TAMPA BAY WATER
Supplying Water To The Region

2575 Enterprise Road, Clearwater, FL 33763
Phone: 727.796.2355 / Fax: 727.791.2388
tampabaywater.org

Board of Directors
Harry Cohen
Lisset Hanewicz
Chopper Davis
Dave Eggers
Jack Mariano
Charlie Miranda
Ron Oakley
Kathleen Peters
Joshua Wostal

General Manager
Charles H. Carden

General Counsel
Kelly M. Fernandez
Persson, Cohen, Mooney, Fernandez & Jackson, P.A.

BOARD AGENDA

October 20, 2025 – 9:30 AM

REGULAR MEETING

OPEN TO THE PUBLIC

PUBLIC COMMENT
The Tampa Bay Water Board of Directors welcomes comments from the public about any issue of concern. Opinions provide valuable input to the board members. However, we request that public comments be directed to issues and not directed personally against any board member or staff member. This provides a mutual respect between the board members and the public.

Public comment may be provided in person, via teleconference during the public comment portion of the meeting, or by submitting written comments for the record and distribution to the Board. Anyone wishing to speak in person must submit a completed speaker card to the Agency Clerk prior to the beginning of the meeting. To submit written comment or to participate via teleconference, please contact Krista Simon at 727-791-2347 or ksimon@tampabaywater.org. by 4:00 p.m. on October 17, 2025. Each speaker shall have a maximum of three (3) minutes to address any matter on the agenda.

The next Board Meeting is scheduled to be held on Monday, November 17, 2025 at 9:30 a.m.

ACCOMMODATIONS
Anyone requiring reasonable accommodations for this meeting as provided for in the Americans with Disabilities Act should contact the Records Department at 727-249-0146 at least three working days prior to the public meeting. If a person decides to appeal any decision made by the Board, with respect to any matter considered at this meeting, he/she will need a record of the proceedings, and for such purposes, he/she may need to ensure that a verbatim record of the proceedings is made, such record includes the testimony and evidence upon which the appeal is to be based.

Regular Meeting Agenda

MONDAY, OCTOBER 20, 2025 – 9:30 AM

9:30 AM - CALL TO ORDER

PLEDGE OF ALLEGIANCE

ROLL CALL

PUBLIC COMMENT - (3 Minutes per speaker)

AGENDA

A. CONSENT ITEMS

A.1 September 15, 2025 - Regular Meeting - Draft Agenda Minutes - *Approve*

A.2 Board Meeting Schedule for 2026 - *Approve*

A.3 Tampa Bay Water Performance Dashboard Update - *Receive Report*

A.4 Water Quality Update - *Receive Report*

A.5 Tampa Bay Water Wise Update - *Receive Report*

A.6 Water Research Foundation Membership - Payment of Annual Dues - *Approve*

A.7 Long-term Master Water Plan Feasibility Program and Developmental Alternatives Study Status Report - *Receive Report*

A.8 South Hillsborough County Program Update - *Receive Report*

A.9 South Hillsborough Pipeline, Projects 01610 and 01616 - Property Acquisition Status Report - *Receive Report*

A.10 Persson, Cohen, Mooney, Fernandez & Jackson, P.A. - Work Assignment Related to South Hillsborough Pipeline Project - *Approve*

A.11 Capital Improvement Program - Task Order Authorization - *Approve*

A.12 Capital Improvement Program - Projects Closeout - *Approve*

A.13 Surface Water Treatment Plant Expansion, Project No. 01014, Project Status Report - *Receive Report*

A.14 Extension of Sole-Source No. 2025-509 for Analytical Equipment, Replacement Parts and Consumable Supplies with Hach Company - *Approve*

A.15 Amendment Two to Roofing Services, Contract No. 2024-012 with Advanced Roofing, Inc., to include Option Year Two and Price Escalation - *Approve*

A.16 Amendment Two to Water Storage Tank Cleaning & Inspection Services, Contract No 2024-008 with In Depth, Inc. to include a Price Escalation - *Approve*

A.17 Janitorial Services, Contract No. 2026700 with Flagship Aviation Services, LLC - *Approve*

A.18 Contract Renewals - *Approve*

REGULAR AGENDA

B. GENERAL MANAGER & GENERAL COUNSEL

B.1 General Manager's Report - *Receive Report*
B.2 Board Policy ADM-BD-0011 - New Point of Connection Request - *Approve*
B.3 2026 Legislative Program Goals and Priorities - *Approve*
B.4 Special Counsel Contract with Gunster Yoakley & Stewart, P.A. for representation in the matter of Polk Regional Water Cooperative v. Tampa Bay Water and Southwest Florida Water Management District - *Approve*

C. ACTION ITEMS

C.1 High Service Pump Station Variable Frequency Drives (Project No. 50070) - Professional Engineering Services, Contract No. 2026016 with McKim & Creed, Inc. - *Approve*
C.2 Lake Bridge Water Treatment Plant-Pump No. 4, (Project No. 07542), Contract No. 2026012 with C&T Contracting Services, LLC. - *Approve*
C.3 South Hillsborough Pipeline, Project Nos. 01610 and 01616, Contract No. 2023-027 Third Amendment with Garney Companies, Inc. - *Approve*
C.4 Feasibility Study for New Groundwater Sources, Project No. 11022 - Tampa Bay Seawater Desalination Expansion with Brackish Groundwater Scope Reduction - *Approve*
C.5 South Hillsborough Wellfield (Project No. 01612) - Development of New Water Supply Infrastructure - *Approve*

D. PRESENTATIONS & REPORTS

D.1 Regional Water Supplies, Member Demands and Environmental Conditions - *Presentation*

E. OTHER ADMINISTRATIVE MATTERS AND OLD BUSINESS

No items to report.

F. RECEIVE & FILE

F.1 Agency Division Activity Reports for September 2025 - *Receive Report*
F.2 Legal Services Activity Report for September 2025 - *Receive Report*
F.3 Legal Services Budget Report through September 2025 - *Receive Report*
F.4 Comprehensive Check List with Delegated Check Approval Items for September 2025 - *Receive Report*
F.5 Disposition of Fixed Assets for September 2025 - *Receive Report*
F.6 Financial Statement - September 2025 - *Receive Report*
F.7 Investment Schedules for September 2025 - *Receive Report*
F.8 True-Up of Fixed Costs between Member Governments through September 2025 - *Receive Report*
F.9 Vendor's Status Report for September 2025 - *Receive Report*

ADJOURNMENT

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.1

DATE: October 1, 2025

TO: Board of Directors

FROM: Charles H. Carden, General Manager

SUBJECT: September 15, 2025 - Regular Meeting - Draft Agenda Minutes - *Approve*

SUMMARY

On September 15, 2025, Tampa Bay Water's Board of Directors held its Regular Board Meeting. A quorum of the Board of Directors of Tampa Bay Water met in person at the Clearwater Administrative Offices.

SUGGESTED ACTION

Approve Minutes.

COST/FUNDING SOURCE

N/A

DISCUSSION

Draft minutes are attached for the Board's review and approval.

Attachment (1)

September 2025 Minutes DRAFT

AGENDA ITEM A.1

Tampa Bay Water

Regular Meeting

September 15, 2025 Minutes

9:30 AM - CALL TO ORDER

Present:	Commissioner Harry Cohen, Hillsborough County
	Vice Chair - Lisset Hanewicz, City of St. Petersburg
	Mayor Chopper Davis, City of New Port Richey
	Commissioner Dave Eggers, Pinellas County
	Commissioner Ron Oakley, Pasco County
Absent:	Commissioner Jack Mariano, Pasco County
	Councilman Charlie Miranda, City of Tampa
	Commissioner Kathleen Peters, Pinellas County
	Commissioner Joshua Wostal, Hillsborough County
Staff:	Chuck Carden, General Manager
Presenters:	Chuck Carden, General Manager
	Kelly Fernandez, General Counsel
	Maribel Medina, Planning and Projects Director
	Brant Bartlett, Government Affairs Program Manager
	Justin Fox, Engineering and Construction Senior Manager
	Shane Johnson, Continuous Improvement Director
	Rick Menzies, Construction Manager
	Jeremy Waugh, Pinellas County Utility Director
General Counsel:	Kelly Fernandez, General Counsel

A list of others who were present and who signed the attendance roster was filed in the permanent files of Tampa Bay Water. Staff and consultants presenting to the Board are listed above.

Chairman Cohen called the meeting to order at 9:30 a.m. The meeting was properly noticed in the Florida Administrative Register and a quorum present.

DRAFT

ROLL CALL

Roll call was taken. Commissioner Mariano, Commissioner Peters, Commissioner Wostal, and Councilman Miranda were not present during the meeting.

PLEDGE OF ALLEGIANCE

Vice Chair Hanewicz led the Pledge of Allegiance.

Chairman Cohen asked if there were any changes to the agenda. Chuck Carden, General Manager, stated there were no changes to the agenda.

PUBLIC COMMENT - (3 Minutes per speaker)

Chairman Cohen opened the Regular Board meeting to public comment. The following speaker(s) made public comment to the Board of Directors:

David Ballard Geddis
Mark Klutho

Public comment was duly recorded and is filed in the permanent records of Tampa Bay Water.

AGENDA

A) CONSENT ITEMS

A.1 August 18, 2025 - Regular Meeting - Draft Agenda Minutes
Approve Minutes.

A.2 Tampa Bay Water Performance Dashboard Update
Receive Report.

A.3 Legislative and Grant Funding Program Update
Receive Report.

A.4 Regional Water Supplies, Member Demands and Environmental Conditions
Receive Report.

A.5 Water Quality Update
Receive Report.

A.6 Tampa Bay Water Wise Update

Receive Report.

A.7 Fiscal Year 2026 Insurance Program for Liability, Auto, Property, Workers' Compensation and Other Coverage
Approve proposed premiums and authorize the General Manager to bind coverage for the Fiscal Year 2026 Tampa Bay Water Insurance Program.

A.8 Special Counsel Current Assignments and Purchase Orders
Approve initial purchase orders for Fiscal Year 2026 to continue special counsel assignments and authorize adjustments to these purchase orders within the approved legal services budget to accommodate changes in assignment activities and workload.

A.9 Fiscal Year 2025 Carry Forward and Transfers of Encumbered and Unencumbered Funds
Approve Fiscal Year 2025 requested carry forward funds and fund transfers.

A.10 Capital Improvement Program - Task Order Authorization
Approve Task Orders.

A.11 Capital Improvement Program - Projects Closeout
Approve Project Closeout.

A.12 Long-term Master Water Plan Feasibility Program and Developmental Alternatives Study Status Report
Receive Status Report.

A.13 Surface Water Treatment Plant Expansion, Project No. 01014, Project Status Report
Receive Status Report.

A.14 South Hillsborough County Program Update
Receive Status Report

A.15 South Hillsborough Pipeline, Project Nos. 01610 and 01616 - Property Acquisition Status Report
Receive Status Report.

A.16 Real Property Disposition - Declaration of Surplus Property and Delegation of Authority to General Manager regarding Lots 10 and 11 of the Parsons Professional Park and Lots 2 and 3 of Cypress Trails
Declare Lots 10 and 11 of the Parsons Professional Park (Parcel No. 301.18) and Lots 2 and 3 of Cypress Trails as surplus property and authorize their sale to adjacent owners or the

general public. Additionally, this item requests that the Board delegates authority to the General Manager to complete negotiations and execute required documents relevant to the sale transactions.

A.17 Fleet Maintenance Contract with Enterprise FM Trust - Fiscal Year 2026 Fleet Purchases, Disposals, and Maintenance
Approve replacement of eight passenger vehicles with Fiscal Year 2026 budgeted funds, replacement of a heavy service truck using Fiscal Year 2025 budgeted funds, and continued contracted Fleet Management activities through Enterprise F.M. Trust under The Interlocal Purchasing System – USA. Contract # 240502 through the end of Fiscal Year 2026.

A.18 As Needed Refueling of Stationary Tanks and Emergency Generators, Contract No. 2026701 with Mansfield Oil Company of Gainesville, Inc.
Approve Contract No. 2026701 with Mansfield Oil Company of Gainesville, Inc. in an amount not to exceed annually budgeted funds.

A.19 First Amendment to Contract No. 2022-052 and Second Amendment to Contract No. 2022-028 with Artemis Consulting Collective, Inc.
Approve the First Amendment to Contract No. 2022-052 and the Second Amendment to Contract No. 2022-028 to change the name to Artemis Consulting Collective Inc.

A.20 GIS Professional Services - General Services Administration, Multiple Award Schedule - Contract No. 47QTCA18D001X, NV5 Geospatial, Inc. (formerly Quantum Spatial, Inc.)
Approve GSA Contract No. 47QTCA18D001X for GIS Professional Services with NV5 Geospatial, Inc. (formerly Quantum Spatial, Inc.) not to exceed FY2026 approved budgeted funds of $160,000.00.

A.21 Information Technology - Cybersecurity Monitoring Services Contract Renewal
Approve services agreement renewal under Omnia Partners Contract R240303 in the amount of $110,050.92.

A.22 Information Technology Staff Augmentation Services - Florida Department of Management Services (DMS) Contract No. 80101507-23-STC-ITSA with Hays U.S. Corporation
Approve Florida DMS Contract No. 80101507-23-STC-ITSA with Hays U.S. Corporation not to exceed Fiscal Year 2026 approved budgeted funds of $678,000.00.

A.23 Microsoft Products & Services - Sourcewell Technology Products & Solutions Contract # 121923-SHI with SHI International Corp.

Approve the purchase of Microsoft Products & Services with SHI International Corp under Sourcewell Technology Products & Solutions Contract # 121923-SHI in an amount not to exceed the fiscal year 2026 approved budgeted funds of $527,000.00.

A.24 Procurement Competitive Exceptions - Vendor Limits
Approve, procurement through the various procurement exceptions, with each listed vendor, potentially exceeding $150,000 in total fiscal year spend, limited to the Board-approved Fiscal Year 2026 budget.

Motion: Vice Chair Hanewicz moved to Approve Consent Items. Mayor Davis seconded the motion.

Vote: The motion CARRIED by a vote of 5 - 0.

REGULAR AGENDA

B) GENERAL MANAGER & GENERAL COUNSEL

B.1 General Manager's Report
Receive Report.

Chuck Carden, General Manager, provided an update on the system supply and water demands, the Alafia River and City of Tampa Hillsborough River permits, Cone Ranch Exchange, and Water Conservation & Protection Mini-grants. Mr. Carden stated he will be providing presentations to each member government with updates on the region's water supply. Mr. Carden announced that Maribel Medina, Planning & Projects Director, recently participated in the Women of Water Panel event and was also featured in the Municipal Water Leader magazine.

A copy of the full report can be found in the agency's Records Department.

No Board action was required on this item.

B.2 2025-2026 Regulatory Plan and Initiation of Repeal of Agency Rules
Approve 2025-2026 Regulatory Plan for submittal in compliance with Section 120.74, F.S. and authorize the General Counsel to initiate the process to repeal all Tampa Bay Water rules codified in the Florida Administrative Code.

Kelly Fernandez, General Counsel, stated the Regulatory Plan is brought to the board every year; however, during the 2025 Legislative Session, a bill passed requiring every agency to also include in its Regulatory Plan a list of all rules and a five-year schedule for repealing those rules. Ms. Fernandez stated the remaining rules are not required for Tampa Bay Water to maintain. General Counsel requested approval of the Regulatory Plan and authorization for

the General Counsel to initiate the rulemaking effort to repeal all of Tampa Bay Water's existing rules.

A copy of the full report can be found in the agency's Records Department.

Motion: Commissioner Oakley moved to Approve the 2025-2026 Regulatory Plan and to authorize General Counsel to initiate the process to repeal Tampa Bay Water's existing rules. Commissioner Eggers seconded the motion.

Vote: The motion CARRIED by a vote of 5 - 0.

C) ACTION ITEMS

C.1 Fiscal Year 2027 Co-funding Request from the Southwest Florida Water Management District Cooperative Funding Program
Approve.

Maribel Medina, Planning and Projects Director, provided a presentation on the Fiscal Year 2027 Co-funding Requests from the Southwest Florida Water Management District Cooperative Funding Program. Ms. Medina stated the requested amounts are for the fiscal year maximum reimbursable amounts set by the District. Staff requests approval to submit co-funding requests for the Tampa Bay Water Wise Program and South Hillsborough Pipeline.

A copy of the full report can be found in the agency's Records Department.

Motion: Mayor Davis moved to Approve Fiscal Year 2027 Co-funding Request from the Southwest Florida Water Management District Cooperative Funding Program. Commissioner Oakley seconded the motion.

Vote: The motion CARRIED by a vote of 5 - 0.

C.2 State & Regional Grant & Legislative Consulting Contract No. 2025051 with Corcoran & Associates, Inc., dba Corcoran Partners
Approve Contract No. 2025051 with Corcoran & Associates, Inc., dba Corcoran Partners, in a not-to-exceed value of $750,000.00.

C.3 Federal Grant & Legislative Consulting Contract No. 2025052 with Jones Walker LLP
Approve Contract No. 2025052 with Jones Walker LLP in a not-to-exceed value of $750,000.00.

Brant Bartlett, Government Affairs Program Manager, provided a presentation on agenda items C.2 and C.3 for Legislative and Grant Funding Services. Mr. Bartlett stated that Corcoran Partners and Jones Walker LLP have long-standing relationships with Tampa Bay

Water. Next, Mr. Barlett reviewed the consultant selection processes and requested approval of Contract 2025051 with Corcoran & Associates (dba Corcoran Partners) for State & Regional Legislative and Grant Funding Services.

A copy of the full report can be found in the agency's Records Department.

Motion: Vice Chair Hanewicz moved to Approve Contract No. 2025051 with Corcoran & Associates, Inc. Commissioner Oakley seconded the motion.

Vote: The motion CARRIED by a vote of 5 - 0.

Brant. Bartlett requested approval of Contract 2025052 with Jones Walker LLP for Federal Legislative and Grant Funding Services.

Motion: Mayor Davis moved to Approve Contract No. 2025052 with Jones Walker LLP. Commissioner Oakley seconded the motion.

Vote: The motion CARRIED by a vote of 5 - 0.

C.4 Professional Services for Utility Locate Services, Contract No: 2026-001
Approve Contract No. 2026001 with GeoPoint Surveying, Inc., in a not-to-exceed amount of $1,661,360 over fiscal years 2026-2029.

Justin Fox, Engineering and Construction Senior Manager, provided a presentation on Professional Services for Utility Locate Services Contract No. 2026001 with GeoPoint Surveying, Inc. Mr. Fox provided a brief overview of the program, reviewing the agency's infrastructure, utility conflict process, and contracted services currently provided by GeoPoint.

A copy of the full report can be found in the agency's Records Department.

Motion: Vice Chair Hanewicz moved to Approve Contract No. 2026001 with GeoPoint Surveying, Inc. Mayor Davis seconded the motion.

Vote: The motion CARRIED by a vote of 5 - 0.

D) PRESENTATIONS & REPORTS

D.1 Member Government Report - Pinellas County
Receive Presentation.

Jeremy Waugh, Pinellas County Utility Director, provided an overview presentation on the County's water, sewer, reclaimed water, and municipal retail and wholesale accounts. Next, Mr. Waugh provided details on the County's storm recovery from Hurricanes Helene and

Milton, infrastructure resiliency, major initiatives, and CIP projects. Mr. Waugh addressed questions on the AMI meters and how new meters relate to reclaimed water.

A copy of the full report can be found in the agency's Records Department.

No Board action was required on this item.

D.2 Tampa Bay Water Strategic Plan Progress Update
Receive update and status report.

Shane Johnson, Continuous Improvement Director, provided an update on the Tampa Bay Water Strategic Plan progress. Mr. Johnson stated the Plan is a critical component of the agency's Continuous Improvement framework. The agency is moving into the last fiscal year of the current five-year plan and anticipates completion by September 2026. Mr. Johnson reviewed the Plan structure, goals for 2022-2027 and update process. Mr. Johnson addressed questions concerning Goal #1 and Goal #6.

A copy of the full report can be found in the agency's Records Department.

No Board action was required on this item.

D.3 Capital Improvements Program - Construction Update
Receive Presentation.

Rick Menzies, Construction Manager, provided an update on the Capital Improvement Program Construction. Mr. Menzies reviewed the construction projects recently completed and provided details on each of the current construction projects. Next, Mr. Menzies reviewed nine additional construction projects that will begin in fiscal year 2026.

A copy of the full report can be found in the agency's Records Department.

No Board action was required on this item.

E) OTHER ADMINISTRATIVE MATTERS AND OLD BUSINESS

Chuck Carden, General Manager, spoke about the recent passing of Ed Armstrong, who was on the Southwest Florida Water Management District Governing Board and was a supporter of Tampa Bay Water.

F) RECEIVE & FILE

F.1 Agency Division Activity Reports for August 2025
Receive and File.

F.2 Legal Services Activity Report for August 2025
Receive and File.

F.3 Legal Services Budget Report through August 2025
Receive and File.

F.4 Comprehensive Check List with Delegated Check Approval Items for August 2025
Receive and File.

F.5 Potential True-Up of Fixed Costs between Member Governments through August 2025
Receive and File.

F.6 Disposition of Fixed Assets for August 2025
Receive and File.

F.7 Financial Statement - August 2025
Receive and File.

F.8 Investment Schedules for August 2025
Receive and File.

F.9 Vendor's Status Report for August 2025
Receive and File

Motion: Vice Chair Hanewicz moved to Approve Receive & File. Commissioner Oakley seconded the motion.

Vote: The motion CARRIED by a vote of 5 - 0.

ADJOURNMENT

The meeting adjourned at 10:33 a.m.

Attest: _____
Charles H. Carden, General Manager/Secretary

Date: _____

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.2

DATE: October 1, 2025

TO: Board of Directors

FROM: Charles H. Carden, General Manager

SUBJECT: Board Meeting Schedule for 2026 - *Approve*

SUMMARY

Each year the Board approves a calendar of meetings for the Regular Board Meetings and for review and adoption of the agency's Annual Budget.

SUGGESTED ACTION

Approve Board Meeting Schedule.

COST/FUNDING SOURCE

N/A

DISCUSSION

The attached calendars were developed for calendar year 2026 Regular Board Meetings and to abide by the budget adoption requirements of the Amended and Restated Interlocal Agreement.

Ten monthly meetings are being proposed to conduct the formal business of the agency that will commence in January 2026. In order to accommodate the busy, and sometimes conflicting, meeting schedules for the elected officials who serve on our Board, Tampa Bay Water Board meetings are held on the third Monday of each month with the exception of the months of January and February when the meetings have been moved due to holidays and June and December when no meetings will be held. The March and September meeting dates are scheduled as provisional dates and may be canceled at the

discretion of the Chair.

In addition, Section 2.08 of the Amended and Restated Interlocal Agreement requires the adoption of the Tampa Bay Water Annual Budget prior to August 1 of each year. In order to meet that contractual requirement, a recommended budget is prepared and reviewed with the Board on a schedule that enables the Board to take formal action to approve a budget at its regularly scheduled May Board meeting.

Attachments (2)

2026 Board Meeting Schedule
Fiscal Year 2027 Budget Development Schedule

2026 BOARD MEETING SCHEDULE

Tampa Bay Water Board meetings are held at the Administrative Offices at 2575 Enterprise Road, Clearwater, FL, 33763
Board meetings begin at 9:30 a.m. unless otherwise set by the Board.

JANUARY 26, 2026

FEBRUARY 23, 2026

***MARCH 16, 2026**

APRIL 20, 2026
(Budget Workshop)

MAY 18, 2026
(Budget Public Hearing)

JUNE 2026 – NO MEETING

JULY 20, 2026

AUGUST 17, 2026

***SEPTEMBER 21, 2026**

OCTOBER 19, 2026

NOVEMBER 16, 2026

DECEMBER 2026 – NO MEETING

* The March and September meeting dates are provisional and may be canceled at the discretion of the Chair.

Any of the above dates can be used for workshops at the Board's direction.

Fiscal Year 2027 Budget Development Schedule	
December 8, 2025	"Fiscal Year 2027 Budget Kickoff" Budget packets distributed internally for division officers and department managers to meet and develop preliminary department budgets.
January 9, 2026	Fiscal year 2027 department budget requests due.
January 19 - 27, 2026	Finance meets with division officers and department managers to review fiscal year 2027 budget requests.
By February 1, 2026	Member Governments' updated Annual Report contractually due to Tampa Bay Water, in the form provided in Exhibit K, of the Amended and Restated Interlocal Agreement, setting forth the next five fiscal years of projected water service demand from their water service area.
February 10, 2026	Preliminary draft of proposed fiscal year 2027 division/department budget worksheets distributed internally for review and comments by all departments.
February 16 - 20, 2026	General Manager meetings with finance, division officers, and department managers to review budget requests, program plans, and outstanding issues.
March 6, 2026	Distribute revised draft of proposed fiscal year 2027 division/department budget worksheets, with changes resulting from February meetings.
March 12, 2026	Executive Team meets to review Proposed Fiscal Year 2027 Sources and Uses Budget Worksheet, Strategic Plan, FY2027-FY2036 Capital Improvement Program Plan, and any related outstanding issues.
March 20, 2026	First draft of Abbreviated Proposed Fiscal Year 2027 Budget document and FY2027-FY2036 Capital Improvement Program Plan prepared and distributed for internal management review before external distribution.
March 30, 2026	The Abbreviated Proposed Fiscal Year 2027 Budget, including annual estimate, and the FY2027-FY2036 Capital Improvement Program Plan distributed to staff, Member Governments, and Board.
April 1 - 10, 2026	Individual meetings with Member Governments' staff, and Board Members, to discuss the Abbreviated Proposed Fiscal Year 2027 Budget and the FY2027-FY2036 Capital Improvement Program Plan.
By April 15, 2026	Tampa Bay Water's annual estimate contractually due to Member Goverments (distributed in late March).
April 20, 2026	Board workshop – Board reviews the Abbreviated Proposed Fiscal Year 2027 Budget and the FY2027-FY2036 Capital Improvement Program plan, and schedules a public hearing for approval on May 18, 2026.
April 21 - 24, 2026	Executive Team meets to review any Board workshop requested changes, if applicable.
May 1, 2026	Distribute the revised Proposed Fiscal Year 2027 Budget with any changes from Board workshop for internal management review.
May 8, 2026	Distribute the revised Proposed Fiscal Year 2027 Budget and the FY2027-FY2036 Capital Improvement Program Plan to the Member Governments, Board and Public.
May 18, 2026	Public Hearing – Request Board approval of the Proposed Fiscal Year 2027 Budget and Fiscal Year 2027 of the Capital Improvement Program, and acceptance of the full ten-year Capital Improvement Program Plan.
By June 17, 2026	Approved Fiscal Year 2027 Budget and FY2027-FY2036 Capital Improvement Program Plan posted on Tampa Bay Water's official website.
October 1, 2026	Approved Uniform Rate for Fiscal Year 2027 becomes effective.
October 10, 2026	Fiscal Year 2026 Annual True-up, and reconciliation of fixed component of the Fiscal Year 2027 annual estimate distributed to members.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.3

DATE: October 6, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Shane Johnson, Continuous Improvement Director

SUBJECT: Tampa Bay Water Performance Dashboard Update - *Receive Report*

SUMMARY

Tampa Bay Water's performance dashboard measures key performance indicators against Tampa Bay Water's internal benchmarks and policies and American Water Works Association's water utility industry benchmarks. The attached performance dashboard provides a snapshot of overall agency performance to the Board of Directors.

SUGGESTED ACTION

Receive Report.

COST/FUNDING SOURCE

N/A

DISCUSSION

Tampa Bay Water staff updated the Board Performance Dashboard to measure key performance indicators identified in the strategic plan and established by agency staff. Regular reports on performance are provided to the Board of Directors with the agenda package. The Board Performance Dashboard has been updated to include metrics aligned with the updated strategic plan, and the most recent benchmarks from the 2024 American Water Works Association Utility Benchmarking Study. These metrics are intended to provide the Board of Directors with a snapshot of the Agency's current

performance.

BACKGROUND

Tampa Bay Water strives to continually improve and become more efficient in operating and maintaining the water supply system and planning for the region's future drinking water needs. In 2023, the Agency's Board of Directors approved the current strategic plan. The Agency assigned key performance indicators to the strategic plan goals for measuring against Tampa Bay Water's internal benchmarks and policies, and the American Water Works Association's water utility industry benchmarks using a performance dashboard. The dashboard uses key performance indicators created as part of the update to the strategic plan and established by agency staff.

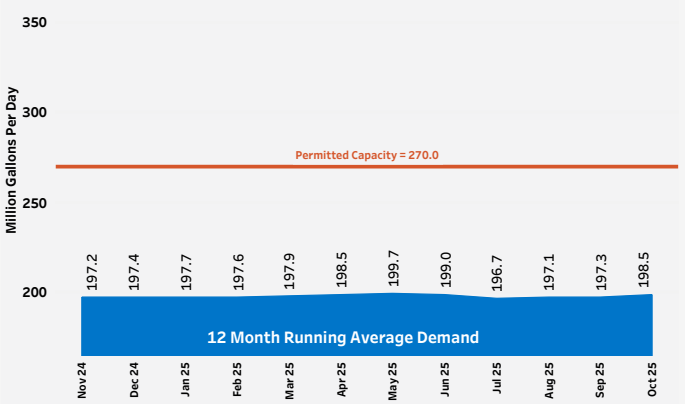
Attachment (1)

Tampa Bay Water Overall Performance Dashboard October 2025

Tampa Bay Water Overall Performance Dashboard

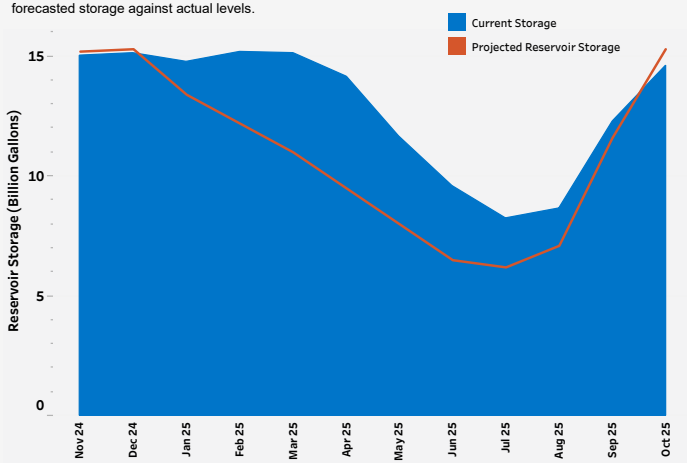
Available Capacity

This indicator shows how much water the utility is permitted to use and the 12 month running average demand. Average demand should not exceed permitted capacity.



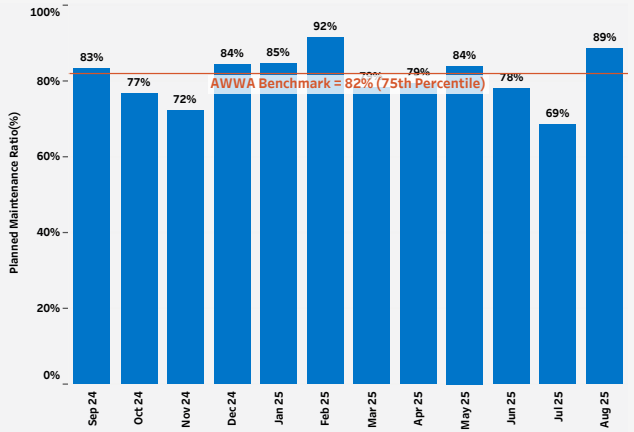
Meeting Projected Reservoir Storage Volume

This indicator provides a measure of the reliability of the utility's forecasted reservoir use by comparing forecasted storage against actual levels.



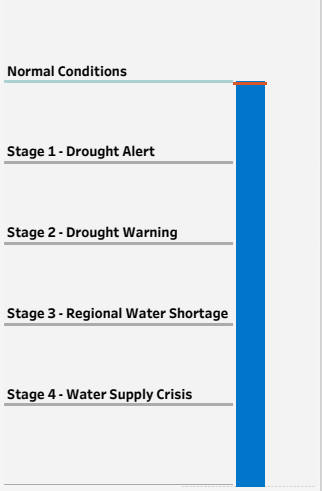
Planned Maintenance Time

This indicator provides a measure of the time spent on planned maintenance shown as a percent of total maintenance time. Utilities should strive to be above the AWWA 2024 benchmark.



Water Shortage Mitigation

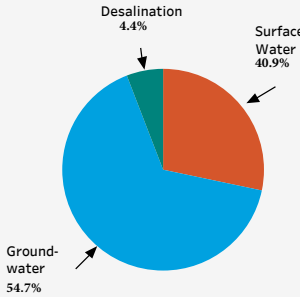
This chart highlights the current stage of Water Shortage Mitigation Plan of Tampa Bay Water.



Water Sources / Water Use Permits / Water Quality

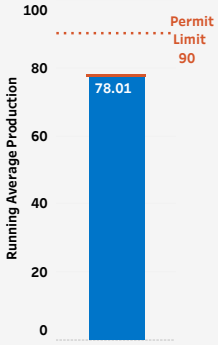
Total Production by Sources Fiscal Year To Date

This chart provides the percentage distribution of sources used to supply water.



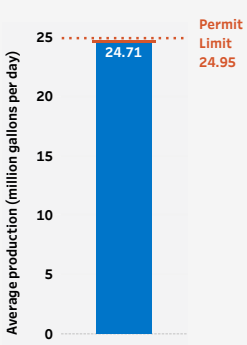
Consolidated Water Use Permit

This indicator provides the 12-month running average for groundwater pumping rate from 10 wellfields and corresponding permit limit.



South-Central Hillsborough Wellfield Permit

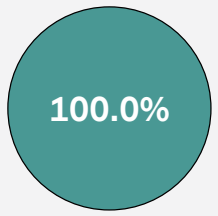
This indicator provides the 12-month running average for groundwater pumping rate from the South-Central Hillsborough Wellfield against its approved pumping limit.



Safe Drinking Water Act Compliance

This indicator quantifies the percentage of time each year that the utility meets all standards in the Safe Drinking Water Act National Primary Drinking Water Regulations averaged over the previous 12 months.

AWWA Benchmark: **100%**

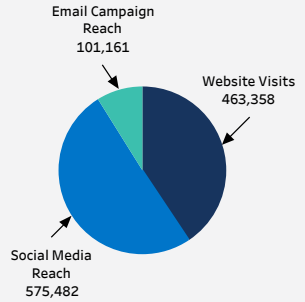


Stakeholder Outreach Fiscal Year To Date

These charts show stakeholder outreach activities of the agency by digital means and through other engagements.

Engagement and Outreach

Digital Reach

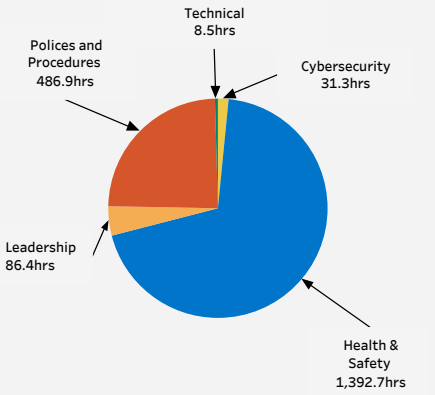


American Water Works Association (AWWA) benchmarks are based on results from participating utilities in the 2024 Utility Benchmarking Study. Participating utilities include retail entities with factors not relevant to wholesale utilities like Tampa Bay Water.

Tampa Bay Water Overall Performance Dashboard

Employee Training Fiscal Year To Date

This chart shows the categories of training provided to Tampa Bay Water employees and the total number of hours of training for each category to date in Fiscal Year 2025. (Source: NeoGov).



Optimized Staffing Levels

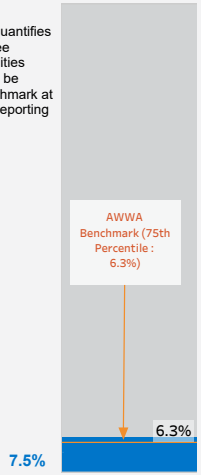
Current Filled Positions

This indicator provides a measure of filled, full-time positions shown as a percentage of total positions for the fiscal year to date.

Current Filled Positions (FTE)	Current Staff Level(FTE)
162	163

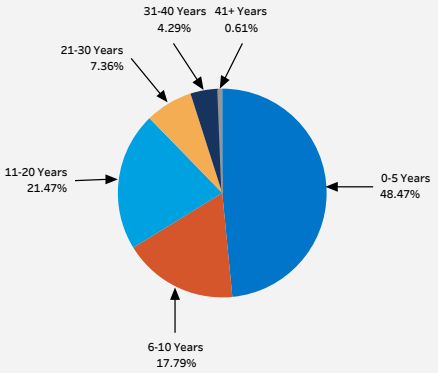
Employee Turnover For Last 12 Months

This indicator quantifies rate of employee departures. Utilities should strive to be below the benchmark at the end of the reporting period.



Employee Experience Distribution

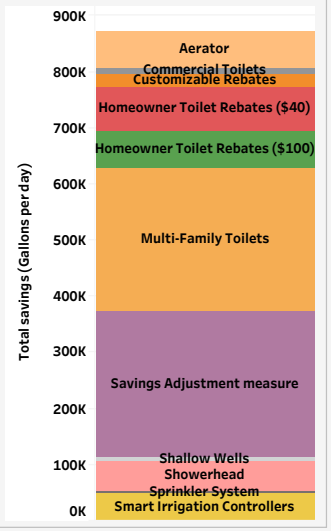
This chart shows relative distribution (percentage) of number of employees based on their total years of experience across all departments for fiscal year to date (Source: Munis).



Tampa Bay Water Wise Program Savings

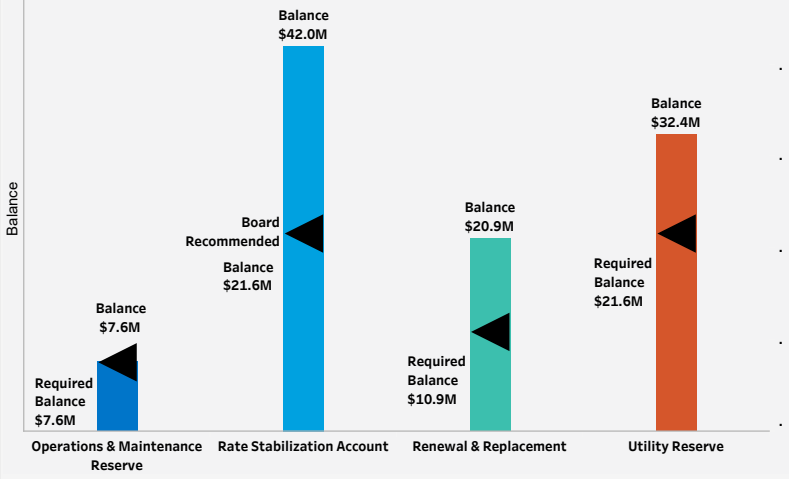
This chart shows the rebate program savings (gallons per day) for all programs since its inception on March 30, 2020.

(Source: Tampa Bay Water Wise Dashboard)



Reserve Funds Balance

This chart tracks the utility's total reserve fund balance across all types against its total contractual or policy based minimums (data is current as of September 2025).

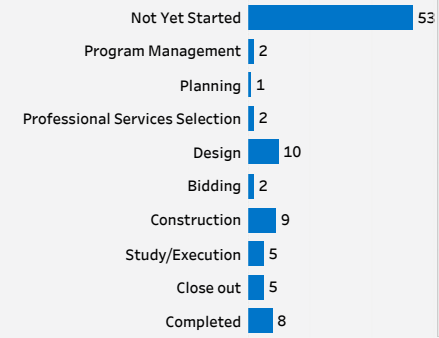


Capital Improvement Program

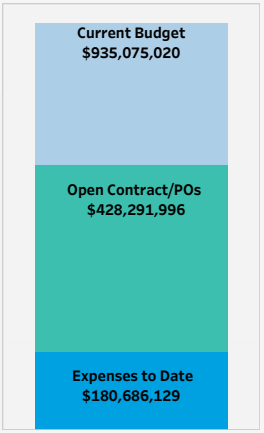
This chart shows the project details by phases for the current fiscal year and also presents current budget, open contracts, and actual expenses for the active projects (Source: Masterworks/Munis).

TOTAL PROJECTS	ACTIVE PROJECTS
97	44

Total Projects by Phases



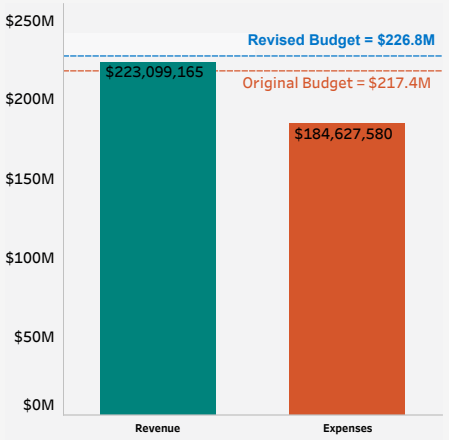
Active Projects



Operating Within Budgets As Forecasted

This indicator provides a measure of the utility's ability to operate within budget forecasts for Fiscal Year (data current as of September 2025).

Actual Revenue and Expenses



American Water Works Association (AWWA) benchmarks are based on results from participating utilities in the 2024 Utility Benchmarking Study. Participating utilities include retail entities with factors not relevant to wholesale utilities like Tampa Bay Water.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.4

DATE: October 1, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Warren Hogg, Chief Science Officer

SUBJECT: Water Quality Update - *Receive Report*

SUMMARY

The Water Quality Update summarizes agency water quality compliance and studies through September 2025 and member government distribution system performance through August 2025. This item summarizes water quality compliance, the results of recent PFAS sampling, the progress on developing recommendations for potential PFAS treatment in light of continuing uncertainty with Environmental Protection Agency PFAS drinking water limits, and progress on developing an updated prioritization schedule for potential removal of Total Organic Carbon at Regional System Facilities.

SUGGESTED ACTION

Receive Report.

COST/FUNDING SOURCE

N/A

DISCUSSION

The agency monitors regional system water quality at member government regional delivery locations identified in the Comprehensive Regional Water Quality Monitoring Plan approved by the Florida Department of Environmental Protection (FDEP). Data are reported in accordance with the Master

Water Supply Contract (Exhibit D) water quality compliance samples and state and federal requirements. **The agency is in compliance at all regional delivery locations during this reporting period.**

Exhibit D Water Quality Monthly Compliance

Exhibit D requirements were met for reported parameters at all regional delivery locations during this period (September 2025).

Future Water Quality Treatment to Comply with PFAS National Primary Drinking Water Regulations

Carollo Engineers performed a Regional Water Quality Study (Study) to assess the technical feasibility and conceptual costs of treatment to reduce total organic carbon (TOC) and other water quality parameters per Board direction. In February 2023, Utility Directors requested information on how the Environmental Protection Agency's (EPA) anticipated polyfluoroalkyl substances (PFAS) maximum contaminant levels (MCLs), and data from (then) pending UCMR5 sampling events could potentially affect TOC treatment technology selection, estimated costs, scheduling of priority treatment locations, and uniform rate projections. Some Utility Directors at that time also requested consideration of a compressed implementation schedule for treatment.

The EPA final MCLs for six PFAS were adopted and became effective in June 2024; compliance with the new MCLs was required by April 2029. However, EPA announced anticipated changes to these 2024 PFAS drinking water regulations in May 2025. EPA stated its intent to retain MCLs for perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA), extend the compliance deadline from 2029 to 2031, and rescind the regulations and reconsider regulatory determinations for perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA), and hexafluoropropylene oxide dimer acid (HFPO-DA). The rescinded requirements would include the Hazard Index standard for mixtures of these three PFAS and perfluorobutanesulfonic acid (PFBS). EPA plans to propose new PFAS drinking water regulations that will update PFAS MCLs in fall 2025 and anticipate issuing final rules in spring 2026.

EPA is also involved in litigation with the American Water Works Association (AWWA) and others, which challenges the scientific basis and projected treatment costs used to develop the PFAS MCLs, including the PFOS and PFOA MCLs, which the EPA recently announced its intention to retain. This litigation will determine if these MCLs will be retained at current levels or remanded back to the EPA for reconsideration. Final briefs in the litigation are to be filed with the Court by December 19, 2025. Oral arguments, which have not yet been scheduled, are expected to begin in early 2026.

The PFOS MCL, and to a lesser extent, the PFOA MCL, affect the Regional Water Quality Study recommendations. These MCLs will now likely remain uncertain until sometime in calendar year 2026. Given the potential for EPA to successfully defend these current MCLs, Tampa Bay Water plans to proceed with recommendations based on the current PFOS and PFOA regulations as described below. These recommendations will also take into account the potential for the EPA to be directed by the Court

to reconsider and propose different MCLs.

The agency retained Carollo Engineers to update the Regional Water Quality Study (Study Update) to address the need for PFOS and PFOA treatment at all locations that are above or near the EPA's existing MCLs to ensure the water delivered to the members meets the current PFOS and PFOA drinking water limits. The Study Update considers the current MCLs, the agency's quarterly and supplemental PFOS and PFOA monthly data, and treatability benchtop studies (to assess PFAS removal in combination with TOC reduction).

The implementation schedule presented in the Study, which was based primarily on TOC treatment location priorities, will shift to PFOS and PFOA treatment location priorities in order to satisfy existing federal and state drinking water MCLs and compliance schedule requirements. This will change the prioritization and timing of new treatment systems, which could also affect Uniform Rate projections. Each re-prioritized PFOS and PFOA treatment location will require granular activated carbon or ion exchange treatment system conceptual design modifications, updated capital and operations and maintenance estimated costs, and revised Uniform Rate projections that account for other Capital Improvements Program projects to satisfy existing federal and state drinking water MCLs and compliance schedule requirements. Additional sampling and analysis, and further PFAS treatability studies including pilot/demonstration studies, will continue to be performed to confirm the level of required treatment as part of the design and implementation of additional treatment systems.

PFOS and PFOA treatment will be recommended, as appropriate, after discussions with member utility directors and staff. An evaluation of the potential implementation planning and financial effects of accelerating the schedule for TOC and other water quality treatment at the 14 regional locations identified in the Study (i.e., reducing three phases to two phases and completing the work in less than the recommended 15-year period) are being discussed with Utility Directors. Given the continuing uncertainty with EPA's PFOS and PFOA MCLs (e.g., ongoing litigation and future proposed regulations), agency staff will carefully consider what preliminary project work may need to begin in the near future if final MCLs are further delayed, in order to assure drinking water quality compliance by April 2031, if that becomes the compliance date.

A draft of the Carollo Engineers Study Update was provided to all member utilities in March 2025. Work sessions to walk through the draft report findings and recommendations were held with individual member utilities in March and April 2025. Member utility comments were received in April through and June 2025. Revisions are being made to the Carollo Engineers draft report, and a meeting has been scheduled with all member utilities for October 20 to review the final report before treatment recommendations are presented to the Board in early 2026.

PFAS Quarterly Compliance Monitoring

The existing EPA PFAS National Primary Drinking Water Regulation, which was finalized in April 2024, requires an initial quarterly PFAS baseline monitoring program be completed during a 12 consecutive month period for all of Tampa Bay Water's active delivery locations by April 26, 2027.

This includes points of connection (POCs) to member utilities and points of entry (POEs) into the regional transmission system. These locations are identified in the agency's Comprehensive Regional Water Quality Monitoring Plan that was approved by the Florida Department of Environmental Protection. This monitoring began in August 2025. Samples were collected in August 2025 and laboratory analyses were completed in September 2025. These data are currently being reviewed.

While the POCs were previously characterized during the UCMR5 and supplemental monthly sampling programs, the POEs did not require earlier sampling. These quarterly characterization data, along with PFAS characterizations of individual source waters and at in-plant locations at the Regional Surface Water Treatment Plant beginning later this year, will be used to further confirm the level of required treatment as part of the design and implementation of additional treatment systems, as may be necessary.

Regional Free Chlorine Maintenance Evaluation

Staff activities on a supplemental water quality characterization program involving TOC species that indicate potential changes in biological stability and more frequent chloramines decay testing is planned for expansion following regional transmission system conditions this summer/fall. This work is intended to provide potential early detection of water chemistry and biology changes in transmission mains that may be the cause for accelerated chloramines decay observed during summer months. Staff continue to evaluate online water quality monitoring equipment for use to continuously measure the size and number of bacteria to anticipate changes in advance of traditional water quality test methods. Staff is also evaluating alternative chemical delivery control methods coupled with other water quality monitoring technologies to optimize reduction of TOC with existing regional surface water treatment processes. The program goal is to use these data to develop interim operational strategies that could lessen the effects of seasonal chloramines decay until TOC reduction treatment can be implemented, if approved by the Board, per the Regional Water Quality Study Update recommendations. Data are presented and discussed at Water Quality Working Group/Operations Coordination Committee meetings.

Red Tide

Staff continues to review monitoring performed by others to remain current on red tide conditions in Tampa Bay. Red tide conditions have not been reported in the vicinity of the desalination plant intake structure. The desalination plant is currently online.

Water Quality Working Group/Operations Coordination Committee

A Water Quality Working Group/Operations Coordination Committee (WQWG/OCC) meeting was held on September 11, 2025. Discussion topics included Tampa Bay Water regional system performance and project status reviews (described above). Member governments submitted their distribution system performance data that are provided in the attached graphs and Tables 1-4. The graphs show, by member government for September 2024 through August 2025, the total number of received complaints, the total distribution system water flushed (by volume), and the water distribution

system water flushed (percent of total water delivered).

BACKGROUND

Fifth Unregulated Contaminant Monitoring Rule (UCMR5) and Supplemental PFAS Data Collection

Finished water quality monitoring of 29 PFAS and lithium, which is required by the EPA under the Unregulated Contaminant Monitoring Rule Round 5 (UCMR5), began in the Tampa Bay region in January 2023 and ended in April 2024 (except for the City of Tampa). Member utilities were required to sample their finished water for four consecutive quarters and Tampa Bay Water concurrently sampled all of our active regional delivery locations to member utilities. Results for Tampa Bay Water's four UCMR5-related sampling events were presented to the Board in July 2024.

Tampa Bay Water identified one PFAS, perfluorooctane sulfonate (PFOS), at an annual average concentration slightly above the EPA's MCL based on these quarterly sampling events. This occurred at one of the agency's two delivery locations to the Hillsborough County Lithia Water Treatment Plant (WTP). All agency UCMR5-related quarterly PFAS data have been posted to the Tampa Bay Water web site. Tampa Bay Water collected monthly supplemental samples for PFAS beginning in July 2024 to capture data during a typical rainy season that could not be obtained during the quarterly sampling because of drought conditions. These subsequent monthly supplemental samplings through September 2025 continued to show slightly higher PFOS and PFOA concentrations compared to the earlier findings.

Based on the analyses of quarterly UCMR5 samples and the supplemental samples through September 2025, Tampa Bay Water has identified PFOS at running annual average concentrations slightly greater than EPA's MCL at the agency's Hillsborough County Lithia and Central WTPs and the Pasco County Lake Bridge Connection. Tampa Bay Water is nearing completion of evaluating the need for PFAS treatment of the water delivered to the Lithia and Central WTPs and Lake Bridge Connection as described in the Regional Water Quality Study discussion in this agenda item. Other PFAS running annual average concentrations at these and other agency delivery locations, which were sampled and analyzed by Tampa Bay Water, continue to be less than the EPA's MCLs or at non-detectable levels.

Monthly supplemental PFAS sampling will continue in 2025 at regional delivery locations for the Hillsborough County Lithia and Central WTPs, the Pasco County Lake Bridge Connection, and the City of Tampa Morris Bridge WTP when the City requests regional water delivery. This supplemental sampling and the above-described PFAS quarterly compliance monitoring samples provide more data points for PFAS treatment decision-making. All available PFAS sampling data collected since July 2023 will be considered in PFAS conceptual treatment designs, cost estimations, and development of recommendations for treatment decision-making to be presented to the Board.

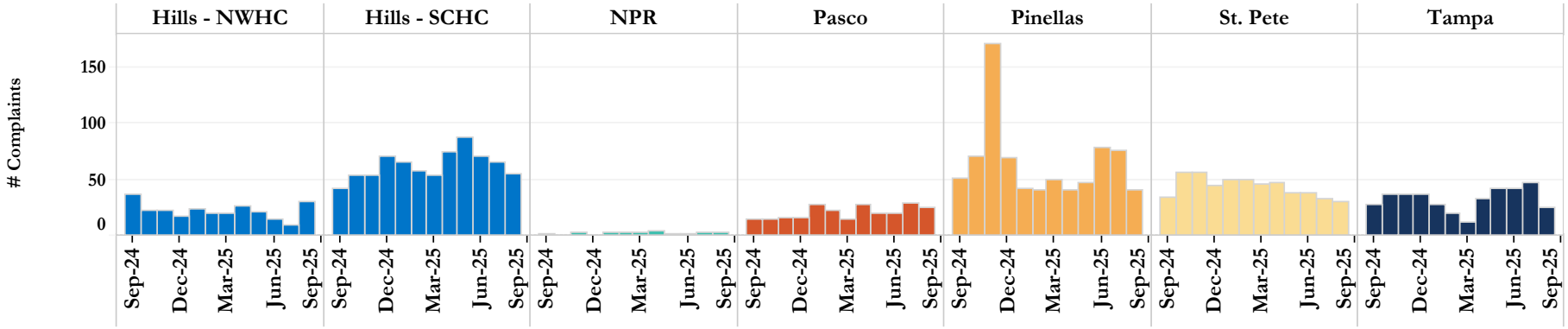
In addition to PFOS, EPA established MCLs for five other PFAS. None of these five PFAS were

identified by the Tampa Bay Water Laboratory at annual average concentrations greater than the EPA MCLs at regional system delivery locations or member distribution system locations during the UCMR5 quarterly sampling study and supplemental monthly sampling events to date. It is important to note the EPA MCLs for PFAS are based on running annual averages like most drinking water compliance requirements. A running annual average is calculated using drinking water quality concentrations from the most recent 12 months of analytical data.

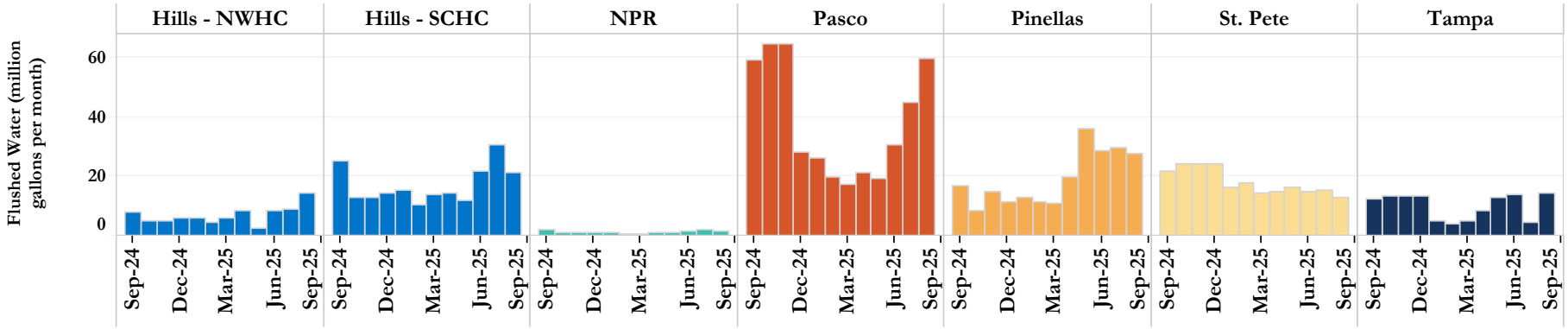
Attachments (2)

Water Quality Exhibits
Water Quality Working Group - Operations Coordination Committee - Meeting Minutes

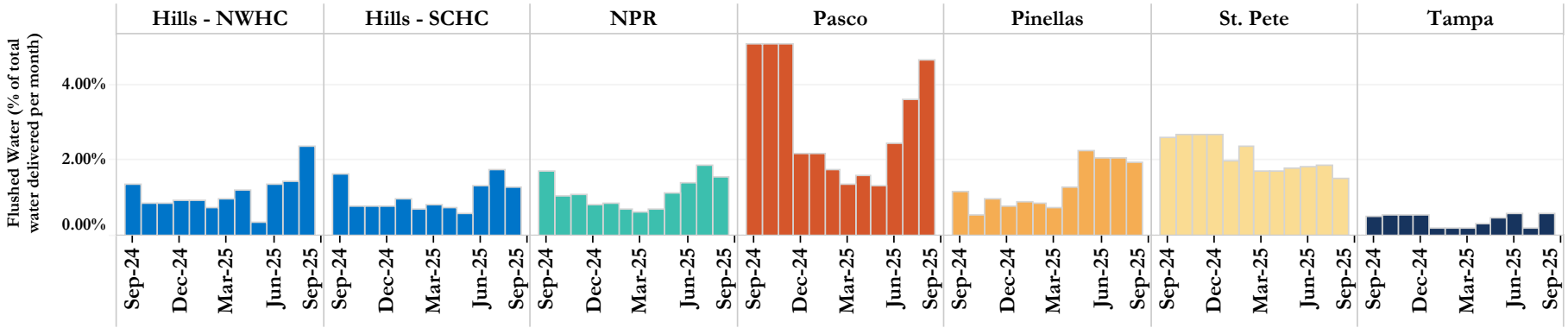
Customer Water Quality Complaints by Member Government (data not normalized for population served)



Distribution System Flushed Water (million gallons per month, data not normalized for production)



Distribution System Flushed Water (% of total water delivered per month)



* Water loss of greater than 10% on an annual basis requires a Water Audit be submitted to the Southwest Florida Water Management District.

Table 1. Customer Water Quality Complaints by Member Government [Data not normalized for population served]

Year	Member	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2025	Hills - NWHC	24	20	19	26	21	14	9	30				
	Hills - SCHC	65	57	53	75	87	70	65	55				
	NPR	2	2	2	4	1	1	2	3				
	Pasco	27	22	15	28	20	19	29	25				
	Pinellas	42	41	49	40	47	78	76	41				
	St. Pete	49	49	46	47	38	38	33	30				
	Tampa	28	19	12	33	42	42	47	25				
2024	Hills - NWHC	20	15	18	19	25	33	41	30	36	22	22	17
	Hills - SCHC	54	56	57	47	60	53	79	71	42	53	53	70
	NPR	1	1	4	4	4	2	0	0	1	0	2	0
	Pasco	28	15	0	30	41	34	31	24	15	15	16	16
	Pinellas	40	46	48	62	62	60	61	67	51	71	171	69
	St. Pete	39	77	38	50	46	24	41	43	34	56	56	44
	Tampa	28	25	35	48	45	52	107	31	27	36	36	36
2023	Hills - NWHC	22	8	19	31	13	8	18	24	22	17	20	20
	Hills - SCHC	57	67	81	96	99	90	68	71	89	77	69	39
	NPR	2	1	4	2	0	4	1	1	1	1	1	0
	Pasco	15	18	31	24	21	20	28	27	40	29	20	20
	Pinellas	40	50	44	65	69	67	97	66	54	77	37	44
	St. Pete	63	58	78	55	68	68	57	47	45	49	32	46
	Tampa	48	31	38	62	45	33	40	46	39	37	21	7
2022	Hills - NWHC	22	8	16	17	24	15	14	17	15	14	16	9
	Hills - SCHC	52	42	62	62	87	82	68	72	57	59	37	39
	NPR	3	4	3	3	3	0	2	1	1	3	0	0
	Pasco	8	25	30	28	13	20	12	18	14	20	15	12
	Pinellas	48	35	52	48	57	49	41	63	47	52	37	43
	St. Pete	37	38	53	48	42	51	55	71	67	63	59	68
	Tampa	31	38	38	43	43	0	0	0	0	0	0	0

Table 2. Distribution System Flushed Water (million gallons per month) [Data not normalized for production]

Year	Member	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2025	Hills - NWHC	5.70	4.31	6.15	8.34	2.47	8.36	8.82	14.38				
	Hills - SCHC	15.50	10.45	14.00	14.39	11.87	21.49	30.53	21.40				
	NPR	0.87	0.63	0.63	0.75	1.23	1.39	1.95	1.62				
	Pasco	26.37	19.91	17.44	21.15	19.41	30.39	44.90	59.62				
	Pinellas	12.98	11.37	11.08	19.86	35.91	28.47	29.42	27.51				
	St. Pete	16.25	17.75	14.40	14.66	16.05	14.89	15.37	12.89				
	Tampa	4.82	3.90	5.00	8.16	12.71	14.02	4.29	14.42				
2024	Hills - NWHC	8.24	10.90	8.92	6.82	8.06	8.15	7.55	6.25	7.67	4.91	4.91	5.86
	Hills - SCHC	17.85	17.05	16.74	21.00	17.24	17.01	25.67	34.50	25.30	12.80	12.80	14.45
	NPR	0.47	0.39	0.63	0.77	0.97	0.63	0.64	0.66	1.77	1.10	1.10	0.83
	Pasco	55.41	34.70	35.71	42.38	34.68	39.03	54.77	54.17	58.98	64.85	64.86	28.18
	Pinellas	14.73	9.63	13.75	16.86	23.65	22.79	16.76	12.51	16.65	8.15	14.61	11.57
	St. Pete	10.35	4.12	8.59	15.68	25.89	24.48	22.99	28.47	21.55	24.24	24.24	24.24
	Tampa	5.27	4.47	4.48	5.55	4.86	4.06	9.48	16.10	12.36	13.19	13.19	13.19
2023	Hills - NWHC	7.28	7.40	9.88	6.20	9.12	10.42	7.77	10.69	8.21	10.23	10.38	8.53
	Hills - SCHC	18.15	20.35	45.91	15.82	18.90	15.78	13.13	13.53	11.87	13.41	12.55	13.80
	NPR	1.05	0.91	0.72	0.39	0.39	0.79	0.67	0.39	0.39	0.39	0.67	0.71
	Pasco	26.12	26.06	27.25	26.51	25.26	37.55	36.30	53.67	40.62	49.95	62.71	50.84
	Pinellas	7.24	6.32	7.36	14.13	18.17	12.09	16.76	25.70	50.71	30.54	23.07	15.76
	St. Pete	14.16	13.18	21.34	8.14	17.91	24.18	20.86	19.45	21.65	23.61	31.61	29.81
	Tampa	5.75	3.43	3.69	2.57	6.94	12.09	5.56	6.66	8.30	11.80	5.00	0.08
2022	Hills - NWHC	9.03	3.30	9.04	9.60	21.61	12.16	44.41	32.55	10.01	15.53	7.13	7.40
	Hills - SCHC	25.66	14.48	14.64	26.83	26.62	31.72	17.65	26.55	27.23	21.62	25.10	20.71
	NPR	0.91	1.11	1.06	1.03	1.07	1.06	1.06	1.05	1.11	1.12	1.03	1.13
	Pasco	18.90	15.80	14.89	17.83	18.07	23.89	31.83	39.17	39.50	40.02	39.15	37.82
	Pinellas	5.78	4.85	6.61	6.96	11.57	10.30	15.76	18.09	13.07	12.01	8.25	12.82
	St. Pete	15.19	17.23	16.48	17.58	14.80	15.01	21.10	32.62	36.28	52.00	31.71	35.15
	Tampa	3.11	4.22	4.91	4.82	6.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 3. Distribution System Flushed Water (% of total water delivered per month)

Year	Member	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2025	Hills - NWHC	0.93%	0.76%	0.97%	1.21%	0.34%	1.36%	1.45%	2.38%				
	Hills - SCHC	0.97%	0.69%	0.81%	0.74%	0.59%	1.31%	1.76%	1.26%				
	NPR	0.87%	0.68%	0.61%	0.71%	1.13%	1.41%	1.88%	1.54%				
	Pasco	2.17%	1.73%	1.35%	1.61%	1.32%	2.43%	3.61%	4.66%				
	Pinellas	0.89%	0.85%	0.75%	1.28%	2.24%	2.05%	2.07%	1.94%				
	St. Pete	1.98%	2.35%	1.70%	1.70%	1.78%	1.84%	1.85%	1.53%				
	Tampa	0.20%	0.18%	0.20%	0.32%	0.47%	0.58%	0.18%	0.57%				
2024	Hills - NWHC	1.45%	1.99%	1.46%	1.06%	1.08%	1.27%	1.28%	1.06%	1.37%	0.85%	0.85%	0.92%
	Hills - SCHC	1.21%	1.19%	1.04%	1.24%	0.86%	0.97%	1.47%	2.14%	1.63%	0.77%	0.77%	0.79%
	NPR	0.45%	0.40%	0.59%	0.72%	0.80%	0.56%	0.59%	0.62%	1.71%	1.03%	1.08%	0.80%
	Pasco	5.35%	3.49%	2.97%	3.23%	2.24%	2.91%	6.75%	4.60%	5.07%	5.10%	5.10%	2.18%
	Pinellas	0.99%	0.68%	0.88%	1.08%	1.36%	1.44%	1.13%	0.84%	1.16%	0.53%	0.95%	0.77%
	St. Pete	1.26%	0.54%	1.02%	1.89%	2.77%	2.84%	2.68%	3.27%	2.59%	2.68%	2.68%	2.68%
	Tampa	0.20%	0.19%	0.17%	0.23%	0.18%	0.17%	0.39%	0.61%	0.50%	0.56%	0.56%	0.56%
2023	Hills - NWHC	1.17%	1.20%	1.34%	0.84%	1.22%	1.57%	1.15%	1.59%	1.24%	1.45%	1.56%	1.42%
	Hills - SCHC	1.18%	1.35%	2.44%	0.84%	0.97%	0.91%	0.73%	0.74%	0.69%	0.74%	0.73%	0.89%
	NPR	1.00%	0.91%	0.63%	0.34%	0.35%	0.76%	0.60%	0.35%	0.35%	0.29%	0.53%	0.62%
	Pasco	2.42%	2.57%	2.14%	2.06%	1.91%	3.29%	3.03%	5.05%	3.26%	3.85%	5.08%	4.36%
	Pinellas	0.49%	0.45%	0.56%	0.84%	1.10%	0.80%	1.05%	1.63%	3.27%	1.86%	1.48%	1.04%
	St. Pete	1.69%	1.70%	2.37%	0.91%	1.98%	2.84%	2.35%	2.20%	2.46%	2.61%	3.69%	3.56%
	Tampa	0.22%	0.14%	0.14%	0.10%	0.25%	0.47%	0.21%	0.26%	0.33%	0.43%	0.20%	0.00%
2022	Hills - NWHC	1.38%	0.53%	1.34%	1.41%	3.10%	1.83%	6.86%	4.92%	1.73%	2.27%	1.19%	1.16%
	Hills - SCHC	1.70%	1.02%	0.92%	1.67%	1.56%	2.58%	1.14%	1.63%	1.94%	1.29%	1.60%	1.32%
	NPR	0.86%	1.13%	0.98%	0.96%	0.92%	0.90%	0.96%	0.97%	1.09%	1.01%	0.99%	1.09%
	Pasco	1.89%	1.58%	1.31%	1.56%	1.42%	2.11%	2.86%	4.00%	4.21%	3.31%	3.68%	4.34%
	Pinellas	0.39%	0.35%	0.42%	0.46%	0.76%	0.67%	1.05%	1.20%	0.95%	0.78%	0.58%	0.88%
	St. Pete	1.87%	2.30%	1.95%	2.13%	1.68%	1.82%	2.43%	3.68%	4.44%	5.76%	3.73%	4.13%
	Tampa	0.11%	0.17%	0.16%	0.16%	0.20%							

Table 4. Regional Total Coliform Rule Compliance (Percent Positive Samples)

Year	Member	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2025	Hills - NWHC	0.75%	0.00%	0.75%	0.00%	0.00%	0.00%	0.00%	0.00%				
	Hills - SCHC	0.90%	0.00%	0.00%	0.45%	0.89%	0.89%	0.89%	2.13%				
	NPR	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%				
	Pasco	0.54%	0.54%	1.06%	0.00%	3.05%	0.00%	0.54%	1.56%				
	Pinellas	0.00%	0.00%	0.00%	0.47%	0.00%	0.00%	0.00%	0.47%				
	St. Pete	0.00%	0.00%	0.55%	0.00%	1.59%	0.55%	0.00%	0.00%				
	Tampa	0.41%	0.00%	0.00%	0.00%	0.00%	0.41%	0.00%	0.00%				
2024	Hills - NWHC	0.00%	0.75%	0.00%	1.47%	0.00%	0.00%	0.75%	0.75%	0.75%	0.00%	0.00%	0.00%
	Hills - SCHC	0.00%	0.00%	2.56%	0.00%	0.89%	2.14%	0.88%	0.45%	0.00%	0.00%	0.00%	0.88%
	NPR	0.00%	0.00%	0.00%	0.00%	2.22%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Pasco	0.00%	0.00%	0.00%	0.00%	0.64%	0.64%	0.00%	1.06%	0.54%	0.54%	0.54%	0.54%
	Pinellas	0.00%	0.47%	0.00%	0.47%	0.00%	3.03%	0.00%	1.80%	0.93%	0.00%	0.00%	0.00%
	St. Pete	0.55%	0.55%	1.08%	1.08%	0.55%	0.55%	0.55%	0.55%	0.00%	0.00%	0.00%	0.00%
	Tampa	0.00%	0.00%	0.81%	0.00%	0.00%	0.00%	0.41%	0.00%	0.00%	0.80%	0.80%	0.00%
2023	Hills - NWHC	0.00%	0.00%	0.00%	0.00%	0.75%	0.00%	1.47%	0.75%	2.16%	0.00%	0.00%	0.75%
	Hills - SCHC	0.00%	0.00%	0.89%	0.00%	1.32%	0.00%	0.45%	0.45%	0.45%	1.32%	0.45%	0.89%
	NPR	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.27%	0.00%	0.00%	0.00%	0.00%
	Pasco	0.64%	0.64%	0.64%	0.00%	0.64%	0.64%	0.63%	1.26%	0.64%	1.23%	0.64%	0.00%
	Pinellas	0.00%	0.00%	0.47%	0.47%	0.93%	1.80%	0.00%	0.47%	0.00%	0.48%	0.00%	0.47%
	St. Pete	0.00%	1.08%	0.55%	0.00%	0.00%	1.08%	2.56%	0.55%	0.00%	0.00%	0.55%	0.00%
	Tampa	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.20%	0.41%	0.00%	0.00%	0.00%
2022	Hills - NWHC	0.00%	0.00%	0.00%	0.00%	0.75%	0.00%	0.00%	1.47%	1.47%	1.47%	0.00%	0.00%
	Hills - SCHC	0.89%	1.32%	2.95%	0.00%	0.00%	1.75%	0.00%	1.73%	0.89%	0.00%	0.45%	0.00%
	NPR	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Pasco	0.00%	0.00%	0.00%	0.00%	0.64%	0.00%	0.00%	1.85%	0.00%	2.99%	0.00%	0.00%
	Pinellas	0.00%	0.47%	0.93%	0.47%	0.00%	0.47%	0.93%	0.93%	0.47%	0.00%	0.93%	0.47%
	St. Pete	0.00%	0.55%	0.00%	0.00%	0.00%	0.00%	1.08%	1.08%	0.55%	0.00%	0.55%	0.00%
	Tampa	0.00%	0.00%	0.00%	0.00%	0.00%							

Meeting Minutes

Water Quality Working Group/ Operations Coordination Committee

September 11, 2025 – Microsoft Teams Meeting

HANDOUTS - sent by email prior to meeting

a. Member Government monthly data

b. September 2025 WQWG-OCC Agenda Packet

A. WATER DELIVERY

1. SYSTEM UPDATES

a. **Surface Waters**

i. RSWTP – Averaging 60 MGD this past month with supply coming from TBC.

ii. Reservoir – Storage at 13 BG with Alafia River source currently feeding the Reservoir.

iii. Desal – Online flow rate of approximately 15 MGD, the 4th RO train started up recently.

b. **Groundwater**

i. All wellfields are operational and available pending system demands**.**

ii. **C**osme and Northwest Hillsborough are offline for operational reasons.

c. **Transmission Mains**

i. Chloramine residuals are in the 3 mg/L range at all regional locations except Fawn Ridge.

ii. Nitrites trending down recently with more stable chloramine residuals in the regional system.

iii. Operations changed strategy at Cypress Creek WTP using free chlorine trim to consume NH_3.

2. UPDATES FROM MEMBER GOVERNMENTS

a. Hillsborough County

i. August 2025 TCR Reporting North Service Area – 0 TCP out of 130 samples – 0%

ii. August 2025 TCR Reporting South Service Area – 5 TCP, 1 *E.coli* positive of 255 samples – 2.55%

iii. August 2025 Complaint Report North Service Area – 30 complaints mostly pressure and color

iv. August 2025 Complaint Report South Service Area – 55 complaint mostly color, odor, pressure

v. August 2025 Flushing Report North Service Area – 14.38 MG (2.40 MG from auto flushers)

vi. August 2025 Flushing Report South Service Area – 21.40 MG (3.20 MG from auto flushers)

vii. August 2025 Total Delivered Water Report North Service Area – 604.27 MG, 2.4 % flushed

viii. August 2025 Total Delivered Water Report South Service Area – 1,693.76 MG, 1.3% flushed

ix. Hillsborough reported an increase in flushing to address elevated nitrite levels at Fawn Ridge.

b. City of New Port Richey

i. August 2025 TCR Reporting – 0 TCP out of 42 samples – 0%

ii. August 2025 Complaint Report – 3 complaints for sediment

iii. August 2025 Flushing Report – 1.62 MG (0.877 MG from auto flushers)

iv. August 2025 Total Delivered Water Report – 105.45 MG, 1.54% flushed

v. New Port Richey reported that their residuals are stable and nitrites are down significantly.

c. Pinellas County

i. August 2025 TCR Reporting – 1 TCP out of 213 samples – 0.47%

ii. August 2025 Complaint Report – 41 complaints; mostly premise issues and rusty water

iii. August 2025 Flushing Report – 27.51 MG (20.35 MG from auto flushers)

iv. August 2025 Total Delivered Water Report – 1,420.20 MG, 1.94% flushed

v. Pinellas County reported their free chlorine maintenance conversion to begin September 22.

d. **Pasco County**

i. August 2025 TCR Reporting – 3 TCP out of 192 samples – 1.56%

ii. August 2025 Complaint Report – 25 complaints; mostly color, odor and customer issues

iii. August 2025 Flushing Report – 59.62 MG (40.41 MG from auto flushers)

iv. August 2025 Water Delivered Report – 1,280.66 MG, 4.66% flushed

v. Pasco noted challenges with chloramine stability and nitrites in their distribution system with large development construction projects underway.

- The Moffit Cancer Center campus has several miles of 20-inch pipe
- 12 MG was flushed in this area last month for pipe clearances and to maintain residuals in these new diameter lines.

vi. Pasco reported meeting internally with a consultant to work on chlorine to ammonia ratio. AWWA recommends a 4.5 to 5.0 ratio, and Pasco reported some promising results so far.

e. **City of St. Petersburg**

i. August 2025 TCR Reporting – 0 TCP out of 180 samples – 0%

ii. August 2025 Compliant Report – 30 complaints; mostly premise issues

iii. August 2025 Flushing Report – 12.88 MG (7.05 MG from auto flushers)

iv. August 2025 Total Delivered Water Report – 842.34 MG, 1.53% flushed

v. Flushing is down compared to flushing numbers last year.

vi. City of St. Petersburg is expecting increased flushing during a pipe replacement project that is scheduled to begin next month.

f. **City of Tampa**

i. August 2025 TCR Reporting – 0 TCP out of 240 samples – 0%

ii. August 2025 Complaint Report – 25 complaints; mostly pressure and color

iii. August 2025 Flushing Report – 14.42 MG (7.81 MG from auto flushers)

iv. August 2025 Total Delivered Water Report – 2,520.43 MG, 0.57% flushed

v. The City of Tampa had increased flushing last month due to elevated nitrites.

vi. The next free chlorine maintenance event is currently scheduled for November 2025.

vii. The City of Tampa recently began purchasing water from Tampa Bay Water.

viii. A UCMR5 PFAS collection was performed at the City of Tampa's point of connection near Morris Bridge on September 11. Results will be shared when available.

B. WATER QUALITY MONITORING/TREATMENT

1. EXHIBIT D PERFORMANCE

Exhibit D performance met requirements at all locations for August 2025.

2. PFAS SUPPLEMENTAL SAMPLING

The August 7, 2025 sampling results for regional delivery at our three highest PFOS locations were unchanged or within a few tenths (ppt) of the July 7, 2025 results.

PFOS

Hillsborough Central WTP	RAA = 4.8 ppt (4.7 ppt last mo.)*	Grab = 5.0 ppt (5.6 ppt last mo.)
Hillsborough Lithia WTP	RAA = 5.9 ppt (5.9 ppt last mo.)	Grab = 6.1 ppt (6.2 ppt last mo.)
Pasco Lake Bridge Connect	RAA = 4.5 ppt (4.4 ppt last mo.)*	Grab = 4.8 ppt (5.5 ppt last mo.)

- August PFOS grab sample results were 0.1-0.7 ppt lower than July
- August PFOS RAA results were 0.0-0.1 ppt higher than July

PFOA

Hillsborough Central WTP	RAA = 3.2 ppt (3.1 ppt last mo.)+	Grab = 4.3 ppt (3.1 ppt last mo.)
Hillsborough Lithia WTP	RAA = 3.1 ppt (3.0 ppt last mo.)+	Grab = 3.9 ppt (3.8 ppt last mo.)
Pasco Lake Bridge Connect	RAA = 3.1 ppt (3.0 ppt last mo.)+	Grab = 3.8 ppt (3.2 ppt last mo.)

- August PFOA grab sample results were 0.1-1.2 ppt higher than July
- August PFOA RAA results were 0.1 ppt higher than July

Notes:

- RAA = running annual average (12 consecutive months)

- Grab = monthly collected sample

- Hillsborough Lithia WTP South Central Regional supply only (not including South-Central Wellfield)

* See text below regarding EPA PFOS RAA compliance averaging requirements

+ See text below regarding EPA PFOA RAA compliance averaging requirements

a. These results continue to be consistent with past months in late 2024 and 2025 and consistent with data used in the Regional Water Quality Study Update treatability focus on the agency's RSWTP and BUD Wells.

b. Of the five actively pumping BUD production wells, three of them have shown PFOS consistently greater than 4.0 ppt (RAAs in August 2025 = 8.7 ppt, 11.4 ppt, and 11.8 ppt); one is close to 4.0 ppt (RAA in August 2025 = 3.6 ppt); and one is below quantitation levels and mostly ND for PFOS.

c. Two of the BUD production wells have shown PFOA consistently greater than 4.0 ppt (RAAs in August 2025 = 4.4ppt and 5.5 ppt); others are below the 4.0 ppt MCL in the range from ND to 2.9 ppt.

d. PFAS treatability focus on the agency's RSWTP and BUD Wells was driven by findings at the regional delivery locations at Hillsborough's Central and Lithia WTPs with PFOS levels slightly above 4.0 ppt.

e. PFAS treatment consideration at the agency's RSWTP would also reduce PFOS levels at the Pasco's Lake Bridge Connection that is located "downstream" from Hillsborough's Central WTP point of connection.

f. PFOS RAA calculated values, which averages grab sample results over 12 months, as expected, show less variation than month to month grab samples; August RAA results were 0.0-0.1 ppt higher than July 2025 while August 2025 grab samples were 0.1-1.2 ppt higher than July 2025 (as shown in table above).

g. EPA's RAA computational compliance procedure requires the assignment of a "0" value when an analytical result is less than the EPA's Practical Quantitation Limit (PQL), PFOS = PFOA = 4.0 ppt.

h. For treatability assessment purposes, the Tampa Bay Water Laboratory's lower PFOS = PFOA PQL values, each approximately 2.0 ppt instead of a "0" value, were conservatively used for RAA calculations instead of "0" values. Treatment recommendations, however, remain the same using both computations.

i. Calculated PFOS RAA value for the Pasco's Lake Bridge Connection, as of August 2025, reduced from 4.5 ppt (shown above*) to 3.6 ppt when using the EPA-required "0" value for compliance averaging.

j. Calculated PFOS RAA value for Hillsborough's Central WTP reduced from 4.8 pt (shown above*) to 4.5 ppt when using the EPA required "0" value for compliance averaging, > 4.0 ppt in both cases.

k. Calculated PFOS RAA value for Hillsborough's Lithia WTP did not change (5.9 ppt) when using the EPA required "0" value for compliance averaging because all analytical results > EPA's PQLs (no "0"s).

l. Calculated PFOA RAA values for Hillsborough's Central and Lithia WTPs and Pasco's Lake Bridge Connection (as of August 2025) reduced from 3.1-3.2 ppt (shown in above table) to 0.0-0.7 ppt when using the EPA-required "0" value for compliance averaging.+ In both cases, compliance is shown.

m. In August, Tampa Bay Water collected samples at all points of connection and points of entry listed in the Laboratory's Comprehensive Regional Water Quality Monitoring Plan. This was done for the PFAS quarterly monitoring to satisfy the EPA's initial compliance deadline by April 2027.

n. Results from this collection will be shared at next month's WQWG-OCC meeting.

3. PFAS TREATABILITY AND REGIONAL WATER QUALITY STUDY UPDATE

Since our last meeting on August 14, 2025:

a. Tampa Bay Water continues to address comments from all member utilities and update the Carollo Engineer's draft report.

b. We expect to issue a matrix of member comments and Carollo Engineer's responses and a revised draft before a face-to-face meeting with all members in our Clearwater offices on Monday, October 20.

c. The purpose of the October 20 meeting is to go over the revisions and technical basis for recommendations (e.g., treatment locations priorities, treatment technologies, etc.).

d. The PFAS treatment locations have top priority because of the current federal requirements, followed by the TOC treatment locations that are based on member utility requests.

e. If federal requirements change for PFAS, TOC sites will move up in priority. The latter would be revisited and discussed at the meeting.

f. With regard to the PFAS federal lawsuit, an extension was granted to all parties until September 12 as both EPA and AWWA are still conferring but had not yet reported consensus.

C. OTHER TOPICS - None discussed

D. FUTURE MEETINGS

Next WQWG-OCC Meeting is online October 9th at 1:30 p.m.

WQWG-OCC September 2025 Meeting Attendees

Chris Wetz, Hillsborough County
David Lundberg, Hillsborough County
Luke Mulford, Hillsborough County
Norrise Shellman, Hillsborough County
Ray Harmon, Hillsborough County
Ronald Beatty, Hillsborough County
Zemberial Strong, Hillsborough County
Colin Eichenmuller, City of New Port Richey
Greg Wikholm, City of New Port Richey
Paula Lashuay, City of Tampa
Antonio Alvarez, Pasco County
Karen Lewis, Pasco County
Kevin Jenkins, Pasco County
Mike Avila, Pasco County
Stephanie Summerbell, Pasco County
Drew Boylson, Pinellas County
Haxhi Muharemi, Pinellas County
Patti Holowecky, Pinellas County
Royce Rarick, Pinellas County
Trevor Bridge, Pinellas County
Wendy Tifft, Pinellas County
Jim Kramer, City of St. Petersburg
Waunda Henry, City of St. Petersburg
John Stanley, City of St. Petersburg
Lauren Tersen, City of St. Petersburg
Waunda Henry, City of St. Petersburg
Mark Green, City of St. Petersburg
Evelyn Dooley, Tampa Bay Water
Laila Martin, Tampa Bay Water
Paul Stanek, Tampa Bay Water
Phil Matthews, Tampa Bay Water
Shawn Jones, Tampa Bay Water
Stephen Cantin, Tampa Bay Water
Steve Fleischacker, Tampa Bay Water
Timothy Smith, SUNDT

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.5

DATE: October 1, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Warren Hogg, Chief Science Officer

SUBJECT: Tampa Bay Water Wise Update - *Receive Report*

SUMMARY

The Tampa Bay Water Wise program provides rebates to encourage water conservation across all water use sectors in all six member government service areas and is supported by grant funding from the Southwest Florida Water Management District. The program goal is to save up to 3.8 million gallons of water per day by 2030 and to cost-effectively defer the need for equivalent new water supplies through improved water use efficiency.

SUGGESTED ACTION

Receive Report.

COST/FUNDING SOURCE

N/A

DISCUSSION

Program Update

This fiscal year (October 1, 2024 – September 22, 2025), the program has saved 178,279 gallons per day (gpd). Total, cumulative water savings since the program launched in March 2020 are 872,745 gpd

as a result of the issuance of 36,735 device rebates. The details of these rebates can be found in the monthly Regional Report, attached to this item and also located here: https://tbw.conservationrebates.com/dashboard/public/regional_dashboard/regional_dashboard.pdf

The Sprinkler System rebate pilot program has been extended indefinitely by the working group. To date, 20 customers have participated in this rebate, and the number of participating irrigation contractors has increased from 5 to 10 over the last six months. The program has been gathering feedback from customers and will gather feedback from irrigation contractors in October. This feedback will be used to inform any changes made to the program in order to increase participation and save more water.

Marketing & Outreach

EGIA, the third-party rebate administrator and marketing manager, launched an enhanced digital campaign on social media and Google to promote awareness of the program. Other marketing activities include the efforts of 2.5 staff who work in the Tampa Bay area to actively promote the program to multi-family property owners, hotel/motel/restaurant owners, schools, local governments, promotions in Home Depot and Lowe's stores, and outreach to key industry professionals such as plumbers and irrigation contractors. EGIA also manages social media, search engine optimization, and the Tampa Bay Water Wise website.

The working group, comprised of member government staff, approved a trial toilet rebate price increase. The goal of the trial period is to evaluate the impact that the higher rebate prices have on participation in the residential and non-residential sectors. EGIA is preparing for these changes on the program website, rebate processing, and marketing materials that are placed in stores and shared online. EGIA will monitor toilet rebate activity throughout this period and evaluate effectiveness in the spring of 2026 in order to determine the impacts and the working group will decide whether or not the prices should remain at the higher levels.

Additional Regional Demand Management Activities

The member governments continue to implement conservation messaging and programs for their customers and promote the Tampa Bay Water Wise program. The attachment to this report includes a summary of their monthly activities. The collective and coordinated efforts of the Member Governments and the Florida Friendly Landscape programs have an impact on regional water demand. These activities play a key role in educating residents about the best ways to save water. These efforts are complementary to the Tampa Bay Water Wise rebate program.

- Florida Friendly Landscaping programs educate residents and businesses about best landscaping management practices. One activity includes implementing the Tampa Bay Community Water Wise Awards, which includes visiting each applicant's landscape and evaluating the water conservation effectiveness and degree to which the landscape incorporates Florida Friendly Landscape principles. Evaluations are underway, and winners will be announced in the fall/spring.
- Conservation Coordination Consortium – Once per month, staff from Member Governments, the

Florida Friendly Landscaping program, Tampa Bay Water, the District, and other organizations meet to provide information about upcoming activities, current efforts, and important project updates.

BACKGROUND

Tampa Bay Water Wise is a regional water conservation rebate program which aims to save up to 3.8 million gallons of water per day (mgd) by 2030 through 20 rebate components. This program is intended to cost-effectively defer the need for new water supplies through improved water-use efficiency which will save the Member Governments and their customers money. The program is managed by Tampa Bay Water and guided by the Member Governments through a Working Group made up of Member Government and District staff which meet monthly. The program is administered by a third-party contractor, Electric and Gas Industries Association, Inc (EGIA).

In August 2018, Agency staff developed a list of potential demand management best practices that could save up to 11 mgd by 2030 at about one-fifth of the cost of developing new water supplies. This approach optimizes the use of existing water resources and could defer the need to develop new supplies to a later date, all within a cost-effective strategy. The plan was approved by the Board in December 2018 as part of the Long-term Master Water Plan update.

On August 20, 2018, the Board approved funding of demand management actions through the annual budget process and applying for matching cooperative funding from the District. The Board also directed staff to work with Member Governments to develop implementation strategies that will help secure identified savings consistent with the Amended and Restated Interlocal Agreement.

The Tampa Bay Water Wise program was officially launched and open to the public via tampabaywaterwise.org on March 30, 2020. The Working Group that was established at the outset of this program currently meets on a monthly basis and is comprised of representatives from each Member Government, Tampa Bay Water, and the District. The water saving goal was revised in 2023, aiming to save 3.8 million gallons per day by 2030.

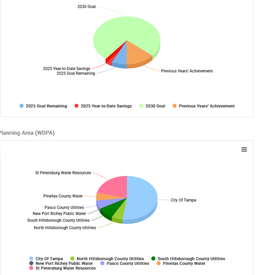
Attachments (2)

Regional Water Wise Dashboard September 2025
Member Government Conservation Report August 2025

Dashboard Reports

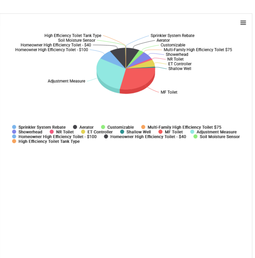
Regional Total Water Savings (GPD) and 2030 Goal

REGIONAL WATER SAVED
Gallons per Day
2025 Goal	559,149
2025 Goal Remaining	369,519
2025 Year-to-Date Savings	179,379
2030 Goal	3,800,000
Previous Years' Achievement	654,465



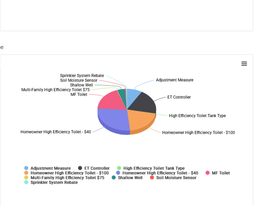
Regional Total Water Savings (GPD) by Water Demand Planning Area (WDPA)

REGIONAL WATER SAVED BY WDPA
Gallons per Day
Regional Savings	872,745
City Of Tampa	456,558
North Hillsborough County Utilities	50,345
South Hillsborough County Utilities	74,107
New Port Richey Public Water	2,189
Pasco County Utilities	56,926
Pinellas County Water	48,871
St Petersburg Water Resources	183,747



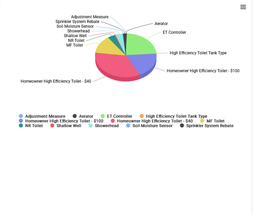
Regional Total Water Savings (GPD) by Rebate Type

REBATE TYPE	Sum of GPD Savings	Sum of Quantity
Grand Total	872,745	36,735
Sprinkler System Rebate	2,857	333
Aerator	63,855	13,262
Customizable	34,562	581
Multi-Family High Efficiency Toilet $75	1,377	51
Showerhead	53,657	6,084
NR Toilet	11,205	415
ET Controller	48,515	313
Shallow Well	6,708	26
MF Toilet	252,981	9,557
Adjustment Measure	261,695	22
Homeowner High Efficiency Toilet - $100	67,130	2,299
Homeowner High Efficiency Toilet - $40	76,125	3,750
Soil Moisture Sensor	776	5
High Efficiency Toilet Tank Type	1,302	37



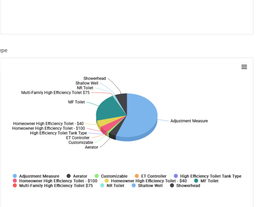
Pasco County Total Water Savings (GPD) by Rebate Type

REBATE TYPE	Sum of GPD Savings	Sum of Quantity
Grand Total	64,935	1,599
Adjustment Measure	4,726	1
ET Controller	10,693	69
High Efficiency Toilet Tank Type	72	2
Homeowner High Efficiency Toilet - $100	11,057	378
Homeowner High Efficiency Toilet - $40	15,306	754
MF Toilet	10,071	373
Multi-Family High Efficiency Toilet $75	162	6
Shallow Well	2,322	9
Soil Moisture Sensor	310	2
Sprinkler System Rebate	224	5



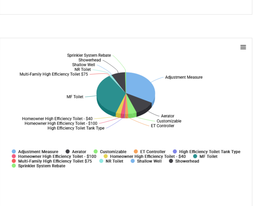
Pinellas County Total Water Savings (GPD) by Rebate Type

REBATE TYPE	Sum of GPD Savings	Sum of Quantity
Grand Total	48,871	1,795
Customizable	1,353	1
ET Controller	775	5
High Efficiency Toilet Tank Type	108	3
Homeowner High Efficiency Toilet - $100	20,392	697
Homeowner High Efficiency Toilet - $40	14,879	733
MF Toilet	5,751	213
Multi-Family High Efficiency Toilet $75	486	18
NR Toilet	1,701	63
Shallow Well	3,096	12
Sprinkler System Rebate	368	48



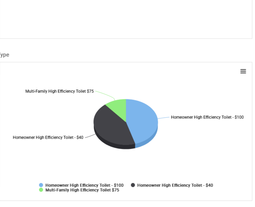
Northwest Hillsborough County Total Water Savings (GPD) by Rebate Type

REBATE TYPE	Sum of GPD Savings	Sum of Quantity
Grand Total	50,345	1,857
Adjustment Measure	-20	1
Aerator	330	64
ET Controller	11,625	75
High Efficiency Toilet Tank Type	108	3
Homeowner High Efficiency Toilet - $100	9,314	319
Homeowner High Efficiency Toilet - $40	17,458	860
MF Toilet	6,669	247
NR Toilet	1,917	71
Shallow Well	258	1
Showerhead	1,870	187
Soil Moisture Sensor	155	1
Sprinkler System Rebate	670	28



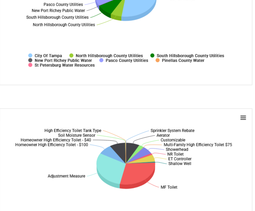
South Central Hillsborough County Total Water Savings (GPD) by Rebate Type

REBATE TYPE	Sum of GPD Savings	Sum of Quantity
Grand Total	74,197	3,179
Adjustment Measure	5,925	1
Aerator	4,210	642
ET Controller	16,740	108
Homeowner High Efficiency Toilet - $100	6,862	235
Homeowner High Efficiency Toilet - $40	5,765	264
MF Toilet	30,996	1,148
Multi-Family High Efficiency Toilet $75	189	7
Showerhead	5,010	501
Soil Moisture Sensor	310	2
Sprinkler System Rebate	100	1



ST Pete County Total Water Savings (GPD) by Rebate Type

REBATE TYPE	Sum of GPD Savings	Sum of Quantity
Grand Total	183,747	5,376
Adjustment Measure	103,681	2
Aerator	7,660	1,917
Customizable	1,710	1
ET Controller	779	5
High Efficiency Toilet Tank Type	72	2
Homeowner High Efficiency Toilet - $100	9,022	309
Homeowner High Efficiency Toilet - $40	9,277	457
MF Toilet	39,312	1,456
Multi-Family High Efficiency Toilet $75	189	7
NR Toilet	1,755	65
Shallow Well	774	3
Showerhead	11,320	1,152



Tampa Total Water Savings (GPD) by Rebate Type

REBATE TYPE	Sum of GPD Savings	Sum of Quantity
Grand Total	456,558	22,991
Adjustment Measure	149,583	17
Aerator	51,565	10,439
Customizable	31,399	579
ET Controller	7,903	51
High Efficiency Toilet Tank Type	972	27
Homeowner High Efficiency Toilet - $100	9,548	327
Homeowner High Efficiency Toilet - $40	12,464	615
MF Toilet	160,182	6,720
Multi-Family High Efficiency Toilet $75	108	4
NR Toilet	5,832	216
Shallow Well	258	1
Showerhead	20,257	4,244
Sprinkler System Rebate	1,474	251

New Port Richey Total Water Savings (GPD) by Rebate Type

REBATE TYPE	Sum of GPD Savings	Sum of Quantity
Grand Total	2,189	90
Homeowner High Efficiency Toilet - $100	992	34
Homeowner High Efficiency Toilet - $40	954	47
Multi-Family High Efficiency Toilet $75	243	9

Member Government Water Conservation Activities
August 2025

Conservation Activities	Pinellas County	City of St. Petersburg	Hillsborough County	City of Tampa	Pasco County	City of New Port Richey
Programs & Devices						
Retrofit Kits Distributed				45		6
Hose Nozzles			29	45		
Irrigation Evaluations		8	7	13		
Rain/Soil Moisture Sensor Rebates		10		5		
Indoor Audit						
Education & Engagement						
Speaking Engagements - # events, #attendees		1/38	10 / 224	1/35		
Expos/Fairs/Events				1		
Tours				1		
Paper/E-bill conservation message - #recipients						
Hotline Calls/Email Inquiries		37/51	77 / 467		7	
Media						
Conservation Website Users - # visits		2,629	81,647	1,714	2,591	
E- Newsletter Opens		2,197				
Twitter Engagements					613	
Facebook Engagements			79,407		1,326	
LinkedIn Engagements			81 / 537			
NextDoor Engagements			426			
Television Shows/Radio Interviews			0 / 0 / 0			
News Releases			8 / 76,500			
Infrastructure Related						
Meter Tests/Changeouts - proactive measure		1,387			1709	
Reclaimed Water (net new connections)					214	
Enforcement						
Water Restriction Warnings	12		191			0
Water Restriction Citations	0		28			0
Water Restriction Enforcement Hours	178					
Water Restriction Enforcement Mileage	1988					
Tampa Bay Water Wise Activities						
Facebook Posts (#)						
Facebook Engagements						
NextDoor Posts (#)						
NextDoor Engagements						
Twitter posts (#)						
Twitter Engagement Rate						
Newsletter/Email - # of recipients		4,823			117,000	
- open rate		48%				
- click rate		2.40%				
Utility Bill Insert - Name rebate type						
Utility Bill Insert - # of recipients						
Other TBWW Activities (Brief description)		Conservation webpages; slides in presentations				

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.6

DATE: October 1, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Warren Hogg, Chief Science Officer

SUBJECT: Water Research Foundation Membership - Payment of Annual Dues - *Approve*

SUMMARY

The Water Research Foundation (formerly known as the American Water Works Research Foundation) is a non-profit association supported by utilities and organizations dedicated to the research needs of the drinking water industry. Tampa Bay Water is a long-standing member of the Foundation. Approval of this item will continue membership through Fiscal Year 2026. Member Government staff have access to the Foundation through Tampa Bay Water's membership.

SUGGESTED ACTION

Approve renewal of the annual Water Research Foundation Membership.

COST/FUNDING SOURCE

Uniform Rate - $ 216,071.00

DISCUSSION

The Water Research Foundation subscription broadly leverages resources to deliver scientifically sound research that offers solutions to the most critical problems utilities face, informs pragmatic policy and regulations, results in cost savings for water utilities and their customers, provides opportunities for utilities to greatly leverage their research dollars and avoid duplication of effort, supports more credible

utility communication with customers, stakeholders, and the media and improves protection of public health and the environment. The annual subscription also gives utilities opportunities to guide the Water Research Foundation's research agenda, network with peers, and receive personalized service from Regional Liaisons.

This membership expense is included in the approved Fiscal Year 2026 budget. Through this utility membership, the Agency's Member Governments have the same benefits and access to all project reports and published research produced by the Water Research Foundation at no additional charge. Attached is a Water Research Foundation Involvement Report from 2020 to 2025. The report shows our utility membership had a total of 177 products ordered, representing a total research value of $44 million. Our utility membership is currently involved in 18 active research projects through the Water Research Foundation as described in the attached report.

The Water Research Foundation membership funding formula is based upon service area population and system flow. The subscription amount was calculated using the estimated population served and water produced during Fiscal Year 2022 and frozen for three subsequent years, with the Fiscal Year 2026 membership being the third year. The subscription amount for the Fiscal Year 2026 membership is $216,071.00. Staff recommends approval to continue the Water Research Foundation membership for Fiscal Year 2026.

BACKGROUND

The Water Research Foundation sponsors practical applied research in support of the drinking water industry. It is a resource for information and technical advice to its members concerning all aspects of water supply, water quality and management issues. The foundation is also active in regulatory development, resource monitoring and compliance processes. Tampa Bay Water has been a subscriber to the Water Research Foundation since 1992. Staff also serve various advisory roles for the Foundation.

Attachment (1)

Water Research Foundation - Tampa Bay Water 2020-2025 Involvement Report

THE Water Research FOUNDATION

YOUR INVOLVEMENT IN WRF

TAMPA BAY WATER

2020 - 2025

7 Organizations Included in Your Subscription

142 Members of Your Staff with WRF Accounts

13 Members of Your Staff Serving/ Served on WRF Planning Bodies

177 WRF Products Ordered by Your Staff
Research Value: $44M

Main Contact:

Steve Fleischacker

813.344.9837

sfleischacker@tampabaywater.org

Additional Current Key Engagement:

Bina Nayak, Pinellas County – Water Utility Research Workshop participant (invite only) – Oct 2025

City of Tampa – Tailored Collaboration submission currently under consideration

Your Participation in WRF Webcasts and Research

133 Members of Your Staff Attended Webcasts

18 Ongoing Research Projects Your Organization Is Actively Involved In
Research Value: $28M

Your WRF Account Manager is here to provide personalized service, ensuring your organization gets the answers it needs, has access to WRF research and innovation resources, and gains input into research planning.

www.waterrf.org

WRF Account Manager

NAME: Julie Minton
phone: 301.922.7860
email: jminton@waterrf.org

Tampa Bay Water

Subscriber Involvement Report 2020 to 2025

Main Contact

Chuck Carden
Tampa Bay Water
2575 Enterprise Road
Clearwater, FL 33763-1102

Phone: (727) 725-7046
FAX: (727) 791-2388
Email: ccarden@tampabaywater.org

Liaison

Stephen Fleischacker
Tampa Bay Water
2575 Enterprise Road
Clearwater, FL 33763-1102

Phone:
FAX: (727) 791-2388
Email: sfleischacker@tampabaywater.org

Summary

A summary of your involvement with the Water Research Foundation from 2020 to 2025 is given below. You detailed involvement and engagement with our research results follows in the remainder of the report.

- 7 organizations included in Tampa Bay Water's subscription
- 142 staff with WRF accounts
- 13 staff served/serving on WRF planning bodies
- 177 products ordered, representing a total research value of $43,591,197
- 133 staff viewed webcasts
- 1 staff attended workshop
- 24 research projects that involved Tampa Bay Water
- 18 active research projects involving Tampa Bay Water

  WRF Project 04914 - Utility Responses to Cyanobacterial/Cyanotoxin Events: Case Studies and Lessons Learned

  WRF Project 05080 - Assessment of Vulnerability of Source Waters to Toxic Cyanobacterial Outbreaks

  WRF Project 05119 - Using Phosphate-Based Corrosion Inhibitors and Sequestrants to Meet Multiple Water Treatment Objectives

  WRF Project 05120 - Utility Field Guide for Developing a Cyanobacteria and Cyanotoxin Monitoring Program

  WRF Project 05122 - Technologies and Approaches to Minimize Brominated and Iodinated DBPs in Distribution Systems

  WRF Project 05142 - Data-Driven Process Control for Maximization of Energy and Resource Efficiency - A

  WRF Project 05170 - State of the Science and Regulatory Acceptability for PFAS Residual Management Options

Summary (Continued)

- 18 active research projects involving Tampa Bay Water (Cont.)

  WRF Project 05175 - Navigating One Water Planning through Municipal Water Programs: Meeting Multiple Objectives and Regulatory Challenges

  WRF Project 05176 - Integrating Climate Impacts with Wet Weather Management, Capital Improvement, and Stream Network Enhancement

  WRF Project 05179 - Feasibility and Applicability of Leading and Innovative Utility-Led Water Affordability Efforts

  WRF Project 05183 - Advancing Partial Denitrification/Anammox (PdNA) Full-scale Applicatior

  WRF Project 05198 - Unlocking the Nationwide Potential of Water Reuse

  WRF Project 05219 - Performic Acid Disinfection in Wastewater Effluent and CSOs in Context of Disinfection By-Products and Future Ambient Water Quality Criteria for Viruses

  WRF Project 05254 - Evaluation and Demonstration of Biotechnological Tools and Methods fo Improving Biofiltration Operation and Optimization

  WRF Project 05286 - Identification and Valuation of Innovative Wastewater Residual Products Beyond Conventional Biosolids

  WRF Project 05289 - Thinking Outside the Pipe: Comparison of Non-invasive, Non-destructive Condition Assessment Technologies for Distribution Pipe

  WRF Project 05293 - Comprehensive Corrosion Control Strategies for Various Water Infrastructure Materials

  WRF Project 05316 - Quantifying Wastewater Sources of Antibiotic Resistance to Aquatic and Soil Environments and Associated Human Health Risks

* Summary data includes involvement by employees of organizations included in this subscription which is not included in the details.

Organizations Included In This Subscription

1999 - 2025	City of New Port Richey
2010 - 2025	City of Tampa Water Department
1999 - 2025	Hillsborough County
1999 - 2025	Pasco County Utilities
1999 - 2025	Pinellas County Utilities
1999 - 2025	St. Petersburg Water Department

Subscription History (Total Commitment: $1,271,240)

Start Date	End Date	Commitment	Subscription Type
10/01/2024	09/30/2025	$216,071	MBRUTILITY- ONEWATER

Tampa Bay Water

Subscriber Involvement Report
2020 to 2025

Subscription History (Continued)

Start Date	End Date	Commitment	Subscription Type
10/01/2023	09/30/2024	$216,071	MBRUTILITY- ONEWATER
10/01/2022	09/30/2023	$216,071	MBRUTILITY DW
10/01/2021	09/30/2022	$209,778	MBRUTILITY DW
10/01/2020	09/30/2021	$209,778	MBRUTILITY DW
10/01/2019	09/30/2020	$203,470	MBRUTILITY DW

Other Project Participation

Funding Year		Project Value
2023	Evaluation and Demonstration of Biotechnological Tools and Methods for Improving Biofiltration Operation and Optimization [#5254] **Participating Utility** WRF Share: $0.00 Cost Share: $0.00 3rd Party In Kind: $10,000.00 **Total Contribution: $10,000.00**	$434,716
2021	Technologies and Approaches to Minimize Brominated and Iodinated DBPs in Distribution Systems [#5122] **Participating Utility** WRF Share: $0.00 Cost Share: $0.00 3rd Party In Kind: $7,500.00 **Total Contribution: $7,500.00**	$487,569
2021	Using Phosphate-Based Corrosion Inhibitors and Sequestrants to Meet Multiple Water Treatment Objectives [#5119] **Participating Utility** WRF Share: $0.00 Cost Share: $0.00 3rd Party In Kind: $5,000.00 **Total Contribution: $5,000.00**	$647,242
2021	Utility Field Guide for Developing a Cyanobacteria and Cyanotoxin Monitoring Program [#5120] **Participating Utility** WRF Share: $0.00 Cost Share: $0.00 3rd Party In Kind: $5,000.00 **Total Contribution: $5,000.00**	$186,563

Other Project Participation (Continued)

Funding Year		Project Value
2020	Assessment of Vulnerability of Source Waters to Toxic Cyanobacterial Outbreaks [#5080] **Participating Utility** WRF Share: $0.00 Cost Share: $0.00 3rd Party In Kind: $0.00 **Total Contribution: $0.00**	$492,764
2020	Investigation of Alternative Management Strategies to Prevent PFAS from Entering Drinking Water Supplies and Wastewater [#5082] **Participating Utility** WRF Share: $0.00 Cost Share: $0.00 3rd Party In Kind: $5,000.00 **Total Contribution: $5,000.00**	$793,734
		Total Project Value: $3,042,588

Project Advisory Committee (PAC) Participation

			Project Value
2025 -	Fleischacker, Stephen	Reducing Nitrification Risks Through Voluntary Collaboration Between Drinking Water Wholesalers and Consecutive Systems [#5348]	$100,000
2024 -	Asefa, Tirusew	The Foundations of Water Resources Planning: Establishing Water Utility Service Level Standards, State of the Field and Guidance [#5306]	$175,000
2016 - 2022	Asefa, Tirusew	Long Term Water Demand Forecasting Practices for Water Resources and Infrastructure Planning [#4667]	$239,396
2015 - 2020	Asefa, Tirusew	An Integrated Modeling and Decision Framework to Evaluate Adaptation Strategies for Sustainable Drinking Water Utility Management Under Drought and Climate Change [#4636]	$1,175,000
			Total Project Value: $1,689,396

177 www.waterrf.org Downloads
Total Research Value: $43,591,197

www.waterrf.org Downloads

07/09/2025	Brown, Amelia	Customer Assistance Programs for Multi-Family Residential and Other Hard-to-Reach Customers [EXECSUM-4557]
07/09/2025	Brown, Amelia	Evaluating Changes in Peak Water Demand and How That May Affect the Choice, Design, Management, and Evaluation of Demand Management Strategies [PIS-5265]
07/09/2025	Brown, Amelia	Methodology for Evaluating Water Use in the Commercial, Institutional, and Industrial Sectors [EXECSUM-4375]
07/09/2025	Brown, Amelia	Residential and Commercial Source Control Programs to Meet Water Quality Goals [D72005PDF]
07/09/2025	Brown, Amelia	Water Use in the Multi-Family Housing Sector [EXECSUM-4554]
04/15/2025	Kim, Jun	Characterization of Organic Carbon and Microbial Communities for the Optimization of Biologically Active Carbon (BAC) Filtration for Potable Reuse [4872]
04/15/2025	Kim, Jun	Chemically Enhanced Biological Filtration to Enhance Water Quality and Minimize Costs [4429A]
04/15/2025	Kim, Jun	Chemically Enhanced Biological Filtration to Enhance Water Quality and Minimize Costs, Appendices A - D [PROJECTPAPER-4429-1]
04/15/2025	Kim, Jun	Chemically Enhanced Biological Filtration to Enhance Water Quality and Minimize Costs: Phase II Pilot-Scale Evaluation [4429B]
04/15/2025	Kim, Jun	Optimizing Filtration in Biological Filters [90793]
04/15/2025	Kim, Jun	Optimum Backwash of Dual Media Filters and GAC Filter-Adsorbers With Air Scour [90584]
04/15/2025	Kim, Jun	Understanding and Improving Reuse Biofilter Performance during Transition from GAC to BAC [5092]
03/23/2025	Comert, Hulya	Gap Assessment for ASME-ITI/AWWA J100-10 Standard and Leading Vulnerability Assessment Tools [4358]
12/12/2024	Comert, Hulya	A Guide for the Implementation and Use of Chloramines [91018F]
12/12/2024	Comert, Hulya	A Guide for the Implementation and Use of Chloramines [EXECSUM-91018F]
11/11/2024	Comert, Hulya	Acoustic Signal Processing for Pipe Condition Assessment [4360]
11/11/2024	Comert, Hulya	Assessment of Technologies for Screening, Floatable Control, and Screenings Handling [00CTS4PDF]

www.waterrf.org Downloads (Continued)

11/11/2024	Comert, Hulya	Monash Tool [WEBTOOL-4326-1]
11/11/2024	Comert, Hulya	Performance and Cost Targets for Water Pipeline Inspection Technologies [EXECSUM-3065]
11/11/2024	Comert, Hulya	Pipeline Inspection Decision Analyzer [WEBTOOL-4553-1]
11/11/2024	Comert, Hulya	Practical Condition Assessment and Failure Probability Analysis of Small Diameter Ductile Iron Pipe [EXECSUM-4661]
11/11/2024	Comert, Hulya	Sewer Lateral Electro Scan Field Verification Pilot [INFR4R12PDF]
08/11/2024	Asefa, Tirusew	Successful Implementation of Decentralized Reuse and Treatment Systems [5040B]
06/21/2024	Jones, Shawn	Nitrification Occurrence and Control in Chloraminated Water Systems [90669]
06/05/2024	Jones, Shawn	Major Sources of Nitrosamine Precursors from Raw Waters and Distribution Systems [4591]
06/05/2024	Jones, Shawn	Major Sources of Nitrosamine Precursors from Raw Waters and Distribution Systems [EXECSUM-4591]
06/03/2024	Jones, Shawn	Assessing and Controlling Bacterial Regrowth in Distribution Systems [90567]
06/03/2024	Jones, Shawn	Assessing the Impacts of Backwash Practice on Biofiltration Operation and Performance [5043]
06/03/2024	Jones, Shawn	Water and Electric Utility Integrated Planning [4469]
05/16/2024	Fleischacker, Stephen	Developing Strategic Consumer Messaging for Microplastics in Drinking Water Supplies [5155]
04/01/2024	Gibbs, Sav	Critical Information Policies for Water Utilities [EXECSUM-91218]
04/01/2024	Gibbs, Sav	Security Practices Primer for Water Utilities [90984F]
03/19/2024	Brown, Amelia	Developing Water Use Metrics for the Commercial and Institutional Sectors [4619A]
03/19/2024	Brown, Amelia	Developing Water Use Metrics for the Commercial and Institutional Sectors [EXECUSUM-4619]
03/19/2024	Brown, Amelia	Water Use Analysis Guide for Commercial and Institutional Efficiency [4619B]
01/26/2024	Christopher, Meghan	Social Media for Water Utilities: Executive Briefing [4638A]
01/26/2024	Christopher, Meghan	Social Media for Water Utilities: Getting Started FAQ [4638C]
01/26/2024	Christopher, Meghan	Social Media for Water Utilities: Literature Review [4638B]

www.waterrf.org Downloads (Continued)

01/05/2024	Gibbs, Sav	Social Media for Water Utilities: Getting Started FAQ [4638C]
03/15/2023	Medina, Maribel	Capital Funding Imperatives: Best Practices for Capital Improvement Programs [4493]
03/15/2023	Medina, Maribel	Improving Water Utility Capital Efficiency [91257]
03/15/2023	Medina, Maribel	Project Delivery Performance Evaluation and Decision Support Tool for Water and Wastewater Capital Projects [4685]
02/20/2023	Fleischacker, Stephen	Impact of a Haloacetic Acid MCL Revision on DBP Exposure and Health Risk Reduction [PIS-5085]
01/04/2023	Christopher, Meghan	Social Media for Water Utilities: Case Studies [CS-4638-1]
01/04/2023	Christopher, Meghan	Social Media for Water Utilities: Getting Started FAQ [4638C]
01/04/2023	Christopher, Meghan	Social Media for Water Utilities: Literature Review [4638B]
01/04/2023	Christopher, Meghan	Social Media for Water Utilities: Results of a Nationwide Survey [PROJECTPAPER-4638-2]
10/06/2022	Acevedo, Amie	A City Prepared for an Uncertain Future: Colorado Springs Utilities Balances Water Conservation and Revenue Stability [CS-4543-1]
10/06/2022	Acevedo, Amie	Los Angeles Department of Water & Power Achieves Demand Management Goals with Unique Volumetric Rate Structure and Long-Term Planning [CS-4543-2]
09/26/2022	McConnell, Robert	Leveraging the Role of Pretreatment Programs in One Water Initiatives: Synthesis of Best Practices and Path Forward [SOW-4971]
09/26/2022	McConnell, Robert	One Water Cities: Development of Guidance Documents and Assessment Metrics: Literature Review [PROJECTPAPER-4969-1]
09/09/2022	McConnell, Robert	Fact Sheet: Wastewater and Constituents of Emerging Concern [PROJECTPAPER-5036-3]
09/09/2022	McConnell, Robert	Technical Brief: Constituents of Emerging Concern Using a One Water Approach [5036]
09/09/2022	McConnell, Robert	Technical Brief: Constituents of Emerging Concern Using a One Water Approach [EXECSUM-5036]
08/31/2022	Brown, Amelia	Developing Water Use Metrics for the Commercial and Institutional Sectors [4619A]
08/31/2022	Brown, Amelia	Developing Water Use Metrics for the Commercial and Institutional Sectors [EXECUSUM-4619]
08/31/2022	Brown, Amelia	Water Use Analysis Guide for Commercial and Institutional Efficiency [4619B]

www.waterrf.org Downloads (Continued)

08/29/2022	McConnell, Robert	Technology Primers for the Simultaneous Compliance Tool [ProjectPaper-3115-1]
08/18/2022	McConnell, Robert	Data Collection Workbook [WEBTOOL-4451-1]
08/18/2022	McConnell, Robert	Managing Infrastructure Risk: The Consequence of Failure for Buried Assets [EXECSUM-4451]
08/18/2022	McConnell, Robert	Retrofit and Management of Metallic Pipe with Cathodic Protection [4618]
08/18/2022	McConnell, Robert	Retrofit and Management of Metallic Pipe with Cathodic Protection [EXECSUM-4618]
04/23/2022	McConnell, Robert	Investigation of Alternative Management Strategies to Prevent PFAS From Entering Drinking Water Supplies and Wastewater [PIS-5082]
03/24/2022	McConnell, Robert	Preliminary Framework for Evaluating Source Water Protection Programs [ProjectPaper-4528-1]
02/17/2022	McConnell, Robert	Lead Service Line Identification Techniques [4693]
01/19/2022	McConnell, Robert	Stream Restoration as a BMP: Crediting Guidance [5075]
01/19/2022	McConnell, Robert	Stream Restoration as a BMP: Crediting Guidance [EXECSUM-5075]
12/10/2021	Brown, Amelia	AMI-Meter Data Analytics [EXECSUM-4741]
09/24/2020	McConnell, Robert	A Risk Management Framework for Managing Source Water Risks in the United States [EXECSUM-4748]
09/24/2020	McConnell, Robert	A User's Guide to Source Water Risk Management: A Framework for Implementing a Source Water Risk Management Program [4748B]
06/30/2020	McConnell, Robert	Climate Data and Information Spectrum for Case Studies [WEBTOOL-4729-1]
04/15/2020	Kim, Jun	Ammonia From Chloramine Decay: Effects on Distribution System Nitrification [90949]
04/01/2020	Asefa, Tirusew	Water Demand Forecasting in Uncertain Times: Isolating the Effects of the Great Recession [4458]
01/17/2020	Bracciano, Dave	An Integrated Modeling and Decision Framework to Evaluate Adaptation Strategies for Sustainable Drinking Water Utility Management Under Drought and Climate Change [4636]

Webcasts

04/10/2025	Cantin, Stephen	2025 Tailored Collaboration Program Overview [WEBCAST-041025]
03/27/2025	Cantin, Stephen	Utility Field Guide for Developing a Cyanobacteria and Cyanotoxin Monitoring Program [WEBCAST_5120_032725]
02/27/2025	Cantin, Stephen	Autonomous in situ Monitoring of Harmful Algal Blooms [WEBCAST-5154-022725]
12/10/2024	Cantin, Stephen	Surveillance of Antimicrobial Resistance Emergence in the Environment [WEBCAST_5182_121024]
11/11/2024	Comert, Hulya	WRF TechScan Proactive Asset Management [TS-PROACTIVEASSETMGMT-21]
06/06/2024	Cantin, Stephen	Guidance for Complying with the Lead and Copper Rule Revisions for Water Systems with No- to Low Prevalence of Lead Service Lines (LSL, LSLs) [WEBCAST-5223-060624]
05/16/2024	Cantin, Stephen Fleischacker, Stephen	Developing Strategic Consumer Messaging for Microplastics in Drinking Water Supplies [WEBCAST-5155-1]
11/14/2023	Cantin, Stephen	Indicator Viruses for Advanced Physical Treatment Process Performance Confirmation [WEBCAST-4955-111423]
05/18/2023	Asefa, Tirusew	Long Term Water Demand Forecasting Practices for Water Resources and Infrastructure Planning [WEBCAST-4667-1]
02/21/2023	Fleischacker, Stephen	Standardizing Methods for Monitoring Antibiotic Resistant Bacteria/Resistant Genes in Wastewater, Surface Water, and Recycled Water [WEBCAST-5052-1]
12/06/2022	Fleischacker, Stephen McConnell, Robert	Enhanced Evaluation of the Removal of Contaminants of Emerging Concern in Decentralized Water Reuse Systems by Non-Targeted Analysis [WEBCAST-4937]
12/01/2022	McConnell, Robert	Quantifying the Contribution of DBPs to the Toxicity of Wastewaters Purified for Potable Reuse [WEBCAST-4737-1]
11/29/2022	Fleischacker, Stephen	WRF Technology Scan: Monitoring Tools & Digital Solutions [WEBCAST-112922]
10/27/2022	Fleischacker, Stephen Kim, Jun	PFAS in Biosolids – Trends, Technologies, and Its Link to the Circular Economy [WEBCAST-102722]
08/09/2022	McConnell, Robert	Algal Bloom Response: Detection, Treatment, and Decision Support Systems [WEBCAST-5154-1]

Webcasts (Continued)

01/10/2022	Fleischacker, Stephen McConnell, Robert	2022 Unsolicited Research Program Update [WEBCAST-011022]
11/16/2021	Fleischacker, Stephen McConnell, Robert	WRF Technology Scan: Data Enabled Operations [WEBCAST-TS-111621]
10/19/2021	Colantuoni, Ian	Geochemical Considerations for Managed Aquifer Recharge Implementation in Potable Reuse [WEBCAST-5051-1]
10/14/2021	Jones, Shawn	PFAS in Biosolids Under a Land Application Scenario: Biotic Weather, Leaching, and Transport [WEBCAST-5042-1]
09/30/2021	McConnell, Robert	PLB: The Next Generation of Water Researchers [WEBCAST-PLB4-093021]
08/02/2021	McConnell, Robert	Constituents of Emerging Concern and the Emerging Technologies to Treat Them: Past, Present, and Future [WEBCAST-PLB-2021-2]
07/15/2021	McConnell, Robert	Assessing the State of Knowledge and Research Needs for Stormwater Harvesting [WEBCAST-4841-1]
06/09/2021	Fleischacker, Stephen	SWB DPR Research Webcast Part 2: Chemicals [WEBCAST-SWB-2]
04/26/2021	Jones, Shawn	COVID-19 Wastewater Surveillance Symposium – A Global Update [WEBCAST-COVID-3]
02/16/2021	Jones, Shawn	WRF Tech Scan Webcast Series: Operation Decision Support Tools [WEBCAST-TS-021621]
11/10/2020	Keirsey, Danielle	Leveraging Big Data and Deep Learning for the Condition Assessment of Wastewater Pipelines [WEBCAST-4902-1]
06/04/2020	McConnell, Robert	Holistic Approach to Improved Nutrient Management-2 [WEBCAST-4974-2]
05/28/2020	McConnell, Robert	Impact of Prolonged Shutdown on Buildings from a Water Quality Perspective [WEBCAST-COVID-SHUTDOWN]
05/21/2020	McConnell, Robert Medina, Maribel	Mapping Climate Exposure and Climate Information Needs to Water Utility Business Functions: Framework, Findings, and Insights from Practitioners [WEBCAST-4729-1]
05/12/2020	Smith, Sandy	Virtual Congressional Briefing on Environmental Surveillance of the Genetic Fingerprint of COVID-19 in Sewersheds [WEBCAST-CONGRESS-1]
04/16/2020	Thomas, Nicole	Latest Coronavirus Research Update Webcast [WEBCAST-COVID-2]

Webcasts (Continued)

03/12/2020	Sprunger, Nathan	Coronavirus Research Update [WEBCAST-COVID19-1]
03/05/2020	McConnell, Robert	Anticipating the Trade-Offs of Alternative Water Supplies [WEBCAST-4715-1]

Workshops

02/01/2024	Brown, Amelia	WRF 2024 Research Planning Summit [WORKSHOP-RSSUMMIT-020124]

Involvement Report Glossary

3rd Party In Kind. The value of non-cash contributions that a participant provides to a WRF project.

Co-Funding Organization. An organization that contributes cash to fund a research project payable to WRF.

Co-Principal Investigator (Co-PI). An individual involved with the Principal Investigator in the executior of a project.

Cost Share. The portion of allowable costs that the contractor, subcontractor or third-party participant contributes to a WRF project.

Participating Utility. An organization that provides third-party contributions or other material support to a WRF research project but does not enter into a contractual relationship with WRF, the contractor or a subcontractor.

Principal Investigator (PI). The contractor's employee with primary responsibility to ensure that all terms and conditions of a contract are met.

Project Advisory Committee (PAC). A group of independent volunteers assembled by WRF to provide an independent technical review, assistance, and/or expertise to a WRF project.

WRF Share. The amount of money the Co-Funding Organization contributes to fund a research project.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.7

DATE: October 1, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: Long-term Master Water Plan Feasibility Program and Developmental Alternatives Study Status Report - *Receive Report*

SUMMARY

The 2023 Long-term Master Water Plan was approved by the Board of Directors in November 2023. This item provides an update on the on-going feasibility studies and the Developmental Alternatives Study.

SUGGESTED ACTION

Receive Status Report.

COST/FUNDING SOURCE

N/A

DISCUSSION

In November 2023 the Board of Directors (Board) approved the 2023 Long-term Master Water Plan (2023 Plan). The 2023 Plan included several recommendations including further study of seven top-ranked water supply projects to meet the region's future water supply needs and the initiation of the Developmental Alternatives study. The seven projects that will be further studied (if needed) include:

- **Eastern Pasco Wellfield:** This project will evaluate a new fresh groundwater wellfield located in northeast Pasco County with an estimated yield of 4 million gallons per day (mgd).
- **Consolidated Water Use Permit Increase:** This project consists of increasing the permitted capacity of the existing Consolidated Water Use Permit by an estimated 10 mgd.
- **Tampa Bay Seawater Desalination Expansion:** The expansion of the existing Desalination Plant has an estimated yield of 11 mgd and considers expansion with either seawater or brackish groundwater. The study will evaluate the expansion with brackish groundwater only as the seawater expansion was evaluated in 2021.
- **North Pinellas Surface Water Treatment Plant and Reservoir:** This concept has an estimated yield of 4 mgd and includes a new surface water treatment plant and reservoir withdrawing water from the outfall canal downstream of Lake Tarpon.
- **Surface Water Treatment Plant at the C.W. Bill Young Regional Reservoir:** This project has an estimated yield of 6 mgd and consists of a new surface water treatment plant at the existing C.W. Bill Young Regional Reservoir using increased withdrawals from the Alafia River.
- **South Hillsborough Surface Water Treatment Plant and Reservoir:** This project has an estimated yield of 4 mgd and consists of a new surface water treatment plant and reservoir withdrawing water from the Little Manatee River and Bull Frog Creek.
- **South Hillsborough Wellfield:** This project consists of a new wellfield in Southern Hillsborough County via aquifer recharge with an estimated yield of 6 mgd. This concept does not require additional study as it was evaluated in 2021.

The projects requiring studies have been grouped into two projects due to scope similarities. Below is a summary of each project, work completed to date, and future activities.

Feasibility Study for New Groundwater Sources (Project No. 11022):

This feasibility study project includes three groundwater source short-listed projects including:

- Eastern Pasco Wellfield
- Consolidated Water Use Permit Increase
- Tampa Bay Seawater Desalination Expansion with Brackish water

Eastern Pasco Wellfield

Work Completed to Date:

- Completed the clearing of the test well site.
- Core hole contractor, Huss Drilling, and well drilling contractor, Applied Drilling Engineering, have mobilized to the site to initiate drilling activities.
- Initiated Citrus Springs aquifer performance pump test.
- Developed updated Preliminary Impact Analysis Report for the Eastern Pasco Wellfield based on Tampa Bay Water staff comments.

Work in Progress:

- Conducting Citrus Springs aquifer performance test.
- Continue drilling activities.

Upcoming Work:

- Analyze Citrus Springs aquifer performance test data.
- Continue public outreach.
- Finalize Preliminary Impact Analysis Report.

Consolidated Water Use Permit Increase

Work Completed to Date:

- Completed wetland and lakes recovery preliminary review.

Work in Progress:

- Preparing Integrated Northern Tampa Bay (INTB) and SWRE Models.

Upcoming Work:

- Develop draft results of GIS Mapping/Interpretation of Recovery Assessment.
- Complete INTB and SWRE modeling.
- Ongoing model development, and data collection.
- Continue public outreach.

Tampa Bay Desalination Plant Expansion with Brackish Water:

Work Completed to Date:

- Completed data collection.
- Developed technical memorandum.

Work in Progress:

- N/A

Upcoming Work:

- N/A

Feasibility Study for Surface Water Sources (Project No. 11025):

This feasibility study project includes three surface water source short-listed projects including:

- North Pinellas Surface Water Treatment Plant and Reservoir
- Surface Water Treatment Plant at the C.W. Bill Young Regional Reservoir
- South Hillsborough Surface Water Treatment Plant and Reservoir

Work Completed to Date:

- Finalized water quality sampling plan and coordination with third party laboratories
- Identified system hydraulic constraints for introduction of new supplies.

Work in Progress:

- Collect and analyze surface water samples.

Upcoming Work:

- Continue surface water sampling.
- Develop Power BI dashboard with water quality sampling results and complimentary, public-facing data (Hillsborough County, United States Geological Survey).
- Process and analyze INTB and SWRE data.

Overall Feasibility Program and Water Selection Schedule

- Complete Feasibility Studies: *September 2024 through April 2027*
- Initiate the Water Supply Selection Process: *June 2026 through October 2027*
- Select the next water supply configuration: *November 2027*

Developmental Alternatives-Phase 1 (Project No. 11021)

Developmental Alternatives are water supply options that may require sophisticated technologies, which do not have a current regulatory framework for permitting, or that require more long-term analysis and study. As technology advances and processes develop, these alternatives may become more cost-effective or permitting uncertainties may be resolved. This first phase includes defining the goals and objectives of the study, identifying potential water supply concepts, engaging member governments to confirm availability of reclaimed water as potential water supply option, and workshops with the members.

Work Completed to Date:

- Kickoff and engagement meetings with Member Governments.
- Collected reclaimed water availability data.
- Conducted brainstorming sessions with technical staff and utilities.
- Finalized summary of workshop results developed and shared with Member Governments.
- Received draft of conceptual alternatives.

Upcoming Work:

- Meetings with the Florida Department of Environmental Protection and the Southwest Florida Water Management District.
- Workshop to define conceptual alternatives scoring criteria.

BACKGROUND

Tampa Bay Water is the sole and exclusive wholesale water provider to its six Member Governments and has the unequivocal obligation to meet the Quality Water needs of all Member Governments. Tampa Bay Water's 2023 Long-term Master Water Plan, approved at the November 2023 Board meeting, documents how Tampa Bay Water meets its unequivocal obligation to provide Quality Water to meet all Member Government demands through the 2043 planning horizon.

The 2023 Plan identifies when new supplies will need to be built by considering demand forecasts, water shortage mitigation strategies and demand management and what to build by identifying and evaluating new water supply projects, optimization of existing assets, where to deliver and how, and public input.

The 2023 Plan made several recommendations including further study of seven top-ranked water supply projects to meet the region's future water supply needs and to initiate the Developmental Alternatives Study. Once the seven project feasibility studies are completed these projects will be evaluated using

Board approved criteria to develop a recommendation for the selection and construction timing of one or more projects. The Developmental Alternatives Study recommended projects concepts may be added to future Long-term Master Water Plans for further evaluation.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.8

DATE: October 1, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: South Hillsborough County Program Update - *Receive Report*

SUMMARY

Tampa Bay Water and Hillsborough County staff continue to develop additional pumping and transmission (pipeline) capacity to increase supply to rapidly growing South Hillsborough County through the August 2020 Memorandum of Understanding. A status report is provided at each regular meeting of the Tampa Bay Water Board of Directors until the projects are operational.

SUGGESTED ACTION

Receive Status Report.

COST/FUNDING SOURCE

N/A

DISCUSSION

Tampa Bay Water continues to meet with Hillsborough County staff to coordinate activities to increase wholesale system capacity to serve South Hillsborough County. Wholesale facilities under development or completed include: a new booster pump station on the existing Brandon Transmission Main to increase its capacity by at least 5 million gallons per day (mgd) (now fully operational), a new pipeline system to deliver up to an additional 65 mgd of water supply, acquisition of permitted quantities for transfer to existing and future Tampa Bay Water wellfields, and a potential new wellfield to deliver new

water supplies to south Hillsborough County. The attached status report summarizes the status of the infrastructure projects, water supply projects and the current South-central Hillsborough Regional Wellfield pumping rate.

BACKGROUND

Tampa Bay Water and Hillsborough County staff continue to develop additional pumping and transmission capacity to increase supply to rapidly growing South Hillsborough County. The August 2020 Memorandum of Understanding provides for a status report at each regular meeting of the Tampa Bay Water Board of Directors until the projects are operational.

In the 1980's, the West Coast Regional Water Supply Authority (the predecessor agency to Tampa Bay Water) constructed temporary supply, treatment and pumping facilities to maintain pressure on behalf of the County and constructed the South-Central Hillsborough Regional Wellfield, the Lithia Treatment Plant, the 42, 36 and 24-inch diameter south county transmission mains and Brandon Transmission mains. The agency retained the wellfield but turned over the treatment, pumping, and transmission facilities to the County.

Again, in the early 2000's, some of the facilities built in the 1980's were nearing capacity, and Tampa Bay Water constructed temporary pumping and treatment facilities under a joint project agreement for the County's use while the County completed construction of its Central Water Treatment and Pumping Facility.

Attachment (1)

October 2025-South Hillsborough County Program Update

South Hillsborough County Program Status Report

October 2025

Completed Projects:

- High Service Pump Station Expansion: 10 to 12 million gallons per day (mgd) average pumping capacity
- Lithia Control Valve Replacement: 1 mgd
- Brandon Booster Station: 5 to 7 mgd

Ongoing Projects:

South Hillsborough Pipeline (Projects 01610/01616)

This project includes the design and construction of a new regional transmission main to the South Hillsborough County area. When completed, the pipeline will be able to provide up to an additional 65 mgd of new supply to South Hillsborough County. This project is being cooperatively funded by the Southwest Florida Water Management District's (District) Cooperative Funding Initiative up to $147,954,000 for eligible project costs. The County and Tampa Bay Water entered into a Joint Project Agreement (JPA) in October 2021 for funding of the pipeline segment B. A Restated and Amended Joint Project Agreement was approved by Hillsborough County Board of County Commissioners (BOCC) and Tampa Bay Water Board in February 2025. Below is a list of completed and ongoing activities:

Design and Project Management

- 90% design was received and reviewed by Tampa Bay Water staff. Comments were provided to the Design consultants in April 2025. The final design is due in December 2025.
- Construction costs and schedule will be updated with the 100% design documents and the Guaranteed Maximum Price (GMP) No. 3 which includes pipeline open-cut installation work.
- Risk Management ongoing. Risk Register updated per GMP No.3.
- The 90% design for the connection at the Regional Facilities Site is due at the end of October 2025. It is expected that the final design will be submitted in February 2026.

Construction

- Design Consultants construction management contract amendments approved by the Board in July 2025.
- Guaranteed Maximum Price (GMP) No. 1 for early material procurement approved by the Board in October 2024.
- Owner Direct Purchase Orders issued for pipe and valve materials under GMP No. 1.

- GMP No. 2 for early construction activities and trenchless installation of sections of the pipeline was approved by the Board at the April 2025 Board Meeting.
- GMP No. 3 for open-cut pipe installation will be presented to the Board for approval in October 2025.
- GMP No. 4 for work at the points of connection at the Regional Facilities Site-Alkalinity Adjustment Facility (Project No. 01617), Lithia Water Treatment Plant and the new Balm site will be presented to the Board for approval in 2026.

Permitting

- U.S. Army Corps of Engineers (USACE), Florida Department of Environmental Protection (FDEP) Environmental Resource Program (ERP) and Environmental Protection Commission (EPC) permit applications submitted in early December 2024.
- Florida Department of Environmental Protection (FDEP) has deemed the Environmental Resource Program (ERP) permit application complete and is now drafting the permit.

Property Acquisition

- Continued voluntary property acquisition activities. Parcels continue to be turned over to legal for negotiation and suit filing. A property acquisition status report is provided as a separate item in this agenda packet.
- The Alafia River Wetland Mitigation Reservation Agreement was fully executed, and final payment was made.
- The Mutual Use Agreement with Hillsborough County was approved at the September 17, 2025, BOCC Meeting. Offer letters for all Hillsborough County easements required for the South Hillsborough Pipeline project were submitted to the County with appraisals.
- Florida Communities Trust (FCT) easement application was submitted for parcels in which they share a financial interest ELAPP.

Joint Project Agreement

- The Amended and Restated Joint Project Agreement (JPA) was approved by the County's Board of County Commissioners on February 19, 2025, and by Tampa Bay Water's Board on February 24, 2025.
- The Amended and Restated Joint Project Agreement (JPA) with Hillsborough County updated project cost estimates, funding commitments, and defined the Point of Connection locations at the Lithia Water Treatment Plant and Balm (AgMart) Water Resources Department Water Campus. Additionally, this agreement includes County- requested infrastructure including a full-size tee connection along the Segment A pipeline for a future Point of Connection and the design and construction of improvements at the County's Lithia Water Treatment Plant. Both additional requests will be funded 100% by the County.

Southwest Florida Water Management District (District) Cooperative Funding Agreement

- Obtained Board approval of the Second Amendment to the District Cooperative Funding Agreement at the May 2025 Board meeting.
- Received the third reimbursement request funds.
- Submitted the FY2027 Cooperative Funding Initiative application.

South Hillsborough Wellfield (Project 01612)

The South Hillsborough Wellfield is one of the seven short-listed water supply projects recommended to the Board in November 2023 for implementation as a new water supply by the year 2033. The project involves designing and constructing a new fresh groundwater wellfield and associated treatment facilities (which includes ozone treatment for the removal of hydrogen sulfide) and could deliver between 6 and 12 million gallons per day (mgd) to southern Hillsborough County as described below.

A Water Use Permit can be obtained with up to 6 million gallons per day of permitted withdrawals based on providing evidence of a net-benefit to the aquifer associated with the County's long-term operation of their water aquifer recharge system to the west of the proposed wellfield. Between 3.1 and 5.1 mgd of additional water supply capacity is being obtained by acquisition of permitted quantities from private landowners and these new quantities are anticipated to be transferred to Tampa Bay Water by early 2026.

The feasibility study for this project was completed in 2021 and requires the following activities to be completed and approved by the Board. This project would help meet the near- and long-term needs of southern Hillsborough County.

Water Use Permit Quantity Acquisition

- The Board approved an agreement with Suburban Land Reserve, Inc. in February 2024 to acquire 590,100 gallons per day of permitted groundwater quantities in southern Hillsborough County. The acquired permitted capacity was transferred to Tampa Bay Water's Balm Farm Water Use Permit on the AgMart property and resulted in an additional 550,000 gallons per day (gpd) of permit quantity; the Balm Farm permit has been increased to an annual average quantity of 775,000 gpd. This quantity can be used to supplement the permit quantities that can be obtained through the long-term aquifer recharge credits from Hillsborough County.
- A subsequent agreement with Land Reserve, Inc. (formerly Suburban Land Reserve, Inc.) and their sister entity, Farmland Reserve, Inc., was approved by the Board in January 2025 to acquire between 3,121,803 gpd and 5,109,300 gpd of permitted quantities. This permitted quantity acquisition will increase our Balm Farm Water Use Permit by 3,127,619 to 5,171,400 gpd, with the final permit quantity determined during permitting with the District. A permit application to modify the Balm Farm Water Use Permit was approved

by the Board in January 2025 and was filed with the District in June 2025. Staff are currently responding to District questions on our permit application. This permit modification is expected to be issued by the District by early 2026.

- The Balm Farm Water Use Permit is expected to have an annual average quantity of 3.9 to 5.95 million gallons per day, depending on the final quantity approved by the District for the pending transfer of permitted quantities.

Property

- Cone Ranch/Lower Green Swamp Preserve Water Rights and Property Exchange with the Environmental Lands Acquisition and Protection Program (ELAPP): Finalize and obtain Board approval of an Interlocal Agreement for the exchange of Cone Ranch/Lower Green Swamp Preserve water rights for permanent and temporary easements for four production well sites and associated infrastructure on the former Ag-Mart property now known as the Stacy R. White Nature Preserve. The details of this exchange agreement were last presented to the Board at the June 2021 Board Meeting under Agenda Item D.2. Expecting approval at the November 2025 Bord meeting.
- Water Resources Department Ag-Mart Balm Water Campus Property: Acquire property from Hillsborough County including access agreements, permanent and temporary easements and/or in fee for the for three production wells, monitoring wells, wellfield collection main, and water treatment facilities and wellfield Point of Connection.

Long-term reclaimed water injection Agreement

- A long-term agreement with Hillsborough County for aquifer recharge credits associated with the injection of reclaimed water to the County's South Hillsborough Aquifer Recharge Program (SHARP) wells would be beneficial to create up to 6 mgd of groundwater credits to be combined into the Water Use Permit for the South Hillsborough Wellfield.
- Staff have drafted a term sheet currently under review by County staff.

Short-term South Hillsborough Production Well (Project 07540)

This project includes the conversion of a test well into a production well and the construction and operation of water treatment facilities by Hillsborough County. The new production well will deliver an average of 2.3 mgd of water under a short-term agreement with Hillsborough County for aquifer injection credits from their existing South Hillsborough Aquifer Recharge Program (SHARP) wells. Staff are implementing the test well conversion into a production well through the South Hillsborough Wellfield-Phase 1 Project.

- A short-term agreement for reclaimed water injection credits with Hillsborough County was executed on April 5, 2023.
- The Water Use Permit for the new production well was issued by the District on October 24, 2023.

- Design for the production well infrastructure is ongoing and has reached 90% design. Hillsborough County is procuring an engineer/contractor to complete the design, permitting, and construction of the necessary water treatment infrastructure.
- Design of the well infrastructure has been placed on hold until the County completes their design activities for the water treatment infrastructure. However, this project may not be needed if the South Hillsborough Wellfield is implemented.

Demand Management

Tampa Bay Water and Hillsborough County staff continue to coordinate activities for demand management in the South Hillsborough County area. Agency and County staff resumed monthly meetings in October 2023 to address high demands and drought conditions in this service area. The main objective of these meetings is to coordinate work for the variety of activities undertaken by the County Agency and Florida Friendly Landscaping TM agents, and to explore opportunities for collaboration. Agency staff continue to promote the Tampa Bay Water Wise Program and work with multi-family residential communities on rebate programs. The County continues to promote outdoor water wise practices and the Tampa Bay Water Wise rebate program directly to Hillsborough County customers. Staff of both agencies are exploring additional public information strategies to promote water conservation in this service area.

South-central Hillsborough Regional Wellfield Supply

Tampa Bay Water continues to work with Hillsborough County to sustain the increase in the quantity of water the County is taking through the existing Central Point of Connection within this service area. Since late June 2023, the County has taken an average of 12.8 mgd through the Central Point of Connection, an increase of about 3 mgd. This increased flow has allowed an equal reduction in the pumping rate of the South-central Hillsborough Regional Wellfield.

The South-central Hillsborough Regional Wellfield Water Use Permit was modified to increase the annual average permit limit from 24.1 to 24.95 mgd on July 26, 2022. The increase in the annual average quantity will revert back to 24.1 mgd when the new regional transmission main is placed in service as specified in the current Water Use Permit. Additional environmental monitoring will occur while the increased annual average permit rate is in effect if access to representative wetland monitoring sites can be obtained from local property owners. The 12-month running average pumping rate from the wellfield was 24.71 mgd at the end of August 2025.

The Board approved an agreement with the Tampa Electric Company (TECO) at the November 2024 meeting to acquire 590,500 gpd of permitted quantity no longer used on their property located east of the South-Central Hillsborough Regional Wellfield. The Board also approved an agreement with Hillsborough County at the January meeting to acquire 344,800 gpd of unused quantities from property owned by the County south of the wellfield. The Board approved an application to increase the annual average quantity of the South-central Hillsborough Regional Wellfield Water Use Permit to receive the quantities acquired from TECO and Hillsborough County at the January

2025 meeting and the application requests the annual average quantity of the South-central Hillsborough Regional Wellfield be increased to 26.821 mgd with the final quantity to be determined during permitting by the District. The permit application was filed on March 14, 2025, and staff expect the modified permit to be issued in November 2025.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.9

DATE: October 1, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: South Hillsborough Pipeline, Projects 01610 and 01616 - Property Acquisition Status Report - *Receive Report*

SUMMARY

This item provides an update to the Board of Directors on property acquisition activities through the end of September 2025 per policy ADM-BD-0009 for property acquisition for the South Hillsborough Pipeline, Projects 01610 and 01616. A total of four (4) parcels were closed in September 2025.

SUGGESTED ACTION

Receive Status Report.

COST/FUNDING SOURCE

$94,649.25/Hillsborough County and $106,322.75/Revenue Bonds

DISCUSSION

Tampa Bay Water is currently engaged in property acquisition activities with property owners along the approved South Hillsborough Pipeline route. Property Acquisition Policy ADM-BD-009 for the South Hillsborough Pipeline, Project Nos. 01610 and 01616, approved by the Board at the May 2024 Board meeting authorizes the General Manager:

- To acquire property rights valued in an amount not to exceed $400,000 per parcel.

- To execute and sign agreements and other required documents to complete transactions for projects previously approved by the Board.
- To secure fee simple title, easements, licenses, leases, mutual use agreements, and rights of entry; and
- To update existing licenses, grant licenses, sign permit applications, sign variance requests.

The Policy requires that:

- Documents associated with these transactions are reviewed and approval by the General Counsel or the General Counsel's designee prior to execution by the General Manager.
- Any purchase of property rights valued up to and including $100,000 may be based on an Opinion of Value.
- Any purchase of property rights valued over $100,000 requires a certified real estate appraisal report prepared by a M.A.I. designated appraiser in accordance with current Uniform Standards of Professional Appraisal Practice.
- The General Manager, or the General Manager's designee, will provide a list of completed transactions approved pursuant to this Policy at the next Board meeting.
- The purchase of property rights valued above $400,000 requires Board approval.

The attached report includes the following:

- Table No. 1: Number of Parcels Needed, Parcels with executed Purchase and Sale Agreements (PSA), and Parcels Closed through end of reporting month(s).
- Table No. 2: Costs associated with Parcels closed through end of reporting months, four (4) parcels were closed in September.
- Table No. 3: Overall property acquisition budget, actuals to date, and remaining budget.

The General Manager has executed necessary documents to complete the transactions listed on the attached Table No.2. Title insurance, survey and opinions of value were ordered as part of the due diligence process prior to closing.

BACKGROUND

Tampa Bay Water and Hillsborough County staff continue to develop additional pumping and transmission (pipeline) capacity to increase supply to rapidly growing South Hillsborough County. A new pipeline system is needed to provide the increased capacity required. The new system will expand delivery of water supplies to both the County's existing Lithia Point of Connection and a new Point of Connection farther south. The South Hillsborough Pipeline will be constructed in two segments. It requires the acquisition of approximately 218 parcels, a reduction from the originally anticipated 234 parcels, including permanent and temporary construction easements. Approximately 80 percent of the necessary parcels are in Segment A and approximately 20 percent of the necessary parcels are in Segment B. Segment A will convey alternative water supplies from the existing High Service Pump Station to Hillsborough County’s Lithia Water Treatment facility. Pipeline Segment B will connect to Pipeline Segment A and provide alternate water supplies to the new Hillsborough County Point of

Connection south of Hillsborough County's Lithia Water Treatment facility as approved by the Hillsborough County Board of County Commissioners in June 2021 and by the Tampa Bay Water Board of Directors in July 2021. Both segments will be planned, designed, and constructed by Tampa Bay Water and partially funded by the Southwest Florida Water Management District for eligible capital costs. The parties agreed through a Joint Project Agreement that Tampa Bay Water is responsible for the remaining share of capital costs for Segment A and Hillsborough County is responsible for the remaining share of capital costs for Segment B.

Attachments (1)

South Hillborough Pipeline Sept 2025 Property Acquisition Report

South Hillsborough Pipeline Property Acquisition Status Report

September 2025

Table 1-Parcels Needed

Segment	Total Parcels Needed [1]	Parcels with executed PSAs	Parcels Closed	Parcels with Executed PSAs or Closed	Parcels Included in Eminent Domain Resolutions	Pending [2]
A	170	3	91	94	63	16
B	48	0	7	7	36	5
Total	**218**	**3**	**98**	**101**	**99**	**21**

Notes:

1-Includes Properties in Fee, Temporary Construction Easements (TCEs), Permanent Utility Easements, and Leases

2- Includes parcels in negotiation, pending appraisal, or pending final sketch & legal.

Table 2-Parcels Closed - September 2025

4 Parcels Closed	Estimated Valuation/Certified Appraisal[1]	Actual[2] Total Costs	Avoided Costs[3]
Total	**$134,770.00**	**$200,972.00**	**$ -**

Notes:

1-Certified Appraisal required only for parcels with costs greater than $100,000

2-Actual Costs include property rights costs, recording fees, and/or taxes

3-Avoided costs include costs Tampa Bay Water will have incurred beyond those included in the Actual Total Costs should the parcel have to go through Eminent Domain, Court, or Order of Taking. Avoided Costs are on a per parcel basis and could include attorney fees, additional appraisal fees, and/or engineers' or other experts' fees.

Table 3-Summary of Actual Costs vs Budget

Segment	Total Property Budget	Actual Costs[1] through August 2025	Actual Costs Previous Month[2] - September 2025	Remaining Total Property Budget
A	$ 13,375,000.00	$ 3,093,865.30	$ 94,649.25	$ 10,186,485.45
B	$ 9,000,000.00	$ 896,598.93	$ 106,322.75	$ 7,997,078.32
Total	**$ 22,375,000.00**	**$3,990,464.23**	**$ 200,972.00**	**$ 18,183,563.77**

Notes:

1-Includes parcels reported per Policy ADM-BD-0009 and individual Board approved parcels

2-Details in Table 2

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.10

DATE: October 8, 2025

TO: Board of Directors

FROM: Kelly M. Fernandez, General Counsel

SUBJECT: Persson, Cohen, Mooney, Fernandez & Jackson, P.A. - Work Assignment Related to South Hillsborough Pipeline Project - *Approve*

SUMMARY

Due to the upcoming retirement of special counsel, it is necessary to reassign work related to the South Hillsborough Pipeline Project. Persson, Cohen, Mooney, Fernandez & Jackson, P.A. is requesting approval of a work assignment to assume these responsibilities.

SUGGESTED ACTION

Approve Assignment.

COST/FUNDING SOURCE

Revenue Bonds/Hillsborough County

DISCUSSION

On March 1, 2024, Persson, Cohen, Mooney, Fernandez & Jackson, P.A. ("PCMFJ") began providing general counsel services to Tampa Bay Water through a General Counsel Services Contract ("Contract"). Former General Counsel Barrie Buenaventura continued to represent Tampa Bay Water as special counsel, first through Conn & Buenaventura, P.A. and subsequently through Buenaventura Law, PLLC, at the rate of $290 per hour. Attorney Buenaventura has been the primary attorney for Tampa Bay Water overseeing the South

Hillsborough Pipeline property acquisition proceedings and matters related to the South Hillsborough Wellfield.

Attorney Buenaventura has given Tampa Bay Water notice that she will be fully retiring on October 31, 2025. PCMFJ believes that it will be able to handle and complete Attorney Buenaventura's work assignments as opposed to retaining replacement special counsel. PCMFJ's Contract provides that it is to be paid $25,000.00 per month as a fixed retainer fee for the Scope of Services set forth in the Contract. Section 4.3 of the Contract further provides that PCMFJ shall be compensated at an hourly rate of $275 per hour for work assignments that exceed the Scope of Services due to their non-routine nature requiring an extensive dedication of time and effort.

It is PCMFJ's opinion that the work assignments currently being handled by Attorney Buenaventura exceed the Scope of Services. The General Manager is in agreement and accordingly, PCMFJ seeks approval of an hourly work assignment beginning November 1, 2025, at the rate of $275 per hour for matters involving South Hillsborough Pipeline property acquisitions and the South Hillsborough Wellfield.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.11

DATE: October 1, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: Capital Improvement Program - Task Order Authorization - *Approve*

SUMMARY

The Tampa Bay Water Board of Directors (Board) accepted the Fiscal Years 2026-2035 Capital Improvements Program (CIP) in May 2025. Subsequent Board approval of individual project activity is required during the project's life cycle. The Attachment Table lists upcoming task authorizations that staff is recommending be assigned to the vendors identified.

SUGGESTED ACTION

Approve Task Orders.

COST/FUNDING SOURCE

$250,000/Renewal and Replacement Fund

DISCUSSION

As identified to the Board on May 4, 2017, Board acceptance of the annual Capital Improvements Program document is an acceptance of the capital projects roadmap. Subsequent Board approvals of individual capital project activity is sought for planning, design and/or construction contracts and/or task authorizations under existing contracts for project fees and assigned funding source. Tampa Bay Water Staff recommends the Board approve the task and assigned funding source in the attached table for the period of October 2025 through November 2025.

BACKGROUND

Tampa Bay Water's CIP Plan is a comprehensive ten-year plan of approved and proposed capital projects. The CIP is updated annually and is subject to changes as the needs for specific projects become more defined and as final approval of individual projects is provided by the Board.

Attachment (1)

October 2025-CIP Tasks Authorizations

CIP Projects Tasks Authorizations

Project Number	Project Name	Task Description	Vendor Name	Contract Number	Task Cost	Funding Source
07153	Cross Bar Ranch Wellfield Water Transmission Main - Utility Conflict	Construction Phase Engineering Services	Wade-Trim, Inc.	2021013	$250,000	Renewal and Replacement Fund

Report Generated on:8/22/2025 2:50:18 PM

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.12

DATE: October 1, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: Capital Improvement Program - Projects Closeout - *Approve*

SUMMARY

In May 2025, the Board accepted the Fiscal Years 2026–2035 Capital Improvements Program (CIP). In accordance with the Agency's Project Management Methodology, a final Board item is required to formally close out capital projects. This item provides closeout documentation for one recently completed capital project.

SUGGESTED ACTION

Approve Project Closeout.

COST/FUNDING SOURCE

N/A

DISCUSSION

This item provides individual reports for completed capital projects. Each report includes the final project schedule, projects description, funding sources and spent amounts, unspent budget, list of purchase orders/contracts and actual expenditures, and a final closeout summary. Staff recommends the

Board approve closeout of the following capital project:

- 50083 - Tampa Bay Desalination Facility – Roof Repairs Phase 1

BACKGROUND

Tampa Bay Water's Capital Improvements Program Plan is a comprehensive ten-year plan of approved and proposed capital projects. The CIP is updated annually and is subject to changes as the needs for specific projects become more defined and as the Board approves individual projects.

Attachments (1)

Project 50083 Close Out Report

Project Closeout Report - September 2025

Project Number	50083
Project Name	Tampa Bay Desalination Facility – Roof Repairs Phase 1
JPA Participant	None
Project Manager	Indigo Dunn
Construction Manager	Lucas Parmer

Final Schedule		
Phase	**Start Date**	**End Date**
Publishing	1/2/2025	5/19/2025
Planning	1/2/2025	2/17/2025
Professional Services Selection	2/18/2025	4/17/2025
Design	4/18/2025	5/14/2025
Bidding	5/16/2025	5/19/2025
Construction or Execution	5/20/2025	8/22/2025
Close-Out	8/23/2025	10/20/2025

Project Description

This project is located at the Tampa Bay Seawater Desalination Water Treatment Plant (Desal WTP). It involves near-term facility rehabilitation measures to ensure continued operational reliability while design and permitting efforts are underway for long-term improvements that will enhance system resilience.

Final Funding Summary*	
Funding Source	**Total**
Released Debt Service Reserve Fund	$648,370.45
Totals	**$648,370.45**

Financial Summary	
Highest Approved Budget	**$2,318,000.00**
Total Expenses	**$648,370.45**
Total Unspent Funds*	**$1,669,629.55**

Purchase Orders/Other Encumbrances and Expenses

Purchase Order	Contract Number	Service Type	Vendor	Actual Expenses
20250585	2005062V	Construction	US WATER-ACCIONA SEAWATER DESLINATION PARTNERS	$648,370.45
			Totals	**$648,370.45**

*Funding Sources have been adjusted to match expenses. Unspent funds have been returned to applicable funding source. All Purchase Orders have been closed.

Project Closeout Report - September 2025

Closeout Summary
The project's goal and objectives have been met within budget and schedule. Under the project scope, the following rehabilitation was completed at the Tampa Bay Seawater Desalination Water Treatment Plant: - Temporary roof and structural reinforcements for the Reverse Osmosis (RO) building - Roof refurbishment of the belt press building - RO building lightning rod replacement

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.13

DATE: October 1, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: Surface Water Treatment Plant Expansion, Project No. 01014, Project Status Report - *Receive Report*

SUMMARY

The Surface Water Treatment Plant Expansion, Project No. 01014, was approved by the Board of Directors as the next water supply project to meet the region's needs by 2028. A monthly status report is provided to keep the Board informed of progress.

SUGGESTED ACTION

Receive Status Report.

COST/FUNDING SOURCE

N/A

DISCUSSION

In August 2022, the Tampa Bay Water Board of Directors selected the Surface Water Treatment Plant Expansion, Project No. 01014, as the next water supply configuration for implementation by 2028.

The project is being delivered through an amendment to Veolia Water North America Operating Services, LLC's Design, Construction, and Operation Agreement (Contract No. 2000-028). This report outlines completed work since the last report, ongoing tasks, and upcoming milestones.

Work Completed to Date

- Developed rigid inclusions Design Criteria Package.
- Conducted pre-application meetings with Hillsborough County Site Development (Site Plan Approval).
- Received Board approval for the Easement Agreement with Tampa Electric Company in support of the project's construction phase.
- Received the 100% Issue for Permit (IFP) design.
- Permits:
    - Received Florida Department of Environmental Protection (DEP) Public Water Systems (PWS).
    - Received Southwest Florida Water Management District (SFWMD) Environmental Resource Permit (ERP).

Work in Progress and Upcoming Tasks

- Hillsborough County Building Permits Department review for the rigid inclusions work.
- Complete the 100% Issue for Construction (IFC) design.
- Submittal review of procurement materials associated with early equipment purchase orders.

Overall Schedule (Remaining Activities)

- Complete 100% Issue for Permit (IFP) Design: **August 2025**
- Construction Notice to Proceed: **September 2025**
- Complete Construction & Commissioning: **Spring 2028**

BACKGROUND

At the August 2022 Board Meeting, the Board of Directors selected the Surface Water Treatment Plant Expansion, Project No. 01014, as the next water supply project to support the region's future water needs. This project will increase Tampa Bay Water's annual average yield from existing surface water sources by 10 to 12.5 million gallons of water per day and is included in the agency's Capital Improvements Program.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.14

DATE: September 26, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Paul Stanek, Chief Operating Officer

SUBJECT: Extension of Sole-Source No. 2025-509 for Analytical Equipment, Replacement Parts and Consumable Supplies with Hach Company - *Approve*

SUMMARY

The Agency uses Hach Company online water quality analyzers for many real-time water quality parameter readings throughout the operating system. The Agency's Purchasing Policy was followed to receive approval of Sole Source Posting 2025-509 for Hach purchases during FY2025. Staff request the extension of Sole Source No. 2025-509 through September 30, 2026, to align the sole source procurement with the Agency's fiscal year.

SUGGESTED ACTION

Approve Extension of Sole-Source No. 2025-509 for Analytical Equipment, Replacement Parts and Consumable Supplies with Hach Company in a not to exceed value of $600,000.00, through September 30, 2026.

COST/FUNDING SOURCE

$600,000.00 not to exceed FY2026 budgeted funds.

DISCUSSION

A Sole Source procurement for Analytical Equipment, Replacement Parts and Consumable Supplies was advertised on December 27, 2024, on Bonfire and the Tampa Bay Water website. No objections or protests were received. Tampa Bay Water posted its Declaration of Sole Source Purchase on January 24, 2025.

Staff recommend the extension of Sole Source No. 2025-509 through September 30, 2026, to align the fiscal year and provide for the fiscal year 2026 purchasing requirements from Hach Company.

BACKGROUND

Tampa Bay Water's Operations Department budgets annually for online analytical equipment, repair services, replacement parts and consumable supplies. A portion of this budget is associated with analytical equipment manufactured by Hach Company. With the exception of APA6000 rotary valve parts, Hach Company is the single source provider of analytical equipment, repair services, replacement parts and consumable supplies for Hach Company analyzers. Therefore, new equipment purchases, repair services, parts and reagents are obtained from Hach Company through a sole source procurement method.

Attachments (2)

2025509 Hach Company Sole Source Memo Final Signed
2025509 Sole Source Notice of Intent Final

Memorandum

TO: Charles H. Carden, General Manager

FROM: Laila Martin, Regional Operations Manager

THRU: Paul Stanek, Chief Operating Officer

DATE: November 27, 2024

SUBJECT: Sole Source Request #2025509
Hach Company – Analytical equipment, replacement parts and consumable supplies.

As per Section 2.4.2.1 of Tampa Bay Water's Purchasing Procedures Manual, approved by the Board of Directors on April 21, 2014, the Operations department is requesting "sole source" designation for the vendor Hach Company for the purchase of analytical equipment, replacement parts and consumable supplies for following reason:

REASON:

☐ The commodity or service is wanted for experimental trials, pilots, and/or testing.

☐ Additional unanticipated commodities or services are needed to complete an ongoing task.

☒ The commodity is identical to existing equipment installed at other agency locations for the same purpose.

☒ The commodity is a component, repair, or replacement part of existing equipment for which no commercially available substitute exists, and the purchase can only be made from the manufacturer or sole distributor.

☐ Exigent circumstances exist that dictate delivery is a critical factor and only one vendor is able to meet the time constraints.

☐ Manufacturer's warranty requires any maintenance, parts and/or support performed on or provided for instruments/equipment be provided by factory trained and authorized representative only.

☐ Other reasons not listed above. Requestor must explain below in Due Diligence.

DUE DILIGENCE:

Tampa Bay Water Operations Department has standardized with Hach on-line analytical equipment for continuous monitoring of a variety of water quality parameters at its water treatment facilities and monitoring sites. This equipment is utilized to conduct analysis of water samples as required by regulatory authorities in compliance with the Safe Drinking Water Act and for additional monitoring of the water quality supplied to our member governments.

Sole Source #2025509
Hach Company

The proprietary design of this analytical equipment requires Hach parts be used in conjunction with Hach equipment. Hach Company is the sole distributor of its analytical equipment, analyzer parts and consumable supplies currently in use in the Tampa Bay Water wholesale system. One exception is the APA6000 rotary valve parts. Purchasing all parts on the attached listing will ensure 1) the analytical equipment provides accurate and repeatable measurements, 2) a simplified ordering process, 3) consistency of maintenance planning and performance, and 4) analytical equipment warranties remain valid. The estimated cost below is based on historical spending and includes potential Hach price increases in December.

ESTIMATED COST: $600,000.00

Please indicate your approval for the sole source designation for Hach Company by signing below:

Stacy Gundry (Nov 27, 2024 12:11 EST) — Nov 27, 2024
Purchasing & Warehouse Manager — Date

Laila Martin — Nov 27, 2024
Department Head — Date

Paul Stanek — Nov 27, 2024
Chief Operating Officer — Date

Note: If estimated amount is over $100,000.00 legal counsel signature is also required.

Roy David Jackson Jr — Dec 2, 2024
General Counsel — Date

Description	Part Number
Filter, Air, 10 Micron	2718
Buret Support Stand	32900
Funnel, Analytical Top Inside Diameter 100mm	108370
Sulfide Reagent #1	181632
Sulfide Reagent #2	181732
19.2N Sulfuric Acid, 100mL	203832
Free Chlorine Color Disc Test Kit, Model CN-66F	223102
Total Chlorine Color Disc Test Kit, Model CN-66T	223103
Sulfuric Acid Standard Soulution, 5.25 N, 100 mL	244932
DPD Total Chlorine Reagent Powder Pillows, 25mL, pk/1000	1406428
DPD Total Chlorine Reagent Powder Pillows, 25mL, pk/100	1406499
DPD Free Chlorine Reagent Powder Pillows, 25mL, pk/1000	1407028
DPD Free Chlorine Reagent Powder Pillows, 25mL, pk/100	1407099
Chlorine (Free and Total) and pH Test Kit	1411100
Galvanic DO Probe O-ring	1857100
1720 Turbidimeter Lamp Assembly	1895000
DPD Free Chlorine Reagent Powder Pillows, 10mL, pk/300	2105503
DPD Free Chlorine Reagent Powder Pillows, 10mL, pk/1000	2105528
DPD Free Chlorine Reagent Powder Pillows, 10mL, pk/100	2105569
DPD Total Chlorine Reagent Powder Pillows, 10mL, pk/300	2105603
DPD Total Chlorine Reagent Powder Pillows, 10mL, pk/1000	2105628
DPD Total Chlorine Reagent Powder Pillows, 10mL, pk/100	2105669
1 Round Glass, 10mL, Cell with Cap	2122800
Glass sample cell, 25 mm round, 10-20-25 mL marks, pk/6	2401906
Sample Cell: 1 Round Glass 10mL	2427606
Sample Cells for 2100 Portable Turbidimeters	2434702
Portable Turbidimeter Sample Cells, Pack of 6	2434706
Chlorine (Total) test Kit, Model CN-21P	2444400
Gelex Secondary Standards Kit, 2100 Portable Turbidimeters	2464105
SpecCheck Secondary Gel Standards Set, Mono/Ammonia	2507500
Ozone AccuVac Ampules, MR, Pk/25	2517025
SPADS 2 (Arsenic Free) Flouride Reagent AccuVac Ampules, Pk/25	2527025
CL-17 Free Chlorine Reagent Kit	2556900
CL-17 Total Chlorine Reagent Kit	2557000
AmVer Low Ammonia Range Reagent Set	2604545
Total Inorganic Nitrogen Pretreatment Reagent Set	2604945
SpecCheck Secondary Gel Standards Set, DPD Chlorine - LR	2635300
Support Ring, 4.5-inch	2656300

StablCal Calibration Set for 2100P	2659405
StablCal Turbidity Standard, 20 NTU, 1000mL	2660153
StablCal Turbidity Standard, 800 NTU, 500mL	2660549
Nitrogen-Ammonia Reagent Set, Salicylate Method, 10mL	2668000
Alkalinity APA Reagent 2	2696653
Alkalinity APA Standard 1	2696753
Alkalinity APA Cleaning Solution	2697053
SpecCheck Standard, Ozone, 0-.75mg/L	2708000
SpecCheck Secondary Gel Standards Set, Fluoride	2712500
Mono APA Reagent 1	2776353
Mono APA Reagent 2	2776453
Mono APA Reagent 3	2776553
Mono APA Standard 1	2776653
Mono APA Standard 2	2776753
Reagent 1 (TISAB) for CA-610	2812811
CA-610 Reagents Set	2816900
Alkalinity APA Reagent 1	2826153
Alkalinity APA Standard 2	2826253
Mono APA Cleaning Solution	2876453
SpecCheck Secondary Gel Standards Set, DPD Chlorine - HR	2893300
1720E Turbidimeter w/ 2 Digital Channel SC-200	2976800
O-ring, Fluorocarbon .070W x 0864 ID	4078800
APA6000 Oil Tight Seal, .88-in. Diameter	4221000
CL-17 Follower Block, Reagent	4274100
CL-17 Follower Block, Sample	4274200
1720 Turbidimeter Drain Plug	4411600
1720 Turbidimeter Calibration Cylinder	4415300
CA-610 Electrode Inner Fill Solution	4450126
Regulator, Non-relieving	4557500
APA Pressure Gauge (0 to 30 psi)	4566400
vv Fuse, 5A 250V Slow-blow 5 x 20MM	4693800
Sample Cell: 1 Round Plastic 10mL with 1cm Pathlength	4864302
APA6000 Alkalinity Analyzer	5100010
APA Mixing Module, 1mL	5102100
APA Mixing Module, 3mL	5102101
Aquatrend Faceplate Assembly	5102200
APA6000 Installation Kit	5104000
Aquatrend Interface Circuit Board	5109200
si CKT BD Assy, Controller #2 BD, APA 6000	5109601

APA6000 Backplane Cable	5116100
Tubing, TFZL, .030 ID X .062 OD, 2000 PSI	5117800
APA6000 Tool Kit	5129100
APA CO2 Scrubber Kit	5143100
Fuse, 1.6A 250V 5MM x 20MM	5208300
1720 Turbidimeter Photocell	5218000
1720 Turbidimeter ICE-PIC Verification Module, 1 NTU	5221500
1720 Turbidimeter ICE-PIC Verification Module, 20 NTU	5225000
CA-610 Pump Housing	5411700
CL-17 Chlorine Analyzer	5440002
CL-17 Main Circuit Board	5440400
CL-17 Preassembled Maintenance Kit	5444301
CL-17 Motor Assembly	5444600
CL-17 Cam/Coupler Assembly	5445200
Power Cord	5448800
APA6000 Ammonia/Monochloramine Analyzer	5500610
CL-17 Installation Kit	5516400
CA-610 Main Circuit Board	5526200
CA-610 Power Supply Circuit Board	5526400
Electrode Body, ISE, CA-610	5527700
Electrode, pH, CA-610	5528100
APA6000 Autoburette Module	5715000
APA Pump Piston Seal Retaining Ring	5715100
APA6000 Autoburette Piston Seals	5716300
APA Pump Piston Ceramic Guide	5716500
CA-610 Fluoride Analyzer	5740001
CA-610 Flow Cell/Pinch Plate	5740300
CA-610 Cam/Coupler Assembly	5741500
CA-610 Motor Assembly	5741600
CA-610 Follower Block	5741800
CA-610 Installation Kit	5742000
CA-610 Maintenance Kit	5742100
CA-610 Electrode Kit	5744800
CA-610 Electrode Tip Kit	5745100
CA-610 Fluoride Tip Assembly	5745100
Pocket Colorimeter II Chlorine	5870000
KTO: Pocket Colorimeter II Fluoride System	5870005
Pocket Colorimeter II, Chlorine (Free and Total) Plus pH	5870012

Pocket Colorimeter II, Chlorine (Free and Total), Mid Range/High Range	5870062
APA6000 Alkalinity Reagents Set	6001000
APA6000 Alkalinity Standards Set	6001100
APA6000 Ammonia/Monochloramine Reagent Set	6001400
APA6000 Ammonia/Monochloramine Standards Set	6001500
Galvanic Membrane DO Sensor Cartridge	6135200
Digital DO Flow Cell	6136300
APA Sample Conditioning Block	6200800
APA6000 Filter, Ceramic	6201100
APA Filter Quad Ring	6201200
APA6000 O-ring, Fluorocarbon	6201400
APA Filter Holder	6201900
Drain Block/Backpressure Regulator Assembly	6204700
APA6000 Valve Module Assembly	6205000
Colorimeter Assembly 600nm	6205801
Colorimeter Assembly 650nm	6205803
APA6000 Alkalinity Colorimeter Module	6206001
APA6000 Ammonia/Monochloramine Colorimeter Module	6206003
Seal Assy. Reagent Bottle w/ tube	6767500
Seal Assy. Reagent Bottle w/ tube 1L	6767520
Cover, Funnel, Process Analyzer	6773500
Assy, Capillary TBG, Process Analyzer	6786900
Kit, Fan Filter, Process Analyzer	6789100
Kit, Fan Plug, Process Analyzer	6789300
5500sc Modbus Module Kit	6792500
CL-17 Colorimeter Module	6867000
Cl-17sc Tubing Kit (pre-assembled)	8560400
Calibration Verification Kit	8568200
CL17sc Colorimetric Chlorine Analyzer with Standpipe Installation Kit, w/o Reagents	8572300
CL17sc Colorimetric Chlorine Analyzer with Pressure Regulator Installation Kit, w/o Reagents	8572400
CL17sc Colorimetric Chlorine Analyzer with Standpipe Installation Kit and Reagents for Free Chlorine	8572700
CL17sc Colorimetric Chlorine Analyzer with Standpipe Installation Kit and Reagents for Total Chlorine	8572800
CL17sc Colorimetric Chlorine Analyzer with Pressure Regulator Installation Kit and Reagents for Free Chlorine	8572900

CL17sc Colorimetric Chlorine Analyzer with Pressure Regulator Installation Kit and Reagents for Total Chlorine	8573000
Calibration Verification Refill Kit	8573200
TU5300sc Low Range Laser Turbidimeter	8626900
Chemkey, 25 Piece, Iron	8636000
Chemkey, 25 Piece, Total Alkalinity Hi Range	8636100
Chemkey, 25 Piece, Total Alkalinity Low Range	8636200
Chemkey, 25 Piece, Hardness Low Range	8636400
Chemkey, 25 Piece, OrthoPhosphate Hi Range	8636500
Chemkey, 25 Piece, OrthoPhosphate Low Range	8636600
Cover Assembly, UV, sc200	8809200
Assy. Probe, LDO Model	9020000
si Power Cord, Modified, North American	9179700
Flow Cell, 1" NPT Sensor	9180100
Door Assembly, Basic Front, sc200	9200800
Cover Assembly, UV and Sun Shield, sc200	9220600
Assembly, Union Mount, 1"NPT LDO	9257000
Smart Porbe Adapter for Hach 5500sc	9321000
4-20mA Output Expansion Module for SC-200 Controller	9334600
DR-900 Multiparameter Handheld Colorimeter	9385100
DR900 Multiparameter Portable Colorimeter	9385100
CUP, Sample, SL1000 (Rectangular)	9418100
Chemkey, 25 Piece, Total Ammonia	9425200
Chemkey, Verification, Chlorine	9427900
Chemkey, 25 Piece, Copper	9429200
Chemkey, 25 Piece, Nitrite	9429300
Chemkey, 25 Piece, Mono/Free Ammonia	9429600
SL1000 Portable Parallel Analyzer	9430000
Chemkey, Verification, System	9436800
Pocket Pro pH Tester	9531000
Assy, Y-strainer w/FTG	9560400
Kit, Maintenance, 5500sc AMC, 1 channel	9560501
Kit, Maintenance, 5500sc AMC, 2 channel	9560502
Valve, Check, 1/8" MNPT, 0.09 PSI, w/ Viton O-ring	9560800
Stir Bar, Teflon 8x3 MM	9563900
Kit, Installation, 5500sc AMC, AC, 1 CH	9565501
Kit, Installation, 5500sc AMC, AC, 2 CH	9565502
Filter, 40UM, 1/4", PP, 100 PSI	9566000
5500sc Funnel	9566100

Cover, Colorimeter PCBA, 5500sc AMC	9566400
Assy, Colorimeter, 5500sc AMC	9568500
Assy, Capillary TBG, Colorimeter, Red	9568601
Assy, Capillary TBG, Colorimeter, Blk	9568602
Filter, Disc, 100UM, 1"NPT	9623400
External Sample Filter for AMC5500sc	9623400
5500sc Reagent Bottle Tray	9640400
Assy, Pkg of Sample Pump Replacement, 5500sc AMC	9713300
5500sc AMC Colorimeter Cleaning Kit	25224000
KTO: 5500sc Ammonia Monochloramine Reagent Set	25233000
5500sc Reagent 1, Ammonia/Monochloramine	25234000
5500sc Reagent 2, Ammonia/Monochloramine	25235000
5500sc Reagent 3, Ammonia/Monochloramine	25236000
5500sc Standard 1, Ammonia/Monochloramine	25237000
5500sc Standard 2, Ammonia/Monochloramine	25238000
5500sc Acidic Surfactant Wash	25239000
Prognosys 5500sc AMC License Kit	25277000
2100Q Portable Turbidimeter	2100Q01
Standard Cell Solution for pHD pH Probes	25M1A1025-115
200 mV ORP Solution	25M2A1001-123
600mV ORP Solution	25M2A1002-123
Conductivity Reference Solution, 1000uS/cm	25M3A2000-119
Dissolved Oxygen Calibration Bags	276M1210
DR-850	48450-60
DR-890	48470-60
KTO: 5500sc Ammonia Monochloramine, 1 Channel	5500.AMC.1.KTO
KTO: 5500sc Ammonia Monochloramine, 2 Channel	5500.AMC.2.KTO
KTO: 5500sc Ammonia Monochloramine, 1 Channel, Ex Filter	5500.AMC.3.KTO
KTO: 5500sc Ammonia Monochloramine, 2 Channel, Ex Filter	5500.AMC.4.KTO
Clark DO Membrane Cartridge	5500A1020-001
Digital 5740sc Galvanic DO Sensor	5740DOB
Galvanic DO Sensor	5740DOB
EZ4004 Reagent Containers, 2.5L	APPAZ0015000
EZ4004 Reagent Containers, 5L	APPAZ0015105
EZ4004 Reagent Containers, 10L	APPAZ0015200
Acid Solution for EZ4004, 0.025 N HCL Solution, 2L	APPC4004-01
Acid Solution for EZ4004, 0.05 N HCL Solution, 25% Range, 2L	APPC4004-02
Acid Solution for EZ4004, 0.1 N HCL Solution, 50% Range, 2L	APPC4004-03
Acid Solution for EZ4004, 0.2 N HCL Solution, Standard Range, 2L	APPC4004-04

Digital Contacting Conductivity Probe	D3422C3
Combination pH Sensor w/ Digital Gateway	DPC1R2A
Digital pH Probe - Peek Material	DPD1P1
Combination ORP Sensor w/ Digital Gateway	DRC1R5N
Digital Differential ORP Sensor	DRD1P5
EZ3507 Fluoride Analyzer, 1 Stream, Modbus RS485	EZ3507.99001C02
Ez4004 Total Alkalinity Analyzer, 1 stream, Modbus RS485	EZ4004.99001C02
LDO Probe, STD, w/1m Cable	LDO10101
sensION156	LPV4049.97.0002
Ultraturb Seawater sc sensor w/5 m cable	LPV415.99.22002
TU5200, Lab Turb with RFID, EPA	LPV442.99.03012
Automatic Cleaning Module for TU5300sc and TU5400sc	LQV159.97.00002
TU5300sc Turb Automatic Cleaning Module	LQV159.99.00002
TU5300sc Turb, Flow Sensor	LQV160.99.00002
2 Digital Channel SC-200 Controller	LXV404.99.00552
Solitax Ts Line Sensor with Wiper	LXV423.99.00100
TU5300sc Turb EPA	LXV445.99.10112
TU5300sc Turb, Sys Chk, EPA	LXV445.99.11112
TU5300sc Turb, Sys Chk, RFID, EPA	LXV445.99.12112
TU5300sc Turb, Flow, EPA	LXV455.99.20112
TU5300sc Turb, Sys Chk, Flow, EPA	LXV455.99.21112
TU5300sc Turb, Flow, RFID, EPA	LXV455.99.22112
TU5300sc Turb, Sys Chk, Flow, RFID, EPA	LXV455.99.23112
TU5300sc Turb, Clean, EPA	LXV455.99.30112
TU5300sc Turb, Sys Chk, Clean EPA	LXV455.99.31112
TU5300sc Turb, Clean, RFID, EPA	LXV455.99.32112
TU5300sc Turb, Sys Chk, Clean, RFID, EPA	LXV455.99.33112
TU5300sc Turb, Flow, Clean, EPA	LXV455.99.50112
TU5300sc Turb, Sys Chk, Flow, Clean, EPA	LXV455.99.51112
TU5300sc Turb, Flow, Clean, RFID, EPA	LXV455.99.52112
TU5300sc Turb, Sys Chk, Flow, Clean, RFID, EPA	LXV455.99.53112
sc4500 Controller,Claros-enabled, 5x mA Output, 2 digital Sensors, 100-240 VAC, without power cord	LXV525.99AA1551
Process Head w/o vial W/Connect	LYZ916
TU5300sc Turb, Operator RFID Tags	LZQ066
TU5300sc Turb, RFID Stickers, Qty 3	LZQ067
Ultraturb Wiper Blades Set	LZV275
Ultraturb Filters with Apparatus for Zero Calibration	LZV325
CVM Ultraturb Verification Module	LZV414.00.40000

Ultraturb Calibration/Cleaning Kit	LZV451
Ultraturb Wiper Motor	LZV473
Solitax Turbidity Wiper Set	LZX050
Solitax Turbidity Desiccant Pack Set	LZX301
Ultraturb Desiccant Bag .5U	LZX303
Ultraturb Desiccant Bag 4U	LZX304
Solitax Turbidity Seals Kit	LZX421
Process Vial	LZY834
TU5300sc Turb, Stablcal Sealed Vials 10, 20 and 600 NTU with RFID	LZY835
TU5300sc Turb, Stablcal Sealed Vial 20 NTU with RFID	LZY837
TU5300sc Turb, Service Bracket Kit	LZY873
Desiccant Cratridge for TU5300sc and TU5400sc	LZY876
TU5300sc Turb, Stablcal Sealed Vials 10, 20 and 600 NTU without RFID	LZY898
TU5300sc Turb, Stablcal Sealed Vial 20 NTU without RFID	LZY899
TU5300sc Turb, Stablcal Glass Verification Rod <0.1 NTU	LZY901
TU5300sc Turb Vial Wiper	LZY903
TU5300sc Turb, Calibration Lid	LZY904.97.00002
TU5300sc Turb, Maintenance Kit	LZY907.97.00002
TU5300sc Turb, Vial Compartment Wiper	LZY910
Nut for Online Vial TU5XXX	LZY917
IntelliCAL™ MTC101 Standard Gel Filled ORP Electrode	MTC10101
IntelliCAL™ PHC201 Standard Gel Filled pH Electrode	PHC20101
Peel Plate Hetrotropic Plate Count Medial, 50 Tests	PP-HPC-50
Peek pH Salt Bridge, 5 pack	SB-P1SV-005
Ryton pH Salt Bridge, 5 pack	SB-R1SV-005
Ultraturb PCB, Hallsensor	YAB011

HACH | 5600 Lindbergh Drive | PO Box 389 | Loveland, Colorado 80539 | P 970.669.3050 | F 970.669.2932 | hach.com

The Sole Authorized Manufacturer and Direct Distributor Letter

November 18, 2024

Customer Name: Tampa Bay Water
Customer Address: 2301 Regional Water Ln
Customer City, State & Zip: Tampa, FL 33619

Customer Account Number: 039630

RE: SOLE SOURCE LETTER – Hach Brand Instruments
Hach Brand Products – Instruments and Chemistry: Brands to include, but not limited to:

Other Hach Brands
Evita, GLI, Hach, Homeland Security Technologies, OPS Systems, Orbisphere, Polymetron, Sigma, Anatel, Dr. Lange, Environmental Test Strips, HIAC, Hydrolab, IQ Scientific Instruments, Lachat Instruments, Leica Microsystems, Marsh-McBirney, Met Onem OTT, Hydrometry, Radiometer Analytical, Sea-Bird Electronics, WET Labs, Hach WIMS™, CLAROS Collect, Mobile Sensor Management

Thank you for your interest in Hach Company products. This letter is to advise that Hach Company is the sole source manufacturer for all Hach branded instrumentation and chemistry. This excludes all resell items, such as glassware, measuring spoons, brushes, and other general lab accessories. Any software or firmware additions or alterations must be purchased directly from Hach Company.

This letter is to confirm that Hach Company is the sole authorized manufacturer and direct distributor of the item(s) listed above.

Thank you for your interest in Hach Company Products. If we can be of further assistance, please contact us at 800-227-4224.

Thank you.

November 18, 2024

Hach Service and Parts

Dear Customer:

The instruments you purchased, part of the following family of brands --- Hach, Great Lakes Instruments, American Sigma, Radiometer Analytical, Lachat, Marsh-McBirney, OptiQuant, Astro, Anatel, Orbisphere, ELE, HIAC, MetOne, and Polymetron --- were designed to be reliable, durable, and easy to operate. Our goal is to design and manufacture instruments that give accurate readings with minimum maintenance requirements.

The Hach Service Representative is a highly trained professional who has a thorough, in-depth knowledge of the workings of each manufactured instrument. Our factory-trained service personnel are the only people authorized to perform any startup service, maintenance, or repair of these instruments. Because of the many different parameters and types of analyzers, we do not recognize or authorize any other service organization to perform repair or recalibration of these analyzers. As an ISO 9001 certified company, we maintain the highest standards for quality assurance and NIST traceable test and calibration equipment. Also, unauthorized repairs will result in voiding the instrument's warranty.

All parts used in our instruments meet our specifications and conform to our high standards. Many parts that may be available from a local vendor go through a testing procedure before being available as a Hach authorized part to ensure that they meet the performance tolerances specified for proper instrument performance. Additionally, the use of non-Hach supplied parts will result in voiding the instrument's warranty.

We have service repair centers that can repair and return instruments efficiently and economically. For on-site services we have an extensive field service organization. Please contact the Hach Service for additional information.

Sincerely,

Hach Service

TAMPA BAY WATER
Supplying Water To The Region

NOTICE OF INTENT TO SOLE SOURCE PURCHASE

Date: December 27, 2024
Subject: 2025509 – Hach Company – Analytical Equipment, Replacement Parts and Consumable Supplies.

Tampa Bay Water, A Regional Water Supply Authority, gives notice of its intent to procure Analytical Equipment, Replacement Parts and Consumable Supplies from Hach Company through a Sole Source method.

Prospective Vendors able to provide Analytical Equipment, Replacement Parts and Consumable Supplies Services for instrumentation specified below are requested to provide information by **January 23, 2025 @ 5:00 p.m.** Information should be forwarded to Taylor Klinko, Purchasing Specialist I, at Tampa Bay Water, 2575 Enterprise Road, Clearwater, Florida 33763-1103 or by email at tklinko@tampabaywater.org

Description	Part Number
Filter, Air, 10 Micron	2718
Buret Support Stand	32900
Funnel, Analytical Top Inside Diameter 100mm	108370
Sulfide Reagent #1	181632
Sulfide Reagent #2	181732
19.2N Sulfuric Acid, 100mL	203832
Free Chlorine Color Disc Test Kit, Model CN-66F	223102
Total Chlorine Color Disc Test Kit, Model CN-66T	223103
Sulfuric Acid Standard Solution, 5.25 N, 100 mL	244932
DPD Total Chlorine Reagent Powder Pillows, 25mL, pk/1000	1406428
DPD Total Chlorine Reagent Powder Pillows, 25mL, pk/100	1406499
DPD Free Chlorine Reagent Powder Pillows, 25mL, pk/1000	1407028
DPD Free Chlorine Reagent Powder Pillows, 25mL, pk/100	1407099
Chlorine (Free and Total) and pH Test Kit	1411100
Galvanic DO Probe O-ring	1857100
1720 Turbidimeter Lamp Assembly	1895000
DPD Free Chlorine Reagent Powder Pillows, 10mL, pk/300	2105503
DPD Free Chlorine Reagent Powder Pillows, 10mL, pk/1000	2105528
DPD Free Chlorine Reagent Powder Pillows, 10mL, pk/100	2105569
DPD Total Chlorine Reagent Powder Pillows, 10mL, pk/300	2105603
DPD Total Chlorine Reagent Powder Pillows, 10mL, pk/1000	2105628

2575 Enterprise Road, Clearwater, FL 33763-1102
Phone: 727.796.2355 / Fax: 727.791.2388
www.tampabaywater.org

DPD Total Chlorine Reagent Powder Pillows, 10mL, pk/100	2105669
1 Round Glass, 10mL, Cell with Cap	2122800
Glass sample cell, 25 mm round, 10-20-25 mL marks, pk/6	2401906
Sample Cell: 1 Round Glass 10mL	2427606
Sample Cells for 2100 Portable Turbidimeters	2434702
Portable Turbidimeter Sample Cells, Pack of 6	2434706
Chlorine (Total) test Kit, Model CN-21P	2444400
Gelex Secondary Standards Kit, 2100 Portable Turbidimeters	2464105
SpecCheck Secondary Gel Standards Set, Mono/Ammonia	2507500
Ozone AccuVac Ampules, MR, Pk/25	2517025
SPADS 2 (Arsenic Free) Flouride Reagent AccuVac Ampules, Pk/25	2527025
CL-17 Free Chlorine Reagent Kit	2556900
CL-17 Total Chlorine Reagent Kit	2557000
AmVer Low Ammonia Range Reagent Set	2604545
Total Inorganic Nitrogen Pretreatment Reagent Set	2604945
SpecCheck Secondary Gel Standards Set, DPD Chlorine - LR	2635300
Support Ring, 4.5-inch	2656300
StablCal Calibration Set for 2100P	2659405
StablCal Turbidity Standard, 20 NTU, 1000mL	2660153
StablCal Turbidity Standard, 800 NTU, 500mL	2660549
Nitrogen-Ammonia Reagent Set, Salicylate Method, 10mL	2668000
Alkalinity APA Reagent 2	2696653
Alkalinity APA Standard 1	2696753
Alkalinity APA Cleaning Solution	2697053
SpecCheck Standard, Ozone, 0-.75mg/L	2708000
SpecCheck Secondary Gel Standards Set, Fluoride	2712500
Mono APA Reagent 1	2776353
Mono APA Reagent 2	2776453
Mono APA Reagent 3	2776553
Mono APA Standard 1	2776653
Mono APA Standard 2	2776753
Reagent 1 (TISAB) for CA-610	2812811
CA-610 Reagents Set	2816900
Alkalinity APA Reagent 1	2826153
Alkalinity APA Standard 2	2826253
Mono APA Cleaning Solution	2876453
SpecCheck Secondary Gel Standards Set, DPD Chlorine - HR	2893300
1720E Turbidimeter w/ 2 Digital Channel SC-200	2976800
O-ring, Fluorocarbon .070W x 0864 ID APA6000 Oil Tight Seal, .88-in. Diameter	4078800 4221000

CL-17 Follower Block, Reagent	4274100
CL-17 Follower Block, Sample	4274200
1720 Turbidimeter Drain Plug	4411600
1720 Turbidimeter Calibration Cylinder	4415300
CA-610 Electrode Inner Fill Solution	4450126
Regulator, Non-relieving	4557500
APA Pressure Gauge (0 to 30 psi)	4566400
vv Fuse, 5A 250V Slow-blow 5 x 20MM	4693800
Sample Cell: 1 Round Plastic 10mL with 1cm Pathlength	4864302
APA6000 Alkalinity Analyzer	5100010
APA Mixing Module, 1mL	5102100
APA Mixing Module, 3mL	5102101
Aquatrend Faceplate Assembly	5102200
APA6000 Installation Kit	5104000
Aquatrend Interface Circuit Board	5109200
si CKT BD Assy, Controller #2 BD, APA 6000	5109601
APA6000 Backplane Cable	5116100
Tubing, TFZL, .030 ID X .062 OD, 2000 PSI	5117800
APA6000 Tool Kit	5129100
APA CO2 Scrubber Kit	5143100
Fuse, 1.6A 250V 5MM x 20MM	5208300
1720 Turbidimeter Photocell	5218000
1720 Turbidimeter ICE-PIC Verification Module, 1 NTU	5221500
1720 Turbidimeter ICE-PIC Verification Module, 20 NTU	5225000
CA-610 Pump Housing	5411700
CL-17 Chlorine Analyzer	5440002
CL-17 Main Circuit Board	5440400
CL-17 Preassembled Maintenance Kit	5444301
CL-17 Motor Assembly	5444600
CL-17 Cam/Coupler Assembly	5445200
Power Cord	5448800
APA6000 Ammonia/Monochloramine Analyzer	5500610
CL-17 Installation Kit	5516400
CA-610 Main Circuit Board	5526200
CA-610 Power Supply Circuit Board	5526400
Electrode Body, ISE, CA-610	5527700
Electrode, pH, CA-610	5528100
APA6000 Autoburette Module	5715000
APA Pump Piston Seal Retaining Ring	5715100
APA6000 Autoburette Piston Seals	5716300

APA Pump Piston Ceramic Guide	5716500
CA-610 Fluoride Analyzer	5740001
CA-610 Flow Cell/Pinch Plate	5740300
CA-610 Cam/Coupler Assembly	5741500
CA-610 Motor Assembly	5741600
CA-610 Follower Block	5741800
CA-610 Installation Kit	5742000
CA-610 Maintenance Kit	5742100
CA-610 Electrode Kit	5744800
CA-610 Electrode Tip Kit	5745100
CA-610 Fluoride Tip Assembly	5745100
Pocket Colorimeter II Chlorine	5870000
KTO: Pocket Colorimeter II Fluoride System	5870005
Pocket Colorimeter II, Chlorine (Free and Total) Plus pH	5870012
Pocket Colorimeter II, Chlorine (Free and Total), Mid Range/High Range	5870062
APA6000 Alkalinity Reagents Set	6001000
APA6000 Alkalinity Standards Set	6001100
APA6000 Ammonia/Monochloramine Reagent Set	6001400
APA6000 Ammonia/Monochloramine Standards Set	6001500
Galvanic Membrane DO Sensor Cartridge	6135200
Digital DO Flow Cell	6136300
APA Sample Conditioning Block	6200800
APA6000 Filter, Ceramic	6201100
APA Filter Quad Ring	6201200
APA6000 O-ring, Fluorocarbon	6201400
APA Filter Holder	6201900
Drain Block/Backpressure Regulator Assembly	6204700
APA6000 Valve Module Assembly	6205000
Colorimeter Assembly 600nm	6205801
Colorimeter Assembly 650nm	6205803
APA6000 Alkalinity Colorimeter Module	6206001
APA6000 Ammonia/Monochloramine Colorimeter Module	6206003
Seal Assy. Reagent Bottle w/ tube	6767500
Seal Assy. Reagent Bottle w/ tube 1L	6767520
Cover, Funnel, Process Analyzer	6773500
Assy, Capillary TBG, Process Analyzer	6786900
Kit, Fan Filter, Process Analyzer	6789100
Kit, Fan Plug, Process Analyzer	6789300
5500sc Modbus Module Kit	6792500

CL-17 Colorimeter Module	6867000
Cl-17sc Tubing Kit (pre-assembled)	8560400
Calibration Verification Kit	8568200
CL17sc Colorimetric Chlorine Analyzer with Standpipe Installation Kit, w/o Reagents	8572300
CL17sc Colorimetric Chlorine Analyzer with Pressure Regulator Installation Kit, w/o Reagents	8572400
CL17sc Colorimetric Chlorine Analyzer with Standpipe Installation Kit and Reagents for Free Chlorine	8572700
CL17sc Colorimetric Chlorine Analyzer with Standpipe Installation Kit and Reagents for Total Chlorine	8572800
CL17sc Colorimetric Chlorine Analyzer with Pressure Regulator Installation Kit and Reagents for Free Chlorine	8572900
CL17sc Colorimetric Chlorine Analyzer with Pressure Regulator Installation Kit and Reagents for Total Chlorine	8573000
Calibration Verification Refill Kit	8573200
TU5300sc Low Range Laser Turbidimeter	8626900
Chemkey, 25 Piece, Iron	8636000
Chemkey, 25 Piece, Total Alkalinity Hi Range	8636100
Chemkey, 25 Piece, Total Alkalinity Low Range	8636200
Chemkey, 25 Piece, Hardness Low Range	8636400
Chemkey, 25 Piece, OrthoPhosphate Hi Range	8636500
Chemkey, 25 Piece, OrthoPhosphate Low Range	8636600
Cover Assembly, UV, sc200	8809200
Assy. Probe, LDO Model	9020000
si Power Cord, Modified, North American	9179700
Flow Cell, 1" NPT Sensor	9180100
Door Assembly, Basic Front, sc200	9200800
Cover Assembly, UV and Sun Shield, sc200	9220600
Assembly, Union Mount, 1"NPT LDO	9257000
Smart Porbe Adapter for Hach 5500sc	9321000
4-20mA Output Expansion Module for SC-200 Controller	9334600
DR-900 Multiparameter Handheld Colorimeter	9385100
DR900 Multiparameter Portable Colorimeter	9385100
CUP, Sample, SL1000 (Rectangular)	9418100
Chemkey, 25 Piece, Total Ammonia	9425200
Chemkey, Verification, Chlorine	9427900
Chemkey, 25 Piece, Copper	9429200
Chemkey, 25 Piece, Nitrite	9429300
Chemkey, 25 Piece, Mono/Free Ammonia	9429600

SL1000 Portable Parallel Analyzer	9430000
Chemkey, Verification, System	9436800
Pocket Pro pH Tester	9531000
Assy, Y-strainer w/FTG	9560400
Kit, Maintenance, 5500sc AMC, 1 channel	9560501
Kit, Maintenance, 5500sc AMC, 2 channel	9560502
Valve, Check, 1/8" MNPT, 0.09 PSI, w/ Viton O-ring	9560800
Stir Bar, Teflon 8x3 MM	9563900
Kit, Installation, 5500sc AMC, AC, 1 CH	9565501
Kit, Installation, 5500sc AMC, AC, 2 CH	9565502
Filter, 40UM, 1/4", PP, 100 PSI	9566000
5500sc Funnel	9566100
Cover, Colorimeter PCBA, 5500sc AMC	9566400
Assy, Colorimeter, 5500sc AMC	9568500
Assy, Capillary TBG, Colorimeter, Red	9568601
Assy, Capillary TBG, Colorimeter, Blk	9568602
Filter, Disc, 100UM, 1"NPT	9623400
External Sample Filter for AMC5500sc	9623400
5500sc Reagent Bottle Tray	9640400
Assy, Pkg of Sample Pump Replacement, 5500sc AMC	9713300
5500sc AMC Colorimeter Cleaning Kit	25224000
KTO: 5500sc Ammonia Monochloramine Reagent Set	25233000
5500sc Reagent 1, Ammonia/Monochloramine	25234000
5500sc Reagent 2, Ammonia/Monochloramine	25235000
5500sc Reagent 3, Ammonia/Monochloramine	25236000
5500sc Standard 1, Ammonia/Monochloramine	25237000
5500sc Standard 2, Ammonia/Monochloramine	25238000
5500sc Acidic Surfactant Wash	25239000
Prognosys 5500sc AMC License Kit	25277000
2100Q Portable Turbidimeter	2100Q01
Standard Cell Solution for pHD pH Probes	25M1A1025-115
200 mV ORP Solution	25M2A1001-123
600mV ORP Solution	25M2A1002-123
Conductivity Reference Solution, 1000uS/cm	25M3A2000-119
Dissolved Oxygen Calibration Bags	276M1210
DR-850	48450-60
DR-890	48470-60
KTO: 5500sc Ammonia Monochloramine, 1 Channel	5500.AMC.1.KTO
KTO: 5500sc Ammonia Monochloramine, 2 Channel	5500.AMC.2.KTO
KTO: 5500sc Ammonia Monochloramine, 1 Channel, Ex Filter	5500.AMC.3.KTO

KTO: 5500sc Ammonia Monochloramine, 2 Channel, Ex Filter	5500.AMC.4.KTO
Clark DO Membrane Cartridge	5500A1020-001
Digital 5740sc Galvanic DO Sensor	5740DOB
Galvanic DO Sensor	5740DOB
EZ4004 Reagent Containers, 2.5L	APPAZ0015000
EZ4004 Reagent Containers, 5L	APPAZ0015105
EZ4004 Reagent Containers, 10L	APPAZ0015200
Acid Solution for EZ4004, 0.025 N HCL Solution, 2L	APPC4004-01
Acid Solution for EZ4004, 0.05 N HCL Solution, 25% Range, 2L	APPC4004-02
Acid Solution for EZ4004, 0.1 N HCL Solution, 50% Range, 2L	APPC4004-03
Acid Solution for EZ4004, 0.2 N HCL Solution, Standard Range, 2L	APPC4004-04
Digital Contacting Conductivity Probe	D3422C3
Combination pH Sensor w/ Digital Gateway	DPC1R2A
Digital pH Probe - Peek Material	DPD1P1
Combination ORP Sensor w/ Digital Gateway	DRC1R5N
Digital Differential ORP Sensor	DRD1P5
EZ3507 Fluoride Analyzer, 1 Stream, Modbus RS485	EZ3507.99001C02
Ez4004 Total Alkalinity Analyzer, 1 stream, Modbus RS485	EZ4004.99001C02
LDO Probe, STD, w/1m Cable	LDO10101
sensION156	LPV4049.97.0002
Ultraturb Seawater sc sensor w/5 m cable	LPV415.99.22002
TU5200, Lab Turb with RFID, EPA	LPV442.99.03012
Automatic Cleaning Module for TU5300sc and TU5400sc	LQV159.97.00002
TU5300sc Turb Automatic Cleaning Module	LQV159.99.00002
TU5300sc Turb, Flow Sensor	LQV160.99.00002
2 Digital Channel SC-200 Controller	LXV404.99.00552
Solitax Ts Line Sensor with Wiper	LXV423.99.00100
TU5300sc Turb EPA	LXV445.99.10112
TU5300sc Turb, Sys Chk, EPA	LXV445.99.11112
TU5300sc Turb, Sys Chk, RFID, EPA	LXV445.99.12112
TU5300sc Turb, Flow, EPA	LXV455.99.20112
TU5300sc Turb, Sys Chk, Flow, EPA	LXV455.99.21112
TU5300sc Turb, Flow, RFID, EPA	LXV455.99.22112
TU5300sc Turb, Sys Chk, Flow, RFID, EPA	LXV455.99.23112
TU5300sc Turb, Clean, EPA	LXV455.99.30112
TU5300sc Turb, Sys Chk, Clean EPA	LXV455.99.31112
TU5300sc Turb, Clean, RFID, EPA	LXV455.99.32112
TU5300sc Turb, Sys Chk, Clean, RFID, EPA	LXV455.99.33112
TU5300sc Turb, Flow, Clean, EPA	LXV455.99.50112
TU5300sc Turb, Sys Chk, Flow, Clean, EPA	LXV455.99.51112

TU5300sc Turb, Flow, Clean, RFID, EPA	LXV455.99.52112
TU5300sc Turb, Sys Chk, Flow, Clean, RFID, EPA	LXV455.99.53112
sc4500 Controller,Claros-enabled, 5x mA Output, 2 digital Sensors, 100-240 VAC, without power cord	LXV525.99AA1551
Process Head w/o vial W/Connect	LYZ916
TU5300sc Turb, Operator RFID Tags	LZQ066
TU5300sc Turb, RFID Stickers, Qty 3	LZQ067
Ultraturb Wiper Blades Set	LZV275
Ultraturb Filters with Apparatus for Zero Calibration	LZV325
CVM Ultraturb Verification Module	LZV414.00.40000
Ultraturb Calibration/Cleaning Kit	LZV451
Ultraturb Wiper Motor	LZV473
Solitax Turbidity Wiper Set	LZX050
Solitax Turbidity Desiccant Pack Set	LZX301
Ultraturb Desiccant Bag .5U	LZX303
Ultraturb Desiccant Bag 4U	LZX304
Solitax Turbidity Seals Kit	LZX421
Process Vial	LZY834
TU5300sc Turb, Stablcal Sealed Vials 10, 20 and 600 NTU with RFID	LZY835
TU5300sc Turb, Stablcal Sealed Vial 20 NTU with RFID	LZY837
TU5300sc Turb, Service Bracket Kit	LZY873
Desiccant Cratridge for TU5300sc and TU5400sc	LZY876
TU5300sc Turb, Stablcal Sealed Vials 10, 20 and 600 NTU without RFID	LZY898
TU5300sc Turb, Stablcal Sealed Vial 20 NTU without RFID	LZY899
TU5300sc Turb, Stablcal Glass Verification Rod <0.1 NTU	LZY901
TU5300sc Turb Vial Wiper	LZY903
TU5300sc Turb, Calibration Lid	LZY904.97.00002
TU5300sc Turb, Maintenance Kit	LZY907.97.00002
TU5300sc Turb, Vial Compartment Wiper	LZY910
Nut for Online Vial TU5XXX	LZY917
IntelliCAL™ MTC101 Standard Gel Filled ORP Electrode	MTC10101
IntelliCAL™ PHC201 Standard Gel Filled pH Electrode	PHC20101
Peel Plate Hetrotropic Plate Count Medial, 50 Tests	PP-HPC-50
Peek pH Salt Bridge, 5 pack	SB-P1SV-005
Ryton pH Salt Bridge, 5 pack	SB-R1SV-005
Ultraturb PCB, Hallsensor	YAB011

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.15

DATE: October 2, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Paul Stanek, Chief Operating Officer

SUBJECT: Amendment Two to Roofing Services, Contract No. 2024-012 with Advanced Roofing, Inc., to include Option Year Two and Price Escalation - *Approve*

SUMMARY

Every year, a variety of short-term roofing repair needs occur requiring Tampa Bay Water to respond in a timely manner. Approval of Amendment Two to this contract will allow continued timely roofing repairs on an as-needed basis.

SUGGESTED ACTION

Approve Amendment Two to Contract No. 2024-012 with Advanced Roofing, Inc. to include an increase in the price and to exercise renewal option year two.

COST/FUNDING SOURCE

Uniform Rate. Not to Exceed Fiscal Year 2026 and 2027 budgeted funds.

DISCUSSION

Tampa Bay Water uses Roofing Services throughout the agency. Contract No. 2024-012 was competitively bid and awarded to Advanced Roofing, Inc. on November 13, 2023. The terms of the original contract provide the option to renew the contract for an additional three (3) years, one (1) year at a time, or any portion thereof. The original expiration date of the Contract was November 30, 2024.

The Board approved Renewal Option Year One to the Contract on October 21, 2024 and the Contract is set to expire on November 30, 2025.

As part of the option year renewal process, Advanced Roofing Inc. informed Tampa Bay Water that costs have increased. Advanced Roofing, Inc. requested a price increase of 2.7% based on the Consumer Pricing Index (CPI) as well as industry sources for raw material, labor and transportation. Research confirmed that it would be in the best interest of Tampa Bay Water to exercise the second option year renewal to include the price increase, instead of pursuing a new procurement.

The proposed amendment has been approved as to form by Tampa Bay Water General Counsel's Office.

BACKGROUND

Tampa Bay Water owns over 238 buildings such as process buildings, pump stations and well houses that must be maintained in order to support reliable water supply to member governments. In the past, roofing repair and replacement was undertaken on a case by case basis, with inherent delays in bidding and awarding work. An as-needed contractor allows the agency to quickly react to these emergent needs.

Attachment (1)

2024-012 Advanced Roofing Amendment 2 - Vendor Signed

SECOND AMENDMENT TO CONTRACT NO. 2024-012

This Second Amendment is made and entered into this __ day of_____, 2025, by and between **Tampa Bay Water, A Regional Water Supply Authority**, an interlocal governmental agency created and existing pursuant to Sections 163.01, 373.713 and 373.715, Florida Statutes, acting by and through its Board of Directors, the governing board thereof ("Tampa Bay Water"), and **Advanced Roofing, Inc.**, a corporation in the State of Florida, ("Contractor").

WHEREAS, Tampa Bay Water retained Contractor for Roofing Services under Contract No. 2024-012, hereinafter "the Contract"; and

WHEREAS, Tampa Bay Water and Contractor entered into a contract for Roofing Services, and it was approved by the Board of Directors on November 13, 2023; and

WHEREAS, Tampa Bay Water and Contractor entered into the First Amendment to exercise the first option renewal year and it was approved by the Board of Directors on October 21, 2024; and

WHEREAS, Tampa Bay Water desires to continue to utilize Contractor for Roofing Services based upon the terms and conditions set forth in the Agreement, as hereby amended.

NOW, THEREFORE, in consideration of the foregoing premises, which shall be deemed an integral part of this Second Amendment to the Contract, and for other good and valuable consideration, the sufficiency and adequacy of which are hereby acknowledged, Tampa Bay Water and Contractor, intending to be legally bound, agree as follows:

1. The Contract is hereby amended to include a price escalation of 2.7% in accordance with Part III, Section 7, PRICE ESCALATION/DE-ESCALATION of the Contract.

2. In accordance with Section 2.0, TERM of the Contract, Tampa Bay Water and the Contractor agree to exercise the second, one-year option to renew the Contract under terms acceptable to both parties, as amended herein, through November 30, 2026. By signing this document, the Contractor agrees to exercise this Contract renewal option.

3. This Second Amendment includes the addition of the attached Contractor Affidavit as a required component of the Contract.

4. This Second Amendment is hereby made a part of, and incorporated in its entirety, into the Contract.

5. In all other respects, the Contract, is hereby reaffirmed by the parties and remains in full force and effect.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed by their duly qualified representatives.

WITNESSES:

Signature

Maria Golovko
Print Name

Signature

Janet Yera
Print Name

ADVANCED ROOFING, INC.

By: Bill Lester

Its: Branch Manager

Date: 9/30/2025

ADVANCED ROOFING INC CORPORATE SEAL 1983 FLORIDA

(CORPORATE SEAL)

ATTEST:

Charles H. Carden, General Manager

TAMPA BAY WATER, A Regional Water Supply Authority

By: _____

Its: _____

Date: _____

(SEAL)

APPROVED AS TO FORM:

General Counsel

TAMPA BAY WATER
CONTRACTOR AFFIDAVIT

STATE OF Florida
COUNTY OF Hillsborough

BEFORE ME, the undersigned authority, appeared Bill Lester, who first being duly sworn hereby swears or affirms as follows:

1. I make this affidavit on personal knowledge.
2. I am over the age of 18 years and otherwise confident to make this Affidavit.
3. I am the Branch Manager of Advanced Roofing, Inc. (the "Contractor").
4. I am authorized by Michael Kornahrens, Vice President to make this Affidavit on behalf of Contractor.

E-Verify

1. Contractor acknowledges that Section 448.09, Florida Statutes, makes it unlawful for any person to knowingly employ, hire, recruit, or refer, for private or public employment, an alien who is not duly authorized to work in the United States.
2. Contractor acknowledges that Section 448.095, Florida Statutes, prohibits public employers, Consultants/Contractors, and subcontractors from entering into a contract unless each party to the contract registers and uses E-Verify.
3. Contractor is in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
4. Contractor understands it shall remain in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes, during the term of any contract with Tampa Bay Water.
5. Consultant's/Contractor's subcontractors are in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
6. Contractor shall ensure compliance with the requirements of Sections 448.09 and 449.095, Florida Statutes, by any and all of its subcontractors.
7. Neither the Contractor nor any subcontractor of Contractor has had a contract terminated by a public employer for violating Section 448.095, Florida Statutes, within the year preceding the date of this Affidavit.
8. If the Contractor or any subcontractor of Contractor has a contract terminated by a public employer for any such violation during the term of any contract with Tampa Bay Water, it shall provide immediate notice thereof to Tampa Bay Water.

Anti-Human Trafficking

In accordance with Section 787.06(13), Florida Statues, the undersigned, on behalf of the entity listed below ("Entity"), hereby attests under penalty of perjury that Entity does not use coercion for labor or services as defined in Section 787.06, Florida Statutes, entitled "Human Trafficking".

Scrutinized Companies

A. Pursuant to Subsections 287.133(2) and (3), Florida Statutes, Respondent acknowledges that a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a proposal on a Contract provide any goods or services to a public entity, may not submit a Proposal on a Contract with a public entity for the construction or repair of a public building or public work, may not submit Proposals on leases of real property to a public entity, may not be awarded or perform work as a Contractor, supplier, subcontractor, or consultant under a Contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017 Florida Statutes, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

B. Pursuant to Subsection 287.134(2)(a), Florida Statutes, Respondent acknowledges that an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as

a Contractor, supplier, subcontractor, or consultant under a contract with any public entity; an may not transact business with any public entity.

C. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that a company that has been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or the Scrutinized Companies that Boycott Israel List or a company that engages in a boycott of Israel, is ineligible and may not submit a bid, proposal, or enter into or renew a contract with an agency for goods or services of $1 million or more. At the time of submission of a proposal for a contract or contract renewal for goods or services of $1 million or more, the company must certify that it is not on either such List and further that it does not have business operations in Cuba or Syria as required by Section 287.135(5), Florida Statutes.

D. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any contract for goods or services of $1 million or more if the awarded company is found to have submitted a false certification as provided under Section 287.135(5), been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or been engaged in Business operations in Cuba or Syria.

E. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any contract for good or services of any amount if the awarded company is found to have or been placed on the Scrutinized Companies that Boycott Israel List or is engaged in a boycott of Israel.

Foreign Countries of Concern

Pursuant to Section 287.138, Florida Statues, Tampa Bay Water may not enter into a contract with an entity that gives access to an individual's personal identifying information if the entity is owned, controlled or organized under the laws of a Foreign Country of Concern which includes the People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolas Maduro, the Syrian Arab Republic, or any other entity or agency under the significant control of such Foreign Country of Concern.

Signature of Affiant
on behalf of Contractor

By: Bill Lester
As its: Branch Manager
Dated: 9/30/2025

Sworn to (or affirmed) and subscribed before me by means of ☑ physical presence or ☐ online notarization, this 30 day of September, 2025, by Bill Lester, on behalf of Advanced Roofing, who is personally known to me or who has produced _____ as identification.

Katherine L. Conway
Comm.: HH 577784
Expires: Aug. 1, 2028
Notary Public - State of Florida

Print Name: Katherine L Conway
Notary Public of the State of Florida

My Commission Expires: 08/01/2028

EXPERIENCE MATTERS.

ADVANCED ROOFING inc

CC-C024413 ESTABLISHED 1983

July 19, 2024

Lynn Lozano
Tampa Bay Water
2575 Enterprise Road
Clearwater, FL 33763

Re: Tampa Bay Water Contract No 2024-012 – Roofing Service Contract Renewal

Jonathan,

I am the Vice President of Advanced Roofing Inc. Please accept this letter of authorization that Mr. Bill Lester, Branch Manager of our Tampa Office is Authorized to sign on behalf of the company for the above renewal contract that we submitted.

Sincerely

Michael Kornahrens
Executive Vice President

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 9/30/2025

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Acrisure Southeast Partners Insurance Services LLC
1317 Citizens Blvd
Leesburg FL 34748

License#: BR-1796553
ADVAROO-06

CONTACT NAME: Jalen Belle-Walker
PHONE (A/C, No, Ext): 800-845-8437 **FAX (A/C, No):**
E-MAIL ADDRESS: jbelle-walker@acrisure.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Greenwich Insurance Company	22322
INSURER B : Starr Indemnity & Liability Company	38318
INSURER C : Bridgefield Employers Insurance Company	10701
INSURER D : Continental Casualty Company	20443
INSURER E : Columbia Casualty Company	31127
INSURER F : Indian Harbor Insurance Company	36940

INSURED
Advanced Roofing Inc
4909 W Knollwood Street
PO Box 15676
Tampa FL 33634

COVERAGES **CERTIFICATE NUMBER:** 1253178844 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X **COMMERCIAL GENERAL LIABILITY**			CGS740979406	1/1/2025	1/1/2026	EACH OCCURRENCE	$ 2,000,000
	[ ] CLAIMS-MADE [X] OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 300,000
	X Contractual Incl						MED EXP (Any one person)	$ 10,000
	X Broad Form PD						PERSONAL & ADV INJURY	$ 2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 4,000,000
	[ ] POLICY [X] PRO-JECT [X] LOC						PRODUCTS - COMP/OP AGG	$ 4,000,000
	[ ] OTHER:							$
A	**AUTOMOBILE LIABILITY**			CAH740979506	1/1/2025	1/1/2026	COMBINED SINGLE LIMIT (Ea accident)	$ 2,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$
	[ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	X HIRED AUTOS ONLY [X] NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
							PIP	$ 10,000
B	[ ] **UMBRELLA LIAB** [X] OCCUR			1000588143251	1/1/2025	1/1/2026	EACH OCCURRENCE	$ 10,000,000
	X **EXCESS LIAB** [ ] CLAIMS-MADE						AGGREGATE	$ 10,000,000
	[ ] DED [X] RETENTION $ 0							$
C	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** Y / N	N / A		830-56020	1/1/2025	1/1/2026	X PER STATUTE [ ] OTH-ER	
	ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? [Y] **(Mandatory in NH)**						E.L. EACH ACCIDENT	$ 1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
D	Installation Floater			4016260407	1/1/2025	1/1/2026	Per Jobsite/Aggregate	$5.5M/$15,000,000
E	Contractors Errors & Omissions			C 6018114505	1/1/2025	1/1/2026	Ea Claim/Aggregate	$5000000/$5000000
F	Contractors Poll incl Mold			CEO744615206	1/1/2025	1/1/2026	Ea Claim/Aggregate	$2000000/$2000000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

.

CERTIFICATE HOLDER

Tampa Bay Water
2575 Enterprise Road
Clearwater FL 33763-1102

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

© 1988-2015 ACORD CORPORATION. All rights reserved.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.16

DATE: October 3, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Paul Stanek, Chief Operating Officer

SUBJECT: Amendment Two to Water Storage Tank Cleaning & Inspection Services, Contract No 2024-008 with In Depth, Inc. to include a Price Escalation - *Approve*

SUMMARY

Tampa Bay Water has multiple water storage, surge and contact tanks throughout the Agency. These tanks are required to be inspected and cleaned by Chapter 62-555.350 F.A.C. The current contract is set to expire on March 30, 2026. Due to recent changes to the international diving standards related to crew sizes for potable water diving operations, the current contractor has requested a pricing increase.

SUGGESTED ACTION

Approve Amendment Two to Contract No. 2024-008 with In Depth, Inc. to include an increase in the price of services.

COST/FUNDING SOURCE

Uniform Rate. Fiscal Year 2026 budgeted funds.

DISCUSSION

Tampa Bay Water uses the services of a qualified contractor to perform online or offline cleaning, inspection, preventative maintenance and emergency repairs for clearwells, chlorine contact and raw or finished water storage tanks at various Tampa Bay Water treatment facilities located within

Hillsborough, Pasco and Pinellas counties.

Contract number 2024-008 for Water Storage Tank Cleaning & Inspection Services was competitively bid and awarded to In Depth, Inc. on October 16, 2023. The original expiration date on the contract was March 30, 2025. The Board approved Renewal Option Year One (Amendment One) to the Contract on March 17, 2025.

On August 8, 2025, In Depth Inc. staff submitted a request for a rate adjustment based on updated Consensus Standards for Commercial Diving and Underwater Operations released by the Association of Diving Contractors International (ADCI). The updated Standards now establish a 4-person dive team as the recognized minimum for potable water diving operations. The original bid pricing for this contract was based on the rate of a 3-person dive crew. Research confirmed that it would be in the best interest of Tampa Bay Water to amend Contract 2024-008 to include the price increase, instead of pursuing a new procurement.

The proposed amendment has been approved as to form by Tampa Bay Water General Counsel's Office.

Attachment (1)

2024008 - In Depth, Inc. - Amendment 2

SECOND AMENDMENT TO CONTRACT NO. 2024-008

This Second Amendment is made and entered into this __ day of_____, 2025, by and between **Tampa Bay Water, A Regional Water Supply Authority**, an interlocal governmental agency created and existing pursuant to Sections 163.01, 373.713 and 373.715, Florida Statutes, acting by and through its Board of Directors, the governing board thereof ("Tampa Bay Water"), and **In Depth, Inc.**, a corporation in the State of Florida ("Contractor").

WHEREAS, Tampa Bay Water retained Contractor for Water Storage Tank Cleaning & Inspection Services under Contract No. 2024-008, hereinafter "the Contract"; and

WHEREAS, Tampa Bay Water and Contractor, entered into a contract for Water Storage Tank Cleaning & Inspection Services and it was approved by the Board of Directors on October 16, 2023; and

WHEREAS, Tampa Bay Water and Contractor entered into the First Amendment to exercise the year one renewal option and it was approved by the Board on March 17, 2025; and

WHEREAS, Tampa Bay Water desires to continue to utilize Contractor for additional services for the Project based upon the terms and conditions set forth in the Agreement, as hereby amended.

NOW, THEREFORE, in consideration of the foregoing premises, which shall be deemed an integral part of this Second Amendment to the Contract, and for other good and valuable consideration, the sufficiency and adequacy of which are hereby acknowledged, Tampa Bay Water and Contractor, intending to be legally bound, agree as follows:

1. The Contract is hereby amended to include a unit price escalation for Online Cleaning & Inspection Services, as referenced in the table below. The increase is based on the Association of Diving Contractors International (ADCI) released and updated Consensus Standards for Commercial Diving and Underwater Operations, and is in accordance with Part III, Section 7, Price Escalation/De-Escalation of the Contract.

Item	Unit of Measure	Current Unit Price	Requested Unit Price
Online Cleaning Services	Hourly Rate	$410.00	$545.00
Online Inspection Services	Each	$3,250.00	$4,150.00

2. This Second Amendment includes the addition of the attached Contractor Affidavit as a required component of the Contract.

3. This Second Amendment is hereby made a part of, and incorporated in its entirety, into the Contract.

4. In all other respects, the Contract, is hereby reaffirmed by the parties and remains in full force and effect.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed by their duly qualified representatives.

WITNESSES:

_____
Signature

_____
Print Name

_____
Signature

_____
Print Name

IN DEPTH, INC.

By:_____

Its:_____

Date:_____

(CORPORATE SEAL)

ATTEST:

_____
Charles H. Carden, General Manager

TAMPA BAY WATER, A Regional Water Supply Authority

By: _____

Its: _____

Date: _____

APPROVED AS TO FORM:

(SEAL)

_____
General Counsel

TAMPA BAY WATER
CONTRACTOR AFFIDAVIT

STATE OF _____
COUNTY OF _____

BEFORE ME, the undersigned authority, appeared _____, who first being duly sworn hereby swears or affirms as follows:

1. I make this affidavit on personal knowledge.
2. I am over the age of 18 years and otherwise confident to make this Affidavit.
3. I am the _____ of _____ (the "Contractor").
4. I am authorized by _____ to make this Affidavit on behalf of Contractor.

E-Verify

1. Contractor acknowledges that Section 448.09, Florida Statutes, makes it unlawful for any person to knowingly employ, hire, recruit, or refer, for private or public employment, an alien who is not duly authorized to work in the United States.
2. Contractor acknowledges that Section 448.095, Florida Statutes, prohibits public employers, Consultants/Contractors, and subcontractors from entering into a contract unless each party to the contract registers and uses E-Verify.
3. Contractor is in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
4. Contractor understands it shall remain in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes, during the term of any contract with Tampa Bay Water.
5. Contractor's subcontractors are in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
6. Contractor shall ensure compliance with the requirements of Sections 448.09 and 449.095, Florida Statutes, by any and all of its subcontractors.
7. Neither the Contractor nor any subcontractor of Contractor has had a contract terminated by a public employer for violating Section 448.095, Florida Statutes, within the year preceding the date of this Affidavit.
8. If the Contractor or any subcontractor of Contractor has a contract terminated by a public employer for any such violation during the term of any contract with Tampa Bay Water, it shall provide immediate notice thereof to Tampa Bay Water.

Anti-Human Trafficking

In accordance with Section 787.06(13), Florida Statues, the undersigned, on behalf of the entity listed below ("Entity"), hereby attests under penalty of perjury that Entity does not use coercion for labor or services as defined in Section 787.06, Florida Statutes, entitled "Human Trafficking".

Scrutinized Companies

A. Pursuant to Subsections 287.133(2) and (3), Florida Statutes, Respondent acknowledges that a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a proposal on a Contract provide any goods or services to a public entity, may not submit a Proposal on a Contract with a public entity for the construction or repair of a public building or public work, may not submit Proposals on leases of real property to a public entity, may not be awarded or perform work as a Contractor, supplier, subcontractor, or consultant under a Contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017 Florida Statutes, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

B. Pursuant to Subsection 287.134(2)(a), Florida Statutes, Respondent acknowledges that an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as

a Contractor, supplier, subcontractor, or consultant under a contract with any public entity; an may not transact business with any public entity.

C. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that a company that has been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or the Scrutinized Companies that Boycott Israel List or a company that engages in a boycott of Israel, is ineligible and may not submit a bid, proposal, or enter into or renew a contract with an agency for goods or services of $1 million or more. At the time of submission of a proposal for a contract or contract renewal for goods or services of $1 million or more, the company must certify that it is not on either such List and further that it does not have business operations in Cuba or Syria as required by Section 287.135(5), Florida Statutes.

D. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any contract for goods or services of $1 million or more if the awarded company is found to have submitted a false certification as provided under Section 287.135(5), been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or been engaged in Business operations in Cuba or Syria.

E. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any contract for good or services of any amount if the awarded company is found to have or been placed on the Scrutinized Companies that Boycott Israel List or is engaged in a boycott of Israel.

Foreign Countries of Concern

Pursuant to Section 287.138, Florida Statues, Tampa Bay Water may not enter into a contract with an entity that gives access to an individual's personal identifying information if the entity is owned, controlled or organized under the laws of a Foreign Country of Concern which includes the People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolas Maduro, the Syrian Arab Republic, or any other entity or agency under the significant control of such Foreign Country of Concern.

_____
Signature of Affiant
on behalf of Contractor

By: _____
As its: _____
Dated: _____

Sworn to (or affirmed) and subscribed before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20___, by _____, on behalf of _____, who is personally known to me or who has produced _____ as identification.

_____

Print Name: _____
Notary Public of the State of Florida

My Commission Expires:

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.17

DATE: October 7, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Paul Stanek, Chief Operating Officer

SUBJECT: Janitorial Services, Contract No. 2026700 with Flagship Aviation Services, LLC - *Approve*

SUMMARY

Tampa Bay Water desires to piggyback the existing contract between the Hillsborough County Aviation Authority and Flagship Aviation Services, LLC for Agency-wide (8 locations) Janitorial Services. Staff recommends awarding a single contract for these services.

SUGGESTED ACTION

Approve Contract No. 2026700 with Flagship Aviation Services, LLC for janitorial services.

COST/FUNDING SOURCE

Uniform Rate. Not to exceed annually budgeted funds (Contract amount is $221,448.00 plus consumables).

DISCUSSION

To obtain the benefits of volume purchases or reduce administrative expenses and time when procuring similar goods or services, Tampa Bay Water may utilize a process commonly known as "piggybacking." This term refers to the use of competitive Bids or RFP's obtained by other governmental entities.

In accordance with authority granted by Chapter 287 F.S. and Purchasing Policy Resolution 2015-012, Tampa Bay Water may "piggyback" any purchasing agreement, of other special districts, municipalities, or counties, if the purchasing agreement was procured by a process that would have met the procurement requirements of Tampa Bay Water and are otherwise in compliance with general law, regardless of whether or not the purchasing agreement contains a clause allowing other governmental entities to "piggyback."

Agency staff has evaluated a contract entered into by Hillsborough County Aviation Authority and Flagship Aviation Services, LLC for Janitorial Services and found that it accurately meets the requirements of Tampa Bay Water and pricing is fair and reasonable. The contract was awarded to Flagship Aviation Services, LLC and commenced on January 1, 2025 as a four year contract which includes two (2), one-year renewal options. If all such renewals are exercised, this contract will have a final termination date of December 31, 2029. Staff recommends approval of Contract 2026700 for Janitorial Services, with Flagship Aviation Services, LLC in an amount not to exceed annually budgeted funds (Contract amount is $221,448.00 plus consumables).

The Contract is attached and has been approved as to form by Tampa Bay Water General Counsel's Office.

BACKGROUND

Tampa Bay Water currently contracts for Agency-wide Janitorial Services at seven locations. Under this contract, eight agency office locations will have a janitorial services program in place. Continued outsourcing of Janitorial Services and expanding the program, to include one additional site (8 locations total), is recommended.

Attachment (1)

2026700 Flagship Aviation Services LLC-Final1

TAMPA BAY WATER, A REGIONAL WATER SUPPLY AUTHORITY
CONTRACT NO. 2026700

This Contract is made and entered into this ____ day of _____, 2025, by and between **Tampa Bay Water, A Regional Water Supply Authority**, an interlocal governmental agency created and existing pursuant to Sections 163.01, 373.713 and 373.715, Florida Statutes, acting by and through its Board of Directors, the governing board thereof ("Tampa Bay Water"), and **Flagship Aviation Services, LLC**, A Corporation in the State of Delaware and licensed to do business in the State of Florida, "Contractor".

WHEREAS, Tampa Bay Water desires to retain Contractor on the date noted above for Janitorial Services; and

WHEREAS, Tampa Bay Water selected Contractor in accordance with the provisions of Tampa Bay Water's Purchasing Manual and applicable provisions of Florida law; and

WHEREAS, Tampa Bay Water desires to retain Contractor for services based upon the terms and conditions set forth in Contract between Contractor and Hillsborough County Aviation Authority, attached hereto as Exhibit A (hereinafter referred to as "the Master Contract"); and

WHEREAS, Contractor agrees to perform the services described in the attached Exhibit B;

NOW, THEREFORE, in consideration of the foregoing premises, which shall be deemed an integral part of this Contract, and for other good and valuable consideration, the sufficiency and adequacy of which are hereby acknowledged, Tampa Bay Water and Contractor, intending to be legally bound, agree as follows:

1. The recitations set forth are true and correct and incorporated by reference into this Contract.
2. Contractor shall perform the services described in the attached Exhibit B for the compensation described therein.
3. This Contract shall remain effective until the termination of the Master Contract between the Contractor and Hillsborough County Aviation Authority, scheduled to continue through December 31, 2029, which includes two (2) one-year renewal options, and upon the same terms and conditions as contained in the Master Contract, as supplemented by Sections 5 through 10 hereof.
4. The contract value shall not exceed approved annually budgeted funds.
5. PUBLIC RECORDS
    a. Contractor acknowledges the agency's legal obligation in accordance with Chapter 119 of the Florida Statutes, to respond to all public records requests in a timely manner and expressly waives any right to contest, impede, prevent or delay such disclosure, or to initiate any proceeding that may have the effect of impeding, preventing or delaying such disclosure, unless the Contractor establishes its right to a public records exception. It is the responsibility of the Contractor alone to establish its right to any such exception. Under no circumstances will Tampa Bay Water be responsible or liable to a Contractor or any other party as a result of disclosing any such information or materials.
    b. Disclosure of requested information will be determined in accordance with Florida laws, rules and regulations. Contractors/Consultants are informed that Tampa Bay Water is subject to the Florida Public Records and Sunshine Laws.
    c. Contractor, acknowledges the following conditions will be made a part of the contract.

ii. Upon request from Tampa Bay Water's custodian of public records, Contractor shall provide Tampa Bay Water with a copy of the requested public records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provide in Chapter 119, Florida Statutes, or as otherwise provided by law.

iii. Contractor shall ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the Contract term and following completion of the Contract if the Contractor does not transfer the records to Tampa Bay Water.

iv. Upon completion of the Contract, Contractor shall transfer, at no cost, to Tampa Bay Water all public records in the possession of the Contractor or keep and maintain public records required by Tampa Bay Water to perform the service under this contract. If the Contractor transfers all public records to Tampa Bay Water upon completion of the contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to Tampa Bay Water, upon request from the agency's custodian of public records, in a format that is compatible with the information technology systems of the agency.

d. Contractor further understands that the following instructions will apply throughout the life of the contract.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S/CONSULTANT'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE AGENCY'S CUSTODIAN OF PUBLIC RECORDS VIA PHONE (727) 796-2355 OPTION 6; EMAIL RECORDS@TAMPABAYWATER.ORG; OR MAIL AT 2575 ENTERPRISE ROAD, CLEARWATER, FLORIDA 33763.

6. CONVICTED VENDOR, DISCRIMINATORY VENDOR LISTS, AND SCRUTINIZED COMPANIES LIST

Affidavit, included herein as Exhibit C, must be completed by Contractor to attest to this section.

a. Pursuant to Subsections 287.133(2) and (3), Florida Statutes, Bidder acknowledges that a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid, proposal, or reply on a Contract, provide any goods or services to a public entity, may not submit a bid, proposal, or reply on a Contract with a public entity for the construction or repair of a public building or public work, may not submit bids, proposals, or replies on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a Contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017 Florida Statutes, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

b. Pursuant to Subsection 287.134(2)(a), Florida Statutes, Bidder acknowledges that an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity.

c. Pursuant to Section 287.135, Florida Statutes, Bidder acknowledges that a company that has been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or the Scrutinized Companies that Boycott Israel List or a company that engages in a boycott of Israel, is ineligible and may not submit a bid, proposal, or enter into or renew a contract with an agency for goods or services of $1 million or more. At the time of submission of a bid, proposal or reply for a contract or contract renewal for goods or services of $1 million or more, the company must certify that it is not on either such list and further that it does not have business operations in Cuba or Syria as required by Section 287.135(5), Florida Statutes.

d. Pursuant to Section 287.135, Florida Statutes, Bidder acknowledges that Tampa Bay Water has the option to terminate any contract for goods or services of $1 million or more if the awarded company is found to have submitted a false certification as provided under Section 287.135(5), been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or been engaged in Business operations in Cuba or Syria.

e. Pursuant to Section 287.135, Florida Statutes, Bidder acknowledges that Tampa Bay Water has the option to terminate any contract for goods or services of one hundred thousand dollars ($100,000.00) or more if the awarded company is found to have or been placed on the Scrutinized Companies or Other Entities that Boycott Israel List or is engaged in a boycott of Israel.

7. EMPLOYEE VERIFICATION SYSTEM

In accordance with Section 448.095, Florida Statutes, the Contractor agrees to register with and utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired during the term of the award/contract for the services specified in the award/contract. Affidavit, included herein as Exhibit C, must be completed by Contractor to attest to this section. The Contractor must also include a requirement in subcontracts that the subcontractor must register with and utilize the E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the award/contract term. If the Contractor enters into a contract with a subcontractor, the subcontractor must provide the Contractor with an affidavit stating that the subcontractor does not employ, contract with, or subcontract with an unauthorized alien. The Contractor shall maintain a copy of such affidavit for the duration of the award/contract. If Tampa Bay Water has a good faith belief that the Contractor has knowingly violated Section 448.09(1), Florida Statutes, Tampa Bay Water shall terminate the Contract with the Contractor, and the Contractor may not be awarded a contract with Tampa Bay Water for at least 1 year after the date on which the award/contract was terminated. The Contractor is liable for any additional costs incurred by Tampa Bay Water as a result of the termination of the award/contract. If Tampa Bay Water has a good faith belief that a subcontractor knowingly violated the law, but the Contractor has otherwise complied with the law, Tampa Bay Water shall promptly notify the Contractor and order the Contractor to immediately terminate the award/contract with the subcontractor.

8. FOREIGN COUNTRIES OF CONCERN

Pursuant to Section 287.138, Florida Statutes, Tampa Bay Water may not enter into a Contract with an entity that gives access to an individual's personal identifying information if the entity is owned, controlled or organized under the laws of a Foreign Country of Concern which includes the: People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolas Maduro, the Syrian Arab Republic, or any other entity or agency under the significant control of such Foreign Country of Concern. Affidavit, included herein as Exhibit C, must be completed by Contractor to attest to this section.

9. ANTI-HUMAN TRAFFICKING

In accordance with Section 787.06, Florida Statutes, the Contractor must provide Tampa Bay Water with an affidavit regarding Anti-Human Trafficking. Affidavit, included herein as

Exhibit C, must be completed by Contractor to attest, under penalty of perjury, that Contractor does not use coercion for labor or services as defined in Section 787.06, Florida Statutes.

10. The laws of the State of Florida shall govern all provisions of this Contract. In the event the parties to this Contract cannot resolve a difference with regard to any matter arising herefrom, the disputed matter will be referred to court-ordered mediation pursuant to Section 44.102, Florida Statutes. If no agreement is reached, any party may file a civil action and/or pursue all available remedies whether at law or equity. The sole and exclusive forum, venue, and jurisdiction for any action arising from this Contract shall be in the 6th Judicial Circuit in and for Pinellas County, Florida.

IN WITNESS WHEREOF, the parties hereto, have caused these presents to be executed by their duly qualified representatives on the day and year first written above.

WITNESS:

_____
Signature

_____
Print Name

FLAGSHIP AVIATION SERVICES, LLC

By:_____

Its:_____

Date:_____

(CORPORATE SEAL)

ATTEST:

_____
Charles H. Carden, General Manager

TAMPA BAY WATER, A Regional Water Supply Authority

By: _____

Its: _____

Date: _____

APPROVED AS TO FORM:

_____
General Counsel

(SEAL)

EXHIBIT A

HILLSBOROUGH COUNTY AVIATION AUTHORITY

CONTRACT FOR JANITORIAL SERVICES AT SKYCENTER ONE

Parties And Addresses:

AUTHORITY: Hillsborough County Aviation Authority
Post Office Box 22287
Tampa, Florida 33622
Telephone: 813-870-8700
Fax: 813-875-6670

COMPANY: Flagship Aviation Services LLC
405 S. Kimball Avenue
Southlake, TX 76092

HILLSBOROUGH COUNTY
AVIATION AUTHORITY
CONTRACT FOR JANITORIAL SERVICES AT SKYCENTER ONE

1. INTRODUCTION....4
2. DEFINITIONS....4
3. SCOPE OF SERVICES....7
4. TERM....8
5. FEES AND PAYMENTS....9
6. TAXES....11
7. PERMITS AND LICENSES....11
8. OWNERSHIP OF DOCUMENTS....11
9. QUALITY ASSURANCE....11
10. NON-EXCLUSIVE....12
11. DEFAULT, REMEDIES, AND TERMINATION RIGHTS....12
12. INDEMNIFICATION....14
13. ACCOUNTING RECORDS/AUDIT REQUIREMENTS....16
14. INSURANCE....18
15. TAKEOVER OF SERVICES....20
16. NON-DISCRIMINATION....21
17. WOMAN AND MINORITY-OWNED BUSINESS ENTERPRISE....23
18. AUTHORITY APPROVALS....25
19. DATA SECURITY....25
20. DISPUTE RESOLUTION....26
21. NON-EXCLUSIVE RIGHTS....27
22. WAIVER OF CLAIMS....28
23. LAWS, REGULATIONS, ORDINANCES, AND RULES....28
24. COMPLIANCE WITH CHAPTER 119, FLORIDA STATUTES PUBLIC RECORDS LAW....28
25. CONTRACT MADE IN FLORIDA....29
26. NOTICES AND COMMUNICATIONS....29
27. SUBORDINATION OF CONTRACT....30
28. SUBORDINATION TO TRUST AGREEMENT....30
29. ASSIGNMENT AND SUBCONTRACTING....30
30. APPLICABLE LAW AND VENUE....31
31. SCRUTINIZED COMPANIES....31
32. ANTI-HUMAN TRAFFICKING LAWS....31
33. RELATIONSHIP OF PARTIES....31
34. RIGHT TO AMEND....32
35. TIME IS OF THE ESSENCE....32
36. TENANCY....32
37. AMERICANS WITH DISABILITIES ACT....32
38. E-VERIFY REQUIREMENT....32
39. FAA APPROVAL....33
40. AGENT FOR SERVICE OF PROCESS....33

41. INVALIDITY OF CLAUSES.....33
42. HEADINGS.....33
43. PUBLIC ENTITY CRIME.....34
44. MISCELLANEOUS.....34
45. ORGANIZATION AND AUTHORITY TO ENTER CONTRACT.....34
46. ORDER OF PRECEDENCE.....34
47. CONTRACT CHANGES.....34
48. COMPLETE CONTRACT.....35

Exhibits:

A – Scope of Services
B – Cleaning Specifications and Standards
C – Sample Work Order
D – Scrutinized Company Certification
E – Affidavit of Compliance with Anti-Human Trafficking Laws

1. INTRODUCTION

This Contract for Janitorial Services at SkyCenter One (Contract) is made and entered into this 5th day of December 2024 between the Hillsborough County Aviation Authority, an independent special district under the laws of the State of Florida whose post office address is Post Office Box 22287, Tampa, Florida 33622 (Authority), and Flagship Aviation Services LLC, a corporation, authorized to do business in the State of Florida (Company), (collectively hereinafter referred to as the Parties).

For and in consideration of the mutual covenants hereof, the Parties do hereby agree as follows:

2. DEFINITIONS

The following terms will have the meanings as set forth below:

2.1 Accounts Payable

The unit within Authority Finance Department that deals with accounts payable.

2.2 Airport

Tampa International Airport.

2.3 Authority's Agent

A person authorized by Authority to act on Authority's behalf and under the Authority's control.

2.4 Board

The Hillsborough County Aviation Authority Board of Directors.

2.5 CEO

The Hillsborough County Aviation Authority Chief Executive Officer.

2.6 Class A Multi-Tenant Office Building

Office building with rents above average for the area due to quality finishes, state of the art systems, exceptional accessibility, and a market presence.

2.7 Cleanable Square Footage

The gross square footage of cleanable space, less areas not required to be cleaned by the

Company.

2.8 Cleaning Agents

Substances used to remove dirt, including dust, stains, foul odors, and clutter on surfaces.

2.9 Cleaning Schedule

The set of instructions in Exhibit B, Cleaning Specifications and Standards, Section A, Cleaning Specifications that describe everything that needs to be done and how frequently it needs to be done in order to maintain a Class A Multi-Tenant Office Building in a clean and sanitary condition.

2.10 Common Areas

Those areas not leased, licensed, or otherwise designated or made available by Authority for exclusive or preferential use by a specific party or parties.

2.11 Contract Documents

The following documents are a part of this Contract and are hereby incorporated by reference: the terms and conditions as contained in this Contract; Request for Proposals (RFP) for Janitorial Services at SkyCenter One, and any subsequent information submitted by Company during the evaluation process.

2.12 Contract Year

(a) With respect to the first year of this Contract, the period commencing on January 1, 2025 and continuing through December 31, 2025. (b) With respect to subsequent years of this Contract, each consecutive twelve-month period thereafter.

2.13 Director of Commercial Real Estate

The Authority employee designated by Authority's Chief Executive Officer to manage and oversee this Contract.

2.14 Day Maid

Personnel responsible for performing Services during the day which are outlined in Exhibit B, Cleaning Specifications and Standards, Day Maid.

2.15 Day Porter/Maintenance Helper

Personnel responsible for performing Services during the day which are outlined in Exhibit B, Cleaning Specifications and Standards, Day Porter/Maintenance Helper.

2.16 Extra Work

Work falling outside the scope of the agreed-upon Services.

2.17 FAA

The U.S. Department of Transportation Federal Aviation Administration or any successor thereto.

2.18 Nightly Janitorial Services

All services, excluding services provided by the Day Maid and Day Porter/Maintenance Helper, as outlined in Exhibit B, Cleaning Specifications and Standards.

2.19 Personnel

Individuals directly employed or contracted by Company to perform the Services for the Authority.

2.20 Project Cleaning

A one-time deep cleaning of an area or a specialty service.

2.21 Routine Cleanings

Cleanings that are performed in the areas provided in Exhibit B, Cleaning Specifications and Standards on a predetermined basis and as set by Authority's Agent.

2.22 Services

The services as detailed in Exhibit A, Scope of Services and Exhibit B, Cleaning Specifications and Standards.

2.23 Site Manager

Company’s representative responsible for coordinating and overseeing this Contract to include, but not be limited to, monitoring, interpreting, and overseeing the Services with regard to the quality performed, the manner of performance, and Authority and customer satisfaction with performance levels.

2.24 SkyCenter One

Property located at 5411 SkyCenter Dr., Tampa, Florida, 33607.

2.25 Term

January 1, 2025 through December 31, 2029, including renewal options.

2.26 TSA

The U.S. Department of Homeland Security Transportation Security Administration or any successor thereto.

2.27 Transition Period

A period of not more than three (3) months following the expiration date of this Contract.

2.28 Work Order

The order form used by Authority and Company in accordance with Article 3, Scope of Services, Section 3.2, Work Order.

3. SCOPE OF SERVICES

3.1 Scope of Services

Company agrees to provide the Services as set forth in Exhibit A, Scope of Services and Exhibit B, Cleaning Specifications and Standards.

3.2 Work Order

A. Without invalidating this Contract, Authority may, at any time, order additions, deletions or revisions to the Services authorized only by Work Order. Prior to the onset of any Services to be performed, Company and Authority will outline each task involved, establish a schedule for completing each task detail the associated costs, and include the names, titles, responsibilities, and resumes of Company's Personnel that will be assigned to the task in a work plan as shown in Exhibit C, Sample Work Order. The Work Order schedule may go beyond the termination date of this Contract if necessary to complete the Work Order tasks. Company will use its best efforts to ensure that each task in the Work Order is completed on budget and on time according to the agreed upon work schedule.

B. Company will only begin Services upon execution of the Work Order by Company and Authority. All such Services will be executed under the applicable conditions of this Contract. No Services will be paid for unless authorized by written Work Order prior to

the performance of such Services.

C. Upon execution of the Work Order, the Authority will issue a purchase order to Company to perform the Services identified in the Work Order. The Authority's Director of Commercial Real Estate or designee will have the authority to execute any Work Order on behalf of the Authority consistent with the terms of this Contract. No Services will be initiated by Company until Company receives the purchase order which will include the final agreed upon Work Order.

D. Any purchase order issued during the effective period of this Contract and not completed within that period shall be completed by the Company within the time specified in the Work Order. This Contract shall govern the Company's and Authority's rights and obligations with respect to that Work Order to the same extent as if the Work Order were completed during the Contract effective period.

3.3 Authority Contact Person

Authority's Director of Commercial Real Estate or designee will be responsible for notifying Company regarding required Services and will be Company's primary contact for all Services under this Contract.

3.4 Site Manager

Company has designated Joshua Cedeno, as the individual to be responsible for the overall project (Site Manager). The Site Manager will be responsible for ensuring that all Services are provided as outlined in Exhibit A, Scope of Services and Exhibit B, Cleaning Specifications and Standards, and will be Company's primary contact for all Services under this Contract.

Company must not remove such Site Manager from providing the Services contemplated by this Contract; provided, however, that the removal of such personnel due to their incapacity, voluntary termination, or termination due to just cause will not constitute a violation of this Contract. Authority will require that, at a minimum, any proposed replacement have equal or greater qualifications and experience as the Site Manager being replaced. Company will not make any personnel changes of the Site Manager until written notice is made to and approved by Authority's Director of Commercial Real Estate or designee.

4. TERM

4.1 Term

The Term of this Contract commences on January 1, 2025 and will continue through December 31, 2029, which includes the renewal options set forth below, unless terminated earlier as provided herein.

4.2 Renewal Options

This Contract may be renewed at the same terms and conditions hereunder for two, one-year periods at the discretion of the CEO. Such renewals will be effective by issuance of a written letter to Company by CEO. If all such renewals are exercised, this Contract will have a final termination date of December 31, 2029.

4.3 Early Termination

Authority may terminate this Contract, without cause, by giving thirty (30) days written notice to Company.

4.4 End of Term Transition

During the final Contract Year, Authority plans to award and transition to a new contract for janitorial services at SkyCenter One. If Company is not selected for the new contract, Company will cooperate fully with Authority and Company's successor to ensure an effective and efficient transition of the janitorial services to the successor. Company acknowledges its responsibility to continuously perform the Services and maintain the highest level of cleaning and customer service during the Transition Period to the successor.

5. FEES AND PAYMENTS

5.1 Not-to-Exceed

The total amount payable under this Contract will be subject to the amount approved by the Board. Authority will provide written notice to Company of the amount approved and any revised amount thereafter.

5.2 Payment

A. Company will be paid for the performance of the Services specified herein. No other charges or costs will be allowed. During each Contract Year, and any renewal option periods, Authority will pay Company per the rates listed below. Company will submit a monthly invoice for Services completed and accepted by Authority during the designated period by the tenth (10th) of the month following the month in which the Services were provided. For any payment period of less than one month, payment shall be on a pro-rata basis in the same proportion that the number of days in the payment period bears to the total number of days in the month for which the Services are payable.

Contract Year	Nightly Janitorial Services Fixed Rate per Sq. Ft.	Day Maid Monthly Rate	Day Porter/Maintenance Helper Monthly Rate
1	$.1332	$4,115.63	$4,540.55
2	$.137	$4,239.10	$4,676.77
3	$.142	$4,366.27	$4,817.07
Renewal Option 1	$.1459	$4,497.26	$4,961.58
Renewal Option 2	$.15	$4,632.18	$5,110.43

B. Extra Work and changes in work may be added or deleted only by Authority approved Work Order. Any Extra Work or changes in work shall be at rates to be negotiated by the Authority Director of Commercial Real Estate.

5.3 Invoices

Invoices required by this Contract will be created and submitted by Company to Authority Finance Department via email to Payables@TampaAirport.com in a form acceptable to Authority and will include at a minimum the invoice date, invoice amount, dates of Services, description of Services, and purchase order number.

5.4 Payment Method

Company will receive electronic payments via Automated Clearing House (ACH), ePayables, or Purchasing Card (PCard). Information regarding the electronic payment methods and processes, including net terms, is available on Authority website at www.TampaAirport.com > Business & Community > Business Opportunities > Supplier Resources > Electronic Payment Methods. Authority reserves the right to modify the electronic payment methods and processes at any time. Company may change its selected electronic payment method during the Term of this Contract in coordination with Accounts Payable.

In accordance with Florida Statute Section 501.0117, companies that accept credit cards as a valid form of payment are prohibited from imposing a surcharge.

5.5 Payment When Services Are Terminated at the Convenience of Authority

In the event of termination of this Contract for the convenience of Authority, Authority will compensate Company as listed below; however, in no event shall Company be entitled to any

damages or remedies for wrongful termination.

A. All Services performed prior to the effective date of termination; and

B. Expenses incurred by Company in effecting the termination of this Contract as approved in advance in writing by Authority.

6. TAXES

All taxes of any kind and character payable on account of the Services furnished and work done under this Contract will be paid by Company. The laws of the State of Florida provide that sales tax and use taxes are payable by Company upon the tangible personal property incorporated in the work and such taxes will be paid by Company. Authority is exempt from all State and Federal sales, use and transportation taxes.

7. PERMITS AND LICENSES

Company will obtain and maintain throughout the Term all permits, licenses, or other authorizations required in connection with the operation of Company's business at SkyCenter One and/or at the Airport. Copies of all required permits, certificates, and licenses will be forwarded to Authority.

8. OWNERSHIP OF DOCUMENTS

All documents, papers, letters, maps, books, tapes, photographs, films, sound recordings, data processing software, or other material, regardless of the physical form or characteristics, made by Company or its employees' incident to, or in the course of, Services to Authority will be and remain the property of Authority.

9. QUALITY ASSURANCE

Company will be solely responsible for the quality of all Services furnished by Company, its employees and/or its subcontractors under this Contract. All Services furnished by Company, its employees and/or its subcontractors must be performed in accordance with best management practices and best professional judgment, in a timely manner, and must be fit and suitable for the purposes intended by Authority. Company's Services and deliverables must conform with all applicable Federal and State laws, regulations, and ordinances.

10. NON-EXCLUSIVE

Company acknowledges that Authority has hired, or may hire, others to perform Services similar

to or the same as those within Company's Services under this Contract. Company further acknowledges that this Contract is not a guarantee of the assignment of any Services and that the assignment of Services to others is solely within Authority's discretion.

11. DEFAULT, REMEDIES, AND TERMINATION RIGHTS

11.1 Events of Default

Company will be deemed to be in default of this Contract upon the occurrence of any of the following:

A. The failure or omission by Company to perform its obligations under this Contract or the breach of any terms, conditions and covenants required herein.

B. The conduct of any business or performance of any acts at the Airport not specifically authorized in this Contract, failure to perform any of the provisions of this Contract or any other agreement between Authority and Company, and Company's failure to discontinue that business or those acts within ten (10) days of receipt by Company of Authority written notice to cease said business or acts.

C. The divestiture of Company's estate herein by operation of law, by dissolution, or by liquidation, not including a merger or sale of assets.

D. The appointment of a Trustee, custodian, or receiver of all or a substantial portion of Company's assets; or the insolvency of Company; or if Company will take the benefit of any present or future insolvency statute, will make a general assignment for the benefit of creditors, or will seek a reorganization or the readjustment of its indebtedness under any law or statute of the United States or of any state thereof, including the filing by Company of a voluntary petition of bankruptcy or the institution of proceedings against Company for the adjudication of Company as bankrupt pursuant thereto.

E. Company's violation of Florida Statute Section 287.133, concerning criminal activity on contracts with public entities.

11.2 Authority Remedies

In the event of any of the foregoing events of default enumerated in this Article, and following ten (10) days' notice by Authority and Company's failure to cure, Authority, at its election, may exercise any one or more of the following options or remedies, the exercise of any of which will not be deemed to preclude the exercise of any other remedy herein listed or otherwise provided by statute or general law:

A. Terminate Company's rights under this Contract and, in accordance with law, Company will remain liable for all payments or other sums due under this Contract and for all damages suffered by Authority because of Company's breach of any of the covenants of

this Contract; or

B. Treat this Contract as remaining in existence, curing Company's default by performing or paying the obligation which Company has breached. In such event all sums paid or expenses incurred by Authority directly or indirectly in curing Company's default will become immediately due and payable as well as interest thereon, from the date such fees or charges became due to the date of payment, at twelve percent (12%) per annum or to the maximum extent permitted by law; or

C. Declare this Contract to be terminated, ended, null and void.

No waiver by Authority at any time of any of the terms, conditions, covenants, or agreements of this Contract, or noncompliance therewith, will be deemed or taken as a waiver at any time thereafter of the same or any other term, condition, covenant, or agreement herein contained, nor of the strict and prompt performance thereof by Company. No notice by Authority will be required to restore or revive time is of the essence hereof after waiver by Authority or default in one or more instances. No option, right, power, remedy, or privilege of Authority will be construed as being exhausted or discharged by the exercise thereof in one or more instances. It is agreed that each and all of the rights, powers, options, or remedies given to Authority by this Contract are cumulative and that the exercise of one right, power, option, or remedy by Authority will not impair its rights to any other right, power, option, or remedy available under this Contract or provided by law. No act or thing done by Authority or Authority agents or employees during the Term will be deemed an acceptance of the surrender of this Contract, and no acceptance of surrender will be valid unless in writing.

11.3 Company's Remedies

Upon thirty (30) days written notice to Authority, Company may terminate this Contract and all its obligations hereunder, if Company is not in default of any term, provision, or covenant of this Contract or in the payment of any fees or charges to Authority, and only upon or after the inability of Company to use the Airport for a period of longer than ninety (90) consecutive days due to war, terrorism, or the issuance of any order, rule or regulation by a competent governmental authority or court having jurisdiction over Authority, provided, however, that such inability or such order, rule or regulation is not due to any fault or negligence of Company.

In the event it is determined by a court of competent jurisdiction that Authority has wrongfully terminated this Contract, such termination shall automatically be deemed a termination for convenience under Section 4, Term, Subsection 3, Early Termination.

11.4 Continuing Responsibilities of Company

Notwithstanding the occurrence of any event of default, Company will remain liable to Authority for all payments payable hereunder and for all preceding breaches of this Contract. Furthermore, unless Authority elects to cancel this Contract, Company will remain liable for and promptly pay any and all payments accruing hereunder until termination of this Contract.

12. INDEMNIFICATION

A. To the maximum extent permitted by Florida law, in addition to the Company's obligation to provide pay for and maintain insurance as set forth elsewhere in this Contract, the Company will indemnify and hold harmless Authority, its members, officers, agents, employees, and volunteers from any and all liabilities, suits, claims, procedures, liens, expenses, losses, costs, royalties, fines and damages (including but not limited to claims for attorney's fees and dispute resolution costs) caused in whole or in part by the:

1. presence on, use or occupancy of Authority property;

2. acts, omissions, negligence (including professional negligence and malpractice), errors, recklessness, intentional wrongful conduct, activities, or operations;

3. any breach of the terms of this Contract;

4. performance, non-performance or purported performance of this Contract;

5. violation of any law, regulation, rule, order, decree, ordinance, Federal Directive or Federal Circular;

6. infringement of any patent, copyright, trademark, trade dress or trade secret rights; and/or

7. contamination of the soil, groundwater, surface water, storm water, air or the environment by fuel, gas, chemicals or any other substance deemed by the Environmental Protection Agency or other regulatory agency to be an environmental contaminant

by the Company or Company's officers, employees, agents, volunteers, subcontractors, invitees, or any other person directly or indirectly employed or utilized by the Company, whether the liability, suit, suit, claim, procedure, lien, expense, loss, cost, royalty, fine or damages is caused in part by an indemnified party. This indemnity obligation expressly applies and shall be construed to include any and all claim(s) caused in part by the negligence, acts or omissions of the Authority, its members, officers, agents, employees, or volunteers.

B. In addition to the duty to indemnify and hold harmless, Company will have the separate and independent duty to defend Authority, its members, officers, agents, employees, and volunteers from all suits, claims or actions of any nature seeking damages, equitable or injunctive relief expenses, liens, expenses, losses, costs, royalties, fines, attorney's fees or any other relief in the event the suit, claim, or action of any nature arises in whole or in part from the:

1. presence on, use or occupancy of Authority property;

2. acts, omissions, negligence (including professional negligence and malpractice), errors, recklessness, intentional wrongful conduct, activities, or operations;

3. any breach of the terms of this Contract;

4. performance, non-performance or purported performance of this Contract;

5. violation of any law, regulation, rule, order, decree, ordinance, Federal Directive, Federal

Circular or ordinance;

6. infringement of any patent, copyright, trademark, trade dress or trade secret rights;

7. contamination of the soil, groundwater, surface water, stormwater, air or the environment by fuel, gas, chemicals, or any other substance deemed by the Environmental Protection agency or other regulatory agency to be an environmental contaminant

by the Company or Company's officers, employees, agents, volunteers, subcontractors, invitees, or any other person directly or indirectly employed or utilized by Company regardless of whether it is caused in part by Company, its members, officers, agents, employees, or volunteers. This duty to defend exists immediately upon presentation of written notice of a suit, claim or action of any nature to Company by a party entitled to a defense hereunder. This duty to defend obligation expressly applies and shall be construed to include any and all claim(s) caused in part by the negligence, acts or omissions of the Authority, its members, officers, agents, employees, or volunteers.

C. If the above indemnity or defense provisions or any part of the above indemnity or defense provisions are limited by Fla. Stat. § 725.06(2)-(3) or Fla. Stat. § 725.08, then with respect to the part so limited, Company agrees to the following: To the maximum extent permitted by Florida law, Company will indemnify and hold harmless Authority, its members, officers, agents, employees, and volunteers from any and all liabilities, damages, losses, and costs, including, but not limited to, reasonable attorneys' fee, to the extent caused by the negligence, recklessness, or intentional wrongful conduct of Company and persons employed or utilized by Company in the performance of this Contract.

D. If the above indemnity or defense provisions or any part of the above indemnity or defense provisions are limited by Florida Statute § 725.06 (1) or any other applicable law, then with respect to the part so limited the monetary limitation on the extent of the indemnification shall be the greater of the (i) monetary value of this Contract, (ii) coverage amount of Commercial General Liability Insurance required under this Contract, or (iii) $1,000,000.00. Otherwise, the obligations of this Article will not be limited by the amount of any insurance required to be obtained or maintained under this Contract.

E. Company's obligations to defend and indemnify as described in this Article will survive the expiration or earlier termination of this Contract until it is determined by final judgment that any suit, claim or other action against Company, its members, officers, agents, employees, and volunteers its fully and finally barred by the applicable statute of limitations or repose.

F. In addition to the requirements stated above, to the extent required by FDOT Public Transportation Grant Agreement and to the fullest extent permitted by law, the Company shall indemnify and hold harmless the State of Florida, FDOT, including the FDOT's officers and employees, from liabilities, damages, losses and costs, including, but not limited to, reasonable attorney's fees, to the extent caused by the negligence, recklessness or intentional wrongful misconduct of the Company and persons employed or utilized by the Company in the performance of this Contract. This indemnification in this paragraph shall survive the termination of this

Contract. Nothing contained in this paragraph is intended to nor shall it constitute a waiver of the State of Florida's and FDOT's sovereign immunity.

G. Nothing in this Article will be construed as a waiver of any immunity from or limitation of liability Authority, or its members, officers, agents, employees, and volunteers may have under the doctrine of sovereign immunity under common law or statute.

H. Authority and its members, officers, agents, employees, and volunteers reserve the right, at their option, to participate in the defense of any suit, without relieving Company of any of its obligations under this Article.

I. If the above Articles A - H or any part of Articles A – H are deemed to conflict in any way with any law, the Article or part of the Article will be considered modified by such law to remedy the conflict.

13. ACCOUNTING RECORDS/AUDIT REQUIREMENTS

13.1 Books and Records

In connection with payments to Company under this Contract, it is agreed Company will maintain full and accurate books of account and records customarily used in this type of business operation, in conformity with Generally Accepted Accounting Principles (GAAP). Company will maintain such books and records for five years after the end of the Term of this Contract. Records include, but are not limited to, books, documents, papers, records, research, and Work Orders related to this Contract. Company will not destroy any records related to this Contract without the express written permission of the Authority.

13.2 Authority Right to Perform Audits, Inspections, or Attestation Engagements

At any time or times during the Term of this Contract or within three years after the end of this Contract, the Authority, FAA, Federal Highway Administration, FDOT, FEMA, Florida Auditor General, Florida Inspector General, Florida Chief Financial Officer, and the Comptroller General of the United States, or any duly authorized representative of each (Auditors), have the right to initiate and perform audits, inspections or attestation engagements over Company's records for the purpose of determining payment eligibility under this Contract or over selected operations performed by Company under this Contract for the purpose of determining compliance with this Contract.

Free and unrestricted access will be granted to all of Company's records directly pertinent to this Contract or any work order, as well as records of parent, affiliate, and subsidiary companies and any subconsultants or subcontractors directly pertinent to this Contract or any work order. If the records are kept at locations other than the Airport, Company will arrange for said records to be brought to a location convenient to Auditors or will provide records electronically in a computer-readable format acceptable to the Auditors at no additional cost to conduct the

engagement as set forth in this Article.

Company agrees to deliver or provide access to all records requested by Auditors within fourteen (14) calendar days of the request at the initiation of the engagement and to deliver or provide access to all other records requested during the engagement within seven (7) calendar days of each request. The Parties recognize that Authority would incur additional costs if records requested by Auditors are not provided in a timely manner and that the amount of those costs is difficult to determine with certainty. Consequently, the Parties agree Authority may assess the Company liquidated damages in the amount of one hundred dollars ($100.00) for each item in a records request, per calendar day, for each time Company is late in submitting requested records to perform the engagement. Accrual of such damages will continue until specific performance is accomplished. These liquidated damages are not an exclusive remedy and Authority retains its rights, including but not limited to, its rights to elect its remedies and pursue all legal and equitable remedies. The Parties expressly agree that these liquidated damages are not a penalty and represent reasonable estimates of fair compensation for the losses that reasonably may be anticipated from Company's failure to comply.

Auditors have the right during the engagement to interview Company's employees, subconsultants, and subcontractors, and to retain copies of any and all records as needed to support auditor workpapers.

If as a result of any engagement it is determined that Company has overcharged Authority, Company will re-pay Authority for such overcharge and Authority may assess interest of up to twelve percent (12%) per year on the overcharge from the date the overcharge occurred.

Approvals by the Authority's staff for any Services included or not included in this Contract do not act as a waiver or limitation of the Auditor's right to perform engagements.

The Company will notify the Authority no later than seven (7) days after receiving knowledge that it is subject to any other audit, inspection or attestation engagement related to this Contract and provide Authority a copy of any audit documents or reports so received.

Company agrees to comply with Section 20.055(5), Florida Statutes, and to incorporate in all subcontracts the obligation to comply with Section 20.055(5), Florida Statutes. Company will include a provision providing Auditors the same access to business records at the subconsultant and subcontractor level in all of its subconsultant and subcontractor agreements executed related to this Contract.

14. INSURANCE

Company must maintain the following limits and coverages uninterrupted or amended through the Term of this Contract. In the event the Company becomes in default of the following requirements, the Authority reserves the right to take whatever actions deemed necessary to protect its interests. Required liability policies other than Workers' Compensation/Employer's Liability and Professional Liability will provide that the Authority, members of the Authority's

governing body, and the Authority's officers, volunteers, agents, and employees are included as additional insureds.

14.1 Required Coverage - Minimum Limits

The minimum limits of insurance (inclusive of any amounts provided by an umbrella or excess policy) covering the Services performed pursuant to this Contract will be the amounts specified herein. To the extent it is used to meet the minimum limit requirements, any Umbrella or Excess coverage shall follow form to the Employer's Liability, Commercial General Liability and Business Auto Liability coverages, including all endorsements and additional insured requirements. Any applicable Aggregate Limits in the Umbrella or Excess policy(ies) shall not be shared or diminished by claims unrelated to this Contract.

14.2 Commercial General Liability Insurance

The minimum limits of insurance covering the Services performed pursuant to this Contract will be the amounts specified herein. Coverage will be provided for liability resulting out of or in connection with ongoing operations performed by, or on behalf of, the Company under this Contract or the use or occupancy of Authority premises by, or on behalf of, the Company in connection with this Contract. Coverage shall be provided on a form no more restrictive than ISO Form CG 00 01. Additional insurance coverage shall be provided on a form no more restrictive than ISO Form CG 20 10 10 01 and CG 30 37 10 01.

	Contract Specific
General Aggregate	$1,000,000
Each Occurrence	$1,000,000
Personal and Advertising Injury Each Occurrence	$1,000,000
Products and Completed Operations Aggregate	$1,000,000

14.3 Workers' Compensation and Employer's Liability Insurance

The minimum limits of insurance are:

Part One:	"Statutory"
Part Two:	
Each Accident	$1,000,000
Disease – Policy Limit	$1,000,000
Disease – Each Employee	$1,000,000

14.4 Business Automobile Liability Insurance

Coverage will be provided for all owned, hired and non-owned vehicles. Coverage shall be provided on a form no more restrictive than ISO Form CA 00 01. The minimum limits of insurance covering the work performed pursuant to this Contract are:

Each Occurrence – Bodily Injury and Property Damage Combined	$1,000,000

14.5 Commercial Crime

The minimum limits of Commercial Crime insurance, including coverage for losses to "Clients' Property", on a form no more restrictive than ISO form CG 04 01 08 13, covering, but not limited to, loss arising from employee theft, employee dishonesty, forgery or alteration, robbery, burglary, embezzlement, disappearance, destruction, money orders and counterfeit currency, depositors forgery, computer fraud, on-premises and in-transit are:

Each Occurrence

Each Occurrence	$1,000,000

14.6 Environmental

Such insurance will be maintained by Company on a form acceptable to Authority for liability resulting from pollution or other environmental impairment, which arises out of, or in connection with, work under this Contract. Company will provide and maintain environmental coverage from the inception of this Contract. If on an occurrence basis, the insurance must be maintained throughout the duration of this Contract. If a claims-made basis, the insurance must cover claims reported within three years of the end of this Contract. The coverage shall apply without regard to whether the loss is caused by Company or Company's contractors, subcontractors, suppliers, consultants or subconsultants. The coverage shall not contain any asbestos abatement, silica, lead, per- and polyfluoroalkyl substances (PFAS), exterior insulation and finish systems (EIFS), permitted work, law, code or ordinance exclusion. Limits of Coverage will be:

Each Occurrence	$1,000,000
Annual Aggregate	$2,000,000

14.7 Waiver of Subrogation

Company, for itself and on behalf of its insurers, to the fullest extent permitted by law without voiding the insurance required by this Contract, waives all rights against the Authority, members of Authority's governing body and the Authority's officers, volunteers, agents, and employees, for damages or loss to the extent covered and paid for by any insurance maintained by the Company.

14.8 Incident Notification

The Company will promptly notify the Airport Operations Center (AOC) of all incidents involving bodily injury or property damage occurring on Authority-owned property, tenant-owned property, or third-party property.

14.9 Customer Claims, Issues, or Complaints

All customer claims, issues, or complaints regarding property damage or bodily injury related to the Company will be promptly handled, addressed, and resolved by the Company.

The Company will track all customer claims, issues, and complaints and their status on a Claims Log available for review, as needed, by Authority Enterprise Risk Management. The Claims Log should include a detailed report of the incident along with the response and/or resolution. Authority Enterprise Risk Management has the option to monitor all incidents, claims, issues, or complaints where the Authority could be held liable for injury or damages.

14.10 Conditions of Acceptance

The insurance maintained by Company must conform at all times with Authority Standard Procedure S250.06, Contractual Insurance Terms and Conditions, which may be amended from time to time and can be downloaded from Authority website at www.TampaAirport.com > Business & Community > Business Opportunities > Supplier Resources > Insurance for Suppliers.

15. TAKEOVER OF SERVICES

Authority will have the absolute right to immediately take over the operations of this Contract, either by itself or through others, as a result of Company's failure, for any reason whatsoever, to employ, maintain in its employ, or adequately provide for the Personnel necessary to keep the Airport open for public patronage.

16. NON-DISCRIMINATION

During the performance of this Contract, Company, for itself, its assignees, and successors in interest, agrees as follows:

A. Company will comply with the regulations relative to non-discrimination in federally assisted programs of the Department of Transportation (DOT) Title 49, Code of Federal Regulations, Part 21, as amended from time to time (Regulations), which are incorporated herein by reference and made a part of this Contract.

B. Civil Rights. Company, with regard to the work performed by it under this Contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. Company will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the Contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21. During the performance of this Contract, Company, for itself, its assignees, and successors in interest agrees to comply with the following non-discrimination statutes and authorities, including but not limited

to:

1. Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin);
2. 49 CFR part 21 (Non-discrimination in Federally-Assisted Programs of The Department of Transportation—Effectuation of Title VI of The Civil Rights Act of 1964);
3. The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
4. Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR part 27;
5. The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age);
6. Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
7. The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
8. Titles II and III of the Americans with Disabilities Act of 1990, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 – 12189) as implemented by Department of Transportation regulations at 49 CFR parts 37 and 38;
9. The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
10. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
11. Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes

discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, Company must take reasonable steps to ensure that LEP persons have meaningful access to Company's programs (70 Fed. Reg. at 74087 to 74100); and

12. Title IX of the Education Amendments of 1972, as amended, which prohibits Company from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

C. In all solicitations either by competitive bidding or negotiation made by the Company for work to be performed under a subcontract, including procurement of materials or leases of equipment, each potential subcontractor or supplier must be notified by Company of Company's obligations under this Contract and the Regulations relative to non-discrimination on the grounds of race, color, or national origin.

D. Company will provide all information and reports required by the Regulations or directives issued pursuant thereto and must permit access to its books, records, accounts, other sources of information and its facilities as may be determined by Authority or the FAA to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of Company is in the exclusive possession of another who fails or refuses to furnish this information, Company will so certify to Authority or the FAA, as appropriate, and will set forth what efforts it has made to obtain the information.

E. In the event of Company's non-compliance with the non-discrimination provisions of this Contract, Authority will impose such contractual sanctions as it or the FAA may determine to be appropriate, including, but not limited to, withholding of payments to Company under this Contract until Company complies, and/or cancellation, termination, or suspension of this Contract, in whole or in part.

F. Company will include the provisions of Paragraphs A through E above in every subcontract and subconsultant contract, including procurement of materials and leases of equipment, unless exempt by the Regulations or directives issued thereto. Company will take such action with respect to any subcontract or procurement as Authority or the FAA may direct as a means of enforcing such provisions, including sanctions for non-compliance. Provided, however, that in the event Company becomes involved in or is threatened with litigation with a subcontractor or supplier as a result of such direction, Company may request Authority to enter into such litigation to protect the interests of Authority and, in addition, Company may request the United States to enter into such litigation to protect the interests of the United States.

G. Company assures that, in the performance of its obligations under this Contract, it will fully comply with the requirements of 14 CFR Part 152, Subpart E (Non-Discrimination in Airport Aid Program), as amended from time to time, to the extent applicable to Company, to ensure, among other things, that no person will be excluded from participating in any activities covered by such requirements on the grounds of race, creed, color, national origin, or sex. Company, if required by such requirements, will provide assurances to Authority that Company will undertake an affirmative action

program and will require the same of its subconsultants.

17. WOMAN AND MINORITY-OWNED BUSINESS ENTERPRISE

17.1 Authority Policy

Authority is committed to the participation of Woman and Minority-Owned Business Enterprises (W/MBEs) in non-concession, non-federally funded contracting opportunities in accordance with Authority W/MBE Policy and Program. Company will take all necessary and reasonable steps in accordance therewith to ensure that W/MBEs are encouraged to compete for and perform subcontracts under this Contract.

17.2 Non-Discrimination

A. Company and any subcontractor of Company will not discriminate on the basis of race, color, national origin, or sex in the performance of this Contract. Company will carry out applicable requirements of Authority W/MBE Policy and Program in the award and administration of this Contract. Failure by Company to carry out these requirements is a material breach of this Contract, which may result in the termination of this Contract or such other remedy as Authority deems appropriate.

B. Company agrees that it will not discriminate against any business owner because of the owner's race, color, national origin, or sex in connection with the award or performance of any agreement, management contract, or subcontract, purchase, or lease agreement.

C. Company agrees to include the statements in paragraphs (A) and (B) above in any subsequent agreement or contract that it enters and cause those businesses to similarly include the statements in further agreements or contracts.

D. Company, for itself, its personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (1) that no person on the grounds of race, color, or national origin will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of Airport facilities; (2) that in the construction of any improvements on, over, or under such land and the furnishing of services thereon, no person on the grounds of race, color, or national origin will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination; and (3) that Company will fully comply with the Department of Transportation-Effectuation of Title VI of the Civil Rights Act of 1964 as amended from time to time.

E. In the event of breach of the above non-discrimination covenants pursuant to Part 21 of the Regulations of the Office of the Secretary of Transportation, as amended, Authority will have the right to terminate this Contract and to re-enter as if said Contract had never been made or issued. The provision will not be effective until the procedures of Title 49

CFR Part 21 are followed and completed, including exercise or expiration of appeal rights.

17.3 W/MBE Participation

A. W/MBE Goal: No specific expectancy for W/MBE participation has been established for this Contract; however, Company agrees to make a good faith effort, in accordance with Authority W/MBE Policy and Program, throughout the Term of this Contract, to contract with W/MBE firms certified as a woman-owned or minority-owned business by the City of Tampa, Hillsborough County, the State of Florida Department of Management Services, Office of Supplier Diversity, or as a Disadvantaged Business Enterprise (DBE) under the Florida Unified Certification Program pursuant to 49 CFR Part 26 in the performance of this Contract.

B. W/MBE Termination and Substitution: Company is prohibited from terminating or altering or changing the Services of a W/MBE subcontractor except upon written approval of Authority in accordance with Authority procedures relating to W/MBE terminations contained in the W/MBE Policy and Program. Failure to comply with the procedure relating to W/MBE terminations or changes during this Contract will be a material violation of this Contract and will invoke the sanctions for non-compliance specified in this Contract and the W/MBE Policy and Program.

C. Monitoring: Authority will monitor the ongoing good faith efforts of Company in meeting the requirements of this Article. Authority will have access to the necessary records to examine such information as may be appropriate for the purpose of investigating and determining compliance with this Article, including, but not limited to, records, records of expenditures, contracts between Company and the W/MBE participant, and other records pertaining to W/MBE participation, which Company will maintain for a minimum of three years following the end of this Contract. Opportunities for W/MBE participation will be reviewed prior to the exercise of any renewal, extension, or material amendment of this Contract to consider whether an adjustment in the W/MBE requirement is warranted. Without limiting the requirements of this Contract, Authority reserves the right to review and approve all subleases or subcontracts utilized by Company for the achievement of these goals.

D. Prompt Payment: Company agrees to pay each subcontractor under this Contract for satisfactory performance of its contract no later than ten (10) calendar days from the receipt of each payment Company receives from Authority. Company agrees further to release retainage payments to each subcontractor within ten (10) calendar days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above-referenced time frame may occur only for good cause following written approval of Authority. This clause applies to both W/MBE and non-W/MBE subcontractors.

18. AUTHORITY APPROVALS

Except as otherwise indicated elsewhere in this Contract, wherever in this Contract approvals are required to be given or received by the Authority, it is understood that the CEO or a designee of the CEO is hereby empowered to act on behalf of the Authority.

19. DATA SECURITY

Company will establish and maintain safeguards against the destruction, loss or alteration of Authority data or third-party data that Company may gain access to or be in possession of in providing the Services of this Contract. Company will not attempt to access, and will not allow its personnel access to, Authority data or third-party data that is not required for the performance of the Services of this Contract by such Personnel.

Company and its employees, vendors, subcontractors, and sub-consultants will adhere to and abide by the security measures and procedures established by Authority and any terms of service agreed to by Authority with regards to data security. In the event Company or Company's subcontractor (if any) discovers or is notified of a breach or potential breach of security relating to Authority data or third-party data, Company will promptly:

A. Notify Authority of such breach or potential breach; and

B. If the applicable Authority data or third-party data was in the possession of Company at the time of such breach or potential breach, Company will investigate and cure the breach or potential breach.

20. DISPUTE RESOLUTION

20.1 Claims and Disputes

A. A claim is a written demand or assertion by one of the Parties seeking, as a matter of right, an adjustment or interpretation of this Contract, payment of money, extension of time, or other relief with respect to the terms of this Contract. The term claim also includes other matters in question between Authority and Company arising out of or relating to this Contract. The responsibility to substantiate claims will rest with the party making the claim.

B. If for any reason Company deems that additional cost or Contract time is due to Company for work not clearly provided for in this Contract, or previously authorized changes in the work, Company will notify Authority in writing of its intention to claim such additional cost or Contract time. Company will give Authority the opportunity to keep strict account of actual cost and/or time associated with the claim. The failure to give proper notice as required herein will constitute a waiver of said claim.

C. Written notice of intention to claim must be made within ten (10) days after Company first

recognizes the condition giving rise to the claim or before the work begins on which Company bases the claim, whichever is earlier.

D. When the work on which the claim for additional cost or Contract time is based has been completed, Company will, within ten (10) days, submit Company's written claim to Authority. Such claim by Company, and the fact that Authority has kept strict account of the actual cost and/or time associated with the claim, will not in any way be construed as proving or substantiating the validity of the claim.

E. Pending final resolution of a claim, unless otherwise agreed in writing, Company will proceed diligently with performance of this Contract and maintain effective progress to complete the work within the time(s) set forth in this Contract.

F. The making of final payment for this Contract may constitute a waiver of all claims by Authority except those arising from:

1. Claims, security interests or encumbrances arising out of this Contract and unsettled;
2. Failure of the work to comply with the requirements of this Contract;
3. Terms of special warranties required by this Contract; and
4. Latent defects.

20.2 Resolution of Claims and Disputes

A. The following shall occur as a condition precedent to Authority review of a claim unless waived in writing by Authority.

First Meeting: Within five (5) days after a claim is submitted in writing, Company's representatives who have authority to resolve the dispute shall meet with Authority representatives who have authority to resolve the dispute in a good faith attempt to resolve the dispute. If a party intends to be accompanied at a meeting by legal counsel, the other party shall be given at least three (3) working days' notice of such and also may be accompanied by legal counsel. All negotiations pursuant to this clause are confidential and shall be treated as compromise and settlement negotiations for purposes of rules of evidence.

Second Meeting: If the First Meeting fails to resolve the dispute or if the Parties fail to meet, a senior executive for Company and for Authority, neither of which have day to day Contract responsibilities, shall meet, within ten (10) days after a dispute occurs, in an attempt to resolve the dispute and any other identified disputes or any unresolved issues that may lead to dispute. Authority may invite other Parties as necessary to this meeting. If a party intends to be accompanied at a meeting by legal counsel, the other party shall be given at least three (3) working days' notice of such and also may be accompanied by legal counsel. All negotiations pursuant to this clause are confidential and shall be treated as compromise and settlement negotiations for purposes of rules of evidence.

Following the First Meeting and the Second Meeting, Authority will review Company's claims and

may (1) request additional information from Company which will be immediately provided to Authority, or (2) render a decision on all or part of the claim in writing within twenty-one (21) days following the receipt of such claim or receipt of additional information requested.

If Authority decides that the work related to such claim should proceed regardless of Authority disposition of such claim, Authority will issue to Company a written directive to proceed. Company will proceed as instructed.

B. Prior to the initiation of any litigation to resolve disputes between the Parties, the Parties will make a good faith effort to resolve any such disputes by negotiation between representatives with decision-making power. Following negotiations, as a condition precedent to litigation, the Parties will mediate any dispute with a mediator selected by Authority. Such mediation shall occur in Hillsborough County, Florida.

C. Any action initiated by either party associated with a claim or dispute will be brought in accordance with the Applicable Law and Venue Article below.

21. NON-EXCLUSIVE RIGHTS

This Contract will not be construed to grant or authorize the granting of an exclusive right within the meaning of 49 USC 40103(e) or 49 USC 47107(a), as may be amended from time to time, and related regulations.

22. WAIVER OF CLAIMS

Company hereby waives any claim against the City of Tampa, Hillsborough County, State of Florida and Authority, and its officers, Board, agents, or employees, for loss of anticipated profits caused by any suit or proceedings directly or indirectly attacking the validity of this Contract or any part thereof, or by any judgment or award in any suit or proceeding declaring this Contract null, void, or voidable, or delaying the same, or any part hereof, from being carried out.

23. LAWS, REGULATIONS, ORDINANCES, AND RULES

Company, its officers, employees, agents, subcontractors, or those under its control, will at all times comply with applicable Federal, State, and local laws and regulations, Authority Rules and Regulations, Policies, Standard Procedures, and Operating Directives as are now or may hereinafter be prescribed by Authority, all applicable health rules and regulations and other mandates whether existing or as promulgated from time to time by the Federal, State, or local government, or Authority including, but not limited to, permitted and restricted activities, security matters, parking, ingress and egress, environmental and storm water regulations and any other operational matters related to the operation of Airport. Company, its officers, employees, agents, subcontractors, and those under its control, will comply with safety, operational, or security measures required of Company or Authority by the Federal Government including but not limited

to FAA or TSA. If Company, its officers, employees, agents, subcontractors, or those under its control will fail or refuse to comply with said measures and such non-compliance results in a monetary penalty being assessed against Authority, then, in addition to any other remedies available to Authority, Company will be responsible and will reimburse Authority the full amount of any such monetary penalty or other damages. This amount must be paid by Company within 15 days from the date of written notice from Authority.

24. COMPLIANCE WITH CHAPTER 119, FLORIDA STATUTES PUBLIC RECORDS LAW

IF THE COMPANY HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE COMPANY'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT (813) 870-8721, ADMCENTRALRECORDS@TAMPAAIRPORT.COM, HILLSBOROUGH COUNTY AVIATION AUTHORITY, P.O. BOX 22287, TAMPA FL 33622.

The Company agrees in accordance with Florida Statute Section 119.0701 to comply with public records laws including the following:

A. Keep and maintain public records required by the Authority in order to perform the Services contemplated by this Contract.

B. Upon request from the Authority custodian of public records, provide the Authority with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Fla. Stat. or as otherwise provided by applicable law.

C. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by applicable law for the duration of the Term of this Contract and following completion of the Term of this Contract.

D. Upon completion of the Term of this Contract, keep and maintain public records required by the Authority to perform the Services. The Company shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the Authority, upon request from the Authority custodian of public records, in a format that is compatible with the information technology systems of the Authority.

The Authority maintains its records in electronic form in accordance with the State of Florida records retention schedules. As a result, the paper original version of this document (to the extent it exists) will be scanned and stored electronically as the authoritative record copy as part of the Authority's record management process. Once that occurs, the paper original version of this document will be destroyed.

25. CONTRACT MADE IN FLORIDA

This Contract has been made in and shall be construed in accordance with the laws of the State of Florida. All duties, obligations and liabilities of Authority and Company related to this Contract are expressly set forth herein and this Contract can only be amended in writing and agreed to by both Parties.

26. NOTICES AND COMMUNICATIONS

All notices or communications whether to Authority or to Company pursuant hereto will be deemed validly given, served, or delivered, upon receipt by the party by hand delivery, or three (3) days after depositing such notice or communication in a postal receptacle, or one (1) day after depositing such notice or communication with a reputable overnight courier service, and addressed as follows:

TO AUTHORITY:
(MAIL DELIVERY)

HILLSBOROUGH COUNTY AVIATION AUTHORITY
TAMPA INTERNATIONAL AIRPORT
P.O. BOX 22287
TAMPA, FLORIDA 33622-2287
ATTN: CHIEF EXECUTIVE OFFICER

OR

(HAND DELIVERY)
HILLSBOROUGH COUNTY AVIATION AUTHORITY
SKYCENTER ONE

5411 SKYCENTER DRIVE
SUITE 500
TAMPA, FLORIDA 33607-1470
ATTN: CHIEF EXECUTIVE OFFICER

TO FLAGSHIP AVIATION SERVICES LLC:

(MAIL DELIVERY)
405 S. KIMBALL AVENUE
SOUTHLAKE, TX 76092
ATTN: CHIEF EXECUTIVE OFFICER

OR

(HAND DELIVERY)
405 S. KIMBALL AVENUE
SOUTHLAKE, TX 76092
ATTN: CHIEF EXECUTIVE OFFICER

or to such other address as either party may designate in writing by notice to the other party delivered in accordance with the provisions of this Article.

If notice is sent through a mail system, a verifiable tracking documentation such as a certified return receipt or overnight mail tracking receipt is required.

27. SUBORDINATION OF CONTRACT

It is mutually understood and agreed that this Contract will be subordinate to the provisions of any existing or future agreement between Authority and the United States of America, its Boards, Agencies, Commissions, and others, relative to the operation or maintenance of the Airport, the execution of which has been or may be required as a condition precedent to the expenditure of federal funds for the development of the Airport, and this Contract will be subordinate to the

license or permit of entry which may be granted by the Secretary of Defense.

28. SUBORDINATION TO TRUST AGREEMENT

This Contract and all rights of Company hereunder are expressly subject and subordinate to the terms, covenants, conditions and provisions of any Trust Agreements or other debt instruments executed by Authority to secure bonds issued by, or other obligations of, Authority. The obligations of Company hereunder may be pledged, transferred, hypothecated, or assigned at any time by Authority to secure such obligations. Conflicts between the terms of this Contract and the provisions, covenants and requirements of the debt instruments mentioned above will be resolved in favor of the provisions, covenants and requirements of such debt instruments.

29. ASSIGNMENT AND SUBCONTRACTING

Company will not assign, subcontract, sublease, or license this Contract without the prior written consent of Authority. Such consent may be withheld at the sole discretion of Authority. If assignment, subcontract, sublease, or license is approved, Company will be solely responsible for ensuring that its assignee, subcontractor, sublessee, or licensee perform pursuant to and in compliance with the terms of this Contract.

In no event will any approved assignment, subcontract, sublease, or license diminish Authority rights to enforce any and all provisions of this Contract.

Before any assignment, subcontract, sublease, or license becomes effective, the assignee, subcontractor, sublessee, or licensee will assume and agree by written instruments to be bound by the terms and conditions of this Contract during the remainder of the Term. When seeking consent to an assignment hereunder, Company will submit a fully executed original of the document or instrument of assignment to Authority.

30. APPLICABLE LAW AND VENUE

This Contract will be construed in accordance with the laws of the State of Florida. Venue for any action brought pursuant to this Contract will be in Hillsborough County, Florida, or in the Tampa Division of the U.S. District Court for the Middle District of Florida.

The Company hereby waives any claim against the Authority and the indemnified parties for loss of anticipated profits caused by any suit or proceedings directly or indirectly attacking the validity of this Contract or any part hereof, or by any judgment or award in any suit or proceeding declaring this Contract null, void, or voidable, or delaying the same, or any part hereof, from being carried out.

31. SCRUTINIZED COMPANIES

Company is required to complete Exhibit D, Scrutinized Company Certification, at the time this Contract is executed and to complete a new Exhibit D for each renewal option period, if any.

This Contract will be terminated in accordance with Florida Statute Section 287.135 if it is found that Company submitted a false Scrutinized Company Certification as provided in Florida Statute Section 287.135(5) or has been placed on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, the Scrutinized Companies that Boycott Israel List, is engaged in a boycott of Israel, or is engaged in business operations in Cuba or Syria. The termination will be subject to the dollar amount limitations included in the respective Florida Statute.

32. ANTI-HUMAN TRAFFICKING LAWS

Company is required to complete Exhibit E, Affidavit of Compliance with Anti-Human Trafficking Laws, at the time this Contract is executed and to complete a new Exhibit E for each renewal option period, if any.

This Contract will be terminated in accordance with Florida Statute Section 787.06(13) if it found that Company submitted a false Affidavit of Compliance with Anti-Human Trafficking as provided in Florida Statute Section 787.06(13).

33. RELATIONSHIP OF PARTIES

The Company is and will be deemed to be an independent contractor and operator responsible for its acts or omissions, and the Authority will in no way be responsible therefore.

34. RIGHT TO AMEND

In the event that the United States Government including but not limited to the FAA and TSA, or its successors, Florida Department of Transportation, or its successors, or any other governmental agency requires modifications or changes to this Contract as a condition precedent to the granting of funds for the improvement of the Airport, Company agrees to consent to such amendments, modifications, revisions, supplements, or deletions of any of the terms, conditions, or requirements of this Contract as may be reasonably required to obtain such funds; provided, however, that in no event will Company be required, pursuant to this paragraph, to agree to an increase in the charges provided for hereunder.

35. TIME IS OF THE ESSENCE

Time is of the essence of this Contract.

36. TENANCY

The undersigned representative of Company hereby warrants and certifies to Authority that Company is an organization in good standing in its state of registration, that it is authorized to do business in the State of Florida, and that the undersigned officer is authorized and empowered to bind the organization to the terms of this Contract by his or her signature thereto.

37. AMERICANS WITH DISABILITIES ACT

Company will comply with the applicable requirements of the Americans with Disabilities Act; the Florida Americans with Disabilities Accessibility Implementation Act; Florida Building Code, Florida Accessibility Code for Building Construction; and any similar or successor laws, ordinances, rules, standards, codes, guidelines, and regulations and will cooperate with Authority concerning the same subject matter.

38. E-VERIFY REQUIREMENT

In accordance with the State of Florida, Office of the Governor, Executive Order Number 11-116 (Verification of Employment Status) and Fla. Stat. Section 448.095 the Company, and any subcontractor thereof, is obligated to register with and use the Department of Homeland Security's E-Verify system to verify the work authorization status of all new employees of the Company or subcontractor. If the Company enters into a contract with a subcontractor, the Company must require the subcontractor to provide an affidavit stating that the subcontractor uses the E-Verify system and does not employ, contract with, or subcontract with an unauthorized alien.

39. FAA APPROVAL

This Contract may be subject to approval of the FAA. If the FAA disapproves this Contract, it will become null and void, and both Parties will bear their own expenses relative to this Contract, up to the date of disapproval.

40. AGENT FOR SERVICE OF PROCESS

It is expressly agreed and understood that if Company is not a resident of the State of Florida, or is an association or partnership without a member or partner resident of said State, or is a foreign corporation, then in any such event Company does designate the Secretary of State, State of Florida, as its agent for the purpose of service of process in any court action between it and Authority arising out of or based upon this Contract, and the service will be made as provided by the laws of the State of Florida, for service upon a non-resident. It is further expressly agreed, covenanted, and stipulated that if for any reason service of such process is not possible, and

Company does not have a duly noted resident agent for service of process, as an alternative method of service of process, Company may be personally served with such process out of this State, by the certified return receipt mailing of such complaint and process or other documents to Company at the address set out in this Contract, or in the event of a foreign address delivery by Federal Express, and that such service will constitute valid service upon Company as of the date of mailing and Company will have thirty (30) days from date of mailing to respond thereto. It is further expressly understood that Company hereby agrees to the process so served, submits to the jurisdiction of the State or Federal courts located in Hillsborough County, Florida, and waives any and all obligation and protests thereto, any laws to the contrary notwithstanding.

41. INVALIDITY OF CLAUSES

The invalidity of any part, portion, sentence, article, paragraph, provision, or clause of this Contract will not have the effect of invalidating any other part, portion, sentence, article, paragraph, provision, or clause of this Contract, and the remainder of this Contract will be valid and enforced to the fullest extent permitted by law.

42. HEADINGS

The headings contained herein, including the Table of Contents, are for convenience in reference and are not intended to define or limit the scope of any provisions of this Contract. If for any reason there is a conflict between content and headings, the content will control.

43. PUBLIC ENTITY CRIME

Company attests compliance with Florida Statute Section 287.133, concerning Public Entity Crimes.

44. MISCELLANEOUS

Wherever used, the singular will include the plural, the plural the singular, and the use of any gender will include both genders.

45. ORGANIZATION AND AUTHORITY TO ENTER INTO CONTRACT

The undersigned representative of Company hereby warrants and certifies to Authority that Company is an organization in good standing in its state of registration, that it is authorized to do business in the State of Florida, and that the undersigned officer is authorized and empowered to bind the organization to the terms of this Contract by his or her signature thereto and neither Company, its officers or any holders of more than five percent (5%) of the voting stock of Company

have been found in violation of Florida Statute Section 287.133, concerning Criminal Activity on Contracts with Public Entities. If Company is a corporation whose shares are not regularly and publicly traded on a recognized stock exchange, Company represents that the ownership and power to vote the majority of its outstanding capital stock belongs to and is vested in the officer or officers executing this Contract.

46. ORDER OF PRECEDENCE

In the event of any conflict(s) among the Contract Documents, Company will present conflict for resolution to Authority. Any costs resulting from Authority resolution of the conflict shall be borne by Company.

47. CONTRACT CHANGES

A change order or amendment is a written contract modification prepared by Authority and signed by both Parties hereto, stating their agreement upon all of the following, and without invalidating this Contract:

A. a change in the Scope of Services, if any;

B. a change of the Contract amount, fees, hourly rates or other costs, if any;

C. a change of the basis of payment, if any;

D. a change in Contract time, if any; and

E. changes to the terms and conditions of this Contract including, but not limited to, the W/MBE or DBE percentage rate, if any.

47.1 Claim for Payment

Any claim for payment for changes in the Services that is not covered by written change order or amendment, or other written instrument signed by the Parties hereto will be rejected by Authority. Company acknowledges and agrees that Company will not be entitled to payment for changes in the Services unless such revised Services are specifically authorized in writing by Authority in advance. The terms of this Article may not be waived by Authority unless such waiver is in writing and makes specific reference to this Article.

Changes in the Services will be performed under applicable provisions of the Contract Documents, and Company will proceed promptly, unless otherwise provided in the change order, amendment, or other written instrument.

47.2 Right to Carry Out the Services

If Company defaults or neglects to carry out the Services in accordance with the Contract

Documents and fails within a seven (7) day period after receipt of written notice from Authority to begin and prosecute correction of such default or neglect with diligence and promptness, Authority may, without prejudice to other remedies Authority may have, correct such deficiencies. In such case an appropriate change order will be issued deducting from payments then or thereafter due Company the cost of correcting such deficiencies, including compensation for another Company's or Authority's additional services and expenses made necessary by such default, neglect, or failure. If payments then or thereafter due Company are not sufficient to cover such amounts, Company will pay the difference to Authority.

48. COMPLETE CONTRACT

This Contract represents the complete understanding between the Parties, and any prior contracts, agreements, or representations, whether written or verbal, are hereby superseded. This Contract may subsequently be amended only by written instrument signed by the Parties hereto unless provided otherwise within the terms and conditions of this Contract.

[Remainder of Page is Intentionally Left Blank]

IN WITNESS WHEREOF, the Parties hereto have set their hands and corporate seals on this 5 day of DECEMBER, 2024.

HILLSBOROUGH COUNTY AVIATION AUTHORITY

ATTEST: _____

Jane Castor, Secretary
HARRY COLEN, ASST. SECRETARY

BY: _____

Arthur F. Diehl III, Chairman

Address: PO Box 22287
Tampa, FL 33622

Address: PO Box 22287
Tampa, FL 33622

LEGAL FORM APPROVED:

WITNESS: _____

Michael T. Kamprath
5411 SkyCenter Drive
Tampa, FL 33607

Printed Name

BY: _____

David Scott Knight, Assistant General Counsel

HILLSBOROUGH COUNTY AVIATION AUTHORITY
STATE OF FLORIDA
COUNTY OF HILLSBOROUGH

The foregoing instrument was acknowledged before me by means of X physical presence or □ online authorization, this 5 day of DECEMBER, 2024, by Arthur F. Diehl III, in the capacity of Chairman, and by HARRY COLEN Jane Castor in the capacity of AST Secretary, for Hillsborough County Aviation Authority, a public body corporate under the laws of the State of Florida, on its behalf.

Stamp or Seal of Notary

VIOLETTA CUMMINS
Commission # HH 095956
Expires June 20, 2025
Bonded Thru Budget Notary Services

_____

Signature of Notary

VIOLETTA CUMMINS

Print, Type, or Stamp Commissioned Name of Notary

Personally Known OR Produced Identification
Type of Identification Produced

FLAGSHIP AVIATION SERVICES LLC

Signed in the Presence of:

Amelia Nieto
Witness

Amelia Nieto
Printed Name

Janine Jenkins
Witness

Janine Jenkins
Printed Name

BY: [signature]
Signature

CFO
Title

Chris Podlasek
Printed Name

405 S. Kimball Ave
Printed Address

Southlake, TX 76092
City/State/Zip

FLAGSHIP AVIATION SERVICES LLC

STATE OF Texas
COUNTY OF Dallas

The foregoing instrument was acknowledged before me by means of ☑ physical presence or ☐ online notarization, this 26th day of November, 2024, by Amelia Nieto (Name of person) as Notary (type of authority), for Flagship Facility Services (name of party on behalf of whom contract was executed).

Stamp or Seal of Notary

Amelia Nieto
Signature of Notary

Amelia Nieto
Print, Type, or Stamp Commissioned Name of Notary

(Personally Known) OR Produced Identification
Type of Identification Produced

AMELIA EDITH NIETO
Notary Public, State of Texas
Comm. Expires 01-23-2028
Notary ID 134725788

Exhibit A

Scope of Services

A. Authority Rights

This Scope of Services details the type of work and deliverables that may be requested by Authority from Company. Services will only begin upon the completion and full execution of this Contract.

1. Authority reserves the right to:

a) Add or delete areas to the Cleanable Square Footage and modify Routine Cleanings or Project Cleaning requirement resulting from changes in incidences that in Authority's opinion require modifications. Payment will be adjusted in accordance with unit pricing listed in Article 5, Fees and Payments.

b) Review and regularly inspect the Cleaning Agents, materials, supplies and equipment and, as necessary, obtain samples and/or conduct independent testing to verify the effectiveness of Cleaning Agents, materials, supplies and equipment and the accuracy of the material safety data sheets (MSDS). Testing may be conducted by a third party. If inspections and/or testing identify Cleaning Agents, materials, supplies and/or equipment that, in Authority's opinion, does not provide effective sanitation or cleanliness or are not performing properly, Authority may require alternate Cleaning Agents, materials, supplies or equipment which meets Authority's standards at no additional cost to Authority.

c) Conduct inspections of the Services at any time. Authority inspection discrepancies will be documented in a report format to include any Services not meeting minimum cleaning standards as defined in Exhibit B, Cleaning Specifications and Standards. Such report will be provided by Authority to Company identifying any discrepancies.

d) Assess fees in accordance with Article 5, Fees and Payments.

e) Require adjustments to Cleaning Schedule as may be necessary to meet the minimum cleaning standards, as detailed in Exhibit B, Cleaning Specifications and Standards, Paragraph 2, Cleaning Standards.

f) Conduct custodial cleaning effectiveness assessments that include soliciting feedback from tenants and Authority's Agent regarding the cleanliness of SkyCenter One on a regular basis via visual inspections, surveys and/or a complaint system. Results of any such assessment will be addressed with

Company and Company will make modifications to the Cleaning Schedule, Cleaning Agents, materials, supplies, equipment, and/or Personnel training as necessary as directed by Authority's Agent.

g) Approve Company's Personnel that will perform Services within Authority areas at SkyCenter One deemed sensitive by Authority.

h) Require the immediate termination of any Personnel as determined by the Director of Commercial Real Estate or designee, including the immediate termination/replacement of the Site Manager. Company will appoint an Authority approved interim Site Manager replacement until a permanent replacement is identified by Company and approved by Authority.

i) Withhold from any payment otherwise due and payable to Company, such sums as Authority deems necessary or desirable to protect itself against failure or delay in performance by Company of its obligation hereunder, which right may be exercised by Authority with or without revoking or terminating this Contract.

j) Perform the Services or hire others to perform the Services and invoice the Company for any costs in excess of the rates listed in Article 5, Fees and Payments if any type of strike, boycott, picketing or work stoppage is directed against Company at SkyCenter One which results in the discontinuance of Services performed under this Contract. Authority will prorate payments for Services completed but not invoiced by Company up until the time of any Service stoppage.

2. Authority Responsibilities

Authority will be responsible for:

a) Providing electricity and water generally available at SkyCenter One as required to perform the Scope of Services under this Contract, at no cost to Company.

b) Initial issuance of access keys required for all spaces for performance of this Contract as deemed necessary by Authority.

c) Provide parking at designated locations for employees directly and actively engaged in providing the Services at no cost to the Company.

3. Authority's Agent

Authority will designate an Agent responsible for:

a) The day-to-day communication with Company's Site Manager.

b) Monitoring, interpreting and overseeing Company's work with regard to, but not limited to, quality of work performed, the manner of performance, rate of progress of the work, acceptability of Cleaning Agents, materials, supplies and equipment furnished by Company, compliance with minimum cleaning standards and Authority satisfaction with performance levels.

c) Coordinating any adjustments to the Services and required remediation.

d) Authorizing minor changes or alterations in the work not involving extra costs and not inconsistent with the overall intent of this Contract.

e) Monitoring and verifying pay applications.

f) Reporting any issue that cannot be resolved with Company to the Director of Commercial Real Estate for final determination.

B. Company Responsibilities

1. Company will:

a) Comply with all terms and conditions of this Contract to achieve and maintain the highest level of Services at SkyCenter One.

b) Comply with all federal, State, and local laws, executive orders, rules and regulations applicable to the provision of Services.

c) Obtain and maintain all licenses required to perform the Services at SkyCenter One.

d) Provide all labor, Cleaning Agents, materials, supplies, equipment, tools, vehicle transportation, uniforms and any other items or services necessary to coordinate, supervise, administer, and perform Services.

e) Manage the activities of all subcontractors and Personnel.

f) Conduct re-cleaning for completed cleaning that is determined unacceptable to Authority at no cost to Authority.

g) Keep assigned storage spaces neat, clean, in good repair and in compliance with all applicable regulations, codes, manufacturer requirements and Airport

regulations regarding storage of Cleaning Agents, supplies, materials and equipment.

2. Deficiencies, Incidents, Accidents and Complaints

a) Correct all Authority or third party identified deficiencies, including immediately responding to remediate any janitorial services hazard created or discovered that could cause damage or injury to Personnel, SkyCenter One, or the public such as tripping or slip and fall hazards, and/or failure to properly meet Occupational Safety and Health Administration (OSHA) requirements which result from inspections or tests. A written response will be sent to Authority that addresses all deficiencies within 30 days of receipt of the written inspection or test report, except instances requiring an immediate response, as determined by Authority. In the event Company does not agree with the findings of Authority, Company will provide specific evidence to substantiate its disagreement.

b) Resolve all claims arising out of any incident or accident during the performance of this Contract that involves property damage and/or injury.

c) Remediate any issue identified by Authority and any complaints by any user of SkyCenter One.

3. Reporting and Documentation

a) Company shall develop, maintain, update, and provide the required plans and reports as detailed below in sufficient detail so Authority can determine that Company is in full compliance with all Contract requirements and all applicable laws. All plans and reports and any other records and documentation provided to Authority will become the property of Authority.

b) Cleaning Schedule
Services will be scheduled and completed in such a way that they do not disrupt the functions and normal day-to-day operations of SkyCenter One.

c) Storage Plan
Maintain a detailed storage plan that addresses safe storage of Cleaning Agents, materials, supplies, tools and equipment at SkyCenter One in accordance with manufacturer specifications, applicable laws and as required by Authority.

d) General Rules for Employee Conduct
Develop and implement general rules for employee conduct that instruct Personnel to:

i. Be clean and neat;

ii. Deal with customers in a prompt, polite, and business-like manner;

iii. Be able to communicate effectively in English to carry out their job requirements;

iv. Comply with Authority Rules and Regulations;

v. Not use improper language, act in a loud, boisterous or improper manner; and

vi. Not solicit or accept gratuities.

The general rules for employee conduct will be part of this Contract and will be reviewed from time to time by the Authority's Agent for modifications, as necessary.

4. Cleaning Agents, Materials, Supplies and Equipment, Company shall:

a) Provide a complete list of Cleaning Agents, supplies, materials and equipment to the Authority's Agent at least 30 days prior to the commencement of this Contract. The list must include the product name, brand name, model number (if applicable), and catalog reference (name of catalog and item number). A copy of an MSDS must be attached to the list for each Cleaning Agent. The list and each MSDS must be kept current during the term of this Contract.

b) Store all Cleaning Agents, supplies, materials and equipment in assigned storage areas at SkyCenter One in accordance with manufacturer specifications and as required by Authority.

c) Keep an inventory of all supplies and materials. Each month, report inventory to Authority's Agent and make recommendations for supply orders.

d) Use all Cleaning Agents, supplies, materials and equipment in strict compliance with all applicable federal, state and local environmental and safety laws and regulations.

e) Maintain all equipment in good, clean, total functional operating condition at all times.

f) Bear all risk of loss, damage or theft.

g) Perform the Services in a manner to ensure the safety of Company's employees and employees at and users of SkyCenter One and to ensure the protection of SkyCenter One regarding any claims related to the Cleaning Agents, materials, supplies and equipment furnished and used under this Contract.

h) Not use chemicals containing ammonia, chlorine, bleach or powdered abrasive cleaners without written permission from Authority.

5. Management and Disposal of Chemical Waste

a) Company is responsible for the management and disposal of all chemical wastes and other wastes that are generated through Company's cleaning actions and restricted from disposal in the sanitary system, including any associated costs. Solid wastes that exhibit no hazardous characteristics or contamination by regulated substances may be disposed of responsibly in available on-site Authority receptacles or dumpsters. Recyclable materials should be collected and disposed of per the guidelines in Exhibit B, Cleaning Specifications and Standards, Paragraph C, Recycling Program Collection Standards. No waste materials or effluent may be discharged outdoors or to Authority's storm water sewer system. Only wastewaters suitable for discharge to the sanitary sewer will be allowable. All sanitary sewer discharges will comply with Authority regulations.

6. Notifications

a) Company shall immediately notify the Authority's Agent via e-mail regarding Personnel issues, incidents, accidents, problems, outages or malfunctions, and any other unusual occurrences. Notice must include an assessment of any damage or resulting or potential injury.

b) Company shall immediately notify the Authority's Agent via telephone regarding any janitorial hazard created or discovered that could cause damage or injury to Personnel, SkyCenter One or the public such as tripping or slip and fall hazards, and/or failure to properly meet OSHA requirements.

7. Personnel

Company will:

a) Abide by all state and federal regulations on the wages and hours of its employees, to include, but not be limited to, the Florida Human Relations Act, the Federal National Relations Act, the Federal Fair Labor Standards Act, the

Federal Civil Rights Act of 1964, as amended, and the Americans with Disabilities Act.

b) Maintain a drug-free workplace within the meaning of the Florida Drug-Free Workplace Act and require Personnel to be drug tested upon reasonable suspicion of drug use.

c) Ensure its Personnel and those doing business with Company comply with the Rules and Regulations of Authority.

d) Maintain sufficient staffing levels to provide the highest level of Services at SkyCenter One and provide adequate supervision and inspections to assure that Personnel are correctly performing the Services.

e) Pay any fines levied against SkyCenter One and Authority caused by Personnel, at no cost to Authority.

f) Provide the Authority's Agent with Personnel's name, telephone number, and photo for access card issuance. Any individual who quits or is terminated must return the access card to the Site Manager immediately. The Site Manager will return the access card to the Authority's Agent. Notification of an individual's change of status will be reported to the Authority by the Authority's Agent immediately. No Personnel will be allowed to work at SkyCenter One without a valid access card.

g) Be solely responsible for the safety, conduct and performance of its Personnel and take all necessary steps to terminate Personnel who participate in acts of misconduct. Immediately, upon written notice by Authority, Company will remove from its payroll at SkyCenter One, any employee who participates in unsafe and/or illegal acts, who violates Authority Rules and Regulations or who, in the opinion of Company or Authority, is otherwise detrimental to the public.

h) Repair any property damage caused by Personnel through abuse, neglect, or misuse of equipment or supplies and considered other than normal wear and tear, at no cost to Authority.

Company's Personnel will:

a) Possess a valid Florida driver's license if operating a motor vehicle on Airport roadways, be covered by Company's insurance and receive Authority vehicle area training, as applicable.

b) Possess an operable cellular telephone to be carried at all times when on duty at SkyCenter One to ensure direct communication with Authority's Agent. Phone numbers are to be filed and maintained with Authority's Agent.

c) Keep uniforms cleaned and well maintained. Permanently stained, torn, disheveled or unsightly uniforms must be replaced immediately at Company's expense.

d) Deal with employees and tenants in a polite manner, be able to communicate effectively in English to carry out assigned job requirements, comply with Authority Rules and Regulations, and comply with Company's general rules for employee conduct.

e) Not use improper language or act in a loud, boisterous or improper manner.

f) Immediately turn in all items of value found at SkyCenter One to the concierge or security guard located at the security desk in the lobby of SkyCenter One.

g) Not solicit or accept, for any reason whatsoever, any gratuity from passengers, tenants, customers, or other persons.

8. Keys

a) Secure keys at all times.

b) Ensure keys are not taken off property.

c) Keep keys not in use in a locked box.

d) Restrict access to keys to essential Personnel only.

e) Be responsible for all costs associated with replacing missing keys and/or installing new locks as a result of lost or misplaced keys. This cost will be paid by Company.

C. Extra Work

1. The Authority's Agent may order additions, deletions, or revisions to the Services under this Contract as necessary to meet Authority objectives. In the event the changes result in Extra Work charges to Authority, Company will advise Authority's Agent in writing of the proposed cost in accordance with the terms of this Contract. If Authority determines that the cost is fair and reasonable, Authority will issue a Work Order to document the change in the Scope of Services under this Contract.

2. If a satisfactory cost for the Extra Work or time to perform the Extra Work cannot be reached, Authority may terminate the Contract as it applies to the Extra Work in question and make such arrangements as may be deemed necessary to complete the Extra Work.

3. In the event of an emergency, as determined by Authority, Company will immediately redirect Personnel as necessary, to assist Authority with clean up. Examples of an emergency include but are not limited to flooding, construction debris, or hazard impacting operations. No penalties will be assessed for unaccomplished work due to the redirection of Personnel for such emergency response.

Exhibit B

Cleaning Specifications and Standards

A. Cleaning Specifications

Area: Lobbies and Common Areas Including but not limited to Entrances, Waiting Areas, and Primary Corridors	Daily	Weekly	Monthly	Quarterly
1. All entry mats and heavy traffic areas are thoroughly vacuumed.	✓			
2. Spot clean carpet as necessary using appropriate products.	✓			
3. Sweep all hard surface floors.	✓			
4. Mop all hard surface floors.		✓		
5. Empty and sanitize trash, ashtrays, urns and replace liners.	✓			
6. Dust and clean exposed ledges and other flat surfaces.	✓			
7. Clean and sanitize all entry door glass, side glass and handles.	✓			
8. Clean, disinfect and polish drinking fountains.	✓			
9. Dust, giving special attention to spider webs.		✓		
10. Spot vacuum all carpets.	✓			
11. Spot-clean all windows glass and glass partitions to hand height.	✓			
12. Spot clean desktops for large debris.	✓			
13. Dust horizontal surfaces to hand height.		✓		
14. Dust Baseboards.		✓		
15. Sweep edges and corners to remove debris.		✓		
16. Detail vacuum all carpet.		✓		
17. Remove fingerprints from doors, frames, light switches, kick plates, handles, and railings.	✓			
18. Clean all interior windows.			✓	
19. High dust above hand-height horizontal surfaces, including, but not limited to, shelves, ceilings, moldings, pipes, ducts, heating outlets.			✓	
20. Lock every exterior suite door upon exit. Return each interior office door to the state it was in before entering.	✓			
Area: Tenant Spaces and Office Areas Includes: Entrances, Waiting Areas, and Primary Corridors	Daily	Weekly	Monthly	Quarterly

1. Vacuum all mats, rugs and carpets, spot clean.		✓		
2. Vacuum all mats, rugs and carpets, spot clean in high-traffic areas	✓			
3. Sweep all hard surface floors, including the communicating stairs for Floors 3/4/5.	✓			
4. Mop all hard surface floors, including the communicating stairs for Floors 3/4/5.		✓		
5. Empty trash receptacles; sanitize and replace liners.	✓			
6. Remove broken-down cardboard and place in recycling room.	✓			
7. Clean and dust exposed surfaces of desks, tables, office furniture and filing cabinets.		✓		
8. Clean and dust all glass surfaces vertical and horizontal to hand height.				✓
9. Clean and sanitize all glass entryways.	✓			
10. Spot clean cubicle partitions as necessary.				✓
11. Clean, disinfect and polish drinking fountains.	✓			
12. Turn off designated lights.	✓			
13. Lock designated doors.	✓			
14. Damp clean countertops.	✓			
15. Clean baseboards		✓		
16. Dust interior window ledges		✓		
17. Remove fingerprints from doors, frames, light switches, kick plates, handles, and railings	✓			
18. High dust above hand height (70") all horizontal surfaces including, but not limited to, shelves, moldings, ledges, pipes, ducts, and heating outlets.			✓	
19. Remove dust and cobwebs from ceiling areas.			✓	
20. Spot mop composition floors with neutral cleaner (auto scrubber should be used where possible)	✓			
21. Lock every exterior suite door upon exit. Return each interior office door to the state it was in before entering.	✓			
A. Breakrooms	Daily	Weekly	Monthly	Quarterly
1. Sweep/damp mop floors.	✓			
2. Empty trash and replace liners.	✓			
3. Damp wipe the exterior of the refrigerator and microwave.	✓			
4. Clean and disinfect faucets, sinks and counters.	✓			

5. Clean and disinfect tables and chairs.	✓			
Area: Elevators Includes: 5 passenger, 1 service and 2 parking garage	Daily	Weekly	Monthly	Quarterly
1. Sweep/Vacuum floors and spot clean where necessary.	✓			
2. Mop floors and spot clean where necessary.		✓		
3. Clean, dust ceilings, doors, and walls, and polish finishes using appropriate products.	✓			
4. Clean and disinfect control panels and call buttons.	✓			
5. Clean and vacuum door tracks.	✓			
6. Detail door tracks.				✓
Area: Restrooms	Daily	Weekly	Monthly	Quarterly
1. Mop/Vacuum floors and clean using appropriate disinfectants.	✓			
2. Clean, dust mirrors, bright work and polish finishes using appropriate products.	✓			
3. Clean and sanitize all exposed surfaces of counters.	✓			
4. Clean and disinfect faucets, sinks, urinals, toilets, and seats with emphasis around any attachments, and bottoms of toilets and urinals.	✓			
5. Empty trash receptacles; sanitize and replace liners.	✓			
6. Empty, clean, sanitize sanitary napkin receptacles and replace liners.	✓			
7. Clean and disinfect stall partitions and doors.	✓			
8. Restock paper towels, toilet paper, hand soap, and check dispensers for proper operation.	✓			
9. Supplies delivered will be stored by Personnel in designated janitorial closest(s). UNLESS OTHERWISE SPECIFIED	✓			
10. Detail grout.			✓	
11. Clean, sanitize, and polish all fixtures including toilets bowls, urinals, and sinks.	✓			
12. Clean and polish chrome fittings.	✓			
13. Clean and polish glass and mirrors.	✓			
14. Remove spots, marks, stains, and splashes from areas.	✓			
15. Spot clean toilet partitions.	✓			
16. Sweep floors.	✓			
17. Damp mop floors with germicidal disinfectant.	✓			

18. Re-supply common area restroom dispensers during the day.	✓			
19. Re-supply personal area restroom dispensers during the night cleaning.	✓			
20. Fingerprints must be removed from doors, frames, light switches, kick plates, plush plates, handles and railings..	✓			
21. Low dust horizontal surfaces to hand height (70")		✓		
22. Dust toilet partitions.		✓		
23. Clean baseboards.		✓		
24. High dust above horizontal surfaces, including, but not limited to, shelves, ceilings, moldings, ledges, pipes, ducts, and heating outlets.			✓	
25. Remove dust and cobwebs from ceiling areas.			✓	
26. Wash and sanitize toilet partitions.			✓	
Area: Fitness Room	Daily	Weekly	Monthly	Quarterly
1. Sweep, mop and vacuum all floors and mats and remove tripping hazards.	✓			
2. Clean and disinfect mats.	✓			
3. Dust furnishing and fixtures.	✓			
4. Clean interior windows, shine doors and fixtures.	✓			
5. Clean and dust wall mirrors and light fixtures.	✓			
6. Clean and sanitize touchpoints on equipment. Use a maintenance checklist for inspections.	✓			
7. Clean and sanitize shower walls, curtains, doors, and fixtures.	✓			
8. Replenish shampoo, conditioner, and soap dispensers if applicable.	✓			
9. Clean and disinfect faucets, sinks and counters.	✓			
10. Clean and disinfect toilets and urinals.	✓			
11. Empty and sanitize sanitary napkin receptacles and replace liners.	✓			
12. Clean and sanitize stall partitions and doors.		✓		
13. Restock paper towels, toilet paper and hand soap.	✓			
14. Restock fresh towels and remove used towels for laundry services.	✓			
15. Detail grout in locker room and shower stall floors.			✓	

Area: Stairwells	Daily	Weekly	Monthly	Quarterly
1. Sweep, vacuum and spot clean stairs.	✓			
2. Mop all landing(s).		✓		
3. Clean and dust handrails and ledges.	✓			
4. Spot clean mats and carpets as necessary.	✓			
5. Police for litter, dust, and debris.	✓			
6. Dust, giving special attention to spider webs and "fuzzy" walls.		✓		
Area: Janitorial Closets	Daily	Weekly	Monthly	Quarterly
1. Must be maintained in orderly and clean fashion and be fully stocked.	✓			
2. Do not leave wet mops leaning against walls or equipment.	✓			
3. Vacuum cleaners are to be emptied and cleaned.	✓			
4. Make sure any running water is shut off.	✓			
Area: Conference Centers Includes: North and South Rooms plus Executive Room (three total)	Daily	Weekly	Monthly	Quarterly
1. Vacuum all rugs and carpet thoroughly giving special attention to under tables and chairs.	✓			
2. Empty trash; sanitize and replace liners.	✓			
3. Clean marker boards as necessary.	✓			
4. Dust and clean tables, glass surfaces, mirrors, picture frames and plaques, using appropriate product.	✓			
5. Low dust all chair legs, cross bars, baseboards, and chair rail trim.		✓		
6. Fabric seats vacuumed and spot cleaned.		✓		
7. Dust, giving special attention to spider webs and "fuzzy" walls.	✓			
Area: Café	Daily	Weekly	Monthly	Quarterly
1. Sweep/mop floors.	✓			
2. Empty trash and replace liners.	✓			
3. Sanitize tables.	✓			
4. Wipe down all the counters.	✓			
5. Clean the seats and benches.	✓			
Day Maid				
A. AOC & EOC	Daily	Weekly	Monthly	Quarterly
1. Clean and disinfect single-stall restrooms and 3rd floor restrooms.	✓			

2. Restock restroom dispensers.	✓			
3. Empty trash receptacles	✓			
4. Clean and disinfect the breakroom.	✓			
5. Restock breakroom supplies.	✓			
6. Dispose all trash to the compactor.	✓			
B. Fitness Center	Daily	Weekly	Monthly	Quarterly
1. Clean and disinfect showers, toilets and urinals.	✓			
2. Clean and sanitize all touchpoints including equipment.	✓			
3. Restock paper towels, toilet paper and hand soap.	✓			
4. Restock fresh towels and remove used towels for laundry services.	✓			
5. Damp mop gym floor.	✓			
6. Dust furnishings and fixings.	✓			
C. Lobby Common Areas	Daily	Weekly	Monthly	Quarterly
1. Inspect seating areas.	✓			
2. Clean and sanitize all entry door glass, side glass and handles.	✓			
3. Clean and sanitize all touchpoints.	✓			
D. As Needed				
1. Vacuum, sanitize, and dust conference rooms and board room.				
2. Fold and inspect towels from the towel service company.				
Day Porter/Maintenance Helper				
A. Garage	Daily	Weekly	Monthly	Quarterly
1. Remove debris from the concrete floor on Floor 1 using a leaf backpack blower.	✓			
2. Remove all debris on grounds.	✓			
3. Clean and sanitize the lift gate access card reader.	✓			
4. Empty and sanitize trash receptacles.	✓			
5. Dust all spiderwebs from garage.	✓			
6. Clean and sanitize bike room.		✓		
7. Sweep, vacuum, mop stairwells.		✓		
8. Clean and sanitize EV charge stations on Floors 1 through 5.		✓		
B. Building Exterior Grounds	Daily	Weekly	Monthly	Quarterly

1. Clean and sanitize all tables and chairs.	✓			
2. Clean and sanitize all glass doors.	✓			
3. Remove debris from sidewalk entrances using a leaf backpack blower.	✓			
4. Clean the loading dock and trash room.	✓			
C. As Needed				
1. Set up and tear down SkyCenter One Conference Center.				
2. Assist Authority's Agent with any building requests.				
3. Submit janitorial supply orders to Authority's Agent.				
Day Maid and Day Porter				
A. Restrooms				
1. Clean and disinfect all restrooms (Floors 1 through 6).	✓			
2. Clean and disinfect single-stall restrooms (Floors 3 through 5).	✓			
3. Clean and disinfect Fitness Center restrooms.	✓			
4. Empty and sanitize all trash receptacles and sanitary napkin receptacles and replace liners.	✓			
B. Penthouse				
1. Check and sweep area.		✓		

B. Cleaning Standards

A. Minimum Cleaning Standards

Company will be required to meet or exceed the minimum cleaning standards listed below. The following standards are not to be construed as exhaustive. Any standards not specifically included but found necessary to properly clean or care for SkyCenter One, including but not limited to all flooring, glass, walls, metal, brightwork, and other surfaces, will be included as though written into these standards.

i. Cleaning Terms

a. Clean and polished appearance means free from dirt, dust, stickers, stains, streaks, lint, cleaning marks, smudges, adhered foreign substances, gum, cobwebs, grease, oil, and grime with no evidence of surface spoilage or spotting resulting in surface reflections that are distinct without variance.

b. Safe condition means all potential hazards have been temporarily barricaded to ensure public safety or the hazard has been removed/remediated and the potential hazard has been reported to Authority.

c. Uniformly clean appearance means all surfaces are free from dirt, dust, stickers, stains, streaks, lint, cleaning marks, smudges, adhered foreign substances, gum, cobwebs, grease, oil, and grime with no evidence of surface spoilage or spotting.

d. Uniformly bright appearance means all polished metal surface reflections are distinct without variance.

ii. Floor Care Standards

a. Cleaning Agents and Equipment

All carpet and hard floor Cleaning Agents and equipment will be pre-approved by the Authority's Agent. Manufacturer's floor cleaning recommendations for the Cleaning Agents and equipment will be closely followed. The equipment will be in good repair at all times.

If floor care is determined by the Authority's Agent to not meet the floor care minimum standards and the discrepancy is caused by improper procedures, Cleaning Agents or equipment used, the deficiency will be corrected within 48 hours of notification of the discrepancy. Testing of new Cleaning Agents and/or equipment will be coordinated through the Authority's Agent.

b. Barricades

A sufficient number of barricades, traffic cones and slip hazard signs approved by the Authority's Agent will be provided for each floor area being cleaned to adequately protect the public. All barricades, traffic cones and signage will be professionally designed for its intended use and will meet all OSHA safety standards. All barricades and directional equipment will be maintained to provide a clean appearance.

c. Drain Maintenance

Water will be strained from machines prior to water being poured down any sink drain. The straining device/method will be pre-approved by Authority's Agent. Floor drains or screens in any sink will not be removed. Liquid will be maintained in P-traps to prevent odors.

d. Carpet Care Processes

i. Carpets will be maintained in such a manner as to promote longevity and will be left in a clean, orderly, and safe condition. Carpets will be spot cleaned to prevent stains from becoming permanent. All stains, gum, food, debris, sticky substances, vomit, trash, bio-hazard spills, and other substances will be removed from the carpet using a properly diluted cleaning solution. Care will be taken to use a Cleaning Agent that will not harm the carpet fibers and ensure complete surface removal. The adjacent surfaces will be protected or cleaned following the spot removal operation. Damaged carpet will be reported to the Authority's Agent with a description of the damage and location.

ii. All vacuuming will be done with an upright vacuum with active vacuum and cylindrical brushing action. Stained areas will be treated with spot-cleaning solutions in accordance with the carpet manufacturer's recommendations. The spot-cleaning process will be performed until as much of the stain as possible has been removed. Pile lifting is an integral part of carpet cleaning in high-traffic areas and is required in all heavy-traffic areas before the extraction process.

The hot water extraction process will be performed as needed to maintain the minimum carpet cleaning standards over the entire carpeted surface and in accordance with the carpet manufacturer's recommendations to remove embedded dirt and grime, lift carpet pile, and return carpets to a clean, bright, and uniform appearance. Equipment with a cylindrical action will be utilized for cleaning, extracting, pile lifting and vacuuming to prevent damage to carpet fibers. The practice of using rotary bonnet equipment for cleaning or drying of carpet is typically not allowed and requires approval by the Authority's Agent.

Chairs, receptacles, tables, benches, and any other non-fixed items will be tipped or moved where necessary to allow for cleaning of the whole surface and will then be placed back into their original positions after the carpets are adequately dry. Fans and air movers will be used to ensure proper drying of carpets.

iii. Interior and exterior walk-off mats will be vacuumed and cleaned and will be free of all visible lint, litter, and soil. Carpet-style entrance mats will be vacuumed to remove soil and dirt and to restore resiliency of the carpet pile. Rubber or polyester

entrance mats will be swept, vacuumed, extracted, or hosed down and then dried to remove soil and grit. Soil underneath entrance mats will be removed, rubber backing will be cleaned to prevent mats from shifting or "walking" and cleaned mats returned to their normal location.

B. Chemical Management

Manage and dispose of all chemical wastes (and wastes otherwise restricted from disposal as sanitary wastes,) at no cost to Authority. Solid wastes that exhibit no hazardous characteristics or contamination by regulated substances may be disposed of responsibly in available on-site Authority Receptacles or dumpsters. No waste materials or effluent may be discharged outdoors or to Authority's storm water sewer system. Only wastewater suitable for discharge to the sanitary sewer will be allowable. All sanitary sewer discharges will comply with Authority Rules and Regulations.

C. Recycling Program Collection Standards

i. Recyclables collected from recycling receptacles will be placed in green-tinted plastic bag liners so that recyclable materials can be clearly identified and kept separate from collected garbage/trash.

ii. All recyclables, including but not limited to paper, newsprint, plastic, aluminum, and cardboard, will be transported to the dock areas or collection sites as designated by Authority. The bags containing recycled materials will be emptied into the designated collection containers and the bags themselves will be disposed of as trash. Additionally, any bag appearing to contain material contaminated by more than 10% non-recyclable materials will be disposed of as trash and not placed in the recycling collection containers. Personnel will wear appropriate personal protective equipment (PPE) when conducting this work.

iii. Tracking of oil, dirt, debris, salt, grease, wheel marks, or other outside substances into SkyCenter One will be prevented at all times when transporting recyclable materials. All garbage/trash collection containers will be cleaned on a regular basis to prevent offending odors and an unprofessional appearance.

iv. Cardboard will be collected separately and transported to the designated cardboard compactor as available and compacted. All Personnel will be properly trained in the operation of the compactors to ensure that cardboard is appropriately placed in the compactors and completely compacted to prevent clogging of debris.

v. Future recycling, composting or program enhancements that Authority implements, including but not limited to, changes in the recycling materials,

segregation approach, locations and types of recycling receptacles and volume of materials generated, will be adhered to and supported.

D. Sustainable Cleaning Standards and Processes

i. Environmentally Preferred Cleaning
Environmental preferred cleaning includes the use of products or services that have a lesser or reduced negative effect on human health and the environment when compared with competing products or services that serve the same purpose.

ii. Low Environmental-Impact Cleaning
It is preferred to use cleaning practices, associated Cleaning Agents, and supply purchases to promote sustainability and improve safety and occupant well-being at SkyCenter One. This ensures that all cleaning procedures, equipment, and Cleaning Agents in use at SkyCenter One provide a clean and safe environment, reduce the risk of toxic chemical exposure to janitorial staff and SkyCenter One occupants, and maintain healthy air quality.

iii. Sustainable Cleaning Systems
The use of sustainable cleaning systems protects the environment and protects occupants' exposure to toxic materials by reducing the overall need for janitorial staff to clean with chemicals. Wherever feasible, the use of microfiber dust mopping of floors and cleaning of hard surfaces should be employed, which in conjunction with the entryway systems, use of HEPA filters, and a daytime vacuum program to eliminate pollutants, reduce the need for wet/chemical cleaning. Concentrated Cleaning Agents will be diluted on site wherever available to reduce energy use involved with the transportation of the product and resource conservation from reduced packaging. This improves indoor air quality at SkyCenter One, reduces ground ozone formation, releases no ozone-depleting chemicals and reduces the risk of janitorial staff and SkyCenter One's occupants to toxic chemical exposure.

iv. Sustainable Cleaning Operating Procedures
Standard operating procedures will be in place and followed reflecting the core principles of sustainable cleaning. Procedures will address how janitorial cleaning, hard floor maintenance, and carpet maintenance will be consistently implemented, managed, and audited. Procedures should also include proactive strategies to reduce contaminant infiltration at the source such as walk-off mats and daytime vacuuming.

v. Environmental Health and Safety Regulations Compliance
All federal, state, and local health, safety and environmental regulations must be complied with, including Occupational Health and Safety Act (OSHA) requirements under the Hazard Communication Standard and the EPA Resource Conservation and Recovery Act (RCRA). Chemical storage on site should be

limited and chemicals must be stored safely with appropriate spill response equipment, procedures, and staff training.

vi. Chemical Concentrations and Dilution Systems
Concentrated Cleaning Agents should be diluted on site; however, when applicable, concentrated Cleaning Agents that are packaged in “ready-to-dispense” (RTD) or other appropriate dilution systems are acceptable. All product dilution/dispensing systems will be pre-approved by the Authority’s Agent. Concentrated packaging systems are used to dilute and dispense a wide variety of concentrated cleaning solutions, from general purpose cleaners and glass cleaners to floor cleaners and restroom cleaners. The use of such Cleaning Agents reduces green-house gas emissions associated with transport of bulkier, “ready-to-use” Cleaning Agents.

Exhibit C

Sample Work Order

Work Order – Professional Services
Hillsborough County Aviation Authority
Janitorial Services at SkyCenter One
Flagship Aviation Services LLC

1. Work Order No.:

2. Project Title:

3. Authorization for Payment
   Purchase Order No.: **OR** ☐ Purchasing Card Number provided

   NOTE: The Purchase Order number must be entered above or Purchasing Card number provided to Company prior to signing this Work Order and prior to beginning work.

4. Contract Amount Summary

Contract Not-To-Exceed Amount		$
Total of Previous Work Order(s)	-	$
Subtotal		$
Amount of this Work Order	-	$
Remaining Contract Amount		$

5. Project Information

   A. Project Purpose:

   B. Project Description:

   C. Project Scope of Work and Deliverables:

   D. Project Number:

6. Schedule and Costs

   A. Project Schedule/Timeline

   Clearly outline the deliverables and the time it will take to complete each deliverable.

Task Number	**Deliverable**	**Due Date**

1.		
2.		
3.		
4.		
5.		

B. Total Cost of Project
Provide the costs in U.S. dollars.

Expenditure *<insert applicable terms>*	Totals
Service Cost	
Hourly Rate <insert job classification>	$
Number of hours to complete project	x
Total Service Cost	$
Reimbursable Costs (as applicable)	
Data	$
Printing	$
Travel*	$
Other:	$
Other:	$
Total Projected Reimbursable Cost	$
Total Projected Project Cost (Service Cost and Reimbursable Costs)	**$**

*All travel related expenses must be in accordance with Authority Policy P412 – Travel, Business Development, and Working Meals Expenses.

C. Reimbursable Costs:
Provide an explanation for all projected reimbursable costs listed in Item B above.

7. Payment
<insert applicable method of payment based on project length and/or milestones or deliverables>

<Projects one month and less>

Payment will be made in full upon completion of the project by Company and acceptance by Authority.

OR

<Projects 30 to 90 days>

Payment will be made in three installments of 25% of the total amount due at 30 days from commencement of services, 25% of the total amount due at 60 days from commencement of services, and the final 50% due upon full completion and acceptance of all deliverables by Authority.

OR

Payment will occur monthly based on time logs and hours completed each month

OR

<Projects exceeding 90 days>

Payment will be made in four equal installments at the 25%, 50% and 75% completion milestones with the final installment to be paid upon full completion and acceptance of all deliverables by Authority.

OR

Payment will occur monthly based on time logs and hours completed each month

---

Company acknowledges the acceptance of this Work Order and has received a Purchase Order number or a PCard number.

Company: Date:

Authorized Official:

Name: Title:

Signature: _____

Hillsborough County Aviation Authority Approval of this Work Order

Department: Real Estate Date:

Name: Title:

Signature: _____

cc: Central Records
Procurement Agent

Exhibit D

Scrutinized Company Certification

Hillsborough County Aviation Authority
PO Box 22287
Tampa, FL 33622
Telephone. 813-870-8700

This certification is required pursuant to Florida State Statute Section 287.135.

As of July 1, 2018, a company that, at the time of bidding or submitting a proposal for a new contract or renewal of an existing contract, is on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List or the Scrutinized Companies that Boycott Israel List or is engaged in a boycott of Israel, created pursuant to Florida Statute Section 215.4725, or has been engaged in business operations in Cuba or Syria, is ineligible for, and may not bid on, submit a proposal/response for, or enter into or renew a contract/agreement with an agency or local governmental entity for goods of services of $1 million or more.

Company:	Flagship Aviation Services LLC		
Address:	405 S. Kimball Ave.		
City: Southlake		State: TX	Zip Code: 76092
Phone: 972-574-9702		Email: cpodlasek@flagshipinc.com	
Federal ID Number: 92-1160337			

I, Chris Podlasek, as a representative of Flagship Aviation Services LLC certify and affirm that this company is not on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List or the Scrutinized Companies that Boycott Israel List or is engaged in a boycott of Israel, and has not been engaged in business operations in Cuba or Syria.

Signature	CFO Title
Chris Podlasek Printed Name	11/26/2024 Date

2.8 Respondent has completed and submitted the Affidavit of Compliance with Anti- Human Trafficking Laws.*

Anti-Human Trafficking Certification

Tampa International Airport

Peter O. Knight Airport
Plant City Airport
Tampa Executive Airport

Affidavit of Compliance with Anti-Human Trafficking Laws

In accordance with Section 787.06 (13), Florida Statutes, the undersigned, on behalf of the Respondent listed below ("Respondent"), hereby attests under penalty of perjury that the Respondent:

1. Does not use coercion for labor or services as defined in Section 787.06, Florida Statutes.

The undersigned is authorized to execute this Affidavit on behalf of Respondent.

Date: August 28, 2024

Signed: _____

Entity: Flagship Aviation Services, LLC

Name: David Pasek

Title: Chief Executive Officer

Joseph W. Lopano, Chief Executive Officer | Brig. General Chip Diehl, Chairman | Gary W. Harrod, Vice Chairman
Mayor Jane Castor, Secretary | Robert I. Watkins, Treasurer | Commissioner Harry Cohen, Assistant Secretary/Assistant Treasurer

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 12/5/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: WS Certificates	
Woodruff Sawyer 50 California Street, Floor 12 San Francisco CA 94111	PHONE (A/C, No, Ext): 844-972-6326	FAX (A/C, No):
	E-MAIL ADDRESS: certificates@woodruffsawyer.com	
	INSURER(S) AFFORDING COVERAGE	**NAIC #**
	INSURER A : Federal Insurance Company	20281
INSURED Flagship Aviation Services LLC 405 S. Kimball Ave. Southlake, TX 76092	INSURER B : Ironshore Specialty Insurance Company	25445
	INSURER C : Zurich American Insurance Company	16535
	INSURER D : American Guarantee and Liability Insurance	26247
	INSURER E : American Zurich Insurance Company	40142
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** 1422529948 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
C	X **COMMERCIAL GENERAL LIABILITY** [ ] CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: X POLICY X PRO-JECT [ ] LOC [ ] OTHER:	Y	Y	GLO6946950	7/1/2024	7/1/2025	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,750,000 $ 1,000,000 $ $ 1,750,000 $ 4,000,000 $ 4,000,000
C	**AUTOMOBILE LIABILITY** X ANY AUTO X OWNED AUTOS ONLY X SCHEDULED AUTOS X HIRED AUTOS ONLY X NON-OWNED AUTOS ONLY	Y	Y	BAP6946949	7/1/2024	7/1/2025	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 2,000,000 $ $ $
D	X **UMBRELLA LIAB** X OCCUR **EXCESS LIAB** [ ] CLAIMS-MADE [ ] DED [ ] RETENTION $	Y	Y	AUC096991603	7/1/2024	7/1/2025	EACH OCCURRENCE AGGREGATE	$ 5,000,000 $ 5,000,000
E	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** Y / N ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? [ ] **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N / A	Y	WC6946951	7/1/2024	7/1/2025	X PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ 1,000,000 $ 1,000,000 $ 1,000,000
A B	CRIME - Employee Theft POLLUTION	Y	Y	81696966 ICELLUW00159257	7/1/2024 7/1/2024	7/1/2025 7/1/2025	Limit Limit/Aggregate	$1,500,000 $5M/$5M

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

General Liability: $250,000 SIR
Automobile Liability: $50,000 Deductible
Workers Compensation: $500,000 Deductible
Pollution Liability: $50,000 Ded
FID: $0
Crime: $10K/$25K/$75K/$5K

See Attached...

CERTIFICATE HOLDER

Hillsborough County Aviation Authority
Tampa International Airport
Attn: Chief Executive Officer
P.O. Box 22287
Tampa, FL 33622

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Zoe Overbay

© 1988-2015 ACORD CORPORATION. All rights reserved.

AGENCY CUSTOMER ID: _____

LOC #: _____

ADDITIONAL REMARKS SCHEDULE

AGENCY Woodruff Sawyer	NAMED INSURED Flagship Aviation Services LLC 405 S. Kimball Ave. Southlake, TX 76092
POLICY NUMBER	
CARRIER / NAIC CODE	EFFECTIVE DATE:

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: 25 **FORM TITLE:** CERTIFICATE OF LIABILITY INSURANCE

RE: Janitorial Services at Skycenter One
Location: 5411 SkyCenter Dr., Tampa, Florida, 33607.

Hillsborough County Aviation Authority, members of the Authority's governing body, and the Authority's officers, volunteers, agents, and its employees, the Florida Department of Transportation are included as additional insured as respects General Liability, Automobile Liability, Umbrella Liability and Pollution Liability to the extent provided in the attached forms.

Waiver of Subrogation applies as respects General Liability, Automobile Liability, Umbrella Liability, Workers Compensation and Pollution Liability to the extent provided in the attached forms and as permitted by law.

© 2008 ACORD CORPORATION. All rights reserved.

The ACORD name and logo are registered marks of ACORD

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

DESIGNATED INSURED FOR COVERED AUTOS LIABILITY COVERAGE

This endorsement modifies insurance provided under the following:

AUTO DEALERS COVERAGE FORM
BUSINESS AUTO COVERAGE FORM
MOTOR CARRIER COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by this endorsement.

This endorsement identifies person(s) or organization(s) who are "insureds" for Covered Autos Liability Coverage under the Who Is An Insured provision of the Coverage Form. This endorsement does not alter coverage provided in the Coverage Form.

This endorsement changes the policy effective on the inception date of the policy unless another date is indicated below.

Named Insured: FLAGSHIP ENTERPRISES HOLDING, INC.

Endorsement Effective Date: 07/01/2024

SCHEDULE

Name Of Person(s) Or Organization(s):
ANY PERSON OR ORGANIZATION WHOM YOU HAVE AGREED TO INCLUDE AS AN ADDITIONAL INSURED UNDER A WRITTEN CONTRACT, PROVIDED SUCH CONTRACT WAS EXECUTED PRIOR TO THE DATE OF LOSS.
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

Each person or organization shown in the Schedule is an "insured" for Covered Autos Liability Coverage, but only to the extent that person or organization qualifies as an "insured" under the Who Is An Insured provision contained in Paragraph **A.1.** of Section **II** – Covered Autos Liability Coverage in the Business Auto and Motor Carrier Coverage Forms and Paragraph **D.2.** of Section **I** – Covered Autos Coverages of the Auto Dealers Coverage Form.

© Insurance Services Office, Inc., 2011

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US (WAIVER OF SUBROGATION)

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
ELECTRONIC DATA LIABILITY COVERAGE PART
LIQUOR LIABILITY COVERAGE PART
POLLUTION LIABILITY COVERAGE PART DESIGNATED SITES
POLLUTION LIABILITY LIMITED COVERAGE PART DESIGNATED SITES
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART
RAILROAD PROTECTIVE LIABILITY COVERAGE PART
UNDERGROUND STORAGE TANK POLICY DESIGNATED TANKS

SCHEDULE

Name Of Person(s) Or Organization(s):
ALL PERSONS AND/OR ORGANIZATIONS THAT ARE REQUIRED BY WRITTEN CONTRACT, OR AGREEMENT WITH THE INSURED, EXECUTED PRIOR TO THE ACCIDENT OR LOSS, THAT WAIVER OF SUBROGATION BE PROVIDED UNDER THIS POLICY FOR WORK PERFORMED BY YOU FOR THAT PERSON AND/OR ORGANIZATION.
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

The following is added to Paragraph **8. Transfer Of Rights Of Recovery Against Others To Us** of **Section IV – Conditions:**

We waive any right of recovery against the person(s) or organization(s) shown in the Schedule above because of payments we make under this Coverage Part. Such waiver by us applies only to the extent that the insured has waived its right of recovery against such person(s) or organization(s) prior to loss. This endorsement applies only to the person(s) or organization(s) shown in the Schedule above.

© Insurance Services Office, Inc., 2018

(2) Comply with laws, regulations, codes or standards.

This applies not only to us, but also to any rating, advisory, rate service or similar organization which makes insurance inspections, surveys, reports or recommendations.

14. Legal Action Against Us

No person or organization has a right under this policy:

a. To join us as a party or otherwise bring us into a **suit** asking for damages from an insured; or

b. To sue us on this policy unless all of its terms have been fully complied with.

A person or organization may sue us to recover on an agreed settlement or on a final judgment against an insured; but we will not be liable for damages that are not payable under the terms of this policy or that are in excess of the applicable limit of insurance. An agreed settlement means a settlement and release of liability signed by us, the insured and the claimant or the claimant's legal representative.

15. Multiple Coverage Sections

No **claim**, or part thereof, for which we have accepted coverage or coverage has been held to apply under one or more Coverages in this policy shall be covered under any other Coverages in this policy.

16. Other Insurance

If other valid and collectible insurance is available to the insured for a loss we cover under this policy, our obligations are limited as follows:

a. Primary Insurance

This insurance is primary except when paragraph **b.** below applies. If this insurance is primary, our obligations are not affected unless any of the other insurance is also primary. Then, we will share with all that other insurance by the method described in paragraph **c**. below. However, regardless of whether **b**. below applies, in the event that a written contract or agreement or permit requires this insurance to be primary for any person or organization you agreed to insure and such person or organization is an insured under this policy, we will not seek contributions from any such other insurance issued to such person or organization.

b. Excess Insurance

(1) This insurance is excess over:

(a) Any of the other insurance, whether primary, excess, contingent or on any other basis, that is Fire, Extended Coverage, Builder's Risk, Installation Risk or similar coverage for **your work**;

(b) Any other insurance, whether primary, excess, contingent or on any other basis, available to you covering liability for damages arising out of **your work**, for which you have been added as an additional insured;

(c) Any project specific insurance, whether primary, excess, contingent or on any other basis, available to you covering liability for damages arising out of **your work** at a specified job site; or

(d) Any other insurance, whether primary, excess, contingent or on any other basis, that covers loss arising in whole or part from **mold matter**, legionella pneumophila or a **disinfection event**.

(2) When this insurance is excess, we will have no duty to defend the insured against any **suit** if any other insurer has a duty to defend the insured against that **suit**. If no other insurer defends, we will undertake to do so, but we will be entitled to the insured's rights against all those other insurers.

(3) When this insurance is excess over other insurance, we will pay only our share of the amount of the loss, if any, that exceeds the sum of:

(a) The total amount that all such other insurance would pay for the loss in the absence of this insurance;

(b) The total of all deductible and self-insured amounts under all that other insurance; and

(c) The deductible and self-insured amounts under this insurance.

(4) We will share the remaining loss, if any, with any other insurance that is not described in this Excess Insurance provision and was not bought specifically to apply in excess of the limits of insurance shown in the Declarations of this policy.

c. Method Of Sharing

If all of the other insurance permits contribution by equal shares, we will follow this method also. Under this approach each insurer contributes equal amounts, excess of applicable deductible and self-insured amounts under all such insurance, until it has paid its applicable limit of insurance or none of the loss remains, whichever comes first.

If any of the other insurance does not permit contribution by equal shares, we will contribute by limits. Under this method, each insurer's share is based on the ratio of its applicable limit of insurance to the total applicable limits of insurance of all insurers.

17. Premiums and Deductible

The first Named Insured shown in the Declarations:

a. Is responsible for the payment of all premiums;

b. Will be the payee for any return premiums we pay; and

c. Is responsible for the payment of all deductibles.

18. Representations

By accepting this policy, you agree:

a. The statements in the Declarations are accurate and complete;

b. Those statements are based upon representations you made to us; and

c. We have issued this policy in reliance upon your representations.

19. Separation Of Insureds

Except with respect to the limits of insurance and any rights or duties specifically assigned in this policy to the first Named Insured, this insurance applies:

a. As if each Named Insured were the only Named Insured; and

b. Separately to each insured against whom **claim** is made or **suit** is brought.

20. Service of Suit

Subject to **SECTION IV – CONDITIONS**, Condition **5**. **Choice of Forum** above, it is agreed that in the event of failure of us to pay any amount claimed to be due hereunder, we, at the request of the insured, will submit to the jurisdiction of a court of competent jurisdiction within the United States. Nothing in this condition constitutes or should be understood to constitute a waiver of our rights to commence an action in any court of competent jurisdiction in the United States, to remove an action to a United States District Court, or to seek a transfer of a case to another court as permitted by the laws of the United States or of any state in the United States. It is further agreed that service of process in such suit may be made upon us and that in any suit instituted against us upon this contract, we will abide by the final decision of such court or of any appellate court in the event of any appeal.

Further, pursuant to any statute of any state, territory, or district of the United States which makes provision therefore, we hereby designate the Superintendent, Commissioner, Director of Insurance, or other officer specified for that purpose in the statute, or his or her successor or successors in office as its true and lawful attorney upon whom may be served any lawful process in any action, suit or proceeding instituted by or on behalf of the insured or any beneficiary hereunder arising out of this contract of insurance, and hereby designates the above named counsel as the person to whom the said officer is authorized to mail such process or a true copy thereof.

21. Transfer Of Rights Of Recovery Against Others To Us

If the insured has rights to recover all or part of any payment we have made under this policy, those rights are

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – COMPLETED OPERATIONS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s)	Location And Description Of Completed Operations
ANY PERSON OR ORGANIZATION WHOM YOU HAVE AGREED TO INCLUDE AS AN ADDITIONAL INSURED UNDER A WRITTEN CONTRACT, PROVIDED SUCH CONTRACT WAS EXECUTED PRIOR TO THE DATE OF LOSS.	ALL LOCATIONS WHERE YOU PERFORM WORK FOR SUCH ADDITIONAL INSURED PURSUANT TO ANY SUCH WRITTEN CONTRACT
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. **Section II – Who Is An Insured** is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by "your work" at the location designated and described in the Schedule of this endorsement performed for that additional insured and included in the "products-completed operations hazard".

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and

2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or

2. Available under the applicable limits of insurance;

whichever is less.

This endorsement shall not increase the applicable limits of insurance.

© Insurance Services Office, Inc., 2018

c. The duties and requirements imposed upon any **insured** under this policy will not apply to any **non-admitted jurisdiction**. However, with respect to any claims made or **suits** brought in a **non-admitted jurisdiction**, it will be the duty of the first **Named Insured** to do or cause the applicable **qualified entity** to do such things as would be required of such **qualified entity** if **Coverage A** applied directly to such claim or **suit**, including:

(1) Make such investigation, defense or settlement as we deem reasonable;

(2) Obtain our approval for any payment; and

(3) Effect approved payments to others, in accordance with the terms and conditions of this insurance.

d. Under **Coverage B**, this policy does not apply to any liability, damage, **loss**, cost or expense arising out of any operations or activities of a **qualified entity**.

e. We will promptly pay the first **Named Insured** at the mailing address listed in Item **2.** of the Declarations the amount of damages covered under the terms of this policy. If the first **Named Insured** or any **qualified entity** recovers from any third party all or part of any amount that we have paid pursuant to this insurance, the first **Named Insured** will promptly reimburse the amount of any such recovery to us.

10. Legal Action Against Us

There will be no right of action against us under this insurance unless:

a. You have complied with all the terms of this policy; and

b. The amount you owe has been determined by settlement with our consent or by actual trial and final judgment.

This insurance does not give anyone the right to add us as a party in an action against you to determine your liability.

11. Maintenance of Underlying Insurance

During the period of this policy, you agree:

a. To keep the policies listed in the Schedule of Underlying Insurance in full force and effect;

b. That the Limits of Insurance of the policies listed in the Schedule of Underlying Insurance will be maintained except for any reduction or exhaustion of limits by payment of claims or **suits** for damages covered by **underlying insurance**;

c. The policies listed in the Schedule of Underlying Insurance may not be canceled or not renewed by you without notifying us, and you agree to notify us in the event an insurance company cancels or declines to renew any policy listed in the Schedule of Underlying Insurance; and

d. Renewals or replacements of the policies listed in the Schedule of Underlying Insurance will not be materially changed without our agreement.

If you fail to comply with these requirements, we will only be liable to the same extent that we would have been had you fully complied with these requirements.

12. Miscellaneous Unintentional Errors and Omissions

Any unintentional error or omission in the description of, or failure to describe completely, any premises or operations intended to be covered by this policy, shall not invalidate or affect the coverage for those operations or premises. However, the **insured** must report such error or omission to the company as soon as practicable after its discovery.

13. Other Insurance

If **other insurance** applies to damages that are also covered by this policy, this policy will apply excess of the **other insurance**. However, this provision will not apply:

a. If the **other insurance** is written to be excess of this policy; or

b. With respect to **Coverage A** only, if the **named insured** has agreed in a written contract to carry insurance to apply prior to and be non-contributory with that of another person or organization's insurance, but only as respects damages arising out of insured operations or work on behalf of the **named insured** performed under such written contract. The limits available to the other person or organization will be the lesser of the policy limits or the minimum limits required by such written contract. In that case, **other insurance** of that person or organization will apply as excess and not contribute prior to the insurance afforded by this policy.

Nothing herein will be construed to make this policy subject to the terms, conditions and limitations of such **other insurance**.

14. Premium

The premium for this policy as stated in Item **6.** of the Declarations is a flat premium. It is not subject to adjustment unless an endorsement is attached to this policy.

15. Separation of Insureds

Except with respect to the Limits of Insurance, and any rights or duties specifically assigned to the first **Named Insured**, this insurance applies:

a. As if each **named insured** were the only **named insured**; and

b. Separately to each **insured** against whom claim is made or **suit** is brought.

16. Terms Conformed to Statute

The terms of this policy which are in conflict with the statutes, laws, ordinances or regulations in any country, jurisdiction, state or province where this policy is issued are amended to conform to such statutes, laws, ordinances or regulations. If we are prevented by law or statute from paying on behalf of the **insured**, then we will, where permitted by law or statute, indemnify the **insured**.

17. Transfer of Rights of Recovery Against Others to Us

a. If the **insured** has rights to recover all or part of any payment we have made under this insurance, those rights are transferred to us. The **insured** must do nothing after the **loss** to impair them. At our request, the **insured** will bring **suit** or transfer those rights to us and help us enforce them.

However, if any **insured** is required by a written contract or agreement which is executed before a **loss** to waive their rights of recovery from others, we agree to waive our rights of recovery. This waiver of rights shall not be construed to be a waiver with respect to any other operations for which the **insured** has not waived their rights of recovery by contract.

b. Any amount recovered will be apportioned in the inverse order of payment of **loss** to the extent of actual payment. The expenses of all such recovery proceedings will be apportioned in the ratio of respective recoveries.

18. Transfer of Your Rights and Duties

Your rights and duties under this insurance may not be transferred without our written consent. If you die, then your rights and duties will be transferred to your legal representative, but only while acting within the scope of duties as your legal representative. Until your legal representative is appointed, anyone having temporary custody of your property will have your rights and duties but only with respect to that property.

19. When Loss is Payable

Coverage under this policy will not apply until the **insured**, or the **insured's** underlying insurer has paid or is legally obligated to pay the full amount of the Underlying Limits of Insurance or **Retained Limit**.

When the amount of **loss** is determined by an agreed settlement or on a final judgment against an **insured** obtained after an actual trial, we will promptly pay on behalf of the **insured** the amount of **loss** covered under the terms of this policy. The first **Named Insured** will promptly reimburse us for any amount within the **Retained Limit** paid by us.

20. Violation of Economic or Trade Sanctions

If coverage for a claim or **suit** under this policy is in violation of any economic or trade sanctions of the United States of America then coverage for that claim or **suit** will be null and void.

B. The following Condition is applicable to **Coverage A** and **Coverage B**:

1. Notice of Occurrence, Claim or Suit

a. You must see to it that we are notified as soon as practicable of an **occurrence** which may result in damages covered by this policy.

To the extent possible, notice will include:

(1) How, when and where the **occurrence** took place;

2. **Electronic data** means information, facts or programs stored as or on, created or used on, or transmitted to or from computer software, including systems and applications software, hard or floppy disks, CD-ROMS, tapes, drives, cells, data processing devices or any other media which are used with electronically controlled equipment.

3. **Loss** means those sums actually paid that the **insured** is legally obligated to pay as damages for the settlement or satisfaction of a claim because of injury or offense, after making proper deductions for all recoveries and salvage. However:

   a. Under **Coverage A**:

      (1) **Loss** also includes defense expenses and supplementary payments if **underlying insurance** includes defense expenses and supplementary payments in the Limits of Insurance; and

      (2) **Loss** does not include defense expenses and supplementary payments if **underlying insurance** does not include defense expenses and supplementary payments in the Limits of Insurance.

   b. Under **Coverage B.**, **loss** does not include defense expenses and supplementary payments.

4. **Other insurance** means a policy of insurance providing coverage that this policy also provides. **Other insurance** includes any type of self-insurance or other mechanisms by which an **insured** arranges for funding of legal liabilities.

   Other insurance does not include **underlying insurance** or a policy of insurance specifically purchased to be excess of this policy providing coverage that this policy also provides.

5. **Pollutants** mean any man-made or naturally occurring solid, liquid, gaseous or thermal irritant or contaminant, including but not limited to: smoke; vapor; soot; fumes; acids; alkalis; chemicals and waste. Waste includes materials to be recycled, reconditioned or reclaimed.

6. **Suit** means a civil proceeding in which injuries or damages to which this insurance applies are alleged. **Suit** includes:

   a. An arbitration proceeding in which such damages are claimed and to which the **insured** must submit pursuant to law or contract or does submit with our consent; or

   b. Any other alternative dispute resolution proceeding in which such damages are claimed and to which the **insured** submits with our consent.

7. **Underlying insurance** means the policy or policies of insurance listed in the Schedule of Underlying Insurance forming a part of this policy. We will only be liable for amounts in excess of the Limits of Insurance shown in the Schedule of Underlying Insurance for any **underlying insurance**.

B. The following definitions are applicable to **Coverage A** only:

1. **Hostile fire** means one which becomes uncontrollable or breaks out from where it was intended to be.

2. **Insured** means:

   a. You;

   b. Any person or organization included as an **insured** in **underlying insurance**; and

   c. Any person or organization qualifying as an additional **insured** in **underlying insurance** but only to the same extent that such person or organization is an additional **insured** under such **underlying insurance**.

3. **Non-Admitted Jurisdiction** means:

   a. Any country or political subdivision in which we are not licensed or permitted to insure risks and where doing so would violate the insurance laws and regulations of such jurisdiction; or

   b. Any country or political subdivision where we are prevented by law from investigating, defending or settling an **occurrence** or **suit**.

4. **Occurrence** means a covered event as defined in **underlying insurance**.

5. **Qualified Entity** means any entity, person or organization that is not an **insured** under this policy and would qualify as an **insured** under this policy, but for the fact that the entity is registered, domiciled or has ongoing operations in a **non-admitted jurisdiction**.

Bodily injury, **property damage** or **environmental damage** based upon or arising out of **your product** after you have relinquished possession of the same, except if installed as part of **your work**.

16. Asbestos and Lead

Solely with respects to **Coverage D: Time-Element Pollution Liability, environmental damage** arising from asbestos, asbestos containing materials or lead-based paint in, on or applied to any building or other structure.

a. This exclusion does not apply to **clean-up costs** for the remediation of soil, surface water or groundwater.

b. This exclusion does not apply to **clean-up costs** to remediate asbestos, asbestos containing materials or lead-based paint within any structure that has been inadvertently displaced and such **clean-up costs** are the direct result of a **pollution incident** which first commences during the **policy period** and arises from explosion, fire, lightning, **Flood** or windstorm damage, provided that:

(1) The insured discovers the **pollution incident** within ten (10) days of first commencement of the **pollution incident**;

(2) The **pollution incident** is reported to us in writing within thirty (30) days of first commencement of the **pollution incident**; and

(3) Subject to **Section III. LIMITS OF INSURANCE AND DEDUCTIBLE**, Paragraphs **1.** through **9.**, the most we will pay for **clean-up costs**, regardless of the number of insureds, **covered properties**, **pollution incidents**, **claims** or claimants, pursuant to the exception contained in this Paragraph shall not exceed $100,000.

SECTION II - WHO IS AN INSURED

1. If you are designated in the Declarations as:

a. An individual, you and your spouse are insureds, but only with respect to the conduct of a business of which you are the sole owner.

b. A partnership or joint venture, you are an insured. Your members, your partners, and their spouses are also insureds, but only with respect to the conduct of your business.

c. A limited liability company, you are an insured. Your members are also insureds, but only with respect to the conduct of your business. Your managers are insureds, but only with respect to their duties as your managers.

d. An organization other than a partnership, joint venture or limited liability company, you are an insured. Your **executive officers** and directors are insureds, but only with respect to their duties as your officers or directors. Your stockholders are also insureds, but only with respect to their liability as stockholders.

e. A trust, you are an insured. Your trustees are also insureds, but only with respect to their duties as trustees.

2. Each of the following is also an insured:

a. Your **volunteer workers** only while performing duties related to the conduct of your business, or your **employees**, other than either your **executive officers** (if you are an organization other than a partnership, joint venture or limited liability company) or your managers (if you are a limited liability company), but only for acts within the scope of their employment by you or while performing duties related to the conduct of your business. However, none of these **employees** or **volunteer workers** are insureds for:

(1) Bodily injury:

(a) To you, to your partners or members (if you are a partnership or joint venture) or to your members (if you are a limited liability company); or

(b) For which there is any obligation to share damages with or repay someone else who must pay damages because of the injury described in Paragraph **(1) (a)** above.

(2) Property damage or **environmental damage** to property owned, occupied or used by rented to, in the care, custody or control of, or over which physical control is being exercised for any purpose by you, any of your

employees, **volunteer workers**, any partner or member (if you are a partnership or joint venture), or any member (if you are a limited liability company).

b. Any person or organization having proper temporary custody of your property if you die, but only with respect to liability arising out of the maintenance or use of that property and until your legal representative has been appointed.

c. Your legal representative if you die, but only with respect to duties as such. That representative will have all your rights and duties under this policy.

d. Any person or organization you agree to include as an insured in a written contract, written agreement or permit, but only with respect to **bodily injury**, **property damage** or **environmental damage** arising out of **your work**.

e. Any person or organization that has at least a 50% controlling interest in you but only with respect to **bodily injury**, **property damage** or **environmental damage** arising out of their financial control of you.

f. A joint venture to which you are a party, but only to the extent of your participation in such joint venture.

SECTION III - LIMITS OF INSURANCE AND DEDUCTIBLE

1. The Limits of Insurance shown in the Declarations and the rules below fix the most we will pay regardless of the number of:

a. Insureds;

b. **Claims** made or **suits** brought;

c. Persons or organizations making **claims** or bringing **suits**;

d. **Pollution incidents**;

e. **Image restoration events**;

f. **Disinfection events**; or

g. **Pre-claim events.**

2. The Policy Aggregate Limit is the most we will pay for the sum of all damages, **emergency response expenses**, **image restoration expenses, disinfection event expenses** and **pre-claim event expenses** under **Coverages A** through **G** inclusive.

3. Subject to Paragraph **2**. above, the Each Occurrence Limit is the most we will pay for the sum of all damages, **emergency response expenses**, **image restoration expenses, disinfection event expenses** and **pre-claim event expenses** under **Coverages A** through **G** inclusive arising out of any one **occurrence**.

4. The limit of insurance applies in excess of the deductible amount shown in the Declarations. The deductible amount applies to the sum of all damages, **emergency response expenses** and **legal and claims expense payments** because of **bodily injury**, **property damage** and **environmental damage** arising out of any one **occurrence**.

We may pay any part or the entire deductible amount to effect settlement of any **claim** or **suit** or to pay **clean-up costs** or **emergency response expenses** which may be covered under this policy and, upon notification of the action taken, you shall promptly reimburse us for such part of the deductible amount as has been paid by us.

5. The Image Restoration Expense Aggregate Limit is the most we will pay for the sum of all **image restoration expenses**. Subject to the Image Restoration Expenses Aggregate Limit, the Image Restoration Expenses Each Occurrence Limit is the most we will pay for all **image restoration expenses** arising out of the same, related or continuous **image restoration event**. The Image Restoration Expenses Each Occurrence Limit applies in excess of the deductible amount shown in the Declarations.

6. The Disinfection Event Expenses Aggregate Limit is the most we will pay for the sum of all **disinfection event expenses**. Subject to the Disinfection Event Expenses Aggregate Limit, the Disinfection Event Expenses Each Occurrence Limit is the most we will pay for **disinfection event expenses** arising out of the same, related or continuous **disinfection event**.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – SCHEDULED PERSON OR ORGANIZATION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s)	Location(s) Of Covered Operations
ANY PERSON OR ORGANIZATION WHOM YOU HAVE AGREED TO INCLUDE AS AN ADDITIONAL INSURED UNDER A WRITTEN CONTRACT, PROVIDED SUCH CONTRACT WAS EXECUTED PRIOR TO THE DATE OF LOSS.	AS REQUIRED BY WRITTEN CONTRACT
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. **Section II – Who Is An Insured** is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or

2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations for the additional insured(s) at the location(s) designated above.

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and

2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to "bodily injury" or "property damage" occurring after:

1. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or

2. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

 © Insurance Services Office, Inc., 2018

C. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or

2. Available under the applicable limits of insurance;

whichever is less.

This endorsement shall not increase the applicable limits of insurance.

© Insurance Services Office, Inc., 2018

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US (WAIVER OF SUBROGATION)

This endorsement modifies insurance provided under the following:

AUTO DEALERS COVERAGE FORM
BUSINESS AUTO COVERAGE FORM
MOTOR CARRIER COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by the endorsement.

This endorsement changes the policy effective on the inception date of the policy unless another date is indicated below.

Named Insured: FLAGSHIP ENTERPRISES HOLDING, INC.
Endorsement Effective Date: 07/01/2024

SCHEDULE

Name(s) Of Person(s) Or Organization(s):
ANY PERSON OR ORGANIZATION AGAINST WHOM YOU HAVE AGREED TO WAIVE YOUR RIGHT OF RECOVERY IN A WRITTEN CONTRACT, PROVIDED SUCH CONTRACT WAS EXECUTED PRIOR TO THE DATE OF LOSS.
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

The **Transfer Of Rights Of Recovery Against Others To Us** condition does not apply to the person(s) or organization(s) shown in the Schedule, but only to the extent that subrogation is waived prior to the "accident" or the "loss" under a contract with that person or organization.

© Insurance Services Office, Inc., 2011

Wolters Kluwer Financial Services | Uniform Forms™

WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

This agreement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

Schedule

ANY PERSON OR ORGANIZATION AGAINST WHOM YOU HAVE AGREED TO WAIVE YOUR RIGHT OR RECOVERY IN A WRITTEN CONTRACT, PROVIDED SUCH CONTRACT WAS EXECUTED PRIOR TO THE DATE OF LOSS.

This endorsement changes the policy to which it is attached and is effective on the date issued unless otherwise stated.

(The information below is required only when this endorsement is issued subsequent to preparation of the policy.)

Endorsement Effective 07/01/2024 Policy No. WC 6946951-00 Endorsement No.

Insured FLAGSHIP ENTERPRISES HOLDING, INC. Premium INCLUDED

Insurance Company AMERICAN ZURICH INSURANCE COMPANY

Countersigned by _____

Copyright 1983 National Council on Compensation Insurance, Inc.

EXHIBIT B

TECHNICAL SPECIFICATION FOR JANITORIAL SERVICES

1. GENERAL

The purpose of this Bid is to establish a contract or contracts, to furnish all materials, labor, supervision, transportation, licenses, equipment and any incidentals necessary for janitorial services and all related services as scheduled by and for Tampa Bay Water's facilities located in the Florida Counties of Hillsborough, Pasco and Pinellas.

2. SUPERVISION

Tampa Bay Water's designated representative is to have free access to all work sites and the work being performed at all times for inspecting or directing the same. The Contractor is to provide he/she necessary access and assistance. Tampa Bay Water designated representatives are listed below. Tampa Bay Water reserves the right to assign alternative representatives as needed.

Ed Davis,
Building, Grounds & Fleet Manager
edavis@tampabaywater.org
813-929-4568 – Office
813-334-1119 – Mobile

Kristan Tricarico,
Facilities Services Coordinator
ktricarico@tampabaywater.org
813-929-4546 – Office
813-701-8488 – Mobile

3. BIDDERS QUALIFICATIONS

A. Bidder must maintain a current business license and provide, with their submittal, supporting documentation.

B. The successful bidder shall have five (5) or more consecutive years of experience in commercial janitorial services business. Bidders shall provide, with their submittal, on the Bidder's Reference List, documentation to support this qualification.

C. The successful bidder(s) shall employ only qualified workers and operators who are skilled in the performance of these activities and shall be fully liable and accountable for each janitorial service provided and the quality of workmanship thereof. The successful bidder(s) shall also employ an adequate number of workers to ensure that all required service specifications are met. Specifically, for the Cypress Creek and Clearwater locations, there shall be a minimum of at least two (2) qualified workers on site at all times and a minimum of 8 man hours allocated for each night for Cypress Creek and Clearwater.

4. PROTECTION

A. If property (public or private) is damaged or is removed without permission while Contractor is performing the work specified, it shall be repaired or replaced at the expense of the Contractor in a manner acceptable to Tampa Bay Water prior to the final acceptance of the work.

B. Prior to the start of work, the Contractor must notify the designated Tampa Bay Water representative, in Section 2 above, in writing, with photos of the site having pre-existing damage to any structure, floor, appliance, fixture, etc., before beginning work. Failure to do so shall obligate the Contractor to make repairs per Section 4.A.

5. GENERAL REQUIREMENTS

A. Contractor shall provide all labor, supervision, equipment, transportation and materials as necessary to accomplish the work as described herein.

B. The Contractor shall not subcontract employees or work in order to ensure that all safety and security criteria have been met.

C. Contractor must be able to complete work in a timely manner as directed by a Tampa Bay Water representative.

D. The Contractor must ensure that any equipment required is properly maintained, is in safe working order and is available for use ***at any time work is scheduled or requested***.

E. All equipment used shall be in good mechanical and safe working condition.

F. All work authorized herein can be stopped by a Tampa Bay Water representative at any point if deemed necessary. This stoppage will not result in loss of a pro-rated payment to the Contractor for services performed up to the point of the stoppage. Contractor shall commence and complete work without interruptions or delays of any sort unless stopped by Tampa Bay Water.

G. Any work stopped by Tampa Bay Water as the result of a safety concern or violation will not resume until the unsafe condition has been corrected and accepted by Tampa Bay Water [i.e. failure to use personal protective equipment, unsafe equipment]. The Contractor will not be compensated for work not completed because of a safety driven work stoppage until the unsafe condition has been corrected and the work completed.

H. All problems regarding work performance must be resolved within three working days at no additional cost to Tampa Bay Water. Tampa Bay Water reserves the right to inspect all equipment and workmanship and require correction as necessary.

6. EMPLOYEES

A. Contractor shall employ an adequate number of qualified workers and operators who are skilled in the performance of janitorial services and all related activities.

B. Contractor shall be fully liable and accountable for each service, the quality of workmanship provided and all required service specifications described herein.

C. Contractor must submit a list of all employees who will be dedicated to this contract and any intention that may be necessary for additional or back-up personnel.

D. All employees of the Contractor shall, at all times, be considered to be the sole employees of the Contractor, under the Contractor's sole direction, and not an employee or agent of Tampa Bay Water.

E. Contractor personnel must be able to supply proper identification at all times.

F. Contractor's staff shall present a professional appearance. Personnel shall be neat, clean, well groomed, properly uniformed and conduct themselves in a respectable professional and courteous manner while performing duties and while at any Tampa Bay Water site.

   i. Use of tobacco products shall only be allowed in designated area(s)

ii. Contractor's personnel shall not play loud music, make unnecessary noises, or use language that causes offense to others.

G. Jessica Lunsford Act: Contractor's employees working on any property that meets the criteria noted in the Jessica Lunsford Act must meet the requirements herein. Requirements can be found at:
http://info.fldoe.org/docushare/dsweb/Get/Document-3151/k12_05-107a.pdf

H. The employment of unauthorized aliens by Contractor is considered a violation of Section 247 A (e) of the Immigration and Nationalization Act. If the Contractor knowingly employs unauthorized aliens, such a violation shall also be cause for cancellation of the contract.

I. Tampa Bay Water reserves the right to require the removal of any employee whose presence on work sites is not in the best interest of Tampa Bay Water.

J. Contractor shall assign an "On Duty" supervisor on site who speaks and reads English. The "On Duty" supervisor's cell phone number shall be provided to the designated Tampa Bay Water representative.

K. The Contractor's on-site supervisor must be available by appointment between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday, to inspect the facilities and meet with Tampa Bay Water representative to handle special problems when required and to attend monthly scheduled meetings.

7. SAFETY AND SECURITY

A. Contractor's and all personnel acting under its direction or control, shall take all necessary precautions for the safety of its employees performing the work and shall at all times comply with all Local, State, and Federal statutes, ordinances, rules and regulations, to include those of any other public body having authority concerning the work, employees or safety.

B. Contractor's employees, as required by Law, shall wear protective equipment to include but not be limited to, appropriate shoes, eye protection, ear protection, etc., where and when it is applicable. All required safety devices must be in place and operational on all equipment being used during the performance of the jobs listed herein.

C. Environmental Health, Safety, Hazardous Substances and Hazardous Materials Minimum Requirements: The following define the minimum requirements the Contractor is to follow for Environmental Health, Safety, Hazardous Substances, Recycling, Hazardous Materials, Hazardous Waste Characterization and Disposal, Waste Minimization, Personnel Training, Required Notifications, and Permits and Records Retention:

i. Safety Data Sheets (SDS): Contractor, delivering any toxic substances, as defined in Florida Statute 1013.49 or as amended, shall furnish to Tampa Bay Water, a Safety Data Sheet and comply with all DOT/State and Federal Regulations.

ii. The Contractor shall provide to the Tampa Bay Water representative a SDS and description literature for each chemical/compound/mixture used in the performance of the Contract before the commencement of any work hereunder. All SDS's shall be of the latest version and comply with 29 CFR 1910.1200. Hazardous chemicals shall not be used, except with prior approval of the Tampa Bay Water representative and must be disposed of properly by the Contractor in

accordance with the U.S. Environmental Protection Agency (U.S. EPA) 40 CFR 260-265. The Contractor shall maintain and have readily accessible on-site a complete book of all SDS's for chemicals in use on premises.

iii. Personal Protective Equipment: All personnel are required to wear personal protective equipment in the performance of their duties, which involve the use of Hazardous Substances and Hazardous Materials including protective eyewear or face shields, respiratory protection as necessary and applicable leak proof gloves.

iv. Fine, Citations and Damages: The Contractor agrees to be solely and financially responsible for any fines and/or damages levied by local, state or federal regulators against Tampa Bay Water for incidents resulting from non-compliance relating to regulatory violations and/or negligence on the part of the Contractor This includes, but is not limited to, spills, leaks, injuries to the environment and injuries to humans or property damages. The Contractor shall be solely responsible for any cost, expenses, attorneys' fees or travel incurred by Tampa Bay Water relating to such violations or negligence.

D. It shall be the sole responsibility of the Contractor performing services for this contract to safeguard their own materials, tools, and equipment. Tampa Bay Water shall not assume any responsibility for vandalism and/or theft of materials, tools, and/or equipment.

E. Possession of concealed or open carried firearms will not be tolerated on any Tampa Bay Water site. Employees, consultants and others visiting agency property may keep firearms locked and out of sight in their private vehicle in the agency's parking lot.

F. Violations of Federal and State laws and any applicable Tampa Bay Water policy regarding Drug Free Workplace will not be tolerated. Violations will be subject for the immediate termination of any contract resulting from this Invitation to Bid.

G. The Contractor agrees that all Contractor personnel shall remain within the limits of the work site and shall not enter any restricted areas during ingress, egress, or any other time. All of the Contractor's personnel shall adhere to Tampa Bay Water's code of conduct that includes, but is not limited to, policies and procedures regarding violence in the workplace, sexual harassment and discrimination.

8. WORK TO BE PERFORMED

A. Performance Standards: The Contractor shall warrant that all work performed hereunder complies with customary, reasonable and prudent industry standards and shall perform all services in a professional manner. Additional performance standards may be identified by Tampa Bay Water.

B. Staffing Levels: The Contractor will ensure adequate operational staffing (day and/or night as specified by Tampa Bay Water) is maintained to ensure the highest level of cleanliness throughout the term of the Contract. Staffing adjustments may be necessary in order to accomplish this standard. The Contractor shall notify Tampa Bay Water representatives, named in Section 2 above, of any staffing changes. The Contractor's failure to maintain staffing levels in a facility in excess of three (3) occurrences within a 12-month period will be considered a breach of Contract, and Tampa Bay Water has the sole discretion to deem such failure as sufficient cause for default and may terminate this

Contract.

C. Meetings:

i. Kick-Off Meeting: The Contractor shall meet with Tampa Bay Water representatives and other staff at least ten (10) days prior to the Contract start date to discuss and develop mutual understandings relative to interpretation or questions concerning specifications, administering and scheduling work, material submittals, safety practices, and contract administration. The Contractor shall submit to Tampa Bay Water each of the following items at the "Kick-off Meeting:"

- Telephone numbers and email addresses of key personnel, as defined herein.
- List of cleaning supplies and SDS *(must be identified by brand name and manufacturer)*
- List of employees and alternates as described in Section 8.B.
- Copy of driver's licenses of employees and alternates for Tampa Bay Water to provide access badges to facilities.
- Work schedules for Contractor staff assigned to a facility.
- Detailed "Cleaning Plan" that includes a schedule for all work to be performed day and/or night including all periodic work as required (i.e., monthly, quarterly, semi-annual, annual cleaning).

ii. Monthly Meetings: The owner or senior manager in the Contractor's organization, acceptable to Tampa Bay Water, shall meet monthly with Tampa Bay Water to review the monthly inspection log mentioned in Section 8.F. below, discuss cleaning issues, address any related problems and discuss upcoming Periodic and As-Needed Janitorial Requirements, outlined in Section 10.B. below, in order to schedule for staff notifications. Tampa Bay Water reserves the right to suspend or discontinue these monthly meetings at its discretion if the Contractor is consistently performing in accordance with expectations.

iii. As-Needed Meetings: Tampa Bay Water reserves the right to request a meeting as needed with Contractor manager and/or supervisor to inspect facilities and/or discuss and address any janitorial related issues.

D. Locations & Site Information: Tampa Bay Water facilities include the following and have the associated information for the Contractor's reference. Tampa Bay Water reserves the right to revise or edit locations and site information as needed.

Location Name	**Clearwater Administrative**	**Cypress Creek Pump Station**	**High Service Pump Station**	**Lithia H2S**	**Lake Bridge Water Treatment Plant**	**Keller H2S**	**Brandon Booster Station**	**C.W. Bill Young Regional Reservoir**
Address	2575 Enterprise Rd. Clearwater, FL 33763	8865 Pump Station Rd. Land O' Lakes, FL 34639	2301 Regional Water Ln. Tampa, FL 33619	5410 Lithia Pinecrest Rd. Lithia, FL 33647	5825 E. County Line Rd. Tampa, FL 33647	3655 Keller Circle, Tarpon Springs, FL 34688	1032 S Mount Carmel Rd. Brandon, FL 33511	17615 Boyette Rd. Lithia, FL 33547
Cleaning	5 times per week	5 times per week	5 times per week	5 times per week	1 time per week	1 time per week	1 time per week	1 time per week

Est. Square Footage	39,000	35,000	1,750	500	200	70	350	950
Est. Sq. Ft. of Carpet	29,900	23,000	800	0	0	0	0	0
Est. Sq. Ft. of VCT	6,250	7,000	0	0	0	0	0	0
Est. Sq. Ft. of Ceramic	2,850	5,000	950	500	0	0	0	950
Est. Sq. Ft. of Sealed Concrete	0	0	0	0	200	70	350	0
# of Buildings	1	4	1	1	1	1	1	1
# of Floors	3	1	1	1	1	1	1	1
Approx. # of Offices	64	58	0	1	0	0	0	0
Approx. # of Conference/Large Office Space	10	8	2	1	0	0	1	3
Refrigerators	6	7	1	1	0	0	0	1
Mini-Refrigerators	0	2	0	0	1	0	0	0
Microwaves	6	8	1	1	1	0	0	1
Toaster Ovens	1	4	1	0	0	0	0	1
Restrooms	16	14	1	1	1	1	1	1
Toilets	19	19	1	1	1	1	1	1
Sinks (Kitchens & Bathrooms	28	31	2	1	1	1	1	1
Urinals	1	3	0	0	0	0	0	0
Showers	6	6	0	1	0	0	0	0

E. Work Hours: The Contractor shall commence after hours services as directed by Tampa Bay Water representatives with lights turned out as areas are completed, except in the immediate area where work is being performed. The Contractor shall complete after hours services and vacate the facility, with all lights out at a time agreed upon in the Kick-Off Meeting. Tampa Bay Water reserves the right to adjust work hours to serve the specific needs of each facility. Tampa Bay Water expects the Contractor and its staff to be proactive in conserving energy by ensuring lights are out in offices, common areas,

etc.

F. Quality Control: The Contractor's on-site supervisor shall perform random site inspections at all facilities weekly during Contract term. The Contractor shall maintain a written log of monthly inspections and provide a copy to the Tampa Bay Water representative at the scheduled monthly meetings.

G. Inspection and Acceptance: Any service rendered under this Contract, including quality of work, is subject to inspection by the Tampa Bay Water representative at any time during the term of the Contract. The Contractor's representative and the Tampa Bay Water representative shall review inspection logs and findings at schedule monthly meetings.

9. MATERIALS & SUPPLIES

A. The Contractor shall furnish all paper products, cleaning supplies, equipment, liners, hand soap, urinal deodorizers, etc. All cleaning equipment, materials and supplies shall be approved by a Tampa Bay Water representative prior to use and stored in a clean, neat and safe manner within designated areas in each facility. No flammable products, including gasoline, shall be stored in the facility.

B. Contractor shall not have materials or supplies delivered to or stored at Tampa Bay Water's warehouse.

C. The Contractor shall submit to Tampa Bay Water a list of all cleaning chemicals, with SDS, at the Kick-Off Meeting in accordance with Sections 7.C. and 8.C. above. Label data must be transferred to smaller containers and spray bottles to ensure personnel safety and proper use, per 29 CFR 1910.1200.

D. All paper products shall conform to the following requirements:

- Toilet paper – 2-ply white
- Toilet seat covers – white
- Paper towels – multi-fold – Natural or white
- Hands free towels - white
- Paper towels rolls – 2-ply – white

E. Paper towels rolls shall be furnished in all food service areas, including break areas, containing vending machines, kitchenettes, and coffee stations.

F. The Contractor shall only use GOJO LTX-12 Pomeberry or Antibacterial Plum foam handwash where applicable and white aloe hand soap or GOJO pump handwash at locations without a GOJO LTX-12 dispenser.

G. The Contractor shall use only nationally recognized brands of cleaning products in strict accordance with the manufacturers' instructions. Environmentally sensitive cleaning products shall be used wherever deemed practicable and effective by Tampa Bay Water. Germicidal disinfectants shall be certified, EPA-registered, hospital-strength, quaternary ammonium-type disinfectants effective against the Human Immunodeficiency and Tuberculosis viruses. Use non-toxic, neutral, all-purpose cleaners. Do not use sodium hypochlorite (bleach), abrasive cleaners, or acid-based cleaners unless approved in advance by Tampa Bay Water. All other cleaners shall be industry-standard products, with low flammability and low toxicity. Other products may be specified by Tampa Bay

Water during the Contract term.

H. The Contractor shall maintain a minimum on-site inventory equal to a two-week stock of all cleaning products and supplies at all times.

I. At the end of the first year of the initial Contract term Tampa Bay Water will evaluate the cost of supplies and reserves the right to remove supplies from the Contract if deemed beneficial to Tampa Bay Water.

10. DELIVERABLES

The Contractor shall provide the minimum services contained within this section for daytime and/or after hours Janitorial Services, whichever is specified by Tampa Bay Water. The term "Daily" in this section shall refer to the single delivery of cleaning services within a 24-hour period.

A. Daily Janitorial Requirements

a. General Daily Requirements (All Space Types)

i. Remove all recyclable and non-recyclable waste, and place in appropriate dumpsters.
ii. Spot clean all trash cans and replace all trash can liners. Reusing trash can liners will not be permissible.
iii. Dust and spot clean exposed horizontal surfaces, paying special attention to rings or spills. Do not disturb any papers or personal items on any work surfaces.
- Wooden surfaces shall be maintained with a wood polish. Every effort must be made so no rings, spills, or noticeable dust is visible
- Formica surfaces shall be maintained so no rings, spills or noticeable dust is visible.

iv. Clean and/or polish tables, benches, and chairs. Wet cleaning may be required with germicidal cleaner.
v. Police stairwells for debris, spills and overall cleanliness
vi. Vacuum all mats and elevator carpets completely.
vii. Vacuum all traffic/common areas and address any visible debris on carpets.
viii. Spot clean light switches, doors and walls.
ix. Maintain carpets, edges, and baseboards free of dust and spots.
x. Maintain hard floors with **no build up in corners**, no discolored edges from improper finish application or cleaning, and **no dull or dirty surfaces**. Provide a high gloss, uniform appearance.

b. Specific Daily Restroom Requirements

i. Perform all applicable tasks outlined above In General Requirements.
ii. Clean and disinfect floors, toilets, sinks and faucets. MUST mop restroom floors.
iii. Dust & clean mirrors.
iv. No mineral deposits will be allowed on any exposed surfaces, including under the rims of toilets and urinals.
v. Keep all paper goods stocked.

vi. Maintain the appearance and cleanliness of the restroom at the highest possible level of quality.
vii. Allow no streaks, discoloration, or visible dust or debris on floors, walls, ceilings, **vents**, toilet partitions, light fixtures and plumbing fixtures.
viii. All metal, porcelain, and tiled surfaces will have a polished and clean appearance.
ix. All painted surfaces shall be clean and streak free.

c. Specific Daily Food Preparation Area Requirements

i. Perform all applicable tasks outlined above In General Requirements.
ii. Wet mop floors using a general-purpose type cleaner.

B. Weekly Janitorial Requirements

a. General Weekly Requirements (All Space Types)

i. All carpeted areas shall be vacuumed.
ii. All hard surface flooring shall be mopped.
iii. Dust handrails and wipe clean inside stairwells and landings
iv. Empty and clean all ash urns and cigarette receptacles.
v. Clean, disinfect, and polish drinking fountains. Do not allow mineral deposits on bubbler or metal.
vi. Clean all entrance glass doors and door frames and all entryways and lobbies.
vii. Dust all wall hangings and decorative light fixtures.
viii. Remove any cobwebs from walls, fixtures and windows.
ix. Sweep all stairs, landings and clean spills if necessary. Including Emergency Exit Stairwells.
x. Clean and Polish elevator doors and the inside, leaving no debris and grates, tracks or corners.

b. Specific Weekly Food Preparation Area Requirements

i. All countertops and tables shall be wet cleaned and disinfected.

C. Monthly Janitorial Requirements

a. General Monthly Requirements (All Space Types)

i. Detail clean all horizontal or vertical surfaces so that no visible dirt, dust, cobwebs, or streaks are visible, including all common area furniture, edges, corners, baseboards, walls, air vents, and door frames (high and low dusting, etc.) from floor to ceiling. Include all janitorial closets, stairwells, entrance areas, restrooms and planters, and any other item or area within the scope of this contract.
ii. Vacuum air supply and return vents and apply a germicidal cleaner.

b. Specific Monthly Restroom Requirements

i. Dust and clean metal surfaces and benches.
ii. Clean and disinfect all showers.
iii. Vacuum and clean exhaust fan vents and other air vents

c. Specific Monthly Food Preparation Area Requirements

i. Detail clean all microwaves, air fryers, and toaster ovens.

D. Quarterly Janitorial Requirements

a. General Quarterly Requirements (All Space Types)

i. Sweep and mop entire pump station floors at two sites. This square footage is not included in Section 8 D. Location and site information for these locations are listed below:

- Cypress Creek Pump Station – 8,208 square feet.
- High Service Pump Station – 6,120 square feet.

b. Specific Quarterly Food Preparation Area Requirements

i. Detail clean interior and exterior of all full size and mini refrigerators. Items inside refrigerators are to be removed prior to cleaning and then placed back in its original location.

E. Semi-Annual Janitorial Requirements

a. General Semi-Annual Requirements (All Space Types)

i. Completely buff, scrub, **strip to bare clean tile**, and refinish all hard surface floors within the first six (6) months of the contract. Floor finishes shall be maintained to the satisfaction of Tampa Bay water on a semiannual basis.

ii. Vacuum fabric partitions throughout the facilities. Contract Manager or designee may waive this requirement based on actual dust levels.

iii. All interior windows shall be cleaned.

iv. Dust and clean all blinds. Cleaning shall occur at the same time interior window surfaces are cleaned.

v. Window blinds, sills, trim and other surroundings of window glass shall be free of drippings and other watermarks after washing

b. Specific Semi-Annual Restroom Requirements

i. Detail clean all restroom floors and scrub grout to a clean and uniform appearance, machine scrub floors, and entirely clean walls within the first six (6) months of the contract and no less than semi-annually thereafter.

ii.

F. Annual Janitorial Requirements

a. General Annual Requirements (All Space Types)

i. Carpet deep cleaning shall be performed on all carpeted areas once a year.

ii. All first-floor exterior windows shall be cleaned as needed

G. As-Needed Janitorial Requirements

a. **Carpet Spot Cleaning**

i. Spot cleaning will be performed utilizing extraction method.

ii. Carpet will be free of any dirt, dust, lint, stain or foreign matter as determined by the Contract Manager, or designee.

iii. Cleaning procedures and chemicals shall be used in accordance with manufacturer's recommendations and warranty condition.
iv. Spot clean any spotted and stained areas as needed or as requested.
v. When spot cleaned, affected carpet areas shall blend with adjacent areas.
vi. Leave no dirt on carpets, in corners, near baseboards, behind doors, or under any furniture.

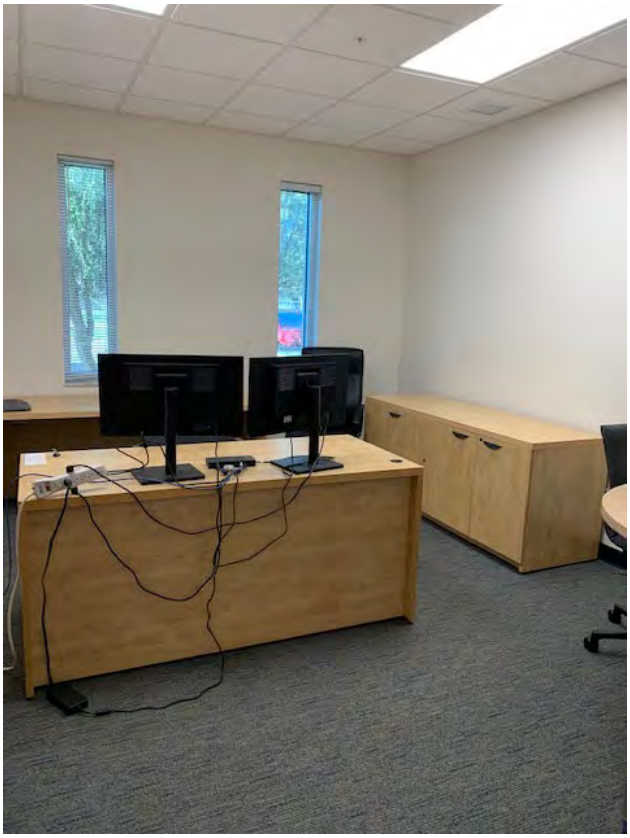
b. **Janitorial Closets**
   i. Maintain janitorial closets and keep equipment clean and odor free.
   ii. Keep mop sink drains unclogged at all times, if unable to unclog, Contractor's onsite supervisor shall inform Contractor Manager.
   iii. Keep janitorial closets stocked with all products used.
   iv. Janitorial closest and designated areas will be assigned for all products to be stored.

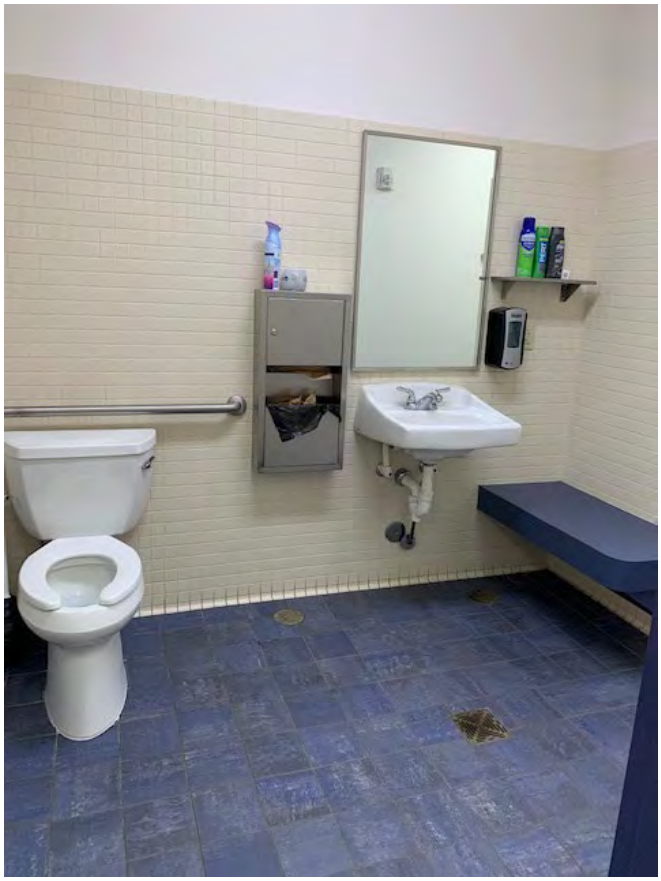
Cypress Creek Pump Station – 4 Buildings

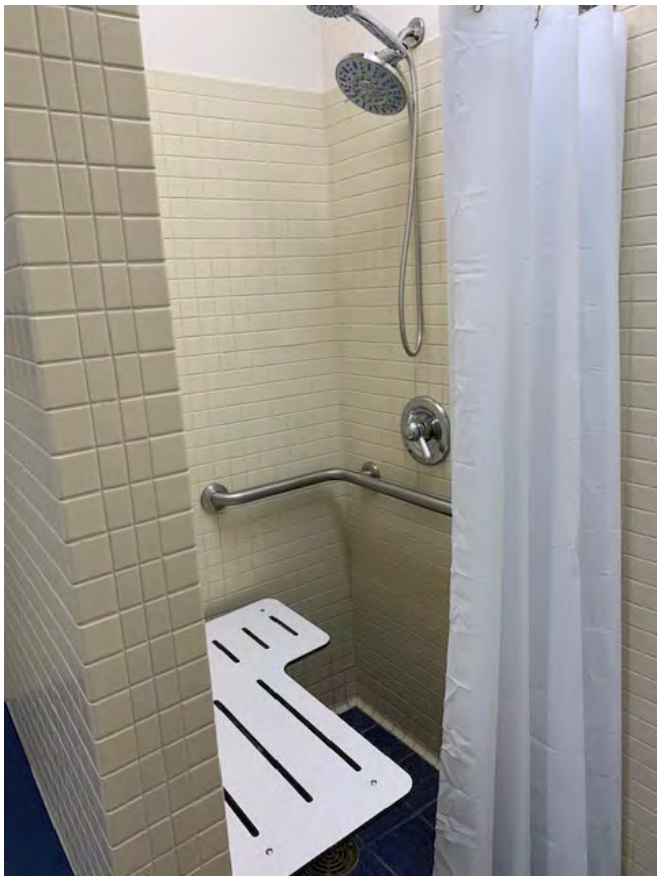
8865 Pump Station Rd. Land O Lakes, FL

- **Building 1: IEM**

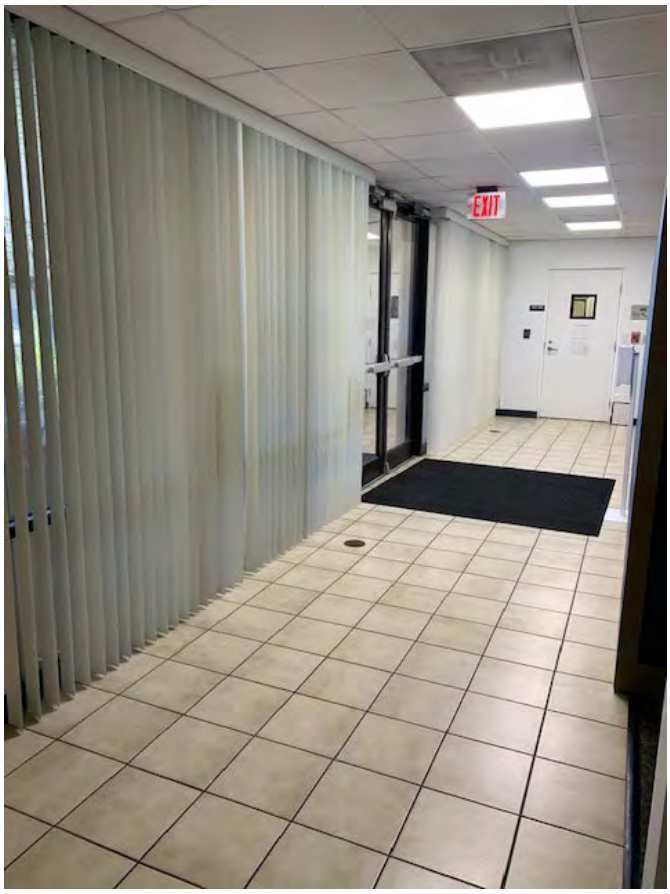
EXIT







- **Building 2: Admin/Lab**

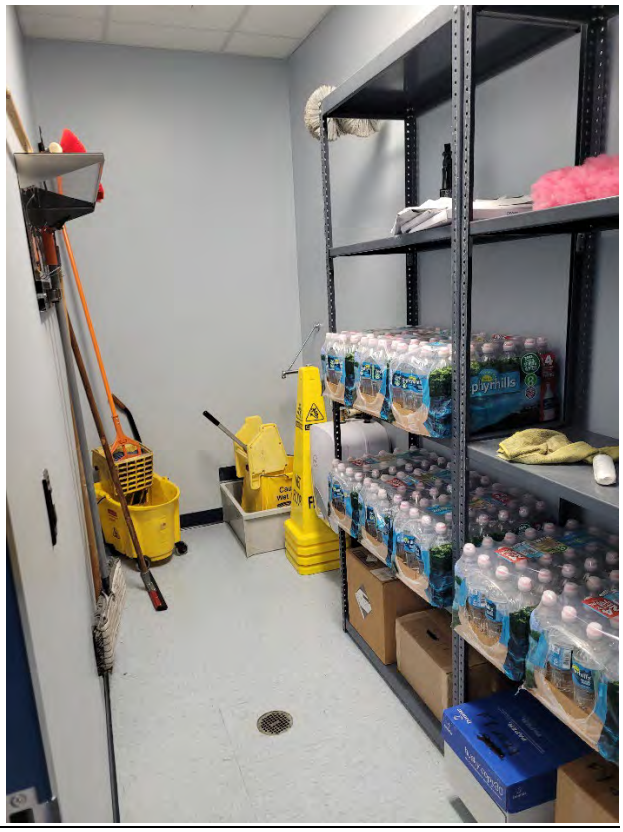

EXIT

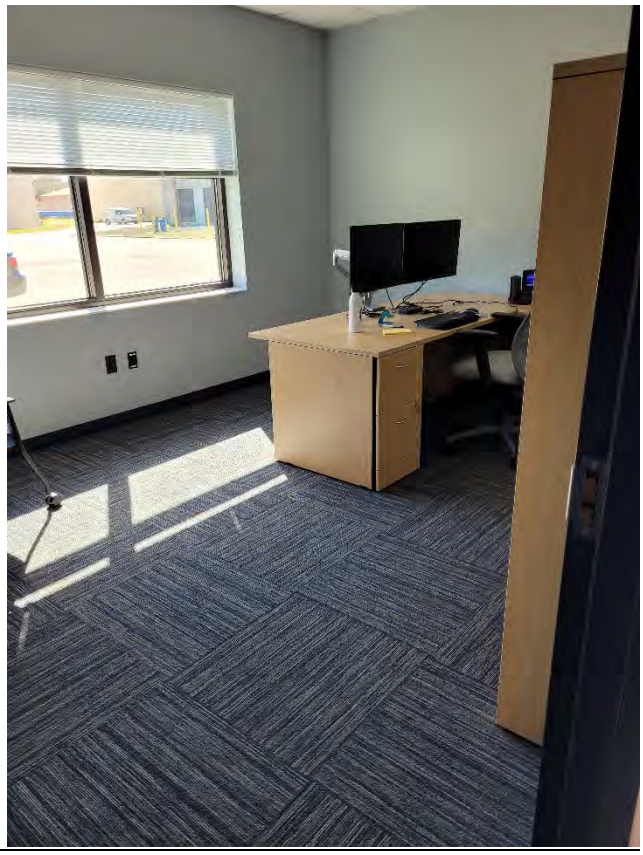
102-121

- **Building 3: Operations/Pump Station**

EXIT

- **Building 4: Warehouse**

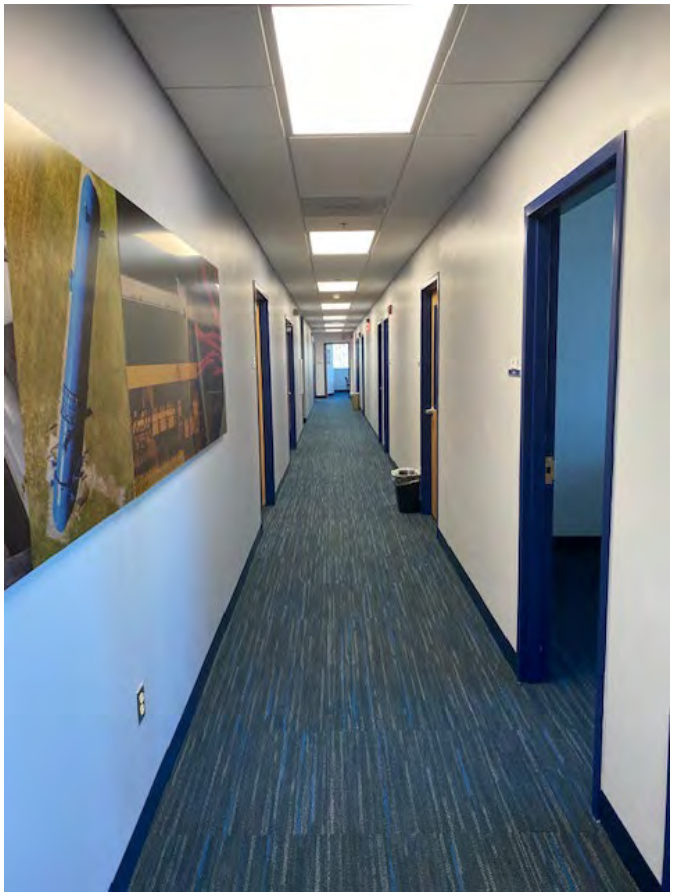




Clearwater Admin

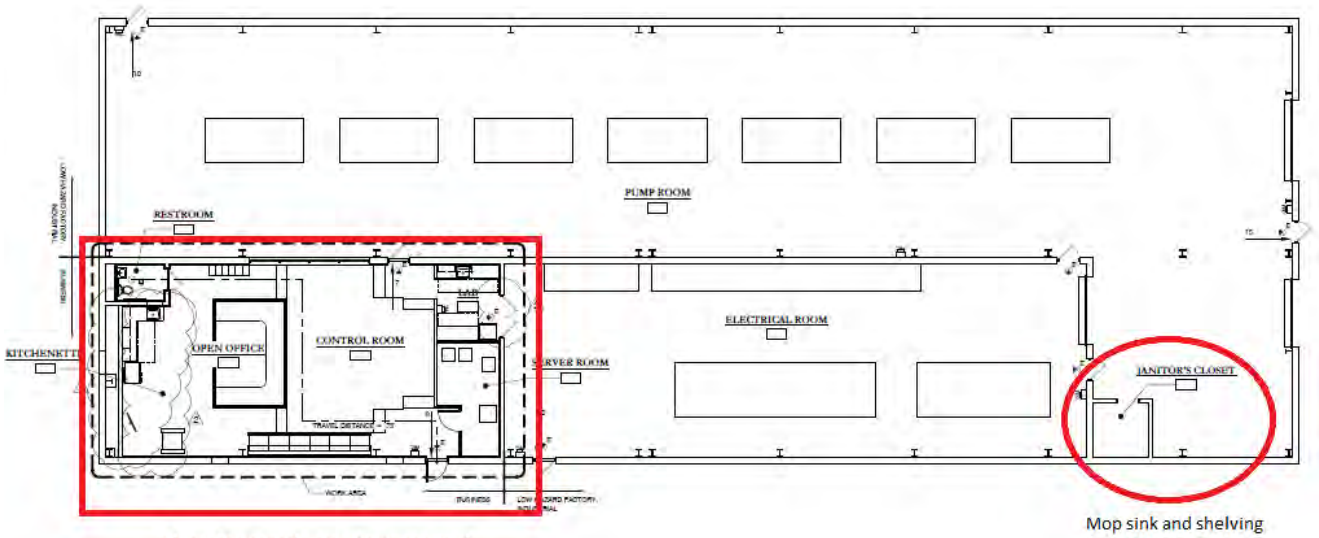
2575 Enterprise Rd. Clearwater, FL

TUFFSTUFF



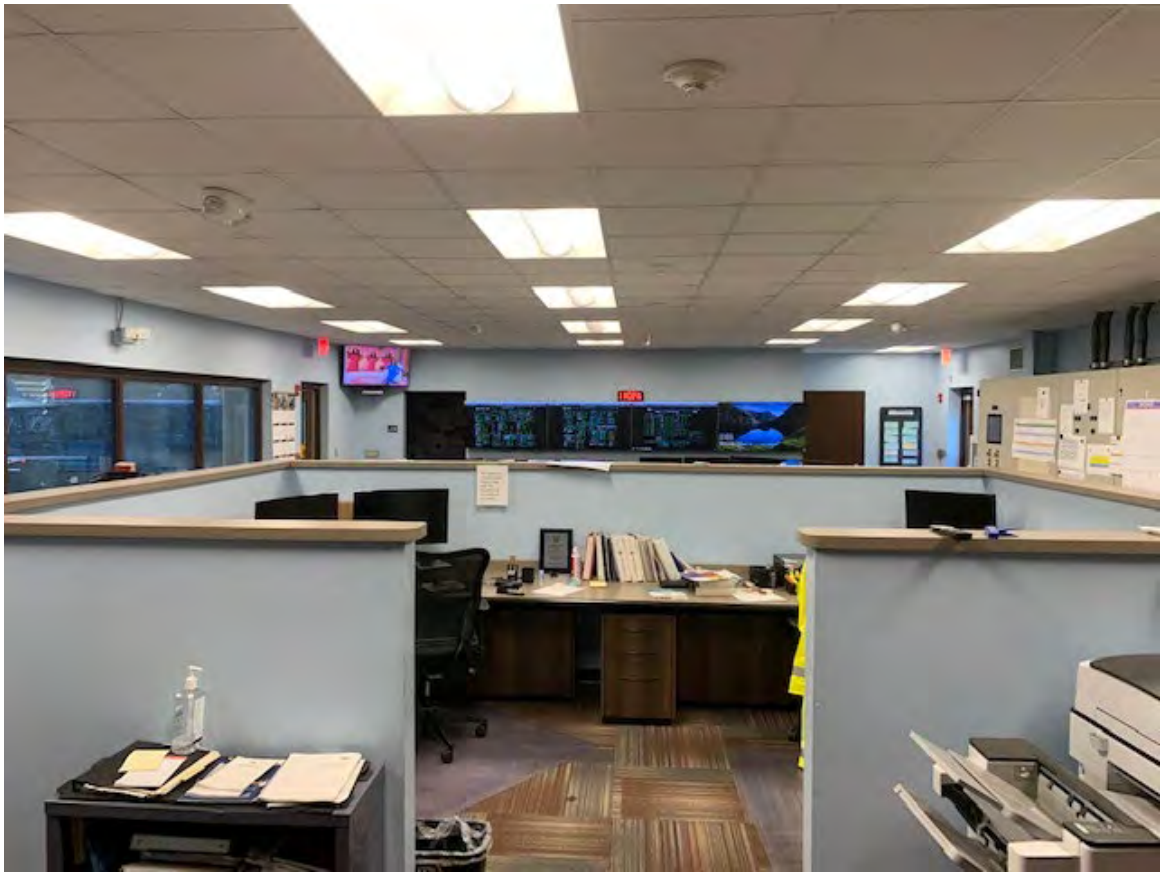
High Service Pump Station – Console

2301 Regional Water Ln. Tampa, FL



This is the console area being serviced in the High Service Pump Station

Mop sink and shelving for products and cleaners

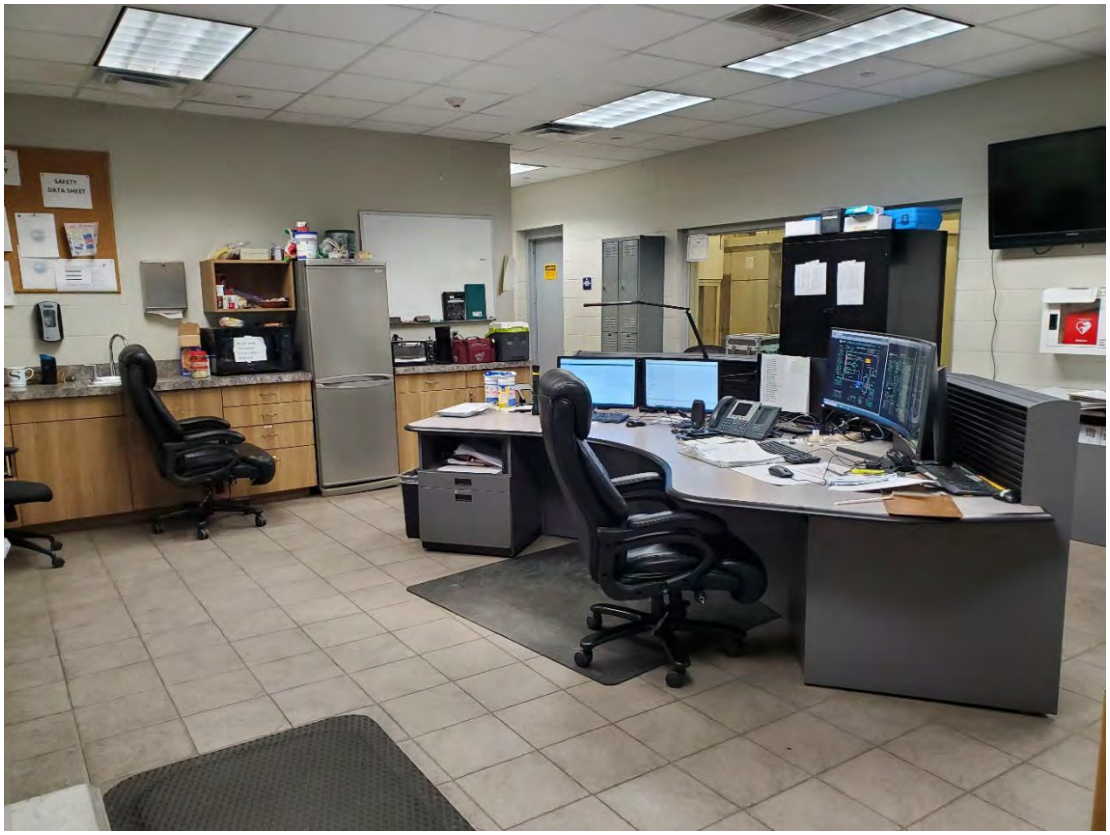


EXIT

DANGER
HIGH VOLTAGE

Lithia H2S

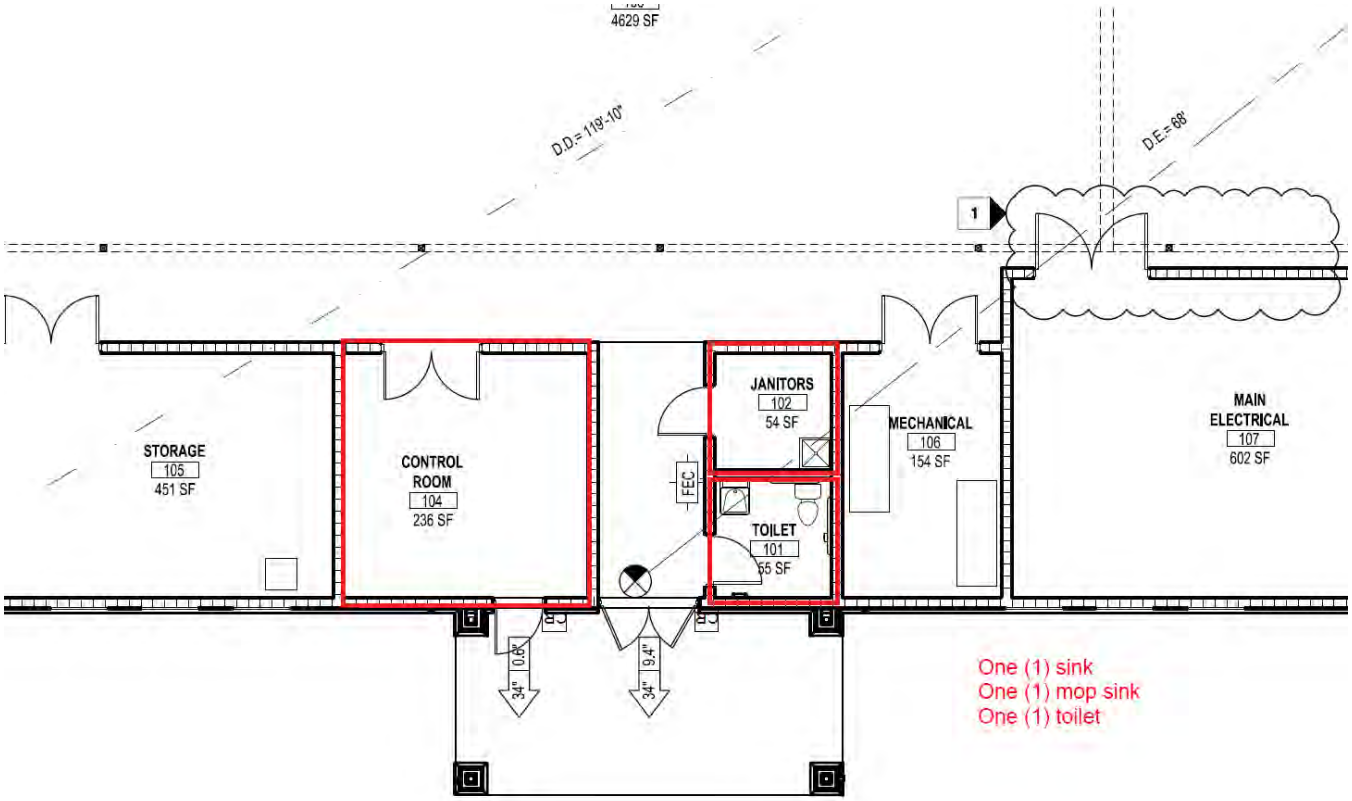
5402 Lithia Pinecrest Rd. Lithia, FL



EXIT

Brandon Booster Station

1032 S. Mount Carmel Rd. Brandon, FL



Lake Bridge - Bathroom Only

5825 County Line Rd. Lutz, FL

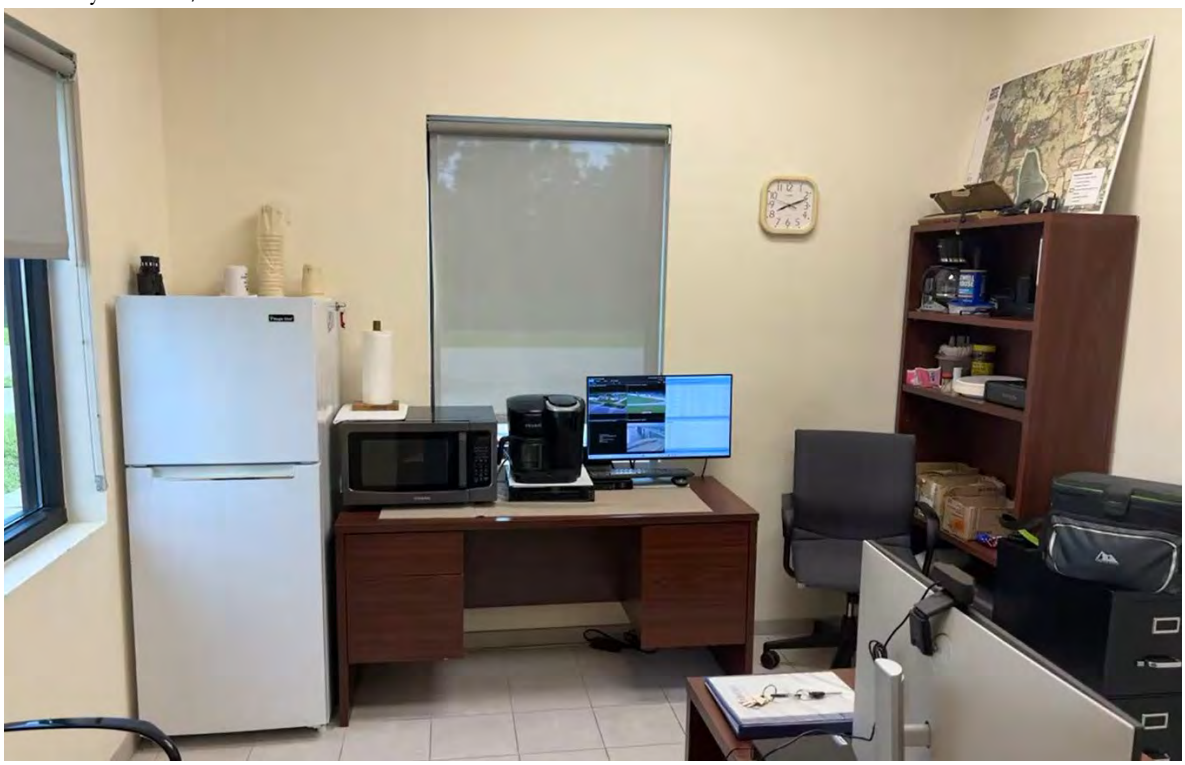
Keller H2S – Bathroom Only

3655 Keller Circle, Tarpon Springs, FL

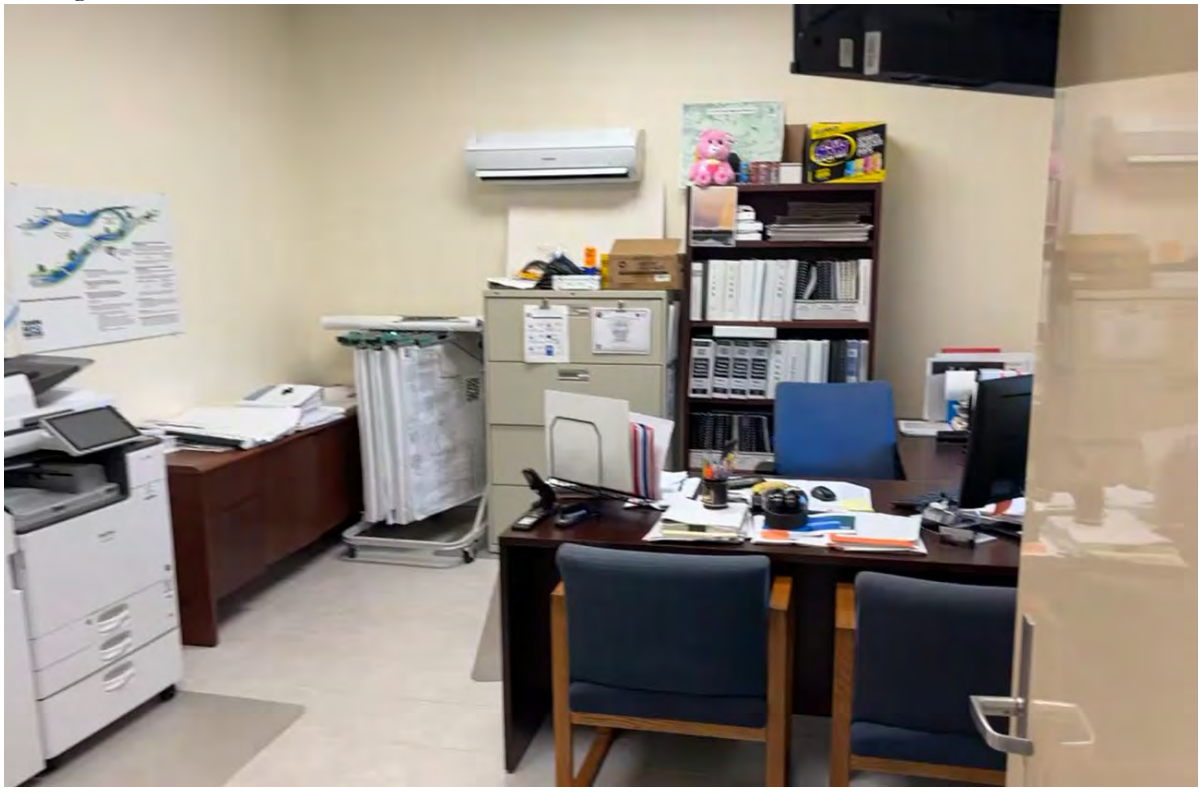
C.W. Bill Young Regional Reservoir

17615 Boyette Rd. Lithia, FL 33547

Security Office/Kitchen

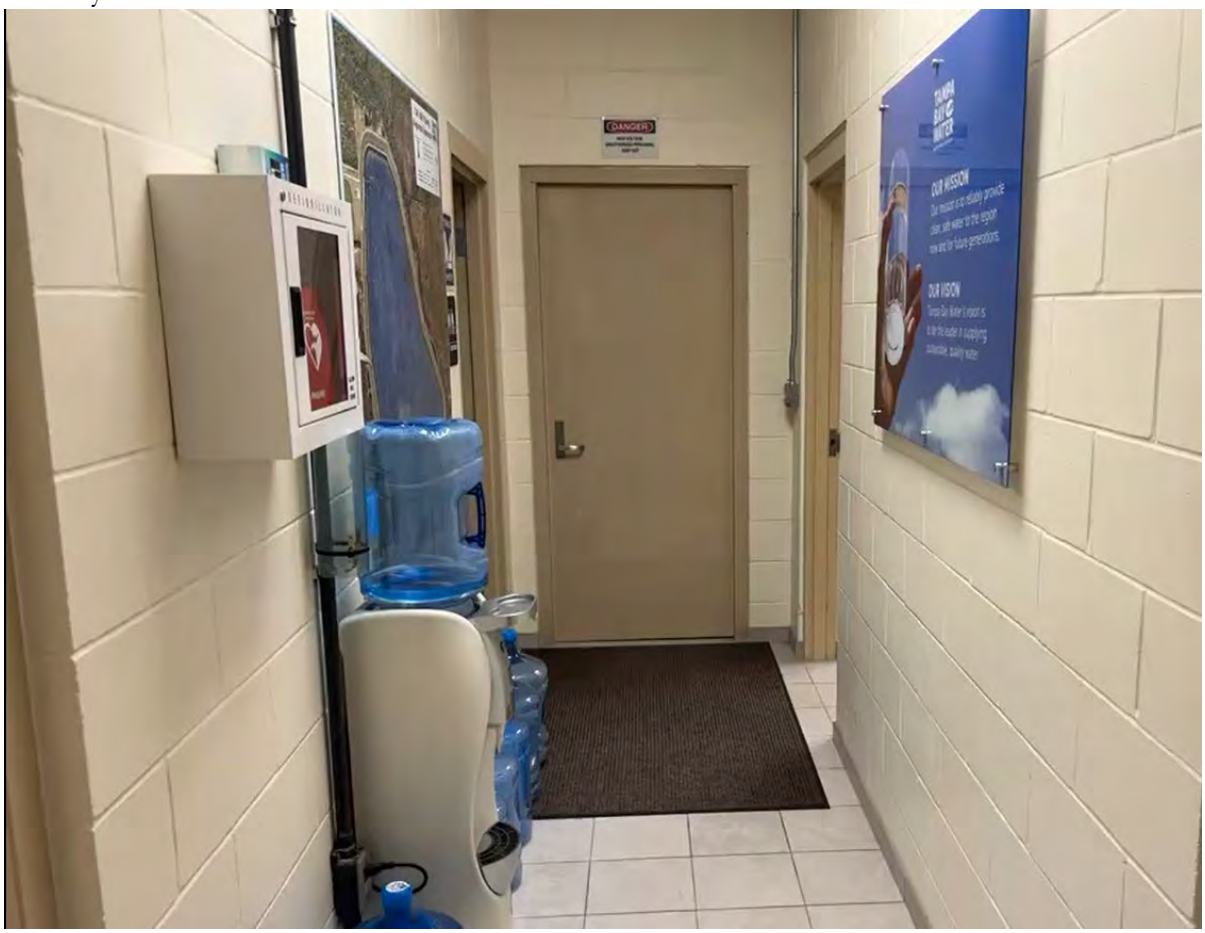


Manager's Office

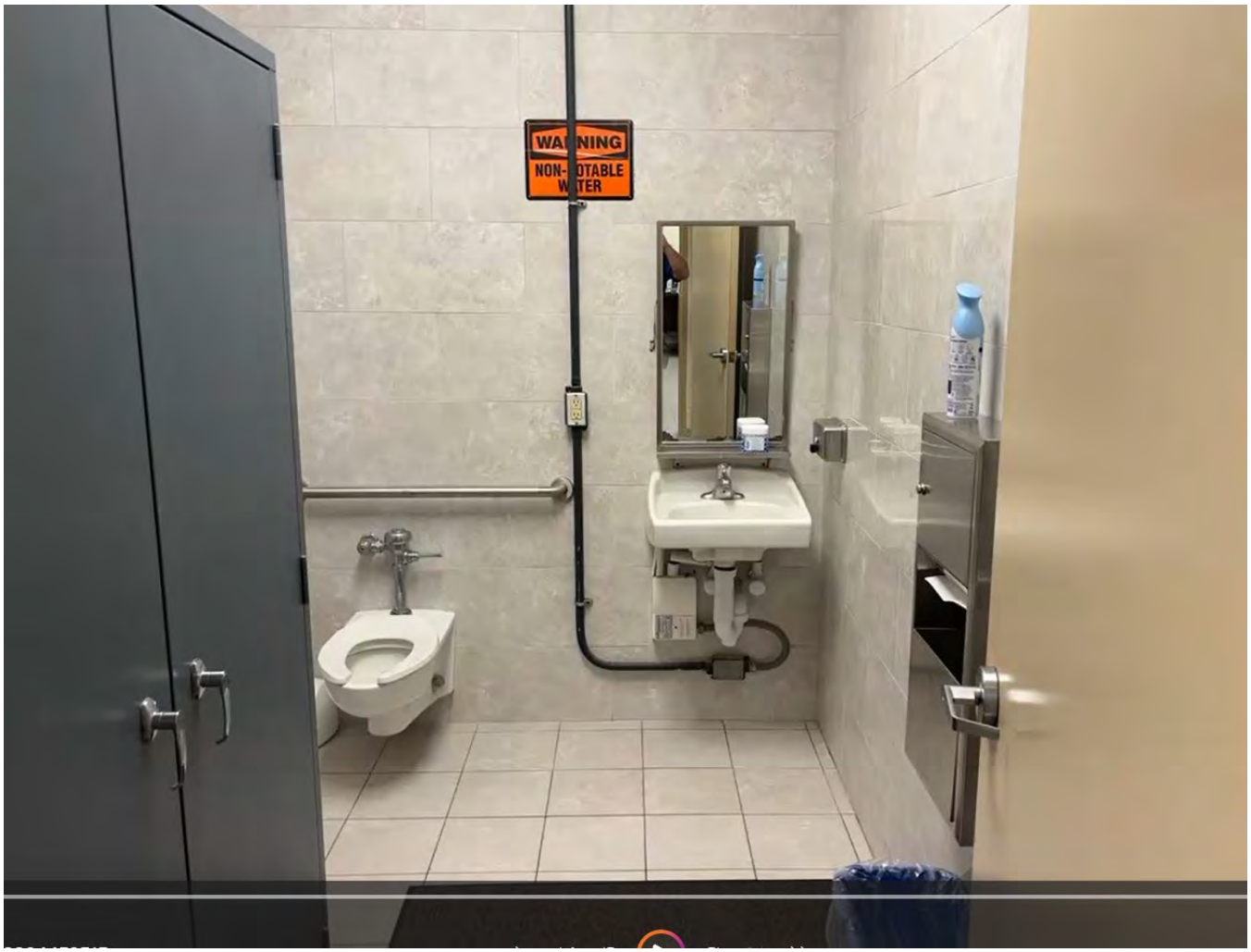


Technician's Office

Hallway



Bathroom



FlagShip™
AVIATION SERVICES

JANITORIAL PROPOSAL
FOR TAMPA BAY WATER

September 5, 2025

Flagship Aviation Services
4100 George J. Bean Parkway
Tampa, FL 33607
flagshipinc.com

September 5, 2025

Dear Lynn,

Flagship Aviation Services can serve as a strategic partner to Tampa Bay Water. From our humble beginnings as a one-person start-up providing custodial services, we've grown into a company that's the perfect size – big enough to offer comprehensive resources and support, yet agile enough to deliver personalized service. With our expertise cleaning in all types of environments, large presence in Tampa, and commitment to service excellence, we're well equipped to meet your unique needs.

Flagship specializes in facilities maintenance services for complex environments, including office buildings, manufacturing facilities, higher education campuses, and airports. We pride ourselves on being a single-source provider, self-performing more than 75% of our facilities services. Our experienced and professional management team offers Tampa Water an individualized approach, ensuring meticulous attention to detail and superior customer service through collaboration with key stakeholders at every stage.

With Flagship, Tampa Bay Water will experience a multitude of benefits:

- Peace of Mind: We're reliable. Whether you need additional support or an emergency response, our team of professionals located within the TPA terminal will arrive with the right tools for the job.
- A Full-Service Provider & Resource: As a single-source service provider, we offer a suite of solutions that optimize operations, eliminating the hassle of managing multiple vendors and ensuring a more efficient, streamlined operation.
- A Smooth & Seamless Transition: Our operations team has years of experience executing seamless and successful transitions. From notification of award to staff training, Tampa Bay Water will have a proactive, collaborative partner every step of the way. Our proven transition plan ensures a seamless shift with no disruption to your daily operations.
- No Lengthy Bid Process: Tampa Bay Water can choose to partner with Flagship by utilizing our contract already in place at Tampa International Airport. This will save valuable time and money allowing staff to focus on other bid processes.
- Service Excellence: Our goal is not just to meet your expectations but to exceed them. From day one, our executive team will be hands-on, delivering the right services at the right time and responding quickly to any unexpected challenges.

FlagShip™
AVIATION SERVICES

Flagship Aviation Services
44100 George J. Bean Parkway
Tampa, FL 33607
flagshipinc.com

We look forward to providing Tampa Bay Water with a tailored solution that aligns with your goals to enhance your operations. More than just a vendor, we strive to be a long-term partner – a trusted and valued extension of your team.

Sincerely,

Jennifer Steward
Sr. Director of Business Development
(512) 963-1107 | jsteward@flagshipinc.com

FlagShip™
AVIATION SERVICES

FLAGSHIP OVERVIEW

Founded in 1988 as a janitorial services provider, Flagship has always prioritized innovation, customer service, and continuous improvement.

With over 30 years of experience in facilities maintenance, we have developed a deep understanding of how buildings operate. This expertise allows us to deliver fully integrated services, including janitorial, engineering, maintenance, and repair – most of which we perform in-house.

Our clients range from single 25,000-square-foot buildings to large, interconnected facilities spanning over 3 million square feet. We specialize in managing multi-shift campuses with complex service requirements, including operations that run 24/7, 365 days a year.

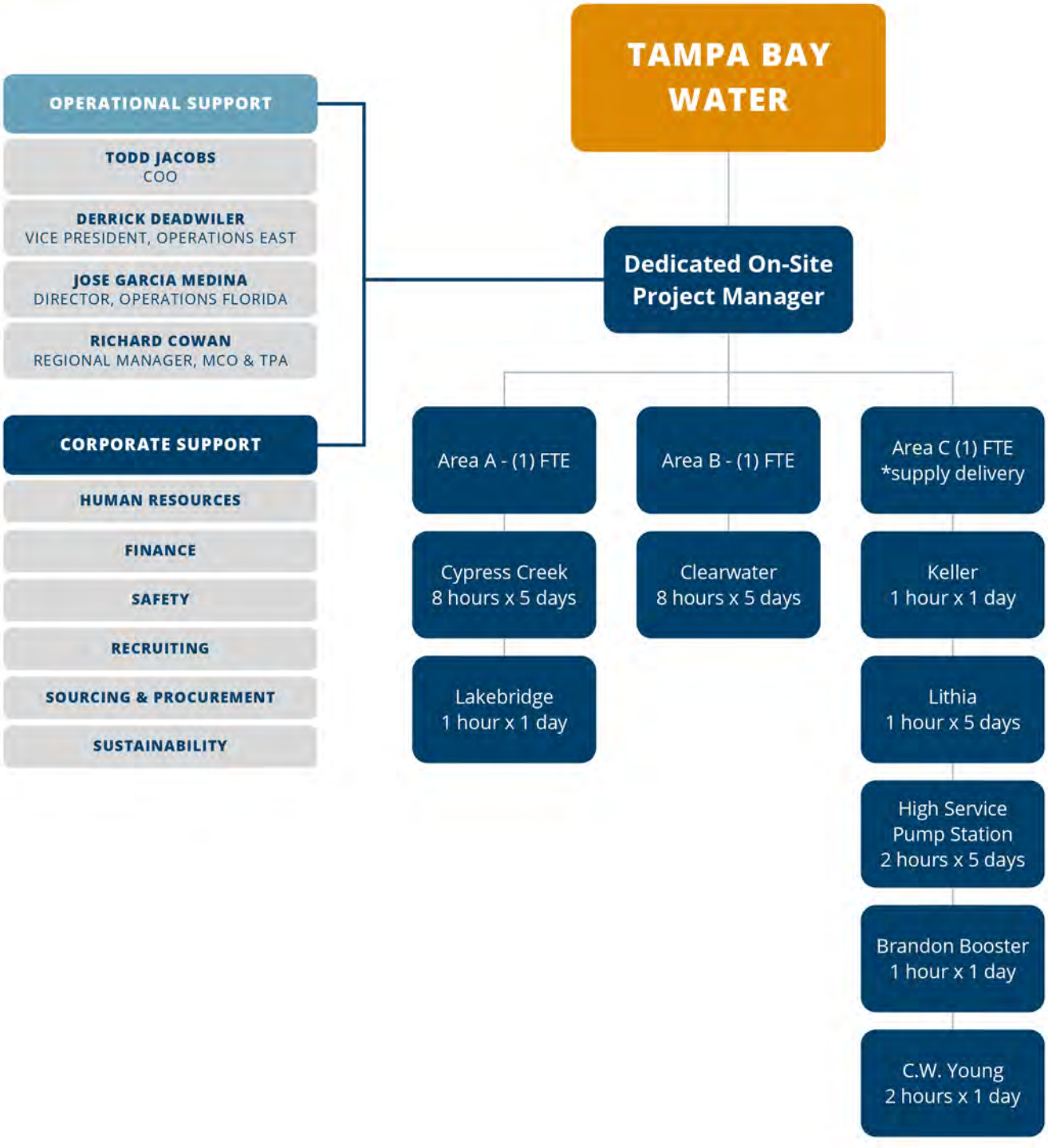
As a company with more than 6,500 full-time employees, we provide the resources and capabilities of a large firm while maintaining the personalized service typically associated with smaller companies. Our experienced management team is actively involved in every account, ensuring customized solutions, meticulous attention to detail, and exceptional customer service.

We are agile and adaptable, scaling alongside our clients to meet their evolving needs. Whether expanding operations, implementing new technologies, or responding to unexpected challenges, we provide the expertise and support needed to keep facilities running smoothly.

"We manage facilities, but we serve people."

– DAVE PASEK, CEO

TEAM BEHIND THE TEAM



TEAM BEHIND THE TEAM

One of Flagship's key differentiators is our Team Behind the Team program, which we use to support our on-site management teams in proactive fashion. TbT allows on-site management to focus on operations and creating positive customer experiences.

Our TbT program is built on purposeful caching and mentoring in action. The coaching and mentoring are supported by weekly review calls and scheduled and non-scheduled on-site visits from leadership and field support teams.

TODD JACOBS
COO

Todd has more than 40 years of experience in the service industry in both operations and business development supporting a wide range of facilities, including airports, high-tech, industrial sites, and university campuses.

Todd plays a key leadership role in the company by developing and implementing business strategies, planning and processes while holding his teams accountable for results. Those results ensure all Flagship operations are focused on performance and customer service. He ensures that all our teams in the field receive proper equipment and training, along with expert vendor support. Our Team behind the Team program ensures the field is not alone on an island but has the operations management and corporate support it needs to be successful.

Todd oversees the EH&S department, driving a safety culture so our employees go home safe each day. Todd's industry experience along with managing large teams in the field has allowed Flagship to become a premiere service provider.

TEAM BEHIND THE TEAM

DERRICK DEADWILER
Vice President, Operations East

Derrick has more than 20 years of experience in the manufacturing, distribution, and facility services industries. As vice president of operations, he is responsible for implementing cost-effective strategies, maximizing operational efficiencies across the organization, ensuring the effective delivery of services to clients, and contributing to the strategic development and long-term value for both Flagship and its clients. Derrick's knowledge spans business functions, including operations, sales, marketing, and business development.

JOSE GARCIA MEDINA
Director, Operations East

Jose has 23 years of experience providing top notch janitorial services at airports, beginning as a frontline worker. Jose has been with Flagship for over 10 years in a managerial capacity.

Since 2001, he has succeeded working for three different janitorial vendors at Orlando International Airport, implementing each company's systems while always putting the airport's needs first.

Relevant Experience:

- Served as Flagship's site manager at Orlando International Airport from 2017 until March 2024
- Served as assistant site manager at Orlando International Airport from October 2016 until 2018
- Served as site manager at Tampa International Airport, overseeing employees on the first, second, and third shifts and overseeing the entire operation managing 175 employees
- Served as operations manager overseeing first and second shift and assisting the site manager Orlando International Airport
- Served as the quality control manager from 2007-2014, overseeing QC processes and overseeing supervisors on the day shift

FlagShip™
AVIATION SERVICES

CUSTOMERS

FLAGSHIP SERVES WORLD-CLASS FACILITIES

VALVE

Meta

SAMSUNG

INVITAE

DENALI
THERAPEUTICS

Walmart

LinkedIn

Dolby

Zillow

FlagShip™
AVIATION SERVICES

NATIONWIDE COVERAGE

Flagship has full-service offices from coast to coast, including our corporate headquarters in Southlake, TX, and regional offices in San Jose, San Diego, and Boston.

We have the capability to serve customers at multiple locations throughout North America.

FlagShip™ AVIATION SERVICES

StartSmart End Smart.

APPROACH TO RECRUITING, HIRING, AND RETENTION

START SMART. END SMART.

The key to success in any service industry is the ability to recruit, train, and retain high quality employees who are dedicated to customer success. Our comprehensive approach achieves just that. Our employees are organized, dependable, and work well within teams.

Retaining great people can be a challenge in an industry known for its churn rate. We've found that a combination of daily/weekly/monthly training, employee engagement, inclusion activities, employee recognition programs, and a well-documented promotion path help us retain our talented people.

LEADERSHIP DEVELOPMENT AND EMPLOYEE ENGAGEMENT

- Online and on-site training and development sessions
- Employee engagement programs highlight success and reward excellent performance

REGIONAL WAGE ANALYSIS

- Regional and state unemployment rates
- Average hourly earnings trends
- Occupational employment and wages
- Business employment dynamics

ON-BOARDING

- Company orientation session
- General safety orientation
- On-the-job training

FINDING THE RIGHT CANDIDATES

- Social media recruiting
- Community partnership and job events
- Screening process

FlagShip™
AVIATION SERVICES

FlagShip™
ACADEMY

FLAGSHIP ACADEMY

LEARNING AND DEVELOPMENT: EQUIPPING EMPLOYEES THROUGHOUT THEIR CAREERS

At Flagship, training isn't a one-time event; it's an ongoing commitment. From day one, every employee participates in a structured training program tailored to their role, location, and responsibilities. Courses are delivered through Flagship Academy, our robust Learning Management System (LMS).

Flagship Academy is an application-based training platform accessible via phone, tablet, or computer. Integrated with Workday, it automatically assigns role-based training and tracks completion in real time. Site leaders receive compliance reports to ensure every employee meets their training requirements. Each module includes comprehension checks, digital sign-offs, and supervisor attestations, ensuring regulatory compliance and accountability.

TRAINING PROGRAMS AT A GLANCE:

- **Ongoing Development**
  - In addition to New Employee Training, employees continually reinforce their skills and maintain compliance through Flagship Academy and hands-on, on-the-job training, covering topics such as:
    - Safety Culture & PPE Use
    - Slip, Trip, and Fall Prevention
    - Ergonomics, Back Safety & Ladder Training
    - Emergency Response & Hazard Communication
    - Discrimination, Harassment, and Workplace Sensitivity

FlagShip™
AVIATION SERVICES

FlagShip™
ACADEMY

FLAGSHIP ACADEMY

TRAINING PROGRAMS AT A GLANCE:

- **Monthly Safety Training**
  - Site Supervisors lead monthly safety training sessions, supported by quizzes and signed attestations. Topics rotate annually based on incident trends to ensure continuous improvement in workplace safety.

- **Leadership Development**
  - We invest in our supervisors and site leaders through structured training in communication, compliance, and coaching, with a strong focus on career progression and internal promotion. Many of Flagship's leaders started on the frontlines and advanced through the company. Our Leadership Development program recognizes talent, builds leadership capacity, and supports long-term growth.

- **Technology-Driven Training & Performance Tracking** All employees receive training on mobile timekeeping, digital work orders, and Flagship's proprietary Intuition™ platform, which enables real-time performance tracking, task verification, and work order transparency.

PROVEN RESULTS

By combining LMS automation, site-specific customization, and skill reinforcement, Flagship's training model reduces onboarding time, closes performance gaps, and enhances consistency across locations—ensuring every employee is equipped to excel.

FlagShip™
AVIATION SERVICES

SAFETY PLAN

Flagship's Safety program helps prevent injuries by creating safety awareness and encouraging dialogue between employees at all levels of the organization. The program includes the following:

- **A formalized documentation system for ongoing training**
- **An annual training calendar**
- **Customized training modules for each site**
- **Job Safety Analyses that break down required tasks to determine potential hazards and recommended safe procedures to complete those tasks**
- **Training modules that focus on each employee's specialty area and provide opportunities for advancement**

PROCEDURES INCLUDE THE FOLLOWING:

- **Frontline Safety Training**
  - All frontline employees participate in periodic training sessions, which are led by vendors, HR representatives, supervisors, operations managers, and other individuals with specific insight into techniques and equipment that can be used to lower the risk of injury.
- **Monthly Supervisors Safety Training**
  - All supervisors undergo refresher training each month, led by the safety manager or HR representatives of each region. Attendance is checked by our Safety Department each month using sign-in sheets.
- **Statistical Analysis**
  - Flagship tracks each supervisor's safety record monthly and supervisors receive cash incentives for maintaining a safe workplace. The goal is to encourage supervisors to address potentially risky situations in the workplace.
- **Identification of At-Risk Employees**
  - On a monthly basis, supervisors are required to report at-risk employees to our corporate safety manager and HR representatives. Supervisors look for warning signs such as chronic complaining, poor attitude, or an inability to maintain their workspace. In many cases, these problems can be addressed by modifying the employee's work duties or through improved communication.

Our employees are our greatest asset. Every employee is considered a member of the Flagship family, and we aim to get everyone home safe, every day.

FlagShip™
AVIATION SERVICES

FlagShip™
INTUITION

QUALITY CONTROL

At Flagship, data isn't just something we collect; it's a powerful tool we use to drive meaningful change. Our team is expertly trained to analyze the insights generated by our technology solutions, which are then seamlessly integrated into **Flagship Intuition™** – our cutting-edge data analytics and reporting tool. We take these insights and translate them into actionable strategies to optimize your facility operations and elevate the occupant experience. Here, we share the proven approach we use to turn data into real-world results, helping you unlock the full potential of your facility.

FlagShip™
INTUITION

HOW WE USE IT

- Cleaning alerts & notifications
- Touchless feedback (QR codes)
- Custodial task management
- Daily quality control inspections

▶ DATA SOURCE: Proprietary Quality Control Mobile Application

DATA POINT:
Cleaning Frequencies

USE THIS DATA TO:

- Reduce redundant cleaning
- Improve resource allocation

DATA POINT:
Inspection Scores

USE THIS DATA TO:

- Identify high-performing areas
- Prioritize areas for improvement
- Track progress over time

DATA POINT:
Task Completion

USE THIS DATA TO:

- Ensure accountability
- Identify bottlenecks
- Prioritize critical tasks

FlagShip™
AVIATION SERVICES

FlagShip™
INTUITION

FLAGSHIP INTUITION™: QUALITY CONTROL INSPECTION PLATFORM

Flagship is proud to partner with TRAX Analytics, which uses a unique blend of technology and data analysis to streamline operations and improve customer satisfaction. Our facility analytics platform enables us to capture, analyze, manage, and display data on our janitorial operations to identify areas that may need improvement and take corrective action to ensure a clean and safe facility. It includes several customizable dashboards, which allows us to track:

- Cleaning alerts and notifications
- Custodial feedback
- Custodial inventory
- Custodial tasks

Every Flagship customer gets access to a proprietary dashboard showing real-time data to include inspection scores, periodic work schedules and completion of special tasks like floorwork, high dusting, etc.

FlagShip™
AVIATION SERVICES

WHAT SETS US APART

AWARDS & RECOGNITION

Flagship clients consistently receive recognition, awards, and certifications for their commitment to cleanliness, safety, and service.

- We support San Diego International Airport – home to the first **LEED Platinum certified** commercial airport terminal in the world.
- Twenty airport customers were recognized in the **2024 J.D. Power North America Satisfaction Study**, with two securing the number one spot in their respective categories.
- Cincinnati & Northern Kentucky International Airport and Tampa International Airport were winners of the **2024 Airport Service Quality (ASQ) awards.**
- We helped San José Mineta International Airport, Harrisburg International Airport, Orlando International Airport, and Phoenix Sky Harbor International Airport earn the **Global Biorisk Advisory Council (GBAC) Star Facility Accreditation.**
- We supported Samsung Semiconductor to achieve and maintain **LEED Gold certification** by using green certified chemicals, Energy Star Rated equipment, environmentally preferable products, and deploying water saving equipment.

CIMS CERTIFICATION

Flagship has achieved the Cleaning Industry Management Standard (CIMS) Green Building with Honors certification from ISSA, the world's leading trade association for the cleaning industry. CIMS GB with Honors is designed to help companies improve cleanliness outcomes, deliver better service and control costs. Certified companies have the necessary structures, processes, procedures, and supporting documentation in place to meet customer needs, while also addressing the heightened demands of cleaning for health and safety.

SUSTAINABILITY INITIATIVES

Flagship offers a scalable Sustainability program with multiple service levels, allowing clients to choose the level of engagement that best fits their needs. Our program covers key areas such as energy, waste, water, supply chain, conservation, and community outreach. With established partnerships and expertise, we help clients customize their sustainability programs to align with their specific goals.

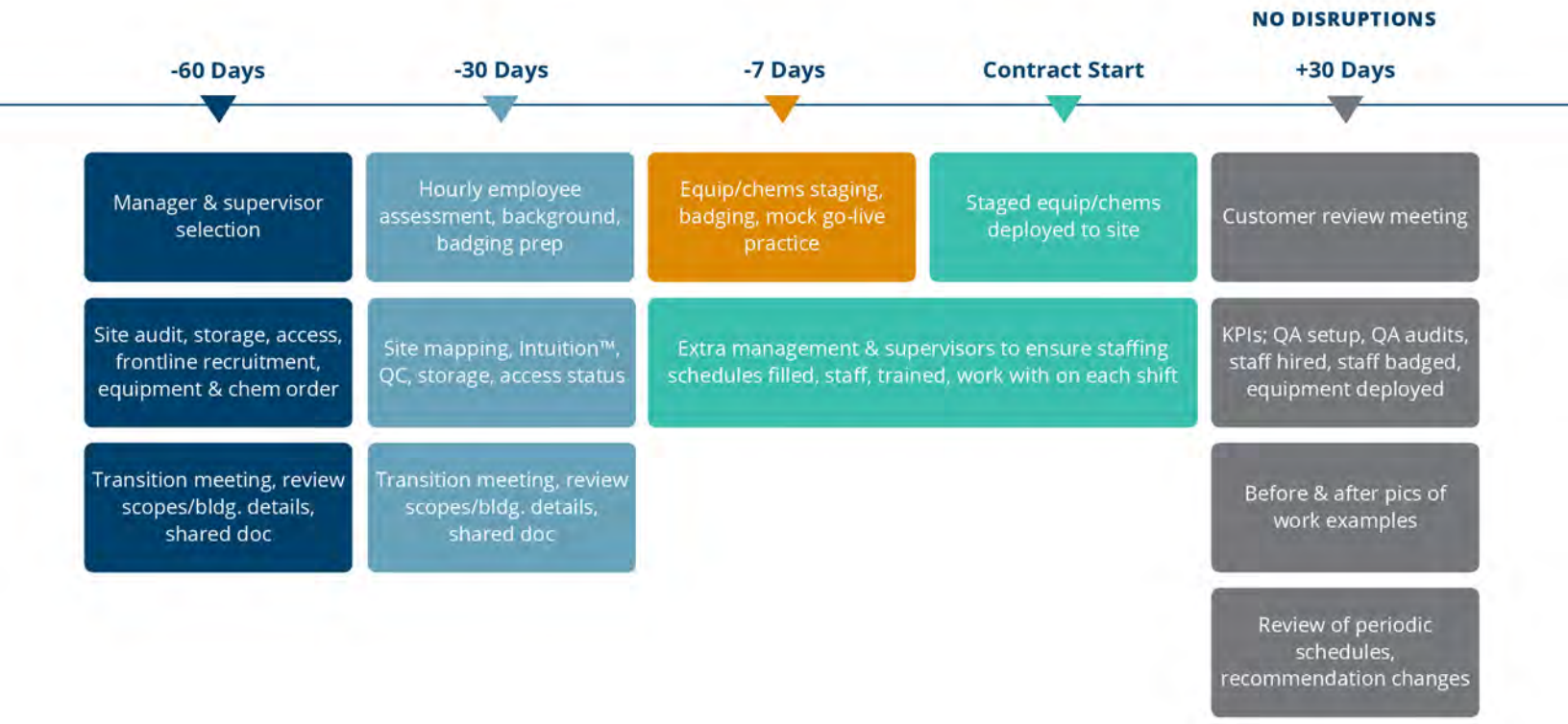
FlagShip™
AVIATION SERVICES

SEAMLESS TRANSITIONS

TRANSITION PLAN

A GREAT PARTNERSHIP BEGINS WITH A SMOOTH TRANSITION.

Our aviation experts and operations executives will collaborate with your leadership team to establish a transition oversight committee that remains actively involved throughout the entire process. Below is a brief overview of the key activities and milestones that take place during the transition. With a proven track record at hundreds of sites, we're confident in the effectiveness of our transition plan.



SEAMLESS AND NON-DISRUPTIVE TRANSITION PROCESS

150+ POINT FLEXIBLE TRANSITION CHECKLIST

SHARED DOCUMENT WITH CUSTOMER

FlagShip™
AVIATION SERVICES

INITIAL PRICING

COST BREAKDOWN

The Flagship pricing below reflects information provided by Tampa Bay Water:

The pricing includes the following:

- (1) One FTE on-site project manager who is dedicated solely to Tampa Bay Water
- (1) One FTE general cleaner servicing Area A as outlined in the proposal Monday - Friday
- (1) One FTE general cleaner servicing Area B as outlined in the proposal Monday - Friday
- (1) One FTE general cleaner servicing Area C as outlined in the proposal Monday - Friday. This team member is also responsible for delivery of supplies to each location as well as completing special project work when it's due.
- (2) vehicles dedicated to Area A and Area C
- All necessary cleaning chemicals, rags, mops and light equipment
- Periodics: 2 x per year strip and wax of all VCT flooring and 1 x per year full carpet extraction
- Professional uniforms at no charge for staff
- Access to affordable healthcare programs including dental and vision
- Flagship Intuition™ quality assurance technology for inspections and dashboard visibility for Tampa Bay Water facility leadership
- ***The below price is for year 1 of services. This cost is all encompassing with the exception of consumables (soap, toilet paper, paper towels, liners) that would be billed on a cost-plus 7% handling fee basis. Other items not included are service sales tax (if applicable).***

JANITORIAL SERVICE	PROPOSED BILLING	
	MONTH	ANNUAL
Combined Total Pricing	$18,454	$221,448

FlagShip™
AVIATION SERVICES

QUESTIONS? REACH OUT TO US!

Flagship Aviation Services
Jennifer Steward | 512.963.1107
jsteward@flagshipinc.com
flagshipinc.com

EXHIBIT C

TAMPA BAY WATER
CONTRACTOR AFFIDAVIT

STATE OF _____

COUNTY OF _____

BEFORE ME, the undersigned authority, appeared _____, who first being duly sworn hereby swears or affirms as follows:

1. I make this affidavit on personal knowledge.
2. I am over the age of 18 years and otherwise confident to make this Affidavit.
3. I am the _____ of _____ (the "Contractor").
4. I am authorized by _____ to make this Affidavit on behalf of Contractor.

E-Verify

1. Contractor acknowledges that Section 448.09, Florida Statutes, makes it unlawful for any person to knowingly employ, hire, recruit, or refer, for private or public employment, an alien who is not duly authorized to work in the United States.
2. Contractor acknowledges that Section 448.095, Florida Statutes, prohibits public employers, contractors, and subcontractors from entering into a contract unless each party to the contract registers and uses E-Verify.
3. Contractor is in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
4. Contractor understands it shall remain in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes, during the term of any contract with Tampa Bay Water.
5. Contractor's subcontractors are in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
6. Contractor shall ensure compliance with the requirements of Sections 448.09 and 449.095, Florida Statutes, by any and all of its subcontractors.
7. Neither the Contractor, nor any subcontractor of Contractor, has had a contract terminated by a public employer for violating Section 448.095, Florida Statutes, within the year preceding the date of this Affidavit.
8. If the Contractor, or any subcontractor of Contractor, has a contract terminated by a public employer for any such violation during the term of any contract with Tampa Bay Water, it shall provide immediate notice thereof to Tampa Bay Water.

Anti-Human Trafficking

In accordance with Section 787.06(13), Florida Statues, the undersigned, on behalf of the entity listed below ("Entity"), hereby attests under penalty of perjury that Entity does not use coercion for labor or services as defined in Section 787.06, Florida Statutes, entitled "Human Trafficking".

Scrutinized Companies

A. Pursuant to Subsections 287.133(2) and (3), Florida Statutes, Respondent acknowledges that a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a proposal on a Contract provide any goods or services to a public entity, may not submit a Proposal on a Contract with a public entity for the construction or repair of a public building or public work, may not submit Proposals on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a Contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017 Florida Statutes, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

B. Pursuant to Subsection 287.134(2)(a), Florida Statutes, Respondent acknowledges that an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of public building or public work; may not submit bids,

proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; an may not transact business with any public entity.

C. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that a company that has been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or the Scrutinized Companies that Boycott Israel List or a company that engages in a boycott of Israel, is ineligible and may not submit a bid, proposal, or enter into or renew a contract with an agency for goods or services of $1 million or more. At the time of submission of a proposal for a contract or contract renewal for goods or services of $1 million or more, the company must certify that it is not on either such List and further that it does not have business operations in Cuba or Syria as required by Section 287.135(5), Florida Statutes.

D. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any contract for goods or services of $1 million or more if the awarded company is found to have submitted a false certification as provided under Section 287.135(5), been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or been engaged in Business operations in Cuba or Syria.

E. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any contract for good or services of any amount if the awarded company is found to have or been placed on the Scrutinized Companies that Boycott Israel List or is engaged in a boycott of Israel.

Foreign Countries of Concern

Pursuant to Section 287.138, Florida Statues, Tampa Bay Water may not enter into a contract with an entity that gives access to an individual's personal identifying information if the entity is owned, controlled or organized under the laws of a Foreign Country of Concern which includes the People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolas Maduro, the Syrian Arab Republic, or any other entity or agency under the significant control of such Foreign Country of Concern.

_____
Signature of Affiant
on behalf of Contractor

By: _____

As its: _____

Dated: _____

Sworn to (or affirmed) and subscribed before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20___, by _____, on behalf of _____, who is personally known to me or who has produced _____ as identification.

_____

Print Name: _____
Notary Public of the State of Florida

My Commission Expires:

TAMPA BAY WATER CERTIFICATE OF INSURANCE or APPROVED ACORD FORM

2575 Enterprise Road
Clearwater, Florida 33763-1102
Phone: 727.796.2355
Fax: 727.791.2388
Suncom: 513.7010
www.tampabaywater.org

Issue Date: Contract Number:

CANCELLATION: Should any of the below described policies be cancelled, non-renewed or adversely changed before the expiration date thereof, the issuing company will provide 30 days written notice to **TAMPA BAY WATER** by certified mail.

Producer:

Insured:

Companies Affording Coverage:	Best Rating/Class:
A.	
B.	
C.	
D.	

COVERAGES: This is to certify that the policies of insurance listed below have been issued to the insured named above for the policy period indicated.

Co. Letter	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFF. DATE	POLICY EXPIR. DATE	LIMITS ALL LIMITS IN THOUSANDS		
	General Liability □ Commercial Form □ Occurrence □ Claims Made □ Comprehensive Form □ Premises Operations □ Explosion, Collapse, Underground Hazard □ Products/Completed Operations Hazard □ Contractual Insurance □ Broad Form Property Damage □ Independent Contractor □ Personal Injury					EACH OCCURRENCE	AGGREGATE
					BI & PD Combined	$	$
					Bodily Injury	$	$
					Property Damage	$	$
					Products Comp/OP	$	$
					Personal & Adv. Injury	$	$
					* Separate Project Agg. For TAMPA BAY WATER		$
	Automobile Liability □ Any Auto □ All Owned Autos □ Scheduled Autos □ Hired Autos □ Non-Owned Autos				Combined Single Limit		$
					Bodily Injury (Per Person)		$
					Property Damage		$
	Umbrella/Excess Liability □ Umbrella Form □ Excess Form □ Following Form Coverage				Each Occurrence		$
					Aggregate		$
	Workers' Compensation and Employers' Liability				□ Statutory Coverage Limit		$
					EL Each Accident		$
					EL Disease Policy Limit		$
					EL Disease Each Employee		$
	Professional Liability □ Claims Made □ Occurrence Retro Date:					$	$
	Builder's Risk □ All Risk Permission to Occupy □ All Owner's Contractors, Subcontractors' Interests Covered □ Installation Floater					$	$
	Other						

Description of Operations/Locations/Vehicle/Special Items:
* Specific Project or Location:

CERTIFICATE HOLDER and ADDITIONAL INSURED

TAMPA BAY WATER, its Contractors, Subsidiaries or Affiliates and each of TAMPA BAY WATER's Directors, Officers, Employees, Representatives, Agents or Volunteers.

Authorized Representative: _____
(Signature required)

Address: _____

Telephone: _____ Fax: _____

THIS IS TO FURTHER CERTIFY THAT:

1. The company issuing the General Liability Coverage hereby agrees to waive any right of subrogation it may acquire against TAMPA BAY WATER, its engineers, its contractors, and all other parties named as insured by reason of any payment made on account of personal injury, bodily injury, including death resulting therefrom, sustained by any employee of the insured or property damage arising out of the performance or furnishing of work under the above referenced contract.

2. Each of the above described policies contains a provision or endorsement that the coverage afforded will not be canceled, adversely changed or non-renewed until at least thirty (30) days prior written notice has been given to TAMPA BAY WATER by certified mail.

3. Each of the above listed companies hereby agrees to deliver to TAMPA BAY WATER new Certificate(s) of Insurance at least fifteen (15) days prior to coverage renewals or binder within such period and a certificate within fifteen (15) days thereafter.

4. If requested, each of the above listed companies hereby agrees to deliver two (2) copies of the policies purchased by the Agent to TAMPA BAY WATER.

5. Each of the above listed companies is authorized to do business and has an agent for service of process in Florida and has an "A" policy holders rating and a financial rating of at least Class VIII in accordance with the most current Best's rating. For self-insurance funds, financial statements are to be provided if requested by TAMPA BAY WATER. (at TAMPA BAY WATER's option, a Best's rating or financial information regarding any self-insurance funds may be waived.)

ACORD™ CERTIFICATE OF LIABILITY INSURANC Clear Save

DATE (MM/DD/YYYY)

PRODUCER

Your Insurance Agent

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED

Company Name
Street
City, State, Zip Code

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A: Company Name	
INSURER B:	
INSURER C:	
INSURER D:	
INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	X	**GENERAL LIABILITY**	Policy Number	effective	expires	EACH OCCURRENCE	$ 1,000,000
		[X] COMMERCIAL GENERAL LIABILITY				DAMAGE TO RENTED PREMISES (Ea occurence)	$ 300,000
		[ ] CLAIMS MADE [X] OCCUR				MED EXP (Any one person)	$ 5,000
						PERSONAL & ADV INJURY	$ 1,000,000
						GENERAL AGGREGATE	$ 2,000,000
		GEN'L AGGREGATE LIMIT APPLIES PER:				PRODUCTS - COMP/OP AGG	$ 2,000,000
		[ ] POLICY [X] PROJECT [ ] LOC					
	X	**AUTOMOBILE LIABILITY**	Policy Number	effective	expires	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
		[X] ANY AUTO					
		[ ] ALL OWNED AUTOS				BODILY INJURY (Per person)	$
		[ ] SCHEDULED AUTOS					
		[ ] HIRED AUTOS				BODILY INJURY (Per accident)	$
		[ ] NON-OWNED AUTOS					
						PROPERTY DAMAGE (Per accident)	$
		GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
		[ ] ANY AUTO				OTHER THAN AUTO ONLY: EA ACC	$
						AGG	$
	X	**EXCESS/UMBRELLA LIABILITY**	Policy Number	effective	expires	EACH OCCURRENCE	$ 2,000,000
		[X] OCCUR [ ] CLAIMS MADE				AGGREGATE	$ 2,000,000
							$
		[ ] DEDUCTIBLE					$
		[ ] RETENTION $					$
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	Policy Number	effective	expires	X WC STATU-TORY LIMITS / OTH-ER	
		ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED?				E.L. EACH ACCIDENT	$ 100,000
		If yes, describe under SPECIAL PROVISIONS below NO				E.L. DISEASE - EA EMPLOYEE	$ 100,000
						E.L. DISEASE - POLICY LIMIT	$ 500,000
		OTHER					

Sample
Sample

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

Re: Job Name/Number
Tampa Bay Water, Its Engineers, Architects, Consultants, Subsidiaries or Affiliates and each of the Tampa Bay Water Directors, Officers, Employees, Representatives, Agents or Volunteers shall be named as additional insured under the GL Policy per CG 20 10 (07/04) AND CG 20 37 (07/04) or equivalent, and the Automobile Liability policy. Waiver of Subrogation is provided in favor of Tampa Bay Water on all policies. The insurance evidenced by this Certificate is primary and non-contributory to any insurance maintained by Tampa Bay Water.

CERTIFICATE HOLDER

Tampa Bay Water
2575 Enterprise Road
Clearwater, FL 33763-1102

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL XXXXXXXX ~~ENDEAVOR TO~~ MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, XXXXXXXXXXXXXXX ~~BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.~~ XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXX

AUTHORIZED REPRESENTATIVE

© ACORD CORPORATION 1988

IMPORTANT

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

DISCLAIMER

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.18

DATE: October 1, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Christina Sackett, Chief Financial Officer

SUBJECT: Contract Renewals - *Approve*

SUMMARY

Renew agency contract in accordance with renewal option year listed in the terms and conditions of the original contract.

SUGGESTED ACTION

Approve contract renewal.

COST/FUNDING SOURCE

Uniform Rate

DISCUSSION

Tampa Bay Water has a number of contracts each year that are available to renew for additional option years. Purchasing and agency staff have reviewed the contract summarized in the attached document and have determined that it continues to be of value and is necessary to the operation of Tampa Bay Water. The vendor has agreed, in writing, that they are agreeable to renew the available option year as prescribed in the original contracts' terms and conditions.

The original terms and conditions of the contract remain unchanged. All original contracts were

approved by the Board and therefore renewals must be provided to the Board for review and approval of each renewal option year.

The contract renewal has been reviewed and approved by Tampa Bay Water General Counsel's Office.

Attachments (2)

October 2025 Consent Renewals
2025-025 Renewal Notice-Opt Yr 3-Vendor Signed

CONTRACT AMENDMENTS EXECUTED FOR CONSENT APPROVAL - OCTOBER 2025

CONTRACT NAME/DESCRIPTION OF SERVICES	CONTRACT NUMBER	CONTRACTOR	ANNUAL AMOUNT	APPROVAL DATE	RENEWAL/ AMENDMENT #	ORIGINAL EXPIRATION	EXTENDED THROUGH	FUNDING SOURCE
MOWING & GROUNDS MAINTENANCE SERVICES	2023-025	FLORIDA TREE & PROPERTY MAINTENANCE	$434,511.25	12/12/2022	3 of 3	12/31/2023	12/31/2026	UNIFORM RATE

TAMPA BAY WATER
Supplying Water To The Region

Board of Directors
Harry Cohen
Lisset Hanewicz
Chopper Davis
Dave Eggers
Jack Mariano
Charlie Miranda
Ron Oakley
Kathleen Peters
Joshua Wostal

General Manager
Charles H. Carden

General Counsel
Kelly M. Fernandez
Persson, Cohen, Mooney, Fernandez & Jackson, P.A.

September 2, 2025

Florida Tree and Property Maintenance LLC
15344 Matis Rd.
Hudson, FL 34669
ftpmaintenance@hotmail.com

Attention: Wes Livernois

Re: Tampa Bay Water Contract No. 2023025 – Mowing & Grounds Maintenance Services – Option Year Three

Dear Mr. Livernois:

The current contract for Mowing & Grounds Maintenance between Tampa Bay Water and Florida Tree and Property Maintenance LLC expires on December 31, 2025. As outlined in Section 2.0, Term, the contract may be extended for three (3), under terms acceptable to both parties. Please accept this letter as confirmation that Tampa Bay Water wishes to exercise the third option to renew the contract with the same terms and conditions through December 31, 2026. We also request written confirmation no later than the end of business on September 12, 2025 that Florida Tree and Property Maintenance LLC agrees to exercise this contract renewal option. If agreed, the second page of this letter should be signed by an authorized representative and returned to me at the address below or via email at llozano@tampabaywater.org. In addition, please forward updated Certificates of Insurance per the terms of the contract to me as well.

Upon agreement, Tampa Bay Water will present the renewal request at the Board of Directors meeting on October 20, 2025 and the renewal will take effect on January 1, 2026.

Thank you for your prompt attention to this request and we look forward to our on-going business with you. Please contact me directly with any questions.

Sincerely,

Lynn Lozano, NIGP-PPA, PACE
Purchasing Specialist I

2575 Enterprise Road, Clearwater, FL 33763-1102
Phone: 727.796.2355 / Fax: 727.791.2388
tampabaywater.org

Florida Tree and Property Maintenance LLC agrees to extend Contract No. 2023025, for Mowing & Grounds Maintenance Services through December 31, 2026 under the same terms and conditions of the original contract.

Florida Tree and Property Maintenance LLC

Signature: _____

Print Name: Wesley Livernois

Title: Owner

Date: 9/10/25

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM B.1

DATE: October 1, 2025

TO: Board of Directors

FROM: Charles H. Carden, General Manager

SUBJECT: General Manager's Report - *Receive Report*

SUMMARY

The General Manager will provide an update on agency programs and activities.

SUGGESTED ACTION

Receive Report.

COST/FUNDING SOURCE

N/A

DISCUSSION

Regional System Update

The regional system update can be found in Item D.1. The end-of-the-water-year report and system status will be presented by Warren Hogg, Chief Science Officer, at the Board meeting.

Alafia River Permit Status

The agency's permit application to increase the withdrawals from the Alafia River to 19% during high flows up to 75 million gallons per day was issued by the Southwest Florida Water Management District

(District) on July 22, 2025. The Polk Regional Water Cooperative (PRWC) and Tampa Bay Water have held several meetings to discuss the permit and the PRWC's concerns about future use of the Alafia River as a water supply source. On September 29, 2025, the PRWC, through its legal counsel, submitted a petition for a formal administrative hearing on the permit with the Southwest Florida Water Management District (District). The District has until October 14 to submit the challenge to the Florida Division of Administrative Hearing to assign an administrative hearing officer. Tampa Bay Water's General Counsel is in the process of securing legal counsel to represent the agency. In the meantime, we continue withdrawing up to 19% of river flow above the minimum flow threshold. Since July 22, more than 1.8 billion gallons of water has been withdrawn from the Alafia River under the increased permit.

Continuous Improvement and Controlled Document Creation

The agency continues to cultivate a culture of continuous improvement. An important step in doing this is ensuring the agency's policies, processes and procedures are documented, and a system is developed to review and update them regularly. The agency adopted PowerDMS as the document management system to keep track of this effort. Since starting use of this software, 350 documents have been published and 33 are in workflow for review and approval. This is an on-going effort and each department in the agency went through workshops to identify needed controlled documents and prioritize them to draft and implement. In addition, internal workshops are held to review older documents to look for improvements and efficiencies and to identify interdependencies between agency departments.

Member Government Board/Council Presentations

The following are the dates of member government board/council meetings where a Tampa Bay Water update will be provided:

- November 5, 2025 - Hillsborough County Board of County Commissioners
- November 13, 2025 - Pinellas County Board of County Commissioners
- December 2, 2025 - New Port Richey City Council
- December 9, 2025 - Pasco County Board of County Commissioners
- December 18, 2025 - City of Tampa City Council
- January 15, 2026 - City of St. Petersburg City Council

Performance Audit and Management Study Update

BakerTilly, the consultant selected to perform the 2025 Performance Audit and Management Study continues to collect data and information from the agency, identify peer agencies for benchmarking, and finalize the performance metrics for comparison and evaluation. Representatives from BakerTilly will be at the agency on October 20-22 to interview staff and board members. Additional interviews will be set up virtually. In addition, self-assessment survey is being developed and will be sent out to agency senior staff, board members and utility directors in the coming weeks. The audit is scheduled to be completed in early 2026 and presented to the Board at its February meeting.

End of the Year True-Up of Fixed Costs

Member Government actual contributions are adjusted at year-end to the current year's budgeted fixed costs, based upon their pro-rata portion of current year production. The process is referred to as True-Up and occurs after each fiscal year has closed. Fiscal Year 2025 ended on September 30, 2025. Tampa Bay Water is completing the annual true-up of fixed costs for the member governments as described in Item F.8.

Upcoming Board Meeting

November 17, 2025

B.1 General Manager's Report Presentation

General Manager's Report

Agenda Item B.1
October 20, 2025

Charles H. Carden
General Manager
Tampa Bay Water

Agency Updates

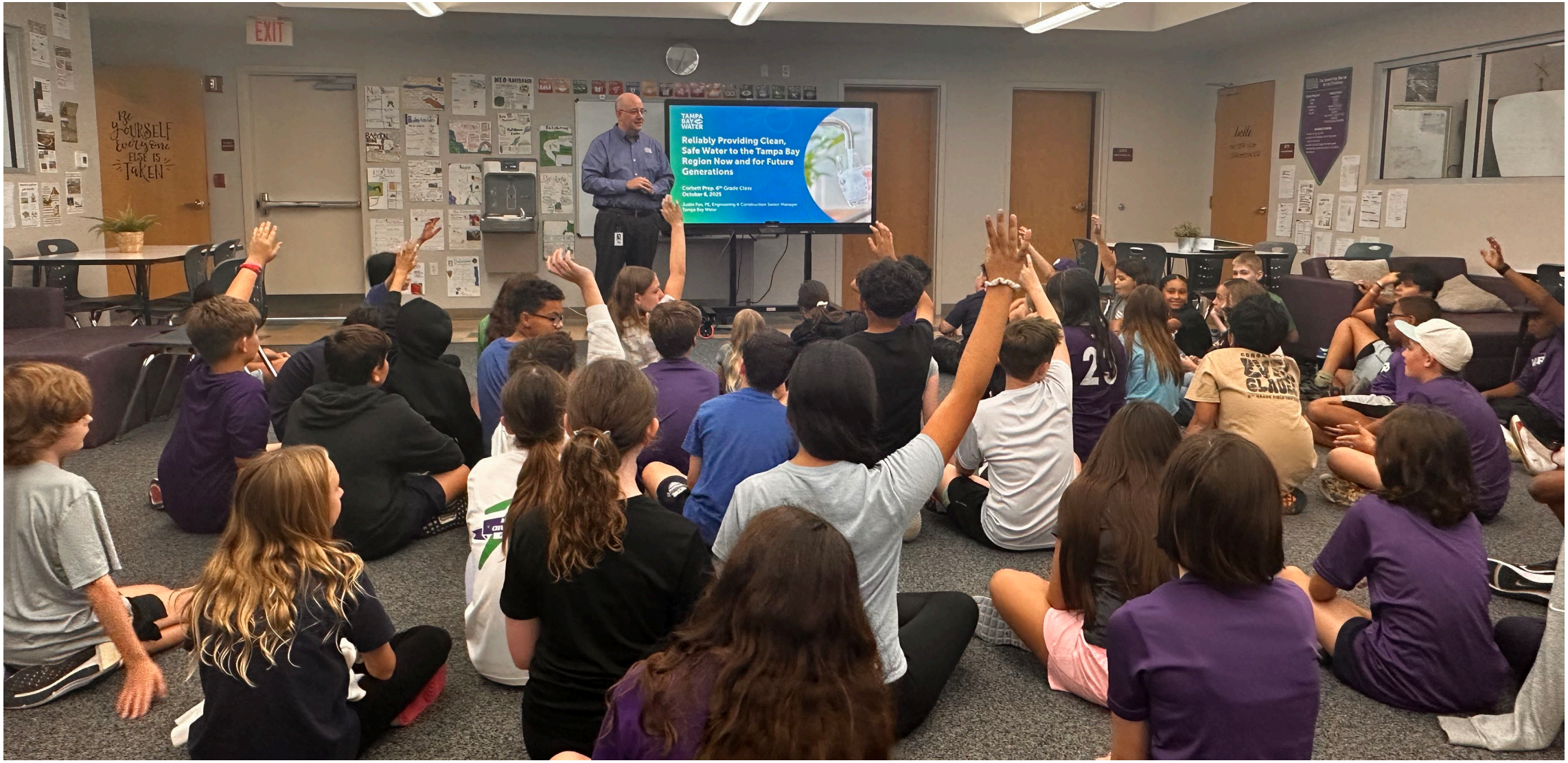
- Alafia River Permit Status
- Continuous Improvement & Controlled Document Creation
- Performance Audit & Management Study Update
- End of the Year True-Up of Fixed Costs

Camp Wai Lani's Water Conservation Academy

Glazer Museum's Birthday Bash

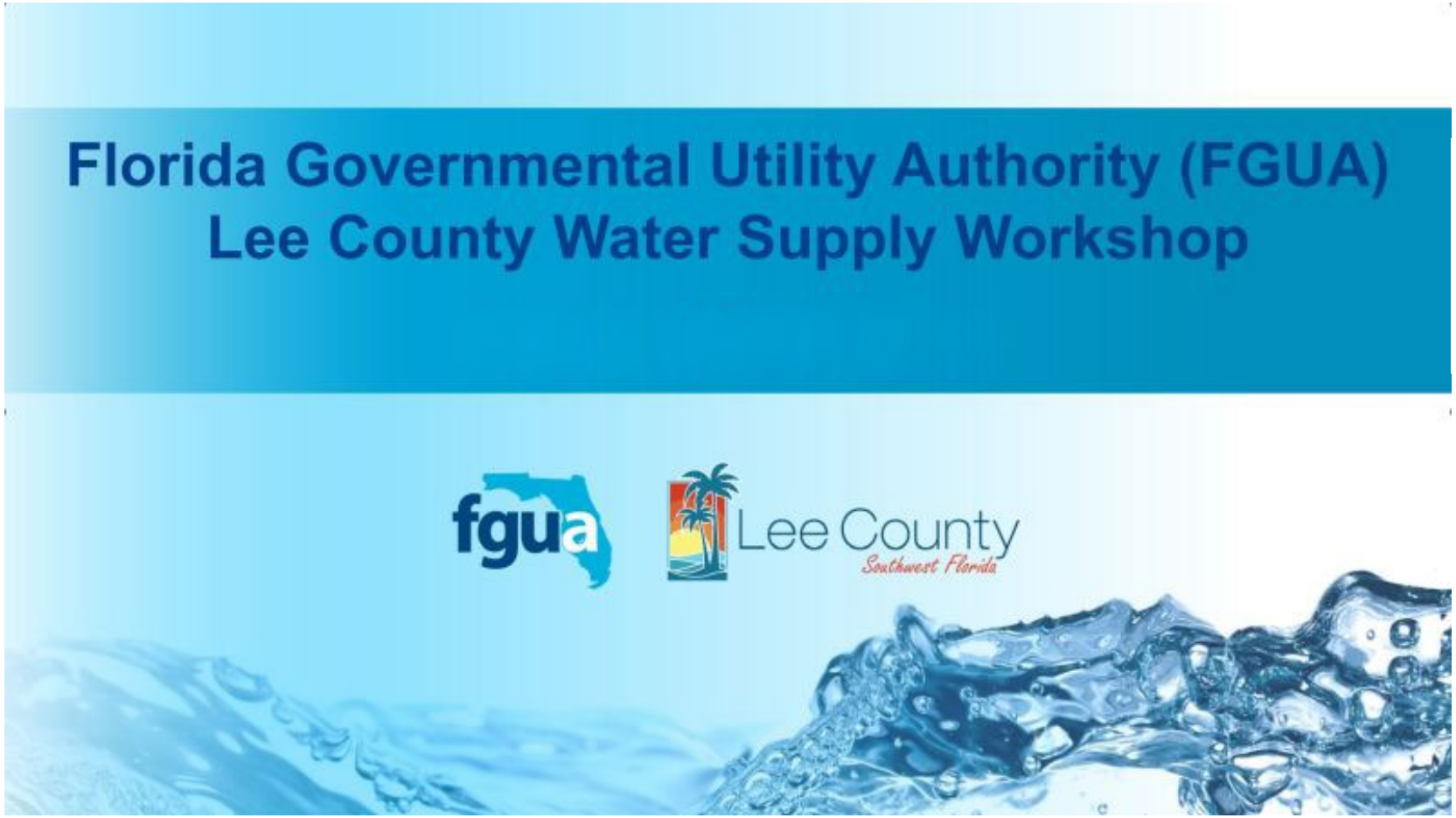
Conservation Conversations

Corbett Prep 6th Grade Classroom Visit



Commissioner Boles Community Open House

FGUA Water Supply Workshop



EAST LEE COUNTY CHAMBER OF COMMERCE
THE FUTURE IS HERE

LEE COUNTY ECONOMIC DEVELOPMENT
SOUTHWEST FLORIDA

Member Government Presentations

Pinellas County

November 13, 2025

Hillsborough County Florida

December 17, 2025

City of New Port Richey Florida

December 2, 2025

City of Tampa Florida

December 18, 2025

PASCO County Florida

December 9, 2025

st.petersburg

January 15, 2026

TAMPA BAY WATER

Questions?

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM B.2

DATE: October 3, 2025

TO: Board of Directors

FROM: Charles H. Carden, General Manager

SUBJECT: Board Policy ADM-BD-0011 - New Point of Connection Request - *Approve*

SUMMARY

Staff prepared a policy to guide member governments in requesting a new Point of Connection to the regional system under the Master Water Supply Contract. Staff requests Board consideration and approval of this policy.

SUGGESTED ACTION

Approve ADM-BD-0011 regarding the request for a new Point of Connection.

COST/FUNDING SOURCE

N/A

DISCUSSION

Over the past few years, two member governments requested to collaborate with Tampa Bay Water staff on developing a new Point of Connection (POC) to the regional system. Though POCs are addressed in the agency's Master Water Supply Contract, no formal policy exists to establish a framework for submitting and addressing member government requests. Tampa Bay Water staff developed an agency policy based on the framework outlined in the Master Water Supply Contract. This new policy:

- Formalizes the process for submitting a new Point of Connection request to Tampa Bay Water.
- Sets forth the ability of member government staff and Tampa Bay Water staff to collaborate to

develop the parameters needed for a new Point of Connection.

- Determines what is needed for that request and for potential joint projects that develop from the request.

Staff recommend Board consideration and approval of the attached policy.

BACKGROUND

The Master Water Supply Contract provides member governments the ability to modify an existing Point of Connection to the regional system. However, no specific framework or process for requesting a new Point of Connection and defining its parameters within Exhibit C of the Master Water Supply Contract exists. While member governments submitted such requests multiple times throughout Tampa Bay Water's history, the process was different with each instance. This new policy aims to standardize the request process and clarify the documentation required at each step.

Attachment (1)

ADM-BD-0011
B.2 Board Policy ADM-BD-011 - New Point of Connection Requests Presentation

	Policy
Name: New Point of Connection (POC) Requests Policy	Number: ADM-BD-0011
Scope: External and Agencywide	Revision No.:0
Prepared by: Charles H. Carden, General Manager	
Approved by:	

1.0 Purpose and Scope:

1.1. Tampa Bay Water's New Point of Connection (POC) Requests Policy establishes the agency's partnership with member governments to jointly define the technical parameters of a new POC and creates a formal process for submitting new POC requests to the agency and Board of Directors.

2.0 Related Documents:

2.1. Amended and Restated Interlocal Agreement reorganizing the West Coast Regional Water Supply Authority dated May 1,1998

2.2. Master Water Supply Contract dated May 1, 1998

3.0 Policy:

3.1. As required in Section 10 of the Master Water Supply Contract, Tampa Bay Water and the Member Governments agreed to multiple POC-related items, including that all POCs will be listed in Exhibit C of the Master Water Supply Contract, that members may have multiple POCs, and that the requester of a POC relocation or location modification will be responsible for the expense of that relocation or location modification. Via this Policy, the Board additionally establishes that:

3.1.1. Member Governments may optionally request to work with Tampa Bay Water staff on defining the new POC parameters before an official Memorandum of Understanding (MOU) is executed.

3.1.2. The request should be in the form of a Letter of Intent (LOI) and should be submitted and signed by an authorized member government representative such as County Administrator, Assistant County Administrator, or Mayor before Tampa Bay Water staff proceeds with the request.

3.1.3. This request (i.e., Letter of Intent) to work with Tampa Bay Water staff to develop these parameters must be approved by Tampa Bay Water's Board of Directors before Tampa Bay Water staff start work.

3.1.4. Once POC parameters are defined, a Memorandum of Understanding between the Member Government and Tampa Bay Water will be developed and approved by the member governing board and the Tampa Bay Water Board of Directors.

3.1.5. If a Joint Project Agreement (JPA) is needed for the construction of the POC, the Member Government and Tampa Bay Water will define agreement terms and submit the JPA to both the member governments' commission/council and Tampa Bay Water's Board of Directors for approval. A JPA can be submitted concurrently with the MOU approval as described in 3.1.4, or later if necessary.

3.1.6. Once a new Point of Connection is in service, Exhibit C to the Master Water Supply Contract will be amended.

4.0 Revision History: (Required)

Date	No.	Reason for Revision	Description of Revision

Board Policy ADM-BD-0011 – New Point of Connection Request

Agenda Item B.2
October 20, 2025

Charles H. Carden
General Manager
Tampa Bay Water

Board Policy: New Point of Connection Request

- Master Water Supply Contract allows Member Governments to request new Points of Connection (POC)
- Requests have been made differently over the years
- Policy establishes methods for the following:
  - Formalizes the process for submitting a new POC request to Tampa Bay Water
  - Sets forth the ability of member government staff and Tampa Bay Water staff to collaborate to develop the parameters needed for a new POC
  - Determines what is needed for that request and for potential joint projects that develop from the request

Recommendation

- Staff recommends approval of Board Policy ADM-BD-0011 – New Point of Connection Request.

TAMPA BAY WATER

Questions?

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM B.3

DATE: September 29, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Michelle Stom, Chief of Staff/Chief Strategy Officer

SUBJECT: 2026 Legislative Program Goals and Priorities - *Approve*

SUMMARY

The 2026 Florida Legislative Session begins on January 13, 2026. The agency's legislative team follows Board-approved legislative goals and priorities each session and throughout the year to ensure a common approach to legislative and grant funding activities. Tampa Bay Water's government affairs program manager and legislative counsel will present the 2026 Legislative Goals & Priorities for Board consideration and approval.

SUGGESTED ACTION

Approve 2026 Legislative Program Goals and Priorities.

COST/FUNDING SOURCE

N/A

DISCUSSION

The agency's strategic goals for financial sustainability and collaborative partnerships are advanced through its legislative and grant planning efforts at state, regional, and federal levels. Tampa Bay Water has historically secured substantial funding from these sources, directly offsetting the capital costs of alternative water supply projects. Maintaining this successful track record requires proactive outreach to

elected officials to foster an understanding of Tampa Bay Water's infrastructure and water supply needs. Legislative developments at federal and state levels can significantly impact the cost of water production and regulatory compliance, making it crucial for the agency to provide input on proposed legislation and regulations that may impose additional costs.

As Tampa Bay Water prioritizes efficient and cost-effective system operations, staff will continue advocating for state and federal legislation that benefits the agency. At the federal level, for example, Tampa Bay Water supports preserving tax-free municipal bonds and innovative water infrastructure financing. The agency also advocates for grants and funding to support capital projects, enhance emergency preparedness, and advance scientific research. Additionally, staff will continue to oppose any legislation that could negatively affect the agency, including redundant federal regulatory mandates. The full list of 2026 Legislative Goals & Priorities is attached.

The Tampa Bay Water Board annually approves legislative program priorities ahead of Florida's Legislative Session. For 2026, the session begins on January 13, with committee weeks starting in October 2025. These priorities will guide the agency's advocacy efforts at state, regional, and federal levels throughout the year. Staff recommends Board approval of the attached 2026 Legislative Program Goals & Priorities.

BACKGROUND

The Tampa Bay Water Board created a unique water system that includes three diverse water sources. Tampa Bay Water's story is a model for other regional water systems. The agency continues to reach out to stakeholders such as the Florida Legislature and the Federal Congressional Delegation to provide knowledge and assistance on water policy. Staff also provides input and assistance to state and regional officials and regulatory agencies by providing expertise on water supply policies, water management history and needs, and technical topics.

Attachment (1)

2026 Legislative Program Goals & Priorities
B.3 2026 Legislative Program Goals and Priorities Presentation

2026 Legislative Program Goals & Priorities

1. **TAMPA BAY WATER GOVERNANCE – SUPPORT** legislation that is consistent with, and **OPPOSE** legislation that is inconsistent with, the Amended and Restated Interlocal Agreement and the current provisions of Sections 373.713 and 373.715, Florida Statutes, which relate to the organization, powers, and duties of regional water supply authorities generally, and Tampa Bay Water specifically.
2. **TAMPA BAY WATER PROJECTS – SUPPORT** preservation and appropriation of state, regional, and federal funds to advance Tampa Bay Water projects addressing regional water supply, environmental stewardship, resiliency, and infrastructure needs.

   A. Federal – Pursue grants, community project funding, and cybersecurity resources; secure appropriations for PFAS compliance and other emerging contaminants; support Climate Adaptation Partnerships (formerly RISA) for research to inform utility planning; advocate NOAA forecasting support; track infrastructure/reconciliation legislation and major federal programs (Bipartisan Infrastructure Law, Inflation Reduction Act). Maintain active engagement with the federal delegation through project updates, guided facility tours, and technical expertise to ensure open communication.

   B. State – Actively pursue funding through the Florida Resilient Grant Program, Alternative Water Supply (AWS) initiatives, and other resilience programs; seek legislative sponsors and support for member project funding; advocate for clear state funding priorities for regionally significant projects. Support continuity of appropriations and consistent planning/resource inventory requirements for water management districts. Maintain strong relationships with the state delegation through updates, facility tours, and technical input.

   C. Regional – Partner with the Southwest Florida Water Management District (SWFWMD) and regional governments to co-fund infrastructure, aquifer recharge, and resilience projects; support agency permits and renewals; invite member government leaders for tours of the regional system to highlight shared investments and benefits.

3. **TAMPA BAY WATER OPERATIONS – SUPPORT** federal and state legislation that facilitates reliable operations, development of facilities, and water conservation, including promotion of Florida-friendly landscaping. Closely monitor amendments to the Clean Water Safety Act, the Cyber Security Information Sharing Act (CISA), and PFAS-related federal and state actions, including EPA rulemaking, NDAA provisions, and state conforming legislation. **OPPOSE** measures imposing additional restrictive standards or conditions that could hinder projects, permitting, or the Interlocal Agreement.
4. **TAMPA BAY WATER STAKEHOLDER ENGAGEMENT** – Build partnerships with aligned organizations such as local chambers of commerce, the Agency on Bay Management, Tampa Bay Estuary Program, American Water Works Association, and American Water Reuse Association. Increase stakeholder awareness through tours of Capital Improvement Program projects and other assets to demonstrate agency investments and regional benefits.

   A. Specifically, be prepared to engage in discussions regarding reclaimed water for potable use, including those facilitated by legislators, the Environmental Protection Agency, the Florida

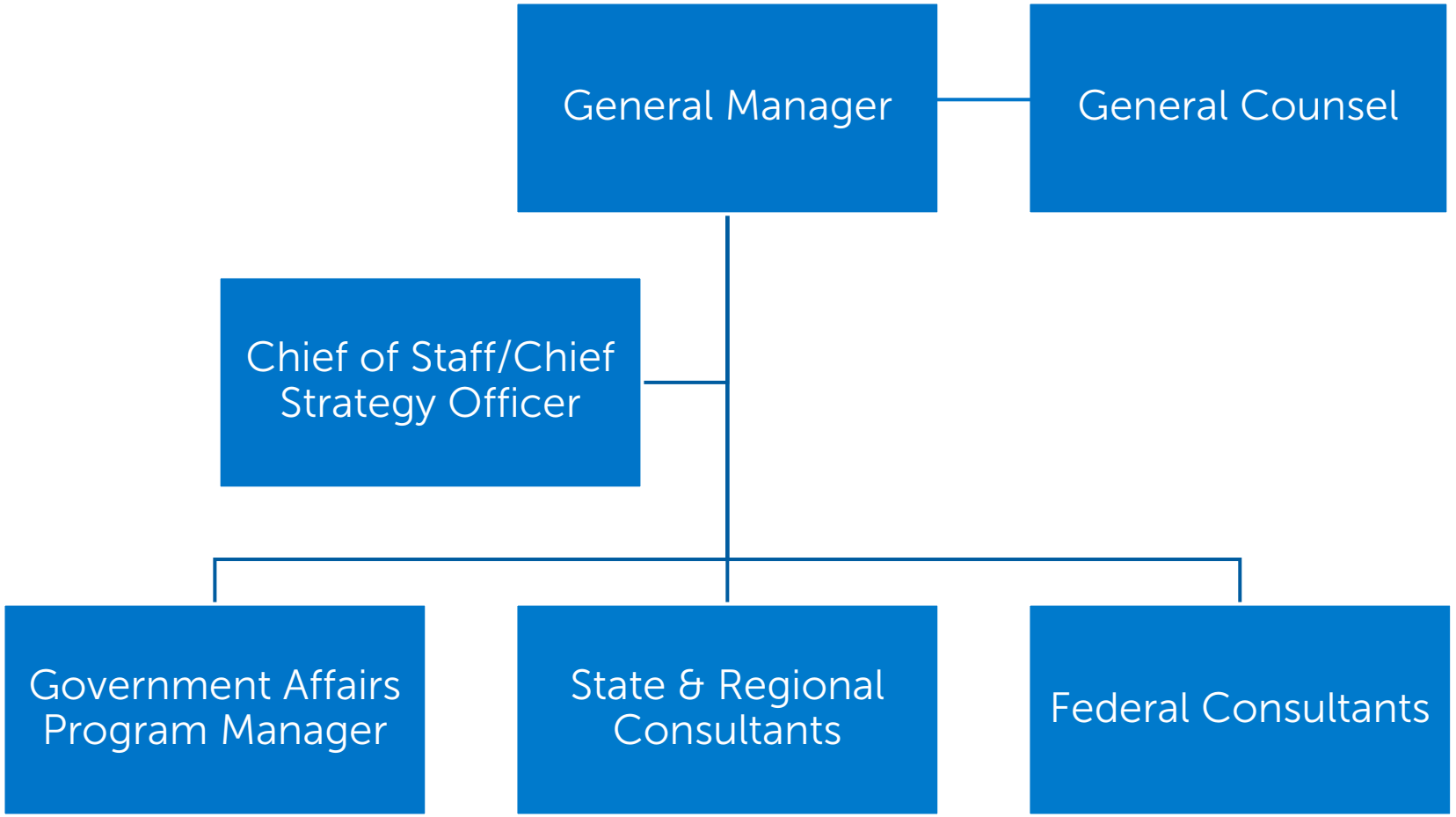
Department of Environmental Protection, the Potable Reuse Commission, and the Southwest Florida Water Management District; provide information on the agency Long-term Master Water Supply Plan and potential new sources of supply, as needed; support legislative efforts regarding the definition of reclaimed water and reuse and advocate consistency with the Amended and Restated Interlocal Agreement and the current provisions of Sections 373.713 and 373.715, Florida Statutes.

2026 Legislative Program Goals and Priorities

Agenda Item B.3
October 20, 2025

Brant Bartlett
Government Affairs Program Manager
Tampa Bay Water

Legislative Team



Background

- Secure appropriations
- Ensure advocacy and grant support
- Monitor legislation and policy issues
- $525M+ appropriations, grants, co-funding
- Maintain strong relationships with decision-makers
- Broad advocacy reach across stakeholders

2026 Legislative Program Goals and Priorities

- Support Tampa Bay Water's Interlocal Agreement
- Advance funding opportunities
- Advocate for supportive legislation
- Pursue and maintain partnerships
- Monitor emerging regulation
- Engage community and industry partners

Recommendation

- Approve the 2026 legislative program goals and priorities

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM B.4

DATE: October 15, 2025

TO: Board of Directors

FROM: Kelly M. Fernandez, General Counsel

SUBJECT: Special Counsel Contract with Gunster Yoakley & Stewart, P.A. for representation in the matter of Polk Regional Water Cooperative v. Tampa Bay Water and Southwest Florida Water Management District - *Approve*

SUMMARY

Polk County Water Cooperative has filed a Petition for Formal Administrative Hearing challenging the Southwest Florida Water Management District's issuance of the Alafia River permit allowing for the increase of surface water withdrawal from 10% to 19% above the minimum flow threshold. The General Counsel has identified Gunster Yoakley & Stewart, P.A. ("Gunster") as a highly qualified firm to represent the interests of Tampa Bay Water in this administrative litigation. This item is approval of the firm to represent Tampa Bay Water.

SUGGESTED ACTION

Approve engagement letter with Gunster Yoakley & Stewart, P.A. and authorize the execution of a waiver of conflict related to Land Reserve, Inc. and Farmland Reserve, Inc.

COST/FUNDING SOURCE

Uniform Rate

DISCUSSION

On September 29, 2025, the Polk Regional Water Cooperative filed a Petition for Formal Administrative Hearing against Tampa Bay Water and the Southwest Florida Water Management District ("District"), challenging the District's issuance of a water use permit to Tampa Bay Water to

increase its surface water withdrawal from the Alafia River from 10% to 19% above the minimum flow threshold. Firms with an expertise in water law were consulted for possible representation of Tampa Bay Water. Conflicts of interest eliminated some firms from further consideration. The General Counsel has identified Gunster Yoakley & Stewart, P.A. ("Gunster") as a highly qualified firm to represent the interests of Tampa Bay Water in this administrative litigation.

The primary Gunster attorneys assigned to this matter have a depth of experience in water law, environmental law more generally, and administrative law. Reduced rates have been negotiated, and Gunster has also agreed to no rate increases until January 1, 2027, with an annual cap on any rate increases thereafter of 3%. In order to proceed forward with the engagement of Gunster, Tampa Bay Water will also need to execute a waiver of conflict of interest due to Gunster's legal representation of Land Reserve, Inc. and Farmland Reserve, Inc. The General Counsel has no concern with this waiver request.

The General Counsel recommends that the Board approve the engagement letter with Gunster and authorize the execution of waivers of conflict related to Land Reserve, Inc. and Farmland Reserve, Inc.

Attachments (2)

2025-10-15 - Tampa Bay Water Engagement Letter
GYS Waiver Letter

Gunster

Writer's Direct Dial: (850) 521-1727
Writer's E-Mail Address: triley@gunster.com

October 15, 2025

VIA E-MAIL

Tampa Bay Water
c/o Kelly M. Fernandez, Esq.
Persson, Cohen, Mooney, Fernandez & Jackson, P.A.
236 Pedro Street
Venice, FL 34285

Re: Engagement of Gunster Yoakley & Stewart, P.A.
Client: Tampa Bay Water ("**TBW**")
Matter: Representation of Tampa Bay Water regarding Polk Regional Water Cooperative's challenge of TBW's Consumptive Use Permit Modification No. 20011794.003 (the "**Matter**")

Dear Kelly:

Thank you for selecting Gunster to represent Tampa Bay Water as legal counsel in connection with the above referenced matter. The purpose of this Engagement Letter and the attached "Terms and Conditions" is to confirm the scope, terms and conditions of our representation.

Scope of Representation

Our representation is limited to representing Tampa Bay Water in connection with the following:

Representation of Client regarding Polk Regional Water Cooperative's challenge of Client's application to modify its existing Consumptive Use Permit Number 20011794.003 to increase surface water withdrawals from the Alafia River, including representation before the Division of Administrative Hearings and settlement discussions, if any.

We may agree to further limit or expand the scope of our representation from time to time, provided that we confirm any such changes in writing.

Our only client in this matter will be Tampa Bay Water, and our firm will not be representing any other entity or person in connection with this matter.

Prospective Waiver of Future Conflicts by TBW

During our evaluation and analysis of potential conflicts, TBW confirmed that TBW previously had a lawsuit related to perfluoroalkyl and polyfluoroalkyl substances, against 3M and other defendants, which is now dismissed pursuant to settlement. We have disclosed, and TBW confirms it understands, that Gunster represents 3M as discovery counsel in a number of perfluoroalkyl and polyfluoroalkyl substance related matters, though such representation does not create a conflict in Gunster's representation of TBW and 3M.

Nonetheless, out of an abundance of caution and to protect against unexpected future changes, TBW agrees that (a) it will not disclose to Gunster any information related to its prior claims against 3M

(or any other entity) on any subject; and (b) should TBW ever again become a party to a perfluoroalkyl and polyfluoroalkyl substances lawsuit involving 3M, TBW will immediately disclose this fact to Gunster while simultaneously refraining from providing Gunster any confidential information about such suit or claim. TBW hereby waives any conflict of interest associated with Gunster's representation of 3M. TBW further agrees that neither it nor anyone acting on its behalf will seek to disqualify Gunster as counsel for 3M.

TBW can and should consult with independent counsel regarding this prospective waiver of future conflicts.

Primary Responsibility and Basis for Fees

I will be the attorney who has primary responsibility for the management of this engagement. We will charge a reasonable fee for our services rendered based upon our standard hourly rates and as further described in the Terms and Conditions. My current hourly rate is $653.00 I will be assisted by my colleagues as follows: Elizabeth Ross, whose hourly rate is $635.00; Gregory M. Munson, whose hourly rate is $648.00; Eric T. Olsen, whose hourly rate is $635.00; Debbie Madden, whose hourly rate is $635.00; Phillip J. Sliger, whose hourly rate is $450.00; Fernando L. Diaz, whose hourly rate is $540.00; and Alexis D. Deveaux, whose hourly rate is $392.00. Our hourly rates will remain as stated above through December 31, 2026. Beginning January 1, 2027, our rates will be subject to change on an annual basis but will not be raised over three percent (3%) above our then-current hourly rates.

In addition to the fees described above, Tampa Bay Water will be responsible for the Firm's regular disbursements and charges incurred in connection with this engagement, as set forth in the attached Terms and Conditions.

We are not currently requiring an Advance Fee Deposit. Should the circumstances or activities in this representation require it, however, we may request an Advance Fee Deposit in the future, as described in the attached Terms and Conditions.

Conflict Clearance and Intake Procedures

As part of our client clearance and intake procedures, we request that you provide us with the names of all parties that might be involved in the Matter. We do this in order to make sure that we have no conflict of interest in undertaking your representation in the Matter, and in making sure that after we undertake your matter we do not accept other engagements which might give rise to a conflict with our representation of you. We do this by maintaining an extensive conflict database system and before we undertake any new matters, we check that database. Accordingly, it is important to us that the information we have is accurate and complete. With this in mind, at the end of this letter we have attached for your review a list of all parties which we have checked against our conflicts database. **If any of the information on that list is inaccurate or incomplete, please let us know immediately.** We strive to maintain the highest ethical standards to remain free of conflicts of interest and by reviewing the below information you can help us do so.

Actions to Take

Please do the following at your earliest convenience:

- Review this Engagement Letter and the attached "Terms and Conditions" for the terms of our representation.

- If this Engagement Letter and the attached "Terms and Conditions" meet with your approval, please sign this letter in the space provided below and return to us at your earliest convenience.

Should you have any questions or concerns about our service, work product, billings, or any other aspect of our engagement, please let me know immediately so that we may address the situation and best respond to your needs. We appreciate your confidence in assigning us this important matter and we look forward to assisting you.

Sincerely,

Timothy M. Riley

Enclosures:
Conflict Database Information
Standard Terms and Conditions

THE UNDERSIGNED HAS REVIEWED AND AGREES TO THE ATTACHED "TERMS AND CONDITIONS" AND THIS ENGAGEMENT LETTER:

TAMPA BAY WATER

By: _____
Print Name:_____
Title: _____

DATE: October ____, 2025

Conflict Database Information

In connection with the Matter, we have searched our conflict database information for the following parties:

Names of Client/Affiliated/Related Parties:

Tampa Bay Water
Charlie Miranda
Chopper Davis
Dave Eggers
Harry Cohen
Jack Mariano
Joshua Wostal
Kathleen Peters
Kelly Fernandez
Lisset Hanewicz
Ron Oakley
Southwest Florida Water Management District

Names of Adverse/Opposite Parties:

Becky Troutman
Bill Mutz
City of Auburndale
City of Bartow
City of Davenport
City of Eagle Lake
City of Lake Alfred
City of Winter Haven
Haines City
Jeff Tillman
Jon Albert
Nat Birdsong
Polk County
Polk Regional Water Cooperative
PRWC
Town of Dundee
Town of Lake Hamilton

If any of the names above are incorrect, or there are individuals or entities which we have missed and should include in our conflict review and database, please let us know immediately so that we may correct any mistakes or omissions.

TERMS AND CONDITIONS

To simplify the language in these "Terms and Conditions," Gunster, Yoakley & Stewart, P.A. is referred to as "we," "our," or "us." The person or entity being provided the legal services is referred to as "you" or "your."

Your Cooperation. You agree to be candid and cooperative with us and to promptly provide us with complete and accurate factual information and all documents and other communications relevant to the subject matter of our representation. You agree to keep us informed of all relevant developments and to cooperate fully with us as we may otherwise reasonably request.

Affiliates. Because of the dynamic and extensive nature of the ownership interests of individuals and companies owning or partially owning or controlling other entities or enterprises, and the challenges that are thereby created with respect to identifying potential conflicts of interests, it is our general policy that, to the extent permitted by the Florida Rules of Professional Conduct and unless you ask us to do otherwise, we do not regard a person, an organization or other legal entity that may be affiliated with you (such as a corporate parent, subsidiary, or other entity in which you have an ownership or other interest) to be a client of our firm unless we have also established an express attorney-client relationship with that other entity through a written agreement.

Delegation of Services. Our attorneys, law clerks, paralegals, planners and information specialists have varying areas of expertise and amounts of experience and different billing rates. Our goal is to render the best legal services we can in the most efficient and cost-effective manner. Therefore, the attorney in charge of your particular matter may assign different members of our firm to perform various services for you in connection with your matter.

Initial Advance Fee Deposits. Initial Advance Fee Deposits will be kept in our non-interest bearing trust account on your behalf during our representation of you, which we may withdraw in our discretion to pay any disbursements as incurred and for any fees and services which have not been paid when due. At the termination of our representation in this matter, the deposit will be applied to any outstanding amounts on the final statement. To the extent you owe us money for other matters handled for you, you hereby authorize us to apply any balance to those matters as well. Any remaining balance, after payment of all fees and costs due to us, will be returned to you. Should your initial Advance Fee Deposit fall below a level acceptable to us, you will replenish it up to the original amount. We may request an additional Advance Fee Deposit in the future, depending upon the level of activity involved with your matter. The Initial Advance Fee Deposit is not an estimate of our total legal fees or a cap on our legal fees. **For Advance Fee Deposits made by credit card, please be advised that a standard processing fee of 3.0397% will be charged for Visa/MasterCard/Discover payments and 3.146% for American Express payments. The processing fee will be charged in addition to the Advance Fee Deposit. For example, if a $10,000 Advance Fee Deposit is charged on a Visa card, you will be charged $10,303.97 and your trust account will reflect a balance of $10,000. There will be a standard two (2) day hold on all credit card charges. Advanced Fee Deposits can be made online.**

Fees; Billable Rates. Unless we agree otherwise in writing as to a specific matter, we will perform our legal services on an hourly rate basis. Currently, our hourly rates range from $350 per hour to $1,400 per hour for all legal services performed by the firm's attorneys, and our hourly rates for paralegals, law clerks, planners or information specialists range from $42.50 to $680 per hour. In addition, we charge $445 per hour for investigative services performed by an in-house investigator. Our hourly rates take into consideration the individual's professional background and other relevant factors. Our fees may be adjusted

by additional amounts to reflect the reasonable value of our services where objectively justified based upon: (a) the unique or unusually complex nature of any particular matter handled, (b) any special expertise required, (c) expedited time constraints and (d) other similar considerations. Any estimate we provided may also be affected by these same circumstances. Our hourly rates are subject to change from time to time.

Disbursements and Additional Charges. We will bill you for the direct costs and service charges that are incurred for your particular matter(s), including such things as: filing fees, postage (including regular, certified, registered or expedited mail, or any other type of delivery by common carriers, such as UPS, Federal Express, or the like), courier services, imaging costs (including scanning, photocopying and printing of documents), teleconferencing services, inter-LATA or international calling tariffs, deposition costs, travel costs, and the fees and expenses of experts or consultants, if needed. We charge for certain additional services we render, including computerized database access and usage (e.g., Lexis, Westlaw, PACER, Dun & Bradstreet, and other information databases), special word processing and after-hours or extraordinary secretarial or accounting services, and the receipt and transmission of facsimiles. These matters will be shown on each invoice. Certain cost items, described above, such as imaging costs, are provided as in-house services by us and the per page non-color imaging charge ($0.15 per page) is based upon a reasonable allocation of our overhead costs directly related to those services. Similarly, our computerized database charges are based upon direct vendor access/ usage charges, which can vary from time to time based upon monthly volume-of-usage discounts that the firm has negotiated with various providers, and passes on to you as available. We are constantly striving to maintain these charges at rates which are lower than those maintained by others in our markets.

Monthly Billing. Except for disbursements paid from any Initial Advance Fee Deposit described above, we bill fees, disbursements and other services on a monthly basis and payment is due within 15 days of receipt. If you make no comment about a statement within 15 days of its date, we will assume that you have reviewed it and find it acceptable.

Interest on Late Payments; Collection Expenses. We will charge interest at the rate of 12% per year on invoice amounts which are not paid within 30 days of the invoice date. If you fail to pay any amount owing to the firm, you will also be responsible for all collection expenses incurred by us, including costs and a reasonable attorney's fee, whether or not commencement of litigation is required.

No Assignment. Because our relationship with you is personal in nature, it is agreed that our duties to you and your resulting rights or claims shall not be assignable or assigned to another person or entity and, unless we expressly agree otherwise in a writing signed by you and us, no third party shall be or is considered as a beneficiary of our services for you.

Jurisdiction and Venue. You: (a) agree that any suit, action or legal proceeding arising out of or in connection with this agreement may be brought only in a Florida federal district or Florida state circuit court located in the Florida county from which the majority of our services (based upon attorney time) were provided, (b) consent to the jurisdiction of each such court in any suit, action or proceeding, (c) waive any objection which you may have to the laying of venue of any such suit, action or proceeding in any of such courts, and (d) agree that service of any court paper may be effected upon you by mail or in such other manner as may be provided under applicable laws or court rules in Florida.

E-Mail. We will use e-mail to communicate with you and other parties in this matter and to transmit and receive documents and other communications. E-mail is subject to some potentially significant security and confidentiality risks. If you do not wish for us to use e-mail in connection with your matter, please let us know as soon as possible.

Retention and Disposition of Documents. At your written request, following the termination of our engagement and upon our receipt of your payment for all outstanding fees and costs, we will return to you all papers and other property that you provided to us. We may retain our own files pertaining to this matter. However, we reserve the right, in our sole discretion and without further notice, to destroy or otherwise dispose of documents, data, or other materials related to or generated on account of the representation within a reasonably short time after the termination of our engagement in connection with each and any matter.

Termination. You may terminate our services and representation at any time upon written notice. Likewise, if at any time we find that we are unable to continue representing you, we will notify you in writing. We reserve the right to terminate our representation if payment is not received within 30 days of the date of a statement, and you agree not to contest our withdrawal from any court or administrative proceeding if payment has not been received within 30 days of the date of a statement. Unless otherwise terminated, your engagement of our firm in connection with this matter will terminate upon our sending you our final statement for services rendered in connection with this matter. After termination of our services and representation, we will prepare a final statement.

Post-Engagement Matters. You have engaged us to provide legal services in connection with a specific matter. After completion of this matter, changes may occur in applicable laws, regulations, facts or circumstances related to your matter that could impact your future rights and liabilities. Unless you separately engage us after completion of this matter to provide additional advice on issues arising in the future, we will not be responsible for advising you or updating you on such issues and changes in applicable laws, regulations, facts and circumstances.

Statements of Professional Judgment. At the commencement and during the course of our representation, we may express opinions or beliefs concerning this matter, alternative courses of action, or results that might be anticipated. Though we shall endeavor to provide conscientious, competent and diligent services, and at all times seek to achieve results that are just and reasonable, due to the uncertainty of all legal matters, we cannot, and therefore do not, warrant, predict or guarantee results or the final outcome of this matter. The payment of our fees and expenses is not contingent or dependent upon any such successful consummation or result.

Additional Services We Provide. Frequently, we produce and mail advisories and newsletters or post information on our Website that may offer timely insights and updates on a variety of issues. These issues range from land use, labor and employment, intellectual property, tax, corporate governance and regulatory matters to estate planning. We conduct seminars on a variety of topics at various locations. Information received through these advisories, newsletters and seminars is not to be considered as legal advice for any particular matter for which you may have employed our services.

Reporting Beneficial Ownership Information. Effective as of January 1, 2024, the Corporate Transparency Act (the "CTA") requires certain entities to report information regarding their beneficial owners (as such term is defined in the CTA), and changes to the identity or identifying information of their beneficial owners, to the Financial Crimes Enforcement Network ("FinCEN"). The CTA provides that "any entity or class of entities that the Secretary of the Treasury, with the written concurrence of the Attorney General and the Secretary of Homeland Security, has, by regulation, determined should be exempt from the requirements of subsection (b) because requiring beneficial ownership information from the entity or class of entities— (I) would not serve the public interest; and (II) would not be highly useful in national security, intelligence, and law enforcement agency efforts to detect, prevent, or prosecute money laundering, the financing of terrorism, proliferation finance, serious tax fraud, or other crimes" may be exempted from beneficial ownership information reporting. In March 2025, FinCEN adopted a regulation exempting all "domestic reporting companies" from the CTA's beneficial ownership information reporting requirements.

Unless you specifically request that we make a CTA filing in connection with the formation of a domestic reporting company, Gunster will not prepare any CTA filing for a domestic reporting company. Unless we specifically agree, in writing, you will be solely responsible for any and all filings required by the CTA, including any updates, corrections, modifications, or other filings. We will not be responsible for any such filings, or for advising you of the need to make any such filings, even if we become aware of facts or circumstances that may require a CTA filing (including, without limitation, an inaccuracy in a prior filing or change to an entity), except as otherwise expressly provided in a separate written engagement letter or addendum. Any statement or recommendation by us that a CTA filing, including without limitation an "additional report" or "corrected report," may be required will not constitute an acknowledgment, agreement, or understanding by us to undertake such filing unless we specifically agree in writing to prepare and submit such filing. Absent such written agreement, you will remain solely responsible for any CTA filings. In the event we agree to prepare and submit any CTA filings, you agree to provide us with true, correct, and complete information. We will not be responsible for verifying the accuracy of any such information and will have no liability for any loss arising out of any inaccuracy contained in such information. We will provide you with the relevant FinCEN identifiers of Gunster personnel in connection with any entity formation.

Entire Agreement. These Terms and Conditions, the Engagement Letter and any joint representation agreement (if applicable) to which these Terms and Conditions is attached represent the entire agreement between you and us regarding this matter and supersede all other negotiations, understandings and representations (if any) made by and between us. No change or waiver of any of the provisions of this engagement shall be binding on either you or us unless the change is in writing and signed by both you and us. Our hourly rates are subject to change from time to time.

Gunster

(651) 650-0554
eross@gunster.com

October 10, 2025

Kelly M. Fernandez, Esq.
General Counsel
Tampa Bay Water
Persson, Cohen, Mooney, Fernandez & Jackson, P.A.
236 Pedro St.
Venice, FL 34285

Re: Waiver of conflict of interest arising from Gunster, Yoakley & Stewart P.A.'s ("GYS") legal representation of Tampa Bay Water, and Land Reserve, Inc. and Farmland Reserve, Inc.

Dear Kelly,

You have asked GYS to represent Tampa Bay Water in defending an administrative challenge to a water use permit authorizing Tampa Bay Water to withdraw surface water from the Alafia River ("Water Rights Litigation"). This administrative challenge is brought by the Polk County Water Cooperative. As you are aware, GYS currently represents Land Reserve, Inc. ("LR") and Farmland Reserve Inc. ("FRI") in an unrelated matter involving the voluntary transfer of groundwater withdrawal rights to Tampa Bay Water ("Water Rights Transfer Matter"). This letter addresses the circumstances under which Tampa Bay Water consents to GYS' representation of LR and FRI and waives any conflict of interest.

As a result of our representation of LR and FRI, our representation of Tampa Bay Water as described above would create a conflict of interest within the meaning of the Rules Regulating the Florida Bar. We have consulted with Tampa Bay Water regarding the conflict of interest that arises through our representation of Tampa Bay Water in the Water Rights Litigation and have explained the implications and material risks of our simultaneous representation of LR and FRI with respect to the Water Rights Transfer Matter.

We believe that GYS will be able to provide competent and diligent representation to Tampa Bay Water and to LR and FRI without resulting in any adverse impacts on our relationships with or prejudice to the interests of either entity. These representations are not prohibited by law and GYS' representation of both entities will not involve the representation of both sides in the same proceeding. GYS' representation of Tampa Bay Water in the Water Rights Litigation is separate from our representation of LR and FRI in the Water Rights Transfer Matter and we will ensure that Tampa Bay Water's confidences and those of LR and FRI will be carefully preserved and kept entirely separate from each other.

It is our understanding that, after considering the advantages, disadvantages and material risks of the proposed conflict waiver, the assurances provided by GYS, as well as the reasonably available alternatives to providing the consent that we have requested, Tampa Bay Water has agreed (1) to provide informed consent to GYS' representation of LR and FRI in the Water Rights Transfer Matter as discussed above, and (2) to waive the resulting conflict of interest. In addition, it may be likely that, in the future, either LR or FRI or both may wish to convey additional groundwater withdrawal rights to Tampa Bay Water. In such case, Tampa Bay Water agrees that GYS' representation of Tampa Bay Water in the Water Rights Litigation will not preclude GYS from representing LR and FRI in any future agreements or interactions with Tampa Bay Water regarding the transfer of groundwater withdrawal rights and Tampa Bay Water waives any conflicts of interest related to the same.

If, at any time, we have any concerns about new conflict issues with respect to our representation we will, to the extent required by the Rules Regulating The Florida Bar, bring those concerns to your attention and suggest that you take such actions as may be appropriate. If, at any time, Tampa Bay Water has similar concerns, we ask that Tampa Bay Water immediately bring them to our attention.

We request that Tampa Bay Water sign this letter acknowledging that Tampa Bay Water agrees with the understandings contained herein and provides its informed consent to our representation as described above and waive the resulting conflict of interest.

In the event of any dispute related to this matter that cannot be resolved short of arbitration or litigation, GYS would not represent either party in any such arbitration or litigation.

If you have any questions concerning this letter or otherwise, please do not hesitate to contact me at the telephone number above.

Sincerely,

Elizabeth Ross

Agreed to this_____day of_____, 2025:

Tampa Bay Water

By:_____

Print Name: _____

Title: _____

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM C.1

DATE: October 6, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: High Service Pump Station Variable Frequency Drives (Project No. 50070) - Professional Engineering Services, Contract No. 2026016 with McKim & Creed, Inc. - *Approve*

SUMMARY

A Consultants' Competitive Negotiations Act (CCNA) procurement was conducted to secure professional engineering services for the High Service Pump Station Variable Frequency Drives. A scope of services has been negotiated with the top-ranked firm, McKim & Creed, Inc.

SUGGESTED ACTION

Approve Contract 2026016 with McKim & Creed, Inc., in a not to exceed amount of $1,000,550, including $125,000 in Owners Allowance.

COST/FUNDING SOURCE

$1,000,550/Capital Improvement Fund

DISCUSSION

Staff conducted a selection for professional engineering services in accordance with the State of Florida's Consultant's Competitive Negotiations Act, Section 287.055, F.S. On March 26, 2025, Tampa

Bay Water posted a Request for Proposals for the High Service Pump Station Variable Frequency Drive project. Vendors were notified through advertisement on Tampa Bay Water's e-procurement platform, Euna Procurement, and the agency's website. Tampa Bay Water added ten (10) known firms as supplemental consultants and thirty-six (36) consultants downloaded the solicitation documents.

A pre-proposal meeting was held on April 24, 2025, with five (5) participating firms. On May 20, 2025, Tampa Bay Water received timely, responsive proposals from the following firms:

- Carollo Engineers, Inc.
- McKim & Creed, Inc.
- Mott MacDonald Florida, LLC

The selection committee comprised of Tampa Bay Water staff rated all respondents in several categories including: project manager experience; technical leads qualifications; recommended project approach; volume of work previously awarded; and minority status, using the advertised scoring criteria. The committee ranked the respondents compiling written scores. Staff ranked McKim & Creed, Inc., as the most qualified.

Staff negotiated a scope and fee in a not-to-exceed amount of $1,000,550, which includes $125,000 in Owner's Allowance. These negotiated documents are included as exhibits in the service contract. The following tasks will be performed under the contract:

- Task 1 – Project Management and Administration During Design, Permitting and Bidding
- Task 2 – Preliminary Engineering
- Task 3 – Detailed Design
- Task 4 – Permitting
- Task 5 – Bidding Services
- Task 6 – Construction Phase Services
- Task 7 – Project Closeout
- Task 8 – Owner's Allowance

Staff recommends Board approval of the negotiated contract with McKim & Creed, Inc. The proposed contract has been approved as to form by Tampa Bay Water's General Counsel's Office and is attached to this agenda item.

BACKGROUND

Tampa Bay Water's Capital Improvements Program (CIP) Plan is a comprehensive ten-year plan of approved and proposed capital projects. The CIP is updated annually and is subject to changes as the needs for specific projects become more defined and as final approval of individual projects is provided by the Board. High Service Pumps Station (HSPS) Variable Frequency Drive (VFD), Project No. 50070, is identified in the CIP.

This project is located at the HSPS which is co-located with the Repump Station facility in Hillsborough County, FL and includes the design, bidding, permitting and construction for the replacement of four medium voltage VFDs; refurbishment of two VFDs; replacement of Remote Terminal Unit Programable Logic Controllers at the HSPS, and Repump Station. In addition to the design effort to replace and refurbish the VFD's and PLC's, an evaluation of VFD Cell Bypass (N+1) technology and arc-flash/coordination study for the entire facility is required. VFD cell Bypass technology (N+1) is preferred at the HSPS but may not be feasible due to space limitations.

Tampa Bay Water's Medium Voltage VFD Renewal and Replacement model recommends replacing control boards and power modules on medium voltage VFD's at ten years old and complete replacement at 20 years old.

Attachment (1)

Contract 2026016
C.1 High Service Pump Station Variable Frequency Drives Presentation

FINANCE & ADMINISTRATION DIVISION
CHRISTINA SACKETT, CFO

PURCHASING DEPARTMENT
REGINA KAVANAGH, PURCHASING SPECIALIST II
TAYLOR KLINKO, PURCHASING SPECIALIST I

WEBSITE: http://www.tampabaywater.org
E-MAIL: purchasing@tampabaywater.org
2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763-1102

CONTRACT

FOR

HIGH SERVICE PUMP STATION VARIABLE FREQUENCY DRIVES

CONTRACT NO.: 2026016
PROJECT NO.: 50070

MCKIM & CREED, INC.

CONTRACT FOR PROFESSIONAL SERVICES

This Contract for Professional Services is made this _____ day of _____, 2025 by and between **Tampa Bay Water**, **A Regional Water Supply Authority**, an interlocal governmental agency of the State of Florida created and existing pursuant to Sections 163.01, 373.713 and 373.715, Florida Statutes ("Tampa Bay Water"), and **McKim & Creed, Inc.,** ("Consultant"), a corporation in the State of North Carolina and authorized to do business in the State of Florida.

W I T N E S S E T H:

WHEREAS, Tampa Bay Water desires to retain Consultant to provide certain professional services consisting of High Service Pump Station Variable Frequency Drives Services; and

WHEREAS, Tampa Bay Water has selected Consultant in accordance with Tampa Bay Water's procurement policy, and applicable provisions of Florida Law; and

WHEREAS, Consultant agrees to provide the professional engineering and design services required by Tampa Bay Water with respect to Project No. 50070 ("Project"), as hereinafter defined;

NOW, THEREFORE, in consideration of the premises set forth above, and of the mutual promises set forth below, and other good and valuable consideration, the sufficiency and adequacy of which are hereby acknowledged, the parties hereto, intending to be legally bound, agree as follows:

1. DEFINITIONS

   The following terms as used in this Contract shall have the following meanings:

   - Contract - This written document, as it may be amended from time to time as provided for herein.
   - Date of Commencement - The date on which Tampa Bay Water delivers to Consultant written notice to proceed with the Services.
   - Law - All laws, statutes, rules, regulations, ordinances, codes and/or orders applicable to the Services.
   - Project - The professional services for High Service Pump Station Variable Frequency Drives.
   - Services - The services as provided for in Exhibit A, as well as any and all obligations, duties, and responsibilities required of Consultant pursuant to this Contract. The term "Services" shall also include all Additional Services which are subsequently authorized in writing by Tampa Bay Water.
   - Additional Services – Subject to Section 11 hereof, any services that are authorized in writing by Tampa Bay Water subsequent to the execution an amendment to this Contract as provided for herein.
   - Subconsultant – All contractors, subcontractors, consultants, subconsultants, suppliers, experts and other entities retained by Consultant to perform or provide any portion of the Services required hereunder.

2. ENGAGEMENT OF SERVICES

   Tampa Bay Water hereby contracts with Consultant for Consultant to perform the Services, and Consultant hereby agrees to perform the Services upon the terms and conditions set forth in this Contract.

3. TERM

   The term of this Contract shall commence on the day and year as shown above and terminate on September 20, 2029, or until all Services required hereunder have been performed.

4. PROJECT COMPENSATION

A. For the timely and proper performance of the Services, Tampa Bay Water shall pay Consultant the compensation in an amount not to exceed $1,000,550.00 which includes $125,000.00 in Owners Allowance, as further detailed in Exhibit B, which is attached hereto and made a part hereof, consistent with the provisions for payment set forth in Tampa Bay Water's Administrative Policy 650-15 which is attached as Exhibit C. Tampa Bay Water shall reimburse Consultant for travel expenses other than travel expenses which are included in lump sum payment items (subject to the "administrative limits" of Section 112.061, Florida Statutes, and Administrative Policy 650-15), provided Consultant (a) maintains appropriate documentation substantiating the expense, (b) discloses that such claimed expense is true and correct as to every material matter, and (c) honors a claim for refund by Tampa Bay Water should such reimbursement be in excess of the administrative limits. Nothing herein shall prevent the payment to Consultant for lump sum items which include travel expenses consistent with the administrative limits.

B. Consultant hereby certifies that the wage rates and other factual unit costs supporting the compensation are accurate, complete and current at the time this Contract is executed. Further, Consultant acknowledges and agrees that any compensation to be paid under this Contract, both as originally set forth in Exhibit B or for any Additional Services hereafter authorized in writing by Tampa Bay Water, will be adjusted to exclude any significant sums by which Tampa Bay Water determines such compensation was increased due to inaccurate, incomplete, or noncurrent wage rates and other factual unit cost. Further, Consultant acknowledges and agrees that any such adjustment to compensation may be made within one (1) year of the expiration or termination of this Contract.

5. PROJECT SCHEDULING

Consultant shall perform the Services in accordance with the milestone dates and/or progress schedule set forth in Exhibit D.

6. CONSULTANT'S REPRESENTATIONS AND WARRANTIES

Consultant represents and warrants to Tampa Bay Water as follows:

A. Consultant is duly authorized to conduct business in the State of Florida.

B. Consultant has, or it will secure at its own expense, all personnel, facilities, and equipment required to perform and complete the Services.

C. Consultant shall maintain an adequate and competent staff of professionals licensed and located within the State of Florida. Consultant shall designate in writing a single representative with whom Tampa Bay Water shall coordinate. This representative shall have authority to transmit instructions, receive information, interpret and deliver Consultant's policies and decisions related to the Services and bind Consultant with respect to any matter arising out of or relating to this Contract.

D. Consultant has or shall secure all licenses or permits required by Law for the performance of the Services and shall comply with all Laws in effect at the time of the execution of this Contract and the time of performance of the Services.

E. Consultant has familiarized itself with the nature and extent of this Contract, the Project, the Services, the site, locality, and all local conditions and Law that may affect Consultant's performance of this Contract, including Consultant's compensation, the progress schedule, and the performance or furnishing of the Services.

F. Consultant has reviewed this Contract (including its Exhibits) and all available information and data shown or indicated in this Contract and has given Tampa Bay Water written notice of all

conflicts, errors, ambiguities, or discrepancies that it has discovered in this Contract or information or data, and the written resolution thereof by Tampa Bay Water is acceptable to Consultant.

G. Consultant shall obtain and review all information and data which relates to the Services or which Consultant may reasonably anticipate may affect cost, scheduling, progress, performance or furnishing of the Services, including, but not limited to, information and data related to the Project work of others under separate contracts, to the extent that such work may interface with the Services hereunder.

H. At all times during the performance of the Services, Consultant shall comply with Title VII of the Civil Rights Act of 1964, as amended, and the Florida Civil Rights Act of 1992. Consultant shall not discriminate in any form or manner against its employees or applicants for employment on the basis of race, color, national origin, religion, sex, age, handicap or marital status. Further, Consultant shall comply with all applicable rules, regulations or executive orders promulgated to give effect to the Civil Rights Act of 1964, as amended.

I. Consultant warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for Consultant, to solicit or secure this Contract. Further, Consultant has not paid or agreed to pay any person, company, corporation, individual or firm, other than a bona fide employee working solely for Consultant, any fee, commission, percentage, gift, or other consideration, contingent upon or resulting from the award or making of this Contract. Consultant represents that it has complied with the provisions of Section 287.055(6), Florida Statutes.

J. Consultant has represented and warrants to Tampa Bay Water that Consultant has special expertise in the type of professional services to be provided pursuant to this Contract and Consultant acknowledges that such representations were a material inducement to Tampa Bay Water to enter into this Contract with Consultant. Consultant, in representing Tampa Bay Water, shall promote the best interest of Tampa Bay Water and assume towards Tampa Bay Water a fiduciary relationship of the highest trust, confidence, and fair dealing.

K. Consultant shall immediately notify Tampa Bay Water if it becomes aware of any facts or circumstances which may reasonably give rise to any claim against Tampa Bay Water for Services performed under or related to the Services performed under this Contract.

L. Consultant agrees that to the extent the performance of Services hereunder involves construction, Consultant acknowledges that it has reviewed or will review Tampa Bay Water's applicable construction contract form that will be utilized with respect to and prior to any construction of the Project, and Consultant agrees that all services to be provided under said construction contract are expressly included and incorporated into the Scope of Services set forth in Exhibit A to be provided by Consultant under this Contract.

M. Consultant has the full power and authority to execute and deliver this Contract and to incur and perform the obligations provided for herein, all of which have been duly authorized by all proper and necessary actions of the governing entity of Consultant.

N. This Contract is a valid, binding and enforceable obligation of Consultant, and does not violate any law, rule, regulation, contract or agreement otherwise enforceable by or against Consultant, except as same may be limited by bankruptcy, insolvency, reorganization or other similar laws affecting the rights of creditors generally.

7. TAMPA BAY WATER'S RESPONSIBILITIES

A. Tampa Bay Water shall review and consider, in a reasonably prompt and thorough fashion, all applications for payments, reports, schedules, estimates, drawings, proposals or other documents

presented to Tampa Bay Water by Consultant and shall inform Consultant of all of Tampa Bay Water's decisions or otherwise take appropriate action within a reasonable time so as to not unreasonably delay the Services of Consultant.

B. Tampa Bay Water shall designate in writing a single representative with whom Consultant shall coordinate. This representative shall have authority to transmit instructions, receive information and interpret and deliver Tampa Bay Water's policy and decisions pertinent to the Services. However, no such representative of Tampa Bay Water shall be authorized to approve any modification or amendment to this Contract, including, but not limited to, authorizing any Additional Services, modification of Project Compensation or Project Scheduling, unless in the best interest of Tampa Bay Water and due to causes or circumstances beyond the control of Consultant.

C. Tampa Bay Water shall cooperate in providing to Consultant, upon Consultant's specific request, all existing and available studies, reports, surveys and other information and data regarding the Project, to the extent such items are in Tampa Bay Water's possession and Tampa Bay Water has actual knowledge of their existence and location. Notwithstanding anything herein to the contrary, Tampa Bay Water does not represent or warrant the accuracy or completeness of any such items, unless it is expressly noted otherwise in writing on such item.

8. CHANGE OF PLAN

A. Tampa Bay Water shall have the absolute right to terminate, suspend, or amend the Services or the Project at any time and for any reason, and such action on its part shall not be deemed a default or breach of this Contract. Any such termination, suspension or amendment of the Services or the Project by Tampa Bay Water shall be in writing.

B. In the event the Services or Project is entirely or partly suspended for one or more periods of time, there shall be no claim for compensation for the suspended period(s). Upon resumption of the Services or Project, Consultant shall resume the Services until the Services are completed in accordance with this Contract, and the time for completion of the Services which were suspended shall be extended for the period of the suspension. If the cumulative total of such suspensions, excluding periods of suspension during the design phase, is two hundred seventy (270) days or less, the extension of time shall be Consultant's sole remedy. If the cumulative total of such suspensions is more than two hundred seventy (270) days, Consultant's sole remedy shall be to terminate this Contract pursuant to Article 9.

C. If Tampa Bay Water amends the Services and Consultant is of the opinion that Additional Services are made necessary as a result thereof, the provisions of Article 11 herein shall apply.

9. TERMINATION OF CONTRACT

A. Tampa Bay Water shall have the right to terminate this Contract, in whole or in part, without cause upon thirty (30) days written notice to Consultant. In the event of any such termination without cause, Consultant's sole and exclusive recovery against Tampa Bay Water shall be limited to that portion of Consultant's compensation earned to the date of termination, together with any costs reasonably incurred by Consultant that are directly attributable to the termination. The Consultant shall not be entitled to any other or further recovery against Tampa Bay Water, including, but not limited to, anticipated fees or profits on Services not required to be performed. Tampa Bay Water shall determine that portion of the compensation earned for any incomplete Services based upon the ratio of such part of the Services completed relative to the entire Services. Any such determination shall be made in Tampa Bay Water's sole discretion. Termination without cause shall be effective upon delivery of written notice to Consultant.

B. Consultant shall be considered in material default of this Contract and such default shall be considered cause for Tampa Bay Water to terminate this Contract, in whole or in part, for any of the following reasons: (a) failure to begin Services within the time specified herein, or (b) failure to timely and properly perform the Services required hereunder or as directed by Tampa Bay Water, or (c) the bankruptcy or insolvency or a general assignment for the benefit of creditors by Consultant or by any of Consultant's principals, partners, officers or directors, or (d) failure to obey any Law, or (e) failure or refusal to allow public access to all public record documents or other materials made or received by Consultant in conjunction with this Contract, unless exempt under Florida law, or (f) Consultant otherwise materially breaches this Contract. In any such event, Tampa Bay Water may terminate this Contract, in whole or in part, by giving Consultant fourteen (14) days written notice. In the event of any such termination for cause, Tampa Bay Water shall not be obligated to make any further payments to Consultant hereunder until such time as Tampa Bay Water has determined all costs, expenses, losses and damages which Tampa Bay Water may have incurred as a result of such default by Consultant, whereupon Tampa Bay Water shall be entitled to set off all costs, expenses, losses and damages so incurred by Tampa Bay Water against any amounts due Consultant hereunder, for services properly performed.

C. If Tampa Bay Water violates the provisions of this Contract, and if said violation continues for sixty (60) days after Consultant has delivered to Tampa Bay Water written notice of such violation, then Consultant may, without prejudice to any other right or remedy, terminate or cancel this Contract by giving Tampa Bay Water fourteen (14) days written notice of such termination or cancellation. In the event of any such termination by Consultant, Consultant's sole and exclusive rights and remedies against Tampa Bay Water shall be the same as and limited to those which are set forth in paragraph 9.A above.

D. Notwithstanding the provisions of paragraphs 9.B and 9.C, this Contract will not terminate for cause if the party receiving the notice begins, within seven (7) days of receipt, to correct its failure and proceeds diligently to cure such failure within no more than thirty (30) days of receipt thereof; provided, however, that if and to the extent such cause for termination cannot reasonably be cured within such thirty (30) day period, and if such party has diligently attempted to cure the same and thereafter continues to diligently cure the same, then the cure period may be further extended by the party that provided said notice.

E. If, after termination of this Contract as provided for in paragraph 9.B above, it is determined for any reason that Consultant was not in default, or that its default was excusable or that Tampa Bay Water otherwise was not entitled to the remedy against Consultant provided for in paragraph 9.B, then such termination for cause shall be deemed to be a termination without cause and Consultant's sole and exclusive rights and remedies against Tampa Bay Water shall be the same as and limited to those afforded Consultant under paragraph 9.A above.

F. Upon any termination of this Contract pursuant to paragraphs 9.A or 9.C above and payment by Tampa Bay Water as required under those paragraphs, Consultant shall deliver to Tampa Bay Water, within ten (10) days of such payment, all papers, drawings, models and other material prepared by and for Consultant with respect to the Project. Upon any termination of this Contract pursuant to paragraph 9.B above, Consultant shall deliver to Tampa Bay Water, within ten (10) days of Consultant's receipt of the termination notice, all papers, drawings, models and other materials prepared by or for Consultant for the Project.

10. WAIVER

A. Consultant's acceptance of final payment shall constitute a full waiver of any and all claims by Consultant against Tampa Bay Water arising out of and relating to this Contract or otherwise related to the Project, except those previously made in writing and identified by Consultant as

unsettled at the time it submits its invoice for final payment. Neither the acceptance of the Services nor any payment by Tampa Bay Water shall be deemed to be an acceptance of defective or incomplete Services or waiver of any of Tampa Bay Water's rights against Consultant.

B. Non-enforcement of any provision of this Contract by either party shall not constitute a waiver of that provision nor shall it affect the enforceability of that provision or the remainder of this Contract.

11. ADDITIONAL SERVICES

A. If Consultant is of the opinion that any services Tampa Bay Water directs it to perform are beyond the scope of the Services under this Contract, Consultant shall, within seven (7) days of such direction, notify Tampa Bay Water in writing of this opinion. Tampa Bay Water shall, within ten (10) working days after receipt of such notification, determine whether or not such service is in fact beyond the scope of this Contract and constitutes Additional Services. If Tampa Bay Water determines that such service does constitute Additional Services, it shall provide extra compensation to Consultant based upon the provisions of Article 4 herein.

B. If, in the opinion of Tampa Bay Water, the progress of the Services during any period is substantially less than the amount which is necessary to meet the Project Schedule or Consultant's obligations under Article 5 herein, Tampa Bay Water may require Consultant to take whatever action is necessary, in the opinion of Tampa Bay Water, to put the Services back on schedule. Such action shall not constitute Additional Services unless the delays were caused by circumstances beyond the control and fault of Consultant or its agents, employees and Subconsultants.

C. In the event of claims by others against Tampa Bay Water in connection with the Project or the Services, Consultant shall provide to Tampa Bay Water such technical assistance that Tampa Bay Water may request. Such assistance shall constitute Additional Services, unless such claims are caused by the failure of Consultant, its agents, employees or Subconsultants to comply with the terms and conditions of this Contract or otherwise perform their duties under this Contract.

D. Subject to the provision of paragraph 8.B herein, Consultant shall not make any charges or claims for damages for any delays or hindrances of less than thirty (30) days from any cause whatsoever during the progress of any portion of the Services. Such delays or hindrances of less than thirty (30) days may be compensated for by an extension of time as Tampa Bay Water may decide. However, any such extension shall not operate as a waiver of any other rights of Tampa Bay Water. If the total of such delays or hindrances exceeds thirty (30) days, any additional services required to be performed by Consultant as a result of such delays or hindrances will be considered Additional Services unless such delays or hindrances were caused in whole or in part by Consultant, its employees, agents, or Subconsultants or as a result of a suspension of the Project or Services entirely or partly by Tampa Bay Water. This paragraph 11.D shall not apply to suspensions of the Project or Services by Tampa Bay Water, which suspensions shall be governed by Article 8.

E. If Tampa Bay Water requires Consultant to provide it with an audit of its Project costs, such audit shall not be considered Additional Services.

12. STATUS REPORTS AND INSPECTIONS

Tampa Bay Water shall be entitled at all times to be advised of the status of the Project, including, but not limited to, the Services of Consultant. Consultant shall cooperate with Tampa Bay Water and its agents to keep Tampa Bay Water advised as to the status of the Project and Services. Tampa Bay Water and/or its authorized representative shall have the right to visit the site and/or the office of Consultant in order to inspect the Services or any of the drawings or documents of Consultant at any

reasonable time. The documents obtained or generated under this Contract shall be maintained by Consultant and made available to Tampa Bay Water upon request by Tampa Bay Water at all times during the term of this Contract and for three (3) years thereafter. In addition to the documents and reports set forth in Exhibit A, Consultant shall, at no cost to Tampa Bay Water, deliver to Tampa Bay Water copies of all other Project documents or reports under Consultant's possession or control that Tampa Bay Water may request from time to time.

13. COORDINATION WITH OTHERS

Consultant shall cooperate with other engineers, consultants, construction contractors and suppliers retained by Tampa Bay Water and assist Tampa Bay Water with the coordination of those various projects, work, and engineering and consulting services. Consultant shall review all information and attend all meetings as shall be reasonably necessary to accomplish the coordination of those various projects, work, and engineering and consulting services, and eliminate any problems where the projects, work or services interface with the Project or Services.

14. SUBCONSULTANTS

Consultant shall not sublet, assign, or transfer this Contract or any Services without the prior written consent of Tampa Bay Water, which consent may be withheld in Tampa Bay Water's sole discretion. Consultant shall be solely responsible for the employment, direction, supervision, compensation and control of any and all Subconsultants. Consultant shall cause all Subconsultants to abide by the terms and conditions of this Contract and all Laws. All Contracts between Consultant and Subconsultants shall be in writing, with a copy of such Contracts to be provided to Tampa Bay Water upon its request for same.

15. INDEMNIFICATION

A. In consideration of One Hundred Dollars ($100.00) separately allocated from the consideration paid hereunder, to the fullest extent permitted by law, the receipt and sufficiency of which is acknowledged by Consultant's execution of this Contract, the Consultant shall indemnify and hold harmless Tampa Bay Water, its officers and employees, from and against any and all liabilities, damages, losses and costs (including but not limited to reasonable attorneys fees) arising out of or to the extent caused by the negligence, recklessness or intentionally wrongful conduct of Consultant or any of the Subconsultants or any other person or organization employed by or utilized by Consultant in the performance of Services under this Contract. This indemnification shall also include all liability, damages, losses and costs (including but not limited to reasonable attorneys fees) arising out of or to the extent caused by any infringement of patents or copyrights incident to providing the Services required hereunder.

B. PURSUANT TO SECTION 558.0035, FLORIDA STATUES, AN INDIVIDUAL EMPLOYEE OR AGENT OF CONSULTANT MAY NOT BE HELD INDIVIDUALLY LIABLE FOR NEGLIGENCE.

16. CONSULTANT'S INSURANCE REQUIREMENTS AND MINIMUM LIMITS

A. The types of insurance Consultant shall purchase and maintain shall include the specific coverages and minimum limits set forth as follows. All said limits shall be per occurrence and in the aggregate combined single limit for all liability, except professional liability coverage which shall be on a claims made basis, with following forms excess or umbrella insurance making up the

difference between the policy limits of underlying policies and the total amount of coverage required.

B. Consultant shall provide the following described insurance, except for coverages specifically waived in writing by Tampa Bay Water, on policies and with insurers acceptable to Tampa Bay Water. The amounts and types of insurance shall conform to the following minimum requirements with the use of current insurance service office forms and endorsements or their equivalent. Notwithstanding the foregoing, the wording of all policies and endorsements shall be subject to Tampa Bay Water's review and approval which shall not be unreasonably withheld.

C. Liability Insurance

i. General Liability

a) Consultant shall purchase and maintain such commercial (occurrence form) or comprehensive general liability, automobile policies and other appropriate insurance for the services being performed and furnished hereunder which shall provide protection from claims set forth below which may arise out of or result from Consultant's performance and furnishing of the services and Consultant's other obligations under the Contract and Assignments issued hereunder.

b) Minimum limits of $1,000,000 per occurrence for all liability must be provided, with excess or umbrella insurance making up the difference, if any, between the policy limits of underlying policies (including employers' liability required in the Worker's Compensation coverage section) and $2,000,000 per occurrence of total coverage required. Limits of coverage shall not be less than the following for Bodily Injury, Property Damage and Personal Injury, Combined Single Limits:

General Aggregate	$2,000,000
Each Occurrence	$1,000,000
Personal Injury/Advertising Injury	$1,000,000
Products Comp/Operations Aggregate	$1,000,000

c) Consultant liability insurance shall include contractual liability coverage sufficient to cover Consultant indemnification obligations under this Contract. Consultant agrees to pay on behalf of Tampa Bay Water, and to provide and pay for a defense for all claims covered by Consultant obligations under the indemnification provisions.

ii. Excess or Umbrella Liability

Umbrella liability insurance is preferred, but an Excess Liability equivalent may be allowed. Whichever type of coverage is provided, it shall not be more restrictive than the underlying insurance policy coverages.

iii. Vehicle Liability

a) Coverage shall be maintained as to the business use of all its owned, non-owned, leased or hired vehicles with limits of not less than: Bodily Injury & Property Damage Liability $500,000, Combined Single Limit Each Accident.

b) If Consultant has no owned, non-owned, leased or hired vehicles, a letter from Consultant so stating must be included with the Certificate of Insurance.

iv. Watercraft/Aircraft Liability:

If Consultant's provision of services involves utilization of watercraft or aircraft, watercraft and/or aircraft liability coverage must be provided to include bodily injury and property damage arising out of ownership, maintenance or use of any watercraft or aircraft, including owned, non-owned and hired.

D. Workers Compensation Coverage

i. Consultant shall purchase and maintain workers' compensation insurance for all workers' compensation obligations imposed by state law and employers' liability limits of at least $100,000 each accident and $100,000 each employee, $500,000 policy limit for disease.
   a. Tampa Bay Water requires Consultant and the Subconsultants to purchase workers' compensation insurance for all its employees regardless of the number of employees they have and regardless of any other exemptions. Florida law permits employers who may be exempt from purchase of coverage to waive their exemptions and purchase the coverage. Tampa Bay Water requires Consultant and all Subconsultants to purchase said coverage, unless waived in writing by Tampa Bay Water.
   b. Consultant and the Subconsultants shall also purchase any other coverages required by law for the benefit of employees.

E. Professional Liability/Malpractice/Errors or Omissions Insurance
   i. Consultant shall purchase and maintain professional liability or malpractice or errors or omissions insurance with minimum limits of $1,000.000 per occurrence.
   ii. If a claims' made form of coverage is provided, the retroactive date of coverage shall be no later than the inception date of claims made coverage, unless the prior policy was extended indefinitely to cover prior acts.
   iii. To the extent commercially available, coverage shall be extended beyond the policy year either by a supplemental extended reporting period (ERP) of as great duration as available, and with no less coverage and with reinstated aggregate limits, or by requiring that any new policy provide a retroactive date no later than the inception date of claims made coverage.
      ii. Consultant shall not commence or continue to perform any Services unless Consultant has in full force and effect all required insurance, and until Consultant has delivered to Tampa Bay Water all insurance certificates required hereunder evidencing the specific insurance coverage required, nor shall any payment for Services performed become due and payable until Consultant has delivered all such certificates to Tampa Bay Water. Consultant shall not permit any Subconsultant to perform any portion of the Services unless such Subconsultant has complied with the insurance requirements, including the workers' compensation and general liability insurance requirements, contained herein.
   iii. Insurance coverage shall be placed with insurers or self-insurance funds, satisfactory to Tampa Bay Water, licensed to do business in the State of Florida and with a resident agent designated for the service of process. All insurers shall have an "A" policyholder's rating and a financial rating of at least Class IX in accordance with the most current Best's rating. Consultant shall provide Tampa Bay Water with financial information concerning any self-insurance fund insuring Consultant. At Tampa Bay Water 's option, a Best's rating or Self-Insurance Fund financial information may be waived.
   iv. As evidence of the insurance coverages required by this Contract, Consultant shall provide Tampa Bay Water certificates of insurance evidencing the specific policies issued, the limits of coverage afforded, and the specific endorsement provided, all in accordance with the form attached hereto as Exhibit E and made a part hereof. An ACORD form meeting these requirements and as shown in Exhibit E may be substituted with the consent of Tampa Bay Water.
   v. All the policies of insurance so required of Consultant, except professional liability and workers' compensation insurance, shall be endorsed to include as additional insureds: Tampa Bay Water, its directors, officers, employees, representatives, agents, and volunteers. If the additional insureds have other insurance which might be applicable to any loss, the insurance required of Consultant shall be considered primary, and all other insurance shall be considered excess. Such insurance policies shall include or be endorsed to include a cross liability clause so the additional insureds will be treated as if a separate

policy were in existence and issued to them. The cross-liability clause does not increase the limits of liability or aggregate limits of the policy.

vi. Deductible and self-insured retention amounts shall be subject to approval by Tampa Bay Water, which approval shall not be unreasonably withheld. Consultant is responsible for the amount of any deductibles or self-insured retentions.

vii. Approval of the insurance by Tampa Bay Water shall not relieve or decrease the liability of Consultant hereunder. Further, Consultant acknowledges that any such acceptance by Tampa Bay Water shall not be deemed to be an acknowledgement that Consultant has satisfied its insurance obligations hereunder. Consultant acknowledges and agrees that Tampa Bay Water does not in any way represent that the insurance (or the limits of insurance) specified in this Article is sufficient or adequate to protect Consultant's interests or liabilities, but are merely minimums.

viii. All insurance shall be maintained in full force and effect for the period provided in paragraph 16.c.x. hereof. Should any coverage approach expiration during the period in which it is to remain in full force and effect, it shall be renewed by Consultant prior to its expiration, and a certificate of insurance again filed with Tampa Bay Water at least fourteen (14) days prior to coverage renewal.

ix. All of the policies of insurance required to be purchased and maintained (or the certificates or other evidence thereof) shall contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused, until at least thirty (30) days prior written notice has been given to Tampa Bay Water and Consultant by certified mail. Consultant shall give notice to Tampa Bay Water within (24) hours of any oral or written notice of adverse change, non-renewal, or cancellation.

x. Except as provided below in paragraph 17.C.xi. for professional liability insurance, all insurance required hereunder shall remain in full force and effect throughout the entire term of this Contract.

xi. Professional liability insurance shall continue in force until the end of one (1) calendar year following the calendar year in which the completion of the Project is estimated to occur pursuant to the Project Schedule. The professional liability insurance policy shall be endorsed to provide for renewals through said one (1) calendar year, or if the current policy is not renewed, to provide for an extended reporting period on the existing policy through said one (1) calendar year.

xii. Consultant shall, upon request by Tampa Bay Water, deliver to Tampa Bay Water a copy of each insurance policy purchased by Consultant pursuant to this Article 17 and Article 18.

xiii. All policies, except for workers' compensation and professional liability, shall contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of subrogation against Tampa Bay Water, its Consultants, directors, officers, employees, representative or agents. Nothing contained in these insurance requirements is to be construed as limiting the liability of Consultant or Consultant's insurance carriers. Further, Consultant hereby waives its right of recovery against Tampa Bay Water with respect to any matter covered by any insurance maintained by Consultant.

17. INSURANCE – GENERAL REQUIREMENTS

A. Consultant shall purchase and maintain such commercial (occurrence form) or comprehensive general liability (occurrence form), professional liability, and other appropriate insurance, with respect to the Services required hereunder, that will provide protection from the types of claims set forth below which may arise out of or result from Consultant's performance and furnishing of the Services, whether it is to be performed by Consultant or the Subconsultants:

i. Claims under workers' compensation, disability benefits and other similar employee benefit acts;
ii. Claims for employer's liability, including those arising under Title VII of the Civil Rights Act of 1964 and the Florida Civil Rights Act;
iii. Claims for damages because of bodily injury, sickness or disease, or death to any person other than Consultant's employee;
iv. Claims for damages insured by personal injury liability coverage which are sustained by any person as a result of a negligent or wrongful act or omission of Consultant or any person employed by or subcontracted to Consultant;
v. Claims for damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom;
vi. Claims for damages because of bodily injury or death of any person, or property damage arising out of the Consultant ownership, maintenance, operation, use or loading and unloading of any owned, hired or non-owned motor vehicle used in connection with the Services, including employee non- Consultant ownership use; and
vii. Claims for damages because of bodily injury or death of any person or property damage arising out of the Consultant ownership, maintenance, operation, use or loading and unloading of any owned, hired or non-owned aircraft and watercraft used in connection with the Services, including employee non- Consultant ownership use.

B. The insurance required by this Article shall include the specific coverage and be written for the limits of liability and coverage provided in Article 16 or required by Law, whichever is greater. Where appropriate for the Services being performed, the commercial (occurrence form) or comprehensive general liability (occurrence form) insurance shall also include: broad form property damage, explosion, collapse, and underground hazard coverage and independent contractor's coverage.

C. The commercial (occurrence form) or comprehensive general liability (occurrence form) insurance shall include contractual liability insurance applicable to all of Consultant's obligations under this Contract that are covered by such insurance.

D. Consultant shall require all Subconsultants to procure and maintain, until the completion of that party's Services, insurance of the types and in the coverage amounts required to be carried by Consultant in this Contract unless Tampa Bay Water agrees in writing, in advance of Consultant's employment of any such Subconsultant, to other types of coverage and/or lower coverage amounts. Provided however, that professional liability insurance shall not be required under this Contract for Subconsultants, unless such party is a licensed professional. The preceding sentence does not preclude Consultant from requiring such insurance. Consultant shall be responsible for ensuring that all Subconsultants comply with all of the insurance requirements contained herein relative to each such party.

E. Tampa Bay Water requires Consultant and all Subconsultants to purchase workers' compensation insurance for all their employees regardless of the number of employees they have and regardless of any other exemptions. Florida law permits employers who may be exempt from purchase of coverage to waive their exemptions and purchase the coverage voluntarily. Tampa Bay Water requires Consultant and all Subconsultants to voluntarily purchase said coverage.

18. STANDARD OF PERFORMANCE

Consultant shall perform and complete the Services in a timely manner and in accordance with the standard of care, skill, and diligence customarily provided by professionals with expertise and experience in the type of Services to be provided hereunder, and in accordance with sound professional principles and practices. Consultant acknowledges that it has represented to Tampa Bay Water that Consultant has expertise and experience in the type of services to be rendered hereunder

and that such representation was a material inducement to Tampa Bay Water to enter into this Contract with Consultant.

19. PROJECT DOCUMENTS AND DATA

A. One (1) copy of all technical data and working papers regarding the Services, whether existing in the office of Tampa Bay Water or in the office of Consultant, shall be made available to the other party to this Contract without expense to such other party. Additional copies shall be made available at the expense of the requesting party.

B. All Project documents, tracings, plans, specifications, maps, evaluations, reports, technical data, and computer application code, other than working papers prepared or obtained under this Contract, are the property of Tampa Bay Water without restriction or limitation of use, and shall be made available, upon request, to Tampa Bay Water at any reasonable time. Consultant, at its own expense, may retain copies thereof for its files and internal use. Any use by Tampa Bay Water of such materials obtained under this Contract for any other Project or use of incomplete materials obtained from Consultant by Tampa Bay Water shall be made at the risk of Tampa Bay Water. However, this does not constitute a disclaimer of the professional liability of Consultant with respect to the original Services as used for the Project.

C. All final plans and documents that are required by Florida Law to be endorsed and are prepared by Consultant in connection with the Services shall bear the endorsement of a person in the full employment of Consultant or duly retained by Consultant and duly licensed in the appropriate professional category.

D. Consultant shall make any patentable product or result of the Services and all information, design, specifications, know-how, data and findings available to Tampa Bay Water without cost to Tampa Bay Water. No material prepared in connection with this Project will be subject to copyright by Consultant, all such copyrights being the property of Tampa Bay Water. Tampa Bay Water shall have the right to publish, distribute, disclose and otherwise use any material prepared by or for Consultant with respect to the Project. Any use of material or patents obtained by Tampa Bay Water under this Contract for any purpose not associated with this Project shall be at the risk of Tampa Bay Water. In Tampa Bay Water's discretion, whenever any renderings, photographs of renderings, photographs of models or photographs of the Project are released by Tampa Bay Water for publicity, proper credit may be given to Consultant, provided the giving of such credit is without cost to Tampa Bay Water.

E. Consultant shall make no statements, press releases or public releases concerning this Contract or its subject matter or otherwise disclose or permit to be disclosed any of the data or any other information obtained or furnished in compliance with this Contract, except at meetings where representatives of Tampa Bay Water are present, without Tampa Bay Water's prior written consent. Consultant shall not publish, copyright, or patent any of the data furnished or developed with respect to the Project without first obtaining Tampa Bay Water's written consent, as all such rights are the property of Tampa Bay Water.

20. PUBLIC RECORDS AND AUDIT RIGHTS

A. Consultant shall keep all books, records, files, plans, drawings and other documentation, including all electronically stored items, which concern or relate to the Services hereunder (collectively referred to herein as "Records") for a minimum of three (3) years from the date of expiration or termination of this Contract or as otherwise required by Law, which ever date is later. Tampa Bay Water, or any duly authorized agents or representatives of Tampa Bay Water, shall have the right to audit, inspect and copy all or such Records as often as they deem necessary during any

such period of time. This right to audit, inspect and copy the Records shall include all of the Records of Subconsultants.

B. **IF THE CONSULTANT HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONSULTANT'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE AGENCY'S CUSTODIAN OF PUBLIC RECORDS VIA PHONE (727) 796-2355 OPTION 6; EMAIL RECORDS@TAMPABAYWATER.ORG; OR MAIL AT 2575 ENTERPRISE ROAD, CLEARWATER, FLORIDA 33763.**

C. Consultant must keep and maintain all public records required by Tampa Bay Water in order to perform services under this Contract.

D. Upon request from Tampa Bay Water's custodian of public records, Consultant shall provide Tampa Bay Water with a copy of the requested public records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provide in Chapter 119, Florida Statutes, or as otherwise provided by law.

E. Consultant shall ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the Consultant does not transfer the records to Tampa Bay Water.

F. Upon completion of the contract, Consultant shall transfer, at no cost, to Tampa Bay Water all public records in the possession of the Consultant, or keep and maintain public records required by Tampa Bay Water to perform the service under this contract. If the Consultant transfers all public records to Tampa Bay Water upon completion of the contract, the Consultant shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Consultant keeps and maintains public records upon completion of the contract, the Consultant shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to Tampa Bay Water, upon request from Tampa Bay Water's custodian of public records, in a format that is compatible with the information technology systems of Tampa Bay Water.

21. EMPLOYEE VERIFICATION

In accordance with Section 448.095, Florida Statutes, the Consultant agrees to register with and utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired during the term of the Contract for the services specified in the Contract. The Consultant must also include a requirement in subcontracts that the subcontractor must register with and utilize the E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor, the subcontractor must provide the Consultant with an affidavit stating that the subcontractor does not employ, contract with, or subcontract with an unauthorized alien. The Consultant shall maintain a copy of such affidavit for the duration of the Contract. If Tampa Bay Water has a good faith belief that the Consultant has knowingly violated Section 448.09(1), Florida Statutes, Tampa Bay Water shall terminate the Contract with the Consultant, and the Consultant may not be awarded a Contract with Tampa Bay Water for at least one (1) year after the date on which the Contract was terminated. The Consultant is liable for any additional costs incurred by Tampa Bay Water as a result of the termination of the Contract. If Tampa Bay Water has a good faith belief that a subcontractor knowingly violated the law, but the Consultant has otherwise complied with the law, Tampa Bay

Water shall promptly notify the Consultant and order the Consultant to immediately terminate the Contract with the subcontractor.

22. MISCELLANEOUS PROVISIONS

A. Tampa Bay Water and Consultant each hereby binds itself, its successors, assigns, and legal representatives to the other. The rights and obligations pursuant to this Contract shall inure solely to the parties hereto (their successors, assigns and legal representatives) and no other party shall have any rights or obligations under or by virtue of this Contract.

B. This written document shall constitute the entire Contract between the parties hereto and said Contract shall not be amended or modified except in writing duly executed by the party against whom such an amendment or modification is sought to be enforced. This Contract shall govern the relationship between Tampa Bay Water and Consultant on the Project.

C. This Contract shall be governed by and construed under the laws of the State of Florida.

D. Venue for any action arising under this Contract shall lie in the State courts for Pinellas County, Florida.

E. Any notices or other writings permitted or required to be delivered under the provisions of this Contract must be in writing and shall be delivered by sending the notice by personal delivery, U.S. regular mail, U. S. express mail or by U.S. certified mail, return receipt requested, in any event with sufficient postage affixed, and addressed as follows:

If to Tampa Bay Water:

Tampa Bay Water
2575 Enterprise Road
Clearwater, Florida 33763-1102
727-796-2355
Attention: Stacy Gundry, Purchasing & Warehouse Manager

If to Consultant:

McKim & Creed, Inc.
1365 Hamlet Avenue
Clearwater, FL 33756
727-442-7196
Attention: Aubrey Haudricourt, P.E., Project Manager

Either party may change said address by notice in writing to the other party in the manner herein provided.

F. The parties hereto acknowledge that they have carefully reviewed this Contract and have been advised by counsel of their choosing with respect thereto, and that they understand its contents and agree that this Contract shall not be construed more strongly against any party thereto, regardless who is responsible for its preparation or drafting.

G. Key personnel and Subconsultants assigned to the Project by Consultant shall not be removed from the Project without the prior written approval of Tampa Bay Water. All key personnel shall be available to the Project on a full time basis, except as otherwise expressly approved in writing by Tampa Bay Water. Such key personnel are as follows:

Aubrey Haudricourt, P.E., Project Manager
Mike Fadini, P.E., Electrical Lead
Eric Brown, El, I& C/SCADA Lead

Brian Pearce, P.E., QA/QC
David Stoner, El, Design Engineer
Tracey Webb, P.E., Construction Support/Permitting
Bill Band, P.E., Structural Engineer

H. If at any time during the term of this Contract Tampa Bay Water notifies Consultant in writing that any of Consultant's employees or the employees of any Subconsultant are objectionable to Tampa Bay Water, Consultant shall remove or have the Subconsultant remove the objectionable employee from the Project and not reemploy the objectionable employee on any portion of the Services.

I. The Consultant's communications with Tampa Bay Water shall be limited to Tampa Bay Water's General Manager and designated staff. Communications with Tampa Bay Water's Board Members are prohibited, except with the prior written permission of Tampa Bay Water's General Manager or at a duly noticed public board meeting. Any such prohibitive communications shall be deemed to be a material breach of this Contract by Consultant. This provision does not prohibit or limit contacts by or on behalf of Tampa Bay Water Board Members with Consultant.

J. When Consultant is requested by Tampa Bay Water to utilize special Consultants not heretofore agreed upon, Consultant shall be reimbursed for the actual reasonable cost of such consulting services. Any request of Tampa Bay Water to utilize specific firms shall be subject to the reasonable refusal of Consultant. Consultant shall obtain Tampa Bay Water's prior written consent before it retains such Consultants.

K. All words used herein in the singular shall extend to and include the plural, and the use of any gender shall extend to and include all genders. Unless the context of the Contract otherwise clearly requires, the term "including" is not limiting and the terms "hereof", "herein", "hereunder" and similar terms in this Contract refer to this Contract as a whole and not to any particular provision of this Contract.

L. The captions and headings herein are for convenience of reference only and in no way define or limit the scope or content of this Contract or in any way affect its provisions. Unless otherwise indicated, references to Articles and paragraphs shall include all subparts.

M. This Contract shall be effective as of the last date upon which all of the parties hereto have executed this Contract, as demonstrated by the date under the signatures on the signature page.

N. Time is of the essence of this Contract and each of its provisions.

O. In the event of a conflict between this Contract and Exhibit A attached hereto, this Contract shall control.

P. All analyses, data, documents, models, modeling, reports and tests performed or utilized by Consultant shall be made available to Tampa Bay Water upon request and shall be considered public records in accordance with Chapter 119, Florida Statutes, unless exempt therefrom.

Q. Unless expressly stated in writing, no action taken by a party to this Contract shall be considered a waiver by such party of compliance with any representations, warranty, duty or responsibility under this Contract.

R. Tampa Bay Water shall decide all questions, difficulties and disputes of any nature whatsoever that may arise under or by reason of this Contract, the prosecution and fulfillment of the Services called for hereunder, or the character, quality, amount, or value thereof. The decision of Tampa Bay Water upon all such claims, questions or disputes shall be final and binding if not contested by Consultant in a written notice delivered to Tampa Bay Water within seven (7) days after Consultant's receipt of written notice from Tampa Bay Water concerning such decision.

S. All express representations, indemnifications, or limitations made or given in this Contract shall survive its completion or termination for any reason.

T. Any provision or part of this Contract held to be void or unenforceable under any law or regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Tampa Bay Water and Consultant, which agree that the Contract shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

U. Consultant is retained by Tampa Bay Water only for the purposes and to the extent set forth in this Contract, and its relationship with Tampa Bay Water shall, during the term of this Contract, be that of an independent contractor. Consultant shall have the discretion, subject to the requirement that it perform the services required hereunder competently and professionally in accordance with the applicable professional standards and otherwise comply with the terms of this Contract, to select the means and methods of performing such services. In this regard, Consultant shall be fully responsible for the employment, direction, supervision, compensation and control of any and all persons employed or retained by Consultant. Neither Consultant nor Consultant's contractors, subcontractors, Consultants, subconsultants, suppliers, experts or other persons or organizations retained or utilized by Consultant for the services required hereunder ("Subconsultants") shall be considered by reason of the provisions of this Contract or otherwise as being an employee or agent of Tampa Bay Water. Consultant shall comply with all workers' compensation, employers' liability and other Federal, State and county and municipal laws, ordinances and regulations required of an employer performing services as herein contemplated. Provided, however, in no event shall Tampa Bay Water be obligated to pay Consultant any overtime or other premium pay compensation unless such overtime or premium compensation was expressly approved in writing and in advance by Tampa Bay Water. Furthermore, Consultant is responsible for paying all income and employment taxes, and Tampa Bay Water shall not be responsible for collecting and/or paying withholding, FUTA, FICA or any other state or federal taxes.

V. **TO THE EXTENT PERMITTED BY APPLICABLE LAW, CONSULTANT AND TAMPA BAY WATER HEREBY ACKNOWLEDGE AND AGREE THAT ANY AND ALL CLAIMS ARISING OUT OF, CONNECTED WITH, OR RELATING TO THIS CONTRACT OR THE RELATIONSHIP CREATED HEREBY ARE MATTERS WHICH, IF ADJUDICATED, SHOULD BE ADJUDICATED BY A COURT WITHOUT A JURY. THEREFORE, THE PARTIES HEREBY WAIVE A TRIAL BY A JURY. NEITHER TAMPA BAY WATER NOR CONSULTANT OR ANY SUCCESSOR THEREOF SHALL SEEK A TRIAL BY JURY IN ANY ACTION OR PROCEEDING (WHETHER AT LAW OR IN EQUITY, WHETHER DIRECT OR COLLATERAL, WHETHER IN CONTRACT OR IN TORT) ARISING OUT OF OR RELATED TO THIS CONTRACT OR THE RELATIONSHIP CREATED HEREBY. NEITHER TAMPA BAY WATER NOR CONSULTANT SHALL SEEK TO CONSOLIDATE ANY ACTION OR PROCEEDING IN WHICH TRIAL BY JURY HAS BEEN WAIVED WITH ANY OTHER ACTION OR PROCEEDING IN WHICH A JURY TRIAL CANNOT BE OR HAS NOT BEEN WAIVED. THE PROVISIONS OF THIS PARAGRAPH CANNOT BE AND HAVE NOT BEEN WAIVED. THE PROVISIONS OF THIS PARAGRAPH HAVE BEEN FULLY DISCUSSED BY THE PARTIES AND THEIR RESPECTIVE ATTORNEYS AND THE PROVISIONS HEREOF SHALL BE SUBJECT TO NO EXCEPTIONS. TAMPA BAY WATER AND CONSULTANT ACKNOWLEDGE AND AGREE THAT NO ONE, INCLUDING, WITHOUT LIMITATION, TAMPA BAY WATER'S AGENTS OR**

CONSULTANTS, HAS REPRESENTED THAT THE PROVISIONS OF THIS PARAGRAPH OR OF ANY OTHER PARAGRAPH OF THIS CONTRACT WILL NOT BE FULLY ENFORCED.

23. SCRUTINIZED COMPANIES AND PUBLIC ENTITY CRIMES STATEMENT

A. Consultant represents that it is in compliance with Subsections 287.133(2) and (3), Florida Statutes, which provide that a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid, proposal or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or Consultant under a contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, Florida Statutes, for CATEGORY TWO for a period of 36 months following the date of being placed on the convicted vendor list.

B. Consultant represents that it is in compliance with Subsection 287.134(2)(a), Florida Statutes, which provides that an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or Consultant under a contract with any public entity; and may not transact business with any public entity.

C. Consultant certifies that it is in compliance with Section 287.135, Florida Statutes, which provides that has been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; the Scrutinized Companies that Boycott Israel List or is engaged in a Boycott of Israel is ineligible and may not submit a bid, proposal, or enter into or renew a contract with an agency for goods or services of $1 million or more. At the time of submission of a bid or proposal for a contract or contract renewal for goods or services of $1 million or more, the company must certify that it is not on either such List and further that it does not have business operations in Cuba or Syria as required by Section 287.135(5), Florida Statutes.

i. Pursuant to Section 287.135, Florida Statutes, Tampa Bay Water reserves the right to terminate any contract for goods or services of $1 million or more if the awarded Consultant:

a) Has been found to have submitted a false Scrutinized Vendor List certification as provided under Section 287.135 subsection (5); or

b) Has been placed on the Scrutinized Companies Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List or

c) Has been engaged in business operations in Cuba or Syria.

ii. Pursuant to Section 287.135, Florida Statutes, Tampa Bay Water reserves the right to terminate any contract for goods or services of any amount if the awarded Consultant has been placed on the Scrutinized Companies that Boycott Israel List or is/are engaged in a boycott of Israel.

24. FOREIGN COUNTRIES OF CONCERN

Pursuant to Section 287.138, Florida Statutes, Tampa Bay Water may not enter into a contract with an entity that gives access to an individual's personal identifying information if the entity is owned, controlled or organized under the laws of a Foreign County of Concern which includes the :People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolas Maduro, the Syrian Arab Republic, or any other entity or agency under the significant control of such Foreign County of Concern.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed by their duly qualified representatives on the dates set forth below.

WITNESS:

_____
Signature

_____
Print Name

MCKIM & CREED, INC.

_____
Signature

_____
Title

_____
Date

(CORPORATE SEAL)

ATTEST:

_____
Charles H. Carden, General Manager

Tampa Bay Water, A Regional Water Supply Authority

By:_____

Its:_____

Date:_____

(SEAL)

APPROVED AS TO FORM:

_____
General Counsel

INDEX OF EXHIBITS

Exhibit A - Scope of Services

Exhibit B - Compensation

Exhibit C - Tampa Bay Water Administrative Policy 650-15

Exhibit D - Project Scheduling

Exhibit E - Certificate of Insurance Form

Exhibit F - Tampa Bay Water Affidavit Form

EXHIBIT A
SCOPE OF SERVICES

EXHIBIT A
SCOPE OF SERVICES
CONTRACT NO. 2026016
TAMPA BAY WATER PROJECT NO. 50070
High Service Pump Station (HSPS) Variable Frequency Drives (VFD)

PROJECT DESCRIPTION

This project focuses on the optimization and modernization of pump power and controls equipment. The improvements include critical updates to the Tampa Bay Water Surface Water Plant High Service Pump Station (HSPS) and Repump Facilities located in Hillsborough County. The pump station will remain operational throughout construction. The specific improvements anticipated for this project are as follows:

- Replace a total of four (4) Medium Voltage Variable Frequency Drives (VFDs) at the HSPS (VFDs #1, #2, #3 and #4)
- Refurbish two (2) VFD's at the HSPS (VFDs #5 and #6)
- No replacement or refurbishment of HSPS VFD #7 is required under this scope
- New VFDs will have internal transformers, and kirk-keyed medium voltage load interrupter switches.
- New communication device servers, switches, cable etc. will be specified as required to maintain the existing communication network and integrate the existing and new VFD's, PLC's and SCADA.
- Replace one (1) Programmable Logic Controller (PLC) at the HSPS (PLC-01) backplane with redundant Schneider Electric M580 PLC processors, Operator Interface Terminal, (OIT), UPS, surge protection, isolators and associated equipment.
- Replace two (2) PLCs at the Repump Station (PLC RIO-9 and RIO-15) with Schneider Electric M580 PLCs in existing RTU panels. Replace related equipment such as the Operator Interface Terminal, (OIT), UPS, surge protection, isolators etc.
- Evaluate replacement of raceways for concealed wiring, evaluate potential for overhead conduit in HSPS building.
- Evaluate PLC backup power needs and methods.
- Evaluate VFD Cell Bypass (N+1) technology. VFD cell Bypass technology (N+1) is preferred at the HSPS but may not be feasible due to space limitations.
- Perform arc-flash/coordination study for the entire HSPS building.
- All VFD cables (to and from) for new VFDs will be replaced.
- Instrumentation cables at HSPS will be replaced.

Assumptions and Clarifications

- Tampa Bay Water will provide existing record drawings
- No subconsultants are anticipated at this time.
- Tampa Bay Water will provide most recent arc-flash information
- It is assumed that no or minimal site disturbance. Work will be within existing buildings. No environmental permitting is anticipated.
- Hillsborough County Building Permit is only permit anticipated.

- Testing of existing medium voltage cables is not required during design.
- Instrumentation cables will be reused at the Repump Facility.
- Masterworks licenses will be provided by Tampa Bay Water for at least 2 users.
- Tampa Bay Water is currently undergoing other projects within this facility and close coordination during construction for installation sequencing and shutdowns will be necessary. (Project 01610 for South Hillsborough Regional Sites Facility Alkalinity Adjustment and chemical feed piping)
- Contractor and their subcontractors will be responsible for circuit breaker and relay testing, updating settings per arc-flash study and installing labels as provided by CONSULTANT.
- PLC and HMI programing by others.

PART I. SCOPE OF WORK

TASK 1. PROJECT MANAGEMENT AND ADMINISTRATION DURING DESIGN, PERMITTING AND BIDDING

CONSULTANT will manage project team included under this contract. CONSULTANT will provide administrative services including project setup activities, monthly invoicing, schedule development and management, and deliverable quality assurance procedures. Project coordination and review meetings will be conducted with Tampa Bay Water staff and other stakeholders throughout the project. The following specific services will be provided by the CONSULTANT:

1A. PROJECT MANAGEMENT AND ADMINISTRATION

CONSULTANT will provide project management and administrative services including regular communication, status documentation and invoicing, including the following specific items:

1. Project set-up.
2. Develop, submit, and maintain a Project Master Schedule within Masterworks.
3. Prepare invoicing and monthly progress summaries, coordinated within Masterworks.
4. Document Management

TASK 1A DELIVERABLES:

CONSULTANT will facilitate various project meetings and will provide the following for all project meetings:

- Monthly invoices with monthly progress status and updated schedule.
- Utilize Masterworks for invoice submission.
- Update Masterworks Risk Register Form as needed throughout the duration of the project.

1B. PROJECT COORDINATION: MEETINGS DURING DESIGN, PERMITTING AND BIDDING

The following specific meetings are anticipated and budgeted:

1) **Kickoff Meeting.** To include:
   - **a)** Coordinate with the OWNER and create the meeting agenda and presentation materials for the meeting
   - **b)** Team Introductions
   - **c)** Deliverables List
   - **d)** Milestone schedule
   - **e)** Risk Analysis Discussion (Complete Masterworks Risk Register Form (after meeting based on discussion)
   - **f)** Information Request List.
   - **g)** Record and scribe notes from the project kick-off meeting in accordance with the Minutes of Meeting Form within Masterworks.
   - **h)** Follow up Action Items noted in the meeting minutes and make sure these are fully completed.
2) **Progress Meetings.** Coordinate and attend Tampa Bay Water's internal project-related progress meetings in person or Virtual with Tampa Bay Water's key team members (engineering, operations and maintenance, construction) to attend. Assumed monthly meetings for design and bidding period, estimated 18 months (total 18 meetings). CONSULTANT project manager and key design staff to attend virtual with onsite meetings when requested.
3) **Preliminary Design Meetings and Workshops**. Coordinate and attend a total of six (6) specific meetings to establish specific design criteria for critical items requiring evaluation and staff decision making during Basis of Design Report (BODR) development (meetings can be Virtual).
   - **a) Additional Meetings during BODR development**.
     - (1) **Pre Vendor Workshop:** Meeting with Tampa Bay Water staff and CONSULTANT to discuss criteria and format of vendor presentations (virtual).
     - (2) **VFD Vendor Technology Workshop(s)**. Assume one (1) meeting for each Vendor. (Max. 4 Vendors)
     - (3) **PLC Selection and Component Replacement review meeting.** One meeting with control system staff to outline extent of replacement of control system.
4) **Design Review Meetings.** Coordinate and attend 30%, 60%, 90% and 100% design review meetings.
5) **Risk Workshops.** (2 each) Coordinate and attend Risk Review meetings after 30% and 90% Design submittals. CONSULTANT will coordinate with Tampa Bay Water and other key stakeholders. It is assumed that all disciplines will be represented at the workshops to provide a collaborative team discussion. Action Items identified shall be completed and incorporated into next phase of project development. CONSULTANT shall update Masterworks Risk Register Form after each workshop (after meeting based on discussion).

6) **Lessons Learned.** CONSULTANT shall participate in one (1) Lessons Learned Meeting following Bidding milestone. The final meetings notes shall be entered into the lessons learned module of Masterworks by Tampa Bay Water Project Manager.
7) **Permitting Agency Meetings.** Coordinate and attend (virtual or in-person) meetings with permitting agencies. Assume one (1) pre-application meeting prior to application submission per agency. Assume a maximum of two (2) per agency to coordinate application comment responses, maximum one (1) hour per meeting.
    a) Hillsborough County Building and Electrical
8) **Bidding.** Attend one (1) pre-bid conference at project site. Review pre-bid conference meeting minutes prepared by Tampa Bay Water' Purchasing Department.

TASK 1B DELIVERABLES:

CONSULTANT will facilitate various project meetings and will provide the following for all project meetings:

- Coordinate timing and location with Tampa Bay Water staff.
- Prepare meeting agenda and presentation materials.
- Take notes and prepare meeting minutes. Meeting notes will be transmitted to Tampa Bay Water's Project Manager via e-mail in draft form within five (5) business days following the meeting for review before finalizing. Tampa Bay Water will return comments on the meeting minutes and all other project submittals to CONSULTANT within five (5) business days of receipt.
- Input meeting documents to Masterworks, using the minutes of meetings form.

TASK 2. PRELIMINARY ENGINEERING

CONSULTANT will perform Preliminary Engineering services needed to establish and confirm the design at the 30% level. The following specific services will be provided by the CONSULTANT.

2A. VFD SELECTION PROCESS

CONSULTANT will facilitate a structured and transparent process for selecting a Variable Frequency Drive (VFD) manufacturer:

1. CONSULTANT will perform a site condition assessment on the existing electrical, instrumentation and control equipment intended to be replaced or refurbished at the HSPS and Repump Station, and document and identify additional elements required to accomplish the goals of this Project.
2. Vendor Engagement. CONSULTANT will coordinate with multiple vendors and present their technologies and differentiators to Tampa Bay Water staff through a series of workshops—either on-site or virtual, based on Tampa Bay Water's preference.
3. Evaluation & Ranking. Following the workshops, McKim & Creed will prepare a detailed evaluation document ranking each vendor based on established criteria such as technology, service capabilities, lead times, cost and responsiveness.

4. Perform a cost benefit analysis for replacement versus upgrades for VFD #5 and VFD #6, based on vintage and life-cycle analysis
5. Provide heat load calculations to evaluate HVAC performance for recommended equipment.

2B. PLC REPLACEMENT INTEGRATION

As part of this project, we will incorporate replacing the existing Programmable Logic Controller (PLC) PLC-01 and PLC's in remote I/O (RIO) panels RIO-9 and RIO-15 at the two sites. Key elements will include:

- Utilizing Schneider Electric M580 as the core PLC platform. Redundant processors will be specified at the HSPS.
- Conducting an evaluation of existing PLC hardware and I/O.
- Designing with consistent topology to be consistent with the existing RIO-3, 7, 10 and 14 RIO panels.
- Proposing improvements only after review and approval by Tampa Bay Water to ensure compliance with established standards.
- Working with staff to understand plant operations and develop a schedule for equipment replacement that will minimize down-time and maintain operation and quality.
- Specify Factory Acceptance Testing requirements that must be provided by the Manufacturing Facility.

2C. BASIS OF DESIGN REPORT

CONSULTANT will prepare a BODR that identifies the proposed upgrades based on the initial results of the previous tasks, as well as additional reviews of the as-builts and project goals. The report will establish the design criteria for the proposed modifications**.** The BODR shall include:

1. Electrical Single Line Diagrams/Riser Diagram (demolition and revised)
2. Preliminary equipment layout
3. Regulatory discussion that summarizes permit application requirements including meeting requirements, permit application fees, and anticipated schedules for all permits required
4. List of any sole-source equipment selections anticipated
5. List of potential Owner Direct Purchases (ODP) and long-lead delivery items greater than 4 to 6 months
6. Review of anticipated constructability issues and facility shutdown plans
7. Anticipated construction and startup sequencing and scheduling
8. American Association of Cost Engineering (AACE) International Class 4 Opinion of Probable Construction (OPCC) (-30% to +50% range of accuracy)
9. Overall project schedule summary

All design drawings shall be created in ACAD 2018 or newer. A draft of the BODR will be provided to the OWNER for review and comment. OWNER will provide comments back to the CONSULTANT in electronic form. Once edits and comments have been received from the OWNER, CONSULTANT will provide comment responses along with the final BODR to the OWNER.

2D. PRELIMINARY DRAWINGS

CONSULTANT will develop preliminary (30% level) drawings that will include the following:

1. Cover Sheet with Location Map and Sheet Index
2. General site layout drawing showing project areas and anticipated construction staging areas.
3. Building Layout and Demolition Plan for each structure
4. Building Equipment Layout (Proposed) for each structure
5. Electrical Single Line Diagrams/Riser Diagram
6. Process & Instrumentation Diagrams

TASK 2 DELIVERABLES:

1) VFD Selection Technical Memorandum – electronic
2) Draft BODR – electronic (both Word and pdf format)
3) Final BODR – electronic (both Word and pdf format)
4) OPCC Class 4 – electronic
5) Project Schedule – electronic (MS Project file)
6) 30% Plans, one set for all improvements
7) Specification Table of Contents – electronic (both Word and pdf format)

TASK 3. DETAILED DESIGN

3A. 60% DESIGN

CONSULTANT will advance the design to 60% completion level, based on the approved BODR and the additional collected information from the site, vendors, and OWNER.

1. Review of OWNER standard specifications and recommended revisions or additions to reflect project specific scope. Draft additional project specific Technical Specifications, format to match OWNER standards.
2. Develop preliminary Coordination and Arc-Flash Study. Tampa Bay Water to provide example of format. Final arc-flash and coordination study will be updated during construction after equipment and conductor lengths have been determined and installed. CONSULTANT will provide initial fault calcs for withstand rating of gear based on most recent fault letter from Utility. Estimated short circuit contribution at utility will be preliminary number used for design.
3. Schedule and perform on-site field research for the existing PLC and RIO panels.
4. Develop Control Narrative for each PLC.
5. Develop detailed design (60% level) drawings that will include the following at a minimum:
    a. Cover Sheet with Location Map and Sheet Index
    b. General site layout drawing showing project areas and anticipated construction staging areas.
    c. Building Layout and Demolition Plan for each structure

d. Building Equipment Layout (Proposed) for each structure
e. Electrical Single-Line Diagram
f. Interconnection Diagrams
g. VFD #1 Control Diagram
h. Process and Instrumentation Diagrams
i. PLC and RIO Panel Drawings
j. Network Block Diagram
k. Draft Construction Phasing Plan

6. Provide Sole Source Justification of Equipment Selection
7. Develop an OPCC for the project and associated components. The OPCC will be in accordance with AACE International Class 3 guidelines (-20% to +30% range of accuracy). The estimated annual operational and maintenance costs will also be developed.
8. Provide QA/QC with constructability and interdisciplinary reviews of the deliverables to the OWNER in accordance with CONSULTANT's standard practice. Internal quality control for the Project will be provided by the CONSULTANT's senior technical staff.

The 60% submittal will be provided to the OWNER for review and comment. No revised version of the 60% submittal will be provided after receipt of OWNER's comments. OWNER comments will be reviewed and incorporated into 90% design submittal.

TASK 3A DELIVERABLES:

1) 60% Plans and Specifications – electronic
   a. Specifications shall be provided in both Word document format with track changes shown and in pdf format for all design phases.
2) Updated Project Schedule – electronic (MS Project file)
3) OPCC Class 3, Update - electronic.
4) Utility Fault Current Letter
5) Arc flash and coordination study – pdf and SKM files

3B. 90% DESIGN

CONSULTANT will advance the design up to 90% completion, based upon comments received from OWNER at 60% design and additional collected information from site, vendors, permitting agencies, and OWNER's team. The 90% design package will include:

1. Revised drawings from each discipline, as well as final draft version of the specialty specifications, including Division 1 specifications for the bid package.
2. CONSULTANT will confirm an AACE Class 2 (-15% to +30% range of accuracy) OPCC.
3. Provide QA/QC with constructability and interdisciplinary reviews of the deliverables to the OWNER in accordance with CONSULTANT's standard practice. Internal quality control for the Project will be provided by the CONSULTANT's senior technical staff.

The 90% documents will be provided to Tampa Bay Water staff for review and comment. No revised version of this submittal will be provided after receipt of OWNER's comments, as all comments will be included in the next submittal (Final Design).

TASK 3B DELIVERABLES:

1) 90% Plans and Specifications – electronic
2) Update and Refine Construction Phasing Plan – electronic
3) OPCC Class 2 - electronic
4) Bid Price Form Draft – electronic
5) Updated Project Schedule – electronic (MS Project file)
6) Signed and Sealed plans, documents and calculations as needed for permitting
7) Updated Arc flash and coordination study – pdf and SKM files

3C. 100% DESIGN

CONSULTANT will consolidate and integrate review comments received from Tampa Bay Water staff at 90% design stage, and the additional collected information from the permitting agencies, to prepare the Issue for Bid set.

Additionally, CONSULTANT will prepare an AACE Class 1 (-10% to +15% range of accuracy) OPCC. CONSULTANT will provide QA/QC with constructability and interdisciplinary reviews of the deliverables to the Tampa Bay Water in accordance with CONSULTANT's standard practice. Internal quality control for the Project will be provided by the CONSULTANT's senior technical staff.

It is anticipated that a final draft of these submittals will be provided to the Tampa Bay Water for review and comments. A final version of this submittal will be provided after receiving Tampa Bay Water staff comments.

TASK 3C DELIVERABLES:

1) 100% Plans and Specifications - electronic,
2) OPCC Class 1 – electronic
3) Bid Price Form – electronic
4) Updated Project Schedule – electronic (MS Project file)
5) Updated Arc flash and coordination study – pdf and SKM files

TASK 4. PERMITTING

4A. BUILDING PERMIT

CONSULTANT will prepare and submit to Tampa Bay Water, one draft permit application package for review of the permit listed below. CONSULTANT will prepare permit application. CONSULTANT will submit application. Application fees, if paid by CONSULTANT, will be reimbursable expenses covered under the Owner's Allowance.

1. Hillsborough County Building Permit (at the completion of 90% design). This level of effort is assuming one (1) permit is required, one pre-application meeting, and total of an additional two (2) responses to Requests for Information with the Building Department during the permitting process.

TASK 4 DELIVERABLES:

1) Draft permit application package for OWNER review, one (1) per each permit – electronic
2) Final permit application package for OWNER signature, one (1) per each permit – electronic
3) Prepare and provide responses to Request for Additional Information (RAIs), estimated two (2) RAIs per permit.

TASK 5. BIDDING SERVICES

Assist Tampa Bay Water Project Manager and Purchasing Department with bid package preparation. Tampa Bay Water to handle project bid advertising. Bidding Services shall assume no Owner Direct Purchases (ODP). If Tampa Bay Water selects to direct purchase materials they will negotiate with selected contractor after Construction Contract award.

5A. TECHNICAL QUESTION RESPONSES

CONSULTANT will respond to technical questions presented during the pre-bidding process.

1. Prepare addenda language for Tampa Bay Water's use. Up to three (3) addenda are assumed.
2. Prepare Issued for Construction documents.

5B. BID EVALUATION SUPPORT

Provide Bid Evaluation and assist with Award to CONTRACTOR.

1. Evaluate bids, including qualifications of manufacturers and CONTRACTOR, and recommend award.
2. Provide expert testimony in any bid protest concerning project procurement, if needed. Services would be provided under Owner's Allowance and negotiated at time of need.

TASK 5 DELIVERABLES:

1) Written response to bidder questions – electronic
2) Recommendation of Award Letter – electronic
3) Prepare Issued for Construction documents for Owner and Contractor use – electronic (pdf)

TASK 6. CONSTRUCTION PHASE SERVICES

CONSULTANT will provide the following construction phase services:

6A. PROJECT MANAGEMENT DURING CONSTRUCTION.

Coordinate, manage and monitor the project staff, subconsultants (if any), and CONTRACTOR for the project in accordance with CONSULTANT's standard of practice in order to monitor and maintain within scope, budget, schedule and quality assurance and control. Provide construction administration to

support project staff, including document management. All work associated with uploading project management, invoicing, and deliverables to Masterworks is included in this task.

6B. INVOICING AND PROGRESS SUMMARY.

Prepare invoicing and monthly progress summaries during construction, coordinated within Masterworks.

6C. PROGRESS MEETINGS.

Estimated construction period is 26 months. Procurement of materials period is 12 months. Active construction period is 12 months. Two (2) months to complete closeout.

1. Facilitate and attend Pre-construction Meeting (1 each) Complete project team to attend, in-person.
2. Attend monthly progress meetings during Procurement of materials Period (12 each). Project Manager and key technical staff to attend, virtual (mainly, in-person if/when needed).
3. Attend bi-weekly (every other week) progress meetings during Active Construction Period (24 each). Project manager and construction site representative to attend. Key staff to be available as needed, virtual and in-person.

6D. REQUEST FOR INFORMATION (RFI).

Review and track RFIs technical submittals, and contractor schedule updates in Masterworks. CONSULTANT will provide written technical interpretation of the Drawings when requested by CONTRACTOR and evaluate requested deviations. CONSULTANT has budgeted for 20 requests for information. All documentation to be processed and filed in Masterworks®

6E. SUBMITTALS.

CONSULTANT will review shop drawings submitted by CONTRACTOR. CONSULTANT will also review results of factory tests, and other data that CONTRACTOR is required to submit for conformance and compliance with the provisions of Contract. CONSULTANT has budgeted for 30 submittals to be reviewed and assumes 8 re-submittals (total of 38). All documentation to be processed and filed in Masterworks®

6F. ARC FLASH STUDY.

Once the relevant shop drawings are available, CONSULTANT will update the Arc Flash Study and model, determine protection settings and provide final skm files. Once construction is completed labels will be provided by CONSULTANT.

6G. OPERATIONS AND MAINTENANCE (O&M) MANUALS.

Review O&M Manuals for delivered equipment provided by CONTRACTOR. CONSULTANT shall collect from CONTRACTOR and assemble manual.

6H. CONTRACTOR PAY APPLICATION REVIEW.

CONSULTANT will assist with monthly pay application review.

1. Coordinate, review and recommend for approval CONTRACTOR Items Posting and Pay Applications/Estimates in Masterworks.
2. Coordinate and review CONTRACTOR and SUBCONTRACTOR schedule updates monthly, along with reviewing and checking red line as-builts monthly and part of reviewing contractor pay applications.

6I. ON-SITE OBSERVATION DURING CONSTRUCTION.

1. CONSULTANT shall provide part-time observation and document work in progress during active construction. These services shall be provided for an average of 5 hours per week (including travel), for a total estimated at 12 months.
2. Based on observation of work, determine that the CONTRACTOR's work complies with Contract requirements and applicable permits.
3. As part of this effort, daily logs will be provided on a weekly basis. A tablet will be provided by Tampa Bay Water to prepare daily field reports, upload photos and training will be provided by Tampa Bay Water to use Masterworks. Logs will include, at a minimum:
    i) Activities onsite.
    ii) Progress photos.
    iii) Documentation of CONTRACTOR's equipment and labor on site at time of observation.

6J. COMPLETION WALKTHROUGHS. (This will be performed for each VFD)

Provide inspection services for Substantial Completion and Final Inspection for each VFD. CONSULTANT's RPR shall provide one (1) documented substantial completion walkthrough prior to each start-up (6 hour estimated including travel). Based upon this walkthrough, CONSULTANT shall provide a punch list for items required for final completion walkthrough. CONSULTANT RPR shall provide one (1) final inspection to determine that all punch list items were addressed. After satisfactory completion of punch list items, CONSULTANT shall recommend in writing to Tampa Bay Water that work is acceptable.

6K. START UP SERVICES – ELECTRICAL. (This will be performed for each VFD, 6 total)

1. Provide input for installation sequency, coordination of facilities shutdowns and reduced flows with Contractor, Tampa Bay Water's Construction Manager and Tampa Bay Water's Maintenance and Operations staff. This will be used for Contractor's Startup Plan.
2. Attend CONTRACTOR organized start up meeting outlining start up procedures with Tampa Bay Water staff. Provide input for any startup results to be documented.
3. Review Contractor written Startup Plan.
4. Observe startup and document any deviations from contract documents.
5. Obtain any startup or testing data from Contractor.
6. Attend and review commissioning.

6L. STARTUP SERVICES - INSTRUMENTATION.

Consultant to provide the following engineering programming services:

1. Assist with coordination of Startup Services, including review of the Startup Plan.
2. Schedule and attend one (1) PLC programming logic workshop with Tampa Bay Water staff, CONTRACTOR and Contractor's Integrator.
3. Review integration test plans and submittals.
4. Attend Factory Acceptance Testing (FAT) at manufacturer's site, 2 each (1 each per PLC). Assumed manufacturer located within 120 miles.
5. Attend on-site testing services for each VFD to observe PLC interface.
6. Attend system acceptance testing (SAT) for programming for each VFD startup and overall system operation.

6M. PROJECT COMPLETION.

1. Provide certificates of Substantial Completion and Final Completion.

TASK 6 DELIVERABLES:

1) Submittal Review Responses
2) Meeting agendas, presentation material and minutes – electronic
3) Substantial Completion Punchlists – electronic
4) Substantial and Final Completion Letter of Recommendation - electronic
5) Arcflash Report and Equipment Labels – native SKM files
6) Draft Operation and Maintenance Manual – electronic
7) Final Operations and Maintenance Manual – four (4) hard copy sets and electronic
8) RPR daily logs (submitted weekly) – electronic (In Masterworks)
9) RFI Responses – electronic (in Masterworks)
10) Submittal Responses – electronic (in Masterworks)

TASK 7. PROJECT CLOSEOUT

CONSULTANT will provide the following project closeout services:

7A. PROJECT MANAGEMENT DURING CLOSEOUT.

Coordinate, manage and monitor the project staff, subconsultants (if any), and CONTRACTOR for the project in accordance with CONSULTANT's standard of practice in order to monitor and maintain within scope, budget, schedule and quality assurance and control. Provide construction administration to support project staff, including document management. All work associated with uploading project management, invoicing, and deliverables to Masterworks is included in this task.

7B. INVOICING AND PROGRESS SUMMARY.

Prepare invoicing and monthly progress summaries during construction, coordinated within Masterworks.

1. Submit any remaining invoices for payment.

7C. PERMIT MANAGEMENT AND CLOSEOUT.

Assist with permit closeout and provide details and documentation for the permits obtained for the project.

1. Create, maintain and submit Permit status in Masterworks.
2. Prepare final documents and certifications for the relevant regulatory agencies.

7D. PROJECT DOCUMENT VERFICATION.

Verify the following items have been submitted to Tampa Bay Water.

1. Major Equipment Shop Drawings
2. Operation And Maintenance Manual (O&M). The O&M documents are expected to be prepared by the CONTRACTOR and the manuals will be assembled by the CONSULTANT.
3. Warrantees, Guarantees And Certificates Manuals. This manual will contain all warranties, guarantees, bonds, certificates, and similar documents, including those customarily provided by manufacturers and suppliers which cover a period greater than the one-year correction period. These documents should show Tampa Bay Water as beneficiary.
4. Construction observation reports and copies of Construction Photographs
5. Final testing reports provided by CONTRACTOR.
6. CONTRACTOR'S redline markups and verification of record documents.
7. Asset tracking documentation provided by CONTRACTOR.

7E. RECORD DRAWINGS.

Review As-Builts and prepare record drawings based upon CONTRACTOR's redline markups:

1. Review the CONTRACTOR'S redline Contract drawings mark-ups monthly throughout the construction phase to verify completeness and accuracy.
2. Review the CONTRACTOR'S final as-built drawings for completeness and accuracy.
3. Once the CONTRACTOR'S as-built drawings are accepted, the CONSULTANT will incorporate the as-built revisions into the design drawings to produce the Record Drawings.
4. CONSULTANT will submit stamped Record Drawings and all electronic .DWG drawing files to the OWNER.

7D. PAY APPLICATIONS AND FINAL CHANGE ORDER.

Review final CONTRACTOR pay application and Change Order documents through Masterworks

7E. CLOSEOUT REPORT.

Provide a closeout report as required.

7F. LESSONS LEARNED MEETING.

Participate in one (1) Lessons Learned Meeting.

TASK 7 DELIVERABLES:

1) Major equipment Shop Drawings
2) Draft and Final O&M Manuals
3) Draft and Final Warrantees, Guarantees and Certificates Manuals
4) Construction Photographs
5) Final As-built ACAD Files in electronic format (AutoCAD 2019 and pdf) – electronic
6) Closeout Report – electronic

TASK 8. OWNER'S ALLOWANCE

An Owner's Allowance Task is dedicated to the Project for additional services related to:

1. Additional vendor workshops.
2. HVAC/Mechanical detailed design efforts.
3. Structural detailed design efforts.
4. Permit fees and additional services related to the Project not identified at this time.
5. Assist Tampa Bay Water in preparation and administration of its Owner Direct Purchase (ODP) program, if used.
6. Additional Professional Engineering Services to accommodate potential scope changes regarding VFD#5 and VFD#6 to be replaced instead of being refurbished.

The Owner's Allowance Task must total up to the amount shown in Exhibit B. These additional services may be performed only upon receipt of prior written authorization at the sole discretion of Tampa Bay Water's Project Manager.

Part II. Budget

The services described herein for Task 1, Task 2, Task 3, Task 4 and Task 5 will be performed on a lump sum basis for the fee of Four hundred Thirty-two Thousand, Nineteen dollars ($432,019.00). The services described herein for Task 6 and Task 7 will be performed with compensation for time and material based on current labor rates not to exceed a fee of Four hundred Forty-three Thousand, Five Hundred Thirty-one dollars ($443,531.00). The project also included an Owner's Allowance of One Hundred Twenty-five Thousand dollars ($125,00.00), for a total Not-to-Exceed project fee amount of One million, Five Hundred Fifty dollars ($1,000,550.00) (See Attachment 'B').

Part III. Project Schedule

CONSULTANT will begin work immediately upon approval of the contract by Tampa Bay Water's Board of Directors and the issuance of a Notice to Proceed (NTP) by Tampa Bay Water. The estimated duration of tasks and preliminary schedule for this project is summarized below. The schedule assumes that the Preliminary Design shall be completed no later than 24 weeks after the issuance of the NTP. The schedule also assumes that permitting will be based on 90% design documents, and that final documents for permitting will be complete no later than 28 weeks after a finalized Basis of Design Report. Construction Services are anticipated to start 192 weeks after NTP and take approximately 24 months to complete with the majority of the first 12 months being equipment acquisition. Attachment 'D' summarizes estimated major milestones. A more detailed schedule will be developed and provided to Tampa Bay Water for review at the Design kickoff meeting.

INDEX OF SHEETS (DRAFT)		
	General	
001	G01	Cover Sheet & Project Location Map
002	G02	General Notes & Index
	Civil	
003	C01	General Notes, Legend & Details
004	C02	Site Plan (1" = 10')
	Architectural - None	
	Structural	
005	S01	General Notes, Design Load, Design Criteria & Legend
006	S02	Structural Details (1 of 1)
	HVAC/Plumbing - None	
	Mechanical/Process - None	
	Electrical	
007	E00.1	General Notes
008	E00.2	Legend & Symbols (1 of 2)
009	E00.3	Legend & Symbols (2 of 2)
010	E01.1	HSPS Electrical Building Plan
011	E01.2	HSPS Electrical Building Section Cuts and Elevation
012	E01.3	HSPS Electrical Demolation Plan
012	E01.3	HSPS Interconnection Diagram
013	E01.4	HSPS Demolation One-line Diagram
014	E01.5	HSPS One-line Diagram
015	E01.6	HSPS Pump & VFD #1 Control Diagram
016	E01.7	HSPS Pump & VFD #2 Control Diagram
017	E01.8	HSPS Pump & VFD #3 Control Diagram
018	E01.9	HSPS Pump & VFD #4 Control Diagram
019	E01.10	HSPS Pump & VFD #5 Control Diagram
020	E01.11	HSPS Pump & VFD #6 Control Diagram
021	E02.1	Repump Electrical Building Plan
022	E02.2	Repump Power Plan
023	E04.1	Cable Tray Section and Details
024	E04.2	Electrical Details
	Instrumentation & Controls	
025	I00.1	Symbols (1 of 2)
026	I00.2	Symbols & Notes (2 of 2)
		038

INDEX OF SHEETS (DRAFT)		
027	I01.1	Process & Instrumentation Diagram #1
028	I01.2	Process & Instrumentation Diagram #2
029	I01.3	Process & Instrumentation Diagram #3
030	I01.4	Instrumentation Details
031	I02.1	PLC Panel and RIO Demolation Sheet
032	I03.1	PLC-01 Panel Layout & BOM
033	I03.2	PLC-01 Control Wiring Diagram
034	I03.3	PLC-01 Control Wiring Diagram
035	I03.4	PLC-01 Panel I/O Drawing #1
036	I03.5	PLC-01 Panel I/O Drawing #2
037	I03.6	PLC-01 Panel I/O Drawing #3
038	I03.7	PLC-01 Panel I/O Drawing #4
039	I03.8	PLC-01 Panel I/O Drawing #5
040	I03.9	PLC-01 Panel I/O Drawing #6
041	I03.10	PLC-01 Panel I/O Drawing #7
042	I03.11	PLC-01 Panel I/O Drawing #8
043	I03.12	PLC-01 Panel I/O Drawing #9
044	I03.13	PLC-01 Panel I/O Drawing #10
045	I03.14	PLC-01 Panel I/O Drawing #11
046	I03.15	PLC-01 Panel I/O Drawing #12
047	I04.1	RIO-9 Panel Layout & BOM
048	I04.2	RIO-9 Control Wiring Diagram
049	I04.3	RIO-9 Panel I/O Drawing #1
050	I04.4	RIO-9 Panel I/O Drawing #2
051	I04.5	RIO-9 Panel I/O Drawing #3
052	I04.6	RIO-9 Panel I/O Drawing #4
053	I05.1	RIO-15 Panel Layout & BOM
054	I05.2	RIO-15 Control Wiring Diagram
055	I05.3	RIO-15 Panel I/O Drawing #1
056	I05.4	RIO-15 Panel I/O Drawing #2
057	I05.5	RIO-15 Panel I/O Drawing #3
058	I05.6	RIO-15 Panel I/O Drawing #4
059	I06.1	Network Block Diagram

EXHIBIT B
COMPENSATION

1. Compensation for Services
   Tampa Bay Water shall pay Consultant and Consultant agrees to accept as full compensation for the Services the compensation as provided in Attachment B, which is attached hereto and made a part hereof. Payment will be computed in accordance with one of the following methods set forth in Administrative Policy 650-15, Exhibit C hereof: Raw Labor Rate with Multiplier; Hourly Rate-All Inclusive; or Fixed Fee.

2. Contract Limit
   The limit of this Contract shall not exceed the amount shown in Attachment B without approval from Tampa Bay Water in the form of a written amendment to this Contract.

3. Compensation for Additional Services
   Compensation to the Consultant for performance of Additional Services pursuant to Article 11.0 of this Contract, as well as the specific services to be performed and time of completion, shall be determined in a written amendment to this Contract in advance of performance of said Additional Services, unless Tampa Bay Water authorizes in writing compensation for said Additional Services from Tampa Bay Water's Allowance. Non-scope services must be identified by the Consultant prior to their performance. Failure to notify Tampa Bay Water in writing of non-scope services as required above shall be deemed a waiver of any claim by Consultant that such services were non-scope services.

4. Time of Payment
   Consultant shall submit invoices to Tampa Bay Water by the 20th day of the month for all Services accomplished the previous calendar month, including property closings and properties recommended for eminent domain acquisition. If Tampa Bay Water fails to make any payment due Consultant for services and expenses within sixty (60) days after receipt of Consultant's invoice, Consultant may, after giving seven (7) days written notice to Tampa Bay Water, suspend services under this Contract until it has been paid in full all amounts due Consultant hereunder.

   Monthly invoices shall include separately listed charges for all portions of the Services for which compensation applies, including fees for Subconsultants and reimbursable expenses and costs.

5. Tampa Bay Water's Allowance
   Tampa Bay Water's Allowance is for Tampa Bay Water's use, in the sole discretion of Tampa Bay Water, for the payment for Additional Services beyond the scope of the original Services and for whatever other purpose Tampa Bay Water deems to be in its best interest.

6. Late Payments
   If Tampa Bay Water fails to make payment to Consultant within the time period set forth herein, any such late payment shall accrue interest at the rate authorized by Law applicable to governmental entities at the time.

Tampa Bay Water

Project No. 50070 / Agreement No. 2026016

High Service Pump Station Variable Frequency Drives

ATTACHMENT B

McKim & Creed Fee Estimate

9/10/2025

TASK		STAFF																			PRICING					
																					McKim & Creed			Subconsultants		
	Labor Code	Principal	Engineering Manager	Project Manager II	Technical Specialist III	Technical Specialist II	Project Engineer IV	Project Engineer III	Project Engineer I	Engineer Intern	I&C Specialist IIII	I&C Specialist II	I&C Specialist I	Designer IV	Designer III	Designer II	Designer I	Construction Admin IV	Project Admin-Senior	Project Admin	Labor Hours Total	Labor Cost Total	Expenses		Subconsultant Cost (with 5% Markup)	Subtotal
	Rate	$334	$301	$233	$311	$301	$245	$228	$172	$156	$228	$205	$172	$178	$156	$144	$122	$205	$117	$101						
1	PROJECT MANAGEMENT & COORDINATION	4	69	67	72	112	2	0	84	0	0	71	0	0	0	0	0	0	32	21	534	$129,178	$0	$0	$0	$129,178
A	Project Management and Administration	4	20	30	0	20	0	0	0	0	0	0	0	0	0	0	0	0	24	0	98	$23,174	$0		$0	$23,174
B	Meetings During Design and Permitting	0	49	37	72	92	2	0	84	0	0	71	0	0	0	0	0	0	8	21	436	$106,004	$0	$0	$0	$106,004
1)	Kickoff / Risk Discussion	0	4	4	8	4	0	0	4		0	4	0	0	0	0	0	0	0	1	29	$7,437	$0		$0	$7,437
2)	Progress Meetings, monthly (18 total)	0	0	20	30	24	0	0	10	0	0	12	0	0	0	0	0	0	0	1	97	$25,495	$0		$0	$25,495
3)	Preliminary design meetings and workshops	0	5	0	0	22	0	0	20	0	0	13	0	0	0	0	0	0	6	1	67	$15,035	$0		$0	$15,035
4)	Review Meetings (4 each - 30%, 60%, 90%, 100%	0	20	8	22	20	2	0	20	0	0	20	0	0	0	0	0	0	0	12	124	$29,988	$0		$0	$29,988
5)	Risk Workshops (30% and 90%)	0	16	4	8	16	0	0	16	0	0	16	0	0	0	0	0	0	0	4	80	$19,488	$0		$0	$19,488
6)	Lessons Learned (after 100% & Bidding)	0	0	1	0	6	0	0	2	0	0	6	0	0	0	0	0	0	2	0	17	$3,847	$0		$0	$3,847
7)	Permitting Agency Meetings (2 each)	0	4	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	1	13	$2,681	$0		$0	$2,681
8)	Bidding (Pre-bid Conference)	0	0	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	1	9	$2,033	$0		$0	$2,033
2	PRELIMINARY ENGINEERING	0	31	2	77	17	16	0	150	0	0	56	16	0	104	0	0	0	0	8	477	$99,845	$0	$0	$0	$99,845
A	VFD Selection Process (Excluding Meetings)	0	20	2	57	5	8	0	86	0	0	0	0	0	8	0	0	0	0	8	194	$44,526	$0	$0	$0	$44,526
B	PLC Replacement Integration	0	4	0	0	4	0	0	0	0	0	40	0	0	48	0	0	0	0	0	96	$18,096	$0	$0	$0	$18,096
C	Basis of Design Report (BODR)	0	4	0	16	4	8	0	40	0	0	8	8	0	24	0	0	0	0	0	112	$22,984	$0	$0	$0	$22,984
D	Preliminary Drawings	0	3	0	4	4	0	0	24	0	0	8	8	0	24	0	0	0	0	0	75	$14,239		$0	$0	$14,239
3	DETAILED DESIGN	0	34	0	40	24	0	0	480	0	0	60	28	0	388	0	0	0	0	16	1070	$191,718	$0	$0	$0	$191,718
A	60% Design	0	8	0	32	12	0	0	240	0	0	40	16	0	238	0	0	0	0	8	594	$106,140		$0	$0	$106,140
B	90% Design	0	20	0	0	8	0	0	160	0	0	16	8	0	110	0	0	0	0	8	330	$58,572		$0	$0	$58,572
C	100% Design	0	6	0	8	4	0	0	80	0	0	4	4	0	40	0	0	0	0	0	146	$27,006		$0	$0	$27,006
4	PERMITTING	0	2	8	4	0	0	0	0	8	0	0	0	0	0	0	0	0	4	0	26	$5,426	$0	$0	$0	$5,426
A	Building Permit	0	2	8	4	0	0	0	0	8	0	0	0	0	0	0	0	0	4	0	26	$5,426			$0	$5,426
5	BIDDING SERVICES	0	4	0	0	4	0	0	8	0	0	4	0	0	8	0	0	0	0	0	28	$5,852	$0	$0	$0	$5,852
A	Technical Question Responses	0	2	0	0	2	0	0	8	0	0	4	0	0	8	0	0	0	0	0	24	$4,648			$0	$4,648
B	Bid Evaluation Support	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	$1,204			$0	$1,204
SUBTOTAL (DESIGN & BIDDING) - LUMP SUM		4	140	77	193	157	18	0	722	8	0	191	44	0	500	0	0	0	36	45	2135	$432,019	$0	$0	0	$432,019

Tampa Bay Water

Project No. 50070 / Agreement No. 2026016

High Service Pump Station Variable Frequency Drives

ATTACHMENT B

McKim & Creed Fee Estimate

9/10/2025

TASK		STAFF																			PRICING					
																					McKim & Creed			Subconsultants		Subtotal
	Labor Code	Principal	Engineering Manager	Project Manager II	Technical Specialist III	Technical Specialist II	Project Engineer IV	Project Engineer III	Project Engineer I	Engineer Intern	I&C Specialist IIII	I&C Specialist II	I&C Specialist I	Designer IV	Designer III	Designer II	Designer I	Construction Admin IV	Project Admin-Senior	Project Admin	Labor Hours Total	Labor Cost Total	Expenses		Subconsultant Cost (with 5% Markup)	
	Rate	$334	$301	$233	$311	$301	$245	$228	$172	$156	$228	$205	$172	$178	$156	$144	$122	$205	$117	$101						
6	Construction Phase Services	4	109	73	247	161	0	0	205	24	0	261	0	0	124	0	0	401	68	0	1677	$378,446	4700	$0	$0	$383,146
A	Project Management During Construction	4	24		24																52	$16,024			$0	$16,024
B	Invoicing and Progress Summary		12	48															30		90	$18,306			$0	$18,306
C	Progress Meetings		24	24	60	60			32	24		32						24	5		285	$70,849			$0	$70,849
D	Request for Information		30		30	8						16						30			114	$30,198			$0	$30,198
E	Submittals				8	24			40			16			60			40			188	$37,432			$0	$37,432
F	Arc Flash Study		1		4				48										4		57	$10,269	$700		$0	$10,969
G	Operations and Maintenance Manuals					2			24						16						42	$7,226			$0	$7,226
H	Contractor Pay Application Review				12													12	24		48	$9,000			$0	$9,000
I	On-site Observation During Construction					24						24						260	5		313	$66,029			$0	$66,029
J	Completion Walkthroughs		16		24	24			16			48			48			16			192	$42,864			$0	$42,864
K	Startup Services - Electrical	0	2	0	85	2	0	0	45	0	0	0	0	0	0	0	0	19	0	0	153	$39,274			$0	$39,274
L	Startup Services - Instrumentation	0	0	0	0	15	0	0	0	0	0	125	0	0	0	0	0	0	0	0	140	$30,140	$4,000		$0	$34,140
M	Project Completion	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	$835			$0	$835
7	Close-out Services	0	14	24	68	20	2	0	0	4	0	0	0	0	40	0	16	26	75	0	289	$60,385	$0	$0	$0	$60,385
A	Project Management During Close-out		8		20	8												20			56	$15,136			$0	$15,136
B	Invoicing and Progress Summary		2	20	8														10		40	$8,920			$0	$8,920
C	Permit Management and Closeout				2													4	8		14	$2,378			$0	$2,378
D	Project Document Verification					2									16				24		42	$5,906			$0	$5,906
E	Record Drawings				2	2	2								24		16		4		50	$7,878			$0	$7,878
F	Pay Applications and Final Change Order				24													2	24		50	$10,682			$0	$10,682
G	Closeout Report				4														4		8	$1,712			$0	$1,712
H	Lessons Learned Meeting		4	4	8	8				4									1		29	$7,773			$0	$7,773
TAL (CONSTRUCTION & CLOSE-OUT - T&M NTE)		4	123	97	315	181	2	0	205	28	0	261	0	0	164	0	16	427	143	0	1966	$438,831	4700	0	0	$443,531
AL (DESIGN & BIDDING) - SEE PREVIOUS SHEET		4	140	77	193	157	18	0	722	8	0	191	44	0	500	0	0	0	36	45	2135	$432,019	0	0	0	$432,019
TOTAL (without owner's allowance)		8	263	174	508	338	20	0	927	36	0	452	44	0	664	0	16	427	179	45	4101	$870,850	$4,700	$0	$0	$875,550
OA	OWNER'S ALLOWANCE	0	5	0	8	8	46	0	10	0	0	1	0	20	30	0	0	0	2	0	130	$28,070	$10,000	$0	$0	$125,000
A	Additional Vendor Meeting (Per Each Cost)		1			4			6			1							2			$2,976			$0	$2,976
B	Duct Relocation (HVAC Support)						20							20								$8,460			$0	$8,460
C	Conduit Tray (Structural Support)						26								30							$11,050			$0	$11,050
D	Permit Fees																					$0	$10,000		$0	$10,000
E	Owner Direct Purchase Support		4		8	4			4													$5,584			$0	$5,584
F	Other As Authorized																									$86,930
TOTAL WITH OWNERS ALLOWANCE																										$1,000,550

EXHIBIT C
TAMPA BAY WATER
ADMINISTRATIVE POLICY 650-15

Tampa Bay Water

ADMINISTRATIVE POLICY AND PROCEDURE DIRECTIVE 650-15

April 1, 2006

Financial Management

Policy to Standardize Consultant Fees Charged to Tampa Bay Water

---

OPR: FAM (Ms. Jane Kemerer)
Certified by: FA (Ms. Koni Cassini)
Supersedes: APPD 62-32, September 1, 2004 Pages: 7

I. PURPOSE:

This policy establishes a standardized method for setting fees proposed and/or charged to Tampa Bay Water by consultants and other third parties providing personal/professional services to Tampa Bay Water. These procedures are intended to provide a simplified, efficient mechanism for administering fee structures that will be comparable among entities providing the same or like services.

II. SCOPE:

This policy is applicable to the services of consultants hired directly by Tampa Bay Water and to the services of sub-consultants who perform work for Tampa Bay Water which are charged through to Tampa Bay Water under another consultant's billing. This policy shall be utilized in the process of requesting proposals for services and in the actual billing of services to Tampa Bay Water by the consultants. Personal/professional services include, but are not limited to, companies and individuals providing the following services: engineering; surveying; architectural; auditing; accounting; computer programming and software design; public relations and design; environmental and hydrologic data collection; monitoring and analysis; construction management; land agent services; water supply sampling and testing; records management services; and other as-needed professional or personal services. This Policy does not apply to construction contractors, legal services, or to the purchase of goods and products or the provision of services relative to the maintenance and repair of those goods or products.

This policy applies to Proposals and Bid requests issued after the effective date of the policy and the resulting contracts/services. It does not apply to contracts existing on or prior to the effective date.

III. POLICY:

A) All individuals or companies providing personal/professional services to Tampa Bay Water shall be required to utilize one of the three methods described below to determine their hourly rate(s) or total fees when proposing and billing fees for services.

B) The specific method to be used must be established by the project manager, with Director approval, at the time Requests for Proposals/Qualifications (RFP) or Bid requests are issued. A single RFP or Bid shall not utilize both the Raw Labor Rate and the Hourly Rate method. However, contracts for both specified tasks and as-needed services may utilize a rate method and a Fixed Fee method when determined by the project manager to be necessary. Requests for Proposals/Qualifications or Bid requests must state the standard fee method required for the services being proposed. Each contract prepared must also contain a fee schedule based on the required method. Furthermore, all contracts issued as a result of a single RFP or Bid must utilize the method specified in the RFP or Bid. Staff is also encouraged to use the same standard fee method for all services of a particular type. (For example, all engineering services would use the same standard fee method, regardless of the specific nature of the tasks or the department requesting the services.)

C) Regardless of which of the following three methods is used, the final Rate or Fixed Fee must reflect the final total rate or fee to be billed to Tampa Bay Water **inclusive of all direct, indirect and overhead costs and profit component.** No additional cost recovery or profit will be allowed in addition to the established Rate or Fixed Fee except as described under "Sub-consultant/Outside Services" and "Out-of-State Travel".

1. **Raw Labor Rate with Multiplier method:**
   For purposes of this policy, the Raw Labor Rate is defined as the gross wage rate per hour earned by or paid to one or more classes of employee of the consultant, without regard to or inclusion of employee benefits, administrative costs or any other costs of the consultant. The permitted billing method is the Raw Labor Rate X (times) a multiplier which shall not exceed 3.33 (multiplier includes all employee benefits, labor overhead, general and administrative overhead, direct charges and profit).

   a) The multiplier to be used for a specific contract or group of contracts shall be established by Tampa Bay Water and stated in the Request for Proposals/Qualifications or Bid request that is published by Tampa Bay Water. Such multiplier will be established by Tampa Bay Water based on

industry trends, vendor history or such other market indicators as may be available, but in no case shall it exceed the maximum multiplier of 3.33.

b) By revision of this policy, Tampa Bay Water may, but has no obligation to, change its maximum allowable multiplier based on the Consumer Price Index, industry trends or such other market indicators as are determined to be appropriate. Such change shall be made no more frequently than semi-annually and will be effective only for Requests for Proposals/Qualifications/Bids published and contracts executed or amended after the effective date of the policy revision.

2. **Hourly Rate – all inclusive method:**
Total hourly rate all inclusive of labor, employee benefits, labor overhead, general and administrative overhead, direct charges and profit.

3. **Fixed Fee method:**
In those instances where Tampa Bay Water is contracting for a fixed, specified task or tasks and the department director determines it to be in the best interest of Tampa Bay Water, the Request for Proposals/Qualifications/Bids may specify that the vendor shall propose a single all-inclusive Fee for the defined task(s). The Request for Proposals/Qualifications/Bids must state the task(s) to be performed to which the all-inclusive fee applies and must state that no other fees, direct charges or other charges will be paid by Tampa Bay Water to the vendor relative to the defined tasks.

D) Fee Schedules submitted by consultants and other third parties under methods C)1. and C)2. shall be itemized by labor position or function as appropriate for the particular contract.

E) All invoices submitted to Tampa Bay Water for payment for contracts awarded under methods C)1. and C)2. shall show, at a minimum, number of hours worked, dates worked, rate, name and position of personnel performing the work and amount due for the services. Invoices submitted under method C)3. shall show, at a minimum, the dates of service, description of service and amount due for the service. Project Managers may specify inclusion of additional information when needed.

F) **Sub-consultant/Outside Services:**
Sub-consultant or Outside Services in excess of $300 may be submitted to Tampa Bay Water by the lead consultant for reimbursement at actual cost plus an administrative markup not to exceed 5%. Copies of the Sub-consultant/Outside service invoice approved by the consultant must accompany the consultant invoice submitted to Tampa Bay Water. If the executed contract requires that a consultant pay a sub-consultant prior to requesting reimbursement for those costs, the sub-consultant invoice submitted must include the date paid by the consultant. The Sub-consultant/Outside Services invoice shall also adhere to the fee and cost standards

established by this policy. Reimbursement shall not be made for services or costs that do not comply with this policy or which do not have proper documentation including, but not limited to, invoices, time sheets, travel reports, paid receipts and so forth. Sub-consultant/Outside services include, but are not limited to, services such as rental of highly-specialized equipment which is not used routinely by the consultant, bulk printing of reports, bulk mailings, photography, placement of advertisements and laboratory fees. It does not include rental of vehicles, computers, purchase of software, travel or other expenses which are considered to be direct costs or general and administrative overhead and should be included in the established Rate or Fixed Fee. Reimbursement of lesser amounts or other exceptions is discouraged and requires written project manager approval prior to incurring the cost. The written approval must be itemized for each activity and occurrence. A copy of this prior written approval must be submitted to the Finance Department with the invoice requesting reimbursement.

G) **Direct Charges:**

Direct Charges, as referred to in C), are to be included in the established Rate or Fixed Fee and shall not be considered for additional reimbursement. These costs include, but are not limited to, the following:

- Computer time
- Use of any equipment owned by the consultant. (e.g. vehicles, monitoring equipment, cameras, etc.)
- In-house printing
- Research materials
- Telecommunications (e.g. phones, long distance, facsimiles, networking)
- Postage (including overnight, regular mail and courier services)
- Tolls
- Parking
- Gas
- Vehicle Mileage
- Meals (including business meetings)
- In-State Travel (including, but not limited to, airfare, car rental, hotel and taxi.

H) **Out-of-State Travel:**

For purposes of this policy, Out-of-State Travel is defined as travel between the State of Florida and another point outside the State of Florida by a consultant/sub-consultant or their employee (traveler) which occurs in the performance of tasks authorized by Tampa Bay Water. When an RFP/Bid covers services that require Out-of-State Travel, a provision may be included in the fee arrangement to reimburse the consultant for the Out-of-State Travel subject to the following limitations:

a) Airfare/Mileage:
Tampa Bay Water will reimburse the actual cost of round-trip airfare between the Out-of-State Metropolitan Area where traveler's assigned

office or residence is located and the Tampa Metropolitan Area or between the Florida Metropolitan Area where traveler's assigned office or residence is located and the temporary Out-of-State work location for each task assigned. If an assigned task requires a stay greater than one week, Tampa Bay Water shall reimburse (1) one additional round-trip airfare between traveler's assigned office area/residence and temporary work location for each included weekend or (2) the actual cost of hotel/lodging for the included weekend(s). Tampa Bay Water reserves the right to specify on a task by task basis whether it will reimburse weekend airfare or lodging depending on the length of time of the tasks and the expected cost. The Tampa Bay Water Project Manager shall make this determination when tasks are assigned. All airfare must be Coach Fare or lower and the lowest available fares and advance booking shall be utilized to minimize cost whenever possible when selecting airlines and schedules. Tampa Bay Water reserves the right to deny reimbursement of airfares that are excessive due to the failure of the traveler to either advance book or to use the most cost effective airlines when they had sufficient notification from Tampa Bay Water to do so.

If a traveler travels by private vehicle rather than air, they will be reimbursed the lesser of (1) the actual vehicle mileage traveled at the mileage rate currently in effect for Tampa Bay Water travelers or (2) the airfare that would have been charged had they elected to fly as determined by Tampa Bay Water.

b) Hotel/Lodging:

For work assignments of one week or less, Tampa Bay Water shall reimburse the actual cost of hotel room or comparable accommodations for the period beginning with the night before the first day of service to Tampa Bay Water and ending on the night of the last day of service to Tampa Bay Water. Nights before and after this period including holiday nights and weekend nights will not be reimbursed unless the consultant is actually working for Tampa Bay Water on the holiday or week-end days. If an assigned task requires a stay greater than one week, Tampa Bay Water shall reimburse for (1) one additional round-trip airfare between traveler's assigned office area/residence and temporary work location for each included weekend or (2) the actual cost of hotel/lodging for the included weekend(s) as described in a) above. If the assignment is to last for an extended period of time beyond one month and the traveler obtains lodging on a monthly basis which is clearly less costly than other lodging alternatives, Tampa Bay Water shall reimburse that lodging cost as well as the cost of one round-trip airfare per month for the traveler to return to their home. Reimbursement of actual hotel/lodging costs shall be limited to 115% of the GSA published per diem rate for the specific city or Metropolitan area plus applicable taxes. (See http://policyworks.gov/org/main/mt/homepage/mtt/perdiem/perd03d.html or www.gsa.gov "per diem rates".)

c) Shuttle/Taxi:
Tampa Bay Water will reimburse the cost of shuttle service/taxi from airport to hotel and between the hotel and temporary work location(s). Transportation to meal locations is included in the M&IE per diem and will not be reimbursed under this part. There will be no reimbursement for transportation from traveler's home or assigned office to airport, including the cost of airport parking.

d) Rental Car:
The cost of a rental car at the location of temporary assignment will be reimbursed when use of a vehicle is necessary or when it is the most cost-effective transportation available for commuting between hotel and work location(s). Reimbursement will be limited to economy or compact class of vehicles, except that another class may be used if the cost for the period of use is lower than or equal to the cost of the economy or compact class for the same period. Consultant must provide evidence of this cost savings. If another type of vehicle is required for the tasks assigned, this must be approved in writing by the project manager prior to reimbursement.

e) Meal and incidental expense (M&IE):

Meals will be reimbursed at the MI&E rate currently in effect as published by the General Services Administration (GSA) for overnight travel only. There will be no meal per diem for travel which does not include an overnight stay. A meal per diem will not be paid for weekends and holidays unless the traveler is actually working for Tampa Bay Water on those days and such hours of work are documented by an approved time sheet.

The M&IE allowance is established periodically by the GSA and varies by area of the country traveled to. Effective April 1, 2006 (for contracts resulting from requests for proposals or bids issued on or after that date) Tampa Bay Water will utilize the GSA rates in effect on that date, as approved by the Board of Directors. Subsequently, such rates will be adjusted to the GSA rates whenever the GSA publishes revised rates. The GSA normally changes its rates on October 1 of each year and may also make interim changes to the rate schedules. It shall be the responsibility of every traveler to check the current rates for their travel destination and dates of travel on the GSA website. www.gsa.gov. [Click on "e-tools", then on "Per Diem Rates".]

The full GSA M&IE rate will be paid for a full day (midnight to midnight) of travel. The traveler will be compensated at 75% of the full rate for the day of departure and the day of return. (E.g. if the full rate is $39, the traveler will receive $29.25 for the day of departure and $29.25 for the day of return and $39 for any intervening days.) If the cost of one or more meals in included in the registration fee for an activity, the per diem

payable to the traveler will be reduced for each meal so included based on the GSA's Meals and Incidental Expense Breakdown at www.gsa.gov.

The M&IE allowance includes the cost of meals and incidental expenses (tips at restaurants and hotels, tips for baggage handling and transportation between the business location and places where meals are taken). No further amounts shall be reimbursed for those items.

f) Supporting Documentation:
The following supporting documentation must be included with any request for reimbursement of Out-of-State Travel costs:

(1) Tampa Bay Water Travel Reimbursement Form for Consultants, completed with dates and times of travel, days worked for Tampa Bay Water, detail of expenses incurred and business purpose.
(2) Copy of airline ticket and boarding pass as proof of travel.
(3) Copy of paid hotel/lodging bill.
(4) Copy of receipt for taxi/shuttle if greater than $10.00 individually or $25.00 in the aggregate.
(5) Copy of paid rental car invoice/agreement.

g) Travel Costs not listed in a) through e) or not documented in accordance with f) shall not be reimbursed.

h) Tampa Bay Water shall not reimburse the travel costs of any individual if the work assignment for that individual is expected to last longer than one year. (Such assignments are deemed indefinite in accordance with the Internal Revenue Service regulations and, as such, do not constitute deductible travel expenses to the traveler.)

JERRY L. MAXWELL
General Manager

EXHIBIT D
PROJECT SCHEDULING

EXHIBIT D

Preliminary Schedule of Critical Tasks

CONTRACT NO. 2026016

TAMPA BAY WATER PROJECT NO. 50070

High Service Pump Station (HSPS) Variable Frequency Drives (VFD)

9/10/2025

Assumed Notice to Proceed* 11/7/2025

	TASK	Weeks from NTP to Complete	Duration (Days)	Start	End
1	**PROJECT MANAGEMENT & COORDINATION DESIGN & BIDDING (Task 2 - Task 5)**	**74**	**517**	**10/20/2025**	**3/21/2027**
	Project Kick-off Meeting		18	10/20/2025	11/7/2025
A	Project Management and Administration		506	10/31/2025	3/21/2027
B	Meetings During Design and Bidding		589	11/7/2025	6/19/2027
2	**PRELIMINARY ENGINEERING**	**21**	**150**	**11/7/2025**	**4/6/2026**
A	VFD Selection Process		116	11/7/2025	3/3/2026
B	PLC Replacement Integration		70	12/19/2025	2/27/2026
C	Draft BODR and Plans Report Ready for Review		53	1/6/2026	2/28/2026
D	Owner Review		21	3/1/2026	3/22/2026
E	Final Deliverable Ready		14	3/23/2026	4/6/2026
3	**DETAILED DESIGN**	**49**	**193**	**4/6/2026**	**10/16/2026**
A	60% Design		74	4/6/2026	6/19/2026
B	90% Design		60	6/19/2026	8/18/2026
C	100% Design (Complete by 10/19/26 for Board Agenda)		59	8/18/2026	10/16/2026
4	**PERMITTING**	**49**	**59**	**8/18/2026**	**10/16/2026**
5	**BIDDING SERVICES**	**72**	**111**	**11/30/2026**	**3/21/2027**
A	Advertise through Bid Opening**		90	11/30/2026	2/28/2027
B	Bid Evaluation		21	2/28/2027	3/21/2027
C	Contract Negotiation (Owner Only)		90	3/21/2027	6/19/2027
6	**CONSTRUCTION PHASE SERVICES**	**189**	**734**	**6/19/2027**	**6/22/2029**
A	Pre-construction Meeting		0	7/3/2027	7/3/2027
B	Procurement Period		360	7/3/2027	6/27/2028
	1) Submittal Review		60	7/3/2027	9/1/2027
	2) Purchasing & Delivery		300	9/1/2027	6/27/2028
C	Active Construction		360	6/27/2028	6/22/2029
	1) Startup (6 each at 45 days)		270	9/25/2028	6/22/2029
	No. 1		45	9/25/2028	11/9/2028
	No. 2		45	11/9/2028	12/24/2028
	No. 3		45	12/24/2028	2/7/2029
	No. 4		45	2/7/2029	3/24/2029
	No. 5		45	3/24/2029	5/8/2029
	No. 6		45	5/8/2029	6/22/2029
7	**PROJECT CLOSE-OUT**	**202**	**90**	**6/22/2029**	**9/20/2029**

* Assumption based on Board Approval at October 20, 2025 Meeting

**No December Board Meeting. Assumption 15 days to get on Board Agenda, 30 days to meeting.

EXHIBIT E
CERTIFICATE OF INSURANCE FORM or APPROVED ACORD FORM

[Either of the attached Forms is acceptable]

Tampa Bay Water
General Insurance Requirements Matrix

Contract Type	Up to $100,000	$100,001 to $1,000,000	$1,000,001 & Over
Professional Services	Tier 1	Tier 2	Tier 3
As-Needed Professional Services	Tier 1	Tier 2	Tier 3
Goods & Services	Tier 1	Tier 2	Tier 3
Construction	N/A	N/A	Tier 3

Insurance Type	Tier 1	Tier 2	Tier 3
General Liability	$1,000,000	$2,000,000	$5,000,000
Automobile	$300,000	$500,000	$1,000,000
Workers Compensation	Statutory	Statutory	Statutory
Umbrella/Excess	Up to GL	Up to GL	Up to GL
Professional Liability	$1,000,000	$1,000,000	$1,000,000

TAMPA BAY WATER
Supplying Water To The Region

2575 Enterprise Road,
Clearwater, Florida 33763-1102
Phone: 727.796.2355
Fax: 727.791.2388
Suncom: 513.7010
www.tampabaywater.org

Issue Date: Contract Number:

CANCELLATION: Should any of the below described policies be cancelled, non-renewed or adversely changed before the expiration date thereof, the issuing company will provide 30 days written notice to **TAMPA BAY WATER** by certified mail.

Producer: Insured:

Companies Affording Coverage:	Best Rating/Class:
A	
B	
C	
D	
E	

COVERAGES: This is to certify that the policies of insurance listed below have been issued to the insured named above for the policy period indicated.

Letter	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFF. DATE	POLICY EXPIR. DATE	LIMITS ALL LIMITS IN THOUSANDS		
	General Liability ☐ Commercial Form ☐ Occurrence ☐ Claims Made ☐ Comprehensive Form ☐ Premises Operations ☐ Explosion, Collapse, Underground Hazard ☐ Products/Completed Operations Hazard ☐ Contractual Insurance ☐ Broad Form Property Damage ☐ Independent Contractor ☐ Personal Injury					EACH OCCURRENCE	AGGREGATE
					BI & PD Combined	$	$
					Bodily Injury	$	$
					Property Damage	$	$
					Products Comp/OP	$	$
					Personal & Adv. Injury	$	$
					* Separate Project Agg. For Tampa Bay Water		$
	Automobile Liability ☐ Any Auto ☐ All Owned Autos ☐ Scheduled Autos ☐ Hired Autos ☐ Non-Owned Autos				Combined Single Limit		
					Bodily Injury (Per Person)		
					Property Damage		
					[redacted]		
	Umbrella/Excess Liability ☐ Umbrella Form ☐ Excess Form ☐ Following Form Coverage				Each Occurrence		$
					Aggregate		$
					[redacted]		
	Workers' Compensation and Employers' Liability				☐ Statutory Coverage Limit		$
					EL Each Accident		$
					EL Disease Policy Limit		$
					EL Disease Each Employee		$
	Professional Liability ☐ Claims Made ☐ Occurrence Retro Date:				[redacted]	$	$
	Builder's Risk ☐ All Risk Permission to Occupy ☐ All Owner's Contractors, Subcontractors' Interests Covered ☐ Installation Floater					$	$
	Fidelity ☐ Employee Dishonesty ☐ Covers Loss to Tampa Bay Water					$	[redacted]
	Other						

Description of Operations/Locations/Vehicle/Special Items:
* Specific Project or Location:

CERTIFICATE HOLDER and ADDITIONAL INSURED
Tampa Bay Water, its Consultants, Subsidiaries or Affiliates and each of Tampa Bay Water's Directors, Officers, Employees, Representatives, Agents or Volunteers.

Authorized Representative: _____
(Signature required)
Address:_____
_____
Telephone: _____ Fax:_____

SEE REVERSE SIDE OF FORM

THIS IS TO FURTHER CERTIFY THAT:

1. The company issuing the General Liability Coverage hereby agrees to waive any right of subrogation it may acquire against Tampa Bay Water, its engineers, its consultants, and all other parties named as insured by reason of any payment made on account of personal injury, bodily injury, including death resulting therefrom, sustained by any employee of the insured or property damage arising out of the performance or furnishing of work under the above referenced Contract.

2. Each of the above-described policies contains a provision or endorsement that the coverage afforded will not be canceled, adversely changed or non-renewed until at least thirty (30) days prior written notice has been given to Tampa Bay Water by certified mail.

3. Each of the above listed companies hereby agrees to deliver to Tampa Bay Water new Certificate(s) of Insurance at least fifteen (15) days prior to coverage renewals or binder within such period and a certificate within fifteen (15) days thereafter.

4. If requested, each of the above-listed companies hereby agrees to deliver two (2) copies of the policies purchased by the Agent to Tampa Bay Water.

5. Each of the above listed companies is authorized to do business and has an agent for service of process in Florida and has an "A" policy holders rating and a financial rating of at least Class VIII in accordance with the most current Best's rating. For self-insurance funds, financial statements are to be provided if requested by Tampa Bay Water. (At Tampa Bay Water's option, a Best's rating or financial information regarding any self-insurance funds may be waived.)

ACORD CERTIFICATE OF LIABILITY INSURANC

Clear | Save

DATE (MM/DD/YYYY)

PRODUCER

Your Insurance Agent

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED

Company Name
Street
City, State, Zip Code

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A: Company Name	
INSURER B:	
INSURER C:	
INSURER D:	
INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	X	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT LOC	Policy Number	effective	expires	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 300,000 $ 5,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
	X	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS	Policy Number	effective	expires	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
		GARAGE LIABILITY ANY AUTO				AUTO ONLY - EA ACCIDENT OTHER THAN AUTO ONLY: EA ACC AGG	$ $ $
	X	EXCESS/UMBRELLA LIABILITY X OCCUR CLAIMS MADE DEDUCTIBLE RETENTION $	Policy Number	effective	expires	EACH OCCURRENCE AGGREGATE	$ 2,000,000 $ 2,000,000
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below NO	Policy Number	effective	expires	X WC STATU-TORY LIMITS OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ $ 100,000 $ 100,000 $ 500,000
		OTHER					

Sample

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

Re: Job Name/Number
Tampa Bay Water, Its Engineers, Architects, Consultants, Subsidiaries or Affiliates and each of the Tampa Bay Water Directors, Officers, Employees, Representatives, Agents or Volunteers shall be named as additional insured under the GL Policy per CG 20 10 (07/04) AND CG 20 37 (07/04) or equivalent, and the Automobile Liability policy. Waiver of Subrogation is provided in favor of Tampa Bay Water on all policies. The insurance evidenced by this Certificate is primary and non-contributory to any insurance maintained by Tampa Bay Water.

CERTIFICATE HOLDER

Tampa Bay Water
2575 Enterprise Road
Clearwater, FL 33763-1102

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

ACORD 25 (2001/08)

© ACORD CORPORATION 1988

IMPORTANT

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

DISCLAIMER

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.

ACORD 25 (2001/08)

EXHIBIT F
TAMPA BAY WATER AFFIDAVIT FORM

TAMPA BAY WATER
CONTRACTOR/CONSULTANT/VENDOR AFFIDAVIT

STATE OF Florida
COUNTY OF Hernando

BEFORE ME, the undersigned authority, appeared Aubrey Haudricourt, who first being duly sworn hereby swears or affirms as follows:

1. I make this affidavit on personal knowledge.
2. I am over the age of 18 years and otherwise confident to make this Affidavit.
3. I am the Project Manager of McKim & Creed, Inc. (the "Contractor/Consultant/Vendor").
4. I am authorized by McKim & Creed, Inc. to make this Affidavit on behalf of Contractor/Consultant/Vendor.

E-Verify

1. Contractor/Consultant/Vendor acknowledges that Section 448.09, Florida Statutes, makes it unlawful for any person to knowingly employ, hire, recruit, or refer, for private or public employment, an alien who is not duly authorized to work in the United States.
2. Contractor/Consultant/Vendor acknowledges that Section 448.095, Florida Statutes, prohibits public employers, contractors, and subcontractors from entering into a contract unless each party to the contract registers and uses E-Verify.
3. Contractor/Consultant/Vendor is in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
4. Contractor/Consultant/Vendor understands it shall remain in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes, during the term of any contract with Tampa Bay Water.
5. Contractor/Consultant/Vendor's subcontractors are in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
6. Contractor/Consultant/Vendor shall ensure compliance with the requirements of Sections 448.09 and 449.095, Florida Statutes, by any and all of its subcontractors.
7. Neither the Contractor/Consultant/Vendor, nor any subcontractor of Contractor/Consultant/Vendor, has had a contract terminated by a public employer for violating Section 448.095, Florida Statutes, within the year preceding the date of this Affidavit.
8. If the Contractor/Consultant/Vendor, or any subcontractor of Contractor/Consultant/Vendor, has a contract terminated by a public employer for any such violation during the term of any contract with Tampa Bay Water, it shall provide immediate notice thereof to Tampa Bay Water.

Anti-Human Trafficking

In accordance with Section 787.06(13), Florida Statues, the undersigned, on behalf of the entity listed below ("Entity"), hereby attests under penalty of perjury that Entity does not use coercion for labor or services as defined in Section 787.06, Florida Statutes, entitled "Human Trafficking".

Scrutinized Companies

F. Pursuant to Subsections 287.133(2) and (3), Florida Statutes, Respondent acknowledges that a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a proposal on a Contract provide any goods or services to a public entity, may not submit a Proposal on a Contract with a public entity for the construction or repair of a public building or public work, may not submit Proposals on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a Contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017 Florida Statutes, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

G. Pursuant to Subsection 287.134(2)(a), Florida Statutes, Respondent acknowledges that an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; an may not transact business with any public entity.

H. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that a company that has been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or the Scrutinized Companies that Boycott Israel List or a company that engages in a boycott of Israel, is ineligible and may not submit a bid, proposal, or enter into or renew a contract with an agency for goods or services of $1 million or more. At the time of submission of a proposal for a contract or contract renewal for goods or services of $1 million or more, the company must certify that it is not on either such List and further that it does not have business operations in Cuba or Syria as required by Section 287.135(5), Florida Statutes.

I. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any contract for goods or services of $1 million or more if the awarded company is found to have submitted a false certification as provided under Section 287.135(5), been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or been engaged in Business operations in Cuba or Syria.

J. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any contract for good or services of any amount if the awarded company is found to have or been placed on the Scrutinized Companies that Boycott Israel List or is engaged in a boycott of Israel.

Foreign Countries of Concern

Pursuant to Section 287.138, Florida Statues, Tampa Bay Water may not enter into a contract with an entity that gives access to an individual's personal identifying information if the entity is owned, controlled or organized under the laws of a Foreign Country of Concern which includes the People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolas Maduro, the Syrian Arab Republic, or any other entity or agency under the significant control of such Foreign Country of Concern.

Signature of Affiant
on behalf of Contractor/Consultant/Vendor

By: Aubrey Haudricourt

As its: Project Manager

Dated: May 20, 2025

Sworn to (or affirmed) and subscribed before me by means of ☐ physical presence or ☒ online notarization, this 20th day of May, 2025, by Aubrey Haudricourt, on behalf of Mckim & Creed, Inc., who is personally known to me or who has produced _____ as identification.

JENNIFER SOULTS
Notary Public - State of Florida
Commission # HH 383107
My Comm. Expires Apr 5, 2027

Print Name: Jennifer Soults
Notary Public of the State of Florida

My Commission Expires:
April 5, 2027

TAMPA BAY WATER

High Service Pump Station – Variable Frequency Drives Project No. 50070 – Professional Engineering Services, Contract 2026016

Agenda Item C.1
October 20, 2025

Charles H. Carden
General Manager
Tampa Bay Water

Project's Purpose

- Strengthen water system reliability and operational resiliency
- Support proactive renewal of a critical facilities
- Modernize aging equipment and improve energy efficiency
- Aligns with the South Hillsborough Pipeline and the Surface Water Treatment Plant Expansion

Scope of Services

- Engineering design, permitting and bidding
- Upgrades to variable frequency drives and instrumentation/control equipment
- Arc flash study and protection
- Preparation of construction documents
- Engineering support during construction

Recommendation

- Staff recommends approval of Professional Engineering Services for the High Service Pump Station Variable Frequency Drives, Project No. 50070 under Contract 2026016, for $1,000,550, inclusive of $125,000 Owner's Allowance.

TAMPA BAY WATER

Questions?

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM C.2

DATE: September 25, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: Lake Bridge Water Treatment Plant-Pump No. 4, (Project No. 07542), Contract No. 2026012 with C&T Contracting Services, LLC. - *Approve*

SUMMARY

An Invitation to Bid for Contract No. 2026012 was conducted to obtain construction services for the Lake Bridge Water Treatment Plant-Pump No. 4. C&T Contracting Services, LLC, was determined to be the lowest responsive, responsible bidder.

SUGGESTED ACTION

Approve Contract No. 2026012 to the lowest responsive, responsible bidder, C&T Contracting Services, LLC., in the amount of $1,545,255, inclusive of $285,000 Owner's Allowance and $100 Indemnification.

COST/FUNDING SOURCE

$1,545,255/Capital Improvement Fund

DISCUSSION

On June 24, 2025, Tampa Bay Water posted an Invitation To Bid for the Lake Bridge Water Treatment Plant-Pump No. 4. Contractors were notified through advertisement on Enua (previously known as Bonfire) and Tampa Bay Water's website. Tampa Bay Water added eight (8) known firms as supplemental contractors and eighty (80) contractors downloaded the bid plans. A non-mandatory pre-

bid conference meeting and site visit was conducted on July 17, 2025, with eight (8) contractors in attendance.

On August 21, 2025, four (4) sealed bids were received from the following contractors and publicly opened with the following results:

Contractor	Total Bid*
C&T Contracting Services, LLC.	$1,260,155
Vogel Bros. Building Co.	$1,460,306
KAT Construction & Materials Inc.	$1,560,000
Razorback LLC.	$1,563,000

*Total Bid amount does not include Owner's Allowance nor indemnification.

Tampa Bay Water staff and the design engineering consultant, Carollo Engineers, Inc., reviewed and evaluated the bids and determined C&T Contracting Services, LLC, to be the lowest responsive, responsible bidder.

Staff recommends that Contract No. 2026012 be awarded to C&T Contracting Services, LLC, in the amount of $1,260,155, plus an owner's allowance of $285,000 and indemnification of $100, for a total award amount of $1,545,255. This contract shall remain effective through the completion of this project.

The proposed contract has been reviewed and approved as to form by Tampa Bay Water's General Counsel. The proposed contract, Bid Price form and Carollo Engineers, Inc.'s recommendation letter are attached.

BACKGROUND

Tampa Bay Water's Capital Improvements Program Plan (CIP) is a comprehensive ten-year plan of approved and proposed capital projects. The CIP is updated annually and is subject to changes as the needs for specific projects become more defined and as final approval of individual projects is provided by the Board. The Lake Bridge Water Treatment Plant-Pump No. 4, Project No. 07542, is identified in the CIP and includes the installation of an additional pump at the Lake Bridge Water Treatment Plant, to increase the capacity of the pump station and meet the demand needs at Pasco County's most Eastern Point of Connection.

Attachments (3)

07542 - Bid Submittal Price Form
07542 - Recommendation of Award Letter
2026012 - Lake Bridge Water Treatment Plant Pump No. 4
C.2 Lake Bridge Water Treatment Plant Pump No. 4 Presentation

PRICE FORM

Failure to fully complete this form SHALL result in the Bidder being deemed NONRESPONSIVE.

Review this ITB in its entirety and provide pricing below that is inclusive of all expenses.

Tampa Bay Water
Lake Bridge Water Treatment Plant - Pump No. 4
Project No. 07542
Bid Form

Item No. (A)	Description (B)	Unit (C)	Quantity (D)	Unit Price (E)	Total Price (F)
1	Mobilization/Demobilization	Lump Sum	1	$	$ 87,420
2	Equipment Procurement	Lump Sum	1	$	$ 495,427
3	Concrete Work	Lump Sum	1	$	$ 18,199
4	Mechanical Work	Lump Sum	1	$	$ 310,998
5	Electrical Work	Lump Sum	1	$	$ 241,304
6	Instrumentation Work	Lump Sum	1	$	$ 99,206
7	Commissioning	Lump Sum	1	$	$ 7,601
				Total Bid Price	$ 1,260,155

One million, two hundred and sixty thousand, one hundred and fifty five dollars.
(Bid Price Amount Written in Words)

This project provides an Owner's Allowance in the amount of $285,000.00 which is not included in the Price Form above. Contractor's use of Owner's Allowance is not guaranteed. (Usage of Owner's Allowance must be pre-approved by Tampa Bay Water in writing.)

Bidder acknowledges and agrees that the Trench Safety Standards in effect at the time of this Bid and at the time(s) of performing the Work shall be adhered to and compliance is the complete and sole responsibility of the Bidder. The proposed Total Bid Price, as stated herein includes Bidder's total cost for compliance with the Florida Trench Safety Act.

Bidder shall have an Indemnification responsibility in the amount of $100.00 which is not included in the Price Form above.

200 East Robinson Street, Suite 1400
Orlando, Florida 32801
P 407-478-4642
carollo.com

September 8, 2025

Karim Molina-Oyola, PMP
Tampa Bay Water
Project Manager
2575 Enterprise Road
Clearwater, FL 33763

Subject: Lake Bridge WTP Pump #4 Construction – Bid Recommendation

Dear Karim Molina-Oyola:

This letter has been written to offer Carollo's recommendation for bid selection on Tampa Bay Water's Lake Bridge WTP Pump #4 Construction (Project). This Project refers to the Invitation to Bid (ITB) Project 07542 broadcasted from July 17, 2025 and collected August 21, 2025.

Carollo reviewed the low bid as provided by Tampa Bay Water for completeness and additional information was required from the low bidder to complete the review. The low bidder provided additional information on September 3rd, 2025. The additional information included relevant experience from the proposed Integrator (Barney's Pump) and relevant projects from the proposed electrical subcontractor (Shine & Company). Upon evaluating the proposal and additional information provided by the contractor, we recommend awarding the contract to **C&T Contracting Services** (C&T).

This recommendation is based on the content of the bids submitted including but not limited to, completeness of the bid, similar completed projects, and bid amount.

C&T's submission demonstrated a clear understanding of the project scope, included all required documentation, and reflected relevant experience that aligns well with the project's requirements, all at a competitive cost.

Sincerely,

Kunal N.

CAROLLO ENGINEERS, INC.

Kunal Nayee, PE

FINANCE & ADMINISTRATION DIVISION
CHRISTINA SACKETT, CHIEF FINANCIAL OFFICER

PURCHASING DEPARTMENT
REGINA KAVANAGH, PURCHASING SPECIALIST II
TAYLOR KLINKO, PURCHASING SPECIALIST I

Website: http://www.tampabaywater.org
E-Mail: purchasing@tampabaywater.org

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763-1102

CONTRACT # 2026012

FOR

LAKE BRIDGE WATER TREATMENT PLANT-PUMP NO. 4

WITH

C&T CONTRACTING SERVICES, LLC

Bid and Contract Documents

Contract Form	3
Exhibits	
Exhibit A – Tampa Bay Water Documents	718
Addendum One	719
Addendum Two	722
Invitation to Bid	732
Exhibit B – Bidder's Response Forms	835
Bid Submittal	836
Exhibit C – Payment & Performance Bonds	859
Exhibit D – Certificate of Insurance	866

CONTRACT

This Contract, made and entered into as of the _____day of _____, 20_____, by and between Tampa Bay Water, A Regional Water Supply Authority ("Tampa Bay Water") and C&T Contracting Services, LLC, a corporation of the State of Florida, or other business entity authorized to do business in the State of Florida ("Contractor"), with respect to that certain Project consisting of the Work to be performed in accordance with the Contract Documents, supplementary conditions, general conditions, invitation to bid documents, bid price form, technical specifications and all issued addenda for Tampa Bay Water's Lake Bridge Water Treatment Plant-Pump No. 4 (Project 07542).

W I T N E S S E T H:

Tampa Bay Water and the Contractor in consideration of the mutual covenants and obligations contained herein, and for other good and valuable consideration, the sufficiency and adequacy of which are hereby acknowledged, agree as follows:

1.0 Work

1.1 The Contractor shall perform all of the Work in accordance with the Contract Documents (as that term is defined in the General Conditions which are attached to and made a part of this Contract).

1.2 Contractor shall perform the Work in accordance with generally accepted construction practice under the same or similar circumstances at the same time and in the same locality. Contractor shall have exclusive responsibility for all construction means, methods, techniques, sequences, and procedures necessary or desirable for the correct, prompt, and orderly prosecution and completion of the Work as required by this Contract and the Contract Documents.

1.3 The responsibility to provide the construction means, methods, techniques, sequences and procedures shall include, but not be limited to, the obligation of the Contractor to provide the following construction requirements, as applicable: temporary power and light; temporary offices and construction trailers; required design certifications; required approvals; weather protection; site clean-up and housekeeping; construction trade management; temporary parking; a construction safety plan; safety and first aid facilities; correction of or compensation for defective work or equipment; Subcontractors' insurance certificates; storage areas; workshops and warehouses; temporary fire protection; site security; temporary Utilities; including without limitations; potable water and water for use in performing the Work (in all cases, including a backflow preventer meeting ANSI A40.6); phone; sanitary; gas or fuel; Subcontractor and Supplier qualification; equipment and materials procurement and expediting; receipt and unloading and proper storage of delivered materials and equipment; erection rigging; temporary supports; submittal and shop drawings review and orderly filing system; construction and procurement critical path scheduling; construction coordination; and cooperation with Tampa Bay Water in implementation of Tampa Bay Water's owner's direct purchase sales tax savings program.

1.4 During the progress of the Work, Contractor shall at all times during normal working hours afford Tampa Bay Water and Engineer every reasonable opportunity for observing all Work. During any such observation, all representatives of Tampa Bay Water and Engineer shall comply with all safety and other rules and regulations applicable to presence in or at the Work site.

1.5 Contractor shall have full responsibility, to the extent applicable, for locating all underground Utilities in advance of excavation; scheduling excavation and uncovering in advance, unless it conflicts with Work already uncovered; shoring, blocking, and protecting underground Utilities; repairing any damage done to the satisfaction of Tampa Bay Water and Engineer and the owners of those underground Utilities; promptly notifying Tampa Bay Water and Engineer of any newly discovered underground Utility; and the safety, protection and repairing of any damage done to any affected Work. Al1 costs involved and time required to perform these responsibilities shall be considered as having been included in the Contract Price.

1.6 Contractor shall use care and diligence, and shall take all appropriate precautions, to protect the Work and the Work site and the property of other persons (including any materials, equipment, or other items furnished by Tampa Bay Water) from damage due to the nature of the Work, the natural elements, carelessness of others, and from any cause, until final completion of the Work; and for such purpose, Contractor shall provide fencing, protective features (such as tarpaulins, boards, boxing, frames, canvas guards, and fireproofing), and other safeguards to the extent Contractor reasonably determines such are necessary and proper in the performance of the Work.

1.7 Contractor shall ensure that each employee, representative, Subcontractor, Supplier, and others acting for the Contractor use designated access roads and parking areas. Contractor shall employ watchmen on the Work site when necessary and shall also erect and maintain such strong and suitable barriers and such lights as shall effectively prevent the happening of any accident to health or to property or to any partially completed Work or to any materials stored on or adjacent to the Work site. Contractor shall employ any additional temporary fencing and gates to adequately protect the Work.

1.8 Stored materials shall be kept in a neat and orderly manner. Materials that are subject to deterioration by exposure to the sun, rain or other elements shall be kept adequately covered and protected. Contractor shall be responsible for protecting all stored materials and the Work site safe from theft and vandalism.

1.9 All costs involved and time required to perform these responsibilities shall be considered as having been included in the Contract Price.

1.10 Contractor shall notify owners of adjacent property (including underground Utility owners) not less than forty-eight (48) hours, or the time period required by Laws and Regulations, whichever period is longer, prior to commencing the Work, and shall coordinate and cooperate with them in the location, protection, removal, relocation, and/or replacement of their property. At least five (5) days prior to providing such notice to adjacent property owners, Contractor shall submit its proposed written notice to Tampa Bay Water for review and approval. All damage, injury or loss to property caused, directly or indirectly, in whole or part, by Contractor, any Subcontractor or Supplier or anyone for whose acts any of them may be liable, shall be remedied at Contractor's expense, which shall be considered to have been included in the Contract Price.

1.11 In case of damage or destruction to the Work, the Work site or adjacent properties resulting from any cause, and regardless of the extent thereof or the estimated cost of repair, replacement or restoration, and whether or not any insurance proceeds are sufficient or available for the purpose, Contractor shall immediately undertake and complete the repair, replacement and restoration of the damage or destruction to the character and condition existing immediately prior to the damage or destruction, all at Contractor's sole cost and expense, which shall be considered to have been included in the Contract Price, except in the event that such damage or destruction is caused by

Tampa Bay Water, its employees, agents, representatives, including Engineer, or is the result of an Uncontrollable Circumstance.

1.12 Contractor shall notify Tampa Bay Water immediately of any damage or destruction to the Work, the Work site or any adjacent properties including, but not limited to, hazardous substance spills, damage to sensitive areas, permit or approval violations, fires and injuries. Additionally, Contractor shall notify the required Insurance carriers and Sureties of any damage or destruction to the Work, the Work site, or adjacent properties, or any accidents on the Work site, as promptly as possible after Contractor learns of any such damage, destruction or accidents. As soon as practicable after learning of any such occurrence, Contractor shall submit a full and complete written report to Tampa Bay Water.

1.13 In case of an emergency which threatens loss or injury to persons or property, Contractor shall take appropriate remedial action, without previous instructions from Tampa Bay Water or Engineer, as the situation may warrant, and shall immediately provide Notice to Tampa Bay Water and Engineer of its action. Any claim for compensation by Contractor, together with substantiating documentation in regard to expense caused by emergency acts, shall be submitted to Tampa Bay Water and the amount of compensation if any, shall be determined by mutual contract, subject to cost substantiation.

2.0 Contract Time

2.1 Tampa Bay Water and the Contractor recognize that time is of the essence with respect to Contractor's performance of its obligation under the Contract Documents, and Tampa Bay Water shall suffer financial loss if Substantial Completion and Final Completion of the Work is not achieved within the Contract Time specified in paragraph 2.2 below. Accordingly, if the Contractor fails to achieve Substantial Completion and Final Completion of the Work within the Contract Time, it shall pay Tampa Bay Water Liquidated Damages in accordance with the terms stated below in *Article III, Liquidated Damages*.

2.2 The Contractor shall commence the Work within ten (10) days after the date specified for the commencement of the Work in the Notice to Proceed and shall complete all Work hereunder as follows:

a. All facilities shall be manually operational to provide Tampa Bay Water at its option the full time use of the Project as intended by the Contract Documents and the Contractor shall perform the Work to achieve Substantial Completion within 415 days of issuance of Notice to Proceed as the commencement date of the Contract Time.

b. The Contractor shall perform the Work to achieve Final Completion within 492 days of issuance of Notice to Proceed as the date of commencement of the Contract Time.

2.3 The completion deadlines in this Section 2 are subject to adjustment in accordance with the General Conditions.

3.0 Liquidated Damages

3.1 If the Contractor fails to achieve Substantial Completion of the Work within the Contract Time, as said time period may be adjusted pursuant to the terms of the Contract Documents, Contractor shall pay Tampa Bay Water Liquidated Damages in accordance with the following:

a. The Contractor shall pay Tampa Bay Water as Liquidated Damages, and not as a penalty, the amount of Fifteen Hundred Dollars and Zero cents ($1,500.00) for each

day that expires after the Contract Time specified above in paragraph 2.2a for Substantial Completion. These Liquidated Damages are Tampa Bay Water's sole and exclusive Substantial Completion delay related damages and represent a reasonable estimate of Tampa Bay Water's damages in the event Substantial Completion of the Work is delayed. The Contractor agrees that these Substantial Completion Liquidated Damages do not constitute a penalty or forfeiture.

b. The Contractor shall pay Tampa Bay Water as Liquidated Damages and not as a penalty, the amount of Five Hundred Dollars and Zero Cents ($500.00) for each day that expires after the time specified in Paragraph 2.2.b for Final Completion. These Liquidated Damages are Tampa Bay Water's sole and exclusive Final Completion delay related damages and represent a reasonable estimate of Tampa Bay Water's damages in the event Final Completion of the Work is delayed. The Contractor agrees that these Final Completion Liquidated Damages do not constitute a penalty or forfeiture. Also, Contractor agrees these Final Completion Liquidated Damages are in addition to, and not duplicative of, the Substantial Completion Liquidated Damages noted in Paragraph 3.1.a above.

4.0 Contract Price

4.1 Tampa Bay Water hereby agrees to pay to the Contractor in lawful money of the United States for the faithful performance of all of the Contractor's obligations under the Contract Documents, and the Contractor agrees to accept in full payment the Contract Price of: **One Million Five Hundred Forty-Five Thousand Two Hundred Fifty-Five Dollars And No Cents**, **($1,545,255.00),** inclusive of the Owner's Allowance and Indemnification subject to the conditions governing payments to the Contractor in the Contract Documents. If the Contract Price includes any Unit Price amounts and the actual quantity of Unit Price items installed is different than the estimated quantity, then the Contract Price shall be adjusted in accordance with the Contract Documents. The Contract Price includes, if applicable, only those Alternates accepted by Tampa Bay Water, as identified in paragraph 4.3 below. The Contract Price includes, if applicable, only those Allowances established by Tampa Bay Water, as identified in paragraph 4.4 below.

4.2 The Unit Prices and associated estimated quantities included within the Contract Price are attached hereto and made a part hereof as Schedule A.

4.3 The following Bid Options have been accepted by Tampa Bay Water and are included within the Contract Price:

ALTERNATE	Price
Not Applicable	Not Applicable

4.4 The following Allowances have been established by Tampa Bay Water and are included within the Contract Price:

ALLOWANCE	Price
Owner's Allowance	$285,000.00
Indemnification	$100.00

Payment of Allowances shall only be authorized by issuance of Change Authorization signed by Tampa Bay Water in accordance with Section 7.2.1 of the General Conditions.

5.0 Payment

Payment procedures are outlined in the General Conditions, Article VII Payment. All monies not paid when due shall bear interest at a rate not to exceed the interest rate allowed by law to

be paid by governmental entities in Florida, provided that this does not exceed six percent per year simple interest.

Tampa Bay Water's payment to Contractor of any progress or final payment shall not release the Contractor of any liability and shall not be deemed evidence of performance or be construed as an acceptance of defective or improper Work, or Work that does not comply with the requirements of the Contract Documents.

6.0 Miscellaneous

6.1 All Contract Documents are hereby incorporated into and made a part of this Contract by this reference. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract Documents.

The Contract Documents represent the final and entire integrated Contract between the parties with respect to the Work. The Contract Documents supersede all prior oral or written Contracts, if any, between the parties, and any statement, representation, promise or inducement not set forth in the Contract Documents is null and void and not binding on Tampa Bay Water or the Contractor. Except for the warranty and third party beneficiary rights of Tampa Bay Water set forth herein, the Contract Documents shall not in any way create a relationship of any kind between the Engineer and the Contractor or between Tampa Bay Water and a Subcontractor or Supplier, or between Tampa Bay Water and any other person.

If any provision(s) of the Contract Document is/are invalid, illegal, or unenforceable such provision(s) shall be considered divisible, and all other provisions of the Contract Documents shall nevertheless remain in full force and effect.

6.2 The Contractor shall not sell, assign, transfer or otherwise convey any of its rights and shall not delegate any of its duties under the Contract Documents without the prior and expressed written consent of Tampa Bay Water and the Surety. Any attempted sale, assignment, transfer, conveyance or delegation of the Contractor's rights under this Contract or the other Contract Documents in violation of the terms of this paragraph shall be void and shall relieve Tampa Bay Water of any further liability under the Contract Documents but shall not relieve the Contractor or the Contractor's Surety(ies) of any liability. If Tampa Bay Water consents in writing to an assignment, unless specifically stated to the contrary in the consent, the assignment shall not release or discharge the Contractor from any duty, responsibility or obligation set forth in the Contract Documents, and shall not release or discharge the Surety(ies) under the bonds required by the Contract Documents.

6.3 This Contract shall be binding on Tampa Bay Water, the Contractor, and all of their respective successors, heirs, legal representatives and, if Tampa Bay Water has consented to an assignment or delegation as provided in the previous paragraph, assigns and delegates.

6.4 Any waiver by Tampa Bay Water of any provision of the Contract Documents must be specific and in writing and shall apply only to the particular matter concerned and not to other similar or dissimilar matters. Any waiver of any breach of the Contract Documents shall not be held to be a waiver of any other or subsequent breach. Neither the failure of Tampa Bay Water to exercise any power given to Tampa Bay Water under the Contract Documents or to insist upon compliance by the Contractor with Contractor's obligations under the Contract Documents, nor any custom or practice of Tampa Bay Water and Contractor at variance with the terms of the Contract Documents, shall constitute a waiver of Tampa Bay Water's right to demand full and

complete compliance by the Contractor with the terms and provisions of the Contract Documents.

6.5 Nothing contained in the Contract Documents shall in any manner authorize, empower or constitute the Contractor, its Subcontractors or Suppliers as agent(s) of Tampa Bay Water; authorize or empower the Contractor, its Subcontractors or Suppliers to assume or create any obligation or responsibility whatsoever, express or implied, on behalf of or in the name of Tampa Bay Water; or authorize or empower the Contractor, its Subcontractors or Suppliers to bind Tampa Bay Water in any manner or make any representation, warranty, covenant, contract or commitment on behalf of Tampa Bay Water. The Contractor shall perform all Work under the Contract Documents as an independent contractor. This Contract does not create, and shall not be construed as creating, any rights enforceable by any person not a party to the Contract.

6.6 This Contract and the Contract Documents shall be governed by and construed in accordance with the Laws and Regulations of the State of Florida without giving effect to any rules governing conflict of laws.

6.7 The parties agree that for any litigation arising under the Contract Documents, venue shall be only in the state courts in and for Pinellas County, Florida.

6.8 All documents prepared or produced by Contractor or any of its Subcontractors pursuant to this Contract are the property of and belong to Tampa Bay Water, provided that Contractor is allowed to reuse such documents with the approval of Tampa Bay Water. If Contractor claims that any such document is proprietary or protected by trade secret or otherwise, Contractor has the burden to establish the basis of any such protection but until judicially declared otherwise, Tampa Bay Water shall have all rights of ownership and use of such documents.

6.9 In no event shall Tampa Bay Water be liable to Contractor, nor shall Contractor be liable to Tampa Bay Water, for any incidental, consequential, or punitive damages based upon claims arising out of or in connection with the performance or non-performance of a party's obligations under this Contract, or the material inaccuracy of any representation made by a party in this Contract, whether such claims are based upon contract, tort, negligence, warranty or other legal theory. Contractor acknowledges and agrees, however, that claims, which are brought by third parties against Tampa Bay Water and for which, but for the application of this paragraph, Contractor would otherwise have an indemnification obligation under this Contract, shall not be considered consequential damages under this paragraph.

6.10 All express representations, indemnifications, or limitations of liability made in or given in this Contract will survive its completion or termination for any reason.

6.11 To the extent permitted by applicable law, Contractor and Tampa Bay Water hereby acknowledge and agree that any and all claims arising out of, connected with, or relating to this Contract or the relationship created hereby are matters which, if adjudicated, should be adjudicated by a court without a jury. Therefore, the parties hereby waive a trial by a jury. Neither Tampa Bay Water nor Contractor or any successor thereof shall seek a trial by jury in any action or proceeding (whether at law or in equity, whether direct or collateral, whether in Contract or in tort) arising out of or related to this Contract or the relationship created hereby. Neither Tampa Bay Water nor Contractor shall seek to consolidate any action or proceeding in which trial by jury has been waived with any other action or proceeding in which a jury trial cannot be or has not been waived. The provisions of this paragraph cannot be and have not been waived. The provisions of this paragraph have been fully discussed by the parties and their respective attorneys and the provisions hereof shall be subject to no exceptions. Tampa Bay Water and Contractor acknowledge and agree that no one,

including, without limitation, Tampa Bay Water's agents or contractors, has represented that the provisions of this paragraph or of any other paragraph of this Contract will not be fully enforced.

6.12 Contractor warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for the Contractor to solicit or secure this Contract and that Contractor has not paid or agreed to pay any person, company, corporation, individual, or firm, other than a bona fide employee working solely for Contractor any fee, commission, percentage, gift or other consideration contingent upon or resulting from the award or making of this Contract.

7.0 Public Records and Audit Rights

7.1 Contractor shall keep all books, records, files, drawings, plans and other documentation, including all electronically stored items, which concern or relate to the services required hereunder (collectively referred to as "Records"), for a minimum of three (3) years from the date of expiration or termination of this Contract, or as otherwise required by any applicable law, whichever date is later. Tampa Bay Water, or any duly authorized agents or representatives of Tampa Bay Water, shall have the right to order, inspect and copy all such Records as often as they deem necessary during any such period of time. This right to audit, inspect and copy the Records shall include all of the Records of the Subconsultants.

7.2 IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTARCTOR'S DUTY TO PROVIDE TO PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE AGENCY'S CUSTODIAN OF PUBLIC RECORDS VIA PHONE (727) 796-2355 OPION 6; EMAIL RECORDS@TAMPABAYWATER.ORG; OR MAIL AT 2575 ENTERPRISE ROAD, CLEARWATER, FLORIDA 33763.

7.3 Contractor must keep and maintain all public records required by the Agency in order to perform services under this Contract.

7.4 Upon request from the Agency's custodian of public records, Contractor shall provide the Agency with a copy of the requested public records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provide in Chapter 119, Florida Statutes, or as otherwise provided by law.

7.5 Contractor shall ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the Contract term and following completion of the Contract if the Contractor does not transfer the records to the Agency.

7.6 Upon completion of the Contract, Contractor shall transfer, at no cost, to the Agency all public records in the possession of the Contractor or keep and maintain public records required by the Agency to perform the service under this Contract. If the Contractor transfers all public records to the Agency upon completion of the Contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the Contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the Agency, upon request from the Agency's custodian of public

records, in a format that is compatible with the information technology systems of the Agency.

8.0 Definitions

Defined terms used in this Contract have the intent and meanings assigned to them in the General Conditions, *Article I, Definitions.*

9.0 Engineer

Tampa Bay Water has retained the firm of Carollo Engineers Inc. to act as the Engineer, assume all of the duties and responsibilities and have the rights and authority assigned to the Engineer in the Contract Documents with respect to completion of the Work in accordance with the Contract Documents.

10.0 Public Entity Crime Statement

10.1 Pursuant to subsections 287.133(2) and (3), Florida Statutes, a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid, proposal or reply on a Contract to provide any goods or services to a public entity; may not submit a bid, proposal or reply on a Contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals or replies on leases of real property to a public entity; may not be awarded or perform work as a Contractor, supplier, subcontractor, or consultant under a Contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, Florida Statutes, for CATEGORY TWO, for a period of thirty-six (36) months following the date of being placed on the convicted vendor list.

10.2 Contractor hereby certifies and warrants that it has not been placed on any convicted vendor list for the past thirty-six (36) months and is in full compliance with the requirements of subsections 287.133(2) and (3), Florida Statutes.

11.0 Discrimination

Pursuant to Subsection 287.134(2)(a), Florida Statutes, an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a Contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a Contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a Contract with any public entity; and may not transact business with any public entity. Contractor hereby certifies and warrants that it has not been placed on any discriminatory vendor list and is in full compliance with the requirements of subsections 287.134(2)(a), Florida Statutes.

12.0 Drawings and Specifications

12.1 The Drawings consist of the following:

Sheet No.	Sheet Description
00D01	**Plan and Sections**
00GE01	**Electrical Legend**
00GE02	**Electrical Abbreviations**
00TE01	**Typical Details 1**
03E01	**Overall Plant One-Line Diagram**

Sheet No.	Sheet Description
10E01	Lake Bridge WTP Control, and Grounding Plan
10E02	Pump Room Power, Control, and Grounding Plan
10E03	Electrical Room Power, Control, and Grounding Plan
00G01	General
00G02	Drawing Index
00G03	Notes, Legend, and Symbols
00G04	Abbreviations
00GN01	Symbols and Abbreviations 1
00GN02	Symbols and Abbreviations 2
00GN03	Symbols and Abbreviations 3
00GN04	Symbols and Abbreviations 4
00GN05	Schematic Symbols
00GN06	Sample Loop Drawing
00GN07	Equipment Tagging (Water Treatment)
00TN01	Typical Details 1
00TN02	Typical Details 2
00TN03	Typical Details 3
00TN04	Typical Details 4
04N01	Network Block Diagram
05N01	PLC Cabinet Modifications
05N02	PLC Cabinet Modifications 2
06N01	PLC Cabinet Pump 1 Schematic Modification
06N02	PLC Cabinet Pump 2 Schematic Modification
06N03	PLC Cabinet Pump 3 Schematic Modification
06N04	PLC Cabinet Pump 4 Schematic Modification
06N05	Schematics 5- High Service Pump 4
07N01	I/O Tables
10N01	High Service Pumps P&ID 1
10N02	High Service Pumps P&ID 2
00M01	Existing Plan and Sections
00M02	Plan and Sections
00TS01	Typical Details 1

12.2 The Specifications consist of the following:

Section No.	Title
01010	Summary of Work
01025	Measurement and Payment
01027	Payment Applications
01040	Project Coordination
01065	Permits and Easements
01070	Abbreviation and Symbols
01200	Project Meetings
01300	Contractor Submittal
01310	Project Schedule
01313	Construction and Schedule Constraints
01340	Shop Drawings, Product Data, and Samples

Section No.	Title
01370	Schedule of Valves
01380	Construction Photographs
01410	Regulatory Requirements
01411	Testing and Quality Control
01505	Mobilization
01540	Security
01600	Product Requirements
01631	Product Substitutions
01650	Start-Up
01710	Cleaning
01720	Contract Record and Close Out Documentations
01730	Operating and Maintenance
01740	Warranties and Bonds
01756	Commissioning
01821	Instruction of Operations and Maintenance Personnel
02100	Demolitions
03000	Concrete
03600	Grouting
05051	Anchor Bolts, Toggle Bolts and Concrete Inserts
07900	Joint Sealants
09940	Protective Coatings
09941	Shop Applied Coatings for Pumps, Motors, and Pump Motor Bases
11312H	Axially-Split Centrifugal Pumps
15010	Valve Installation
15050	Common Work Results for Mechanical Equipment
15052	Common Work Results for General Piping
15059	Miscellaneous Piping and Pipe Accessories
15060	Ductile Iron Pipe and Fittings
15093	Check Valves
15094	Pipe Supports
15101	AWWA Butterfly Valves
15108	Air Release and Combination Air Valves
15110	Common Work Results for Valves
15121	Pipe Couplings
15958	Mechanical Equipment Testing
16050	Common Work Results for Electrical
16062	Grounding
16070	Hangars and Supports
16075	Electrical Identification
16100	Electrical Equipment Installation
16120	Low Voltage Wire Connections
16122	Motors
16123	600-Volt or Less Wires and Cables
16125	Fiber Optic Cable and Appurtenances
16130	Conduits
16134	Boxes

Section No.	Title
16150	Low Voltage AFD
16305	Electrical Arc Flash Study
16416	Surge Protective Devices
16950	Field Electrical Acceptance Tests
16951	Electrical Functional Testing
16990	Conduit Testing
17101	Specific Control Strategies – (Process Area)
17500	Instrumentation and Control Systems
17530	Programmable Logic Controllers
17560	Instrumentation General Requirements
17562	Flow Instruments
17563	Pressure and Level Instruments
17565	Miscellaneous Instruments

13.0 Scrutinized Companies and Foreign Countries of Concern

13.1 Contractor certifies that it is in compliance with Section 287.135, Florida Statutes, which provides that a company that has been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; the Scrutinized Companies that Boycott Israel List or is engaged in a Boycott of Israel is ineligible and may not submit a bid, proposal, or enter into or renew a Contract with an agency for goods or services of $1 million or more. At the time of submission of a bid or proposal for a Contract or Contract renewal for goods or services of $1 million or more, the company must certify that it is not on either such List and further that it does not have business operations in Cuba or Syria as required by Section 287.135(5), Florida Statutes.

13.2 Pursuant to Section 287.135, Florida Statutes, Tampa Bay Water reserves the right to terminate any Contract for goods or services of $1 million or more if the awarded Contractor:

a. Has been found to have submitted a false Scrutinized Vendor List certification as provided under Section 287.135 subsection (5); or
b. Has been placed on the Scrutinized Companies Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or
c. Has been engaged in business operations in Cuba or Syria.

13.2 Pursuant to Section 287.135, Florida Statutes, Tampa Bay Water reserves the right to terminate any Contract for goods or services of any amount if the awarded Contractor has been placed on the Scrutinized Companies that Boycott Israel List or is engaged in a boycott of Israel.

13.3 Foreign Countries of Concern. Pursuant to Section 287.138, Florida Statutes, Tampa Bay Water may not enter into a Contract with an entity that gives access to an individual's personal identifying information if the entity is owned, controlled or organized under the laws of a Foreign County of Concern which includes the People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolas Maduro, the Syrian Arab Republic, or any other entity or agency under the significant control of such Foreign County of Concern. Tampa Bay Water reserves the right to terminate any Contract for goods or services of any amount if the awarded Contractor is in violation of Section 287.138, Florida Statutes

14.0 Employee Verification

In accordance with Section 448.095 Florida Statutes, the Contractor agrees to register with and utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired during the term of the Contract for the services specified in the Contract. The Contractor must also include a requirement in subcontracts that the subcontractor must register with and utilize the E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the Contract term. If the Contractor enters into a Contract with a subcontractor, the subcontractor must provide the Contractor with an affidavit stating that the subcontractor does not employ, contract with, or subcontract with an unauthorized alien. The Contractor shall maintain a copy of such affidavit for the duration of the Contract. If Tampa Bay Water has a good faith belief that the Contractor has knowingly violated Section 448.09(1), Florida Statutes, Tampa Bay Water shall terminate the Contract with the Contractor, and the Contractor may not be awarded a Contract with Tampa Bay Water for at least 1 year after the date on which the Contract was terminated. The Contractor is liable for any additional costs incurred by Tampa Bay Water as a result of the termination of the Contract. If Tampa Bay Water has a good faith belief that a subcontractor knowingly violated the law, but the Contractor has otherwise complied with Consultant to immediately terminate the Contract with the subcontractor.

15.0 Anti-Human Trafficking

In accordance with Section s.787.06, Florida Statutes, the Contractor must provide Tampa Bay Water with an affidavit regarding Human Trafficking. Affidavit included herein must be completed by Contractor to attest, under penalty of perjury, that Contractor does not use coercion for labor or services as defined in s. 787.06, Florida Statutes.

IN WITNESS WHEREOF, Tampa Bay Water and Contractor have signed two (2) copies of this Contract, and all parts of the Contract Documents have been identified by Owner and Contractor. This Contract will be effective on _____ (which is the Effective Date of the Contract). This Contract may be signed in several counterparts, each of which is an original and all of which constitute one and the same instrument.

WITNESSES

_____
Witness

C&T CONTRACTING SERVICES, LLC

By: _____

Name: _____

Title: _____

(CORPORATE SEAL)

ATTEST

_____
Charles H. Carden, General Manager

TAMPA BAY WATER
A Regional Water Supply Authority

By: _____

Name: _____

Its: _____

Date: _____

Approved as to form:

(SEAL)

_____
General Counsel

Address for giving notice to:

TAMPA BAY WATER
2575 Enterprise Road
Clearwater, Florida 33763-1102
Attn: Stacy Gundry, Purchasing and Warehouse Manager

The ENGINEER:
Carollo Engineers Inc.
401 N. Cattleman Road, Suite 306
Sarasota, FL 34232

The CONTRACTOR:
C&T Contracting Services, LLC
11023 Countryway Blvd
Tampa, FL 33626
Attn: Chris Telson, Operations Manager

End of Contract

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That _____ as Principal, located at _____ (Business Address) and _____as Surety, located at _____ (Business Address) are held and firmly bound to the Tampa Bay Water, A Regional Water Supply Authority as Obligee in the sum of _____ ($_____) for the payment whereof we bind ourselves, our heirs, executors, personal representatives, successors and assigns, jointly and severally.

Whereas, Principal has entered into a contract dated as of the _____ day of _____, 20__, with Obligee for **Lake Bridge Water Treatment Plant-Pump No. 4, Project No.: 07542, Contract No. 2026012** in accordance with DRAWINGs and Specifications, which contract is incorporated by reference and made a part hereof, and is referred to as the Contract.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs the Contract at the times and in the manner prescribed in the Contract; and

2. Pays Obligee any and all losses, damages, costs and attorneys' fees, including appellate proceedings, that Obligee sustains because of any default by Principal under the Contract including, but not limited to, all delay damages, whether liquidated or actual, suffered by Obligee; and

3. Performs the guarantee of all work and materials furnished under the Contract for the time specified in the Contract, then this bond is void; otherwise, it remains in full force.

BE IT FURTHER KNOWN:

1. Any changes, regardless of scope or amount, in or under the Contract and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect Surety's obligation under this Bond.

2. The Surety, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or other work to be performed hereunder, or the Specifications referred to therein shall in anyway affect its obligations under this bond, and it does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to work or to the Specifications.

3. This Performance Bond is issued in compliance with the terms and conditions set forth in Florida Statute 255.05; however, it is intended to exceed the minimal coverage requirements established by that statute. The Notice and time limitations of Florida Statute 255.05 (2) are also, to the extent applicable, if any, incorporated herein by reference and made a part hereof.

4. In no event will the Surety be liable in the aggregate to Obligee for more than the penal sum of this Performance Bond regardless of the number of suits that may be filed by Obligee.

5. Whenever the Contractor shall be, and is declared by Tampa Bay Water to be in default under the Contract, Tampa Bay Water having performed Tampa Bay Water's obligations thereunder, the SURETY shall promptly remedy the default, as set forth below and at the sole option of Tampa Bay Water, by promptly:

(a) Completing the Contract in accordance with its terms and conditions and paying Tampa Bay Water all of its losses, damages, costs and attorneys' and legal assistants' fees, whether at trial, on appeal or in bankruptcy, that Tampa Bay Water sustains because of any default by Principal under

the Contract including, but not limited to, all delay damages, whether liquidated or actual. In the event Surety takes over and completes the Contract, then in such event it shall be entitled to receive the balance of the Contract Price, as defined in sub-paragraph 2 below; or

(b) Indemnifying Tampa Bay Water for all of its damages, expenses, costs, delay damages, attorneys' and legal assistant's fees, including appellate and bankruptcy proceedings, that Tampa Bay Water has incurred, suffered or sustained as a result of Tampa Bay Water's completion of the Contract or the Principal's default under the Contract, less the remaining unpaid balance of the Contract Price, if any. The term "balance of the Contract Price," as used in this Performance Bond, shall mean the total amount payable by Tampa Bay Water to the Contractor under the Contract and any amendments thereto, less the amount previously paid by Tampa Bay Water to the Contractor.

IN WITNESS WHEREOF, the above parties have executed this instrument this _____ day of _____, 20__, the name of each party being affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered in the presence of:

PRINCIPAL:

_____ _____

_____ By: _____

Witnesses as to Principal

Name: _____

Its: _____

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20____, by _____, as _____ of _____, a _____ _____corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____
Notary Public Signature

(AFFIX NOTARY SEAL)

_____
Print Name

My Commission Expires:

ATTEST:

SURETY:

_____
(Printed Name)

_____
Witness as to Surety

_____
_____
_____
(Business Address)

_____
(Authorized Signature)

_____
(Printed Name)

OR

_____

_____
Florida Resident Agent and As Attorney in Fact
(Attach Power of Attorney)

_____
Witness

_____
_____
_____
(Business Address)

_____
(Printed Name)

_____
(Telephone Number)

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20____, by _____, as _____ of _____, a _____ corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____
Notary Public Signature

(AFFIX NOTARY SEAL)

_____
Print Name

My Commission Expires:

PUBLIC PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That _____ as Principal, located at _____ (Business Address) and _____ as Surety, located at _____ (Business Address) are held and firmly bound to the Tampa Bay Water, A Regional Water Supply Authority as Obligee in the sum of _____ ($_____) for the payment whereof we bind ourselves, our heirs, executors, personal representatives, successors and assigns, jointly and severally.

Whereas, Principal has entered into a contract dated as of the _____ day of _____, 20__, with Obligee for **Lake Bridge Water Treatment Plant-Pump No. 4, Project No.: 07542, Contract No. 2026012** in accordance with DRAWINGs and Specifications, which contract is incorporated by reference and made a part hereof, and is referred to as the Contract.

THE CONDITION OF THIS BOND is that if Principal:

1. Promptly makes payment to all claimants as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor, materials or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in the Contract; and
2. Pays Obligee all losses, damages, expenses, costs, and attorneys' fees, including appellate proceedings that Obligee sustains because of default by the Principal under paragraph 1 of this bond; then this bond is void; otherwise, it remains in full force.

BE IT FURTHER KNOWN:

1. Any changes, regardless of scope or amount, in or under the Contract and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect Surety's obligation under this Bond.
2. The Surety, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or other work to be performed hereunder, or the Specifications referred to therein shall in anyway affect its obligations under this bond, and it does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to work or to the Specifications.
3. This Payment Bond is a statutory payment bond and is not intended to be a common law Payment Bond. This Payment Bond is issued in compliance with the terms and conditions set forth in Florida Statute 255.05. The Notice and time limitations of Florida Statute 255.05 (2) are also expressly incorporated herein by reference and made a part hereof. Any action instituted by a claimant under this bond must be in accordance with the Notice and Time limitations contained in Florida Statute 255.05 (2).

In no event shall the Surety be liable in the aggregate to claimants for more than the penal sum of this Payment Bond, regardless of the number of suits that may be filed by such claimants.

IN WITNESS WHEREOF, the above parties have executed this instrument this _____ day of _____, 20__, the name of each party being affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered in the presence of:

PRINCIPAL:

_____ _____

Witnesses as to Principal

By:_____

Name: _____

Its:_____

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _ _____ day of _____, 20____, by _____, as ____ _____ of _____, a _____ _____corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____

Notary Public Signature

(AFFIX NOTARY SEAL)

_____

Print Name

My Commission Expires:

ATTEST:

SURETY:

_____ _____

(Printed Name)

_____ _____

_____

Witness as to Surety

_____

(Business Address)

_____

(Authorized Signature)

_____

(Printed Name)

OR

_____ _____

Florida Resident Agent and As Attorney in Fact

_____ (Attach Power of Attorney)

Witness _____

_____

_____

(Business Address)

_____

(Printed Name)

_____

(Telephone Number)

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this __ _____ day of _____, 20____, by _____, as ____ _____ of _____, a _____ _____corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____

Notary Public Signature

_____

Print Name

My Commission Expires: (AFFIX NOTARY SEAL)

TAMPA BAY WATER, A REGIONAL WATER SUPPLY AUTHORITY CERTIFICATE OF INSURANCE FORM or APPROVED ACORD FORM

Issue Date:

Producer:

CANCELLATION: Should any of the below described policies be cancelled, non-renewed or adversely changed before the expiration date thereof, the issuing company will provide 30 days written notice to Tampa Bay Water by certified mail.

Re: Project/Contract Number: _____

Insured:

COMPANIES AFFORDING COVERAGE	BEST RATING/CLASS
A.	
B.	
C.	
D.	
E.	

COVERAGES: This is to certify that the policies of insurance listed below have been issued to the insured named above for the policy period indicated.

Company Letter	1. TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE	POLICY EXPIRATION DATE	LIMITS ALL LIMITS IN THOUSANDS		
	2. GENERAL LIABILITY ❑ Commercial Form ❑ Occurrence ❑ Claims Made ❑ Comprehensive Form ❑ Premises-Operations ❑ Explosion, Collapse, Underground Hazard ❑ Products/Completed Operations Hazard ❑ Contractual Insurance ❑ Broad Form Property Damage ❑ Independent Contractor ❑ Personal Injury					EACH OCCURRENCE	AGGREGATE
					BI & PD Combined	$	$
					Bodily Injury	$	$
					Property Damage	$	$
					Products Comp/OP	$	$
					Personal & Adv. Injury	$	$
					* Separate Project Agg. For Tampa Bay Water		$
	AUTOMOBILE LIABILITY ❑ Any Auto ❑ All Owned Autos ❑ Scheduled Autos ❑ Hired Autos ❑ Non-Owned Autos				Combined Single Limit		
					Bodily Injury (Per Person)		
					Bodily Injury (Per Accident)		
					Property Damage		
	UMBRELLA/EXCESS LIABILITY ❑ Umbrella Form ❑ Excess Form ❑ Following Form Coverage				Each Occurrence		
					Aggregate		
	WORKERS' COMPENSATION AND EMPLYERS' LIABILITY				☒ Statutory Coverage Limit		$
					EL Each Accident		$
					EL Disease – Policy Limit		$
					EL Disease – Each Employee		$
	PROFESSIONAL LIABILITY ❑ Claims Made ❑ Occurrences Retro Date _____					$	$
	BUILDER'S RISK ❑ All Risk ❑ Permission to Occupy ❑ All Owners', Contractors', Subcontractors' Interests Covered ❑ Installation Floater				$		
	FIDELITY ❑ Employee Dishonesty ❑ Covers Loss to Tampa Bay Water				$		
	OTHER						

Description of Operations/Locations/Vehicle/Special Items:

***** Specific Project or Location:

CERTIFICATE HOLDER and ADDITIONAL INSURED

Tampa Bay Water, Its Engineers, Architects, Consultants, Subsidiaries or Affiliates and each of the Tampa Bay Water Directors, Officers, Employees, Representatives, Agents or Volunteers.

Authorized Representative: _____
(Signature Required)

Address _____

Telephone # _____ Facsimile # _____

THIS IS TO FURTHER CERTIFY THAT:

1. The company issuing the General Liability Coverage hereby agrees to waive any right of subrogation it may acquire against Tampa Bay Water, its engineers, its consultants, and all other parties named as insured by reason of any payment made on account of personal injury, bodily injury, including death resulting therefrom, sustained by any employee of the insured or property damage arising out of the performance or furnishing of work under the above referenced Contract.

2. Each of the above-described policies contains a provision or endorsement that the coverage afforded will not be canceled, adversely changed or non-renewed until at least thirty (30) days prior written notice has been given to Tampa Bay Water by certified mail.

3. Each of the above listed companies hereby agrees to deliver to Tampa Bay Water new Certificate of Insurance at least fifteen (15) days prior to coverage renewals or binder within such period and a certificate within fifteen (15) days thereafter.

4. If requested, each of the above-listed companies hereby agrees to deliver two (2) copies of the policies purchased by the Agent to Tampa Bay Water.

5. Each of the above listed companies is authorized to do business and has an agent for service of process in Florida and has an "A" policy holders rating and a financial rating of at least Class VIII in accordance with the most current Best's rating. For self-insurance funds, financial statements are to be provided, if requested by Tampa Bay Water. (At Tampa Bay Water's option, a Best's rating or financial information regarding any self-insurance funds may be waived.)

ACORD CERTIFICATE OF LIABILITY INSURANC Clear Save

DATE (MM/DD/YYYY)

PRODUCER

Your Insurance Agent

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED

Company Name
Street
City, State, Zip Code

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A: Company Name	
INSURER B:	
INSURER C:	
INSURER D:	
INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	X	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PROJECT LOC	Policy Number	effective	expires	EACH OCCURRENCE	$ 1,000,000
						DAMAGE TO RENTED PREMISES (Ea occurence)	$ 300,000
						MED EXP (Any one person)	$ 5,000
						PERSONAL & ADV INJURY	$ 1,000,000
						GENERAL AGGREGATE	$ 2,000,000
						PRODUCTS - COMP/OP AGG	$ 2,000,000
	X	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS	Policy Number	effective	expires	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
						BODILY INJURY (Per person)	$
						BODILY INJURY (Per accident)	$
						PROPERTY DAMAGE (Per accident)	$
		GARAGE LIABILITY ANY AUTO				AUTO ONLY - EA ACCIDENT	$
						OTHER THAN AUTO ONLY: EA ACC	$
						AGG	$
	X	EXCESS/UMBRELLA LIABILITY X OCCUR CLAIMS MADE DEDUCTIBLE RETENTION $	Policy Number	effective	expires	EACH OCCURRENCE	$ 2,000,000
						AGGREGATE	$ 2,000,000
							$
							$
							$
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below NO	Policy Number	effective	expires	X WC STATUTORY LIMITS / OTHER	
						E.L. EACH ACCIDENT	$ 100,000
						E.L. DISEASE - EA EMPLOYEE	$ 100,000
						E.L. DISEASE - POLICY LIMIT	$ 500,000
		OTHER					

Sample

Sample

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

Re: Job Name/Number
Tampa Bay Water, Its Engineers, Architects, Consultants, Subsidiaries or Affiliates and each of the Tampa Bay Water Directors, Officers, Employees, Representatives, Agents or Volunteers shall be named as additional insured under the GL Policy per CG 20 10 (07/04) AND CG 20 37 (07/04) or equivalent, and the Automobile Liability policy. Waiver of Subrogation is provided in favor of Tampa Bay Water on all policies. The insurance evidenced by this Certificate is primary and non-contributory to any insurance maintained by Tampa Bay Water.

CERTIFICATE HOLDER

Tampa Bay Water
2575 Enterprise Road
Clearwater, FL 33763-1102

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ~~ENDEAVOR TO~~ XXXXXXXX MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, ~~BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.~~ XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

AUTHORIZED REPRESENTATIVE

ACORD 25 (2001/08) © ACORD CORPORATION 1988

IMPORTANT

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

DISCLAIMER

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.

ACORD 25 (2001/08)

SUPPLEMENTARY CONDITIONS

Supplementary Conditions to the General Conditions, *Article IV, The Contractor and Its Employees*.

The limits of liability for the following insurance required by the General Conditions, *Article IV, The Contractor and Its Employees*, as amended in the Supplementary Conditions, shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Commercial General Liability. The coverage(s) shall be no less than:
   (a) Minimum limits of $1,000,000 per occurrence combined single limit for all liability must be provided, with umbrella insurance making up the difference between the policy limits of underlying policies and the total amount of coverage required. The referenced limit shall be provided as a separate aggregate for the Work (Project Aggregate).

   (b) Minimum limits of $2,000,000 Aggregate single limit for all liability must be provided, with umbrella insurance making up the difference between the policy limits of underlying policies and the total amount of coverage required. The referenced limit shall be provided as a separate aggregate for the Work (Project Aggregate).

2. Business Automobile Liability. The coverage shall be no less than:
   (a) Minimum limits of $1,000,000 combined single limit for all liability must be provided.

3. Umbrella/Excess Liability. The coverage shall be no less than:
   (a) Minimum limits of $2,000,000 per occurrence must be provided.

   (b) Aggregate limits of $5,000,000 must be provided.

4. Worker's Compensation and Employer's Liability. The coverage shall include:
   (a) Coverage A:
   State: Statutory limits under the Laws of the State of Florida.
   Federal: Statutory limits under the Laws of the United State of America (e.g., Longshoremen's, etc.)

   (b) Coverage B:
   Employer's Liability, bodily injury, occupational sickness or disease, or death of Contractor's employees shall be no less than:
   1) $500,000 Each Accident
   2) $1,000,000 Each Disease
   3) $500,000 Each Employee

   Tampa Bay Water requires Contractor employers to purchase workers compensation insurance for all their employees regardless of the number of employees they have and regardless of any other exemptions. Florida law permits employers who may be exempt from purchase of coverage to waive their exemptions and purchase the coverage. Tampa Bay Water requires the Contractor to purchase said coverage.

5. Builder's Risk "All Risk" or Installation Floater Insurance. Coverage shall be no less than the full insurable replacement value of the Work, including completed Work, Work in progress and all insurable building materials, structures, fences, lights, equipment, pumps, electrical components, and similar insurable property. Exceptions to insurable property include underground property (after installation), site work and road work.

6. Additional Requirements:
   (a). Tampa Bay Water must be listed as an Additional Insured on General Liability, Auto Liability and Excess policies;

   (b). Excess/Umbrella policies shall be written as "follow form";

   (c.) The insurance provided for Tampa Bay Water as Additional Insured shall apply as primary and non-contributory insurance;

   (d). The Additional Insured Endorsement utilized for General Liability must be form CG 20 10 (07/04) and CG 20 37 (07/04) or broader wording in Tampa Bay Water's favor as approved by Tampa Bay Water;

   (e). Contractor shall maintain General Liability coverage for itself and all Additional Insureds for the duration of the Work and maintain completed operations coverage for itself and Additional Insureds for five (5) years after completion of the Work;

   (f). All Contractor insurance policies will include a Waiver of Subrogation in favor of Tampa Bay Water;

   (g). Each of Contractor's insurance policies shall be endorsed to provide Tampa Bay Water with at least thirty (30) days written notice prior to any material change or cancellation of the policy, to the fullest extent commercially available;

   (h). Deductible amounts on Contractor policies shall not exceed $25,000 and shall require approval from Tampa Bay Water; and

   (i). In the event Contractor breaches any provision of the Insurance Requirements of the Contract, Tampa Bay Water may deduct the cost of any insurance from any funds Payable to Contractor under the Contract Documents.

General Conditions

Table of Contents		Page
Article	Description	
1	Definitions	30
2	Contract Documents	35
3	The Engineer	36
4	The Contractor and Its Employees	38
5	Tampa Bay Water/Owner	51
6	Progress of the Work	52
7	Payment	59

GENERAL CONDITIONS

1. Definitions

Wherever in the Contract Documents the following terms are used, the intent and meaning shall be as follows:

1.1. Addenda: Instruments issued by Engineer for Tampa Bay Water prior to the advertised time for receipt of Bids that modify the Contract Documents by additions, deletions, clarifications, corrections, or other revisions.

1.2. Contract: The written Contract between Tampa Bay Water and the Contractor covering the Work to be performed.

1.3. Allowances: A specified sum included in the Contract Price to be utilized only at the discretion of Tampa Bay Water.

1.4. Alternates: A specified portion of the Work listed on the Bid which has been added to or deducted from the Base Bid, at Tampa Bay Water's discretion, as identified in the Contract.

1.5. As Approved: The words "As Approved," unless otherwise qualified, shall be understood to be for conformance with the Contract Documents.

1.6. As-Built Contract Documents: A set of the Contract Documents marked up by the Contractor to show the Work as constructed with all modifications from the original Contract Document.

1.7. Base Bid: The sum total of the combined Unit Prices, Lump Sum Prices and Allowances in the Bid, excluding all Alternates.

1.8. Bidder: The person(s), partnership, firm or corporation submitting a Bid for the Work.

1.9. Bid Documents: The "Bid Documents" consist of the Instruction of Bidders, Information to Bidders, Request for Bids, Bid and the Contract Documents.

1.10. Bid Security: The Bid Bond, certified check or cashier's check provided pursuant to this ITB to protect Tampa Bay Water from the unauthorized withdrawal of Bid or refusal to execute the Contract Documents. Electronic Bids received through Bonfire must be accompanied by a copy of a certified check, or cashier's check drawn on a bank in good standing, or the Florida Bid Bond included herein. The Bid Bond must be issued by a surety authorized to issue such bonds in the State of Florida, in the amount of Five percent (5%) of the proposed total Contract Price of the Bid submitted. The Florida Bid Bond included herein shall be given as a guarantee that the Bidder will not withdraw its Bid for a period of One Hundred Twenty (120) days after the opening of Bids.

When submitting the electronic bid, a copy of the Bid Bond should be submitted in the electronic package. The original Bid Bond must be delivered to Tampa Bay Water physically via mail, delivery service or in-person. If submitting electronically, banking information may be redacted on copies of checks. Original checks must be delivered physically and unaltered.

1.11. Business Day: The term Business Day means each day occurring Monday through Friday.

1.12. Change Authorization: A written instrument which, when recommended by the Engineer and signed by Tampa Bay Water, authorizes and directs the Contractor to perform changes in the Work as described in the Change Authorization, and/or gives the basis, if any, for a subsequent adjustment in Contract Price or Contract Time. Upon receipt of a Change Authorization, the Contractor is authorized and required to perform the subject changes in the Work.

1.13. Change Order: A written instrument which, when recommended by the Engineer and signed by Tampa Bay Water and the Contractor, amends the Contract Documents to provide for changes in the Work, and/or Contract Price, and/or Contract Time.

1.14. Construction Directive: A written instrument issued by the Engineer pursuant to Paragraph 7.2.9.

1.15. Contract Documents: The "Contract Documents" consist of the Contract, Addenda, Supplementary Conditions, General Conditions, Specifications, Drawings, Change Order, Change Authorizations, and all other documents expressly incorporated by specific reference thereto. The Contract Documents are sometimes collectively referred to as the "Contract".

1.16. Contractor: The person(s), partnership, firm, or corporation that entered into and is (are) identified in the Contract.

1.17. Contractor's Representative: The Contractor's superintendent, project manager or other person at the location of Work authorized to direct the Work and receive communications from Tampa Bay Water or Engineer.

1.18. Contract Price: The total compensation payable by Tampa Bay Water to the Contractor for the performance of the Work by the Contractor in accordance with the requirements of the Contract Documents, as stated in the Contract and adjusted by all Change Order and Change Authorizations.

1.19. Contract Time: Unless otherwise specified, the Contract Time for all or a designated part of the Work is the period of time allowed, subject to Change Order and Change Authorizations, for completion of a specified part of the Work. The first Day of Contract Time shall be that date as specified on the Notice to Proceed as the date the Contract Time shall commence.

1.20. Correction Period: The period of time established in paragraph 4.20.2 hereafter for the correction of Defective Work.

1.21. Day: Unless otherwise specifically stated, the term Day shall be understood to mean calendar day.

1.22. Defective: A term used to refer to Work that is faulty, unsatisfactory, deficient, damaged or does not conform to the requirements of the Contract Documents and all applicable Laws and Regulations.

1.23. Drawings: The term Drawings refers to the various drawings, profiles, cross sections, elevations, details, plans and other working drawings and supplementary drawings, or reproductions thereof, sealed by the Engineer, which show the location, character, dimensions, details of the Work to be performed, all as identified in the Contract. Drawings may either be bound in the same book as the balance of the Contract Documents or bound in separate sets, and are a part of the Contract Documents, regardless of the method of binding.

1.24. Engineer: The person or organization identified as such in the Contract that provided the technical design. The term "Engineer" means the Engineer or its authorized representatives.

1.25. Final Completion: The completion of all the Work in accordance with the Contract Documents.

1.26. Laws And Regulations: Federal, State, and Local Statutes, Judicial and Administrative Decisions, Laws, By-Laws, Codes, Rules, Regulations, Resolutions, Ordinances, and/or Orders applicable to the Project.

1.27. Lump Sum Price: The price paid for a specified quantity of Work, which when performed, is paid for on the basis of an agreed price for the completed Work.

1.28. Notice: The term "Notice" or the requirement to notify, as used in the Contract Documents or applicable Laws and Regulations, shall signify a written communication

delivered in person; or by certified or registered mail, return receipt requested, to the individual, to a member of the firm, or to an officer of the corporation for whom it is intended.

1.29. Notice Of Award: The written notice of acceptance of the Bid by Tampa Bay Water to the successful Bidder stating that upon compliance by the Bidder, within the time specified, with the requisite conditions stated in this ITB, Tampa Bay Water will deliver the Contract to the successful Bidder for its execution.

1.30. Notice to Proceed: The written Notice issued by Tampa Bay Water to the Contractor, authorizing it to proceed with the Work in accordance with the Contract Documents, and fixing the date for which the Contract Time shall commence.

1.31. Or Equal: The term "or equal" shall be understood to indicate that the "equal" product is the same or better than the named product in function, performance, reliability, quality, and general configuration. Determination of equality in reference to the Project design requirements will be made by the Engineer.

1.32. Partial Utilization: Use by Tampa Bay Water of a portion of the Work (as designated by Tampa Bay Water) before reaching Substantial Completion for all the Work.

1.33. Payment Application: The forms provided by Tampa Bay Water which shall be used by the Contractor in requesting partial or final payment.

1.34. Permit Allowance: The Permit Allowance is for Tampa Bay Water's use in reimbursing the Contractor for the actual cost of permit fees required by Laws and Regulations necessary to perform the Work. This is a pass-through cost and no mark-ups are allowed on the Permit Allowance.

1.35. Progress Report: A written report(s) indicating progress of the Work, estimated date for delivery of materials, and proposed plan for recovery of any delays to the timing and sequence of Work set forth in the Progress Schedule and proposed plan for recovery of any delays to the timing and sequence of Work set forth in the Progress Schedule.

1.36. Progress Schedule: Schedule which shows the timing and sequence of Contractor's proposed execution of the Work and all subsequently issued updates thereto, after said updates have been reviewed and accepted by Tampa Bay Water.

1.37. Project : The name of the Project is as identified in the Contract.

1.38. Project Allowance: The Project Allowance is solely for Tampa Bay Water's use in the payment for changes in the Work, where such changes have been approved pursuant to the Contract Documents.

1.39. Project Representative: The authorized representative(s) of the Engineer who is (are) assigned to the Project or any part thereof.

1.40. Record Drawings: Drawings that are prepared by the Engineer reflecting as-built information provided by the Contractor on Contractor's As-Built Contract Documents.

1.41. Shop Drawings: All drawings, diagrams, illustrations, schedules, and other data prepared by or for the Contractor to illustrate some part of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams, and other data prepared by a Supplier and submitted by the Contractor to illustrate items of material or equipment.

1.42. Specifications: The term "Specifications" refers to those written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work, and certain administrative details applicable thereto, all as identified in the Contract. Where standard Specifications, common to the construction industry and to standard engineering practice, are referenced to or are otherwise applicable, the applicable portions of the most current versions of such standard Specifications shall

become a part of these Contract Documents. If referenced standard Specifications conflict with Specifications contained herein, the requirements contained herein shall control unless contrary to Laws and Regulations.

1.43. Subcontractor: An entity having a Contract with the Contractor for performing labor on the Work on the Project, or for performing both labor on the Project and furnishing materials or equipment.

1.44. Submittal: The term Submittal includes shop drawings, tests, samples, Progress Schedules and other schedules, Progress Reports and other reports, and any other documents required for submission by the Contract Documents.

1.45. Substantial Completion: Substantial Completion shall be that degree of completion of the Work or specified portion of the Work in accordance with the Contract Documents, as specified in the General Conditions, *Article II, Contract Time* of the Contract, certified by the Engineer and approved by Tampa Bay Water as evidenced by the Engineer's issuance of a Certificate of Substantial Completion, sufficient to provide Tampa Bay Water, at its discretion, the full-time use of the Work or Partial Utilization of a specified portion of the Work for the purposes for which it was intended.

1.46. Supplier: A manufacturer, fabricator, distributor, material man, or vendor having an Contract with the Contractor for furnishing materials or equipment for the Project.
Tampa Bay Water, A Regional Water Supply Authority/Owner: Tampa Bay Water, A Regional Water Supply Authority, is the Owner of the Work described in the Contract Documents. The term "Owner" and "Tampa Bay Water" are interchangeable

1.47. Uncontrollable Circumstance: Any act, event or condition affecting the Project, Contractor or Tampa Bay Water to the extent that it materially and adversely affects: (i) the ability of either party to perform any obligation hereunder (except for payment obligations); or (ii) the cost of such party's performance, if such act, event or condition is beyond the reasonable control and is not also the result of the willful or negligent act, error or omission or failure to exercise reasonable diligence on the party relying thereon as justification for not performing an obligation or complying with any condition required of such party under this Contract;

(1) *Inclusions*. Subject to the foregoing, such acts or events include the following:

(a) an act of God, hurricane, landslide, lightning, earthquake, fire, flood, plague, tornadoes, (but not including reasonably anticipated weather conditions for the geographic area of the Work site), explosion, sabotage or similar occurrence, acts of a public enemy, extortion, war, blockade or insurrection, riot or civil disturbance;

(b) a Change in Law;

(c) the failure of any appropriate governmental body or private utility having operational jurisdiction in the area in which the Project is located to provide and maintain Utilities to the Work site;

(d) any failure of title to the Work site or any enforcement of any encumbrance on the site or on any improvements thereon not consented to in writing by, or arising out of any action or Contract entered into by, the party adversely affected thereby;

(e) the preemption of materials or services by a governmental body in connection with a public emergency or any condemnation or other taking by eminent domain of any portion of the Project or Work site;

(f) the presence at the Work site of (i) subsurface structures, materials or conditions having archaeological significance; (ii) any habitat of endangered or similarly protected species; (iii) functioning subsurface structures at the site (to the extent not identified by Tampa Bay

Water to Contractor); and (iv) subsurface conditions of which Contractor, through the exercise of reasonable diligence, could not reasonably be expected to have notice;

(g) strikes by an organized union of the Contractor's Subcontractors;

(h) the failure of Tampa Bay Water to obtain any permit or approval which is Tampa Bay Water's responsibility to obtain, on or prior to the dates set forth in the Project Schedule.

(2) *Exclusions*. It is specifically understood that none of the following acts or conditions shall constitute Uncontrollable Circumstances:

(a) general economic conditions, interest or inflation rates, or currency fluctuations or exchange rates;

(b) changes in the financial condition of Tampa Bay Water, Contractor or any Subcontractor affecting the ability to perform their respective obligations;

(c) the consequences of error, neglect or omissions by the parties and any Subcontractor in the performance of any Work or responsibilities under this Contract;

(d) any increase for any reason in premiums charged by the Contractor's insurers or the insurance markets generally for the required Insurance;

(e) the failure of Contractor to secure any patents or licenses in connection with the technology necessary to perform its obligations hereunder;

(f) the failure of any Subcontractor or Supplier to furnish labor, materials, services or equipment for any reason other than for acts or events specifically included herein as Uncontrollable Circumstances;

(g) equipment failure except when due to acts or events specifically enumerated herein as Uncontrollable Circumstances; or

(h) any Change in Law with respect to the issuance of any permit or approval, the enactment of any statute, or the promulgation of any regulation affecting the standards or requirements of performance, the terms and conditions of which do not impose more stringent or burdensome requirements on the Project or Contractor than in effect on the Effective Date of the Contract.

Unit Price: The price paid for units of Work which, when performed, is measured and paid for on the basis of units.

1.48 Work: The word "Work" within these Contract Documents shall include all material, labor, services, documentation, tools, equipment, fuel, utilities, temporary facilities and all appliances, machinery, transportation, and appurtenances necessary to perform and complete the Project in accordance with the Contract Documents, and such additional items not specifically indicated or described which can be reasonably inferred as belonging to the item described in the Contract Documents or indicated and as required by good practice to provide a complete and satisfactory system(s) or structure(s).

1.49 Working Hours: Working Hours shall mean the hours between 7:00 a.m. and 6:00 p.m., Monday through Friday, excluding legal holidays. Maintenance of equipment will be allowed outside of Working Hours.

1.50 Other terms not defined herein shall have the meanings assigned to them elsewhere in the Contract Documents, and if not assigned and where the context will permit, as used or defined in the Florida Statutes.

2. Contract Documents

2.1 Intent of Contract Documents

2.1.1. The Contract Documents comprise the entire Contract between Tampa Bay Water and the Contractor concerning the Work. The Contract Documents are complementary, and what is called for by one shall be as binding as if called for by all. The intent of the Contract Documents is to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any work, materials, or equipment that may reasonably be inferred from the Contract Documents as being required to produce the indicated result shall be supplied whether or not specifically called for, with no increase in the Contract Price or extension of the Contract Time. When words which have a customary technical or trade meaning are used to describe work, materials, or equipment, such words shall be interpreted in accordance with that meaning, unless a contrary definition appears in the Contract Documents, in which case the Contract Documents shall control.

2.1.2. Whenever the terms "as ordered", "as directed", "as required", "as allowed", "As Approved", or terms of like effect, or the adjectives "reasonable", "suitable", "acceptable", "proper", or "satisfactory", or adjectives of similar effect, are used to describe a requirement, direction, review, or judgment of the Engineer or Tampa Bay Water as to the Work, it is intended that the requirement, direction, review, or judgment will be to evaluate the Work for compliance with the Contract Documents.

2.1.3. No use of any provision of any standard Specifications, manual, or code (whether or not expressly incorporated by reference in the Contract Documents), or Suppliers' instructions, shall be effective to (a) change the duties and responsibilities of the Contractor, Tampa Bay Water, or Engineer, or any of their consultants, agents, or employees from those assigned in the Contract Documents; or (b) to assign to the Contractor, Tampa Bay Water, or Engineer, or any of their consultants, agents, or Tampa Bay Water employees, any duty or authority to supervise or direct the execution of the Work or to assume responsibility contrary to the provisions of the Contract Documents.

2.2 Priority of the Contract Documents

2.2.1. In resolving inconsistencies or apparent conflicts among the Contract Documents, the first listed below shall take precedence and control over those following:

a. Contract
b. Supplementary Conditions
c. General Conditions
d. Specifications / Drawings
e. Front-Ends

2.2.2. In resolving inconsistencies between Drawings and Specifications, Contractor shall be obligated to comply with the more costly or stringent requirement, as determined by Tampa Bay Water. Figure dimensions on Drawings shall take precedence over scale dimensions. Detailed Drawings shall take precedence over general Drawings.

2.3 Examination and Verification of Contract Documents

2.3.1. Before undertaking each part of the Work, the Contractor shall carefully study and compare the Contract Documents with each other, check and verify pertinent figures and all applicable field measurements, and compare and coordinate related requirements for Work (i.e. location, dimensions, fit,

completeness, consistency, etc.).

2.3.2. The Contractor shall, immediately upon discovery, report in writing to the Engineer any conflict, error, omission, or ambiguity in the Contract Documents which the Contractor discovers, whether prior to or while performing the Work, and shall obtain a written interpretation or clarification from the Engineer before proceeding with any affected Work. The Engineer shall promptly investigate the matter and until such interpretation or clarification is obtained from the Engineer, any Work done by the Contractor which is directly or indirectly affected by same, will be at the Contractor's risk and the Contractor shall bear all resultant costs and delays.

2.4 Documents to be kept on the Project Site

The Contractor shall keep at least one copy of the Contract Documents on the Project site in good order, available to Tampa Bay Water and its representatives. The Contractor shall maintain on a daily basis at the Project site, and make available to the Engineer on request, one current set of As-Built Contract Documents which have been accurately marked by Contractor to indicate all modifications in the completed Work that differ from the original Contract Documents. As a condition precedent to Final Completion of the Work, the Contractor shall give the Engineer one complete set of these As-Built Contract Documents.

2.5 Additional Contract Documents

The Engineer shall furnish to the Contractor thirty-seven (37) sets of sealed Drawings (24 X 36) hard copies, one PDF copy and one AutoCAD electronic copy; sets of sealed Drawings and one (1) reproducible set of the Contract Documents.

2.6 Ownership of Contract Documents

All portions of the Contract Documents, and copies thereof furnished by the Engineer are the property of Tampa Bay Water. They are not to be used on other work and are to be returned to the Engineer at the completion of the Work with the exception of the Contractor's record set. Any reuse or adaptation of these materials by Contractor without specific written permission by Tampa Bay Water is expressly prohibited and shall be at the risk of the Contractor and without liability or legal expense to Tampa Bay Water or Engineer. The Contractor shall hold Tampa Bay Water and Engineer harmless from any and all damages and claims, including reasonable attorneys' fees and legal assistants' fees, for such unauthorized use.

3. The Engineer

3.1 Authority of the Engineer

The Engineer shall be a representative of Tampa Bay Water during the Contract Time for performance of the Work. The Engineer shall have authority to reject Work which does not conform to the Contract Documents. However, the Engineer's authority shall not affect the Contractor's responsibility to perform the Work in accordance with the Contract Documents.

3.2 Duties and Responsibility of the Engineer

3.2.1. The Engineer shall make visits to the Project site at intervals appropriate to the various stages of construction to observe the progress and quality of the Work and to determine if the Work is proceeding in accordance with the Contract Documents. Visits and observations made by the Engineer are solely for the benefit of Tampa Bay Water and shall not relieve the Contractor of its obligations including, but not limited to, the Contractor's obligations to conduct comprehensive inspections of the Work and to furnish materials and perform acceptable work, and to provide adequate safety precautions, all in

accordance with the Contract Documents.

3.2.2. The Engineer shall respond, in writing, within 21 days of receipt (unless more time is reasonably required for response), to all claims by Tampa Bay Water or the Contractor required for performance of the Work and requests for clarification or interpretation of the Contract Documents. The Engineer's response shall be of factual and/or technical nature, and shall not include the legal interpretation of the Contract Documents.

3.2.3. The Engineer may assign one or more Project Representatives to observe the Work. It is understood that such Project Representatives shall have authority to issue Notices of non-conformance and make decisions within the limitations of authority of the Engineer. The Contractor shall furnish all reasonable assistance required by the Engineer or Project Representative for proper observation of the Work. Observations by the Project Representative shall not relieve the Contractor of its obligations including, but not limited to, the Contractor's obligation to conduct comprehensive inspections of the Work and to furnish materials and perform work, and to provide adequate safety precautions, all in accordance with the Contract Documents.

3.2.4. On-site observations by the Engineer, Project Representatives and other assistants shall not relieve the Contractor from its obligation to perform the Work in accordance with the Contract Documents, nor constitute acceptance of Defective Work, nor give rise to any duty on their part to make the observations for the benefit of the Contractor.

3.2.5. The Engineer shall review Submittals within the times specified in the General Requirements, or if not specified, within 21 days of receipt (unless more time is reasonably required for review) for conformance with the design of the Project and for compliance with the Contract Documents. The Engineer's review shall not extend to means, methods, techniques, sequences, nor to procedures of construction (except where a specific means, method, technique, sequence, or procedure of construction is indicated in or required by the Contract Documents), nor to safety precautions or programs incident thereto.

3.3 Rejected Work

3.3.1. The Engineer shall have authority to disapprove or reject Work at any time during the performance of the Work, which the Engineer believes to be Defective; or to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed. The Engineer's authority does not relieve the Contractor from its responsibility to perform in accordance with the Contract Documents. When the Contractor is notified by the Engineer of rejection of Defective Work, the Contractor shall take immediate action to correct same.

3.3.2. All Defective Work, whether discovered before or after Final Completion, shall be removed and replaced by the Contractor, without cost to Tampa Bay Water, with Work which shall conform to the Contract Documents. Failure on the part of the Engineer to condemn or reject Defective Work shall not be construed to imply acceptance of such Work. Tampa Bay Water shall reserve and retain all of its rights and remedies at law or equity against the Contractor and its Surety for correction of or damages arising from any and all Defective Work.

3.4 Lines and Grades

Lines and grades shall be established as provided in the Drawings or the Supplementary Conditions. All information, stakes or marks shall be carefully preserved by the Contractor, and if the information, stakes or marks are destroyed or removed, all such information, stakes or marks shall be replaced at the Contractor's expense.

3.5 Detail Drawings and Instructions

If required, the Engineer shall furnish within 21 days (unless more time is reasonably required), in writing, additional instructions by means of Drawings or otherwise, as required for the proper execution of the Work. All such Drawings and instructions shall be in writing and consistent with the Contract Documents.

4. The Contractor and Its Employees

4.1 Contractor

4.1.1. The Contractor shall independently perform all Work included in the Contract Documents and shall not be considered an agent of Tampa Bay Water or of the Engineer, nor shall the Contractor's Subcontractors, Suppliers, or employees be agents of Tampa Bay Water or of the Engineer.

4.1.2. The Contractor shall provide competent, suitably qualified and reliable personnel, Subcontractors, and Suppliers to survey and lay-out the Work and furnish and perform the Work in accordance with the Contract Documents.

4.2 Subcontractors and Suppliers

4.2.1. The Contractor shall be responsible and liable to Tampa Bay Water for the acts and omissions of Contractor's employees, agents, and Subcontractors and Suppliers and their respective employees.

4.2.2. The Contractor shall list each Subcontractor or Supplier whom the Contractor intends to award a subcontract, other than those Subcontractors or Suppliers previously listed in the Bid, by submitting to Tampa Bay Water in writing, for each additional Subcontractor and Supplier, the same information required to be set forth in the Bid.

4.2.3. Work performed by a Subcontractor or Supplier shall be through an appropriate written subcontract which expressly binds the Subcontractor or Supplier to the terms and conditions of the Contract Documents for the express benefit of Tampa Bay Water, and requires each of them to assume toward the Contractor all of the obligations which the Contractor assumes toward Tampa Bay Water.

4.2.4. The Contractor shall deliver to Tampa Bay Water a copy of each subcontract with a Subcontractor or Supplier within fifteen (15) Days after receiving the Notice to Proceed or the execution of the subcontract, as applicable.

4.2.5. The Contractor shall perform (with the Contractor's own employees) not less than fifty percent (50%) of the difference between the Contract Price minus the cost of materials for the Project.

4.2.6. Nothing contained in the Contract Documents or any subcontract shall create any contractual relationship between any Subcontractor or Supplier and Tampa Bay Water or Engineer. Provided, however, Tampa Bay Water shall be named an intended third party beneficiary under all such subcontracts.

4.3 Equal Opportunity

4.3.1. At all times during the performance of the Work, Contractor shall comply with Title VII of the Civil Rights Act of 1964 and the Florida Civil Rights Act of 1992. The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, age,

handicap, or marital status. The Contractor shall take affirmative action to ensure that employment applications are used and that employees are treated without regard to their race, color, religion, sex, national origin, age, handicap or marital status for employment, upgrading, demotion, or transfer; recruitment advertising; layoff or termination; rates of pay, or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this non-discrimination clause.

4.3.2. The Contractor shall state in all solicitations or advertisements for employment placed by or on behalf of the Contractor that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, age, handicap, or marital status.

4.4 Indemnity

4.4.1. In consideration of One Hundred Dollars ($100.00) separately allocated from the first consideration paid hereunder, and other good and valuable consideration, including Tampa Bay Water's execution of the Contract, the sufficiency of which is hereby acknowledged by Contractor, Contractor shall indemnify and hold harmless Tampa Bay Water, its officers, employees, agents, representatives and consultants from and against all liabilities, costs, losses, and damages (including, but not limited to, all reasonable attorney's fees to the extent caused by the negligence, recklessness or intentional wrongful conduct of Contractor, any Subcontractor, or any individual or entity directly or indirectly employed or utilized by Contractor in the performance of the Work under this Contract. This indemnification shall also include all liabilities, damages, losses and costs including, but not be limited to, reasonable attorneys' fees arising out of any infringement of patents or copyrights incident to performing the Work by the Contractor, any Subcontractor or any person or organization employed by Contractor to perform or furnish any of the Work, or anyone for whose acts any of them may be liable.

4.4.2. With respect to all claims against Tampa Bay Water or the Engineer by any employee of the Contractor, the indemnification obligation under this Article shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor (or any Subcontractor or Supplier) under workers' compensation, disability benefit or other employee benefit acts.

4.4.3. The separate consideration recited in paragraph 4.4.1 above is in consideration of the indemnification obligation set forth in this Article 4.4, as well as any other indemnification provided by Contractor under the Contract Documents.

4.4.4 Contractor acknowledges and agrees its indemnification obligations under paragraph 4.4.1 shall be effective and fully enforceable even if any party indemnified hereunder is partially at fault or responsible for the claim; provided, however, Contractor shall not be liable or responsible for indemnifying any claim which is the result of the sole negligence of Tampa Bay Water, Engineer or any other party indemnified under paragraph 4.4.1.

4.5 Bonds and Insurance

A. Performance Bonds, Payment Bonds and Other Bonds

4.5.1. The Contractor shall furnish Performance Bonds and Payment Bonds, each in an amount at least equal to the Contract Price, in accordance with the requirements of Sections 255.05, Florida Statutes, as security for the faithful

performance and payment of all Contractor's obligations under the Contract Documents. These Bonds shall be in the forms specified in the Contract Documents. The Contractor shall also furnish any other bonds required in the Supplementary Conditions. All bonds shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Reinsuring companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. Attorneys-in-Fact who sign Bonds shall attach a certified copy of their Power of Attorney.

B. The Contractor's Insurance – General

4.5.2. The Contractor shall purchase and maintain the coverage specified in this Article and the Supplementary Conditions, and shall be written for not less than the limits of coverage specified in the Supplementary Conditions. The Contractor shall submit certificates to Tampa Bay Water itemizing the policies issued, limits of coverage, expiration dates and endorsements provided, using the form provided in the Contract Documents.

4.5.3. The Contractor shall not start or continue to perform any Work unless it has in full force and effect all required insurance as per the Contract Documents. The Contractor shall submit the insurance certificates provided with these Contract Documents for review by Tampa Bay Water prior to performing any Work. All Subcontractors and Suppliers performing Work on the Project shall provide the same types and limits of insurance as is required of the Contractor hereunder, unless otherwise expressly waived in writing by Tampa Bay Water.

4.5.4. Insurance shall be provided by insurance companies authorized to transact business and which have an agent for service of process in the State of Florida, having at least an "A-" Best's Rating and a Class VIII or better financial size category in accordance with the most current A.M. Best Company rating.

4.5.5. All the policies of insurance shall be endorsed to provide that any failure of the Contractor to comply with any provisions will not prejudice coverage for Tampa Bay Water. Deductible amounts shall be reduced or eliminated upon Tampa Bay Water's written request in which case Contractor shall be entitled to payment of any additional costs for such reduction or elimination of deductibles in accordance with paragraph 7.2 of these General Conditions. The insurer's costs of providing the insured(s) a defense at trial in bankruptcy proceedings, and/or appeal, including attorneys' fees, and legal assistants' fees, shall not be included within the limits of the policy coverage, but shall remain the insurer's separate responsibility.

4.5.6. To the fullest extent commercially available, all the policies of insurance shall be endorsed to provide that the coverage afforded will not be cancelled, adversely changed or renewal refused until at least thirty (30) Days' prior written Notice has been given to Tampa Bay Water and the Engineer by certified mail, return receipt requested. Should any coverage approach expiration during the period in which it is to remain in full force and effect, it shall be renewed prior to its expiration, and certificate filed with Tampa Bay Water at least thirty (30) Days prior to expiration. Tampa Bay Water and Engineer, their officers, agents, and employees shall be named as Additional Insured(s) on the Contractor's and any Subcontractor's commercial general liability, comprehensive automobile liability insurance, umbrella/excess liability and builder's risk policies for any claims arising out of work performed under the Contract Documents.

4.5.7. In case of the breach of any provision of this Article, Tampa Bay Water, at its option, may take out and maintain, at the expense of the Contractor, such insurance as Tampa Bay Water may deem proper and may deduct the cost of such insurance from any monies which may be due or become due the Contractor under the Contract Documents.

4.5.8. In carrying out any of the provisions of the Contract Documents or in exercising any authority granted by the Contract Documents, there will be no personal liability upon any board member, officer, employee or agent of Tampa Bay Water.

C. The Contractor's Liability Insurance

4.5.9. The Contractor shall purchase and maintain commercial general liability and other insurance appropriate for the Work, in the limits of at least those specified in the Supplementary Conditions, and which shall provide protection from claims itemized below which may arise out of or result from the Contractor's performance and furnishing of the Work and the Contractor's other obligations under the Contract Documents, whether the Work and the obligations be performed or furnished by the Contractor, Subcontractor or any Supplier, to wit:

a. Claims under workers' compensation, disability benefits, and other applicable similar employee benefits acts;

b. Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees; claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees; claims for damages insured by personal injury liability coverage sustained by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or by any other person for any other reason; claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use; claims arising by operation of Laws and Regulations for damages because of bodily injury or death of any person or for damage to property; and

c. Claims for damages because of bodily injury or death of any person, or property damage arising out of ownership, maintenance, operation, use of loading and unloading of any owned, hired or non-owned motor vehicle used in the Work, including employee non-ownership use.

4.5.10. The Contractor's liability insurance shall include contractual liability coverage sufficient to cover the Contractor's indemnification obligations under the Contract Documents. The Contractor agrees to pay on behalf of Tampa Bay Water, and to provide and pay for a defense for all claims covered by the Contractor's obligations under the indemnification provisions.

4.5.11. The Contractor's liability insurance shall be endorsed to include as additional insured: Tampa Bay Water, the Engineer, their consultants, any subsidiaries or affiliates, and each of their directors, officers, shareholders, agents, or employees. The insurance afforded to these additional insured shall be primary insurance, and neither the coverage nor the amount of insurance provided under the Contractor's policies shall be reduced or prorated by the existence of any other insurance applicable to any loss they may have sustained. If the Subcontractors and Suppliers do not purchase and maintain the coverage specified in this Article or the Supplementary Conditions, they shall be included in the Contractor's policies as additional insured.

4.5.12. The Contractor's liability insurance shall remain in effect until three (3) years after Final Completion and at all times after that when the Contractor may be correcting or removing and replacing Defective Work. Evidence of insurance shall be furnished to Tampa Bay Water yearly.

4.5.13. These requirements shall not be construed to limit the liability of the Contractor or its insurers. Tampa Bay Water does not represent that the specified coverage or limits of insurance are sufficient to protect the Contractor's interests or liabilities.

D. Property Insurance

4.5.14. The Contractor shall purchase and maintain builder's risk "all risk" completed value insurance coverage for physical loss or damage upon the Work at the Project site to its full insurable value, including completed Work and Work in progress. This insurance shall list Tampa Bay Water as an additional insured and shall include the interests of the Contractor, Subcontractors and Suppliers, the Engineer, and Tampa Bay Water's and the Engineer's consultants in the Work, all of whom shall be listed as additional insured. At a minimum, and not by way of limitation, it shall insure against extended coverage, perils of fire, lightning, windstorm, flood, rain, hail, explosions, riot, tornado, hurricane, sink holes, theft, vandalism and malicious mischief, collapse and water damage and shall include damages, losses and expenses arising out of or resulting from any insured loss incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys and other professionals). If not covered under the "all risk" insurance, the Contractor shall purchase and maintain similar property insurance on parts of the Work stored on and off the Project site or in transit whether or not such Work is included in a Payment Application. The policy shall be endorsed to permit use or occupancy by Tampa Bay Water prior to Final Completion. The property insurance may have a deductible amount, which shall be borne by the Contractor, not exceeding $25,000.00. The property insurance shall comply with the requirements of this Article.

E. Waiver of Subrogation Rights

4.5.15. Tampa Bay Water and the Contractor intend that all policies of insurance shall protect Tampa Bay Water, the Contractor, and the Engineer, provide primary coverage for all losses and damages caused by the perils covered. Accordingly, all such policies shall be endorsed to provide that in the event of payment of any loss or damage the insurer shall have no rights of subrogation or other recovery against any of the parties named as insured or additional insured, and if the insurers require separate waiver forms to be signed by the Engineer or Tampa Bay Water's and the Engineer's consultants, Tampa Bay Water will obtain separate waiver forms, and if such forms are required of any Subcontractor or Supplier, the Contractor will so obtain them.

4.6 Taxes and Charges

The Contractor shall pay any and all sales and use taxes and all withholding taxes, whether State or Federal, and pay all Social Security charges and also all State Unemployment Compensation charges, and pay or cause to be withheld, as the case may be, any and all taxes, charges, fees, or sums whatsoever, which are now required to be paid or withheld under any laws, unless otherwise modified in the Supplementary Conditions.

4.6.2. Tampa Bay Water reserves the right to implement an Owner's Direct Purchase sales tax savings program with respect to the Project. In such event,

Contractor shall cooperate and assist Tampa Bay Water, at no additional cost, with respect to the implementation of that sales tax savings program. Tampa Bay Water and Contractor shall work together to identify particular pieces of equipment and material that are suitable for direct purchase by Tampa Bay Water. As such items are identified, Tampa Bay Water shall issue purchase orders, in accordance with a schedule mutually acceptable to Tampa Bay Water and Contractor, to the appropriate Suppliers of such items for the direct purchase of those items by Tampa Bay Water. Tampa Bay Water shall pay the Supplier of such items directly and the title for such items shall pass directly from the Supplier to Tampa Bay Water. Notwithstanding the foregoing, Contractor shall remain responsible for the ordering, scheduling, coordinating, insuring, delivery, unloading, storage, installation, operation, and warranties of all such direct purchase items, as if Contractor had purchased the items itself for incorporation into the Work. In that regard, Tampa Bay Water shall assign to Contractor all contract and warranty rights Tampa Bay Water may have against any such Supplier, so as to permit Contractor to assert warranty or other contract claims for defective or nonconforming materials or equipment directly against the Supplier. As Tampa Bay Water issues purchase orders to the Suppliers of such items, Tampa Bay Water and Contractor shall execute a Change Order which deducts from the Contract Price the amount being paid by Tampa Bay Water, plus the amount of sales tax that otherwise would have been paid on such items. As an inducement to Contractor to more fully cooperate and facilitate this sales tax savings program, Contractor shall receive as a bonus, at the time final payment is to be made hereunder, a sum equal to ten percent (10%) of the total amount of sales tax saved by Tampa Bay Water as a result of these direct purchases.

4.7 Codes, Ordinances, Permits, and Licenses

4.7.1. The Contractor shall keep itself fully informed of all applicable Laws and Regulations, which in any manner affect the Work. All permits, licenses, inspection fees, impact fees, and other costs necessary for performance of, compliance with, and/or completion of the Work shall be obtained and paid for by the Contractor, unless otherwise modified in the Supplementary Conditions.

4.7.2. If Tampa Bay Water has obtained and paid for any permits or licenses applicable to the Work, the Contractor shall meet all requirements of those permits and licenses. The Contractor shall bear all costs arising from the Contractor's responsibilities under this Article.

4.7.3 All Work is to be performed by Contractor in accordance with the most current applicable Laws and Regulations. Provided, however, in the event of any changes to any applicable Laws and Regulations that take effect after the date Contractor submitted its Bid to Tampa Bay Water, and under the circumstances it is not reasonable to assume that Contractor was or should have been aware of such changes, and Contractor provides Notice to Engineer of the changes and Engineer thereupon directs Contractor in writing to perform the Work in accordance with such changes, and such changes impact the time and/or cost of Contractor's performance of the Work, a Change Order or Change Authorization shall be issued with respect to such changes.

4.8 Superintendence

4.8.1. The Contractor shall keep at the Project site supervisory personnel who shall direct the Work in a competent manner, applying the skills, expertise and

attention necessary to perform the Work in accordance with the Contract Documents. The Contractor shall designate, in writing before starting Work, a competent Project superintendent who shall be an employee of the Contractor and shall have complete authority to represent and to act for the Contractor. The Contractor shall notify Tampa Bay Water and Engineer in writing prior to any change in superintendent assignment. If Tampa Bay Water objects to the Contractor's superintendent, the Contractor shall submit a replacement superintendent at no increase in Contract Price nor extension in Contract Time. The Contractor shall be responsible for all construction means, methods, techniques, sequences, and procedures, and for providing adequate safety precautions and coordinating all portions of the Work.

4.8.2. If Tampa Bay Water or the Engineer object to any of the Contractor's personnel, by reason of being unfit, incompetent, unskilled, disorderly, intemperate, or otherwise hindering the Work, the Contractor shall promptly correct the problem and, if required by Tampa Bay Water or the Engineer, remove such personnel from the Work. Failure to comply with this provision shall constitute a material breach of the Contract and be grounds for withholding payment.

4.9 Reception of Engineer's Communications

4.9.1. The Contractor's Representative at the Project site shall have authority to act on behalf of and contractually bind the Contractor. All communications given to the Contractor's Representative shall be deemed given to the Contractor. Communications of major importance will be confirmed in writing upon request from the Contractor.

4.9.2. The Engineer may schedule Project meetings for the purposes of discussing and resolving matters concerning the various elements of the Work. The time and place for these meetings and the names of persons required to be present shall be determined by Tampa Bay Water and the Engineer. The Contractor shall comply with these attendance requirements and shall also require its Subcontractors and Suppliers to comply.

4.10 Safety

4.10.1. The Contractor shall be solely responsible for the condition of the Project site, including the safety of all persons and property during performance of the Work. This requirement shall apply continuously and not be limited to normal Working Hours. Safety provisions shall conform to U.S. Department of Labor (OSHA), and all other applicable Laws and Regulations, as well as all applicable safety rules and regulations promulgated by Tampa Bay Water from time to time. Where any of these are in conflict, the more stringent requirement shall be followed. The Contractor's failure to thoroughly familiarize itself with the aforementioned safety provisions shall not relieve it from compliance with the obligations and penalties set forth therein

4.10.2. The Contractor shall develop and maintain for the duration of this Project a safety program, and a written safety plan specific to the Project that will effectively incorporate and implement all safety provisions required by any Laws and Regulations. The Contractor shall appoint an employee assigned to the Work who shall be responsible to supervise and enforce compliance with the safety program.

4.10.3. The Contractor, as a part of its safety program, shall maintain at its office or other prominent place at the Project site, the written safety plan and safety equipment applicable to the Work as prescribed by the aforementioned

authorities and all articles necessary for giving first aid to the injured. The written safety plan shall establish the procedures for the immediate removal to a hospital or a doctor's care of persons (including employees) who may be injured on the Project site.

4.10.4. The Contractor must give Tampa Bay Water and the Engineer prompt Notice of all accidents or injuries whatsoever arising out of, or in connection with, the performance of the Work, whether on or adjacent to the Project site, giving full details in writing, including statements of witnesses. The prompt Notice required hereunder shall be given within 24 hours with respect to any injuries, and within two (2) working days as to all other accidents.

4.10.5. If a claim is made by anyone against the Contractor or any Subcontractor for any reason including, but not limited to, any accident, the Contractor shall give Tampa Bay Water and the Engineer prompt Notice, giving full details of the claim.

4.11 Protection of Work and Property

4.11.1. The Contractor shall have full responsibility for locating all underground utilities in advance of excavation (whether they are indicated on the Contract Documents or indicated by visible markers); scheduling excavation and uncovering in advance, unless it conflicts with Work already uncovered; shoring, blocking, and protecting the underground utilities; repairing any damage done to the satisfaction of Tampa Bay Water or the owners of those underground utilities; giving prompt Notice to Tampa Bay Water and the Engineer of any newly discovered underground utility; and the safety, protection and repairing of any damage done to any affected Work. All costs involved and time required to perform these responsibilities shall be considered as having been included in the Contract Price and in the Progress Schedule for performing the Work within the Contract Time; except that in the case of newly-discovered underground utilities, those costs and times shall, upon proper documentation, be considered pursuant to the General Conditions, *Article 6.8. Differing Site Conditions*, for adjustment of the Contract Price and/or the Contract Time.

4.11.2. The Contractor shall at all times safely guard and protect from damage Tampa Bay Water's property, property on which the Project is located if not owned by Tampa Bay Water, adjacent property, and its own Work from injury or loss. The Contractor shall provide all facilities required for protection of the Work according to all Laws and Regulations and local conditions.

4.11.3. The Contractor shall protect its Work and materials from damage due to the nature of the Work, the natural elements, carelessness of others, or from any cause, until Final Completion of the Work.

4.11.4. The Contractor shall notify owners of adjacent property (including underground utility owners) not less than 48 hours, or the time period required by Laws and Regulations, whichever period is longer, prior to the Work affecting the property, and shall coordinate and cooperate with them in the location, protection, removal, relocation, and/or replacement of their property. All damage, injury or loss to property caused, directly or indirectly, in whole or part, by the Contractor, any Subcontractor or Supplier or anyone for whose acts any of them may be liable, shall be remedied at the Contractor's expense. The Contractor shall shore up, brace, underpin, and protect as may be necessary, all foundations and other parts of all existing structures adjacent to the Project site.

4.12 Responsibility of Contractor to Act in Emergency

In case of an emergency which threatens loss or injury to persons or property, the Contractor shall take appropriate remedial action, without previous instructions from Tampa Bay Water or Engineer, as the situation may warrant, and immediately provide Notice to Tampa Bay Water and the Engineer of its action. Any claim for compensation by the Contractor, together with substantiating documentation in regard to expense caused by emergency acts, shall be submitted to Tampa Bay Water and the Engineer and the amount of compensation if any, shall be determined by mutual Contract.

4.13 Materials and Appliances

4.13.1. Unless otherwise modified in the Supplementary Conditions, all materials to be incorporated into the Work shall be new. The Contractor shall furnish satisfactory evidence to the Engineer as to the kind and quality of materials.

4.13.2. In selecting and/or approving equipment and materials for installation in the Project, neither Tampa Bay Water nor the Engineer shall be responsible for injuries or claims resulting from failure of the equipment or material to comply with Laws and Regulations and applicable federal, state, and local safety codes or requirements, or other applicable safety requirements, or failure due to the Work being Defective.

4.14 Contractors' and Manufacturers' Compliance with State Safety Laws and Regulations, OSHA, and Other Code Requirements

The completed Work shall include all necessary permanent safety devices, such as machinery guards and similar safety items required by the state and federal (OSHA) industrial authorities and other Laws and Regulations. Further, any features of the Work subject to such safety regulations shall be fabricated, furnished, and installed (including installation of Tampa Bay Water-furnished equipment) in compliance with these requirements. Subcontractors and Suppliers shall be held responsible for compliance with the requirements included herein. The Contractor shall notify all Suppliers and Subcontractors of the provisions of this Article.

4.15 Submittals

4.15.1. After checking and verifying all field measurements and after complying with all applicable procedures, Contractor shall submit to the Engineer for its review all Submittals, which shall bear a stamp or specific written indication that the Contractor has satisfied Contractor's responsibilities under the Contract Documents with respect to Submittals. All Submittals shall be promptly submitted by Contractor so as to cause no delay to the completion of the Work. All Submittals shall be identified as Engineer may require. The data shown shall be complete with respect to quantities, dimensions, specified performance, and design criteria, materials, and similar data sufficient to enable Engineer to review the information.

4.15.2. All Submittals shall be identified clearly as to material, Supplier, pertinent data such as catalog numbers, and the use for which it is intended. The Contractor shall review all Submittals prior to submission, for compliance with the Contract Documents and shall provide specific written certification of compliance.

4.15.3. Before each submission, the Contractor shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar data with respect thereto and reviewed and coordinated each Submittal with other Submittals and with the requirements of the Work and for compliance with the Contract

Documents. At the time of each submission, Contractor shall provide specific written Notice of each variation from the requirements of the Contract Documents, and in addition, shall cause a specific notation of each such variation to be made on each Submittal submitted for review and approval. In the absence of such notification, the approval of a Submittal shall not waive or alter the original requirements of the Contract Documents.

4.15.4. The Contractor shall make all corrections required by Engineer, and shall resubmit the required number of corrected copies of Submittals and new samples for review. The Contractor shall direct specific attention in writing to revisions other than the corrections called for by the Engineer on previous Submittals.

4.15.5. Where a Submittal or sample is required by the Contract Documents, any related Work performed prior to the Engineer's review and approval of the pertinent Submittal shall be at the Contractor's sole expense and responsibility.

4.15.6. Submittals are to demonstrate how the Contractor intends to conform with the design of the Project and the information given in the Contract Documents.

4.15.7. All costs incurred by Tampa Bay Water and the Engineer for the review of a particular Submittal after the Engineer's second review shall be borne by the Contractor, and shall be reimbursed by the Contractor to Tampa Bay Water. Tampa Bay Water may withhold such costs from payments to the Contractor.

4.15.8. The Contractor shall not be entitled to any claim for additional time or compensation caused by the review of any resubmittals.

4.16 Substitution of Materials

4.16.1. Whenever materials, equipment, type of construction, or process are described in the Contract Documents by using a brand name, make, manufacturer, supplier, patent, catalog number, or technique, the naming or Specifications of the item is intended to denote the standard of quality and essential characteristics of the item or process required by Tampa Bay Water. Unless words indicating that no substitution is permitted are used, items from prospective suppliers may be accepted by the Engineer if sufficient information is submitted by the Contractor in its written application for the substitution to allow the Engineer to determine whether the material or equipment proposed (1) will perform at least equally well, function, and achieve the results called for by the design, (2) is at least of equal materials of construction, quality and necessary essential design features, (3) is suited to the same use as that named or specified, (4) conforms to the desired detailed requirements for that item including, but not limited to, durability, strength, appearance, dimensions, aesthetics (where aesthetics are essential), safety, service, comparable usefulness, reliability, economy of operation, and ease of maintenance, (5) evidences a proven record of performance, and (6) will not extend the Contract Time or increase the Contract Price. Contractor shall be responsible for and shall pay all costs in connection with any inspection or testing required in connection with Tampa Bay Water's or Engineer's acceptance of a Supplier of materials or equipment proposed to be incorporated in the Work.

4.16.2. Each application for a substitution shall certify that the proposed substitute will meet each of the six criteria itemized in paragraph 4.16.1., and that the evaluation and acceptance by the Engineer of the proposed substitute will not prejudice completion of the Work within the Contract Time. All variations of

the substitute from the item named or specified shall be identified (operation, materials or construction finish, thickness or gauge of material dimensions, loads, tolerances, deleted/added features, etc.), and information regarding available maintenance, repair, and replacement service shall be indicated. The Contractor is solely responsible for verifying that substitutes are in accordance with the Contract Documents, and that dimensions, arrangement, design, and construction details, and all other features of substitutes are suited to the specified purpose.

4.16.3. A proposed substitute will be accepted as equivalent or "Or-Equal" to that named or specified if, in the Engineer's judgement, it meets the criteria in paragraph 4.16.1. No substitute shall be utilized, ordered, or installed without the Engineer's prior written acceptance.

4.17 Tests, Samples, and Observations

4.17.1. The Contractor shall furnish, with no increase in Contract Price, the necessary test pieces and samples, including facilities and labor for obtaining the same, as required by the Contract Documents or requested by the Engineer. When required by the Contract Documents or requested by the Engineer, the Contractor shall furnish certificates of any designated tests of materials and equipment.

4.17.2. The Contractor shall establish a quality control system to ensure sufficient supervision, inspection and testing of all items of Work, including those of the Subcontractors and Suppliers, and to ensure conformance to the applicable Contract Documents with respect to products, workmanship, construction, maintenance, finish, functional performance, and identification. The Contractor's quality control system shall include checking, approval, and coordination of Submittals and the surveillance of all specified tests.

4.17.3. Tampa Bay Water, the Engineer, authorized government agents and their representatives shall at all times be provided safe access to the Work whenever it is in preparation or progress, and the Contractor shall provide facilities for such access and for observations, including maintenance of temporary and permanent access.

4.17.4. If the Contract Documents, Laws and Regulations or any public authority requires any Work to be specially tested or approved, the Contractor shall give timely Notice to the Engineer of its readiness for testing or approval.

4.17.5. If any testing, inspection, or approval reveals failure of any part of the Work to conform to the Contract Documents, the Contractor shall not recover any costs made necessary by that failure, and shall reimburse Tampa Bay Water for all direct, indirect, and consequential costs made necessary by that failure including those of repeated procedures, and compensation for the Engineer's services. Such reimbursement may be withheld from payment to the Contractor.

4.17.6. If a portion of the Work is covered contrary to the Engineer's request or to requirements specifically expressed in the Contract Documents, it must, if required by the Engineer, be uncovered for the Engineer's examination and be recovered at the Contractor's expense without change to the Contract Time or Contract Price. If any Work should be covered up without approval or consent of the Engineer, re-examination of questioned Work may be ordered by the Engineer, and if so ordered, the Work shall be uncovered by the Contractor. If it is found that such Work is Defective, Contractor shall bear all direct, indirect, and consequential costs of such uncovering, exposure,

observation, inspection, correction of the Defective Work, and testing and of satisfactory reconstruction, (including but not limited to fees and charges of engineers, architects, attorneys, and other professionals) and Tampa Bay Water shall be entitled to reimbursement or to deduct the costs from payment to the Contractor. If it is found that such Work is not Defective, Tampa Bay Water shall reimburse Contractor for the cost of uncovering, inspecting, and recovering such Work.

4.18 Royalties and Patents

The Contractor shall pay all royalty and patent fees unless otherwise specified. Pursuant to the indemnity provisions of the General Conditions, *Article 4.4, Indemnity,* the Contractor shall defend all suits or claims for infringement of any patent rights and shall save Tampa Bay Water and the Engineer harmless from any and all loss, including reasonable attorneys' fees and legal assistants' fees on account thereof.

4.19 Contractor's Right to Terminate Contract

If the Work is stopped under an order of any court or other public authority for a period of more than 3 months, through no act or fault of the Contractor, its Subcontractors, or their respective employees, or if Tampa Bay Water should fail to pay the Contractor within forty-five (45) Days after the time specified in the General Conditions, *Article 7.1. Partial Payments,* any sum recommended by the Engineer and approved by Tampa Bay Water, then the Contractor may, upon fifteen (15) Days written Notice to Tampa Bay Water and the Engineer, suspend Work. If Tampa Bay Water fails to correct the conditions, which under this Article justify the Contractor's suspension of the Work, the Contractor may, after fifteen (15) Days additional written Notice to Tampa Bay Water and the Engineer, terminate the Contract. Upon termination, the Contractor's sole and exclusive remedy shall be the same as and limited to those rights set forth in paragraph 6.6.6 hereafter. Contractor shall not be entitled to any additional rights or remedies against Tampa Bay Water, including loss profits and other damages, all such other remedies being expressly waived by Contractor.

4.20 Warranty and Guarantee; Correction of Defective Work During Correction Period

4.20.1. The Contractor warrants and guarantees to Tampa Bay Water that all Work will be in accordance with the Contract Documents and will not be Defective, including all Work performed or furnished by any Subcontractor or Supplier. This warranty and guarantee is in addition to and shall survive the Contractor's obligations under the Correction Period set forth in this Article.

4.20.2. The Contractor shall make, at its own expense, all repairs or replacements necessitated by Defective Work, and pay for any damage (whether to the Work itself or other property), including routine repairs resulting from such Defective Work, which becomes evident within the one (1) year after the date of Substantial Completion established by the Engineer for the entire Work or for specified items of Work, or within one (1) year after the date of Final Completion of the Work if Tampa Bay Water did not operate or use the entire facility between the Substantial Completion date and Final Completion, or within such longer period of time as may be prescribed by Laws and Regulations or by the terms of any applicable special guarantee required by the Contract Documents ("Correction Period"). After the Correction Period, Contractor shall remain liable to Tampa Bay Water, and its successors, for Defective Work and damage resulting from such Defective Work, but such liability shall not include an obligation to make routine repairs, unless otherwise agreed to in writing.

4.20.3. Contractor's subcontracts with its manufacturer(s) and the Supplier(s) of all other materials and equipment used in the Project which have a cost of more than $1,000.00 shall require an express warranty from the manufacturer(s) and the Supplier(s) to Tampa Bay Water that the materials (1) are new, (2) have been manufactured and supplied in accordance with the requirements of the Contract Documents, and (3) are not Defective. Such express warranty shall be for a period of not less than the Correction Period.

4.20.4. Defective Work identified for correction during the Correction Period but remaining Defective after its expiration shall be considered as part of the obligations of the warranty or guarantee.

4.20.5. The Contractor agrees to defend, indemnify and hold Tampa Bay Water and the Engineer harmless from liability of any kind arising from damage due to Defective Work. The Contractor shall make all repairs and replacements promptly upon receipt of written order for same from Tampa Bay Water or the Engineer. If the Contractor fails to make the repairs and replacements promptly, or in an emergency, where delay would cause serious risk, loss, or damage, Tampa Bay Water may have the Defective Work corrected or the rejected Work removed and replaced, and the Contractor and its Surety shall be liable for the cost thereof.

4.20.6. Contractor's subcontracts with its manufacturer(s) and the Supplier(s) of all materials shall permit the Contractor to assign to Tampa Bay Water all express and implied warranties from the manufacturer(s) and the Supplier(S). Contractor hereby assigns to Tampa Bay Water all express and implied warranties from the manufacturer(s) and the Supplier(S) of all materials used in the Work.

4.20.7. The specified warranties and guarantees and the Contractor's obligations for correction of Work specified in this Article are in addition to and not in limitation of any other specific remedies provided in the Contract Documents or by Laws and Regulations.

4.20.8. Tests, inspections or approvals shall not in any way relieve the Contractor from its obligations to perform the Work in accordance with the Contract Documents, or to warrant and guarantee the Work as provided in the Contract Documents.

4.20.9. These provisions shall not be construed to prohibit Tampa Bay Water from seeking damages or any remedy at law or equity against Contractor for breach of the Contract, Defective Work or the warranties provided herein.

4.21 Allowances

Contractor shall not proceed with any Allowance item unless and until it has received express written authorization from Tampa Bay Water. The Contract Price shall be adjusted by Change Order or Change Authorization based upon the actual cost of the Allowance items authorized in writing by Tampa Bay Water.

4.22 Contractor's Representations:

4.22.1. Contractor has examined and carefully studied the Contract and Contract Documents.

4.22.2. Contractor has visited the Work Site and become familiar with and is satisfied as to the general, local, and site conditions that may affect cost, progress, and performance of the Work.

4.22.3. Contractor is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, and performance of the Work.

4.22.4. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions (if any) at or contiguous to the Work site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Work site which have been identified or made available by Tampa Bay Water; and (2) reports and drawings of Hazardous Environmental Conditions (if any) at the Work site which have been identified or made available by Tampa Bay Water.

4.22.5. Contractor is aware of the general nature of Work to be performed by Tampa Bay Water and others at the Work site that relates to the Work to the extent indicated in the Contract Documents.

4.22.6. Contractor has correlated the information known to Contractor, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.

4.22.7. Contractor has given Tampa Bay Water written notice of all conflicts, errors, ambiguities or discrepancies that Contractor has discovered in the Contract Documents and the written resolution thereof by Tampa Bay Water is acceptable to Contractor.

4.22.8. The Contract Documents are sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

4.22.9. Contractor's execution of this Contract is not based upon their reliance upon any representation, understanding or Contract not expressly set forth herein. Tampa Bay Water has not made any representation to Contractor except as expressly set forth herein.

4.22.10. Contractor is organized and exists under the laws of the State of _____ and is in good standing in the State of _____ and is authorized to do business in the State of Florida.

4.22.11. Contractor has the full power and authority to execute and deliver this Contract and to incur and perform the obligations provided for herein and therein, all of which have been duly authorized by all proper and necessary action of the governing body of the Contractor. Contractor is in compliance with all laws and regulatory requirements to which they are subject.

4.22.12 Contractor executes this Contract as a free and voluntary act, without any duress, coercion, or undue influence exerted by or on behalf of Tampa Bay Water or any other party.

4.22.13 This Contract is a valid, binding and enforceable obligation of Contractor, and does not violate any law, rule, regulation, contract or Contract otherwise enforceable by or against Contractor, except as the same may be limited by bankruptcy, insolvency, reorganization or other similar laws affecting the rights of creditors generally.

5. Tampa Bay Water/Owner

5.1 General Provision

5.1.1. Written communications from Tampa Bay Water to the Contractor shall in general be issued through the Engineer, but if issued directly by Tampa Bay Water, a copy shall be provided to the Engineer.

5.1.2. Tampa Bay Water may issue without negotiation, and at its discretion, Change Authorizations, as provided in the Contract Documents. Only Tampa Bay

Water is empowered under the Contract Documents to order changes in the Work that affect Contract Time or Contract Price or quality.

5.1.3. If the Work is Defective, or the Contractor fails to supply sufficiently skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in a way that the completed Work will conform to the Contract Documents, Tampa Bay Water may order the Contractor to stop the Work, or any portion of the Work in question, until the cause for the stop order has been eliminated; however, this right of Tampa Bay Water to stop the Work shall not give rise to any duty on the part of Tampa Bay Water to exercise this right for the benefit of the Contractor or any other party. The Contractor shall not be allowed to recover any costs resulting from an order to stop the Work, and the Contractor shall reimburse Tampa Bay Water for all direct, indirect, or consequential costs attributable to an order to stop the Work; those costs to be documented as to reasonableness, and Tampa Bay Water shall be entitled to an appropriate decrease in Contract Price, or to withhold such decrease against any amounts recommended for payment. The Contractor shall remain responsible for maintaining and performing in accordance with the Progress Schedule and shall not be entitled to any extension in Contract Time or any increase in Contract Price.

5.1.4. Neither Tampa Bay Water, the Engineer, nor Tampa Bay Water's consultants will be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions, and programs related to safety, and neither Tampa Bay Water nor Engineer or any of their consultants shall be responsible for the Contractor's failure to perform or furnish the Work in accordance with Contract Documents.

6. Progress of the Work

6.1 Beginning of the Work

6.1.1. Prior to starting the Work, the Contractor shall prepare and submit to the Engineer, a Progress Schedule and a schedule for Submittals in a format acceptable to Tampa Bay Water and the Engineer and as specified in the General Requirements showing the dates on which each part or division of the Work is expected to be started and completed, and a schedule for Submittals.

6.1.2. No sooner than ten (10) Days before the Notice to Proceed is issued, a pre-construction conference shall be held to review the steps undertaken by the Contractor to comply with the schedule requirements; review the qualifications of the Contractor's on-site personnel; review the Contractor's plans for lay-down and staging areas, construction traffic, and access to the Project site, parking, communications, procedures, and other similar matters.

6.2 Schedules and Progress Reports

6.2.1. The Progress Schedule or schedule recovery actions, once reviewed and accepted by Tampa Bay Water and Engineer, shall be utilized to report progress or schedule recovery actions, and to evaluate the Contractor's Payment Applications. The Contractor shall be required to keep Tampa Bay Water informed of the progress of the Work by delivering updated Progress Schedules prior to the seventh (7th) day of each month for Tampa Bay Water and Engineer' review and acceptance. Contractor's Submittal of acceptable monthly updates to the Progress Schedules is a condition precedent to Tampa Bay Water's obligation to make payments to Contractor hereunder. Notwithstanding anything in the Contract Documents to the contrary, it is

expressly acknowledged and agreed that no review or acceptance of any Progress Schedule by Tampa Bay Water or Engineer shall be construed as an admission or acknowledgement by Tampa Bay Water or Engineer that any such Progress Schedule was either reasonable or achievable.

6.2.2. Prior to the seventh (7th) day of each month, the Contractor shall submit to the Engineer, an itemized Progress Report of the delivery status of purchased equipment and material, Shop Drawings and the status of shop and field fabricated Work. These Progress Reports shall indicate, but shall not be limited to, the dates of the purchase orders, the estimated delivery dates of any material and/or equipment, and cause(s) of delays, if any.

6.2.3. In addition to retainage, Tampa Bay Water shall have the right to withhold all or any portion of Progress Payments for the Work if the Contractor fails to update and submit the Progress Schedule(S) and Progress Reports as specified.

6.2.4. Neither Tampa Bay Water's nor the Engineer's review of the Contractor's Progress Schedule, or Tampa Bay Water's decision to raise or not to raise any objections about the Contractor's Progress Schedule, shall impose on Tampa Bay Water or the Engineer any responsibility for the timing, planning, scheduling, or execution of the Work, nor relieve Contractor of its obligation to complete the Work in a timely manner.

6.3 Prosecution of the Work

6.3.1. Tampa Bay Water and the Contractor agree that time is the essence with respect to Contractor's performance under the Contract Documents. The Contractor shall perform the Work at such time, and in or on such part(s) of the Project site as may be required to complete the Work as required by the Contract Documents.

6.3.2. If the Contractor desires to carry on Work at night or otherwise outside of the Working Hours, it shall give timely Notice to Tampa Bay Water and Engineer to allow satisfactory arrangements to be made for observing the Work in progress. The Contractor shall reimburse Tampa Bay Water for all of Tampa Bay Water's expenses associated with the Work performed outside of normal Working Hours.

6.3.3. The Contractor shall carry on the Work and adhere to the most recent approved Progress Schedule during all disputes or disagreements with Tampa Bay Water. No Work shall be delayed or postponed pending resolution of any disputes or disagreements. Upon receipt of a written order from the Engineer or Tampa Bay Water, the Contractor will immediately proceed with the Work regardless of whether a Change Order or Change Authorization has or has not been issued.

6.4 Tampa Bay Water's Right to Retain Imperfect Work

If any part or portion of the Work completed under the Contract Documents shall prove Defective, Tampa Bay Water shall have the right in its sole discretion, to retain such Work and may make such deductions in the payment due the Contractor as may be just and reasonable.

6.5 Tampa Bay Water's Right to do Work

Should the Contractor neglect to prosecute the Work in conformance with the Contract Documents or neglect or refuse at its own cost to remove and replace Work as shall have been rejected by the Engineer, then Tampa Bay Water may notify the Contractor and its Surety of the condition, and after seven (7) Days written Notice to the Contractor and its Surety, or without Notice if an emergency or danger to the Work or public exists, and without prejudice to any other right which Tampa Bay

Water may have under the Contract Documents, take over that portion of the Work which has been improperly executed, and correct the deficiencies and deduct the cost thereof from the payments then or thereafter due the Contractor.

6.6 Tampa Bay Water's Right to Terminate

6.6.1. At any time, Tampa Bay Water may request the Contractor to provide adequate assurances of its ability to complete the Work in the manner and times designated in the Contract Documents. The types of adequate assurances shall be designated by Tampa Bay Water and shall consist of reasonable means for the Contractor to prove its ability to perform.

A. Termination for Cause

6.6.2. Tampa Bay Water, shall have full power and authority to terminate the services of the Contractor seven (7) Days after providing Notice to the Contractor and its Surety, or sooner if safety to persons or property is in question, because:

a. the Contractor refuses or fails to prosecute the Work, or separable part of the Work, with the diligence that will cause its completion within the corresponding Contract Time, including any authorized adjustments; supply sufficient skilled workers, materials or equipment in adherence with the Progress Schedule; or comply with the Progress Schedule requirements; or

b. the Contractor fails to complete the Work, or any separable part, within the corresponding Contract Time, including any authorized adjustments; or

c. the Contractor refuses or fails to make prompt payment to Subcontractors, disregards Laws and Regulations; refuses or fails to perform the Work in conformance with the Contract Documents; or violates any provision of the Contract Documents; or

d. the Contractor fails to provide Tampa Bay Water with adequate assurances in accordance with this Article, that the Contractor can complete the Work in accordance with the Contract Documents.

6.6.3. If, after the furnishing of said Notice, the Contractor and the Surety fail to cure or correct the default, Tampa Bay Water may terminate Contractor's right to perform the Work and take possession of the Project site and of all materials, tools, and appliances thereon, and require Contractor to assign to Tampa Bay Water any or all of Contractor's subcontracts with Subcontractors or Suppliers, as directed by Tampa Bay Water, and finish the Work by whatever method it may deem expedient and charge the cost thereof to the Contractor and Surety. In such case, the Contractor shall not be entitled to receive any further payment until the Work is finally completed. If the expense of completing the Work exceeds such unpaid balance of the Contract Price, the Contractor and its Surety shall pay the difference to Tampa Bay Water.

6.6.4. Where the Contractor's rights to perform the Work have been so terminated by Tampa Bay Water, the termination shall not affect any rights or remedies of Tampa Bay Water against the Contractor then existing or which may accrue after termination. Any retention or payment of monies due the Contractor by Tampa Bay Water shall not release the Contractor from its contractual liability or any other liability.

B. Termination for Convenience

6.6.5. Upon seven (7) Days written Notice to the Contractor and its Surety, Tampa Bay Water may, without cause and without prejudice to any other right or remedy, elect to terminate the Contractor's services under the Contract

Documents in whole or in part. Upon receipt of such Notice, the Contractor shall immediately proceed in accordance with any specific provisions or instructions, to protect and maintain the Work, and make reasonable and diligent efforts to mitigate costs associated with the termination.

6.6.6. In any such termination for the convenience of Tampa Bay Water, the Contractor, as its sole and exclusive remedy, shall be entitled to payment for that portion of the Contract Price attributable to the Work completed, prior to receipt of the Notice of termination, in accordance with the Contract Documents, together with Contractor's reasonable and direct out-of-pocket termination expenses; provided, however, Contractor shall not be entitled to any further or additional recovery against Tampa Bay Water including, but not limited to, any lost profit on Work not performed or any other damages however categorized.

6.6.7. If, after Notice of termination for cause as provided in paragraph 6.6.A above, it is determined the Contractor was not in default or that Tampa Bay Water was not entitled to the remedies set forth therein, the termination shall be deemed to have been for the convenience of Tampa Bay Water and Contractor's rights and remedies shall be the same as and limited to those set forth in paragraph 6.6.6 above.

6.6.8. No waiver, express or implied, of any covenant, provision, right or remedy herein shall at any time thereafter be held to be a waiver of the terms and conditions of this Article.

6.7 Delays and Extensions of Time

6.7.1. If the Contractor is delayed in the progress of the Work by any act or neglect of Tampa Bay Water or the Engineer, or by any other contractor retained by Tampa Bay Water, or by strikes, lockouts, fire, adverse weather conditions not reasonably anticipated, or acts of nature, or any other cause beyond the fault and neglect of the Contractor, within 48 hours of the start of the occurrence, the Contractor shall provide Notice to Tampa Bay Water. Within seven (7) Days after the event which caused the delay has ended, the Contractor must provide full documentation of the impact of the delay. The Contract Time may be extended by Change Order or Change Authorization for such reasonable time as the Engineer and Tampa Bay Water determine. No extension of time will be granted to the Contractor for delays occurring to parts of the Work that have no measurable impact on the completion of the total Work. No extension of Contract Time will be considered for weather conditions reasonably anticipated for the area in which the Work is being performed. Reasonably anticipated weather conditions will be based on official records of monthly precipitation and other historical data. Adverse weather conditions, if determined by the Engineer to be of a severity that would impact progress of the Work, may be considered as cause for an extension of Contract Time. No request by the Contractor for an equitable adjustment to the Contract Time under this Article will be allowed, unless the Contractor has given the Notice and documentation within the times required.

6.7.2. Delays in delivery of equipment or material purchased by the Contractor or its Subcontractors or Suppliers shall not be considered as a cause for delay. The Contractor shall be fully responsible for the timely ordering, scheduling, expediting, delivery, and installation of all equipment and materials.

6.7.3. Within 21 days (unless a longer period of time is reasonably required) after the Contractor submits to Tampa Bay Water and the Engineer a written request

for an extension of time, the Engineer will present its written opinion to Tampa Bay Water as to whether an extension of time is justified and, if so, its recommendation as to the number of Days for time extension. Tampa Bay Water shall make the final decision on all requests for extensions to Contract Time.

6.7.4. The Contractor waives its right to file claims unless the claims are filed within the times specified in the Contract Documents. Tampa Bay Water's determination shall be final and binding on the Contractor unless the Contractor files suit within thirty (30) days after receipt of Tampa Bay Water's decision.

6.7.5. Notwithstanding anything in the Contract Documents to the contrary, no interruption, interference, inefficiency, suspension or delay in the commencement or the progress of the Work for any cause whatever, including those for which Tampa Bay Water or Engineer may be responsible, in whole or in part, shall relieve Contractor of its duty to perform or give rise to any right to damages or additional compensation from Tampa Bay Water. Contractor expressly acknowledges and agrees that it shall receive no damages for delay. Contractor's sole remedy, if any, against Tampa Bay Water will be the right to seek an extension to the Contract Time, in accordance with the procedures set forth in this Article 6.7; provided, however, the granting of any such time extension shall not be a condition precedent to the aforementioned "No Damage for Delay" provision. This paragraph shall expressly apply to claims for early completion, as well as to claims based on late completion. Notwithstanding the foregoing, if the Work is delayed due to the fault or neglect of Tampa Bay Water or Engineer, and such delays have a cumulative total of more than 30 calendar days, Contractor may make a claim, in accordance with the procedures set forth in Article 7.3, for its actual and direct delay damages accruing after said 30 calendar days.

6.8 Differing Site Conditions

6.8.1. The Contractor shall promptly, and before the conditions are disturbed, provide Notice to Tampa Bay Water and the Engineer of:

a. any subsurface or latent physical conditions at the Project site which differ materially from those (i) observed by Contractor prior to the Submittal of its Bid or (ii) indicated in the Contract Documents or the Existing Condition Documents referenced in the Information to Bidders,

or

b. any unknown physical conditions at the Project site, of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.

6.8.2. The Engineer shall investigate the reported conditions promptly after receiving the Notice from the Contractor. If the conditions do materially differ and cause an increase or decrease in the Contractor's cost or time for performance of the work, an equitable adjustment shall be made in accordance with the procedures set forth in Articles 6.7 and 7.3 herein. Notwithstanding the provisions of this paragraph, if the reported condition in question would have been revealed by a thorough on-site inspection, Tampa Bay Water in its sole discretion shall have the right to deny any such claim for an adjustment in the Contract Price or Contract Time.

6.8.3. No request by the Contractor for an equitable adjustment to the Contract Price or Contract Time for differing site conditions will be allowed if made after the time periods set forth in Articles 6.7 or 7.3, or Final Completion, whichever first occurs.

6.9 Liquidated Damages

Should the Contractor fail to achieve Substantial Completion of the Work within the Contract Time, as that time may be adjusted pursuant to the terms of the Contract Documents, the Contractor shall pay to Tampa Bay Water the liquidated damages as set forth in the Contract. Tampa Bay Water shall have the right to deduct the liquidated damages from any amount due, or that may become due to the Contractor. If an insufficient amount of the Contract Price remains, the amount of liquidated damages shall be due and collectible from the Contractor and its Surety, jointly and severally.

6.10 Other Contracts

6.10.1. Tampa Bay Water reserves the right to let other contracts in connection with the Project. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their equipment and materials for the execution of their work and shall properly interface and coordinate its Work with theirs.

6.10.2. If the execution of any part of the Work depends on the performance of any other contractor, utility service company or Tampa Bay Water, the Contractor shall promptly provide Notice to the Engineer of any defects or deficiencies that render it incompatible with the intended results of these Contract Documents. The Contractor's failure to provide the required Notice shall constitute an acceptance of the work by others as being fit and proper for integration with the Work.

6.11 Use of Premises

6.11.1. The Contractor shall confine its equipment, the storage of materials, and the operation of its workers to the areas shown on the Contract Documents or indicated by Laws and Regulations, permits, easements, licenses or directions of Tampa Bay Water or the Engineer. The Contractor shall provide, at its own expense, any right-of-ways or access to the Work which it may require outside the limits of Tampa Bay Water's property interests or easements and shall furnish Tampa Bay Water and the Engineer copies of permits and Contracts for use of property outside that provided by Tampa Bay Water prior to entering said properties.

6.11.2. The Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall the Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.11.3. The Contractor shall take all precautions to minimize inconvenience to residents living adjacent to the Project site by maintaining access to driveways and providing dust control for the Project site and noise control devices for dewatering equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any land or areas contiguous thereto, resulting from the performance of the Work.

6.12 Substantial and Final Completion Dates

6.12.1. When the Contractor considers that the entire Work or designated portion thereof has progressed to the point where it is sufficiently complete in

accordance with the Contract Documents, and it has been proven to be ready for its intended use, the Contractor shall provide Notice to Tampa Bay Water and the Engineer that the Contractor considers the Work or designated portion thereof, Substantially Complete (except for listed items to be completed or corrected prior to Final Completion). The Contractor shall prepare an initial list of items of Work to be corrected or completed for Final Completion and attach that list to the above referenced Notice. Within a reasonable time after that, Tampa Bay Water, the Contractor, and the Engineer shall make an inspection to determine the status of completion.

6.12.2. If Tampa Bay Water and Engineer agree that Substantial Completion of the Work has been achieved, the Engineer shall issue a Certificate of Substantial Completion for the purpose of establishing the starting date for specific equipment warranties, and to establish the date that Tampa Bay Water shall assume the cost of operating such equipment. Said Certificate shall not be considered as Final Completion of any portion of the Work or relieve the Contractor from completing the remaining Work within the specified time and in compliance with the Contract Documents. The Engineer shall review and supplement the Contractor's initial list of items of Work to be corrected or completed for Final Completion and such revised and supplemental list shall be attached to the Certificate of Substantial Completion. Provided, however, the failure to include any incomplete or Defective Work on said list shall not relieve or excuse the Contractor from completing all of the Work in accordance with the requirements of the Contract Documents.

6.12.3. When the Contractor considers the entire Work has progressed to the point where it is complete in accordance with the Contract Documents, the Contractor shall provide Notice to Tampa Bay Water and the Engineer that the Contractor considers the Work to have reached Final Completion.

6.13 Performance Testing

Operating equipment and systems shall be performance tested in accordance with the General Requirements and in the presence of the Engineer to demonstrate compliance with the Contract Documents. The Contractor shall schedule such testing with the Engineer at least one (1) week in advance of the planned date for testing.

6.14 Tampa Bay Water's Use of Portions of the Work

Following issuance of the Notice of Substantial Completion, Tampa Bay Water may occupy and operate the Work. Such occupancy and operation shall not be considered as Final Completion of any portion of the Work, nor shall such occupancy or use be considered as cause for an extension of the Contract Time.

6.15 Cutting, Patching, or Fitting

The Contractor shall do all cutting, patching, or fitting of its Work that may be required to make its several parts come together properly and fit the Work to receive or be received by work of other contractors shown in or reasonably implied by the Contract Documents.

6.16 Cleaning Up

The Contractor shall, at all times, keep property on which Work is in progress and the adjacent property free from accumulations of waste material or rubbish caused by employees or by the Work. Upon completion of the construction, the Contractor shall remove all temporary structures, rubbish caused by employees, Suppliers, Subcontractors, or the Work, and waste materials resulting from its operations.

6.17 Intoxicants

The Contractor and persons under its employ shall not bring onto, possess, sell, or use alcohol, narcotics, drugs (other than prescription drugs, provided the person in possession of the drug has a valid prescription in his or her name, or over-the-counter drugs which may be purchased legally by the person), or controlled substances while on the Project site, including parking lots, at any time, including all breaks and lunch periods. The Contractor and persons under its employ shall not report to, or commence, or continue to work while under the influence of alcohol or any drugs, regardless of whether those drugs were legally or illegally taken. The Contractor and persons under its employ shall not undertake any activities at the Project site which create a nuisance or improperly disturbs or interferes with Tampa Bay Water's operations at the Project site or the use and enjoyment of any adjacent properties by their respective owners. Gambling on the Project site is prohibited.

7. Payment

7.1 Partial Payments

A. General

7.1.1. Within ten (10) days after commencing the Work, but in any event prior to the Submittal of its first Payment Application, Contractor shall submit to Engineer, for Engineer's and Tampa Bay Water's review and approval, a proposed schedule of values which distributes the Contract Price among the various items and categories of Work to be performed. Said schedule of values shall be in such form and contain such detail as may be required by Engineer and Tampa Bay Water. The final approved schedule of values shall serve as the basis for partial payments and shall be incorporated into the Payment Application form provided by Tampa Bay Water. Nothing contained in this Article shall be construed to affect the right of Tampa Bay Water or Engineer to reject, the whole or any part of the Work, should such Work be found to be Defective. All estimated quantities of Work for which partial payments have been made are subject to review and correction on the final Payment Application. Payment by Tampa Bay Water and acceptance by the Contractor of partial payments based on Unit Price Work, shall not in any way constitute acceptance of the estimated Unit Price Work by Tampa Bay Water.

7.1.2. The Contractor shall provide Tampa Bay Water with copies of its written daily reports at weekly intervals. Refusal of the Contractor to provide its daily reports shall be cause for Tampa Bay Water to withhold payments until the Contractor's daily reports have been provided.

B. Estimate

7.1.3. The Contractor shall not submit more than one Payment Application per month with respect to the Work. Within twenty-five (25) Business Days following submission of a complete and accurate Payment Application to the Engineer, approved by the Engineer, and acceptable to Tampa Bay Water, Tampa Bay Water shall make partial payments to the Contractor on the basis of Work performed during the preceding calendar month by the Contractor. The final working day of each month shall be used as the day for measurement of Work performed.

7.1.4. The Engineer shall, within twenty-five (25) Business Days after receipt of each Payment Application for payment, provide Notice to Tampa Bay Water recommending payment to the Contractor, or return the request to the Contractor providing Notice of the Engineer's reasons for refusing to recommend payment. In the latter case, the Contractor may make the

necessary corrections and resubmit the request. Payment shall be made by Tampa Bay Water within ten (10) Business Days after a corrected payment request is received.

7.1.5. The Engineer may refuse to recommend and Tampa Bay Water may refuse to pay the whole or any part of any payment, if in the Engineer's or Tampa Bay Water's opinion, the Contractor is not entitled to any such payment. The Engineer may also refuse to recommend and Tampa Bay Water may refuse to pay any payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests of any Work, retract any previous recommendation or payment to such extent necessary in the Engineer's or Tampa Bay Water's opinion to protect Tampa Bay Water from loss for reasons not limited to:

a. The Work is Defective, or completed Work has been damaged requiring correction or replacement;
b. The Contract Price has been reduced because of Change Order;
c. Tampa Bay Water has been required to correct Defective Work or complete all or portions of the Work;
d. The Contractor's unsatisfactory prosecution of the Work in accordance with the Contract Documents;
e. Written claims have been made against Tampa Bay Water or liens have been filed in connection with the Work;
f. The Contractor's failure to make payment to Subcontractors OR Suppliers for labor, materials, or equipment;
g. Amounts owed by Contractor to Tampa Bay Water as Liquidated Damages; or
h. Any other amounts which may be owed to Tampa Bay Water by Contractor pursuant to the terms of the Contract Documents.

C. Deduction from Estimate

7.1.6. Unless modified in the Supplementary Conditions, Tampa Bay Water shall withhold from each partial payment, five percent (5%) of the amount earned for Work completed. A deduction and retainage of five percent (5%) shall be made on the estimated amount earned for approved items of material delivered to and properly stored at the Project site but not incorporated into the Work. The retainage is to be withheld by Tampa Bay Water until all Work has been performed in accordance with the Contract Documents and until such Work has been accepted by Tampa Bay Water.

7.1.7. Tampa Bay Water may deduct from each Payment Application an amount equal to Tampa Bay Water's estimate of the amount of Liquidated Damages then due, or which may become due.

D. Reimbursement

7.1.8. For Tampa Bay Water's expenses as defined in the General Conditions, *Article 4.15. Submittals*, and for testing that is performed by Tampa Bay Water or the Engineer which indicates Work is Defective, or for any other cost for which Tampa Bay Water is entitled to reimbursement from Contractor under the Contract Documents, at Tampa Bay Water's election, such reimbursement shall be deducted from the Contractor's monthly partial payments or shall be paid by Contractor within 30 days after Tampa Bay Water makes demand for same upon Contractor.

E. Qualification for Partial Payment for Materials Delivered

7.1.9. Partial payments for materials delivered but not yet incorporated into the Work shall be as described below:

a. Materials, as used herein, shall be considered to be those items which are fabricated and manufactured material and equipment. No consideration shall be given to individual purchases of less than $200.00 for any one item.

b. To receive partial payment for materials delivered to the Project site, but not incorporated in the Work, it shall be necessary for the Contractor to include a list of such materials with the Payment Application, the utilization of Tampa Bay Water provided forms is required. At its sole discretion, Tampa Bay Water, with the Engineer's advice, may approve items for which partial payment is to be made. Partial payments shall be based on the Contractor's actual cost for the materials as evidenced by invoices from the Supplier. Proper storage and protection shall be provided by the Contractor, As Approved by the Engineer. Final payment shall be made only for materials actually incorporated in the Work and upon acceptance of the Work, all materials remaining for which partial payments had been made shall revert to the Contractor, unless otherwise agreed, and partial payments made for these items shall be deducted from the final payment for the Work.

c. Contractor warrants and guarantees that title to all items of Work requested in any Payment Application, whether incorporated in the Project or not, shall pass to Tampa Bay Water at the time of payment for such items, free and clear of all liens, claims, security interests, and encumbrances.

d. If requested by the Engineer, the Contractor shall provide, with subsequent Payment Applications, invoices receipted by the Subcontractor or Supplier showing payment in full has been made.

F. Payment

7.1.10. The amount of partial payment due the Contractor shall be equal to the current value of the Contract Price earned, less, any retainage, less any amounts previously paid, and any deductions for reimbursement as required by the Contract Documents.

7.2 Payment for Change Orders

7.2.1. Tampa Bay Water, without Notice to the Sureties, shall have the right to order changes to the Work. If the parties agree upon the terms for the change, including any appropriate adjustments to the Contract Price or Contract Time, a Change Order shall be issued. If the parties cannot agree upon the terms for the change, a Change Authorization may be issued by Tampa Bay Water. The terms of the Change Authorization shall be final and binding upon Contractor, unless Contractor makes a claim, within twenty-one (21) days of its receipt of the Change Authorization, challenging those terms it takes objection to, giving full details and supporting documentation for its specific objections. Any terms not specifically objected to within that twenty-one (21) day period shall be deemed final and accepted by Contractor. Regardless of whether or not Contractor files a timely claim with respect to any of the terms of the Change Authorization, Contractor shall proceed with the change to the Work, as set forth in the Change Authorization, as directed by Tampa Bay Water or Engineer.

7.2.2. At Tampa Bay Water's option, payment or credit for any changes covered by a Change Order or a Change Authorization, whether additive or deductive,

shall be determined by one or a combination of the methods set forth in a, b, or c, below, as applicable:

a. Unit Prices

Those Unit Prices stipulated in the Contract shall be utilized where they are applicable. In the event the Change Order or Change Authorization results in a change in excess of twenty-five percent (25%) of the original Contract quantity, and the total dollar change in value of that item exceeds twenty-five percent (25%), Tampa Bay Water will review the Unit Price to determine if a new Unit Price shall be negotiated. Unit Prices for new unit items not listed in the Contract shall be negotiated and mutually agreed upon.

b. Lump Sum

A total lump sum amount for the Work negotiated and mutually acceptable to the Contractor and Tampa Bay Water. Lump Sum Price quotations for modifications to the Work shall include substantiating documentation with an itemized breakdown of Contractor and Subcontractor costs, including labor, material, rentals, approved services, overhead, and profit, all calculated as specified under "C" below.

c. Cost Reimbursement Work

The term "cost reimbursement work" shall be for changes to be compensated for on a time and expense basis, that is, on an accounting of the Contractor's forces, materials, equipment, and other items of direct cost as required for the change.

Tampa Bay Water, at its sole discretion, may direct the change to be accomplished on a cost reimbursement work basis, in which event the change will be priced based upon the labor, materials, equipment and other costs hereafter noted associated with such change. The cost items for cost reimbursement work shall be limited to the following items:

1. Labor, including superintendent and foremen, for those hours associated with the cost reimbursement work (actual payroll cost, including wages, fringe benefits as established by negotiated labor agreements, contracts, labor insurance and labor taxes as established by law). Expressly excluded from this item are all labor costs associated with negotiating the subject change. No other fixed labor burdens will be considered, unless approved in writing by Tampa Bay Water.
2. Material associated with the change, including sales tax, if paid for by the Contractor or its Subcontractor.
3. Rental, or equivalent rental cost of equipment, including necessary transportation for items having a rental value in excess of $100.00.
   Rental or equivalent rental cost shall be allowed for only those Days or hours during which the equipment is (or would have been for deductive changes) in actual use. Rental and transportation allowances shall not exceed the current rental rates prevailing in the locality. The rentals allowed for equipment shall, in all cases, be understood to cover all fuel, supplies, repairs, and renewals, and no further allowances shall be made for those items, unless specific Contract to that effect is made.
4. Additional bond as required and approved by Tampa Bay Water.
5. Additional insurance (other than labor insurance) as required and approved by Tampa Bay Water.

6. To the costs noted above, for net additive changes, there shall be added the following fixed fees for the Contractor or Subcontractor actually performing the change:
   A. A fixed fee of twenty-five percent (25%) of the cost of item 1 above. For costs incurred for Work performed by Subcontractors, the Contractor's fee shall not exceed ten percent (10%) and the Subcontractor's fee shall be the same as for the Contractor; and
   B. A fixed fee of ten percent (10%) added to the cost of items 2 and 3.

7.2.3. The fixed fees noted above in the previous paragraph shall be considered to be the full compensation for all cost of general supervision, overhead, profit, and any other general expense.

7.2.4. The Contractor's records shall make clear distinction between the direct costs of Work paid for on a cost reimbursement work basis and the costs of other Work. The Contractor shall furnish the Engineer report sheets in duplicate of each day's cost reimbursement work no later than the working day following the performance of said Work. The report sheets shall itemize the materials used, and shall cover the direct cost of labor and the charges for equipment rental, whether furnished by the Contractor, Subcontractor, or other forces. The report sheets shall provide names or identifications and classifications of workers, the hourly rate of pay and hours worked, and also the size, type, and identification number of equipment and hours operated.

7.2.5. Material charges shall be substantiated by valid copies of vendors' invoices. Such invoices shall be submitted with the daily reports or, if not available, they shall be submitted with subsequent daily report. Said daily report shall be signed by the Contractor or Contractor's Representative.

7.2.6. Tampa Bay Water reserves the right to furnish such materials and equipment as it deems expedient, and the Contractor shall have no claim for profit or added fees on the cost of such materials and equipment.

7.2.7. To receive partial payments and final payment for cost reimbursement work, the Contractor shall submit to the Engineer, in a manner approved by the Engineer and Tampa Bay Water, detailed and complete documented verification of the Contractor's and any of its Subcontractors' actual costs involved in the cost reimbursement work. Such costs shall be submitted within seven (7) Days after said Work has been performed.

7.2.8. Except for Change Authorizations and Change Order, no other written or oral order from Tampa Bay Water or the Engineer shall be treated as a change in the Work or entitle the Contractor to an adjustment to the Contract Price or Contract Time.

7.2.9. The Engineer, by issuing a Construction Directive, may order minor changes in the Work not involving extra cost, or additional times and not inconsistent with the purpose of the Project, but otherwise, except in an emergency endangering life or property, additions or deductions from the Work shall be performed only in pursuance of an approved Change Authorization or Change Order.

7.2.10. Any compensation paid in conjunction with the terms of a Change Order shall comprise the total compensation due the Contractor for the change defined in the Change Order. By signing the Change Order, the Contractor acknowledges that the stipulated compensation adjustment includes payment for alteration of the Work, payment for the interruption of schedules, extended

overhead, delay, or any other impact claim or ripple effect, and by such signing specifically waives any reservation or claim for additional adjustment to compensation or time in respect to the subject Change Order.

7.2.11. Tampa Bay Water hereby delegates authority to its General Manager (and his/her designee) to approve any and all Change Order and Change Authorizations in its name, so long as each such Change Order or Change Authorization does not exceed $285,000.00, and further as long as the cumulative total of all Change Order or Change Authorizations does not exceed $285,000.00, unless otherwise approved by the Tampa Bay Water's Board. Each Change Order or Change Authorization over $285,000.00 or which cumulatively exceeds $285,000.00 must be expressly approved by Tampa Bay Water's Board before it shall be binding upon Tampa Bay Water.

7.3 Claims for Additional Compensation

7.3.1. In any case where the Contractor may seek additional compensation, except for an emergency threatening imminent property damage or personal injury, the Contractor shall provide Notice to Tampa Bay Water and the Engineer of its intent to make a claim for such compensation before it begins the Work on which it bases the claim, in order that such matter may be settled or other appropriate action promptly taken. If such notification is not given or the Engineer is not afforded proper facilities by the Contractor for keeping an accurate account of actual costs, the Contractor shall be deemed to have waived its claim for additional compensation.

7.3.2. The Contractor's written Notice, and the fact that the Engineer has kept account of the cost as aforesaid, shall not in any way be construed as proving the validity of the claim.

7.3.3. Claims for additional compensation shall be made in itemized detail and submitted in writing to Tampa Bay Water and Engineer within seven (7) Days following completion of that portion of the Work for which the Contractor bases its claim. If the claim is found to be acceptable by Tampa Bay Water and the Engineer, the Contractor shall be paid as provided in the General Conditions, *Article 7.2. Payment for Change Orders.* No request by the Contractor for an equitable adjustment to the Contract Price under this Article shall be allowed, unless the Contractor has given Notice within the times required.

7.3.4. The Contractor waives its right to file claims unless the claims are filed within the times specified in the Contract Documents. Tampa Bay Water's final determination shall be final and binding on the Contractor unless the Contractor files suit within thirty (30) days after receipt of Tampa Bay Water's decision.

7.4 Release of Liens or Claims

The Contractor shall indemnify and hold harmless Tampa Bay Water and the Engineer from all claims for labor and materials furnished under the Contract Documents. Prior to the final payment, the Contractor shall furnish to Tampa Bay Water, as part of its final Payment Application, a certification that all of the Contractor's obligations on the Project have been satisfied and that all monetary claims and indebtedness have been paid. The Contractor shall furnish releases or waivers, satisfactory to Tampa Bay Water, from all Subcontractors and Suppliers and of all liens and notices arising out of or filed in connection with the Work. Tampa Bay Water may reduce the amount of retainage withheld upon receipt of an affidavit from Contractor identifying any amounts in dispute with Subcontractor or Suppliers, and provided the amount of retainage withheld continues to exceed the amount in dispute.

7.5 Final Payment

7.5.1. Upon completion of all of the Work, the Contractor shall provide Notice to the Engineer that it has completed its Work and shall request final payment. Upon receipt of such Notice, the Engineer, together with Tampa Bay Water, will inspect and, if acceptable, the Engineer will submit to Tampa Bay Water its recommendation as to acceptance of the Work and as to the final Payment Application of the Contractor. Within sixty (60) Days after the Contractor has submitted its final Payment Application, together with the Sureties' consent to final payment, and upon approval of this Payment Application request by Tampa Bay Water and compliance by the Contractor with provisions in the General Conditions, *Article 7.4. Release of Liens or Claims*, and all other provisions of the Contract Documents as may be applicable, Tampa Bay Water shall pay to the Contractor all monies due it under the provisions of these Contract Documents. Final payment is further subject to Tampa Bay Water's receipt from Contractor of all as-built DRAWINGs, certifications, maintenance manuals, operating instructions, written guarantees and warranties, and bonds relating to the Work, and assignment of all guarantees and warranties from Subcontractors, vendors, Suppliers or manufacturers, all as required by the Contract Documents.

7.5.2. Contractor and Tampa Bay Water agree that project closeout and release of retainage shall be in accordance with Chapters 218 and 255, Florida Statutes, as amended by Chapter 2023-134, Laws of Florida. Specifically, Contractor shall cooperate with Tampa Bay Water to prepare a punch-list with estimated costs of items to complete the Work. Within 20 business days of completion of said punch-list, Tampa Bay Water shall pay Contractor the remaining contract balance, including retainage previously withheld, less an amount equal to 150% of the estimated cost to complete the items on the punch-list, and also less any amounts that are subject to a good faith dispute made in writing to the Contractor by Tampa Bay Water.

7.6 No Waiver of Rights

Neither the inspection by Tampa Bay Water or the Engineer, nor any payment for or acceptance of the whole or any part of the Work by Tampa Bay Water or Engineer, nor any extension of time, nor any possession taken by Tampa Bay Water, shall operate as a waiver of any provision of the Contract Documents, or any right to damages, nor shall such waive any subsequent breach. Acceptance of final payment shall not release Contractor of any liability under the Contract Documents or otherwise, and shall not be deemed evidence of performance or be construed as acceptance of Defective or improper Work.

7.7 Acceptance of Final Payment Constitutes Release

The acceptance by the Contractor of the final payment shall release Tampa Bay Water and the Engineer from all claims and all liability to the Contractor for all things done or furnished in connection with the Work, and every act of Tampa Bay Water and others relating to or arising out of the Work except claims previously made in writing and identified by Contractor in its final Payment Application as still unsettled. No payment, however, final or otherwise, shall operate to release the Contractor or its Sureties from obligations under the Contract Documents and the Performance Bonds, Payment Bonds, and other bonds and warranties, as herein provided.

7.8 Record Maintenance and Auditing Rights

Contractor shall keep all books, records, files and other documentation, including all electronically stored items, which concern or relate to the Work hereunder (collectively

referred to herein as the "Records"), for a minimum of three (3) years from the date of expiration or termination of this Contract or the date of Final Completion or as otherwise required by law, whichever date is later. Tampa Bay Water, or any duly authorized agents or representatives of Tampa Bay Water, shall have the right to audit, inspect and copy all such Records as often as they deem necessary during any such period of time. This right to audit, inspect and copy Contractor's Records shall include all of the Records of the Subcontractors and Suppliers.

7.9 Hazardous Materials

If Contractor encounters on the Project site any materials reasonably believed by Contractor to be petroleum or petroleum-related products, or other hazardous or toxic substances which have not been rendered harmless, Contractor immediately shall (i) stop Work in the area affected and (ii) report such condition to Tampa Bay Water in writing. If the Work is so stopped and hazardous material is found, the Work in the affected area shall not thereafter be resumed except by Change Order. Any such Change Order shall include, but not be limited to, an adjustment to the Contract Time as appropriate. If no hazardous material is found after the Work has stopped, no Change Order is required to resume the Work in the affected area. Further, if the hazardous material was generated or caused by the Contractor, or any of its employees, agents, Subcontractors or Suppliers, no Change Order will be required for an adjustment in the Contract Time, and Contractor shall indemnify Tampa Bay Water for any costs incurred by Tampa Bay Water with respect to such hazardous material.

* * * * * *

End of General Conditions

10.0 TECHNICAL SPECIFICATIONS

(Consisting of 596 pages)

TAMPA BAY WATER

LAKE BRIDGE WATER TREATMENT PLANT PUMP #4 – BID SET

CLIENT PROJECT NO. 07542

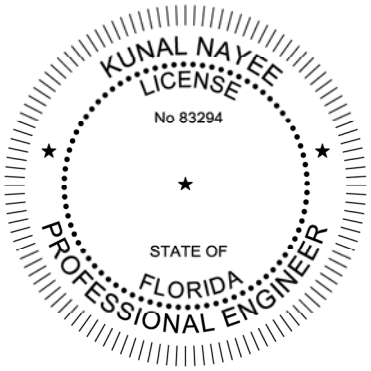
TECHNICAL SPECIFICATIONS

BID SET

VOLUME 1 OF 2

APRIL 2025

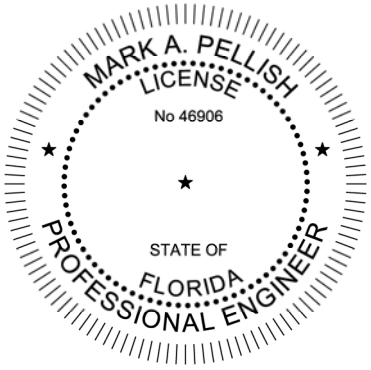
200 EAST ROBINSON STREET, SUITE 1400 ▪ ORLANDO, FLORIDA 32801 ▪ P 407-478-4642



This item has been digitally signed and sealed for Divisions 01-11 by Kunal Nayee on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

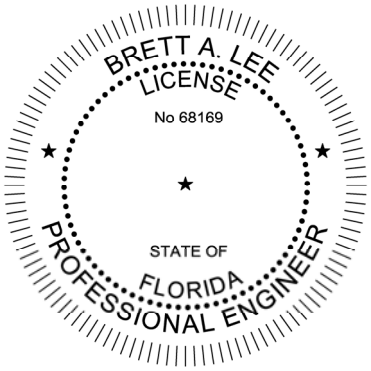
Carollo Engineers, Inc.
200 E Robinson Street, Suite 1400
Orlando, Florida 32801
407.478.4642
407.377.4343



This item has been digitally signed and sealed for Division 16 by Mark Pellish on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Carollo Engineers, Inc.
200 E Robinson Street, Suite 1400
Orlando, Florida 32801
407.478.4642
407.377.4343



This item has been digitally signed and sealed for Division 17 by Brett Lee on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Carollo Engineers, Inc.
200 E Robinson Street, Suite 1400
Orlando, Florida 32801
407.478.4642
407.377.4343

TAMPA BAY WATER

LAKE BRIDGE WATER TREATMENT PLANT PUMP #4 – DESIGN CRITERIA PACKAGE

TABLE OF CONTENTS

VOLUME 1 OF 2

DIVISION 01 – GENERAL REQUIREMENTS

SECTION NO.	TITLE	SPECIFICATION SOURCE
01010	SUMMARY OF WORK	TAMPA BAY WATER
01025	MEASUREMENT AND PAYMENT	TAMPA BAY WATER
01027	PAYMENT APPLICATIONS	TAMPA BAY WATER
01040	PROJECT COORDINATION	TAMPA BAY WATER
01065	PERMITS AND EASEMENTS	TAMPA BAY WATER
01070	ABBREVIATIONS AND SYMBOLS	TAMPA BAY WATER
01200	PROJECT MEETINGS	TAMPA BAY WATER
01300	CONTRACTOR SUBMITTAL	TAMPA BAY WATER
01310	PROJECT SCHEDULE	TAMPA BAY WATER
01313	CONSTRUCTION AND SCHEDULE CONSTRAINTS	TAMPA BAY WATER
01340	SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES	TAMPA BAY WATER
01370	SCHEDULE OF VALVES	TAMPA BAY WATER
01380	CONSTRUCTION PHOTOGRAPHS	TAMPA BAY WATER
01410	REGULATORY REQUIREMENTS	CAROLLO
01411	TESTING AND QUALITY CONTROL	TAMPA BAY WATER
01505	MOBILIZATION	TAMPA BAY WATER
01540	SECURITY	TAMPA BAY WATER
01600	PRODUCT REQUIREMENTS	CAROLLO
01631	PRODUCT SUBSTITUTIONS	TAMPA BAY WATER
01650	START-UP	TAMPA BAY WATER
01710	CLEANING	TAMPA BAY WATER
01720	CONTRACT RECORD AND CLOSE OUT DOCUMENTATIONS	TAMPA BAY WATER
01730	OPERATING AND MAINTENANCE	TAMPA BAY WATER
01740	WARRANTIES AND BONDS	TAMPA BAY WATER
01756	COMMISSIONING	CAROLLO
01821	INSTRUCTION OF OPERATIONS AND MAINTENANCE PERSONNEL	TAMPA BAY WATER

DIVISION 02 – SITE CONSTRUCTION

02100	DEMOLITIONS	TAMPA BAY WATER

DIVISION 03 – CONCRETE

SECTION NO.	TITLE	SPECIFICATION SOURCE
03000	CONCRETE	TAMPA BAY WATER
03600	GROUTING	TAMPA BAY WATER

DIVISION 05 – METALS

SECTION NO.	TITLE	SPECIFICATION SOURCE
05051	ANCHOR BOLTS, TOGGLE BOLTS AND CONCRETE INSERTS	TAMPA BAY WATER

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

SECTION NO.	TITLE	SPECIFICATION SOURCE
07900	JOINT SEALANTS	CAROLLO

DIVISION 09 – FINISHES

SECTION NO.	TITLE	SPECIFICATION SOURCE
09940	PROTECTIVE COATINGS	TAMPA BAY WATER
09941	SHOP APPLIED COATINGS FOR PUMPS, MOTORS, AND PUMP AND MOTOR BASES	TAMPA BAY WATER

DIVISION 11 – EQUIPMENT

SECTION NO.	TITLE	SPECIFICATION SOURCE
11312H	AXIALLY-SPLIT CENTRIFUGAL PUMPS	CAROLLO

DIVISION 15 – MECHANICAL

SECTION NO.	TITLE	SPECIFICATION SOURCE
15010	VALVE INSTALLATION	TAMPA BAY WATER
15050	COMMON WORK RESULTS FOR MECHANICAL EQUIPMENT	CAROLLO
15052	COMMON WORK RESULTS FOR GENERAL PIPING	CAROLLO
15059	MISCELLANEOUS PIPING AND PIPE ACCESSORIES	TAMPA BAY WATER
15060	DUCTILE IRON PIPE AND FITTINGS	TAMPA BAY WATER
15093	CHECK VALVES	TAMPA BAY WATER

15094	PIPE SUPPORTS	TAMPA BAY WATER
15101	AWWA BUTTERFLY VALVES	TAMPA BAY WATER
15108	AIR RELEASE AND COMBINATION AIR VALVES	TAMPA BAY WATER
15110	COMMON WORK RESULTS FOR VALVES	CAROLLO
15121	PIPE COUPLINGS	CAROLLO
15958	MECHANICAL EQUIPMENT TESTING	CAROLLO

DIVISION 16 – ELECTRICAL

SECTION NO.	TITLE	SPECIFICATION SOURCE
16050	COMMON WORK RESULTS FOR ELECTRICAL	CAROLLO
16062	GROUNDING	TAMPA BAY WATER
16070	HANGERS AND SUPPORTS	CAROLLO
16075	ELECTRICAL IDENTIFICATION	TAMPA BAY WATER
16100	ELECTRICAL EQUIPMENT INSTALLATION	TAMPA BAY WATER
16120	LOW VOLTAGE WIRE CONNECTIONS	TAMPA BAY WATER
16122	MOTORS	TAMPA BAY WATER
16123	600-VOLT OR LESS WIRES AND CABLES	TAMPA BAY WATER
16125	FIBER OPTIC CABLE AND APPURTENANCES	CAROLLO
16130	CONDUITS	TAMPA BAY WATER
16134	BOXES	TAMPA BAY WATER
16150	LOW VOLTAGE AFD	TAMPA BAY WATER
16305	ELECTRICAL ARC FLASH STUDY	TAMPA BAY WATER
16416	SURGE PROTECTIVE DEVICES	TAMPA BAY WATER
16950	FIELD ELECTRICAL ACCEPTANCE TESTS	TAMPA BAY WATER
16951	ELECTRICAL FUNCTIONAL TESTING	TAMPA BAY WATER
16990	CONDUIT SCHEDULE	CAROLLO

DIVISION 17 – INSTRUMENTATION AND CONTROLS

SECTION NO.	TITLE	SPECIFICATION SOURCE
17101	SPECIFIC CONTROL STRATEGIES - [PROCESS AREA]	TAMPA BAY WATER
17500	INSTRUMENTATION AND CONTROL SYSTEMS	TAMPA BAY WATER
17530	PROGRAMMABLE LOGIC CONTROLS	TAMPA BAY WATER
17560	INSTRUMENTATION GENERAL REQUIREMENTS	TAMPA BAY WATER

17562	FLOW INSTRUMENTS	TAMPA BAY WATER
17563	PRESSURE AND LEVEL INSTRUMENTS	TAMPA BAY WATER
17565	MISCELLANEOUS INSTRUMENTS	TAMPA BAY WATER

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.1 PROJECT DESCRIPTION

A. The WORK described herein consists of installation of a 4th pump, motor, variable frequency drive (VFD), and all associated electrical and Instrumentation and Control (I&C) equipment to operate the new pump as described in the Basis of Design Report and Technical Specifications included in these Contract Documents. The *Lake Bridge Water Treatment Plant* (WTP) generally consists of a High Service Pump Room, with three (3) existing pumps, an Electrical Room where VFDs and other electrical equipment are located, and chemical rooms where water is dosed with Sodium Hypochlorite, Sodium Hydroxide and Ammonium Hydroxide as indicated on the DRAWINGS and specified herein.

B. The project is located as shown in the Contract Documents.

1.2 WORK DESCRIPTION

A. The WORK of this PROJECT consists of:

1. Preparation of the Electrical room for the installation of VFD #4 and the installation of VFD #4 as shown on the construction DRAWINGS and specified herein.
2. Construction of all required equipment and pipe supports as shown on the construction DRAWINGS and specified herein.
3. Installation of the pump, motor, and all associated piping and/or appurtenances in the High Service Pump room as shown on the construction DRAWINGS and specified herein.
4. Verification and pulling of existing electrical and instrumentation conductors from the pump room and VFD room to the control panel.
5. Purchasing, storage, and transportation of all equipment to the site and installation in the appropriate locations as shown on the construction DRAWINGS and specified herein.
6. Replace the existing programmable logic controller (PLC) processor with the new PLC processor as shown on the construction DRAWINGS and specified herein.
7. Program and configure the PLC and HMI software upgrades along with upgrading existing PLC functionality as specified herein.
8. Conduct performance testing for all control system programming, including the new pump and motor.

9. Furnish all materials, labor, tools, equipment, and incidentals necessary for the complete and proper construction of the WORK as shown on the construction DRAWINGS and specified herein.

10. Perform commissioning and startup of the Lake Bridge Pump Station once installation and PLC integration are completed as specified herein.

B. All materials, equipment, skills, tools and labor which are necessary and incidental for the proper completion of the WORK, shall be furnished and installed by the CONTRACTOR at no additional cost to the OWNER, whether specifically indicated in the CONTRACT DOCUMENTS or not.

C. In carrying out the WORK, comply with all applicable basic materials and construction requirements specified in the CONTRACT DOCUMENTS.

1.3 OWNER FURNISHED EQUIPMENT (NOT APPLICABLE)

1.4 CONTRACT PRICE

A. Construct the WORK based on the PROPOSAL. The CONTRACTOR's compensation for all construction, materials, equipment, and installation shown on the DRAWINGS and included in the SPECIFICATIONS will be deemed to be included in the unit Bid Schedule.

PART 2 - SUBSTANTIAL AND FINAL COMPLETION

A. Before substantial completion, inspect and take all necessary remedial measures of every portion of the WORK, whether remedial work was identified by the CONTRACTOR, ENGINEER or OWNER, to ensure the overall performance is in compliance with the terms of the CONTRACT DOCUMENTS.

B. The WORK shall be complete including all incidental mechanical, electrical, testing and calibration, and disinfection and ready for the OWNER to assume operations.

C. SUBSTANTIAL and FINAL COMPLETION of the WORK shall be completed, tested and ready for operation in accordance with the dates as contained in the CONTRACT DOCUMENTS.

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 GENERAL

A. The CONTRACTOR shall receive and accept the compensation provided in the PROPOSAL and the AGREEMENT as full payment for furnishing all materials, labor, tools and equipment, for performing all operations necessary to complete the WORK and also as full payment for loss or damages arising from the nature of the WORK, or from any discrepancy between the actual quantities of WORK and quantities herein estimated by the ENGINEER, or from the action of the elements or from any unforeseen difficulties which may be encountered during the prosecution of the WORK until FINAL COMPLETION.

B. The prices stated in the PROPOSAL include all costs and expenses for taxes, labor, equipment, materials, commissions, transportation charges and expenses, patent fees and royalties, labor for handling materials during inspection, together with any and all other costs and expenses for performing and completing the WORK. The basis of payment for UNIT PRICE WORK shown in the PROPOSAL shall be in accordance with the description of the respective items in this Section.

C. The CONTRACTOR'S attention is called to the fact that the prices for the various items of work are intended to establish a total price for completing the WORK in its entirety. Should the CONTRACTOR feel that the cost for any item of WORK has not been established by the PROPOSAL form, the cost for that work shall be included in some other applicable PROPOSAL item, so that the PROPOSAL for the PROJECT does reflect the CONTRACTOR'S total price for completing the WORK in its entirety.

1.2 MEASUREMENT

A. The quantities shown are approximate and are only given as a basis of calculation upon which the award of the CONTRACT is to be made. The OWNER *Tampa Bay Water, and Carollo Engineers, Inc. (OWNER'S Representative/ENGINEER)* does not assume any responsibility for the final quantities, nor shall the CONTRACTOR claim misunderstanding because of such estimate of quantities. The quantities for payment shall be determined by actual measurement of the completed items, in place, ready for service and accepted by the OWNER, in accordance with the applicable method of measurement therefore contained herein. Representatives of the CONTRACTOR and the ENGINEER shall witness all field measurements.

1.3 WORK OUTSIDE AUTHORIZED LIMITS

A. No payment will be made for WORK constructed outside the authorized limits of work.

1. Measurement Standards.

B. Unless otherwise specified for the particular items involved, all measurements of distance shall be taken horizontally or vertically.

1.4 PROPOSAL ITEM DESCRIPTIONS. Detailed descriptions for each proposal item follow:

A. Item No. 1 – Mobilization and Demobilization: Mobilization and Demobilization refer to the activities required to set up and dismantle the construction site infrastructure. Mobilization includes the transportation and setup of all necessary equipment, tools, materials, and personnel at the project site. It also involves site preparation, establishing safety measures, securing permits, and setting up temporary facilities (e.g., offices, storage, utilities). Demobilization occurs at the end of the project, involving the removal of all equipment, tools, and materials, clearing the site, and ensuring that the location is restored to a satisfactory condition.

B. Item No. 2 – Equipment Procurement: The Equipment Procurement for this project involves the acquisition of all necessary equipment and materials required for the successful installation and operation of the system. This includes procuring a pump, motor, Variable Frequency Drive (VFD), instrumentation, piping, valves, and all associated appurtenances. The procurement process will encompass the purchasing from specified suppliers, managing purchase orders, and coordinating the timely delivery of these components to the project site. Additionally, the process will ensure that all equipment meets required performance specifications, industry standards, and safety regulations. Proper quality checks will be performed to verify the functionality, compatibility, and durability of each item, ensuring that the installation can proceed smoothly without delays. This phase also involves the coordination of transportation, storage, and inventory management to ensure the proper handling and safeguarding of all equipment and materials until they are needed on-site.

C. Item No. 3 – Concrete Work: Concrete work involves the preparation, mixing, pouring, and finishing of concrete for various structural elements of the project. This includes equipment and pipe supports. The scope also covers surface preparation, formwork installation, reinforcement placement, and curing to ensure the durability and integrity of the concrete. Concrete work is a critical element of construction, requiring expertise in both materials and construction techniques.

D. Item No. 4 – Mechanical Work: Mechanical work refers to the process of placing and setting up various systems, equipment, or components as specified in the project's design and scope. This includes the installation of mechanical equipment. The installation process ensures that all systems and materials are properly integrated into the overall station and that they function according to the specifications. It requires coordination among multiple trades, with a strong emphasis on quality control and adherence to safety standards.

E. Item No. 5 – Instrumentation Work: Instrumentation work involves the installation, calibration, and testing of instruments and control systems specified in the project's design and scope. This involves installation of sensors, gauges, and monitoring devices for temperature, pressure, flow, or other parameters specified. Instrumentation work is essential for ensuring the systems operate within their desired parameters, with a focus on accuracy and reliability. Proper installation and testing of these instruments are vital to the success of the project.

F. Item No. 6 – Electrical Work: The Electrical Work for this project includes the installation and testing of a motor and Variable Frequency Drive (VFD), along with the necessary wiring for all new instrumentation. This involves connecting the motor to the VFD, ensuring proper electrical integration and functionality. Additionally, all wiring for the new instrumentation will be routed through existing conduits, ensuring compliance with safety standards and regulatory requirements. The work will include testing and commissioning to verify the proper operation of the motor, VFD, and instrumentation systems. The electrical system will be fully tested for performance, functionality, and safety, ensuring that all components work together seamlessly and efficiently.

G. Item No. 7 – Commissioning: Commissioning is a critical phase in the project lifecycle that ensures all systems, components, and equipment of a project are installed, tested, and performing according to the specified design, operational requirements, and industry standards. This item outlines the processes and tasks involved in the commissioning of the project's infrastructure, systems, and equipment, ensuring that everything is operational and functioning efficiently before the final handover. Commissioning includes:

1. Pre-Commissioning Activities:
    a. Review and verify design documentation, equipment specifications, and operational requirements.
    b. Coordinate with the project team, contractors, and vendors to ensure that all systems and components are ready for commissioning.
    c. Conduct pre-commissioning inspections to confirm that systems and equipment are correctly installed, aligned, and meet all safety and quality standards.
2. System Integration and Testing:
    a. Perform systematic testing of all individual systems and subsystems (e.g., mechanical, electrical, instrumentation and control systems, etc.) to ensure that they integrate and function as a cohesive unit.
    b. Execute a series of tests such as functionality checks, performance verification, and calibration to validate the operational capacity of each system.
    c. Identify and resolve any discrepancies, malfunctions, or non-compliance issues that arise during the testing phase.

3. Operational Verification:

   a. Verify the operational performance of systems under normal working conditions. This includes monitoring system responses to various loads, cycles, and operational scenarios.

   b. Ensure that all safety mechanisms, alarms, and emergency shutdown protocols are working correctly.

   c. Conduct system optimization to enhance energy efficiency, reliability, and overall performance.

4. Training and Handover:

   a. Provide training for the client's operations team to ensure they are familiar with the operation, maintenance, and troubleshooting of all systems.

      1) Two training sessions to be conducted for Operations staff. Equipment training shall be conducted on Tuesdays or Thursdays.

   b. Document operational procedures and develop user manuals for the client's reference.

   c. Complete final testing and commissioning reports detailing system performance, compliance with specifications, and any deviations or corrective actions taken.

5. Post-Commissioning Support:

   a. Offer a period of post-commissioning support, during which any unforeseen issues are addressed and rectified.

   b. Provide ongoing technical support and assist with performance optimization, if required.

H. Price Form: Review this ITB in its entirety and provide pricing below that is inclusive of all expenses.

Item #	Description	Unit	Quantity	Unit Price	Total Price
1	Mobilization/Demobilization	LS	1	$_____	$_____
2	Equipment Procurement	EA		$_____	$_____
3	Concrete Work	CY		$_____	$_____
4	Mechanical Work	LS	1	$_____	$_____
5	Electrical Work	LS	1	$_____	$_____
6	Instrumentation Work	LS	1	$_____	$_____
7	Commissioning	LS	1	$_____	$_____

END OF SECTION

SECTION 01027

PAYMENT APPLICATIONS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. The CONTRACTOR shall submit PAYMENT APPLICATIONS to the OWNER or OWNER'S REPRESENTATIVE/ENGINEER in accordance with the schedule established in the General Conditions of the CONTRACT DOCUMENTS.

1.2 FORMAT AND DATA REQUIRED

1. The CONTRACTOR shall submit applications electronically into OWNER's Masterworks project management software.
2. The CONTRACTOR shall provide itemized data, including, line items and values, and any other supporting documentation required for processing in Masterworks software.
3. Submit payment requests and attach spreadsheet with cost data related to Progress Schedule.
4. Fill in information required on application form.

1.3 PREPARATION OF EACH PAYMENT APPLICATION

A. Application Form:

1. Complete required information, including that for CHANGE ORDERS executed prior to date of submittal of application. Pay applications are executed in two steps, Items Posting per Masterworks MW-SOP-21 which is reviewed and approved by the OWNER or designee and Pay Estimate step per MW-SOP-22 requirements.
2. Complete summary of dollar values to agree with respective totals indicated on continuation sheets.
3. By submitting a payment application into the Masterworks project management software, the CONTRACTOR is certifying the payment application is correct and all subcontractor and suppliers have been paid to date. Submittal of payment application shall be per Masterworks MW-SOP-22 requirements.

B. Continuation Sheets:

1. Complete total list of all scheduled component items of work, with item number and dollar value for each item as specified in the finalized schedule of values as approved by the OWNER, as indicated in Masterworks MW-SOP-21 and -22 requirements.
2. Complete dollar value in each column for each scheduled line item when work has been performed or products stored on site.

3. List each CHANGE ORDER executed prior to date of submission, at the end of the continuation sheets. List by CHANGE ORDER Number, and description, as for an original component item of work.

4. Payment on component material stored on site shall be in accordance with the General Conditions.

1.4 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. When the OWNER requires substantiating data, the CONTRACTOR shall submit suitable information, with a cover letter identifying:

1. PROJECT.

2. PAYMENT APPLICATION number and date.

3. Cost flow summary.

4. Updated schedule of values.

5. Progress schedule.

6. Detailed list of enclosures.

7. For stored products: In accordance with the General Conditions.

8. Equipment log.

9. Submit "certified" payroll, if applicable.

10. Record (as built) documents.

11. Photos and videos from the current pay period.

12. Applicable unconditional waiver and release on progress payment for pervious payment made by OWNER.

B. The CONTRACTOR shall maintain an updated set of AS-BUILT DRAWINGS in accordance with Section 01720 Contract Record and Close Out Documents. As a prerequisite for monthly progress payments, the CONTRACTOR shall exhibit the updated AS-BUILT DRAWINGS for review by the OWNER or the ENGINEER.

1.5 SUBMITTAL PROCEDURE

A. The CONTRACTOR shall submit the PAYMENT APPLICATION to the OWNER at the time stipulated in the General Conditions. Pay applications are executed in two steps, Items Posting per Masterworks MW-SOP-21 which is reviewed and approved by the OWNER or designee and Pay Estimate step per MW-SOP-22 requirements.

B. The OWNER's ENGINEER shall perform the initial review of the PAYMENT APPLICATION and make a recommendation to the OWNER for approval.

1.6 PAYMENT REQUESTS

A. Prepare progress payment requests on a monthly basis. Base requests on the breakdowns of costs for each scheduled activity and the percentage of completion for each activity.

B. Indicate total dollar amount of work planned for every month of the project. Equate sum of monthly amounts to Lump Sum Contract Price.

C. Generate Progress Payment request forms by downloading cost data from the schedule information to a spreadsheet type format.

D. Identify each activity on the Progress Schedule that has a cost associated with it, the cost for each activity, the estimated percent complete for each activity, and the value of work completed for both the payment period and job to date.

E. Prepare summary of cost information for each Major Item of Work listed in the Schedule of Values. Identify the value of work completed for both the payment period and job to date.

F. Payment period:

1. Monthly Application for Payment period shall begin on the 1st day of each month, and end on the last day of each month.
2. Submit Application for Payment to ENGINEER no later than the 5th day of each month for work completed the previous month.
3. Engineer will finalize and submit recommendation for Application for Payment to OWNER by the 15th day of each month to allow time for processing and approval.

1.7 COST SUMMARIES

A. Prepare Summary of Cost Information for each Major Item of Work listed in the Schedule of Values. Identify the Value of Work Completed for both the payment period and job to date.

B. Cash flow summary: Prepare cash flow summary, indicating total dollar amount of work planned for each month of the project. Equate sum of monthly amounts to Lump Sum contract price.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01040

PROJECT COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and supervisory requirements necessary for Project Coordination including, but not limited to:

1. Coordination;
2. Administrative and supervisory personnel;
3. General installation provisions; and,
4. Cleaning and protection.

B. Progress meeting and coordination meetings are included in the Section 01200 Project Meetings.

C. Requirements for the CONTRACTOR'S Construction Schedule are included in Section 01300 Contractor Submittals.

1.2 COORDINATION

A. Coordination: Coordinate construction activities included under various Sections of these Specifications and CONTRACT DOCUMENTS to assure efficient and orderly installation of each part of the WORK. Coordinate construction operation included under different Sections of these Specifications and CONTRACT DOCUMENTS that are dependent upon each other for proper installation, connection, and operation.

1. Where installation of one part of the WORK is dependent on installation of other components, either before or after its own installation, schedule construction activities in sequence required to obtain the greatest results possible.
2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Administrative Procedures:

1. CONTRACTOR shall be responsible for training its staff as needed for proficiency in the OWNER's Masterworks program. A contact list of Masterworks users shall be provided to the OWNER.

2. Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the WORK. Such administrative activities include, but not limited to, the following:

   a. Preparation of schedules;

   b. Installation and removal of temporary facilities/structures;

   c. Delivery and processing of submittals;

   d. Progress meetings; and,

   e. Project close-out activities.

1.3 COORDINATION WITH OWNER AND OTHER CONTRACTORS

A. It may be necessary for the CONTRACTOR to plan the WORK and coordinate with other contractors insofar as possible to prevent any interference and delay.

B. The CONTRACTOR shall at all times be required to coordinate with the OWNER's staff for the CONTRACTOR's WORK onsite, to prevent any interference and delay.

1.4 SUBMITTALS

A. Comply with requirements contained in Section 01300, Contractor Submittals.

1. Staff Names: Within 15 days of Notice to Proceed, and prior to any site access for design or construction activities, submit a list of the CONTRACTOR'S principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify individuals, their duties and responsibilities; list their addresses, email and telephone numbers.

2. Provide a list of subcontractors with addresses, email and telephone numbers.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

A. Inspection of Conditions: The CONTRACTOR and/or subcontractors of each major component shall inspect the conditions under which the work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

B. Manufacturer's Instructions: The CONTRACTOR shall comply with the manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in CONTRACT DOCUMENTS.

C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.

D. Recheck measurements and dimensions, before starting each installation.

E. Install each component during weather conditions and PROJECT status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.

F. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

3.2 CLEANING AND PROTECTION

A. During handling and installation, clean and protect construction in progress and adjoining materials in place.

B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period.

END OF SECTION

SECTION 01065

PERMITS AND EASEMENTS

PART 1 - GENERAL

A. The CONTRACTOR shall obtain and pay for all permits and licenses related to their WORK as provided in the General Conditions excepted as otherwise provided herein. Copies of all permits obtained by the CONTRACTOR shall be submitted to the OWNER in electronic PDF format along with copies of the permit applications. During PROJECT closeout, CONTRACTOR to provide documentation the permit has been closed.

B. WORK shall be conducted and shall result in construction of improvements of this PROJECT in full accordance with the conditions of the permits granted for the PROJECT.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01070

ABBREVIATIONS AND SYMBOLS

PART 1 - GENERAL

A. Referenced Standards: Any reference to published specifications or standards of any organization or association shall comply with the requirements of the specification or standard which is current on the date of Advertisement for Bids. In case of a conflict between the referenced specifications or standards, the one having the more stringent requirements shall govern. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the CONTRACT DOCUMENTS) shall be effective to change the duties and responsibilities of the OWNER, CONTRACTOR or ENGINEER, or any of their consultants, agents or employees from those set forth in the CONTRACT DOCUMENTS.

B. In case of conflict between the referenced specifications or standards and the CONTRACT DOCUMENTS, the CONTRACT DOCUMENTS shall govern.

C. Abbreviations:

AA	Aluminum Association
AASHTO	American Association of State Highway & Transportation Officials
AASHO	American Association of State Highway Officials (now AASHTO)
ABMA	American Bearing Manufacturer's Association
ABPA	Acoustical and Board Products Association
ACI	American Concrete Institute
ACOE	Army Corps of Engineers
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AI	The Asphalt Institute
AIEE	American Institute of Electrical Engineers (now IEEE)
AIMA	Acoustical and Insulating Materials Association
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standard Institute
API	American Petroleum Institute
APWA	American Public Works Association
AREA	American Railway Engineering Association
ASA	American Standards Association (now ANSI)
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers

ASSCBC	American Standard Safety Code for Building Construction
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWPB	American Wood Preservers Bureau
AWS	American Welding Society
AWWA	American Water Works Association
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard
DOT Spec	Standard Specification for Road and Bridge Construction Florida Department of Transportation
E/A	Engineer and/or Architect
EPA	Environmental Protection Agency
F'C	Concrete Compressive Strength
FDEP	Florida Department of Environmental Protection
FDER	(now FDEP - formerly Florida Department of Environmental Regulation)
FDOT	Florida Department of Transportation
FS	Federal Standard
FRP	Fiberglass Reinforced Plastic
GPM	Gallons Per Minute
HP	Horsepower
ID	Inside Diameter
IEEE	Institute of Electrical and Electronic Engineers IPCEA Insulated Power Cable Engineers Association
LBR	Limerock Bearing Ratio
NBFU	National Board of Fire Underwriters
NBS	National Bureau of Standards
NEC	National Electrical Code
NECA	National Electrical Contractors' Association
NEMA	National Electrical Manufacturers Association NFPA National Fire Protection Association
NPDES	National Pollution Discharge Elimination System
NPT	National Pipe Threads
NSF	National Science Foundation
OD	Outside Diameter
OSHA	U.S. Department of Labor, Occupational Safety and Health Association
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PS	United States Products Standards
PSIG	Pounds Per Square Inch Gauge
RPM	Revolutions Per Minute
SAE	Society of Automotive Engineers
SDI	Steel Decks Institute
SJI	Steel Joists Institute
SMACNA	Sheet Metal & Air Conditioning Contractors' National Assoc.

SSPC	Structural Steel Painting Council
STA	Station (100 feet)
SWFWMD	Southwest Florida Water Management District
TDH	Total Dynamic Head
TECO	Tampa Electric Company
UL	Underwriter's Laboratories, Inc.
USACOE	United States Army Corps of Engineers
USASI or USAS	United States of America Standards Institute (Now ANSI)
USDA	United State Department of Agriculture
USEPA	United States Environmental Protection Agency

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. The OWNER shall schedule and shall administer the preconstruction meeting, periodic progress meetings, and specially called meetings throughout the progress of the WORK. The ENGINEER shall prepare agenda for meetings, make physical arrangements for meetings and preside at meetings, and shall prepare and distribute meeting minutes.

B. Representatives of CONTRACTORS, SUBCONTRACTORS and SUPPLIERS attending meetings shall be authorized to act on behalf of the entity each represents.

C. The CONTRACTOR shall attend meetings to ascertain that the WORK is progressing consistent with CONTRACT DOCUMENTS and PROGRESS SCHEDULE.

1.2 DESIGN SERVICES AND PRECONSTRUCTION MEETINGS

A. The Preconstruction Meeting will be conducted no more than ten (10) days before the NOTICE TO PROCEED is issued, and before any WORK at the site is started.

B. The following shall be in attendance at the Preconstruction Meeting:

1. OWNER and OWNER'S representatives.
2. ENGINEER and associated professional consultants.
3. CONTRACTOR'S PROJECT representatives.

C. In addition to those identified in the Contract General Conditions, the following items may be addressed at the preconstruction meeting:

1. Distribution and discussion of:
    a. List of major SUBCONTRACTORS and SUPPLIERS.
    b. PROGRESS SCHEDULE.
    c. Proposed schedule of values.
    d. SUBMITTAL Log.
    e. Quality Control Plan.
    f. Access and usage procedures for OWNER's Masterworks program.
    g. Risk Management.
2. Critical work sequencing including shutdowns and utility connections.
3. Major equipment deliveries and priorities.

4. PROJECT coordination:
    a. Designation of responsible personnel.
    b. Addresses, email and phone numbers.
    c. Emergency phone numbers.
5. Procedures and processing of:
    a. CHANGE AUTHORIZATIONS.
    b. PROPOSAL requests.
    c. SUBMITTALS.
    d. CHANGE ORDERS.
    e. PAYMENT APPLICATIONS.
    f. Allowances.
6. Distribution of conformed CONTRACT DOCUMENTS.
7. Procedures for maintaining record documents.
8. Construction photographs and pre, during, and post construction audio-video.
9. Use of premises:
    a. Office, work, storage and staging areas.
    b. OWNER'S and ENGINEER'S requirements.
10. Submittal of shop drawings.
11. Temporary and permanent utilities.
12. Housekeeping procedures.
13. Bond and Insurance certifications.
14. Progress meetings.
15. Working Hours.
16. Safety procedures and first aid.
17. Security.

1.3 PROGRESS MEETINGS

A. Progress meetings will be held at a frequency to be determined by the OWNER, depending on the progress of the project. This may be weekly, biweekly, or monthly.

B. Progress meetings will be held at a location designated by the OWNER.

C. The following shall be in attendance:
    1. OWNER'S representative(s).
    2. ENGINEER and associated professional consultants as needed.

3. CONTRACTOR.
4. SUBCONTRACTORS and SUPPLIERS as appropriate to the agenda.
5. Others as required.

D. The following items may be discussed at the progress meetings:

1. Review of minutes of previous meeting.
2. Review of PROGRESS REPORT.
3. Field observations, problems, conflicts.
4. Problems and critical/long lead items which impede compliance with PROGRESS SCHEDULE.
5. Review of off-site fabrication, delivery schedules.
6. Corrective measures and procedures to maintain/regain PROGRESS SCHEDULE, if necessary.
7. Revisions to PROGRESS SCHEDULE.
8. PROGRESS since previous progress meeting.
9. PROGRESS during succeeding work period.
10. Review SUBMITTAL schedules; expedite as required.
11. Pending changes and substitutions.
12. Review proposed changes for effect on PROGRESS SCHEDULE and on completion date(s).
13. Other business.

E. The CONTRACTOR shall attend progress meetings and shall study previous meeting minutes and current agenda items, in order to be prepared to discuss pertinent topics as listed in 1.3D.

F. The CONTRACTOR shall provide a current SUBMITTAL log at each progress meeting in accordance with Section 01300, Contractor Submittals.

G. The CONTRACTOR shall provide a current three (3) week look ahead PROGRESS SCHEDULE and PROGRESS REPORT at each progress meeting in accordance with Section 01310, Project Schedules.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01300

CONTRACTOR SUBMITTALS

PART 1 - GENERAL

1.1 DEFINITION AND SCOPE

A. Whenever SUBMITTALS are required by the CONTRACT DOCUMENTS, at the OWNER'S request, or reasonably required for construction, operation, and maintenance of the Work, all such CONTRACTOR SUBMITTALS shall be submitted to the OWNER'S construction manager.

B. Within 10 days after the NOTICE OF AWARD, but prior to the pre-construction meeting, the CONTRACTOR shall submit the following items to the OWNER'S construction manager for review.

1. A preliminary schedule of SHOP DRAWING SUBMITTALS and Materials Submittals.

2. A list of all permits and licenses the CONTRACTOR shall obtain indicating the permitting agency, the type of permit, the expected date of application for the permit, required date for receipt of the permit, and permit fee.

C. The CONTRACTOR shall allow three (3) weeks for the OWNER'S and ENGINEER'S review of all SUBMITTALS.

1.2 RELATED WORK SPECIFIED ELSEWHERE IN THE GENERAL REQUIREMENTS

A. Section 01720 - Contract Record and Close-Out Documents.

B. Section 01730 - Operating and Maintenance Data.

C. Section 01740 - Warranties and Bonds.

1.3 REQUIREMENTS

A. CONTRACTOR is responsible to determine and verify field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, and check and coordinate each item with other applicable approved SHOP DRAWINGS and CONTRACT DOCUMENT requirements.

B. A separate transmittal form shall be used for each specific item or class of material or equipment for which a SUBMITTAL is required. Transmittal of a SUBMITTAL of various items using a single transmittal form shall be permitted only when the items taken together constitute a SUPPLIER'S "package" or are so functionally related that expediency indicates review of the group or package as a whole. A multiple-page SUBMITTAL shall be collated into sets, and each set shall be stapled or bound, as appropriate, prior to submission.

C. Any SUBMITTAL which is incomplete or does not provide the level of detail outlined in the CONTRACT DOCUMENTS, shall be considered unacceptable for review and shall be returned for resubmittal. Should any SUBMITTAL be a part of any schedule milestone and is considered to be unacceptable by the OWNER or ENGINEER, the appropriate milestone shall be considered as not having been met until a complete and properly detailed SUBMITTAL is received.

D. If a SUBMITTAL is returned to the CONTRACTOR marked "REVIEWED, NO COMMENTS," formal revision and resubmission of said SUBMITTAL will not be required.

E. If a SUBMITTAL is returned to the CONTRACTOR marked "REVIEWED, COMMENTS AS NOTED," formal revision and resubmission of said SUBMITTAL will not be required.

F. If a SUBMITTAL is returned to the CONTRACTOR marked "REJECTED; REVISE AND RESUBMIT," the CONTRACTOR shall revise said SUBMITTAL and shall resubmit said revised SUBMITTAL to the OWNER'S construction manager.

G. On resubmittals, the CONTRACTOR shall direct specific attention, in writing or on the resubmitted SUBMITTAL, to revisions other than those requested by the OWNER or ENGINEER on previous reviews.

H. Fabrication and placement of order to SUPPLIER of an item shall not commence before the OWNER has reviewed the pertinent SUBMITTAL and returned copies to the CONTRACTOR marked either "REVIEWED, NO COMMENTS" or "REVIEWED, COMMENTS AS NOTED." Revisions indicated on SUBMITTALS shall be considered as changes necessary to meet the requirements of the CONTRACT DOCUMENTS and shall not be taken as the basis of claims for extra work.

I. All SUBMITTALS shall be carefully reviewed by an authorized representative of the CONTRACTOR prior to submission to the OWNER. Each SUBMITTAL shall be dated, signed, and certified by the CONTRACTOR as being correct. No consideration for review by the OWNER or ENGINEER of any SUBMITTALS shall be made for any items which have not been so certified by the CONTRACTOR. All non-certified SUBMITTALS shall be returned to the CONTRACTOR without action taken by the OWNER, and any delays caused thereby shall be the total responsibility of the CONTRACTOR.

J. The OWNER'S and ENGINEER'S review of the CONTRACTOR'S SUBMITTALS shall not relieve the CONTRACTOR of the entire responsibility for the correctness of details and dimensions. The CONTRACTOR shall assume all responsibility and risk for any misfits due to any errors in SUBMITTALS. Any fabrication or other WORK performed in advance of the receipt of approved SUBMITTALS shall be entirely at the CONTRACTOR'S risk and expense. The CONTRACTOR shall be responsible for the dimensions and the design of adequate connections and details.

K. The CONTRACTOR shall provide contract record and close out documentation in electronic format.

1.4 AS-BUILT DRAWINGS

A. AS-BUILT DRAWINGS shall be maintained by the CONTRACTOR in strict accordance with the GENERAL CONDITIONS.

B. PAYMENT APPLICATIONS will not be approved if the AS-BUILT DRAWINGS are not kept current and will not be approved until the AS-BUILT DRAWINGS show completely all information required and are current.

C. The final PAYMENT APPLICATION shall not be accepted by the OWNER until the AS-BUILT DRAWINGS are approved for conformance to the minimum requirements. The OWNER'S acceptance of the CONTRACTOR'S AS-BUILT DRAWINGS does not relieve the CONTRACTOR of the sole responsibility for the accuracy or completeness of the AS-BUILT DRAWINGS.

D. On AS-BUILT DRAWINGS the CONTRACTOR shall, at a minimum, note the limits, location, and depth of electrical conduits located by GPS coordinates.

E. All deviations shall be highlighted on the AS-BUILT DRAWINGS using a "cloud". If any revisions to the original plans required a CHANGE ORDER, the "cloud" shall include the CHANGE ORDER number.

F. The CONTRACTOR shall submit all AS-BUILT DRAWINGS after review and approval by the OWNER and ENGINEER in digital electronic format.

G. F. The OWNER will provide an AutoCAD file, using the latest version of the software, of the conformed drawings for the CONTRACTOR to add his as-built information.

1.5 REQUIREMENTS FOR ELECTRONIC FILES

A. Electronic files shall be delivered on a unique CD-ROM in Adobe Acrobat's Portable Document Format (PDF). The PDF file(s) shall be fully indexed using the Table of Contents, searchable with thumbnails generated and any extra blank pages removed. A second electronic files of AutoCAD files shall be delivered on a separate CD-ROM in the latest version of AutoCad with all as- built changes clearly marked.

B. Scanned images must be at a readable resolution. For most documents, they will be scanned at 300 dots per inch (dpi). Optical Character Recognition (OCR) capture must be performed on these images. OCR settings shall be performed with the "original image with hidden text" option in Adobe Acrobat Exchange.

C. For manual, one (1) PDF document (PDF file) shall be created for each manual. The entire manual shall be converted to single .PDF file via scanning or other method of conversion. Drawings or other graphics shall be converted to .PDF format and included into the single PDF document. Pages that must be viewed in landscape format shall be rotated to the appropriate position for easy reading on screen.

D. The PDF documents shall have a bookmark created in the navigation frame for each major entry ("Section" or "Chapter") in the Table of Contents. Thumbnails shall be generated for each page or graphic in the PDF file.

E. The opening view for each PDF document shall be as follows:

1. Initial View: Bookmarks and Page.

PART 2 - MAGNIFICATION: FIT IN WINDOW PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01310

CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope of Work:

1. The CONTRACTOR shall prepare and submit to the ENGINEER a PROGRESS.

2. SCHEDULE demonstrating complete fulfillment of all CONTRACT DOCUMENTS requirements to coordinate, plan, schedule and perform the WORK under this contract (including activities of SUBCONTRACTORS).

3. The PROGRESS SCHEDULE shall be used to control the WORK and to provide a definitive basis for determining project progress. The PROGRESS SCHEDULE shall be prepared, maintained and updated by the CONTRACTOR and historical dates agreed monthly with the ENGINEER. The CONTRACTOR shall submit a preliminary PROGRESS SCHEDULE and a PROGRESS SCHEDULE for acceptance by the OWNER and ENGINEER. These schedules shall be the CONTRACTOR's working schedules and shall be used to plan, organize and execute the WORK, record and report actual performance and progress, and show how the CONTRACTOR plans to complete all remaining WORK as of the end of each progress report period.

4. The PROGRESS SCHEDULE shall provide sufficient detail and clarity to reflect the intricacies and interdependencies of activities so the CONTRACTOR can plan, schedule, monitor, control and report on the progress of his work. In addition, it shall provide the ENGINEER and OWNER a tool to monitor and follow the progress for all phases of the WORK.

1.2 SUBMITTAL PROCEDURES

A. SUBMITTAL requirements shall include:

1. Narrative description of the logic and reasoning of the schedule.

2. Submittal Schedule.

3. Procurement schedule outlining items with lead times longer than 2 weeks.

4. Schedule for permit submittal and review.

5. Individual construction activities with time phased logic schedule of WORK.

6. Milestones.

7. Shutdown and Startup Schedule.

8. Electronic schedule files to be uploaded into Masterworks in .PDF, native file format and MS Project (if applicable).

1.3 PRE-CONSTRUCTION SCHEDULING CONFERENCE

A. The ENGINEER will conduct a pre-construction scheduling conference with the CONTRACTOR to review requirements for the schedules, including Schedule of Values, cost-loading and schedule configuration. The conference shall be conducted sufficiently early to allow the CONTRACTOR to submit the preliminary PROGRESS SCHEDULE within ten (10) days after NOTICE TO PROCEED.

B. At this meeting, the CONTRACTOR shall explain in detail the procedure to be used to develop the schedule activity cost-loading or Schedule of Values and cash flow. This procedure is subject to the review and acceptance of the ENGINEER.

1.4 PRELIMINARY PROGRESS SCHEDULE.

A. Following the pre-construction scheduling conference but within ten (10) calendar days after NOTICE TO PROCEED, the CONTRACTOR shall submit a preliminary PROGRESS SCHEDULE for review by the OWNER and ENGINEER. The preliminary PROGRESS SCHEDULE shall show detailed construction-related activities for the entire project. The remainder of the Contract activities shall be shown as summary bars within the Milestones of the Work. The OWNER shall complete its review of the proposed plan and schedule within five (5) days after receipt of diagram/schedule and state its acceptance or rejection of the schedule. Within five (5) days after the conclusion of the OWNER'S review, the CONTRACTOR shall revise the schedule as required and resubmit the tabulated schedule produced there from. The revised tabulated schedule shall be reviewed and accepted or rejected by the OWNER within five (5) days after receipt. The revised tabulated schedule shall be reviewed and accepted or rejected by the OWNER within five (5) days after receipt. No progress payments will be made during the period specified above for the preliminary PROGRESS SCHEDULE until the preliminary PROGRESS SCHEDULE has been accepted by the ENGINEER. The tabulated schedule when accepted by the OWNER shall constitute the PROGRESS SCHEDULE unless a revised PROGRESS SCHEDULE is required due to substantial changes in the WORK or a change in CONTRACT TIME(S), delinquency by CONTRACTOR requiring a recovery schedule, or as otherwise provided for herein below. Activities not occurring as scheduled are delinquent if they begin after late start or they finish after late finish.

B. The preliminary PROGRESS SCHEDULE shall:

1. Describe the activities to be accomplished during the WORK and their dependency relationships (predecessor/successor) and a tabulated schedule as herein defined.

2. Illustrate a feasible schedule for completion of the Work within the time and Milestones specified.

3. The schedule produced and submitted shall indicate interim milestone and SUBSTANTIAL and FINAL COMPLETION dates identical to the milestone and completion dates specified elsewhere herein.

4. Provide an elementary example of the schedule in the format to be used for the PROGRESS SCHEDULE.

5. Include the activity code structure as described in paragraph 19 of this specification.

C. Preliminary PROGRESS SCHEDULE Submittal Format:

1. CONTRACTOR shall electronically submit a PDF and native file of the preliminary PROGRESS SCHEDULE. A brief narrative shall accompany the submittal, describing CONTRACTOR's scheduling approach to the project. The narrative shall include a description of the Contract Milestones, approach for construction activities during the period of the preliminary PROGRESS SCHEDULE, description of the general approach of the activities for the work beyond the preliminary PROGRESS SCHEDULE period, a description of the project's critical path, identification of critical long-lead submittals, and planned outages. The narrative shall also incorporate activity codes, calendars, weather days, Milestone constraints, and work breakdown structure in accordance with the requirements specified herein.

1.5 PROGRESS SCHEDULE

A. The PROGRESS SCHEDULE comprises all the construction-related activities for the Work and shall show the order in which the CONTRACTOR proposes to carry out the work. CONTRACTOR shall include Milestones, coordination necessitated by limited access and available work areas, and the availability and use of manpower, material and equipment. When the tabulated schedule has been accepted, the CONTRACTOR shall add calendar dates to the schedule corresponding to days from NOTICE TO PROCEED and shall submit to the OWNER an electronic, tabulated schedule in which the activities have been sequenced by activity numbers. The CONTRACTOR shall use the PROGRESS SCHEDULE to plan, schedule and coordinate the Work including activities of subcontractors, equipment vendors, and suppliers.

B. The ENGINEER'S review and acceptance of the CONTRACTOR'S PROGRESS SCHEDULE is for conformance to the requirements of the CONTRACT DOCUMENTS only. Review and acceptance by the OWNER of the CONTRACTOR'S PROGRESS SCHEDULE shall not relieve the CONTRACTOR of any of its responsibility whatsoever for the accuracy or feasibility of the PROGRESS SCHEDULE, or of the CONTRACTOR'S ability to meet the interim milestone date and the FINAL COMPLETION date, nor does such review and

acceptance expressly or implicitly warrant, acknowledge or admit the reasonableness of the logic, durations, manpower or equipment loading of the CONTRACTOR'S PROGRESS SCHEDULE.

C. The PROGRESS SCHEDULE shall be to the level of detail acceptable to the ENGINEER, and shall include the following:

1. Organization and structural breakdown of the PROJECT;
2. Milestones and completion dates;
3. Type of work to be performed and the labor trades involved;
4. Purchase, manufacture and delivery activities for major materials and equipment;
5. Preparation, submittal, and acceptance of shop drawings and material samples;
6. Deliveries of owner-furnished equipment and/or materials;
7. Acceptances required by regulatory agencies and/or other third parties;
8. Access requirements to work areas;
9. Identification of interfaces and dependencies with preceding, concurrent and follow-on Contractors;
10. Tests, submittal of test reports and acceptance of test results;
11. Planning for phased or total acceptance by OWNER; including start up and commissioning;
12. Sequence of construction to maintain plant operations;
13. Planned outages.

D. The activities included in the PROGRESS SCHEDULE shall be defined in workdays. Durations shall be based on the labor (crafts), equipment, and materials required to perform each activity on a normal workday basis. Activity durations shall be 20 working days or less except in the case of non-construction activities such as procurement of materials, delivery of equipment, and concrete curing. All durations shall be the result of definitive manpower and resource planning by CONTRACTOR to perform the Work, in consideration of contractually defined on-site work conditions and CONTRACTOR's planned means and methods.

E. Revised PROGRESS SCHEDULE: The CONTRACTOR, if requested by the ENGINEER, shall provide a revised PROGRESS SCHEDULE if, at any time, the ENGINEER considers the completion date to be in jeopardy because of "delinquent activities" or for other valid reasons. "Delinquent activities" are all activities behind schedule in the accepted PROGRESS SCHEDULE regardless of the existence of positive float on the activity. The revised PROGRESS SCHEDULE shall include a new tabulated schedule designed to show how the CONTRACTOR intends to accomplish the WORK to meet the completion dates or milestones. The form and

method employed by the CONTRACTOR to modify the PROGRESS SCHEDULE shall be the same as the originally approved PROGRESS SCHEDULE.

F. The updated PROGRESS SCHEDULE shall also show changes occurring since the previous submission of schedule, including:

1. Major changes in scope.
2. Activities modified since previous submission.
3. Revised projections or progress and completion.
4. Other identifiable changes approved by the ENGINEER.

G. When the PROGRESS SCHEDULE is accepted by the ENGINEER, the ENGINEER will save a copy of the PROGRESS SCHEDULE as the baseline schedule and will use it for analysis of CONTRACTOR's progress.

H. The CONTRACTOR shall update the PROGRESS SCHEDULE monthly.

1.6 CONSTRUCTION PROGRESS SCHEDULES.

A. A copy of the PROGRESS SCHEDULE, shall be submitted monthly with that month's PROGRESS REPORT (in strict accordance with the General Conditions) or at the request of the ENGINEER.

B. With each PAYMENT APPLICATION, the CONTRACTOR shall submit a copy of the PROGRESS REPORT and the PROGRESS SCHEDULE marked to show the activities completed and partially completed, for which payment is requested.

1.7 ELECTRONIC PROGRESS SCHEDULE FORMAT AND REPORTING.

A. The PROGRESS SCHEDULE shall be created using software of choice. CONTRACTOR shall use ENGINEER's file-naming format throughout the project.

B. Native files shall be submitted with the baseline and with each progress update.

C. A baseline schedule shall be set and utilized with each submittal:

1. Select <None> as the baseline type for the Preliminary Schedule Submittal.
2. Once the Preliminary and Project Schedule are accepted, the baseline type shall be named <Initial Plan>.
3. Each subsequent Project Schedule update shall set the baseline type to <Last Performance Update>.
4. The data date for schedule calculation in the preliminary PROGRESS SCHEDULE and PROGRESS SCHEDULE shall be set as the date of the Notice to Proceed unless otherwise specified by the ENGINEER.

1.8 COST-LOADING. (NOT USED)

1.9 RESOURCE-LOADING. (NOT USED)

1.10 SUBMITTALS

A. The PROGRESS SCHEDULE and associated reports shall be submitted to the ENGINEER for acceptance within the period of the preliminary PROGRESS SCHEDULE specified herein. If the PROGRESS SCHEDULE is not submitted, no progress payments will be made after the due date until the PROGRESS SCHEDULE has been submitted.

B. Printouts and electronic layouts required as part of the PROGRESS SCHEDULE submittal and monthly updates are as follows:

1. Summary Schedule: one page milestone and summary schedule, sorted by total float, early-start, early-finish;
2. Detailed Project Schedule: organized by Work Breakdown Structure (WBS) or area of work; sorted by total float, early-start, early-finish;
3. Critical Path Schedule: sorted based on the total float, early-start, early-finish;
4. 60-Day Look Ahead Schedule: sorted by total float, early-start, early-finish;
5. Activities in Progress: organized by WBS or area of work; sorted by total float, early-start, early-finish;
6. Out-of-sequence Report: tabular report showing work performed out-of-sequence.

C. CONTRACTOR shall submit additional layouts if directed by ENGINEER.

D. The submittal shall include the following:

1. Narrative report summarizing the contract milestones, critical path, project approach including phasing or use of crews, significant submittal and fabrication items, coordination or interface requirements, OWNER-provided items, and list of subcontractors and vendors.
2. 2. Graphic reports including critical path report (longest path), summary schedule report, total float report by early-start early-finish, look-ahead report grouped by work breakdown structure or project phasing, and cash flow projection. Cash flow projections include estimated cumulative cost curves based on early and late start dates and projection of monthly payments over the life of the project. Only submit a cash flow projection if required.

E. The PROGRESS SCHEDULE file shall be submitted in an executable format.

F. The narrative and graphic reports shall be provided on 8”x11” paper and E-size plots respectively.

1.11 MONTHLY SCHEDULE UPDATES.

A. Monthly PROGRESS SCHEDULE updates shall be submitted for the duration of the Contract on a date agreed to by the OWNER, ENGINEER, and CONTRACTOR. If monthly PROGRESS SCHEDULE updates are not submitted by the due date, progress payments will be withheld until the required information is submitted.

B. The updated schedule shall be reviewed each month in a meeting with ENGINEER to verify:

1. Actual start dates,
2. Actual completion dates,
3. Activity percent completion,
4. Revised logic (as-built and projected) and changes in activity durations, cost assigned,
5. Cost influence of change orders, if any,
6. Revisions due to extension of time.

C. Prior to each meeting, CONTRACTOR shall prepare a complete and accurate report of current procurement and construction progress through the end of the update period, and a depiction of how CONTRACTOR plans to continue the Work to meet all contract completion dates. All network changes and status data agreed to during each update meeting shall be considered as accepted by both parties unless written notice of any exceptions is given within five calendar days after the meeting.

D. For major network changes that cannot be agreed to during an updating meeting, CONTRACTOR shall submit the proposed changes for ENGINEER's acceptance prior to inserting such changes into the network. Submittals may be in the form of marked-up networks, fragnets, or schedule abstracts, provided they are submitted with a letter of transmittal. A fragnet is defined as a sequence of new activities and/or activity revisions that are proposed to be added to the existing schedule to demonstrate how project events have an impact on the schedule.

1.12 DATA

A. The data date is the re-settable date that serves as the end of a reporting period. The reporting period will be recorded on a monthly basis, e.g., January 1st through January 31st with the 31st as the data date. If required for coordination purposes by the OWNER, the ENGINEER will provide specific data dates to be used by the CONTRACTOR.

1.13 REVIEW PROCESS

A. ENGINEER will review CONTRACTOR's preliminary PROGRESS SCHEDULE and full PROGRESS SCHEDULE submittals within 20 calendar days after receipt of all required information.

B. At the request of OWNER or ENGINEER, CONTRACTOR shall participate in any meetings necessary to reach a mutual agreement and acceptance of the preliminary PROGRESS SCHEDULE, PROGRESS SCHEDULES, or Cash Flow Projections.

C. If any of the required submittals are returned to CONTRACTOR for corrections or revisions, they shall be resubmitted within ten calendar days after the return mailing date. Resubmittals shall include all information and media included in the first submittal. Review and response by ENGINEER will be given within 10 calendar days after receipt of each resubmittal.

D. Schedules shall show contract completion of the Work on the Contract completion date and with zero or positive total float even if the CONTRACTOR plans to finish early. In no event shall acceptance of the schedule be a basis for a claim for delay against OWNER or ENGINEER by CONTRACTOR for an early finish. A PROGRESS SCHEDULE containing activities with negative float or that extend beyond the Contract completion date will not be acceptable.

E. Review and acceptance of the PROGRESS SCHEDULE by the OWNER or ENGINEER does not relieve CONTRACTOR of responsibility for the accuracy or feasibility of the PROGRESS SCHEDULE or of the CONTRACTOR'S ability to meet the interim milestone date and the FINAL COMPLETION date. Omissions and errors in the accepted PROGRESS SCHEDULE shall not relieve the CONTRACTOR of obligations under the Contract. Acceptance by ENGINEER in no way makes ENGINEER or OWNER an ensurer of the Schedule's success or liable for time or cost overruns. ENGINEER and OWNER hereby disclaim any obligation or liability by reason of acceptance of the PROGRESS SCHEDULE by the ENGINEER.

1.14 RESPONSIBILITY FOR SCHEDULE COMPLIANCE

A. Whenever it becomes apparent from the current PROGRESS SCHEDULE that the critical path is delayed and the contract completion date will not be met, CONTRACTOR shall mitigate the delay by taking some or all of the following actions at no additional cost to OWNER.
   1. Increase construction manpower in such quantities and crafts as will bring the project back on schedule within the completion dates and milestones.
   2. Increase the number of working hours per shift, shifts per day, working days per week, and the amount of construction equipment, or any combination of the foregoing, to substantially eliminate the backlog of work.

3. Re-schedule activities to achieve maximum practical concurrence of activities and to comply with the schedule date(s).

B. Within ten calendar days of the ENGINEER's request, CONTRACTOR shall submit a recovery schedule and written statement of the steps intended to remove or arrest the delay to the critical path in the schedule. If the CONTRACTOR fails to submit the required information or should fail to take measures acceptable to the ENGINEER, the ENGINEER with OWNER concurrence may direct CONTRACTOR to increase manpower, equipment and scheduled work hours to remove or arrest the delay to the critical path and the CONTRACTOR shall promptly provide such level of effort at no additional cost to OWNER.

C. In the event CONTRACTOR fails to follow the updated or revised recovery schedule, OWNER may elect to withhold progress payments until CONTRACTOR complies with the revised schedule.

D. Should CONTRACTOR's efforts not remove or arrest the delay to the critical path of the accepted schedule, then OWNER shall be entitled to supplement CONTRACTOR's workforce and equipment to remove and arrest any delay and shall be entitled to deduct all costs and expenses associated therewith from payments due to the CONTRACTOR. If insufficient Contract funds remain, OWNER may recover such funds from CONTRACTOR and its Surety.

1.15 CHANGE ORDERS, DELAYS, AND EXTENSIONS OF TIME

A. When change orders or delays are experienced by CONTRACTOR and CONTRACTOR requests an extension of time, CONTRACTOR shall submit a written time impact analysis to the ENGINEER illustrating the influence of each change or delay to the current Contract Schedule completion date. Each time impact analysis shall include a fragnet incorporating the change order or delay into the PROGRESS SCHEDULE to demonstrate how CONTRACTOR was delayed.

B. Each time impact analysis shall demonstrate the estimated time impact based on the events of the change or the delay; the date the change was given to CONTRACTOR, or the delay incurred, the status of construction at that point in time, and the event time computation of all activities affected by the change or delay. The event times used in the analysis shall be those included in the latest update of the PROGRESS SCHEDULE or as adjusted for the events of delay.

C. Three copies of the time impact analysis and an electronic copy on compact disk shall be submitted within seven calendar days of delay occurrence or direction to proceed with a change is given to CONTRACTOR. No time extensions will be considered if the time impact analysis is not submitted within the specified time.

D. The ENGINEER will review CONTRACTOR's time impact analysis. CONTRACTOR shall furnish such justification and supporting evidence as the ENGINEER deems necessary to determine whether CONTRACTOR is entitled to an extension of time. ENGINEER's review of each time impact analysis will be made within 5 working days of receipt of the time impact analysis and additional information as required by the ENGINEER, unless subsequent meetings and negotiations are necessary.

E. The Contract completion time will be adjusted only for causes specified in paragraph 15. Time extensions will be granted only to the extent that equitable time adjustments for the activity or activities affected exceed the total or remaining float along the critical path at the time of actual delay. Delays in activities which are not on the critical path and do not affect Contract completion dates, will not be considered for an extension of time.

F. Upon approval of a CHANGE ORDER, the approved change shall be reflected in the next PROGRESS SCHEDULE submitted by the CONTRACTOR.

1.16 CAUSES FOR EXTENSIONS OF TIME

A. Additional positive total float in the PROGRESS SCHEDULE generated by efficiencies of OWNER or CONTRACTOR is a shared commodity to be reasonably used by either party, and belongs exclusively to the PROJECT. The CONTRACTOR is not entitled to any additional compensation for completion of the project prior to expiration of the Contract Times.

1. OWNER-Initiated Changes.

B. OWNER initiated changes to the Contract work that absorb float time will not be considered for an extension of time. OWNER-initiated changes that affect the critical path of the PROGRESS SCHEDULE shall be grounds for extending or shortening completion dates. Use of float time for CONTRACTOR initiated changes will require OWNER's concurrence. CONTRACTOR's changes, however, shall give way to OWNER-initiated changes competing for the same float time.

1. Outside CONTRACTOR's Control.

C. Events outside of the CONTRACTOR's control that affect the critical path of the PROGRESS SCHEDULE will be considered for an extension or reduction of the Contract Times.

1. Weather Delays.

D. ENGINEER will obtain weather data during construction from a reputable source and will maintain weather records.

E. Any weather-related extension of Contract time shall be non-compensable. Efficiencies gained as a result of favorable weather within a calendar month, where the number of days of normally anticipated weather days is less than expected, shall contribute to the project float and shall not affect the Contract Times.

F. Application for a weather-related extension of time shall be submitted to the ENGINEER and shall state the extension requested and be supported by the relevant weather data.

1.17 AS-BUILT SCHEDULE

A. As a condition precedent to release of final payment, the last update to the PROGRESS SCHEDULE submitted shall be identified by the CONTRACTOR as the "As-Built Schedule". The "As-Built Schedule" shall reflect the exact manner in which the project was actually constructed (including actual start and completion dates, activities, sequences, and logic) and shall be signed and certified by the CONTRACTOR's project manager.

1.18 SCHEDULE SOFTWARE SETTINGS AND RESTRICTIONS

A. The following shall apply unless otherwise directed by the ENGINEER.

1. Schedule Options:

a. Shall be defined only to "Use expected finish dates";

b. Scheduling progressed activities to be set to "Use only retained logic", not progress override option;

c. Critical Path activities defined as Total Float less than or equal to zero;

d. Calculating start-to-start lag from "early start" dates; and computing total float as "finish float = late finish – early finish";

e. Calendar to be set for scheduling relationship lag as "Predecessor Activity Calendar."

2. Activity progress shall be shown using Remaining Duration. Date format shall be DDMMYY.

3. Default activity type shall be set to "Independent Task".

4. Date/time activity constraint(s), other than those required by the Contract, will not be allowed unless accepted by ENGINEER. CONTRACTOR shall identify proposed constraints and explain the constraint purpose in the Narrative Report.

5. Lags shall not be used in the creation of an activity that will perform the same function, e.g., concrete cure time. Lag durations contained in the project schedule shall not have a negative value. CONTRACTOR shall identify any lag proposed and explain the purpose of the lag in the Narrative Report.

6. Actual Start and Finish dates shall not be automatically updated by default mechanism that may be included in the CPM scheduling software system. Actual Start and Actual Finish dates on the CPM schedule shall be updated by actual work progression.

1.19 ACTIVITY CODES

A. The work breakdown structure (WBS) to be confirmed or revised by the ENGINEER are listed below. Confirmation or revision of the activity codes and WBS will be provided to the CONTRACTOR within three workdays of the Effective Date of the Agreement. Use of the ENGINEER prescribed activity codes and WBS is mandatory.

B. "Project Codes" are reserved for the OWNER. Only "Activity Codes" at Project Level will be permitted for CONTRACTOR use.

Activity Code	Code Value	Description
Phase	0005	Construction Phase
Construction Phase	A	Milestones
	BC	Administrative
	D	Submittals
	E	Construction Activities
		Closeout Phase
Submittals	SUB	Submittals
	R&A	Review & Approve
	F&D	Fabricate & deliver

Other Codes to be prescribed by ENGINEER or requested by CONTRACTOR for project specific criteria.

1.20 ACTIVITY RELATIONSHIPS

A. Relationships between activities shall be identified with the following information:

1. Predecessor and successor activity ID.
2. Relationship types:
   a. FS - Finish to start.
   b. SS - Start to start.

c. FF - Finish to finish.

d. SF - Start to finish – This relationship is not allowed, unless authorized by ENGINEER.

1.21 PROJECT CALENDARS

A. Project Calendars shall use workdays and calendar days as the planning unit for the schedule. Use of Global Calendars is reserved for OWNER. Each calendar shall be set to start on Mondays with holidays in accordance with OWNER policy. The following calendars shall be used for each activity except as otherwise accepted by ENGINEER:

1. 5-Day x 8 Hour Workweek (with holidays) shall be used for 5-day 40-hour workweek activities: Monday through Friday. All holidays and non-workdays shall be assigned to this calendar. This calendar shall be used for all normal work activities, submittals, and fabricate and delivery activities. This calendar shall be the default calendar for the project unless otherwise specified.

2. 5-Day x 10-Hour Workweek (with holidays) shall be used for 5-day 50-hour workweek activities: Monday through Friday. All holidays and non-workdays shall be assigned to this calendar.

3. 6-Day x 10-Hour Workweek (with holidays) shall be used for 6-day 60-hour workweek activities. Monday through Saturday. All holiday and non-workdays shall be assigned to this calendar.

4. 7-Day Calendar (no holidays) shall be used for 7-day workweek activities. No non-workdays shall be entered into this calendar.

5. Additional Calendars may be assigned depending on need. However, CONTRACTOR shall consult with the ENGINEER before other calendars are entered and/or used in the Project schedule.

B. The workday to calendar day correlation shall be based on a single shift and 5-day work week with adequate allowance for holidays, adverse weather and all other special requirements of the Work. CONTRACTOR may, at his option, propose alternate baseline calendars to allow a second shift and/or a single shift on Saturdays subject to the concurrence and acceptance of OWNER. Under no circumstances will a schedule be accepted which allows regularly scheduled work on Sundays.

C. The holidays observed by the OWNER are as follows:
New Year's Day.
Martin Luther King Jr. Day.
Memorial Day.
Independence Day.
Labor Day.
Thanksgiving Day.
Friday after Thanksgiving Day.

Christmas Eve.
Christmas Day.

1.22 FLOAT

A. CONTRACTOR shall not use float suppression techniques, including preferential sequencing (arranging critical path through activities more susceptible to OWNER caused delay); lag logic restraints; zero total or free float constraints; extended activity times; or imposing constraint dates other than as required by the Contract. Float suppression will be cause for rejection of the preliminary PROGRESS SCHEDULE or full PROGRESS SCHEDULE and its updates.

1.23 MANDATORY MILESTONES

A. The Contract duration shall be equal to the time period between the Notice to Proceed and the completion Milestone. The following milestones are mandatory.

1. PROJECT Award.
2. Notice to Proceed.
3. Substantial Completion as established in the Bid Form.
4. Completion as established in the Bid Form.

B. The following additional milestones are to be considered and incorporated into the PROGRESS SCHEDULE in accordance with the Contract terms, if applicable.

1. Permit constraints.
2. Facility shut down or outage milestone requirements.
3. Applicable phasing milestones.
4. Other milestones deemed appropriate by the ENGINEER.

1.24 PROGRESS MEETINGS

A. For all progress meetings, the CONTRACTOR shall submit a three (3) week schedule showing all activities in progress, uncompleted or scheduled to be worked during the three weeks. The three-week schedule shall include the current week plus the next two. The three-week schedule shall list all activities which are scheduled for work during the period, which are currently planned to be worked even if out of sequence and work which is unfinished but scheduled to be finished. The schedule shall also show the planned resources and any deviations from that plan.

End of Section

SECTION 01313

CONSTRUCTION AND SCHEDULE CONSTRAINTS

PART 1 - GENERAL

1.1 THE REQUIREMENT

A. WORK shall be scheduled, sequenced, and performed in a manner which minimizes disruption to the operation and maintenance of the existing facility.

B. The CONTRACTOR shall incorporate the construction and schedule constraints of this Section in preparing the construction schedules required under Section 01310 – Construction Schedules.

1.2 EXISTING FACILITY

A. The WORK shall be executed while the existing facility is in operation. Operation of the existing facility shall not be jeopardized nor shall the efficiency as a result of the execution of the WORK.

B. Unless indicated otherwise, temporary pumping, piping, power, lighting, controls, instrumentation, alarms, security devices, and safety devices shall be provided by the CONTRACTOR whenever its activity or interruption due to its activity affects the existing facility.

C. The construction constraints in this Section do not include every item affecting the completion of the WORK but are intended to describe the sequence of critical events necessary to minimize disruption to the existing facility operation. It shall be understood and agreed by the CONTRACTOR that the critical events described are not inclusive and that additional items of WORK not included may be required to minimize disruption and ensure compliance. Deviation from or modification of these suggested sequences is permitted if techniques and methods known to the CONTRACTOR will result in less disruption, and if deviation is approved in advance by the ENGINEER.

1.3 OPERATION OF EQUIPMENT

A. Operational functions or shutdown required to facilitate CONTRACTOR's operation will be done by the OWNER's personnel only.

B. The OWNER's operation and maintenance personnel will cooperate in every way that is practical in order to facilitate CONTRACTOR's operation. However, certain shutdowns and connections may only be permissible at times other than normal working hours such as nights or weekends. No additional payment will be made to the CONTRACTOR for any night, weekend, or holiday premium or overtime payments.

C. If it becomes necessary for the proper operation or maintenance of portions of the facility, the OWNER may require the CONTRACTOR to reschedule an approved shutdown. The CONTRACTOR shall then reschedule its operations so there shall be no conflict with necessary operations or maintenance of the facility. The CONTRACTOR shall, within two days of notice by the OWNER that a rescheduled shutdown is necessary, furnish the ENGINEER a revised outage request and a plan for rescheduling the shutdown in accordance with the requirements of the construction schedule.

1.4 OUTAGE REQUESTS

A. Modifications to existing facilities, the construction of new facilities, and the connection of new to existing facilities may require the temporary outage of existing facilities. In such cases, the CONTRACTOR shall coordinate WORK with the OWNER as described below. The CONTRACTOR shall submit a detailed outage plan and time schedule for construction activities which will make it necessary to remove a pipeline, electrical circuit, equipment, structure, road, or other facilities from service.

1. This work must occur during a 4-hour shut down period.
2. The shutdown must be coordinated with Tampa Bay Water.

B. The outage plans shall be submitted to the OWNER for acceptance a minimum of two weeks in advance of the time that such outages are required. The outage plans shall be coordinated with the construction schedule and shall meet the restrictions and conditions of this Section. The outage plan shall describe the length of time required to complete the operation; any necessary temporary power, controls, instrumentation, or alarms required to maintain control and monitoring, the amount of manpower, and equipment which the CONTRACTOR shall provide in order to ensure proper operation of associated treatment units. Costs for preparing and implementing the outage plans shall be the responsibility of the CONTRACTOR as part of the WORK.

C. The CONTRACTOR shall not begin an alteration affecting existing facilities until specific written approval has been granted by the OWNER in each case.

D. The ENGINEER will coordinate the CONTRACTOR's planned procedure with the OWNER's personnel. The OWNER has the authority to modify any proposed shutdown procedures if such procedures would adversely impact the OWNER's operations.

E. The OWNER shall be notified in writing at least one week in advance of the required outage if the schedule for performing the WORK has changed or if revisions to the outage plan are required. The CONTRACTOR shall provide written confirmation of the shutdown date and time two days prior to the actual shutdown.

1.5 TEMPORARY CONNECTIONS

A. Making connections to existing facilities shall be thoroughly planned in advance, and required equipment, materials, and labor shall be on hand at the time of undertaking the connections. WORK shall be completed as quickly as possible and with as little delay as possible and shall proceed continuously (24 hours a day and seven days a week), if necessary, to complete modifications and/or connections in the minimum time.

B. The cost of any temporary facilities and night, weekend, or holiday activity and overtime payments required during process interruptions shall be included in the WORK.

C. Temporary facilities and piping shall be located to minimize interference with CONTRACTOR's construction facilities and OWNER's operation and maintenance of the existing facilities. Unless otherwise indicated, each temporary pipeline shall be of the same size as its connection to the existing or permanent facility at the downstream end of the pipeline. Piping materials shall be suitable for the material being conveyed and be as required in the Contract Specifications.

D. When temporary electrical power, controls, instrumentation, or alarms are required for routine continuous operations of existing or new equipment, the CONTRACTOR shall provide the necessary equipment and appurtenances. Prior to installing said equipment and appurtenances, CONTRACTOR shall furnish a submittal on the proposed components and installation for ENGINEER's review and approval.

E. A plan showing the size and location of the temporary facilities and piping shall be submitted to the ENGINEER at the same time as the outage plan required under this Section. Costs for design, provision, operation, and removal of temporary facilities and piping shall be part of the WORK.

1.6 CONSTRUCTION SEQUENCING

A. Construction activities shall be scheduled and sequenced to ensure continuous operation of the existing facilities. The CONTRACTOR's scheduling shall develop construction sequencing so that the WORK will not adversely impact OWNER's

operations. The CONTRACTOR shall be responsible for development of the construction sequencing. In implementing the construction sequencing, the CONTRACTOR shall maintain the existing facilities in service until new facilities are constructed and are operational to supplement the existing capacity. When new facilities are operational and accepted by the OWNER, the existing facilities may be taken out of service. The following general guidelines shall be used by the CONTRACTOR in planning the sequence of construction.

1. Safe working conditions for personnel shall be maintained during rehabilitation, modification, and demolition WORK. The foregoing includes at least proper trench excavation, the provision of temporary equipment guards, supports, warning signs, walkways, covers over openings, handrailing, and protection of electrical equipment and power supply.
2. Temporary facilities shall be constructed in accordance with applicable codes and regulations to operate safely and properly.
3. Valves to be temporarily shut off during the WORK shall be tagged as such and shall be wired shut with a crimped lead seal and padlocked.
4. Electrical and mechanical equipment shall be similarly shut down.

B. Construction Restrictions: Project specific.

1. All proposed shutdowns of OWNER'S facilities shall be submitted and approved in advance per Section 01010 Summary of Work. The OWNER will have the sole authority as to when (seasonally and time of day) this work will be accomplished.
2. Pump #4 Piping Installation.
3. This potential shutdown will be required to install the suction header piping for Pump #4 if the existing suction header 42-inch butterfly valve does not have a secure seal required to install the additional suction header piping. The maximum allowable duration of shutdown is 4 hours. Time of day or seasonal restrictions on when shutdown occurs are to be determined by the OWNER. The sequence of the work to be performed is as follows:
    a. Install pipe and equipment supports,
        1) 42" x 24" tee support,
        2) Saddle type pipe supports,
        3) One (1) for the 42" suction header.
        4) One (1) for the 24" suction piping.
        5) Metal stanchion pipe supports.
    b. Mount Pump and motor equipment pad,
    c. Confirm existing 42" suction header BFV and existing 16" Pump #4 discharge BFV are closed,

d. Mount proposed pump and motor on the equipment pad,

e. Run wires for the following equipment from the high service pump room to the electrical room via existing conduits as specified herein or as required in DRAWINGS,

f. Run wires from VFD #4 to the PLC.

g. Install proposed VFD #4 cabinet, equipment, and terminate all wiring in the VFD,

h. Install all piping, valves, and fittings from the pump up to the proposed 24" Pump #4 suction BFV,

i. Remove 42" blind flange from suction header (blind flange to be reused),

j. Install the 42" x 24" tee and install the existing blind flange on the downstream side of the tee,

k. Install the 10" harnessed expansion joint and 10" x 16" reducer on the discharge side of Pump #4,

l. Remove the 16" blind flange from the Pump #4 16" discharge BFV,

m. Install the 16" check valve,

n. Fill Pump #4 and piping with hyper chlorinated water per FDEP instruction,

o. Perform visual pressure testing of piping,

p. Flush hyper chlorinated water with potable water via instrumentation ports or 1" SS bypass connected to the 42" blind flange,

q. Bacteriological test,

r. Once the bacteriological testing is completed and Pump #4 is cleared for operation, slowly open the 42" suction header BFV, 24" Pump #4 suction BFV, and 16" Pump #4 discharge BFV respectively.

s. Place Pump #4 VFD in automatic operation.

1.7 PERMITS

A. The CONTRACTOR shall abide by the conditions of permits and shall obtain proof of satisfaction of conditions from issuers of permits prior to acceptance of the WORK by the OWNER.

B. CONTRACTOR must comply with all permit conditions, but not limited to, in the following permits. Copies of the permit conditions are contained in the permit notebook available for review and on file at the offices of the ENGINEER.

a. FDEP Permit 62-555.900 Application for a Specific Permit to Construct PWS Components.

1.8 SCHEDULE CONSTRAINTS

A. General:

1. It is the CONTRACTOR's responsibility to coordinate and plan the construction activities to integrate each schedule constraint into performance of the overall WORK.

END OF SECTION

SECTION 01340

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 - GENERAL

1.1 REQUIREMENTS

A. The CONTRACTOR shall submit to the OWNER for review such SHOP DRAWINGS, test reports, product data on materials and equipment (hereinafter in this article called data) and material Samples as are required including, but not limited to those Shop Drawings, product data and samples for materials and equipment specified elsewhere in the SPECIFICATIONS and in the CONTRACT DOCUMENTS.

B. All SUBMITTALS shall be in accordance with Section 01300 Contractor Submittals of the SPECIFICATIONS.

C. Within ten (10) calendar DAYS after the issuance of the NOTICE OF AWARD, the CONTRACTOR shall submit to the OWNER a complete list of preliminary data on items for which SHOP DRAWINGS and product data are to be submitted. Included in this list shall be the names of all proposed SUPPLIERS (manufacturers) furnishing specified items. Review of this list by the OWNER and the ENGINEER shall in no way, expressed or implied, relieve the CONTRACTOR from submitting complete SHOP DRAWINGS and providing materials, equipment, etc., fully in accordance with the SPECIFICATIONS. This procedure is required in order to expedite final review of SHOP DRAWINGS.

D. The CONTRACTOR shall maintain an accurate updated SUBMITTAL log in Masterworks and shall present this log at each scheduled progress meeting with the OWNER and the ENGINEER. This log shall include the following items:

1. SUBMITTAL Description and Number assigned.
2. Date submitted for review.
3. Date returned to CONTRACTOR.
4. Status of SUBMITTAL (For Information Only, Make Corrections as Noted, No Exceptions Taken, Rejected, Revise and Resubmit).
5. If the Submittal is critical to project schedule.
6. Date of Resubmittal and Return (as applicable).
7. Date of material release (for fabrication).
8. Projected date of fabrication.
9. Projected date of delivery to site.

10. SPECIFICATION Section.

11. DRAWINGS Sheet Number.

E. The CONTRACTOR shall also submit the final documents, after the review and approval by the OWNER and the ENGINEER, in electronic digital format as specified in Section 01300 Contractor Submittals.

1.2 CONTRACTOR'S RESPONSIBILITY

A. All drawings, data and samples prepared by or for the CONTRACTOR shall be checked before submitting. Each and every copy of the drawings, data and samples shall bear the CONTRACTOR'S stamp showing that they have been so checked. SHOP DRAWINGS submitted without the CONTRACTOR'S stamp will be returned to the CONTRACTOR for conformance with this requirement. SHOP DRAWINGS shall indicate any deviations in the SUBMITTAL from requirements of the CONTRACT DOCUMENTS.

B. Prior to submittal, the CONTRACTOR shall determine and verify:

1. Field measurements.

2. Field construction criteria.

3. Catalog numbers and similar data.

4. Conformance with SPECIFICATIONS.

C. Any related Work covered by a drawing, data, or a Sample performed prior to Owner's acceptance of the drawing, data, or Sample will be at the sole expense and responsibility of Contractor.

D. The CONTRACTOR shall submit all drawings and schedules sufficiently in advance of construction requirements to provide no less than twenty-one (21) DAYS for checking and appropriate action from the time the received.

E. All SUBMITTALS shall be accompanied with a transmittal letter prepared in duplicate, unless otherwise specified herein, containing the following information:

1. Date.

2. PROJECT NAME and Number.

3. CONTRACTOR'S name and address.

4. The Number of each SHOP DRAWING, Project Data, and Sample submitted.

5. Notification of Deviations from CONTRACT DOCUMENTS.

6. SUBMITTAL Log Number conforming to SPECIFICATION Section and DRAWINGS Sheet Numbers.

F. The CONTRACTOR shall submit electronic copies of descriptive or product data SUBMITTALS via Masterworks to complement SHOP DRAWINGS for the OWNER'S construction manager. The OWNER'S Engineer shall review the SUBMITTAL and return to the CONTRACTOR the remaining number of marked-up sets with appropriate review comments.

G. The CONTRACTOR shall be fully responsible for observing the need for and making any changes in the arrangement of piping, connections, wiring, manner of installation, etc., which may be required by the materials/equipment the CONTRACTOR proposed to supply both as pertains to the WORK and any and all WORK affected under other parts, headings, or divisions of DRAWINGS and SPECIFICATIONS.

H. If the CONTRACTOR considers any correction indicated on the DRAWINGS to constitute a change to the CONTRACT DOCUMENTS, the CONTRACTOR shall give NOTICE thereof to the OWNER at the time of re-submittal.

I. SHOP DRAWINGS and SUBMITTAL data shall be reviewed by the ENGINEER for each original submittal and first resubmittal; thereafter review time for subsequent resubmittals shall be charged to the CONTRACTOR at a rate of $150 per hour.

J. After a SHOP DRAWING is approved, the CONTRACTOR shall make no further changes therein except upon written approval from the OWNER.

1.3 ENGINEER'S REVIEW OF SUBMITTALS

A. The ENGINEER'S review of SHOP DRAWINGS, product data and samples submitted by the CONTRACTOR shall cover only general conformity with the design concept of the PROJECT. The ENGINEER'S review and the OWNER'S approval shall not constitute an approval of dimensions, quantities, and details of the material, equipment, device, or item shown, or to the CONTRACTOR'S means, methods, techniques, sequences or procedures of construction or to safety precaution or programs incident thereto.

B. Reviews and resubmittals shall be in accordance with Section 01300 Contractor Submittals of the SPECIFICATIONS.

C. No partial SUBMITTALS will be reviewed.

1.4 SHOP DRAWINGS

A. SUPPLIER'S (manufacturer's) catalog sheets, brochures, diagrams, illustrations and other standard descriptive data shall be clearly marked to identify pertinent materials, product or models. Information which is not applicable to the WORK shall be deleted by striking or cross-hatching.

B. If SHOP DRAWINGS show variations from CONTRACT DOCUMENTS because of standard shop practice or for other reasons, the CONTRACTOR shall describe such variations in the letter of transmittal. In failing to describe such variations, the CONTRACTOR shall not be relieved of the responsibility for executing the WORK in accordance with the CONTRACT DOCUMENTS, even though such SHOP DRAWINGS have been reviewed.

C. Data on materials and equipment include, without limitation, materials and equipment lists, catalog data sheets, cuts, performance curves, diagrams, materials of construction and similar descriptive material. Materials and equipment lists shall give, for each item thereon, the name and location of the SUPPLIER (manufacturer), trade name, catalog reference, size, finish and all other pertinent data.

D. For all mechanical and electrical equipment furnished, the CONTRACTOR shall provide a list including the equipment name, and address and telephone number of the SUPPLIER'S representative and service company so that service and/or spare parts can be readily obtained.

1.5 SAMPLES

A. The CONTRACTOR shall furnish, for the approval of the OWNER, samples required by the CONTRACT DOCUMENTS or requested by the OWNER or the ENGINEER. Samples shall be delivered to the OWNER'S construction manager as specified or directed. The CONTRACTOR shall prepay all shipping charges on samples. Materials or equipment for which samples are required shall not be used in the WORK until approved by the OWNER.

B. Samples shall be of sufficient size and quantity to clearly illustrate:

1. Functional characteristics of the product, with integrally related parts and attachment devices.
2. Full range of color, texture and pattern.
3. A minimum of two (2) samples of each item shall be submitted.

C. Each sample shall have a label indicating:

1. PROJECT Name.
2. Name of CONTRACTOR and SUBCONTRACTOR.
3. Material or Equipment Represented.
4. Place of Origin.
5. Name of Producer and Brand (if any).
6. Location in PROJECT.

Samples of finished materials shall have additional marking that will identify them under the finish schedules.

D. The CONTRACTOR shall prepare a transmittal letter in duplicate for each shipment of samples containing the information required in subparagraph 1.05.B. above. A copy of such letter shall be enclosed with the shipment and a copy shall be sent to the OWNER and logged into Masterworks as a submittal with attached photos of the sample. Approval of a sample shall be only for the characteristics or use named in such approval and shall not be construed to change or modify any CONTRACT DOCUMENT requirements.

E. Approved samples not destroyed in testing shall be sent to the OWNER'S construction manager or stored at the site of the WORK. Materials and equipment incorporated in WORK shall match the approved samples. Samples which failed testing or were not approved will be returned to, and at the expense of, the CONTRACTOR, if so requested at time of submission.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01370

SCHEDULE OF VALUES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope of Work:

1. The CONTRACTOR shall submit to the OWNER a proposed Schedule of Values allocated to the various LUMP SUM PRICE items of the WORK, before the first pay application.

2. Upon request of the OWNER, the CONTRACTOR shall support the values with data which shall substantiate their correctness.

3. The Schedule of Values shall be used by the OWNER for the purpose of reviewing LUMP SUM PRICE items and PAYMENT APPLICATIONS.

1.2 FORM AND CONTENT OF SCHEDULE OF VALUES

A. The schedule of values shall be submitted electronically into Masterworks using a format subject to approval by OWNER. The schedule shall identify:

1. PROJECT name and location.

2. PROJECT number.

3. GL Code from Purchase Order.

4. Name and address of CONTRACTOR.

5. ENGINEER'S name.

6. Date of submission.

B. The schedule of values shall list the installed value of the component parts of the WORK in sufficient detail to serve as a basis for computing values for partial payments during construction.

1. The value shall not be less than $1,000 and shall not exceed $1,500,000.

C. Each line item shall be identified with the number and title of the respective major section of the SPECIFICATIONS.

D. For each major line item, the schedule shall list sub-values of major products or operations under the item.

E. For items on which partial payments will be requested for stored materials, the value shall be broken down into:

1. The cost of the materials, delivered and unloaded. Paid invoices shall be required for materials upon request by the OWNER.

2. The total installed value.

1.3 SUBSCHEDULE OF UNIT MATERIAL VALUES

A. The CONTRACTOR shall submit a subschedule of unit costs and quantities for products on which partial payments will be requested for stored products.

B. The form of SUBMITTAL shall parallel that of the Schedule of Values, with each item identified the same as the line item in the Schedule of Values.

C. The unit quantity for bulk materials shall include an allowance for normal waste.

D. The unit values for the materials shall be broken down into:

1. Cost of the material, delivered and unloaded at the site, with taxes paid.

2. Copies of paid invoices for component material shall be included with the payment request in which the material first appears.

E. The installed unit value multiplied by the quantity listed shall equal the cost of that item in the Schedule of Values.

1.4 REVIEW AND RESUBMITTAL

A. The ENGINEER and OWNER shall have seven days to review the Schedule of Values submitted by the CONTRACTOR. After review by ENGINEER and OWNER, the CONTRACTOR shall revise and resubmit the Schedule of Values and Subschedule of Unit Material Values as required.

B. The CONTRACTOR resubmits revised schedules in the same manner.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01380

CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.1 REQUIREMENTS

A. The CONTRACTOR shall take digital construction record photographs periodically during the course of the WORK.

1.2 PHOTOGRAPHY REQUIRED

A. Photographs shall be taken in strict conformance with this Section and shall be furnished to the OWNER with each PAYMENT APPLICATION.

B. Photographs shall be taken at each of the major stages of construction listed below.

1. Pre-construction conditions.
2. Installation of equipment and facilities.
3. Completion of site restoration.

C. Views and Quantities Required:

1. Digital photographs shall be taken and uploaded weekly into Masterworks Photo file. All photos shall be titled in a way that a search of the photos can be done.
2. Photographs shall be submitted in sufficient quantities to adequately document construction progress. The number of photographs necessary will depend on the WORK performed and may vary from month to month. The OWNER and/or OWNER's REPRESENTATIVE reserves the right to request for additional photographs if the submitted photographs are deemed insufficient.
3. Each photograph shall be time and date stamped.
4. If possible or applicable, photographs shall be taken from the same views as was taken during the previous photograph session or construction stage.

1.3 COSTS OF PHOTOGRAPHY

A. The CONTRACTOR shall pay all costs related to construction photography.

PART 2 - PRODUCTS

2.1 DIGITAL PRINT

A. All photographs are to be color digital and provided with a description index of the images with dates.

B. Each photograph label shall list the following:

1. Process area location.
2. Construction Stage (as listed in Paragraph 1.2.B of this Section).
3. Date and time of exposure.

C. CONTRACTOR shall submit the photographs electronically into Masterworks.

PART 3 - EXECUTION

3.1 TECHNIQUE

A. The photography shall be a factual presentation of the condition and progress of the WORK.

B. The photography shall be of correct exposure and focus and:

1. High resolution and sharpness.
2. Maximum depth-of-field.
3. Minimum distortion.

END OF SECTION

SECTION 01410

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Regulatory authorities and codes.

1.2 AUTHORITIES HAVING JURISDICTION (AHJ)

A. Also referred to as the permitting agency.

B. Building Department: Pasco County:

1. Pasco County Building Permit Application.

C. Florida Department of Environmental Protection:

1. Form 62-555.900: Application for a Specific Permit to Construct PWS Components.

1.3 APPLICABLE CODES

A. International Code Council (ICC).

1. Building code:

a. International Existing Building Code (IEBC), 2021.

2. Electrical code:

a. National Fire Protection Association (NFPA), NFPA 70: National Electrical Code (NEC), 2020.

3. Energy code:

a. International Energy Conservation Code (IECC), 2021.

4. Fire code:

a. International Fire Code (IFC), 2021.

5. Mechanical code:

a. International Mechanical Code (IMC), 2021.

B. Products in contact with drinking water:

1. Materials in contact with drinking water: In accordance with NSF 61 and NSF 372.

a. Certification by an independent ANSI accredited third party, including, but not limited to, NSF International, as being lead free.

C. Florida Building Commission (FBC):

1. Building code:

   a. Florida Building Code, 8th Edition, 2023: Existing Building.

   b. Florida Building Code, 8th Edition, 2023: Accessibility.

   c. Florida Building Code, 8th Edition, 2023: Test Protocols for High-Velocity Hurricane Zones.

2. Electric Code:

   a. Florida Electric Code (FEC), 8th Edition, 2023: Electrical.

3. Energy code:

   a. Florida Building Code, 8th Edition, 2023: Energy Conservation.

4. Fire code:

   a. Florida Fire Prevention Code, 8th Edition, 2023.

5. Mechanical code:

   a. Florida Building Code, 8th Edition, 2023: Mechanical.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01411

TESTING AND QUALITY CONTROL

PART 1 - GENERAL

PART 2 - SCOPE

PART 3 - SUMMARY OF WORK:

3.1 The contractor shall establish and implement a quality control plan to perform sufficient inspection of all items of the work, including that of subcontractors, to ensure conformance to the technical specifications and the drawings with respect to the materials, workmanship, construction, equipment performance, and identification.

3.2 The contractor shall submit the qualifications of the contractor's quality control (cqc) plan manager.

3.3 The contractor's job supervisory staff may be used for quality control, supplemented as necessary by additional personnel for surveillance or special technicians to provide capability for the controls required by the technical specifications. The contractor's quality control plan must clearly identify the quality control leader and personnel organizational system. The leader must have the authority to direct the removal and replacement of defective work.

3.4 After the contract is awarded and before the construction begins, the contractor shall meet with the owner or its representative to discuss quality control requirements. The meeting shall develop mutual understanding relative to the details of the quality control plan, including the appropriate forms to be used for recording the quality control operations, inspections, administration of the quality control plan, and the interrelationship of the contractor and the owner inspection.

3.5 The contractor shall submit his written quality control plan for review at or before the preconstruction meeting, describing the activities and listing those inspections and testing activities that the contractor will perform prior to beginning the work. The contractor's quality control plan shall describe how he will communicate timely notification to allow for inspection activities performed by the owner, or its representatives, for on and off-site construction activities.

3.6 All compliance inspections shall be recorded on the appropriate forms, including but not limited to the specific items required in each section of the technical specifications. The completed forms, including record of corrective actions taken, shall be furnished to the owner. The owner's quality control representative will maintain a list of all deficiencies which are not corrected the same day as they are discovered.

3.7 Should recurring deficiencies in an item or items indicate that the quality control plan is not adequate, the contractor shall take corrective actions as directed by the owner to update the quality control plan, to satisfactorily address and resolve any reoccurring deficiencies.

PART 4 - RELATED WORK SPECIFIED ELSEWHERE:

4.1 SECTION 01300 – CONTRACTOR SUBMITTALS

4.2 CONTRACTOR'S QUALITY CONTROL PROGRAM

4.3 GENERAL: Establish and execute a quality control (cqc) plan for work. The plan shall establish adequate measures for verification and conformance to defined requirements by contractor personnel and lower-tier subcontractors (including fabricators, suppliers, and subcontractors). This program shall be described in a plan responsive to this section.

4.4 CQC PERSONNEL:

4.5 Contractor's cqc plan manager shall report to a senior project manager of the contractor and shall have no supervisory or managerial responsibility over the workforce.

4.6 The contractor cqc plan manager shall be on-site as often as necessary, but not less than the daily working hours specified in the contract documents to remedy and demonstrate that work is being performed properly and to make multiple observations of work in progress.

4.7 The contractor is to furnish personnel with assigned cqc functions reporting to the cqc manager. Persons performing cqc functions shall have sufficient qualifications, authority, and organizational freedom to identify quality problems and to initiate and recommend solutions.

4.8 CQC PLAN:

4.9 Contractor's cqc plan shall include a statement by the senior project manager designating the cqc plan manager and specifying the authority delegated to the cqc plan manager to direct cessation or removal and replacement of defective work.

A. Describe the cqc program and include procedures, work instructions, and records. Describe methods relating to areas that require special testing and procedures as required by the specifications.

B. Include specific instructions defining procedures for observing work in process and comparing this work with the contract requirements (organized by specifications section).

C. Describe procedures to ensure that equipment or materials that have been accepted at the site are properly stored, identified, installed and tested.

D. Include procedures to verify that procured products and services conform to the requirements of the specifications. Requirements of these procedures shall be applied, as appropriate, to lower-tier suppliers and/or subcontractors.

4.10 COMMISSIONING QUALITY CONTROL: include procedures to verify that the commissioning requirements of the contract documents are integrated into the contractor's cqc plan and conform to the requirements of the specifications. Requirements of these procedures shall be applied, as appropriate, to the contractor and the lower-tier suppliers and/or subcontractors.

A. Include instructions for recording inspections and requirements for demonstrating through the daily inspection reports that work inspected was in compliance or a deficiency was noted and action to be taken.

B. Procedures to preclude the covering of deficient or rejected work.

C. Procedures for halting or rejecting work.

D. Procedures for resolution of differences between the cqc plan manager and the production personnel.

E. Identify contractual hold/inspection points as well as any contractor-imposed hold/inspection points.

F. Daily inspection report: include, at a minimum:

G. Inspection of specific work.

H. Quality characteristics in compliance.

I. Quality characteristics not in compliance.

J. Corrective/remedial actions taken.

K. Statement of certification.

L. Cqc manager's signature, electronic signature is acceptable.

M. Information provided on the daily report shall not constitute notice of delay or any other notice required by the contract documents.

4.11 DEFICIENT AND NON-CONFORMING WORK AND CORRECTIVE ACTION: include procedures for handling deficiencies and non-conforming work. Deficiencies and non-conforming work are defined as documentation, drawings, material, equipment, or work not conforming to the indicated requirements or procedures. The procedure shall prevent non-conformances by identification, documentation, evaluation, separation, disposition, and corrective action to prevent reoccurrence. Conditions having adverse effects on quality shall be promptly identified and reported to the senior level management. The cause of conditions adverse to quality shall be determined and documents and measures implemented to prevent recurrence. In addition, at a minimum, this procedure shall address:

A. Personnel responsible for identifying deficient and non-complying items within work.

B. How and by whom deficient and non-compliant items are documented "in the field."

C. The personnel and process utilized for logging deficient and non-compliant work at the end of each day onto a deficiency log.

D. Tracking processes and tracking documentation for deficient and non-conforming work.

E. Personnel responsible for achieving resolution of outstanding deficiencies.

F. Include detailed procedures for the performance and control of special process (e.g., welding, soldering, heat treating, cleaning, plating, nondestructive examination, etc.).

4.12 AUDITS: the cqc program shall provide for regularly scheduled documented audits to verify that cqc procedures are being fully implemented by contractor and its subcontractors. Audit records shall be made available to engineer upon request.

4.13 DOCUMENTED CONTROL/QUALITY RECORDS:

A. Establish methods for control of contract documents that describe how drawings and specifications are received and distributed to ensure the correct issue of the document being used. Describe how record document/drawing data are documented and furnished to engineer.

B. Maintain evidence of activities affecting quality. Including operating logs, records of inspection, audit reports, personnel qualification and certification records, procedures, and document review records.

C. Maintain quality records in a manner that provides for timely retrieval and traceability. Protect quality records from deterioration, damage and destruction.

D. Develop a list of specific records as required by the contract documents that will be furnished to engineer at the completion of activities.

4.14 ACCEPTANCE OF CQC PLAN: engineer's acceptance of the cqc plan shall not relieve contractor from any of its obligations for performance of work. Contractor's cqc staffing is subject to engineer's review and continued acceptance. Owner, at its sole discretion, and without cause, may direct contractor to remove and replace the cqc plan manager.

A. Acceptance of the cqc plan by the engineer is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction.

B. After acceptance of the cqc plan, notify the engineer in writing of any proposed change. Proposed changes are subject to acceptance by the engineer.

PART 5 - TESTING LABORATORY SERVICES

5.1 All tests which require the services of a laboratory to determine compliance with the contract documents shall be performed by an independent commercial testing laboratory acceptable to the owner. The laboratory shall be staffed with experienced technicians, and shall be properly equipped, aci certified, and fully qualified to perform the tests in accordance with the specified standards.

PART 6 - TESTING LABORATORY SERVICES FURNISHED BY CONTRACTOR

6.1 All testing required in connection with the performance of the work (which are identified as the contractor's responsibility in the contract documents) shall be performed and paid for by the contractor, and a certified copy of the results will be furnished to the owner within five (5) days of the test.

6.2 The contractor is also responsible for all testing and inspection services required to achieve an effective quality control program, to assure that the work strictly complies with the contract requirements, for example laboratory testing of samples to meet FDEP permitting requirements. The contractor shall pay all costs for such services.

PART 7 - TRANSMITTAL OF TEST REPORTS

7.1 Written reports of test and engineering data furnished by the contractor shall be submitted as specified in Section 01300, contractor submittals.

PART 8 - PRODUCTS (NOT USED)

PART 9 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01505

MOBILIZATION

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. The WORK specified in this Section includes the preparatory work and operations in mobilizing for beginning work on the PROJECT including, but not limited to, those operations necessary for the movement of personnel, *pumps, motors, other equipment, supplies and incidentals to the project site, other construction facilities/field offices, safety equipment and first aid supplies, demobilization*, and any other items necessary for the proper performance and completion of the WORK in accordance with the CONTRACT DOCUMENTS and as required by State and Local LAWS AND REGULATIONS.

B. The cost of bonds and required insurance, and any other preconstruction expense necessary for the start of the WORK, excluding the cost of construction materials, shall also be included in this Section.

C. The cost of field engineering, permitting and permit fees, initial PROGRESS SCHEDULE, color photographs, pre and post construction records, research and detection of underground facilities, sanitary and other temporary utilities are included in this Section.

D. Total payment for mobilization shall not exceed 10 percent of the total value of the Work, unless specified in the Bid Tabulation. Any mobilization costs in excess of this percentage shall be split amongst the applicable line items in the Schedule of Values.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01540

SECURITY

PART 1 - GENERAL

1.1 DESCRIPTION

A. The CONTRACTOR shall require its personnel, and the personnel of its SUBCONTRACTORS and SUPPLIERS to cooperate at all times with the OWNERS', CITY's, and COUNTY's security policies and personnel at Tampa Bay Water facilities, including but not limited to check-in and check-out when entering and leaving the site.

B. The CONTRACTOR shall insure that each employee, representative, SUBCONTRACTOR, SUPPLIER, and others acting for the CONTRACTOR uses designated access roads and parking areas.

C. The CONTRACTOR shall ensure that all personnel and personnel of its SUBCONTRACTORS meet the standard for the Jessica Lundsford Act while working on any agency property adjacent to a school.

D. The CONTRACTOR shall employ watchmen on the WORK when necessary and shall erect and maintain such strong and suitable barriers and such lights as shall effectually prevent the happening of any trespass or any accident to health or to property or to any partially completed WORK or to any materials stored on or adjacent to the site of the WORK. The CONTRACTOR shall be responsible for the security of all material and equipment on the project site.

E. Materials shall be stored at the designated contractor's laydown area and shall be kept in a neat and orderly manner. Materials that are subject to deterioration by exposure to the sun, rain or other elements shall be kept adequately covered and protected. Materials at risk for theft shall be secured by the CONTRACTOR in a manor appropriate to the location.

F. The CONTRACTOR will be required to provide a copy of the driver's license for those receiving access card and keys. Access materials must be returned to the owner upon final completion. It is the responsibility of the CONTRACTOR to safeguard access materials which are to be used by the assigned party and to notify the OWNER of lost or stolen keys.

G. All of the above shall be provided at no additional cost to the OWNER.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01600

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Requirements for products.

1.2 TERMINOLOGY

A. The words and terms listed below, are not defined terms that require initial capital letters, but, when this Section is referenced in other Specifications, have the indicated meaning:

1. Manufacturer's instructions:

a. Stipulations, directions, and/or recommendations issued by the manufacturer of the product addressing handling, storage, installation, protection, erection, and/or application of the product.

2. Product data:

a. Information about the product, typically found in the manufacturer's catalogs specifications or other resources, including data sheets, bulletins, and brochures.

3. Spare parts and maintenance products:

a. Duplicate parts necessary to replace a damaged or worn part of the product.

b. Consumables such as operating fluids.

4. Special tools:

a. Special wrenches, gauges, circuit setters, and other similar devices required for the proper operation or maintenance of a product that would not normally be in the Owner's tool kit and that have been specifically made for use on a product for assembly, disassembly, repair, or maintenance.

1.3 SHIPMENT

A. Requirements prior to shipment of equipment:

1. Engineer approved Submittals or other written documentation allowed by the Contract Documents.

2. Engineer approved Manufacturer's Certificate of Source Testing.

3. Operations and maintenance manuals as specified in Section 01730 – Operating and Maintenance Data and Section and 01821 – Instruction of Operations and Maintenance Personnel.

B. Transport products by methods that avoid product damage.

C. Deliver products in undamaged condition in the manufacturer's unopened packaging.

1.4 DELIVERY AND HANDLING

A. Handle products in accordance with the manufacturer's instructions.

B. Deliver products in undamaged condition in the manufacturer's unopened packaging.

C. Provide construction equipment and personnel to handle products by methods in accordance with the manufacturer's instructions.

D. Upon delivery, promptly inspect shipments:

1. Verify compliance with the Contract Documents, correct quantities, and undamaged condition of products.

2. Acceptance of shipment does not constitute final acceptance of products.

E. Owner may request advanced delivery of spare parts, maintenance products, and special tools.

1. Deduct the delivered items from the inventory list and provide transmittal documentation.

1.5 STORAGE

A. Immediately store and protect products until installed in the Work.

B. Store products with seals and legible labels intact.

C. Protect painted or coated surfaces against impact, abrasion, discoloration, and damage.

D. Storage of equipment in accordance with the manufacturer's instructions:

1. Including connection of motor heaters, lubrication, manually rotating shafts, etc.

2. Furnish a copy of the manufacturer's instructions for storage to the Engineer prior to storage of equipment and materials.

E. Furnish covered, weather-protected storage structures providing a clean, dry, noncorrosive environment for mechanical equipment, valves, architectural items, electrical and instrumentation equipment.

F. Storage of spare parts, maintenance products, special tools:

1. Immediately store in accordance with the manufacturer's instructions.

2. Store spare parts, maintenance products, and special tools in an enclosed, weather-proof, and lighted facility during the construction period.

3. Protect parts subject to deterioration, such as ferrous metal items and electrical components with appropriate lubricants, desiccants, or hermetic sealing.

4. Store large items individually:

    a. Weight: Greater than 50 pounds.

    b. Size: Greater than 24-inches wide by 18-inches high by 36-inches long.

    c. Clearly labeled:

        1) Equipment tag number.

        2) Equipment manufacturer.

        3) Subassembly component, if appropriate.

5. Store smaller items in spare parts boxes:

    a. Weight: Less than 50 pounds.

    b. Size: Less than 24-inches wide by 18-inches high by 36-inches long.

    c. Clearly labeled:

        1) Equipment tag number.

        2) Equipment manufacturer.

        3) Subassembly component, if appropriate.

6. Spare parts and special tools box:

    a. Box material: Waterproof, corrosion resistant.

    b. Hinged cover with locking hasp:

        1) Inventory list taped to underside of cover.

        2) Clearly labeled:

            a) "Spare Parts and/or Special Tools".

            b) Equipment tag number.

            c) Equipment manufacturer.

            d) Subassembly component, if appropriate.

G. Exterior storage of fabricated products:

1. Place on aboveground supports that allow for drainage.

2. Cover products subject to deterioration with impervious sheet covering.

3. Provide ventilation to prevent condensation under covering.

H. Store moisture sensitive products in watertight enclosures.

I. Store loose granular materials on solid surfaces in well-drained area:

1. Prevent materials mixing with foreign matter.

2. Provide access for inspection.

J. Provide an equipment log and stored products log with monthly pay applications:

1. Include: Storage location, equipment or product identification, date stored, date of inspection/maintenance, date removed from storage, copy of manufacturer's recommended storage guidelines, description of inspection/maintenance activities performed, and signature of party performing inspection/maintenance.

K. When needed and approved by the Engineer, offsite storage location shall be within 20 miles of the Project Site:

1. Provide proof of insurance coverage for products stored offsite.

L. Payment will not be made for products improperly stored or stored without providing the Engineer with the manufacturer's instructions for storage.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS

A. Provide products by the same manufacturer when units are of similar nature, unless otherwise specified.

B. Provide like parts of duplicate units that are interchangeable.

C. Provide equipment or products that have not been in service prior to delivery, except as required by tests.

D. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes:

1. Conform to reference standard by date of issue current on date of Contract Documents, except where specific date is established by code.

E. Provide products produced by manufacturers regularly engaged in the production of these products.

F. Provide products that bear approvals and labels as specified such as Factory Mutual (FM), Underwriters Laboratory (UL), or National Sanitation Foundation (NSF International) that are acceptable to the Authority Having Jurisdiction.

G. All wetted materials used in the production of potable water, or in contact with the water or chemicals used to treat water, shall conform to NSF 60/61 or other acceptable standards in accordance with Florida Administrative Code 62-555 - Permitting, Construction, Operation And Maintenance of Public Water Systems.

2.2 MATERIAL

A. Dissimilar metals:

1. Separate contacting surfaces with dielectric material.

2. Neoprene, bituminous impregnated felt, heavy bituminous coatings, nonmetallic separators, washers, petrolatum tape, or other materials as specified.

3. Dielectric coatings can be used to separate dissimilar metal couples from surrounding environment if isolation of metals is not possible, with approval of the Engineer.

B. Edge grinding:

1. Sharp projections of cut or sheared edges of ferrous metals which are not to be welded shall be ground to a radius required to ensure satisfactory paint adherence and mitigate any safety hazard.

2. A surface profile will need to be re-established for coating adherence based on coating manufacturer's profile requirements.

C. Use anti-galling compound on threads of stainless steel fasteners during factory assembly.

D. Provide anti-galling compound with stainless steel fasteners shipped for field assembly.

E. Aluminum in contact with concrete or masonry: Apply epoxy mastic as specified in Section 09940 - Protective Coatings, coating system EPX-M-5.

2.3 PRODUCT SELECTION

A. When products are specified without named manufacturers, provide products that meet or exceed the Specifications.

B. When products are specified with names of manufacturers but no model numbers or catalog designations, provide products by one of the named manufacturers that meet or exceed specifications.

C. When products are specified with names of manufacturers and model numbers or catalog designations, provide products with model numbers or catalog designations by one of the named manufacturers.

D. When products are specified with names of manufacturers, but with brand or trade names, model numbers, or catalog designations by one manufacturer only, provide:

1. Products specified by brand or trade name, model number, or catalog designation.

2. Products by another named manufacturer proven, in accordance with requirements for an "or equal", including the Engineer's approval, to meet or exceed quality, appearance and performance of specified brand or trade name, model number, or catalog designation.

E. When products are specified with only one manufacturer followed by "or equal," provide:

1. Products meeting or exceeding specifications by specified manufacturer.

2. Engineer deemed "or equal" evidenced by an approved Shop Drawing or other written communication.

F. When products are specified by naming 2 or more manufacturers with 1 manufacturer as a "Basis of Design":

1. Any of the named manufacturers can be submitted.

2. If the product submitted is not by the named "Basis of Design" product and requires a change in the scope (dimensions, configuration, physical properties, etc.), schedule (longer lead time), or budget, the Contractor must submit a substitution request.

2.4 SPARE PARTS, MAINTENANCE PRODUCTS, AND SPECIAL TOOLS

A. Provide spare parts and maintenance products as required by Technical Sections:

1. Submit completed Attachment A - Spare Parts, Maintenance Products, and Special Tools Inventory List.

B. Provide 1 set of special tools required to install or service the equipment:

C. Prior to Substantial Completion, arrange to deliver spare parts, maintenance products, and special tools to the Owner at a location on site, chosen by the Owner:

1. Provide itemized list of spare parts and special tools that matches the identification tag attached to each item.

2. Owner and Engineer will review the inventory and the itemized list to confirm it is complete and in good condition prior to signing for acceptance.

D. Contractor is responsible for spare parts, maintenance products, and special tools until acceptance by the Owner.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Inspect equipment or products prior to installation.

B. Repaint or recoat damaged painted or coated surfaces after installation.

C. Use anti-galling compound on stainless steel threads used for field assembly.

3.2 PROTECTION AFTER INSTALLATION

A. Provide coverings as necessary to protect installed products from damage due to traffic and subsequent construction operations:

1. Remove covering when no longer needed.

2. Replace corroded, damaged, or deteriorated products before acceptance of the Project.

B. Update equipment log with monthly pay applications:

1. Data includes as a minimum: Description of maintenance activities performed in accordance with the manufacturer's recommendation and industry standards and signature of party performing maintenance.

END OF SECTION

ATTACHMENT A - SPARE PARTS, MAINTENANCE PRODUCTS, AND SPECIAL TOOLS INVENTORY LIST

SPARE PARTS, MAINTENANCE PRODUCTS, AND SPECIAL TOOLS INVENTORY LIST

Owner: _____ **Date:** _____

Contractor: _____ **Project No.:** _____

Project Name: _____

Inventory List				
Spec Number: _____		Spec Title: _____		
Equipment Tag No.: _____		Equipment Manufacturer: _____		
Quantity	**Subassembly Component**	**Description**	**Manufacturer's Part Number**	**Storage Location**

SECTION 01631

PRODUCT SUBSTITUTIONS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for handling requests for substitutions made after award of the Contract.

B. The CONTRACTOR'S Construction Schedule and the Schedule of Submittals are included under Section 01300 Contractor Submittals.

1.2 DEFINITIONS

A. Definitions used in this Section are intended not to change or modify the meaning of other terms used in the CONTRACT DOCUMENTS.

B. Substitutions: Request for changes in products, materials, equipment, and methods of construction required by CONTRACT DOCUMENTS proposed by the CONTRACTOR after award of the Contract are considered requests for "substitutions". Request for substitutions prior to bids are not considered substitutions but as "Prior Approvals". The following are not considered substitutions:

1. Substitutions requested by Bidders during the bidding period and accepted prior to award of Contract are considered as included in the Contract Documents. "Prior Approvals" shall meet the requirements specified in this Section for Substitution Request Submittal.

2. Revisions to Contract Documents requested by the Owner or Owner's Representative.

3. Specified options of products and construction methods included in Contract Documents.

C. Substitution Request Submittal: Requests for substitution will be considered if received within 60 days after commencement of the WORK. Requests received more than 60 days after commencement of the WORK may be considered or rejected at the discretion of the OWNER'S Representative.

1. Submit a copy of each request for substitution for consideration electronically into OWNER's Masterworks project management software. Submit requests in the form and in accordance with procedures required for Change Order proposals.

2. At the beginning of the request for substitution, clearly state the basis on which the request is made. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:

   a. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.

   b. Samples of both the proposed substitution and the specified product, where applicable or requested.

   c. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.

   d. Coordination information, including a list of changes or modifications needed to other parts of the WORK and to construction performed by separate CONTRACTORS, that will become necessary to accommodate the proposed substitution.

   e. A statement indicating the substitution's effect on the CONTRACTOR'S Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall CONTRACT Time.

   f. Cost information, including a proposal of the net change, if any in the Contract Sum.

   g. Certification by the Contractor that the substitution proposed is equal- to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.

3. OWNER or OWNER'S Representative's Action: Within one week of receipt of the request for substitution, the OWNER or OWNER'S Representative will request additional information or documentation necessary for evaluation of the request. Within 2 weeks of receipt of the request, or one week of receipt of the additional information or documentation, whichever is later, the OWNER or OWNER'S Representative will notify the CONTRACTOR of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name. Acceptance will be in the form of a CHANGE ORDER.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Conditions: The CONTRACTOR'S substitution request will be received and considered by the OWNER or OWNER'S Representative when: extensive revisions to Contract Documents are not required; proposed changes are in keeping with the general intent of the CONTRACT DOCUMENTS; the request is timely, fully documented, and properly submitted; and when one or more of the following conditions are satisfied, as determined by the OWNER or OWNER'S Representative; otherwise requests will be returned without action except to record noncompliance with these requirements.

1. The request is directly related to an "or equal" clause or similar language in the Contract Documents.
2. The specified product or method of construction cannot be provided within the CONTRACT Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the WORK promptly or coordinate activities properly.
3. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
4. A substantial advantage is offered the OWNER, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the OWNER may be required to bear. Additional responsibilities for the OWNER shall include additional compensation to the OWNER'S Representative for redesign and evaluation services, increased cost of other construction by the OWNER or separate CONTRACTORS, and similar considerations.
5. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the CONTRACTOR certifies that the substitution will overcome the incompatibility.
6. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.
7. The specified product or method of construction cannot provide a warranty required by the CONTRACT DOCUMENTS and where the CONTRACTOR certifies that the proposed substitution provide the required warranty.

B. The Contractor's submittal and OWNER or OWNER'S Representative's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the CONTRACT DOCUMENTS does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

C. If a proposed substitution requires investigation, testing, or approval to determine its suitability for incorporation into the WORK, the testing of the proposed substitution shall be determined by the OWNER'S Representative. The CONTRACTOR shall bear all costs of such investigations or tests, including the OWNER'S Representative's additional services made necessary by such substitutions.

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01650

START-UP

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope of Work: The CONTRACTOR shall provide material, personnel, and equipment as needed, as specified herein or as directed by the OWNER to perform start-up and demonstration tests.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PRELIMINARY START-UP REQUIREMENTS

A. Start-up Certification: Prior to system start-up, the CONTRACTOR shall successfully complete all the field testing required of the individual components of the WORK. The CONTRACTOR shall complete and submit the Check-Out Memo, on the form as provided at the end of this section, signed by the CONTRACTOR and SUBCONTRACTORS. The Check-Out Memo shall be submitted before instruction in operation to the OWNER or acceptance of FINAL COMPLETION.

B. The CONTRACTOR shall have approved O&M's for all equipment being started, or affected by the startup process.

C. The CONTRACTOR shall demonstrate to the OWNER that all temporary jumpers and/or bypasses have been removed and that all of the components are operating under their own controls as designed.

D. The CONTRACTOR shall submit a written start up plan listing all activities to be performed prior to, during and after startup including who is responsible for each activity at a minimum of two weeks prior to startup. The CONTRACTOR shall coordinate start-up activities with the OWNER'S operating personnel at the facility site and with the ENGINEER prior to commencing system start-up.

3.2 START-UP TESTS

A. The CONTRACTOR shall confirm that all equipment is properly energized, that the valves are set to their normal operating condition and that the flow path through the WORK is unobstructed.

B. The CONTRACTOR shall preform start up testing as required in the Specifications for the PLC, motor, pump, and all associated sensors.

C. The CONTRACTOR shall initiate start-up in accordance with the OWNER'S existing operation and maintenance procedures as outlined in Section 01821 Instruction of Operations and Maintenance Personnel.

D. The CONTRACTOR shall observe the component operation and,upon direction from OWNER and ENGINEER make adjustments as necessary to optimize the performance of the WORK.

E. The start-up tests shall be conducted for ten (10) consecutive DAYS. The OWNER may elect to reduce the required number of DAYS for the start-up testing period. The WORK shall operate successfully during the start-up testing period in the manner intended. If the WORK does not operate successfully, or if the start-up is interrupted, the CONTRACTOR shall correct the problems and the test will start over. During the start-up tests, the CONTRACTOR shall instruct the OWNER'S designated operating personnel in the function and operation of the WORK.

1. Start-up testing may not start on a Friday, Saturday, or Sunday, unless confirmed by the Owner. All start-up tests shall be started during the first part of the work week. Fridays and weekends will be considered part of the seven consecutive day testing period.

F. The CONTRACTOR shall coordinate with the OWNER for any adjustments desired or operational problems that require debugging.

G. The CONTRACTOR shall make adjustments as necessary.

END OF SECTION

CHECK-OUT MEMO

_____OWNER: _____ No. Copies _____
_____ENGINEER: _____ No. Copies _____ CHECK-OUT_____
_____CONTRACTOR: _____ No. Copies _____

_____FIELD: _____ No. Copies _____ MEMO NO._____

_____OTHER: _____ No. Copies _____

PROJECT DATA

NAME: _____
LOCATION: _____
OWNER: _____
OTHER: _____

CONTRACT DATA

NUMBER: _____
DATE: _____
DRAWING NO. _____
SPECIFICATION SECTION: _____

Name of equipment checked:

Name of SUPPLIER of equipment:

1. The equipment furnished has been checked on the job. We have reviewed (where applicable) the performance verification information submitted to us by the CONTRACTOR.
2. The equipment is properly installed, except for items noted below.*
3. The equipment is operating satisfactorily, except for items noted below.*
4. The written operating and maintenance information (where applicable) has been presented to the CONTRACTOR, and gone over with the CONTRACTOR in detail. Copies of all applicable operating and maintenance information and parts lists have been furnished to the CONTRACTOR for insertion in each of the Operation and Maintenance Manuals.

Checked By:

Name of SUPPLIER'S Rep.	Name of General Contractor
Address and Phone No. of Rep.	Authorized Signature/Title/Date
Signature/Title/Person Making Check	Name of Subcontractor
Date Checked Authorized Signature/Title/Date	

*SUPPLIER'S Representative Notations: Exceptions noted at time of check were:

SUPPLIER'S Representative to note adequacy of related equipment that directly affects operation, performance or function of equipment checked. (No comment presented herein will indicate acceptable adequacy of related systems or equipment):

SECTION 01710

CLEANING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope of Work: The CONTRACTOR shall execute regular cleaning, or as directed by the ENGINEER OR OWNER, during progress of WORK and at completion of the WORK as required by the General Conditions.

1.2 DISPOSAL REQUIREMENTS

A. The CONTRACTOR shall conduct cleaning and disposal operations to comply with all applicable LAWS AND REGULATIONS.

PART 2 - MATERIALS

2.1 MATERIALS

A. The CONTRACTOR shall use only those cleaning materials which do not create hazards to health or property and which do not damage surfaces.

B. The CONTRACTOR shall use only those cleaning materials and methods recommended by the SUPPLIER of the surface material to be cleaned.

PART 3 - EXECUTION

3.1 CLEANING DURING CONSTRUCTION

A. The CONTRACTOR shall execute daily cleaning to keep the WORK, the site and adjacent areas free from accumulations of waste materials, water, eroded material, rubbish and windblown debris resulting from construction operations.

B. The CONTRACTOR shall provide suitable on-site containers for the daily collection of all waste materials, debris and rubbish.

C. The CONTRACTOR shall remove waste materials, debris and rubbish from site containers periodically and dispose of at properly licensed and permitted disposal areas away from the site.

D. The CONTRACTOR shall schedule operations so that dust and other contaminants resulting from the cleaning process do not fall on wet or newly-coated surfaces.

E. The CONTRACTOR shall remove from the site all surplus materials and temporary structures when no further need therefore develops and as approved by the ENGINEER. The CONTRACTOR shall be responsible and liable for all spillage and shall incur all associated costs including, but not limited to, costs related to repair and maintenance resulting from any such damage.

3.2 FINAL CLEANING

A. The CONTRACTOR shall employ skilled workmen for final cleaning.

B. The CONTRACTOR shall remove all grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels and all other foreign materials from sight-exposed interior and exterior surfaces.

C. Prior to FINAL COMPLETION, the CONTRACTOR shall conduct an inspection of sight-exposed interior and exterior surfaces and all WORK areas in the presence of the ENGINEER, to verify that the entire WORK and the entire construction area of the WORK are clean.

END OF SECTION

SECTION 01720

CONTRACT RECORD AND CLOSE OUT DOCUMENTATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section addresses documentation items that are required to be delivered through the OWNER'S REPRESENTATIVE to the OWNER prior to final payment and close out of the CONTRACT. The CONTRACTOR will assist, as directed by the OWNER'S REPRESENTATIVE, in acquiring the material necessary to assemble and deliver the various documentation items. Requirements set forth in other sections of these specifications shall be coordinated with this Section so that all documentation items required to close out the CONTRACT are delivered to the OWNER after it is reviewed and in the case of item 1.6, approved by the OWNER'S REPRESENTATIVE.

B. CONTRACT close out documentation items include:

1. Major Equipment Shop Drawings (as designated by the OWNER'S REPRESENTATIVE), Pipe Laying Schedules, and Surveying Manual.
2. Operation and Maintenance Manual.
3. Warranties, Guarantees, and Certificates Manual.
4. Construction Photographs.
5. Conformed to Construction Records Drawings.
6. Permit Notebook.
7. Property Notebook.

The requirements for these CONTRACT close out documentation items are described in this Section.

1.2 MAJOR EQUIPMENT SHOP DRAWINGS, PIPE LAYING SCHEDULES, AND SURVEYING MANUAL.

A. This manual shall contain a copy of the accepted shop drawings for the major materials and equipment associated with the project. The manual shall be divided into sections with each section dedicated to a particular specification section. The manual shall contain CONTRACTOR redlines showing any associated changes from the CONSTRUCTION DOCUMENTS.

B. Three (3) hard copy sets of this manual and one electronic file copy are to be delivered to the OWNER. The requirements for hard copies and for electronic files are provided below in this Section.

1.3 OPERATION AND MAINTENANCE MANUAL

A. Operation and Maintenance Data shall be furnished as specified in Section 01730 Operating and Maintenance Data.

1.4 WARRANTIES, GUARANTEES, BONDS, AND CERTIFICATES MANUAL

A. This manual shall contain all warranties, guarantees, bonds, certificates, and similar documents, including those customarily provided by manufacturers and suppliers which cover a period greater than the one-year Contractor's correction period. Show OWNER as beneficiary on these documents. Two (2) hard copy sets of this manual and one electronic file copy are to be delivered to the OWNER. The requirements for hard copies and for electronic files are provided below in this Section.

1.5 CONSTRUCTION PHOTOGRAPHS

A. This manual shall contain construction photographs obtained from the CONTRACTOR, ENGINEER, and OWNER. All photographs are to be color digital compiled on USB hard drive and provided with a descriptive index of images with dates. As specified in Section 01380 Construction Photographs.

B. Two (2) electronic file copies are to be delivered to the OWNER.

1.6 CONFORMED TO CONSTRUCTION RECORD DRAWINGS

A. As identified in General Conditions Article 2.4.1., the CONTRACTOR is to maintain on a daily basis at the PROJECT site one current set of AS-BUILT CONTRACT DOCUMENTS. The CONTRACTOR is to give the set of AS-BUILT CONTRACT DOCUMENTS to the OWNER'S REPRESENTATIVE who in turn will produce Conformed to Construction Record drawings.

B. Three (3) 22" x 34" size sets of drawings, or other size stated by the OWNER, each signed and sealed by the OWNER'S REPRESENTATIVE(s) of Record, shall be delivered to the OWNER. In addition, one electronic file of each drawing in Windows based - AutoCAD 2018 format and one electronic file of each drawing signed and sealed (seal must be inked) shall be scanned and saved as Win. OS - Tif 6.0 files with a resolution of 300 dpi, shall be provided to the OWNER in the most logical format listed by judging the size of the project. The files should be labeled by drawing title and page number and submitted electronically into Masterworks.

1.7 REQUIREMENTS FOR MANUAL HARD COPIES

A. All manuals and other data shall be printed on heavy, first quality 8-1/2 x 11 inch paper, with standard three-hole punching. DRAWINGS and diagrams shall be reduced to 8-1/2 x 11 inches or 11 x 17 inches. Where reduction is not practicable, larger drawings shall be folded separately and placed in envelopes, which are bound into the manuals. Each envelope shall be suitably identified on the outside. Each volume containing data for three or

more items of equipment shall include a table of contents and index tabs. Each manual shall be prepared and delivered in substantial, permanent, three-ring or three-post binders with a table of contents, suitable index tabs, and a label on the binder spine.

1.8 REQUIREMENTS FOR ELECTRONIC FILES

A. For all documents except Conformed to Construction Records Drawings, each electronic copy shall be delivered on a unique USB hard drive in Adobe Acrobat's Portable Document Format (PDF). The PDF file(s) shall be fully indexed using the Table of Contents, searchable with thumbnails generated and any extra blank pages removed.

B. Scanned images must be at a readable resolution. For most documents, they will be scanned at 300 dots per inch (dpi). Optical Character Recognition (OCR) capture must be performed on these images. OCR settings shall be performed with the "original image with hidden text" option in Adobe Acrobat Exchange.

C. One PDF document (PDF file) shall be created for each manual. The entire manual shall be converted to a single .PDF file via scanning or other method of conversion. Drawings or other graphics shall also be converted to .PDF format and included into the single PDF document. Pages that must be viewed in landscape format shall be rotated to the appropriate position for easy reading on screen.

D. The PDF documents shall have a bookmark created in the navigation frame for each major entry ("Section" or "Chapter") in the Table of Contents. Thumbnails shall be generated for each page or graphic in the PDF file.

E. The opening view for each PDF document shall be as follows:

1. Initial View: Bookmarks and Page.
2. Magnification: Fit In Window.
3. The file shall open to the cover page of the manual, with bookmarks to the left, and the first bookmark shall be linked to the Table of Contents.

F. The PDF documents shall be uploaded to Masterworks in the appropriate project folder.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01730

OPERATING AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 OPERATION AND MAINTENANCE DATA AND MANUALS

A. Adequate operation and maintenance information shall be supplied for all equipment requiring maintenance or other attention. The equipment Supplier shall prepare a project specific operation and maintenance manual for each type of equipment indicated in the individual equipment sections or the equipment schedule.

B. Parts lists and operating and maintenance instructions shall be furnished for other equipment not listed in the individual equipment sections or the equipment schedule.

C. Operation and maintenance manuals shall include the following:

1. Cover page.
2. Table of Contents: General description of information provided within each tab section.
3. A description that clearly identifies the purpose of the equipment and how the equipment works. This description shall be specific to the project or facility that the equipment is being installed at.
4. Equipment function, normal operating characteristics, and limiting conditions.
5. Assembly, installation, alignment, adjustment, and checking instructions.
6. Operating instructions for startup, routine and normal operation, regulation and control, shutdown, and emergency conditions.
7. Lubrication and maintenance instructions.
8. Guide to troubleshooting.
9. Parts lists with replacement part costs and predicted life of parts subject to wear.
10. Outline, cross section, and assembly drawings; engineering data; and wiring diagrams.
11. Test data and performance curves, where applicable.
12. Start-up procedures: Recommendations for installation, adjustment, calibration, and troubleshooting.
13. Preventative maintenance procedures:
    a. Recommend steps and schedules for maintaining equipment.
    b. Troubleshooting.
14. Storage Instructions.

15. Overhaul instructions: Direction for disassembly, inspection, repair and reassembly of the equipment; safety precautions; and recommended tolerances, critical bolt torques, and special tools that are required.

16. Online resources.

17. Telephone resources.

18. Warranty information in accordance with requirements of section 01740 Warranties and Bonds.

D. The operation and maintenance manuals shall be in addition to any instructions or parts lists packed with or attached to the equipment when delivered, or which may be required by CONTRACTOR. The operation and maintenance manual shall include a copy of all material used for any training provided for the equipment, including any slide shows used during training.

E. Preliminary copies of operation and maintenance manual shall be submitted to ENGINEER before shipment of the equipment. Preliminary copies shall be in electronic format and should be submitted via the Masterworks submittal process.

F. After review by ENGINEER, four (4) final copies of operation and maintenance manuals shall be delivered to OWNERS REPRESENTATIVE or ENGINEER not later than 30 days prior to placing the equipment in operation. Operation and maintenance manuals must be accepted by OWNER prior to placing equipment in operation. In addition, one electronic copy shall be included with each final operation and maintenance SUBMITTAL within Masterworks.

G. Shipment of equipment will not be considered complete until all required manuals and data have been received in format acceptable to OWNER.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Sequencing:

1. Submit draft operation and maintenance manuals prior to shipment of the equipment to the Site.

2. Submit approved operation and maintenance manuals at least 30 days prior to Functional Testing and at least 60 days prior to Owner Training.

3. Make final operation and maintenance manuals available at the Site for use by construction personnel.

1.3 HARD COPY OPERATION AND MAINTENANCE MANUALS

A. All manuals and other data shall be printed on heavy, first quality 8-1/2 x 11 inch paper, with standard three-hole punching. Drawings and diagrams shall be reduced to 8-1/2 x 11 inches or 11 x 17 inches. Where reduction is not practicable, larger drawings shall be folded separately and placed in envelopes, which are bound into the manuals. Each envelope shall

be suitably identified on the outside. Each volume containing data for three or more items of equipment shall include a table of contents and index tabs. Each manual shall be prepared and delivered in substantial, permanent, three-ring or three-post binders with a table of contents and suitable index tabs.

1.4 ELECTRONIC OPERATION AND MAINTENANCE MANUALS

A. Each electronic copy shall be electronically uploaded into Masterworks in PDF format and shall be prepared at a resolution between 300 and 600 dots per inch (dpi), depending on document type. Blank pages shall be removed from the electronic copy of the operations & maintenance manuals.

B. File size shall be limited to 10 MB. When multiple files are required the least number of files possible shall be created. File names shall be in the format OMXXXXX- YYYZ-V.pdf, where XXXXX is the five digit number corresponding to the specification section, YYY is a three digit O&M manual number, e.g. 001, Z is the letter signifying a resubmittal, A, B, C, etc, and V is a number used only when more than one 10 MB file is required for an O&M manual.

C. The PDF file(s) shall be fully indexed using the Table of Contents, searchable with thumbnails generated.

D. Scanned images must be at a readable resolution. For most documents, they should be scanned at 300 dots per inch (dpi). Optical Character Recognition (OCR) capture must be performed on these images. OCR settings shall be performed with the "original image with hidden text" option in Adobe Acrobat Exchange.

E. One PDF document (PDF file) shall be created for each equipment service manual. The entire manual shall be converted to a single .PDF file via scanning or other method of conversion. Drawings or other graphics shall also be converted to .PDF format and included into the single PDF document. Pages that must be viewed in landscape format shall be rotated to the appropriate position for easy reading on screen.

F. The PDF documents shall have a bookmark created in the navigation frame for each major entry ("Section" or "Chapter") in the Table of Contents. Thumbnails shall be generated for each page or graphic in the PDF file.

G. The opening view for each PDF document shall be as follows:

1. Initial View: Bookmarks and Page.
2. Magnification: Fit In Window.
3. The file shall open to the cover page of the manual, with bookmarks to the left, and the first bookmark shall be linked to the Table of Contents.

1.5 LABELING

A. As a minimum, the following information shall be included on all final electronic O&M manual materials and hard copy manuals:

1. Equipment name followed by "Operation and Maintenance Manual."
2. Project Name.
3. Tampa Bay Water Contract No: Example: "Tampa Bay Water Contract No. XXXXX"
4. Specification Section Number. Example: "Section XXXXX"
5. Manufacturer's Name.
6. File Name and Date. Example: "OMXXXXX_YYYZ-V.pdf", "5-05-02"

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01740

WARRANTIES AND BONDS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope of Work:

1. The CONTRACTOR shall compile specified warranties and bonds, as required by the General Conditions and as specified in these SPECIFICATIONS.

2. The CONTRACTOR shall co-execute warranties and/or bonds when so specified.

3. The CONTRACTOR shall review warranties and bonds to verify compliance with CONTRACT DOCUMENTS.

4. The CONTRACTOR shall submit required SUBMITTALS to the OWNER'S construction manager for review and transmittal to the ENGINEER for review through Masterworks in accordance with the requirements in section 01300 CONTRACTOR SUBMITTALS.

B. Disclaimers and Limitations: SUPPLIER'S (manufacturer's) disclaimers and limitations on product warranties do not relieve the CONTRACTOR of the warranty of the WORK that incorporates the products, nor does it relieve suppliers, SUPPLIERS (manufacturers), and SUBCONTRACTORS required to countersign special warranties with the CONTRACTOR.

1.2 DEFINITIONS

A. Standard Product Warranties are preprinted written warranties published by individual SUPPLIERS (manufacturers) for particular products and are specifically endorsed by the SUPPLIER (manufacturer) to the OWNER.

B. Special Warranties are written warranties required by or incorporated by the OWNER, either to extend time limits provided by standard warranties or to provide greater rights for the OWNER.

1.3 OWNER'S RIGHTS

A. OWNER reserves the right to reject warranties.

B. OWNER reserves the right to refuse to accept WORK for the project if the required warranties have not been provided.

1.4 WARRANTY REQUIREMENTS

A. For all material, the CONTRACTOR shall submit an express warranty from the product SUPPLIER (manufacturer). The SUPPLIER'S warranty period shall be concurrent with the CONTRACTOR'S CORRECTION PERIOD, unless otherwise specified.

B. The CONTRACTOR shall be responsible for obtaining express certificates for material warranty for all major items for which the normal list price is more than $1,000. The ENGINEER reserves the right to request warranties for material not classified as major. The CONTRACTOR shall warrant material not considered to be "major" in the CONTRACTOR'S correction period even though specific certificates of warranty may not be required.

C. In the event that the material or equipment SUPPLIER (manufacturer) is unwilling to provide a one-year warranty coinciding with the CONTRACTOR'S CORRECTION PERIOD, the CONTRACTOR shall obtain from the SUPPLIER a two-year warranty commencing at the time of material or equipment delivery to the PROJECT site. This two-year warranty from the SUPPLIER shall not relieve the CONTRACTOR of its responsibilities during the CORRECTION PERIOD.

D. The OWNER shall incur no labor or equipment cost during the CORRECTION PERIOD.

E. The warranty shall cover all necessary labor, and materials resulting from improper assembly or erection, defective workmanship and materials, leakage, breakage or other failure of all material and components furnished by the CONTRACTOR.

F. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted WORK.

G. Reinstatement of Warranty: When WORK covered by a warranty has failed and been corrected by replacement or rebuilding; reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

H. Replacement Cost: Upon determination that WORK covered by a warranty has failed, replace or rebuild the WORK to an acceptable condition complying with requirements of the CONTRACT DOCUMENTS. The CONTRACTOR is responsible for the cost of replacing or rebuilding defective WORK regardless of whether the OWNER has benefited from use of the WORK through a portion of its anticipated useful service life.

I. Owner's Recourse: Written warranties made to the OWNER are in addition to implied warranties, and shall not limit the duties, obligations, rights, and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the OWNER can enforce such other duties, obligations, rights, or remedies.

1. Rejection of Warranties: The OWNER reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the CONTRACT DOCUMENTS.

J. The Owner reserves the right to refuse to accept WORK for the PROJECT where a special warranty, certification, or similar commitment is required on such WORK or part of the WORK, until evidence is presented that entities required to countersign such commitments are willing to do so.

1.5 MANUFACTURER'S 1 YEAR WARRANTY MINIMUM REQUIREMENTS

A. Written warranty issued by item's manufacturer.

B. Project-specific information, Project-specific information, properly executed by product manufacturer, and expressly states that its provisions are for the benefit of the CONTRACTOR.

C. Covers all costs associated with the correction of the defect, including, but not limited to, removal of defective parts, new parts, labor, and shipping.

D. Provides a timely response to correct the defect.

1. Manufacturer shall provide, in a timely fashion, temporary equipment as necessary to replace warranted items requiring repair or replacement, when warranted items are in use and are critical to the treatment process, as defined by OWNER.

E. Warranty to commence running on the date of substantial completion.

1. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit warranty within 10 calendar days after acceptance, listing date of acceptance as beginning of warranty period.

F. Duration of warranty: 1 year.

1.6 SUBMITTAL REQUIREMENTS

A. The CONTRACTOR shall assemble in one document all warranties, bonds and service and maintenance contracts, executed by each of the respective SUPPLIERS (manufacturers), and SUBCONTRACTORS.

B. Four (4) original signed copies of each warranty, bond and contract are required.

C. A Table of Contents shall be provided and shall be neatly typed, in orderly sequence and shall provide complete information for each item including, at a minimum:

1. Product of work item.

2. Firm, with name of responsible principal, address and telephone number.

3. Scope of work item.

4. Date of beginning of warranty, bond or service and maintenance contract.

5. Duration of warranty, bond or service maintenance contract.

6. Other information for OWNER'S personnel including instances which might affect the validity of warranty or bond.

7. CONTRACTOR, name of responsible principal, address and telephone number.

D. Two (2) copies of the document shall be submitted to the OWNER'S construction manager. Warranties should be added to the O&M manuals in accordance with specification section 01730 Operations and Maintenance Data.

1.7 FORM OF SUBMITTALS

A. Format:

1. Page size: 8-1/2 inches x 11 inches.

a. Sheets shall be punched for use in a standard three O-ring binder.

b. Larger sheets shall be folded to 8-1/2 inches x 11 inches.

2. Cover: Each packet cover shall identify with typed or printed title "WARRANTIES AND BONDS" and the following information:

a. PROJECT name and number.

b. Name of CONTRACTOR.

B. Binder: Commercial quality, three O-ring binder, with durable and cleanable plastic covers and maximum ring size of two inches shall be used.

C. The CONTRACTOR shall also submit the warranties and bonds, after the review and approval by the OWNER and the ENGINEER, in electronic format as specified in Section 01300 Contractor Submittals of the SPECIFICATIONS.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01756

COMMISSIONING

TABLE OF CONTENTS

PART 1 - GENERAL....2

1.1 SUMMARY....2
1.2 DEFINITIONS....2
1.3 SUBMITTALS....4
1.4 COMMISSIONING COORDINATOR (CC)....6
1.5 MANUFACTURER'S REPRESENTATIVES....6
1.6 PLANNING PHASE....7
1.7 TESTING AND TRAINING PHASE....10
1.8 START-UP PHASE....21

PART 2 - PRODUCTS (NOT USED)....21

PART 3 - EXECUTION (NOT USED)....21

ATTACHMENT A - COMMISSIONING FLOWCHARTS

ATTACHMENT B - MANUFACTURER'S CERTIFICATE OF SOURCE TESTING

ATTACHMENT C - MANUFACTURER'S CERTIFICATE OF INSTALLATION VERIFICATION

ATTACHMENT D - MANUFACTURER'S CERTIFICATE OF FUNCTIONAL COMPLIANCE

ATTACHMENT E - TRAINING EVALUATION FORM

ATTACHMENT F - COMMISSIONING ROLES AND RESPONSIBILITIES MATRIX

ATTACHMENT G - FUNCTIONAL TESTING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Commissioning.

1.2 DEFINITIONS

A. Commissioning: The process of planning for, testing of, and start-up of systems, subsystems, equipment, components, and devices of the Work to demonstrate, through documented verification, that the Work has successfully met the Contract Documents. It includes training the Owner's staff on operation and maintenance of the installed Work.

B. Commissioning Phases: The activities of commissioning are grouped into the phases defined in the following table:

1. Table 1 - Commissioning Ph:

TABLE 1 - COMMISSIONING PHASES		
Planning Phase	**Testing and Training Phase**	**Start-Up Phase**
Draft Test Plans	Source Testing: • Documentation	Start-Up: • Documentation • Owner Training
	Installation Verification: • Documentation • Owner Training	
	Functional Testing: • Documentation • Owner Training	

2. Attachment A provides Commissioning Flowcharts.

C. Component: A part of a system that does not have an electrical connection or internal electronics. Examples: Piping and pressure gauges.

D. Device: A part of a system that has electrical connections or internal electronics. Examples: Level transmitter or pressure transmitter.

E. Electrical Energization Plan: A plan to manage how and when power is applied to electrical equipment.

F. Equipment: A factory or field assembled apparatus that performs an identifiable function. Examples: Pumps, motors, VFDs, MCCs.

G. Functional Testing: Testing performed on a completed subsystem or system to demonstrate that the system meets the specified requirements. Example systems: Backwash system, dewatering system.

H. Installation Verification: Testing to demonstrate that equipment or system and associated components or devices have been properly installed. Example equipment: Pumps, meters, and blowers with associated piping.

I. Manufacturer's Certificate of Functional Compliance: The form completed by the manufacturer to confirm that testing of the installed equipment or system has been performed and the results conform to the specified performance. The form is provided in Attachment D provided at the end of this Section.

J. Manufacturer's Certificate of Installation Verification: The form completed by the manufacturer to confirm that the equipment or system is installed in conformance with the Contract. The form is provided in Attachment C at the end of this Section.

K. Manufacturer's Certificate of Source Testing: The form completed by the manufacturer to confirm that the specified source tests have been performed and the results conform to the specified requirements. The form is provided in Attachment B at the end of this Section.

L. Owner Training: The Owner's staff is trained by the Contractor, with assistance from manufacturer, to operate and maintain the completed Work. This is sometimes referred to as Vendor Specific Training.

M. Process Stream: A series of liquid or solids flow processes that are designed to improve the water quality to meet regulatory permit requirements.

N. Source Testing: Test equipment or products for performance at point of manufacture or assembly for the requirements specified in the Contract Documents. Also referred to as factory testing and factory acceptance testing (FAT).

O. Start-Up: Operating the Work with process water to verify the Work meets the Contract Documents.

P. Start-Up Phase: The phase when Start-Up occurs.

Q. Subsystem: A grouping of equipment, components, and devices that is a part of a larger system and that perform a single definable function. Examples: Sand filters, filter backwash.

R. System: A grouping of equipment, components, and devices that perform a single definable function. If a system is a part of a larger system, it is referred to as a subsystem:

1. Examples: Flocculation and sedimentation, filtration.

S. System Testing: Testing of a completed system for an extended time period. Examples: Headworks, filtration.

T. Water Management Plan: A plan to manage the test water used for commissioning from source to disposal. The test water may be clean water, potable water, non-potable water, or process water (e.g., raw water, plant water, sludge). The plan demonstrates how water will be produced, conveyed, treated, disposed of as directed by the plant manager, and/or recycled.

1.3 SUBMITTALS

A. Project Commissioning:

1. Commissioning Coordinator's qualifications:

a. Submit to Engineer no later than 30 days after Notice to Proceed.

b. Describe previous similar experience on similar projects with a list of references, including phone numbers.

c. Provide names and qualifications of commissioning assistants, if applicable.

2. Schedules:

a. Commissioning Schedule containing all commissioning activities.

b. Owner Training Schedule.

3. Test Plans:

a. Submit draft Test Plan outlined in the Planning Phase, unless specified otherwise:

1) Engineer approval of draft Test Plans required for successful completion of Planning Phase.

b. Submit final Test Plan a minimum of 30 calendar days prior to testing.

c. Engineer approval of final Test Plan required prior to start of testing.

4. Test Reports:

a. Submit draft Test Reports outline in the Planning Phase, unless specified otherwise:

1) Engineer approval of draft Test Reports outline required for successful completion of Planning Phase.

b. Submit final Test Report a maximum of 30 calendar days after testing.

B. Technical Sections Commissioning:

1. Manufacturer's representative's qualifications:

a. Submit to Engineer no later than 30 days in advance of required services.

b. Representative's name, phone, and e-mail address:

1) May use 2 representatives: 1 for field testing and 1 for Owner Training.

2) Provide resume stating instructor's technical expertise and instructional technology skills and experience.

2. Test Plans:
    a. Submit draft Test Plan outlined in the Planning Phase, unless specified otherwise:
        1) Engineer approval of draft Test Plans required for successful completion of Planning Phase.
    b. Submit final Test Plan a minimum of 30 calendar days prior to testing.
    c. Engineer approval of final Test Plan required prior to start of testing.
3. Test Reports:
    a. Submit draft Test Reports outline in the Planning Phase, unless specified otherwise:
        1) Engineer approval of draft Test Reports outline required for successful completion of Planning Phase.
    b. Submit final Test Report a maximum of 30 calendar days after testing.
4. Manufacturer's representatives field notes and data.
5. Owner Training:
    a. Prior to the training session:
        1) Training instructor qualifications.
        2) Training course materials: Due 30 calendar days prior to initial training session:
            a) If Owner requires, Continuing Education Units (CEUs), submit training materials to state regulatory agency in sufficient time to obtain approval for training prior to the training.
            b) Drafts of training agenda, lesson plan, presentation, handouts, and list of audio-visual aids.
            c) Format: 1 electronic copy in the format specified by the Owner and 3 hard copies organized in notebooks.
    b. Post training session:
        1) Training course materials: Due 14 calendar days after class completion:
            a) Recordings.
            b) Class attendance sheet.
            c) Final version of training agenda, final lesson plan, presentation, handouts, and audio-visual aids.
            d) Format: 1 electronic copy in the format specified by the Owner and 3 hard copies organized in notebooks.
        2) Provide materials for all sessions of the class in a single transmittal.

3) If the Owner requires training CEUs, issue training CEU certificates approved by the state regulatory agency to Owner's staff who successfully completed the training.

1.4 COMMISSIONING COORDINATOR (CC)

A. Responsibilities include the following:

1. Must be the Contractor's superintendent or a designated representative, if they have the required experience.
2. Become thoroughly familiar with Contract Commissioning requirements.
3. Provide the primary interface with Engineer and Owner for Commissioning efforts.
4. Lead Commissioning efforts - all phases and tasks.
5. Coordinate training efforts.
6. Meetings:
    a. CC is responsible for setting Commissioning coordination meeting dates and times, as well as preparing the agendas and meeting minutes.
    b. CC shall conduct Commissioning progress meetings throughout construction, to plan, scope, coordinate, and schedule future activities, resolve problems, etc.
    c. Frequency: Monthly minimum. Increase frequency as needed based on complexity and quantity of Commissioning activities.

1.5 MANUFACTURER'S REPRESENTATIVES

A. Qualifications: As specified below and in the Technical Sections:

1. For Installation and Functional Testing:
    a. Factory trained and experienced in the technical applications, installation, operation, and maintenance of respective equipment/system with full authority by the equipment/system manufacturer to issue the certifications required of the manufacturer.
2. Training instructor qualifications:
    a. Provide resume stating instructor's technical preparation and instructional technology skills and experience.
    b. If CEUs are required, the operator training instructors must comply with state regulatory.
    c. Knowledgeable in the equipment/system for which they are training.
    d. Experienced in conducting classes.
    e. Sales representatives are not qualified instructors unless they possess the detailed operating and maintenance knowledge required for proper class instruction.

3. Representatives to be approved by Owner and Engineer.

4. No substitute representatives without written approval by Owner and Engineer.

B. Duties:

1. Determine if additional time and/or trips (beyond those specified in the Technical Sections) is required to perform the specified services:

a. Coordinate services in accordance with the Contractor's Project schedule, up to and including making multiple trips to the Project Site when there are separate milestones associated with installation of each occurrence of manufacturer's equipment.

b. Perform on-site services as specified in the Technical Sections.

c. Provide weekly copies of manufacturer's representatives field notes and data to Contractor.

1.6 PLANNING PHASE

A. Overview of Planning Phase:

1. Define approach and timing for Commissioning.

2. Obtain Engineer approval of draft Test Plans.

B. Test Plans:

1. Define approach and timing for:

a. Testing and Training Phases:

1) Major systems, with separate plans for each system.

b. Start-Up Phase.

2. Centralized Commissioning database:

a. Provide system to manage information:

1) Detailed steps.

2) Dependencies and other relationships of steps.

b. Update the database within 24 hours of task completion.

3. Source Test (Factory Acceptance Test) and Functional Test Plans:

a. As specified in this Section and other Technical Sections.

b. Based on approved Shop Drawings.

c. Prepared by the Contractor.

d. Include the following items for each test:

1) Purpose of the test.

2) Identification of each item of equipment/system to be tested, including system designation, location, tag number, control loop identifier, etc.

3) Description of the pass/fail criteria that will be used.

4) Listing of pertinent reference documents (Contract and industry standards or sections applicable to the testing):

a) Credentials of test personnel.

5) Test equipment:

a) Include Product Data for the test equipment.

b) Appropriate calibration records:

(1) Drawings or photographs of test stands and/or test apparatus.

6) Duration: Determine test durations with Owner's input.

7) Detailed step-by-step test procedures:

a) Level of detail shall be sufficient for the witness to follow the steps.

e. Define for Functional Testing:

1) Required temporary systems (pumps, piping, etc.).

2) Shutdown requirements for existing systems.

f. Furnish labor, power, tools, equipment, instruments, and services required for and incidental to testing activities.

4. Test forms minimum requirements:

a. Name of product to be tested.

b. Test date.

c. Names of persons conducting the test.

d. Names of persons witnessing the test, where applicable.

e. Test data.

f. Applicable project requirements as specified in the Technical Sections.

g. Check offs for each completed test or test step.

h. Place for signature of person conducting tests and for the witnessing person, as applicable.

5. Owner responsibilities:

a. Owner will schedule staff within the constraints of their workloads:

1) Those who will participate in this test have existing full-time work assignments, and testing is an additional assigned work task, therefore, scheduling is imperative.

2) Treatment facilities are typically operated on an around-the-clock basis and are staffed in work shifts.

3) Maximum hours per day available for commissioning activities: 4.

4) Days available for commissioning activities: Monday to Thursday.

5) Scheduling coordination with the CC.

6. CC is responsible for the following:

a. Coordinate schedule with the Owner's personnel and manufacturer's representatives (instructors).

C. Test Reports:

1. Minimum requirements:

a. Title.

b. Abstract.

c. Equipment.

d. Procedures.

e. Results:

1) Complete disclosure of the calculation methodologies.

f. Conclusions.

g. Signature by an authorized party.

h. Appendices:

1) Completed test forms signed by witnesses.

2. Water Management Plan:

a. Requirements:

1) Demonstrate how water will be produced, conveyed, treated, recycled, and or disposed until testing verifies specified requirements.

3. Commissioning Schedule:

a. Content:

1) Comply with Attachment G - Functional Testing Requirements and provide activities organized by system and subsystem.

2) Include:

a) Source Testing when required.

b) Functional Testing.

c) Owner Training.

3) Comply with Attachment F - Commissioning Roles and Responsibilities Matrix.

b. Procedures:

1) Submit Commissioning Schedule as specified in Section 01310 – Project Schedules.

1.7 TESTING AND TRAINING PHASE

A. Overview of Testing and Training Phase:

1. General:

a. Contractor tests the Work to verify it meets the Contract requirements.

b. Contractor trains the Owner to operate and maintain the Work.

2. Contractor responsibilities:

a. Furnish labor, chemicals, tools, equipment, instruments, and services required for and incidental to completing Commissioning activities in accordance with the approved Commissioning Plans.

3. Owner responsibilities:

a. Furnish labor, power, water and services required for and incidental to completing Commissioning activities in accordance with the approved Commissioning Plans.

b. Owner provided services, equipment, and/or materials to be as specified in Section 01010 - Summary of Work.

B. Source Testing:

1. As specified in the Technical Section.

2. Source Test Plan:

a. Engineer approval of Source Test Plan required prior to testing.

3. Witnessed in person:

4. As specified in the Technical Section.

5. Contractor is responsible for trip costs associated with Owner's and Engineer's representatives:

1) Transportation:

a) Commercial airline costs to and from Tampa International Airport, including related fees.

b) Rental car to and from arrival airport, hotel, and test site, including related fees.

2) Hotel/Meals:

a) Hotel with an American Automobile Association 3 Diamond rating or higher equivalent for single occupancy room per person per day.

b) Meal allowance based on state government per diem guidelines per test site location.

b. When factory is located outside of the United States, Contractor is responsible for costs associated with additional security of Owner's and Engineer's representatives, including armed escorts, as determined appropriate by the Owner and/or Engineer.

6. Virtual witness testing:

a. As specified in the Technical Sections.

7. Contractor is responsible for costs associated with virtual witness:

a. Provide the following:

1) An agenda detailing start time of each major phase in the procedure defined in the approved Test Plan.

2) A dedicated operator (separate from the test technician) to operate the camera, provide commentary throughout test, and inspect devices at the request of the attendees.

b. Online meeting platform: Microsoft Teams.

c. Share video through a high-definition camera.

d. Establish methods to communicate, convey, and record information clearly even in environments with loud background noise:

1) Electronic feed for screen sharing of the control panel, HMI, or other screens used throughout testing.

2) Provide recording of virtual sharing within 1 day after testing.

e. Test run of virtual sharing a minimum of 1 week prior to the test:

1) Use current record documents in PDF format.

2) Provide recording of virtual sharing within 1 day after the test run.

3) Engineer approval of test run virtual sharing is required before Source Testing.

8. If the Source Test is not ready on the scheduled date or if the Source Test fails:

a. Contractor is responsible for associated costs:

1) First test costs that are non-refundable, if applicable.

2) Repeat test costs:

a) Trip costs, if applicable.

3) Virtual witness costs, if applicable.

9. Source Testing is complete after successful testing, submittal of test report, and Manufacturer's Certificate of Source Testing.

10. Engineer approval of Source Testing Report is required.

C. Installation Verification:

1. Overview:

   a. Verifying the installation of equipment to be in accordance with Manufacturer's Instructions.

2. Prerequisite:

   a. Engineer approval of Source Testing Report.

3. Perform checks:

   a. Structural anchorage check.

   b. Electrical energization check:

      1) As specified in the flowchart shown in Attachment A.

   c. Health and safety check.

4. Submit Manufacturer's Certificate of Installation Verification.

5. Engineer approval of Manufacturer's Certificate of Installation Verification is required.

D. Functional Testing:

1. Overview:

   a. Testing the function of a system or subsystem.

2. Prerequisites:

   a. Engineer approval of Manufacturer's Certificate of Installation Verification.

   b. Engineer approval of Functional Test Plan required prior to testing.

   c. Draft Operations and Maintenance Manual as specified in Section 01782 - Operations and Maintenance Manual.

   d. Completed pipe, valve, and gate labeling of system or subsystem:

      1) As specified in Section 15010 Valve Installation, 15060 Ductile Iron Pipe 42 Inches and Smaller and other applicable specifications prior to the start of Functional Testing.

3. Witnessed.

4. Discipline checks:

   a. Verify support systems function properly, such as seal water, pipes, valves, etc.

   b. As specified in the individual Technical Sections.

5. Consecutive Day Test:

   a. Operate the Work as specified in Attachment G - Functional Testing Requirements and as specified in the individual Technical Sections:

      1) Successful completion of subsystem testing required prior to system testing.

b. Failure response time:

1) Be equipped and ready to provide emergency repairs, adjustments, and corrections to comply with the "Significant Interruption Duration" requirements as specified in Attachment G - Functional Testing Requirements.

c. Duration:

1) As specified in Attachment G - Functional Testing Requirements.

2) Restart the consecutive day test when the system performance failures exceed the "Significant Interruption Duration" time period specified in Attachment G - Functional Testing Requirements:

a) Individual equipment/system failures that are corrected within the "Significant Interruption Duration" time specified in Attachment G - Functional Testing Requirements shall not require the consecutive day test to be restarted unless the failure recurs.

b) Engineer has the authority to reject the consecutive day test if individual equipment/system failures are repetitive.

6. Instrumentation and controls tests:

a. Loop Validation Tests.

b. Complete End-to-End Testing (CEET):

1) Signal are tested from the field device through the PLC program, the network, and all the way to the operator's HMI graphic screens.

7. Restore to condition prior to testing:

a. Dewater and clean sumps.

8. Submit Manufacturer's Certificate of Functional Compliance.

9. Engineer approval of Manufacturer's Certificate of Functional Compliance is required.

E. Documentation:

1. Provide records generated during Commissioning Phase of Project, including, but not limited to:

a. Training documentation.

b. Manufacturer's Certificate of Source Testing.

c. Manufacturer's Certificate of Installation Verification.

d. Manufacturer's Certificate of Functionality Compliance.

e. Daily logs of equipment/system testing identifying tests conducted and outcome.

f. Test forms and documentation.

g. Functional Testing results.

h. Logs of time spent by manufacturer's representatives performing services on the job site.

i. Equipment lubrication records.

j. Electrical phase, voltage, and amperage measurements.

k. Insulation resistance measurements.

l. Bearing temperature measurements.

m. Data sheets of control loop testing, including testing and calibration of instrumentation devices and setpoints.

n. Provide: 1 electronic copy in format specified by Owner and 3 hard copies organized in notebooks.

o. Store the data within 24 hours of the test or document creation in the project Masterworks system.

p. Due date: Within 14 calendar days of Substantial Completion.

2. Engineer approval of documentation is required.

F. Owner Training:

1. Train Owner's staff on the operation and maintenance of the equipment/system.

2. Train on each topic of the approved Operation and Maintenance Manual:

a. Include classroom instruction and field demonstration with all necessary tools and test equipment.

3. Training tailored to the skills and job classifications of the staff attending the classes (e.g., plant superintendent, treatment plant operator, maintenance technician, electrician, etc.).

4. Training outcomes:

a. Owner's staff can safely operate, maintain, and repair the equipment/systems provided as recommended by the manufacturer.

5. Training plan:

a. CC shall meet with Engineer and Owner's designated training coordinator to develop list of personnel to be trained and to establish expected training outcomes and objectives at least 60 calendar days prior to commissioning of equipment/system.

b. Coordinate and arrange for manufacturer's representatives to provide both classroom-based learning and field (hands-on) training, based on training module content and stated learning objectives.

c. Conduct classroom training at location designated by Owner.

d. Scope and sequence:

1) Plan and schedule training in the correct sequence to provide prerequisite knowledge and skills to trainees:

a) Describe recommended procedures to check/test equipment/system following a corrective maintenance repair.

2) If multiple classes are needed to meet the training objectives, they shall be included in the training plan.

6. Owner Training Schedule:

a. Schedule Owner's staff training within the constraints of their workloads:

1) Those who will participate in this training have existing full-time work assignments, and training is an additional assigned work task, therefore, scheduling is imperative.

2) Owner staff work schedules regularly shift, as treatment facilities are typically operated on an around-the-clock basis.

3) Maximum training hours per week: 16.

4) Days available for training:

a) Monday to Thursday.

b. Training scheduling coordination:

1) CC is responsible for the following:

a) Coordinate schedule for training periods with the Owner's personnel and manufacturer's representatives (instructors).

2) Complete Owner Training no sooner than 15 calendar days prior to Functional Testing of each system.

c. Class logistics:

1) Delivery time minimum: 2 hours.

2) Delivery time maximum: 4 hours.

3) Class agenda:

a) Refreshment break: One 10-minute break.

b) Meal break: One 45-minute break, unless otherwise specified.

c) Schedule refreshment breaks and meal breaks to meet the class needs and Owner work rules.

4) Schedule specific sessions:

a) Minimum of 30 days in advance to allow Owner staffing arrangements to take place.

b) At the times requested by the Owner, within the period 8 a.m. to 5 p.m. Monday through Friday:

(1) Times scheduled will be at Owner's discretion.

c) Owner approval and confirmation required for session schedules.

d) Provide minimum of 2 sessions for each class unless otherwise noted:

(1) The purpose of having multiple sessions on each class is to accommodate the attendance of as many Owner personnel working different shifts as possible.

e) A maximum of 1 session per day for each class.

d. Number of students:

1) Estimated class size maximum: 10 staff.

2) Engineer will confirm the headcount 1 week prior to the class so that the instructor can provide the correct number of training aids for students.

7. Submittals:

a. Submit Training Plan Schedule 60 calendar days before the first scheduled training session, including, but not limited to, lesson plans, participant materials, instructor's resumes, and training delivery schedules.

b. Submit training documentation, including the following:

1) Training plan:

a) Training modules.

b) Scope and sequence statement.

c) Contact information for manufacturer's instructors. including name, phone, and e-mail address.

d) Instructor qualifications.

2) Training program schedule:

a) Format: Bar chart:

(1) Include in the Project Progress Schedule.

b) Contents:

(1) Training modules and classes.

8. Lesson plans:

a. Divide training into discrete modules appropriate for the equipment and trades.

b. State performance-based learning objectives in terms of what the trainees will be able to do at the end of the lesson.

c. Define student conditions of performance and criteria for evaluating instructional success.

d. Minimum requirements:

1) Hands-on demonstrations planned for the instructions.

2) Cross-reference training aids.

3) Planned training strategies such as whiteboard work, instructor questions, and discussion points or other planned classroom or field strategies.

4) Attach handouts cross-referenced by section or topic in the lesson plan.

5) Indicate duration of outlined training segments.

e. Provide instruction lesson plans for each trade:

1) Detailed component description:

a) Identify each component function and describe in detail.

b) Identify equipment's mechanical, electrical, and electronic components and features.

c) Where applicable, group relative components into subsystems.

d) Identify and describe in detail equipment safety features, permissive and controls interlocks.

2) Equipment operation:

a) Describe equipment's operating (process) function and system theory.

b) Describe equipment's fundamental operating principles and dynamics.

c) Identify support equipment associated with the operation of subject equipment.

d) Detail the relationship of each piece of equipment or component to the subsystems, systems, and process.

e) Cite hazards associated with the operations, exposure to chemicals associated with the component, or the waste stream handled by the component.

f) Specify appropriate safety precautions, equipment, and procedures to eliminate, reduce, or overcome hazards.

3) Define Preventative Maintenance (PM) inspection procedures required on equipment in operation, spot potential trouble symptoms (anticipate breakdowns), and forecast maintenance requirements (predictive maintenance):

a) Review preventive maintenance frequency and task analysis table.

4) Define equipment Corrective Maintenance (CM) troubleshooting:

a) Describe recommended equipment preparation requirements as they relate to specific craft problems.

b) Identify and describe the use of any special tools required for maintenance of the equipment as they relate to specific craft problems.

c) Provide component specific troubleshooting checklists as they relate to specific craft problems.

d) Describe component removal/installation and disassembly/assembly procedures for specific craft repairs.

e) Perform at least 2 hands-on demonstrations of common corrective maintenance repairs.

5) Describe recommended measuring instruments and procedures, and provide instruction on interpreting alignment measurements, as appropriate.

9. Training instruction format:

a. Training for operations and maintenance personnel shall be provided as one entity.

b. Training for operations personnel shall be provided separately from the maintenance personnel:

1) Training for maintenance personnel shall be further subdivided into the following 4 trade groups:

a) Mechanical maintenance.

b) Electrical maintenance.

c) Instrumentation and controls maintenance.

d) Process Controls Network (PCN) maintenance.

c. Instructors shall apply adult education best practices, emphasizing learner participation and activity.

d. Lecturing should be less than 30 percent of class time.

e. Training delivery may include problem solving, question/answer, hands-on instruction, practice, evaluation/feedback tools, and lecture to support training objectives.

f. Conduct hands-on instruction according to the following descriptions:

1) Present hands-on demonstrations of at least the following tasks:

a) Proper start-up, shutdown, and normal and alternative operating strategies.

b) Common corrective maintenance repairs for each group.

c) Recommended procedures to check/test equipment/system following a corrective maintenance repair.

d) Preventative maintenance points.

e) Calibration, if applicable.

2) Use tools and equipment provided by manufacturer to conduct the demonstrations:

a) Submit requests for supplemental assistance and facilities with the Contractor's proposed lesson plans.

3) Contractor remains responsible for equipment disassembly or assembly during hands-on training situations involving equipment disassembly or assembly by Owner's personnel.

g. Training aids:

1) Instructors shall provide needed audio-visual devices such equipment (televisions, video recorder/player, computer, projectors, screens, easels, etc.), models, charts, etc., for each class.

2) Instructor to confirm with Engineer in advance of each class that the classroom will be appropriate for the types of audiovisual equipment to be employed.

10. Training sessions:

a. Provide training sessions for equipment/system as specified in the individual equipment/system section.

b. Include the following information in the agenda:

1) Instructor name.

2) Listing of subjects to be discussed.

3) Time estimated for each subject.

4) Allocation of time for Owner staff to ask questions and discuss the subject matter.

5) List of documentation to be used or provided to support training.

c. Owner may request that particular subjects be emphasized, and the agenda be adjusted to accommodate these requests.

d. Digitally record audio and video of each training session:

1) Include classroom and field instruction with question and answering periods.

2) Engineer approval required for producer of video materials from one of the following options:

a) Qualified, professional video production company or individual.

3) Record in digital format and recording shall become property of the Owner with exclusive rights:

a) No video recording agreements will be entered into by the Owner.

4) Media:

a) Video quality shall be 720p HD or greater in MPG, AVCHD, AVI, or MP4 format.

b) Digital color video format.

c) Provide audio portion of the composite CD sufficiently free from electrical interference and background noise to provide complete intelligibility of oral report.

d) Identification: On each copy provide a label with the following information:

(1) Name of training.

(2) Date video was recorded.

e) Display continuous running time.

f) At start of each video recording, record training class name, date, and instructor's name.

g) Provide audio quality that is not degraded during the recording of the field sessions due to background noise, space, distance or other factors.

5) Contractor shall provide a written release from all claims to the recorded training material produced, if required.

e. Distribute copies of the agenda to each student at the beginning of each training class.

f. Trainees will keep training materials and documentation after the session.

g. Distribute Training Evaluation Form following each training session:

1) Training Evaluation Form is included in this Section.

2) Return completed Training Evaluation Forms to Owner's designated training coordinator immediately after session is completed.

3) Revise training sessions judged "Unsatisfactory" by a majority of attendees:

a) Conduct training sessions again until a satisfactory rating is achieved.

11. Engineer approval of Owner Training is required.

1.8 START-UP PHASE

A. Overview of Start-Up Phase:

1. General:

a. Confirm reliability requirements.

B. Start-Up Period:

1. Contractor responsibilities:

a. Support Owner to operate the Work.

2. Owner responsibilities:

a. Owner to operate the Work.

b. Owner-provided services, equipment, and/or materials to be as specified in Section 01010 - Summary of Work.

c. Furnish labor, power, tools, equipment, instruments, and services required for and incidental to completing commissioning activities in accordance with the approved Commissioning Plans.

3. Prerequisites:

a. Engineer approval of Testing and Training Phase.

4. Witnessed.

5. Duration: 10 consecutive days.

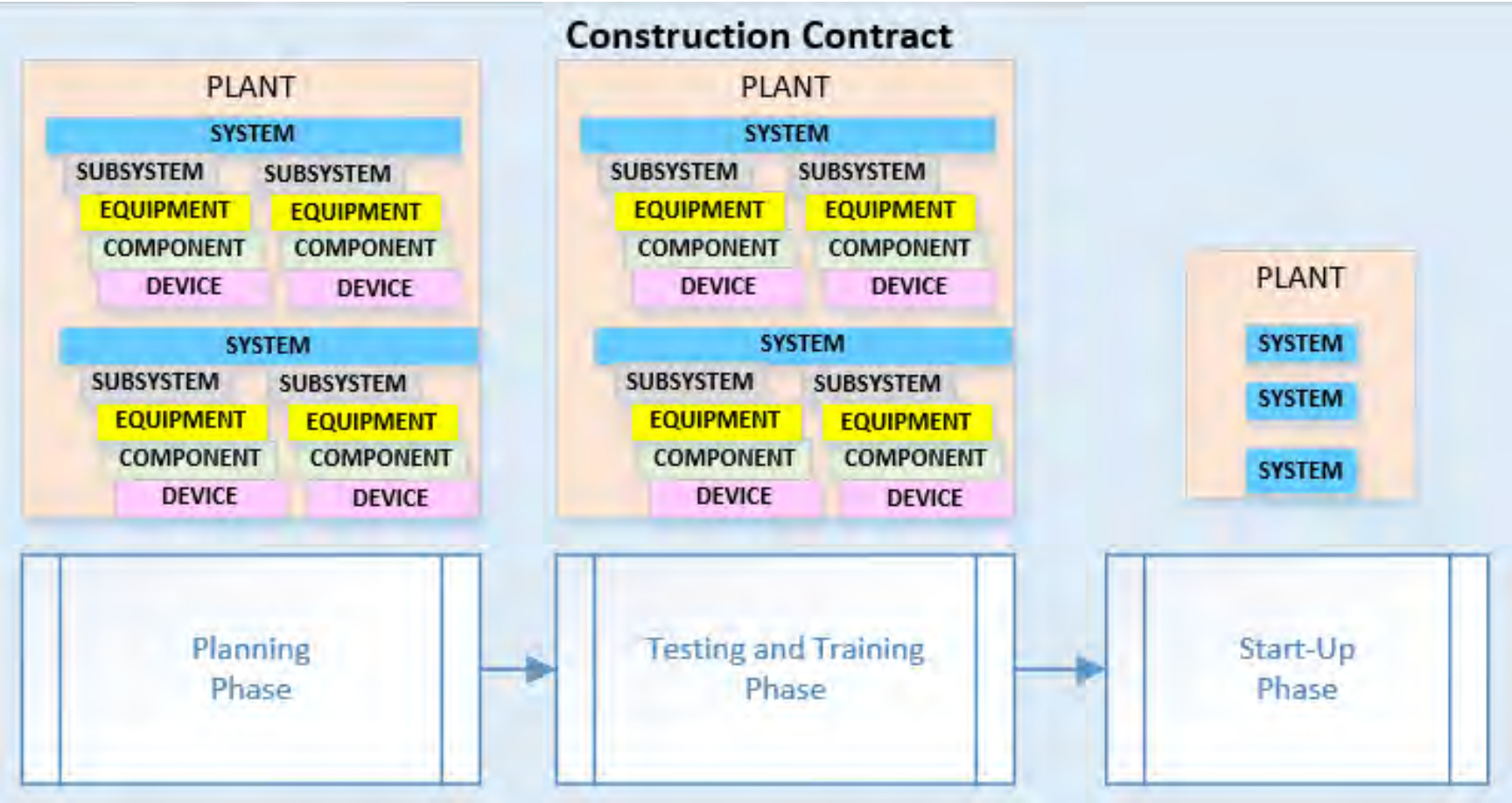
6. Engineer approval of Start-Up Period is required to achieve substantial completion.

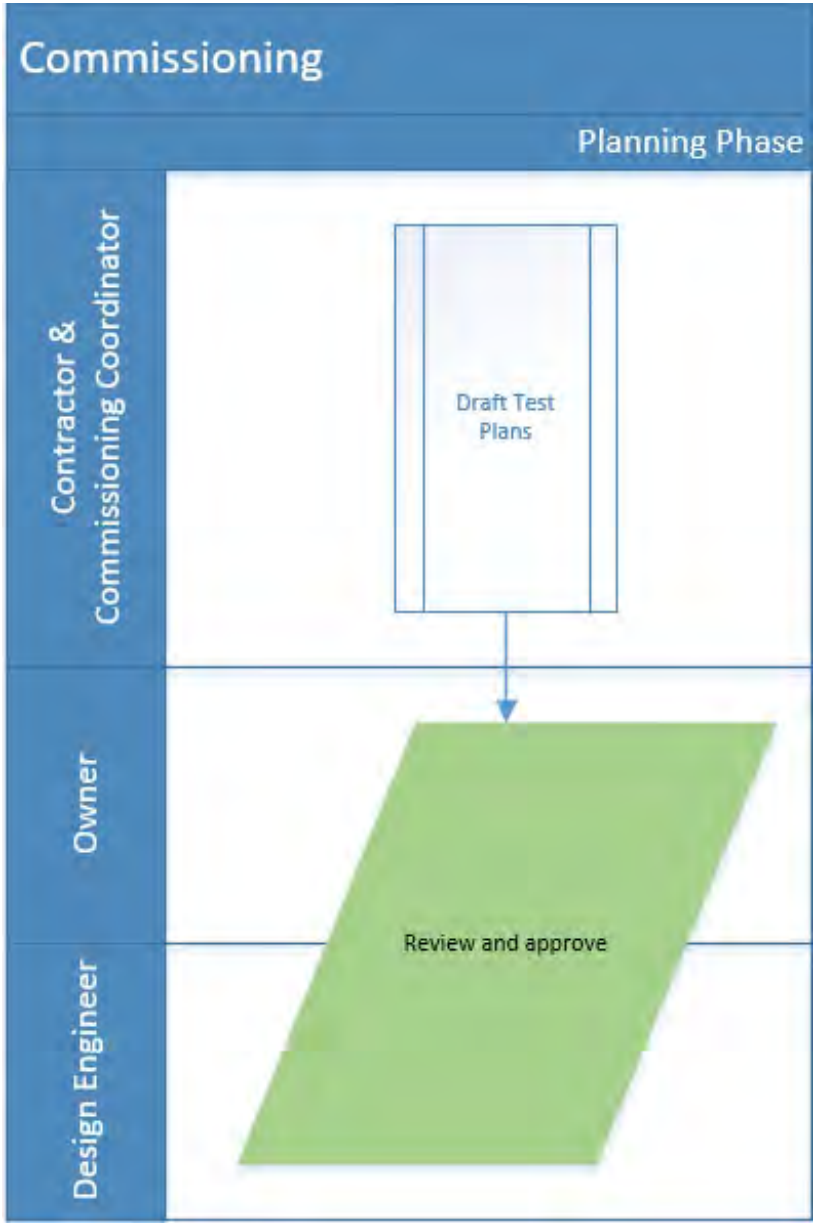
PART 2 - PRODUCTS (NOT USED)

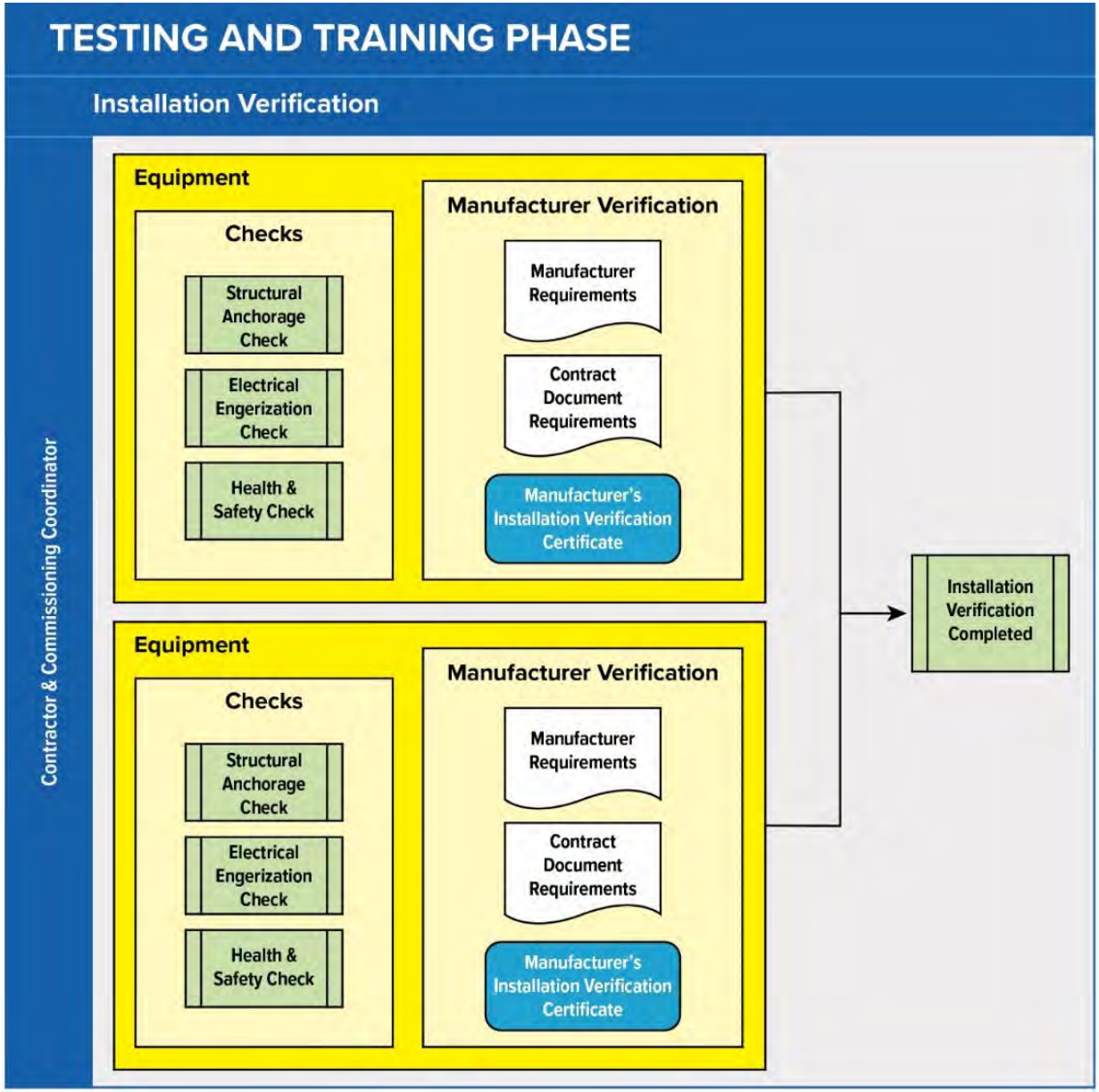
PART 3 - EXECUTION (NOT USED)

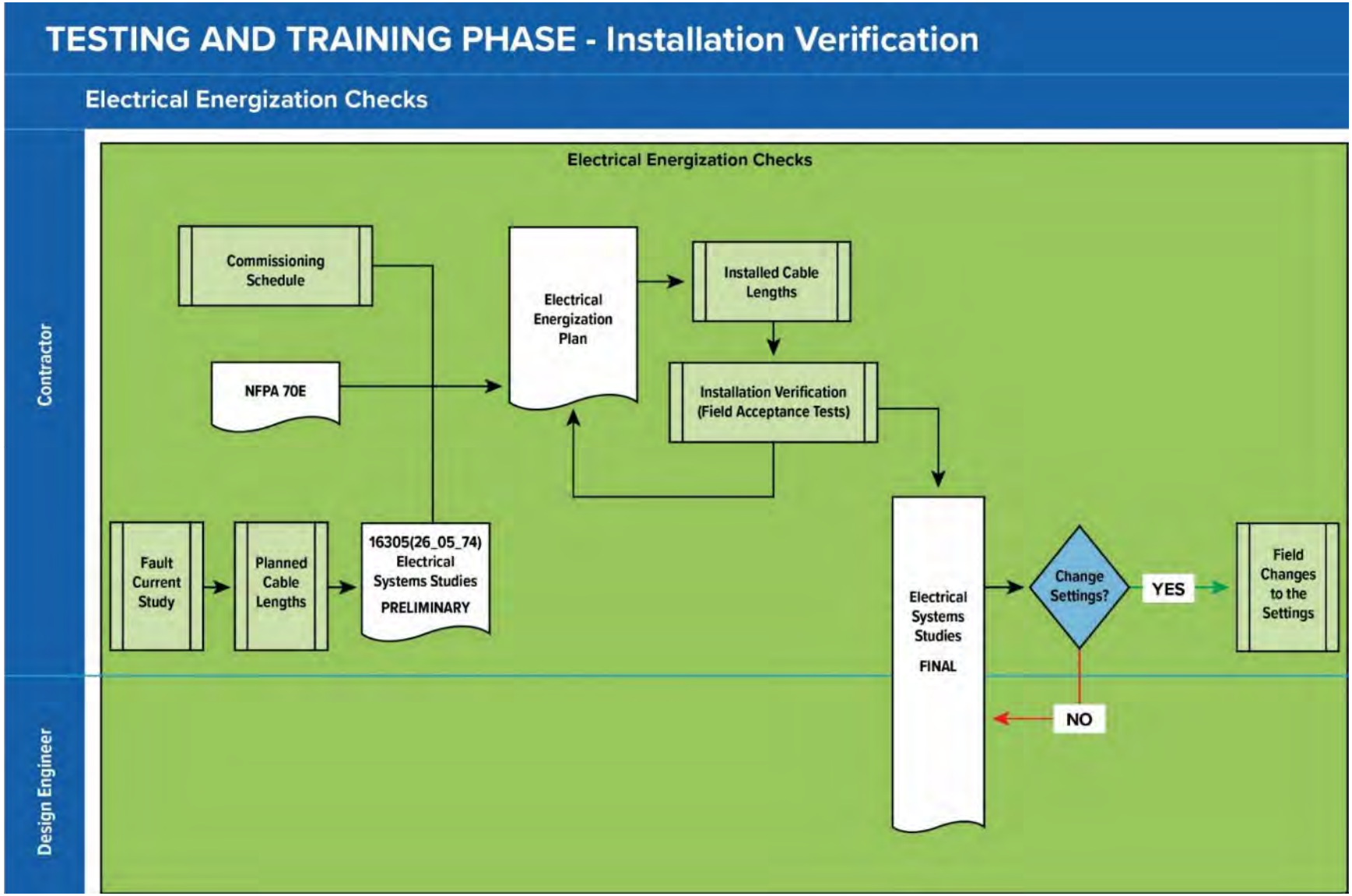
END OF SECTION

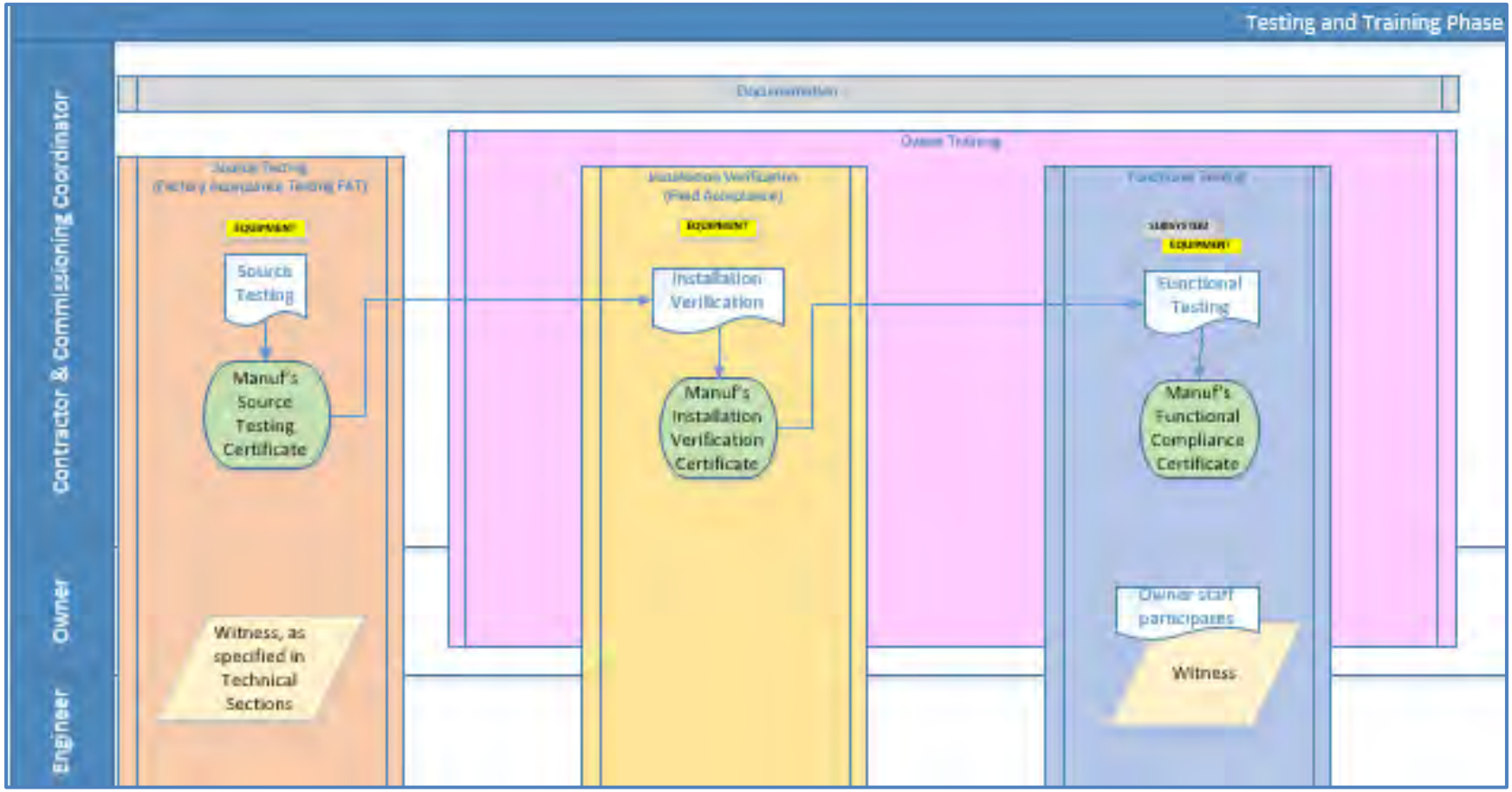
ATTACHMENT A - COMMISSIONING FLOWCHARTS

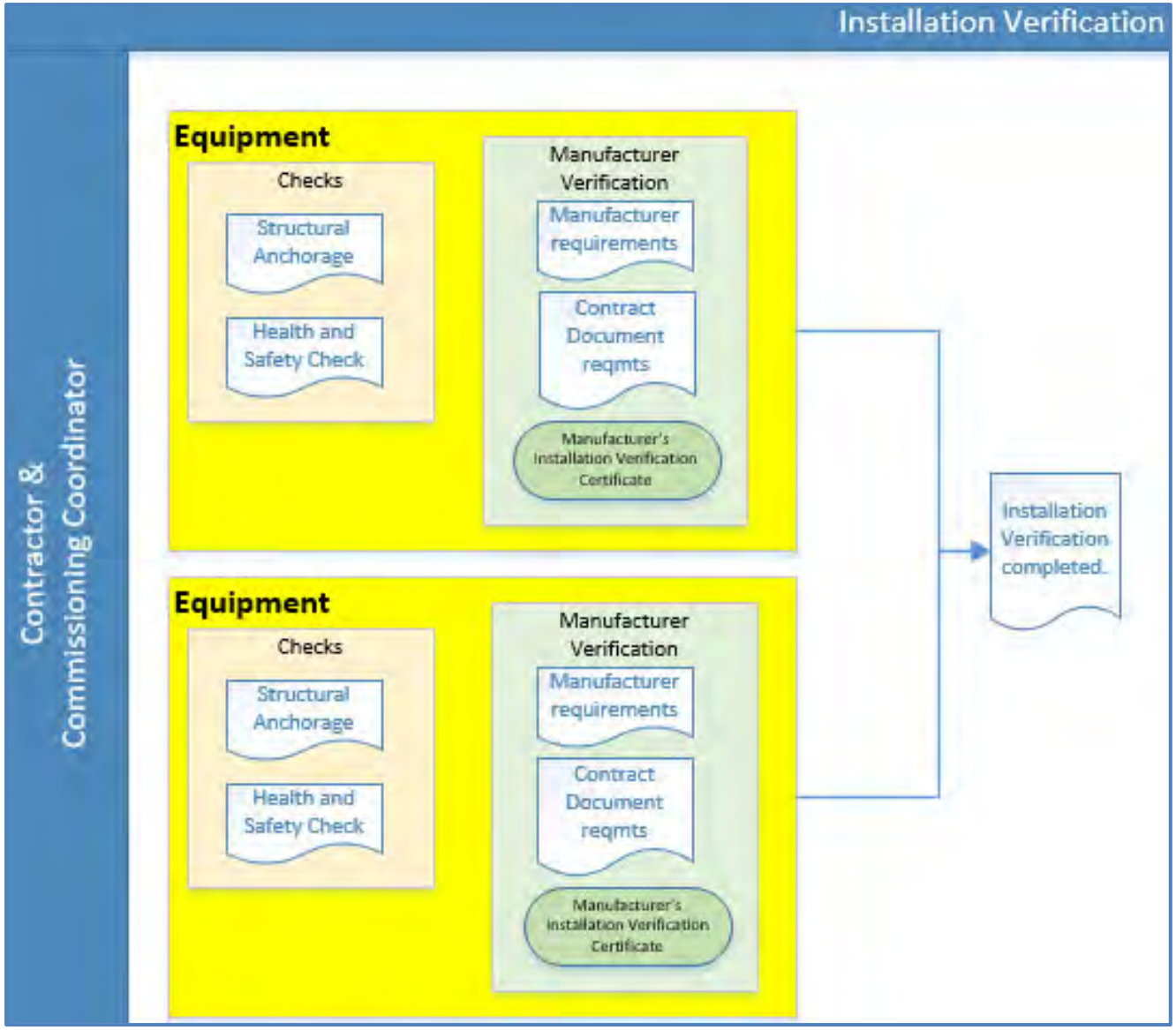

Construction Contract
PLANT
SYSTEM
SUBSYSTEM
SUBSYSTEM
EQUIPMENT
EQUIPMENT
COMPONENT
COMPONENT
DEVICE
DEVICE
SYSTEM
SUBSYSTEM
SUBSYSTEM
EQUIPMENT
EQUIPMENT
COMPONENT
COMPONENT
DEVICE
DEVICE
PLANT
SYSTEM
SUBSYSTEM
SUBSYSTEM
EQUIPMENT
EQUIPMENT
COMPONENT
COMPONENT
DEVICE
DEVICE
SYSTEM
SUBSYSTEM
SUBSYSTEM
EQUIPMENT
EQUIPMENT
COMPONENT
COMPONENT
DEVICE
DEVICE
PLANT
SYSTEM
SYSTEM
SYSTEM
Planning Phase
Testing and Training Phase
Start-Up Phase

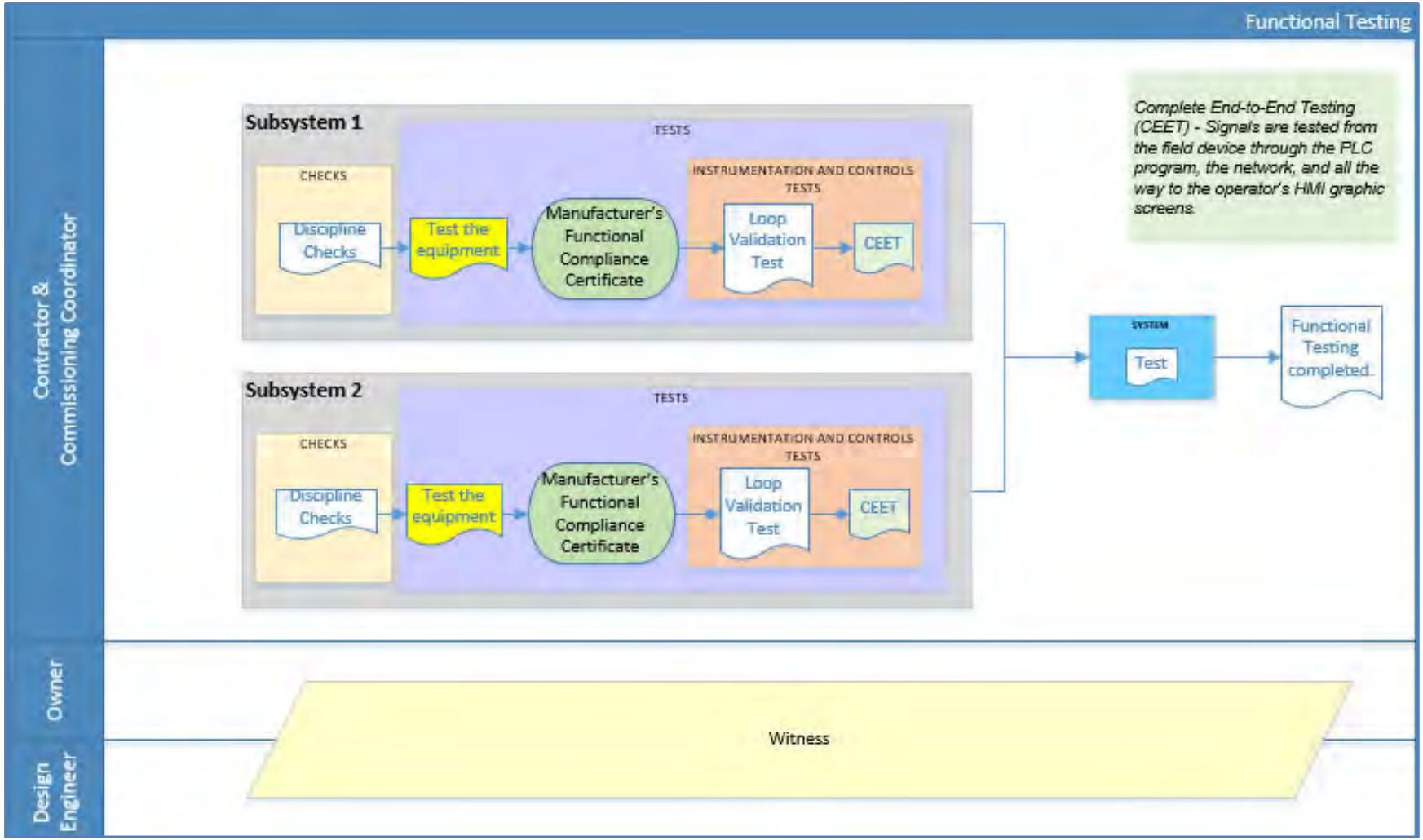

Commissioning
Planning Phase
Contractor & Commissioning Coordinator
Draft Test Plans
Owner
Review and approve
Design Engineer

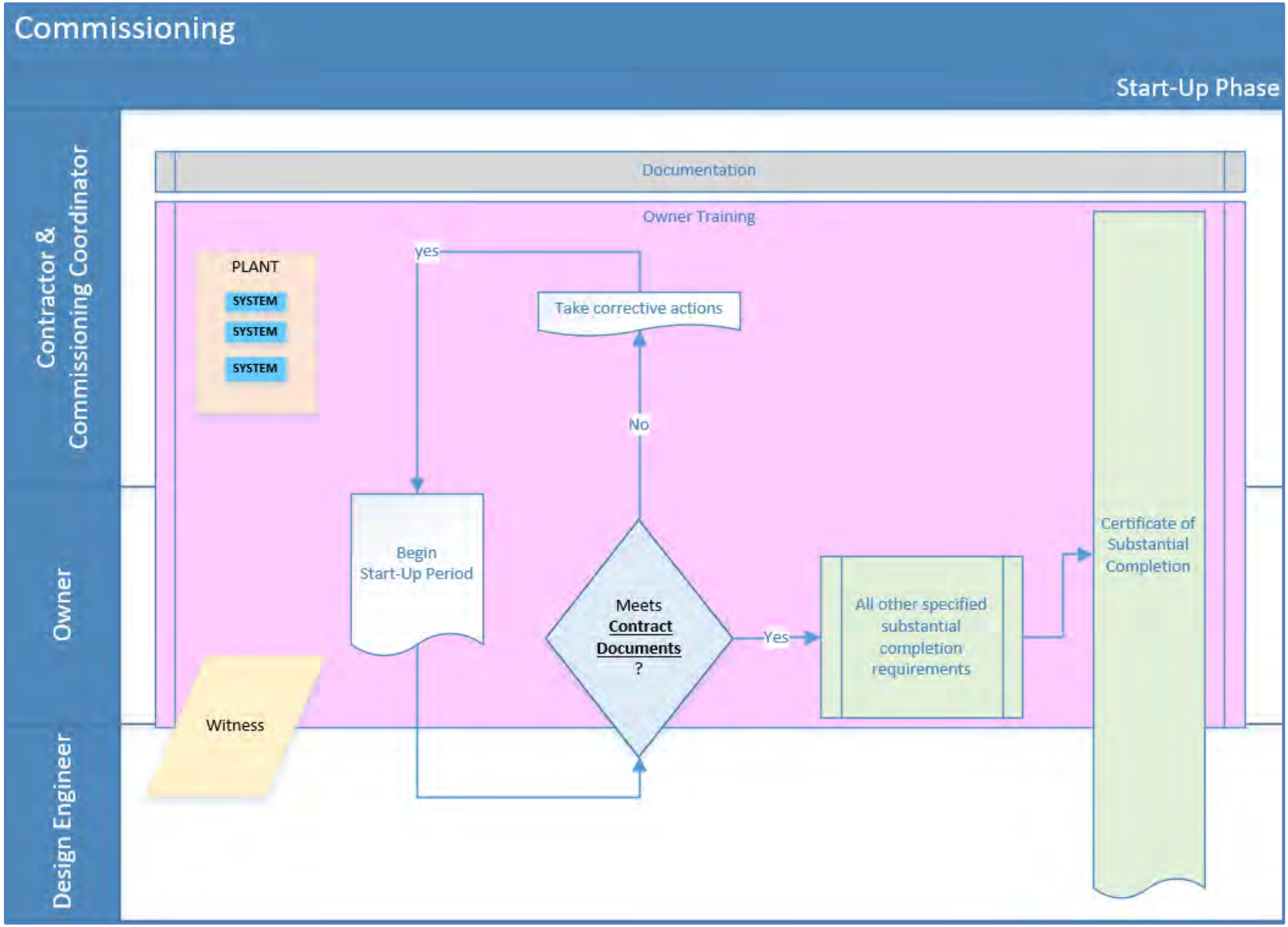

TESTING AND TRAINING PHASE
Installation Verification
Contractor & Commissioning Coordinator
Equipment
Checks
Structural Anchorage Check
Electrical Engerization Check
Health & Safety Check
Manufacturer Verification
Manufacturer Requirements
Contract Document Requirements
Manufacturer's Installation Verification Certificate
Equipment
Checks
Structural Anchorage Check
Electrical Engerization Check
Health & Safety Check
Manufacturer Verification
Manufacturer Requirements
Contract Document Requirements
Manufacturer's Installation Verification Certificate
Installation Verification Completed


TESTING AND TRAINING PHASE - Installation Verification
Electrical Energization Checks
Contractor
Design Engineer
Electrical Energization Checks
Commissioning Schedule
NFPA 70E
Electrical Energization Plan
Installed Cable Lengths
Installation Verification (Field Acceptance Tests)
Fault Current Study
Planned Cable Lengths
16305(26_05_74) Electrical Systems Studies PRELIMINARY
Electrical Systems Studies FINAL
Change Settings?
YES
NO
Field Changes to the Settings


Testing and Training Phase
Contractor & Commissioning Coordinator
Owner
Engineer
Documentation
Source Testing
(Factory Acceptance Testing FAT)
Source Testing
Manuf's Source Testing Certificate
Witness, as specified in Technical Sections
Owner Training
Installation Verification
(Field Acceptance)
Installation Verification
Manuf's Installation Verification Certificate
Functional Testing
Functional Testing
Manuf's Functional Compliance Certificate
Owner staff participates
Witness


Installation Verification
Contractor & Commissioning Coordinator
Equipment
Checks
Structural Anchorage
Health and Safety Check
Manufacturer Verification
Manufacturer requirements
Contract Document reqmts
Manufacturer's Installation Verification Certificate
Equipment
Checks
Structural Anchorage
Health and Safety Check
Manufacturer Verification
Manufacturer requirements
Contract Document reqmts
Manufacturer's Installation Verification Certificate
Installation Verification completed.


Functional Testing
Contractor & Commissioning Coordinator
Owner
Design Engineer
Subsystem 1
TESTS
CHECKS
Discipline Checks
Test the equipment
Manufacturer's Functional Compliance Certificate
INSTRUMENTATION AND CONTROLS TESTS
Loop Validation Test
CEET
Subsystem 2
TESTS
CHECKS
Discipline Checks
Test the equipment
Manufacturer's Functional Compliance Certificate
INSTRUMENTATION AND CONTROLS TESTS
Loop Validation Test
CEET
Complete End-to-End Testing (CEET) - Signals are tested from the field device through the PLC program, the network, and all the way to the operator's HMI graphic screens.
SYSTEM
Test
Functional Testing completed.
Witness


Commissioning
Start-Up Phase
Contractor & Commissioning Coordinator
Owner
Design Engineer
Documentation
Owner Training
PLANT
SYSTEM
SYSTEM
SYSTEM
yes
Take corrective actions
No
Begin Start-Up Period
Meets Contract Documents ?
Yes
All other specified substantial completion requirements
Certificate of Substantial Completion
Witness

ATTACHMENT B - MANUFACTURER'S CERTIFICATE OF SOURCE TESTING

MANUFACTURER'S CERTIFICATE OF SOURCE TESTING

OWNER _____ EQPT/SYSTEM _____

PROJECT NAME _____ EQPT TAG NO. _____

PROJECT NO. _____ EQPT SERIAL NO. _____

SPECIFICATION NO. _____

SPECIFICATION TITLE _____

Comments: _____

_____

_____

_____

_____

I hereby certify Source Testing has been performed on the above-referenced equipment/system as defined in the Contract, and results conform to the Contract Document requirements. Testing data is attached.

Date of Execution: _____, 20 ____

Manufacturer: _____

Manufacturer's Authorized Representative Name *(print)*: _____

_____
(Authorized Signature)

If applicable, Witness Name *(print)*: _____

_____
(Witness Signature)

ATTACHMENT C - MANUFACTURER'S CERTIFICATE OF INSTALLATION VERIFICATION

MANUFACTURER'S CERTIFICATE OF INSTALLATION VERIFICATION

OWNER _____ EQPT/SYSTEM _____

PROJECT NAME _____ EQPT TAG NO. _____

PROJECT NO. _____ EQPT SERIAL NO. _____

SPECIFICATION NO. _____

SPECIFICATION TITLE _____

I hereby certify the installation of the above-referenced equipment/system as defined in the Contract Documents.

NOTES:

1. Attach written certification report prepared by and signed by the electrical and/or instrumentation subcontractor.

Comments: _____

_____

I, the undersigned manufacturer's representative, hereby certify that I am (i) a duly authorized representative of the manufacturer, (ii) empowered by the manufacturer to inspect, approve, and operate this equipment/system, and (iii) authorized to make recommendations required to ensure that the equipment/system furnished by the manufacturer is complete and operational, except as may be otherwise indicated herein. I further certify that all information contained herein is true and accurate.

Date: _____

Manufacturer: _____

Manufacturer's Authorized Representative Name *(print)*: _____

By Manufacturer's Authorized Representative: _____

(Authorized Signature)

ATTACHMENT D - MANUFACTURER'S CERTIFICATE OF FUNCTIONAL COMPLIANCE

MANUFACTURER'S CERTIFICATE OF FUNCTIONAL COMPLIANCE

OWNER _____ EQPT/SYSTEM _____

PROJECT NAME _____ EQPT TAG NO. _____

PROJECT NO. _____ EQPT SERIAL NO. _____

SPECIFICATION NO. _____

SPECIFICATION TITLE _____

I hereby certify the Functional Testing of the above-referenced equipment/system as defined in the Contract Documents.

NOTES:

1. Attach test results with collected data and test report.
2. Attach written certification report prepared by and signed by the electrical and/or instrumentation subcontractor.

Comments: _____

_____

I, the undersigned manufacturer's representative, hereby certify that I am (i) a duly authorized representative of the manufacturer, (ii) empowered by the manufacturer to inspect, approve, and operate this equipment/system, and (iii) authorized to make recommendations required to ensure that the equipment/system furnished by the manufacturer is complete and operational, except as may be otherwise indicated herein. I further certify that all information contained herein is true and accurate.

Date: _____

Manufacturer: _____

Manufacturer's Authorized Representative Name *(print)*: _____

By Manufacturer's Authorized Representative: _____
(Authorized Signature)

WITNESSES:

By Owner's Authorized Representative: _____

(Authorized Signature)

By Engineer's Authorized Representative: _____

(Authorized Signature)

ATTACHMENT E - TRAINING EVALUATION FORM

TRAINING EVALUATION FORM

EQUIPMENT/SYSTEM ITEM: _____

VENDOR/MANUFACTURER: _____

DATE: _____ NAME OF REPRESENTATIVE: _____

1.	Was representative prepared?	Acceptable	Unacceptable	or	N/A
2.	Was an overview description presented?	Acceptable	Unacceptable	or	N/A
3.	Were specific details presented for system components?	Acceptable	Unacceptable	or	N/A
4.	Were alarm and shutdown conditions clearly presented?	Acceptable	Unacceptable	or	N/A
5.	Were step-by-step procedures for starting, stopping, and troubleshooting presented?	Acceptable	Unacceptable	or	N/A
6.	Were routine/preventative maintenance items clearly identified?	Acceptable	Unacceptable	or	N/A
7.	Was the lubrication schedule (if any) discussed?	Acceptable	Unacceptable	or	N/A
8.	Was the representative able to answer all questions?	Acceptable	Unacceptable	or	N/A
9.	Did the representative agree to research and answer unanswered questions?	Acceptable	Unacceptable	or	N/A
10.	Comments: _____				
	_____				
	_____				
	_____				
11.	Overall Rating	Satisfactory	Unsatisfactory		

Note:

Sessions judged "Unsatisfactory" by a majority of attendees shall be revised and conducted again until a satisfactory rating is achieved.

ATTACHMENT F - COMMISSIONING ROLES AND RESPONSIBILITIES MATRIX

COMMISSIONING ROLES AND RESPONSIBILITIES MATRIX

NO.	TASK	OWNER	CONTRACTOR	ENGINEER
Testing and Training Phase				
Source Testing				
	Source Testing	Witnessed as specified in the Technical Sections.	Lead	Witnessed as specified in the Technical Sections. Review
	Manufacturer's Certificate of Source Testing	No Action	Lead	Review
Installation Verification				
	Structural Anchorage Check	Witness	Lead	Review
	Health and Safety Check	Witness	Lead	Review
	Manufacturer Requirements Verification	No Action	Lead	Review
	Contract Documents Verification	No Action	Lead	Review
	Manufacturer's Certificate of Installation Verification	No Action	Lead	Review
Functional Testing				
	Checks	Witness	Lead	Witness, Review
	Tests	Witness	Lead	Witness, Review
	Manufacturer's Certificate of Functional Compliance	No Action	Lead	Witness, Review
System Testing				
	System Testing	Witness	Lead	Witness, Review
Start-Up Phase				
	Start-Up	Lead	Support	Witness, Review

Legend:

Lead: Primarily responsible for organization, coordination, and execution of task work product or result.
Support: Assist the lead with organization, coordination, and execution of task work product or result.
Witness: Observe and document completion of task work product or result.
No Action: Limited or no involvement.
Review: Approve for compliance with Contract Documents or reject.

ATTACHMENT G - FUNCTIONAL TESTING REQUIREMENTS

FUNCTIONAL TESTING REQUIREMENTS

System	Subsystem	Consecutive Day Test Duration (Days)	Significant Interruption Duration (Hours)	Test Liquid	System Operated By
Entire High Service Pump Station		4	2	Finished Water	Owner
	Pumps				
	Variable Frequency Drive(s)				
	Valves				
	Motor(s)				

A. Schedule delays:

1. Changes in the dates for Source Testing less than 30 days of the date provided in the latest approved Commissioning Schedule are considered delays.
2. Contractor is responsible for associated costs resulting from delays:
    a. In person and/or virtual witnessing.
    b. Travel costs and witness labor costs.
        1) Witness labor costs at $250 per hour.

B. Repeat test costs:

1. Contractor is responsible for associated costs for repeat testing:
    a. In person and/or virtual witnessing.
    b. Travel costs and witness labor costs.
        1) Witness labor costs at $250 per hour.

END OF SECTION

SECTION 01821

INSTRUCTION OF OPERATIONS AND MAINTENANCE PERSONNEL

PART 1 - GENERAL

1.1 SCOPE

A. MANUFACTURER shall provide the services of factory-trained maintenance and operations specialists to instruct TAMPA BAY WATER'S operations and maintenance personnel in the recommended operation, troubleshooting, repair, and preventive maintenance procedures for equipment specified in the individual Sections.

B. The resumes of proposed instructors shall be submitted electronically within Masterworks to the ENGINEER for approval.

C. MANUFACTURER shall coordinate these services at times acceptable to TAMPA BAY WATER, with start-up and initial operations in a manner acceptable to TAMPA BAY WATER and with the requirements of the specific equipment Sections. Training sessions may need to be repeated to accommodate TAMPA BAY WATER shift personnel.

D. Manufacturer shall provide two (2) combinations of classroom and field training. All training shall be conducted at the PROJECT site unless otherwise stated in the equipment Sections.

E. CONTRACTOR shall video record all training sessions and provide a copy to TAMPA BAY WATER.

F. CONTRACTOR shall provide an attendance sign-in sheet which is dated and specifies the training for the TAMPA BAY WATER personnel attending the training sessions. A copy shall be provided to TAMPA BAY WATER for their records.

G. Refer to individual equipment Sections for additional requirements for MANUFACTURER's and SUPPLIER's field and test data.

H. Instruction of TAMPA BAY WATER'S personnel shall commence only after the equipment has been started and acceptance tests made and accepted.

1.2 SUBMITTALS

A. Schedule of all proposed training including anticipated duration of each training session.

B. Submit for approval the following for each training session:

1. Proposed Lesson Plan for each scheduled instruction 60 days prior to commencement of training.

2. Credentials of manufacturer's designated operations and maintenance instructor. Credentials shall include a brief resume and specific details of the instructor's experience pertaining to operation of, maintenance of, and training for the equipment specified.

1.3 INSTRUCTION LESSON PLAN

A. Manufacturer's proposed Lesson Plan shall detail specific instruction topics. Training aids to be utilized in the instruction shall be referenced and attached where applicable to the proposed Lesson Plan. "Hands-On" demonstrations planned for the instruction shall be described in the Lesson Plan. Indicate the estimated duration of each segment of the Lesson Plan.

B. Instruction Lesson Plan shall include the following as a minimum:

1. Equipment Operation:

a. Describe equipment's operating (process) function including both local and remote operation.

b. Describe equipment's fundamental operating principals and dynamics.

c. Identify equipment's mechanical, electrical and electronic components and features.

d. Identify all support equipment associated with the operation of subject equipment (e.g., motors).

e. Recommend standard operating procedures to cover start-up, routine monitoring and shutdown of the equipment including emergency shutdown.

2. Detailed Component Description:

a. Identify and describe in detail each component's function.

b. Where applicable, group related components into subsystems. Describe subsystem functions and their interaction with other subsystems.

c. Identify and describe in detail equipment safeties and control interlocks.

3. Equipment Preventive Maintenance (PM):

a. Describe in detail PM inspection procedures required to:

1) Perform an inspection of the equipment in operation.

2) Spot potential trouble symptoms and anticipate breakdowns.

3) Forecast maintenance requirements (predictive maintenance).

b. Define in detail the recommended PM intervals for each component.

c. Provide lubricant and replacement part recommendations and limitations.

d. Describe in detail appropriate cleaning practices and recommend intervals.

e. Identify, demonstrate, and describe the use of special tools required for maintenance of the equipment.

f. Describe in detail component removal/installation and disassembly/ assembly procedures.

g. Perform at least two "hand-on" demonstrations of preventive maintenance procedures.

h. Demonstrate and describe in detail recommended measuring instruments and procedures, and provide instruction on interpreting alignment measurements, as appropriate.

i. Define in detail recommended torquing, mounting, calibration and/or alignment procedures and settings, as appropriate.

j. Describe in detail recommended procedures to check/test equipment following a corrective repair.

4. Equipment Troubleshooting:

a. Define in detail recommended systematic troubleshooting procedures.

b. Provide explicitly detailed component specific troubleshooting checklists.

c. Demonstrate and describe in detail applicable equipment testing and diagnostic procedures to facilitate troubleshooting.

1.4 TRAINING AIDS

A. The manufacturer's instructor shall incorporate training aids as appropriate to assist in the instruction. As a minimum, the training aids shall include text and figure handouts. Other appropriate training aids are:

1. Audio-Visual Aids (e.g., films, slides, videos, overhead transparencies, posters, blueprints, diagrams, catalogue sheets).

2. Equipment cutaways and samples (e.g., spare parts and damaged equipment).

3. Tools (e.g., repair tools, customized tools, measuring and calibrating instruments).

B. The manufacturer's instructor shall utilize descriptive class handouts during the instruction. Photocopied class handouts shall be good quality reproductions. Class handouts should accompany the instruction with frequent reference made to them. Customized handouts developed especially for the instruction are encouraged. Handouts planned for the instruction shall be attached with the manufacturer's proposed Lesson Plan.

1.5 "HANDS-ON" DEMONSTRATIONS

A. The manufacturer's instructor shall present "hands-on" demonstrations of operations and maintenance of the equipment for each scheduled group. The proposed "hands-on" demonstrations should be described in the manufacturer's proposed Lesson Plan.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 02100

DEMOLITIONS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment and incidentals as shown, specified and required for demolitions, removal and disposal WORK.

2. Included, but not limited to, are demolition and removals of existing materials, equipment, or work necessary to install the WORK as shown and specified and to connect same with existing work in an approved manner.

3. Demolitions and removals, which may be specified under other Sections, shall conform to requirements of this Section.

4. CONTRACTOR shall pay for all disposal fees.

B. Related Sections:

1. Section 02220, Excavating, Backfilling, and Compacting.

1.2 SUBMITTALS

A. Schedule:

1. Submit proposed methods, equipment and operating sequences. Including, but not limited to, coordination for shut-off and start-up.

1.3 JOB CONDITIONS

A. Protection:

1. Perform all demolition and removal WORK to prevent damage or injury to structures, occupants thereof and adjacent features which might result from falling debris or other causes, and so as not to interfere with the use, and free and safe passage to and from adjacent structures.

2. Closing or obstructing of roadways, sidewalks, and passageways adjacent to the WORK by the placement or storage of materials will not be permitted, and all operations shall be conducted with a minimum interference to traffic on these ways.

3. Erect and maintain barriers, lights, sidewalk sheds and other necessary protective devices.

4. Repair damage to facilities to remain, or to any property belonging to the OWNER.

B. Scheduling:

1. Carry out operations so as to avoid interference with OWNER operations and work in the existing facilities.

C. Notification:

1. At least 48 hours prior to commencement of a demolition or removal, notify ENGINEER, in writing, of proposed schedule thereof. OWNER will inspect the existing equipment and mark for identification those items, which are to remain the property of the OWNER. Do not start removals without the permission of the ENGINEER.

D. Explosives:

1. Do not bring explosives on site nor use explosives without written consent of authorities having jurisdiction. Such written consent will not relieve CONTRACTOR of total responsibility for injury or damage caused by CONTRACTOR'S blasting operations.
2. Perform all blasting, if permitted, in compliance with applicable governing regulations.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL

A. All materials and equipment removed from existing work shall become the property of CONTRACTOR, except for those which the OWNER has identified and marked for their use. All materials and equipment marked by the OWNER to remain the property of the OWNER shall be carefully removed by CONTRACTOR so as not to be damaged, and shall be cleaned and stored on or adjacent to the Site in a protected location specified by the ENGINEER or loaded onto trucks provided by the OWNER.

B. CONTRACTOR shall dispose of all demolition materials, equipment, debris, and all other items not marked by the OWNER to remain, off the Site and in conformance with all existing applicable laws and regulations.

C. Surfaces of walls, floors, ceilings, or other areas which are exposed by any of the removals specified herein, and which will remain as architecturally finished surfaces shall be repaired and re-finished by CONTRACTOR with the same or matching materials as the existing adjacent surface or as may be otherwise approved by the ENGINEER.

D. Pollution Controls: Use water sprinkling, temporary enclosures, and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level. Comply with governing regulations pertaining to environmental protection.

1. Do not use water when it may create hazardous or objectionable conditions such as flooding and pollution.

2. Clean adjacent structures, facilities, and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to conditions existing prior to the start of the WORK.

3.2 STRUCTURAL REMOVALS

A. Remove structures to the lines and grades shown, unless otherwise directed by the ENGINEER. Where no limits are shown, the limits shall be 4-inches outside the item to be installed. The removal of masonry beyond these limits shall be at CONTRACTOR'S expense and these excess removals shall be reconstructed to the satisfaction of the ENGINEER, with no additional compensation to CONTRACTOR.

B. All concrete, brick, tile, concrete block, roofing materials, reinforcement, structural or miscellaneous metals, plaster, wire mesh and other items contained in or upon the structure shall be removed and taken from the Site, unless otherwise approved by the ENGINEER. Demolished items shall not be used in backfill adjacent to structures or in pipeline trenches.

C. After removal of parts or all of masonry walls, slabs and like work which tie into the WORK or existing work, the point of junction shall be neatly repaired so as to leave only finished edges and surface exposed.

D. The jambs, sills and heads of any windows, passageways, doors, or other openings cut into the WORK or existing work shall be dressed with masonry, concrete or metal to provide a smooth, finished appearance.

E. Where anchoring materials including bolts, nuts, hangers, welds and reinforcing steel, are required to attach the WORK to the existing work they shall be included under this Section, except where specified elsewhere.

3.3 MECHANICAL REMOVALS

A. Mechanical removals shall consist of dismantling and removing of existing piping, pumps, motors, equipment and other appurtenances as specified, shown, or required for the completion of the WORK. Mechanical removals shall include cutting, capping, and plugging as required.

B. When underground piping is to be altered or removed, the remaining piping shall be properly capped. Abandoned underground piping may be left in place, unless it interferes with the WORK or is shown or specified to be removed.

3.4 ELECTRICAL REMOVALS

A. Electrical removals shall consist of the removal of existing transformers, distribution switchboards, control panels, motors, conduits and wires, panelboards, and miscellaneous electrical equipment all as shown, specified, or required to perform the WORK.

B. All existing electrical equipment and fixtures to be removed shall be removed with such care as may be required to prevent unnecessary damage, to keep existing systems in operation and to keep the integrity of the grounding systems.

C. Motors shall be disconnected and removed where shown or specified. Motors not designated by the OWNER to be salvaged shall be removed from the Site. Motors or other electrical gear designated for reuse shall be stored in enclosed, climate controlled storage.

D. Conduits and wires shall be abandoned or removed where shown. All wires in abandoned conduits shall be removed, salvaged, and stored. The wire shall be removed back to the power source or control panel. Abandoned conduits concealed in floor or ceiling slabs, or in walls, shall be cut flush with the slab or wall at the point of entrance. The conduits shall be suitably plugged and the area repaired in a flush, smooth manner approved by the ENGINEER. Exposed conduits, junction boxes and other appurtenances and their supports shall be disassembled and removed from the Site. Repair all areas of the WORK to prevent rust spots on exposed surfaces.

E. Where shown or otherwise required, wiring in the underground duct system shall be removed. All such wiring shall be salvaged and stored as specified. CONTRACTOR shall verify the function of all wiring before disconnecting and removing it. Ducts that are not to be reused shall be plugged where they enter buildings and made watertight.

F. Where shown, direct-burial cable shall be removed. All such wiring shall be salvaged and stored, as specified. CONTRACTOR shall verify the function of all wiring before disconnecting and removing it. All openings in buildings for entrance of direct-burial cable shall be patched and made watertight.

G. Existing panelboards, where shown, shall be removed and disposed of off the Site. Where shown or specified, they shall be replaced with panelboards at the same or adjacent locations. All cutting and patching necessary for the removal and replacement of panelboards shall be performed.

H. Other miscellaneous electrical equipment shall be removed and disposed of off the Site, as required. Care shall be taken in removing all equipment so as to minimize damage to architectural and structural members. Any damage incurred shall be repaired.

3.5 ALTERATIONS AND CLOSURES

A. Alterations shall conform to the CONTRACT DOCUMENTS and the directions and approvals of the ENGINEER.

B. Where alterations require cutting or drilling into existing floors, walls, and roofs, the holes shall be repaired in a manner acceptable to the ENGINEER. CONTRACTOR shall repair such openings with the same or matching materials as the existing floor, wall, or roof or as otherwise approved by the ENGINEER. All repairs shall be smoothly finished, unless otherwise approved by the ENGINEER.

C. Openings in existing concrete slabs, ceilings, masonry walls, floors and partitions shall be closed and sealed as shown or otherwise directed by the ENGINEER. The WORK shall be keyed into the existing work in a manner acceptable to the ENGINEER. Reinforcing steel shall be welded to the existing reinforcing. Welding shall conform to AWS D12.1, Reinforcing Steel Welding Code. In general, use the same or matching materials as the existing adjacent surface. The finished closure shall be a smooth, tight, sealed, permanent closure acceptable to the ENGINEER.

3.6 CLEAN-UP

A. CONTRACTOR shall remove from the Site all debris resulting from the demolition operations as it accumulates. Upon completion of the WORK, all materials, equipment, waste, and debris of every sort shall be removed and premises shall be left, clean, neat and orderly.

END OF SECTION

SECTION 03000

CONCRETE

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The WORK included under this section consists of furnishing all materials, forms, transportation and equipment, and performing all necessary labor to do all the plain and reinforced concrete WORK shown on the DRAWINGS, or incidental to the proper execution of the WORK, or as herein specified.

B. Concrete shall be composed of cement, fine aggregate, coarse aggregate, and water, so proportioned and mixed as to produce a plastic workable mixture in accordance with all requirements under this section suitable to the specific conditions of placement.

1.2 SUBMITTALS

A. General:

1. All materials specified shall be certified by the producer or SUPPLIER (manufacturer) that the furnished material meets the specific requirements of the SPECIFICATIONS.
2. Data for concrete mixes and mix constituents supplied to the Work shall be coordinated through a single supplier.
3. A maximum of 2 mix designs will be reviewed by the Engineer for each class of concrete required.
4. Review of additional mix designs shall be at the expense of the Contractor.

B. Product Data:

1. Data for all products in the mix for each class of concrete shall be submitted concurrently with that mix design.
2. Where products conforming to NSF 61 are required, submit evidence of testing and listing under NSF 61 for use in direct contact with potable water. Testing and listing shall be by a nationally recognized agency acceptable to the Engineer.
3. Admixtures:
    a. For each admixture included in concrete mixes, submit manufacturer's product data demonstrating compliance with standards specified.
    b. If air entraining admixture requires a test method other than ASTM C173 to accurately determine air content, make special note of requirements in the Submittal.

4. Curing compound: Submit complete data on proposed compound.

C. Concrete mixes – Trial batches:

1. Compression strength test results.

a. Submit results of testing. Provide data for each cylinder tested.

b. Submit data indicating trial batch mix designator, slump, and specimen number for each test cylinder.

2. If there is any change in suppliers or in quality of concrete mix constituents, submit new test data.

D. Test reports:

1. Dated not more than 24 months prior to the date of Submittal.

2. Aggregate:

a. Submit certified copies of commercial laboratory tests proposed for use in concrete.

b. Sieve analyses:

1) During construction, submit sieve analyses of coarse, fine, and combined aggregates used any time there is a change in supplier or a significant change in the character and/or grading of materials, and when requested by the Engineer.

c. Aggregates - coarse:

1) Physical properties:

a) Sieve analysis.

b) Percentage of particles having flat and/or elongated characteristics.

c) Abrasion loss.

d) Soundness.

2) Deleterious substances:

a) Clay lumps and friable particles content.

b) Materials finer than No. 200 sieve (percentage).

c) Shale and chert content.

d) Coal and lignite content.

3) Alkali reactivity.

d. Aggregates - Fine:

1) Physical properties:

a) Sieve analysis and fineness modulus.

b) Soundness.

2) Deleterious substances:

a) Clay lumps and friable particles (percentage).

b) Materials finer than No. 200 sieve (percentage).

c) Coal and lignite (percentage).

d) Shale and chert.

(1) Organic impurities ("Color" as determined by ASTM C40).

3) Alkali reactivity.

e. Aggregates - Combined:

1) Test combined gradation for the following sieve sizes: 1.5 inches, 1 inch, 3/4 inch, 1/2 inch, 3/8 inch, No. 4, No. 8, No. 16, No. 30, No. 100, No. 200.

2) Bulk density in accordance with ASTM C29.

3) Void content in accordance with ASTM C29.

4) Submit at:

a) Initial mixture design Submittal.

b) Intervals of not more than 4 weeks.

c) Any time there is a change in character or grading of constituent materials.

d) When requested by the Engineer.

3. Cement:

a. Mill tests, including alkali content measured as equivalent alkalies, for each shipment of cement included in the Work.

1) During construction, submit mill certificates for cement being used at intervals of not more than 90 days, any time there is a change in supplier or a significant change in the character of the materials, and when requested by the Engineer.

4. Supplemental cementitious material:

a. Fly ash: Identify source and provide testing results to demonstrate compliance with requirements of ASTM C618 and this Section.

1) Include the Supplier's report certifying the total alkali content of the material, expressed as equivalent percentage of sodium oxide (Na2Oe).

E. Certificates:

1. Current NRMCA certification for all plants and trucks that will be used to supply concrete.

F. Source Quality Control Submittals:

1. Truck batch tickets for each load of concrete delivered to the Site, whether accepted or rejected.

2. Concrete supplier's quality control plan. Include the following elements, at a minimum:

a. Names and qualifications of key quality control personnel:
   1) Quality control manager.
   2) Testing and inspection personnel.

b. Names and qualifications of testing laboratories:
   3) Each laboratory shall hold current accreditation from the AASHTO Accreditation Program, or other accreditation program acceptable to the Engineer, for each test performed.

c. Example forms for: Inspection reports, certificates of compliance, and test results.

d. Quality control procedures: Method and frequency of performing each procedure, including inspections and materials testing. At a minimum, the plan shall include:
   4) Daily testing of aggregate gradation.
   5) Monthly testing of cement quality.
   6) Monthly testing of fly ash quality.

e. Procedures to control quality characteristics, including standard procedures to address properties outside the specified operating limits, and example reports to document non-conformances and corrective actions taken. Include procedure for notifying the Contractor and Engineer of non-conformances.

f. Procedures for verifying that:
   7) Materials are properly stored during concrete batching operations.
   8) Batch plants have the ability to maintain concrete consistency during periods of extreme heat and of low temperatures.
   9) Admixtures are dispensed in the correct dosages within the accuracy requirements specified.
   10) Delivery trucks have a valid NRMCA certification card.

g. Procedures for verifying that weighmaster certificate for each load of concrete shows:
   11) Cement and supplementary materials are from sources designated in the approved Submittals.
   12) Concrete as-batched complies with the constituent weights designated in the approved Submittals.

13) Corrections for aggregate moisture are being correctly applied.
14) Any mix water withheld from the batch.

h. Procedures for visually inspecting concrete during discharge.

G. Field Quality Control Submittals:

1. Contractor's notifications of readiness for concrete placement.

2. Contractor's reports of field quality control testing.

a. Include with each report the concrete batch ticket number and identification numbers for associated cylinders used for compressive strength testing.

1) Testing results for slump, temperature, unit weight, and air entrainment.

2) Testing results for compressive strength at 7 and 28 days, and for any compressive strength tests after 28 days.

3) Note on batch ticket the amount of water that was withheld and the maximum amount that can be added on site as "Max add water." Record on the batch ticket the volume of water actually added at the Site.

4) Note on the batch ticket the concrete mix classification as defined in the Table in Section 2.4B.

H. Special Procedure Submittals:

1. Repair of defective concrete: Submit mix design for repair materials to be used.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Packing and shipping:

1. Deliver, store, and handle concrete materials in a manner that prevents damage and inclusion of foreign substances.

2. Deliver and store packaged materials in original containers until ready for use.

3. Deliver aggregate to mixing site and handle in such manner that variations in moisture content will not interfere with steady production of concrete of specified degree of uniformity and slump.

B. Acceptance at Site:

1. Reject material containers or materials showing evidence of water or other damage.

2. Concrete mixes: Do not accept or incorporate into the Work concrete mixes that do not comply with the specified requirements for water content, slump, temperature, and air content.

1.4 SEQUENCING AND SCHEDULING

A. Schedule placing of concrete in a manner that completes all placing operations from one construction, contraction, or expansion joint to another construction, contraction, or expansion joint.

B. Joints at each end of the placement shall be as indicated on the Drawings, or as identified and accepted in advance by the Engineer.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

A. Provide concrete with a homogeneous mixture, that, when hardened, will have required strength, watertightness, and durability.

B. Provide a workable, low-shrinkage concrete mix that maximizes aggregate content and minimizes paste content.

C. Performance requirements:

1. General:

a. Except as otherwise specified, provide concrete composed of portland cement, supplemental cementitious materials, aggregate, admixtures and water, proportioned and mixed to produce a plastic, workable mixture in accordance with requirements of this Section, and suitable to specific conditions of placement.

b. Proportion aggregates to produce a gradation of aggregate that combines fine and coarse aggregate in well-graded proportions that maximizes the aggregate content and minimizes the paste content of the mix. Gradation should maximize long-term durability and strength of the concrete mixture.

c. Durability requirements will be deemed to be satisfied when:

1) Mixture is proportioned with a well-graded combined aggregate.

2) Specified water-cement ratio is satisfied.

3) Concrete contains the specified range of air content.

4) Maximum specified paste content is satisfied.

d. Proportion materials in a manner that will secure the lowest cement content, water-cementitious materials ratio, and paste volume that is consistent with good workability that provides a plastic and cohesive mixture, and that provides a slump that is within the specified range.

e. Construction and expansion joints have been positioned in structures as indicated on the Drawings, and curing methods have been specified, for

purpose of to reduce the number and size of cracks, resulting from normal expansion and contraction expected from the concrete mixes specified.

f. Remove and replace, or repair as specified in this Section, non-conforming work and surfaces with cracks, voids and honeycombs, or surface wetness.

2. Workmanship and methods: Provide concrete work, including detailing of reinforcing, in accordance with best standard practices and as set forth in ACI CODE-318 and ACI CODE-350.

2.2 MATERIALS

A. Cement:

1. Cement: Cement for all concrete shall be domestic Portland cement that conforms to the requirements of ASTM Designation C 150, Type I, Type II or Type III. Type III cement for high early strength concrete shall be used only for special locations and only with the approval of the ENGINEER.

2. Only one brand of cement shall be used in any individual structure unless approved by the ENGINEER. Cement which has become damaged, partially set, lumpy or caked shall not be used and the entire contents of the sack or container which contains such cement will be rejected. No salvaged or reclaimed cement shall be used.

B. Fine Aggregate: Fine aggregate shall conform to the requirements of the latest edition of the Florida Department of Transportation "Standard Specifications for Road and Bridge Construction."

C. Coarse Aggregate: Coarse aggregate shall conform to the requirements of the latest edition of the Florida Department of Transportation "Standard Specifications for Road and Bridge Construction," except that slag shall not be used and the gradation shall be Grade 57 AS APPROVED by the ENGINEER.

D. Water: Water shall be taken from a potable water supply and shall be fresh, clean and free from injurious amounts of oil, acid, alkali or organic matter.

E. Admixtures: No admixtures shall be used except by specific approval of the ENGINEER. Fly ash is not acceptable. When approved, all admixtures in a given mix shall be of the same manufacturer, be used in accordance with the manufacturer's recommendations and meet the following minimum standards.

1. Air entraining agent: ASTM C 260.

2. Water Reducing and Retarding Admixture: ASTM C 494, Type D and free of chlorides.

F. Membrane Curing Compound: Membrane curing compound shall conform to the requirements of AASHTO Designation M 148, Type 1-clear, or Type 2-white pigmented. Combination curing and sealing products (cure and seal) will not be permitted.

G. Membrane: Membrane shall be a 6-mil polyethylene film in accordance with ASTM C171 and white in color.

H. Neat cement grout:

1. Use: For spreading over surface of construction and cold joints in concrete before placing additional concrete above those joints.

2. As specified in Section 03600 - Grouting.

I. Reinforcing Steel:

1. Reinforcing steel shall conform to the requirements of ASTM Designation A 615, Deformed Grade 60, except where otherwise indicated.

a. The name of the SUPPLIER of the reinforcing steel shall be called out in the SHOP DRAWINGS together with a sketch showing the pattern of the deformation, including the mill mark.

b. Bar reinforcement shall be accurately fabricated in accordance with the latest CRSI Manual of Standard Practice. The CONTRACTOR shall have prepared and shall submit to the ENGINEER necessary SHOP DRAWINGS and bar lists. The CONTRACTOR shall be responsible for errors made in SHOP DRAWINGS even though approved by the ENGINEER.

2. Bar Supports:

a. Bar supports for reinforcing steel shall conform to the requirements of CRSI Manual of Standard Practice and shall be of a height to furnish the concrete cover called for on DRAWINGS. High chairs shall be furnished for bent or top bars in solid slabs. Bar supports to be in contact with exterior surfaces of concrete shall be Class C with plastic caps at least 1 inch in length on the leg tips, or Class E with stainless steel legs. Bar supports shall be spaced not more than 100 times the diameter of the bars to be supported, with not more than 1/4 spacing from the end of the supported bars to the first chair.

b. Bar supports for slabs on grade shall be plain concrete blocks, 3 inches high by 4 inches square with tie wires embedded in support. Concrete strength shall be at 3,000 psi at time of use.

J. Forms: Forms shall be of wood, steel or other approved materials. The sheeting for all exposed surfaces shall be 5-ply plywood, unless otherwise specifically authorized. Forms of like character shall be used for similarly exposed surfaces in order to produce a uniform appearance. Forming for exposed exterior concrete from 1 foot below finished exterior grade to top of structure shall be carefully fabricated so as to provide a smooth finish without defects. The type, size, shape, quality and strength of all materials of which the forms are made shall be subject to the approval of the ENGINEER. If it is the ENGINEER's opinion that the interior surfaces of the forms are too irregular to produce the specified finish, they shall be lined

with smooth, dense, moisture resistant hardboard or other material of which the ENGINEER approves.

2.3 EQUIPMENT

A. General:

1. Provide adequate equipment and facilities for accurate measurement and control of materials and for readily changing proportions of material into mixers.

B. Batching equipment, or batch plant.

1. Capable of controlling delivery of all material to mixer within 1 percent by weight of individual material.

C. Mixing equipment:

1. Mixers may be of stationary plant, paver, or truck mixer type, as appropriate to the Work.
2. Capable of combining aggregates, water, and cementitious materials, and admixtures within specified time into a thoroughly mixed and uniform mass, and of discharging the mixture without segregation.
    a. Maintain concrete mixing equipment in good working order and operate at loads, speeds, and timing recommended by the manufacturer or as specified.
    b. Proportion cementitious materials and aggregate by weight.
3. If bulk cementitious materials are used, weigh them on separate visible scale which will accurately register scale load at any stage of weighing operation from zero to full capacity.
4. Prevent cementitious materials from coming into contact with aggregate or with water until materials are in mixer ready for complete mixing with all mixing water.
5. Procedure of mixing cementitious materials with sand or with sand and coarse aggregate for delivery to the Project Site, for final mixing and addition of mixing water will not be permitted.
6. Retempering of concrete will not be permitted.
7. Discharge entire batch before recharging.
8. Volume of mixed material per batch: Not to exceed manufacturer's rated capacity of mixer.
9. Equip each mixer with device for accurately measuring and indicating quantity of water entering concrete, and operating mechanism such that leakage will not occur when valves are closed.
10. Equip each mixer with device for automatically measuring, indicating, and controlling time required for mixing:

a. Interlock device to prevent discharge of concrete from mixer before expiration of mixing period.

11. Transit-mixed concrete:

a. Mix and deliver in accordance with ASTM C94.

b. Total elapsed time between addition of water at batch plant and discharging completed mix.

c. Not to exceed 90 minutes.

d. Elapsed time at the Project Site shall not exceed 30 minutes.

e. Under conditions contributing to quick setting, total elapsed time permitted may be reduced by the Engineer.

f. Equip each truck mixer with device interlocked to prevent discharge of concrete from drum before required number of turns and furnish device that is capable of counting number of revolutions of drum.

12. Continuously revolve drum after it is once started until it has completely discharged its batch:

a. Do not add water until drum has started revolving.

b. Right is reserved to increase required minimum number of revolutions or to decrease designated maximum number of revolutions allowed, if necessary, to obtain satisfactory mixing. Contractor will not be entitled to additional compensation because of such increase or decrease.

D. Other types of mixers: For other types of mixers, mixing shall be as follows:

1. Mix concrete until there is uniform distribution of materials, and discharge mixer completely before recharging.

2. Neither speed nor volume loading of mixer shall exceed manufacturer's recommendations.

3. Continue mixing for minimum of 1-1/2 minutes after all materials are in drum, and for batches larger than 1 cubic yard increase minimum mixing time 15 seconds for each additional cubic yard or fraction thereof.

2.4 CLASSIFICATION AND STRENGTH OF CONCRETE

A. Class and minimum strength requirements for concrete shall be as tabulated below. Unless otherwise specified, Class B concrete shall be used.

B. Strength Requirements: Concrete class and strength shall meet the minimum compressive strength requirements at the age of 7 and 28 days as shown in the following table. The compressive strengths shall be as determined by standard laboratory cylinder tests in accordance with the procedure set forth in ASTM Designation C 31 and C 39. (See Article 3.03 of this Section for testing of cylinders.)

Minimum Compressive Strength In Pounds Per Square Inch					
		3 Consecutive Cylinder Average		Low Cylinder	
Class	**For Design Purposes**	**7 Days**	**28 Days**	**7 days**	**28 Days**
A	4000	2950	4250	2600	3750
B	3000	2100	3520	1850	2800
Flowable Fill	50-150	---	---	50-150	50-150

2.5 PROPERTIES AND DESIGN OF CONCRETE MIX

A. General:

1. Develop and provide mix designs for each concrete class listed in the Table included in Section 2.4B.
2. Select and proportion mixes and document properties using one of the 2 methods that follow. Procedures and requirements for use of each alternative are specified in subsequent paragraphs of this Section.
    a. Field experience method.
    b. Trial batch method.
3. Organize and submit mix designs with data on all constituent materials and products for that mix for the Engineer's review.
4. Do not place concrete until the mix design for that concrete class has been accepted by the Engineer.
5. After acceptance, do not modify accepted mixes or provide new mixes without the Engineer's prior review and acceptance of the proposed alternative.
    a. Exception: At all times, adjust batching of water to compensate for free moisture content of the fine aggregate used.
    b. For any change to approved mixes, the Engineer may require new trial batching and testing program as specified in this Section before acceptance and use.
    c. For any change to approved mixes, make modifications within limits set forth in this Section.
    d. If there is change in source or quality of any constituent of the concrete class or mix, the revised mix will be considered a new class of concrete and shall require full re-submittal of all data describing mix constituents, design, and testing.
6. Material sampling, mix designs, trial batch preparation and testing, modifications to mix designs, and any re-testing required to satisfy the requirements of this Section or to obtain satisfactory performance shall be at the Contractor's expense and shall not be considered cause for delay.

B. Measurements of materials:

1. Measure materials by weighing, except as otherwise specified or where other methods are specifically authorized in writing by the Engineer.
2. Furnish apparatus for weighing aggregates and cementitious materials that is suitably designed and constructed for this purpose.
3. Accuracy of weighing devices: Furnish devices that have capability of providing successive quantities of individual material that can be measured to within 1 percent of desired amount of that material.

4. Measuring or weighing devices: Subject to review by the Engineer. Shall bear valid seal of the Sealer of Weights and Measures having jurisdiction.

5. Weighing cementitious materials:

   a. Weigh cementitious materials separately.

   b. Cement in unbroken standard packages (sacks): Need not be weighed.

   c. Weigh bulk cementitious materials and fractional packages.

6. Measure mixing water by volume or by weight.

C. Requirements for mix proportioning:

1. Develop and provide mixes that:

   a. Can be readily worked into corners and angles of forms and around reinforcement, without excessive vibration, and without permitting materials to segregate or free water to collect on surface.

   b. Prevent unnecessary or haphazard changes in the consistency of the concrete supplied.

2. Constituent materials:

   a. Provide concrete mixes composed of portland cement, blended aggregates, admixtures and water.

   b. In no case shall returned fresh concrete or its constituents be incorporated into concrete batched for the Work.

3. Minimum specified compressive strength:

   a. Minimum specified compressive strength is designated at 28 days, unless otherwise indicated in the Table in Section 2.4B.

   b. For locations where the placed concrete is adequately protected and is not subjected to loads for an extended period during construction, the Contractor may request that the period for achieving the minimum specified compressive strength be extended to 56 days.

      1) If accepted by the Engineer, provide mixes that achieve at least 75 percent of their minimum specified compressive strength after 28 days.

D. Concrete classes for use in the Work:

1. Provide concrete classes listed in the Table included in Section 2.4B.

2. Provide normal weight concrete, having minimum weight of 140 pounds per cubic foot, unless otherwise noted.

3. Pumped concrete:

   a. Provide pumped concrete that complies with all requirements of this Section.

E. Concrete mix design documented by field experience:

1. Mix design:

a. Prepare preliminary mix design for each concrete class. Submit mix design with product and testing data for materials to be used in the mix for the Engineer's review.

2. Historical records for similar mix.

a. Determinations of similarity of materials and proportions between historical and proposed mixes shall be by the Engineer, and that shall be final.

b. Historical record - Materials:

1) Submit with each mix design the following data for a previously-supplied concrete mix similar to that proposed for this Work.

2) Records demonstrating that the previously supplied mix included similar materials and proportions as those of the proposed mix.

a) Documentation that the same concrete supplier will provide both mixes.

b) Documentation that the materials used was from the same suppliers and had essentially the same properties, demonstrated by test data, as those proposed.

c) Documentation that proportions of materials in the record mix are essentially the same as those proposed and that the specified compressive strength of the record mix is within 1,000 pounds per square inch of that required by this Section.

d) Concrete supplier's statement describing any changes made to production of the record mix during the time period reported.

e) Concrete supplier's statement that preparation and quality control procedures for the record mix were essentially the same as those to be employed for this Work.

c. Historical record - Testing:

1) Submit with each record mix, corresponding test data for slump, compressive strength (with relationships for rate of strength gain between testing ages), and drying shrinkage.

2) Only records satisfying the following requirements will be accepted.

a) All tests were conducted within a period of 1 year preceding the date of the Submittal.

b) All tests were conducted over a period including not less than 45 days.

c) Record of compressive strength testing includes at least 30 tests for slump and 28-day compressive strength.

d) Record of compressive strength tests is consecutive. In other words, it includes all tests conducted on the subject mix within the 1-year time period described above (not just selected tests during that period).

e) Submit concrete supplier's sworn statement confirming that all tests for the record mix have been reported.

f) Tests for drying shrinkage are described in subsequent paragraphs of this Section for "concrete mix design documented by trial batch preparation and testing".

g) Provide supplementary testing if requested by the Engineer.

d. For mixes determined to be similar and to have an acceptable test history, acceptance criteria shall be as follows:

1) Acceptance criteria:

a) Slump: All tests within limits specified for record mix.

b) Compressive strength: Average compression strength for tests, as determined by ACI CODE-350 not less than minimum required average strength.

F. Concrete mix design documented by trial batch preparation and testing:

1. Mix design and trial batches:

a. Prepare preliminary mix design for each concrete class. Submit mix design with product and testing data for each combination of materials and proportions to be used for the Engineer's review.

1) Determine water content of the mix based on curves showing the relation between water-cementitious materials ratio and the 7- and 28-day compressive strength of the concrete.

2) Determine each curve using 4 or more points, each representing the average compressive strength value of at least 3 specimens tested at each age.

b. After materials and proposed mix designs have been accepted by the Engineer, have trial batches for each concrete mix design prepared by the Contractor's testing laboratory.

1) Prepare trial batches using the cementitious materials, aggregates, and admixtures proposed to be used for the Work.

2) Provide batches of sufficient quantity to determine slump, workability, consistency, and finishing characteristics, and to provide sufficient specimens for testing.

c. For each trial batch, make and test specimens to determine and report slump, compressive strength (with relationships for rate of strength gain between testing ages), and drying shrinkage.

1) If trial batches do not produce concrete conforming to the specified requirements for slump, strength, workability, consistency, drying shrinkage, restrained shrinkage, and finishing, change mix proportions and, if necessary, sources of materials.

2) Make additional trial batches and perform additional tests until a batch that conforms to requirements of this Section is produced.

G. Tests And Design Mix:

1. The CONTRACTOR, shall submit for approval by the ENGINEER the proposed sources of the materials, or ready-mixed concrete, which the CONTRACTOR intends to use in the WORK. A design mix which has been used by the concrete SUPPLIER before may be submitted for approval provided the proportions and strengths meet the requirements of these SPECIFICATIONS.

2. The source and SUPPLIER of material after once having been approved shall not be changed by the CONTRACTOR, except AS APPROVED by the ENGINEER, and additional laboratory tests may be required by the ENGINEER to prove conformance with specification requirements.

3. If during the progress of the WORK, tests indicate that concrete is not being produced in accordance with these SPECIFICATIONS, the ENGINEER may order changes in the materials or their proportions so as to secure concrete as specified.

H. Slump: Slumps shall be as low as possible consistent with proper placing. Low slump concrete shall be used for footing and slabs on grade. Medium slump concrete shall be used for walls, columns and suspended slabs. Concrete shall conform to the limits specified in the following schedule:

Class of Concrete	Medium Slump	Low Slump
A	4 to 5 inch	2 to 3 inch
B	4 to 5 inch	2 to 3 inch

2.6 SOURCE QUALITY CONTROL

A. Sample and test materials in accordance with the following requirements:

1. Sampling, testing, and reporting frequency:

a. In preparation for mix design submittals and trial batch tests.

b. Whenever there is a change in source of the material, or a significant change in the characteristics or quality of materials from the same source.

c. At intervals not exceeding 90 calendar days, unless otherwise specified in the following paragraphs.

2. Supplemental cementitious materials.

a. Sample and test fly ash in accordance with ASTM C311.

3. Aggregate:

a. Sample combined aggregate in accordance with ASTM D75 and ASTM D3665, and test for gradation in accordance with ASTM C136.

b. At least once every 30 days, and when requested by the Engineer.

c. Submit test results.

4. Cementitious materials:

a. Sample and test cementitious materials and provide mill certificates demonstrating compliance with ASTM C150 and additional requirements of this Section.

1) Determine alkali content by method set forth in ASTM C114.

b. At least once every 90 days, and when requested by the Engineer.

c. Submit test results.

B. Batch materials in accordance with the following requirements:

1. Concrete batch weights: Control and adjust so as to secure maximum yield, and at all times maintain proportions of concrete mix within specified limits.

2. Aggregates:

a. Obtain aggregate from a source capable of providing uniform quality, moisture content, and grading during any single day's operation.

b. Furnish satisfactory means at batching plant for checking moisture content of fine aggregate for each batch.

3. Admixtures:

a. Batch solutions using mechanical batcher capable of accurate measurement.

b. Air entraining admixture: Add to batch in portion of the mixing water, unless otherwise recommended by the admixture manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

A. Concrete Mixing:

1. Equipment: The concrete shall be ready-mixed and the equipment shall conform to the applicable requirements of ASTM Designation C 94.

2. Measurement: Equipment necessary to positively determine and control the actual amounts of all materials entering the concrete shall be provided by the CONTRACTOR to the ENGINEER. All materials shall be measured by weight, except that water may be measured by volume.

B. Submit proposed sequence of concrete placements. After acceptance, adhere to proposed sequence of placing concrete, except when specific changes are requested by the Contractor and accepted by the Engineer.

1. Use construction methods and sequence work to allow concrete placement to reach adequate strength and to be constructed with required support to prevent overstress of the concrete structure during construction.

C. Notify the Engineer in writing that preparations are complete and ready for placement of concrete. Such notification shall indicate readiness - not just intention - to place concrete for the designated portion of the Work.

1. Submit notification to the Engineer on forms provided by or acceptable to the Engineer and bearing the signature of the Contractor's superintendent.

a. Sample form is included at the end of this Section, see Attachment B - Coarseness Factor Chart.

2. Submittal of notification will be the Contractor's certification that preparations are complete and in accordance with the Contract Drawings and Specifications.

3. Provide notification for the Engineer to make final observations at the locations of concrete placements not less than 24 hours before commencing placement of concrete.

3.2 CONCRETE JOINTS

A. Locations of joints are indicated on the Drawings.

1. In order to preserve strength and watertightness of structures, make no other joints, except as authorized by the Engineer.

2. Construct joints where indicated, and as indicated on the Drawings.

3. Where joint locations are not indicated on the Drawings, submit the Contractor's proposed locations for the Engineer's review and acceptance. Provide construction joints in slabs and walls at intervals not greater than 35 feet.

B. Time between placements of adjacent concrete separated by joints.

1. Provide not less than 3 days (72 hours) between placement of adjacent sections for the following:

   a. Slabs.

   b. Walls.

2. Provide not less than 7 days (168 hours) between placement of the lower and upper pours for the following:

   a. Walls over slabs.

   b. Slabs over walls.

   c. Slabs keyed into the sides of walls.

3. Edges of joints:

   a. Provide joints have edges detailed as indicated on the Drawings.

   b. Protect wall and slab surfaces at edges from concrete splatter. Thoroughly clean adjacent surfaces after completion of each placement.

C. Joint construction:

1. Preparation of forms:

   a. Provide cleanout holes at base of each wall and column for inspection and cleaning.

   b. Wash forms and adjacent joint surfaces of sawdust, chips, and other debris after forms are built, and immediately before concrete or grout placement.

   c. Should formwork confine sawdust, chips, or other loose matter in such manner that it is impossible to remove them by flushing with water, use a vacuum cleaner for their removal and then flush cleaned surfaces with water.

2. Before placing concrete against previously placed concrete, thoroughly clean the prior placement of laitance, grease, oil, mud, dirt, curing compounds, mortar droppings, or other objectionable matter by means of pressure washing.

3. Provide and install waterstops, expansion joint material, and other similar materials as indicated on the Drawings and as specified.

   a. Take special care to ensure that waterstops are secured in proper position.

   b. Take special care to ensure that concrete is well consolidated around and against waterstops during placement.

4. Horizontal joints:

   a. As initial placement over cold joints, thoroughly spread bed of neat cement grout.

      1) Thickness: Not less than 1/2 inch or more than 1 inch.

b. For wall placements above planned cold joints, placement of neat cement grout will not be required for locations where the wall mix includes high-range water-reducing admixture (superplasticizers), and the Contractor can demonstrate dense concrete joints without voids or honeycomb after the forms are removed.

3.3 MEASURING AND BATCHING MATERIALS

A. Measurement of materials:

1. Proportion and measure cementitious materials and aggregates by weight.
    a. Weigh cementitious materials separately.
    b. If bulk cementitious materials are used, weigh them on separate visible scale that will accurately register scale load at any stage of weighing operation from zero to full capacity.
    c. Cement in unbroken standard packages (sacks) need not be weighed.
2. Mixing water: Measure by volume or by weight.
3. Other mix constituents: Measure by weight, except as otherwise specified or accepted by the Engineer.
4. Weighing and measuring devices:
    a. Use equipment designed and constructed specifically for that purpose.
    b. Furnish devices capable of weighing successive quantities of individual material measured to within 1 percent of desired weight of that material.
    c. Bearing valid seal of the department of weights and measures for the authority having jurisdiction over the Work.
5. Measurements and measuring devices:
    a. Subject to review by the Engineer.

B. Batching:

1. Admixtures shall be added at the concrete batch plant.
2. Addition of admixtures in the field is permitted only with prior acceptance by the Engineer, and only when the following conditions are satisfied:
    a. Dosage and mixing is personally overseen by the concrete supplier's trained technologist.
    b. Adequate mixing is provided after addition.
    c. Maximum time to placement of concrete remains 90 minutes after water added to mix - not 90 minutes after any field additions/adjustments.
    d. Slump at discharge after additions/modifications conforms to the requirements outlined in this Specification.

3.4 MIXING AND TRANSPORTING

A. Machine mixing:

1. Prevent cementitious materials from coming into contact with aggregate or with water until materials are in mixer and ready for complete mixing with all mixing water.
2. Procedure of mixing cementitious materials with sand, or with sand and coarse aggregate, for delivery to the Project Site for final mixing and addition of mixing water is not permitted.
3. Remixing of concrete that has started to take its initial set (retempering) is not permitted.
4. Discharge entire batch before recharging.
5. Volume of mixed material per batch: Not exceeding manufacturer's rated capacity of mixer.

B. Transit-mixed concrete:

1. Mix and deliver in accordance with ASTM C94, except as modified in this Section.
2. Total elapsed time between addition of water at batch plant and discharging completed mix:
    a. Not to exceed 90 minutes or 300 revolutions of the mixing drum.
    b. Under conditions contributing to rapid setting, total elapsed time permitted may be reduced by the Engineer.
3. Temperature - minimum and maximum allowable during mixing and transporting:
    a. Minimum: 50 degrees Fahrenheit.
    b. Maximum: 90 degrees Fahrenheit.
4. Continuously revolve drum after it is started until it has completely discharged its batch.
    a. Do not add water until drum has started revolving.
    b. Engineer reserves the right to increase required minimum number of revolutions or to decrease designated maximum number of revolutions allowed, if necessary, to obtain satisfactory mixing. Contractor will not be entitled to additional compensation because of such increase or decrease.

C. Concrete delivery:

1. Furnish to the Engineer a delivery ticket for each batch of ready mixed concrete within 24 hours after delivery. Include the following information on each ticket:
    a. Time of day concrete was batched, and time of day that discharge from the truck is complete.

b. Printed record of the individual weight of each of the following constituents in the batch: Fine aggregate, coarse aggregate, cement, pozzolan, and water.

c. Concrete class as defined as either Class A or Class B.

d. Type, brand, and quantity of each admixture in the batch.

e. Total volume of water allowed in the mix, volume of mixing water added at the batch plant, volume of mixing water withheld from the mix during batching, and total volume of any water added to the mix after leaving the batch plant.

f. Number of revolutions of transit truck at arrival on site, and total number of revolutions when discharge is complete.

g. Volume of concrete delivered in the batch.

h. Numerical sequence of the batch delivered for that placement.

2. Additional water may only be added to the mix when the following conditions are fully satisfied:

a. Batch ticket showing total volume of water already added and maximum volume of water that may be added is available for the Engineer's observation before any additional water is added.

b. Total volume of water in the mix after the addition will be less than the maximum allowable volume of water indicated on the ticket.

c. Full concrete load is still within the truck's mixing drum and truck has not begun to discharge the load. Under no conditions shall water be added in the field to a partial truckload of concrete.

d. Volume of water added and time of addition are clearly marked for record on the batch ticket delivered to the Engineer.

3. Addition of admixtures in the field is permitted only with prior approval by the Engineer, and when the following conditions are satisfied:

a. Dosage and mixing is personally overseen by the concrete supplier's trained technologist and the admixtures supplier's representative.

b. Adequate mixing time is provided after addition of admixtures.

c. Maximum time to placement of concrete remains 90 minutes after water is added to the mix - not 90 minutes after any field additions/adjustments.

d. Slump at discharge after additions/modifications conforms to the requirements of Table 3 of this Section.

D. Conveying concrete:

1. Convey concrete from mixer to location of final deposit by methods that prevent separation or loss of materials.

2. Use equipment for chutes, pumps, and conveying of concrete of such size and design as to ensure practically continuous flow of concrete, from delivery to the point of placement, without separation of materials.

3. Design and use chutes and devices for conveying and depositing concrete that direct concrete vertically downward when discharged from chute or conveying device.

4. Keep equipment for conveying concrete thoroughly clean by washing and scraping upon completion of any day's placement.

3.5 PLACING AND CONSOLIDATING

A. Preparation:

1. Obtain the Engineer's acceptance of completed preparations before placing concrete.

   a. Notify the Engineer in writing that all preparations are complete and ready for placement of concrete. Such indication shall indicate readiness, not just intention, to place concrete for the designated portion of the Work.

   b. Submit completed Attachment D - Contractor's Concrete Placement Checklist Form.

2. Confirm completeness of the following before notification of readiness is given to the Engineer:

   a. Place forms, reinforcement, screeds, anchors, ties, and inserts in final position.

   b. Reinforcement is secure and properly fastened in its correct position.

   c. Loose form ties at construction joints have been retightened.

   d. Dowels, bucks, sleeves, hangers, pipes, conduits, anchor bolts, and any other fixtures required to be embedded in concrete have been placed and adequately anchored to maintain a minimum 2-inch clearance between the item and any concrete reinforcement.

      1) Securing embedded items in position by wiring or welding to the reinforcement is not permitted.

   e. Forms have been cleaned of debris and form release agents are applied as specified.

3. Preparation for placement of footings and slabs on grade:

   a. Do not place concrete on ground or compacted fill until subgrade is in moist condition acceptable to the Engineer.

   b. If necessary, sprinkle subgrade with water not less than 6 or more than 20 hours in advance of placing concrete.

   c. If subgrade surface becomes dry prior to actual placing of concrete, sprinkle again, without forming pools of water.

   d. Do not place concrete if subgrade is muddy or soft.

4. Keep sufficient protective coverings on hand at all times for protection of concrete during and after placement.

    a. Protect concrete placed before rain to prevent water from coming in contact with such concrete.

    b. Protect concrete placed before winds to prevent excessive drying or embedment of debris in the finished surfaces.

B. Concrete placement:

1. Do not place concrete:

    a. With slump outside the limits specified in this Specification.

    b. In which initial set has occurred, or that has been retempered.

    c. During rainstorms or high velocity winds.

2. Deposit concrete at or near its final position to avoid segregation caused by rehandling or flowing.

    a. Do not deposit concrete in large quantities in one place, and then work material along forms with vibrator or by other methods.

3. Do not drop concrete freely into place from height greater than 5 feet. Use tremies for placing concrete where drop is over 5 feet.

4. Place concrete on slopes starting from bottom of slope and working upward.

5. Place concrete in horizontal lifts not exceeding 24 inches in depth and bring up evenly in all parts of forms.

6. After concrete placement begins, continue in a continuous operation without significant interruption until the end of the placement. Plan and implement precautions to prevent any delay, between layers or adjacent volumes, from exceeding 20 minutes.

7. If concrete is to be placed over previously placed concrete and more than 20 minutes has elapsed, spread layer of neat cement grout over surface before placing additional concrete. Provide grout layer thickness of not less than 1/2 inch or more than 1 inch.

8. Placement of concrete for slabs, beams, or walkways:

    a. If cast monolithically over walls or columns, do not commence until concrete in walls or columns has been allowed to set and shrink.

    b. Allow set time of not less than 1 hour for shrinkage.

        1) During waiting time, keep top surface of concrete moist, but not wet.

        2) Do not permit water to pond or stand on the surface.

        3) Do not coat surface with evaporation retarders or curing agents.

    c. Start placement above wall or column with layer of neat cement grout as described in the preceding paragraph.

C. Consolidating concrete:

1. Consolidate concrete with aid of acceptable mechanical vibrators.

2. Thoroughly consolidate concrete around reinforcement, pipes, or other shapes built into the Work.

3. Provide sufficiently intense vibration to cause concrete to flow and settle readily into place and to visibly affect concrete over radius of at least 18 inches.

4. Vibrators:

   a. Keep sufficient vibrators on hand at all times to vibrate concrete as placed.

   b. In addition to vibrators in actual use while concrete is being placed, have on hand a minimum of 1 spare vibrator in operable condition.

   c. Do not place concrete until it has been confirmed that all vibrating equipment, including spares, are in operable condition.

5. Place concrete solidly against forms and concrete surfaces, leaving no voids or honeycomb.

6. Make concrete solid, compact, and smooth. If for any reason surfaces or interiors have voids or are in any way defective, repair such concrete in manner acceptable to the Engineer.

7. Do not over-vibrate so as to produce segregation.

3.6 INSTALLATION

A. Forms:

1. Construction:

   a. Forms shall be built true to line and grade, and shall be mortar tight and sufficiently rigid to prevent displacement or sagging between supports. Particular attention shall be given to adequacy of supports and shoring, which is the CONTRACTOR'S responsibility. The surfaces of forms used for permanently exposed surfaces shall be smooth and free from irregularities, dents, sags, or holes. Forms for surfaces to receive stucco finish shall be suitable for its application. Bolts and rods used for internal ties shall be so arranged that, when the forms are removed, all metal is at least 1 1/2 inch from any concrete surface. Form ties shall be removed immediately after removal of forms, and holes shall be thoroughly plugged with grout within 24 hours after form removal and kept damp for 4 days to prevent shrinking.

   b. Wire ties will not be permitted. All forms shall be so constructed that they can be removed without hammering or prying against the concrete. Unless otherwise indicated, suitable moldings shall be placed to bevel or round exposed edges at expansion joints or at any other corners that are to remain. Beams below grade shall have forms at both sides.

2. Coating: Prior to the placing of steel reinforcement or concrete, forms for exposed surfaces shall be coated with a nonstaining paraffin base oil or mineral oil. Forms for unexposed surfaces may be thoroughly wetted in lieu of oiling, immediately before the placing of concrete.

3. Removal: Forms and/or form supports shall not be removed from any concrete until it has obtained sufficient strength to support itself and any live loads it may be subjected to, and then only with the approval of the ENGINEER.

B. Reinforcing Steel: When placed in the forms, reinforcement shall be clean and free of all rust, scale, dust, dirt, paint, oil or other foreign material and shall be accurately and securely positioned in the forms as shown on the DRAWINGS before the placing of concrete. Reinforcing steel shall be wired or otherwise fastened together at intersections and shall be supported by concrete or metal supports, spacers or hangers. Bar supports, where adjacent to the ground, shall be set on precast concrete pads compressed into the subgrade. The CONTRACTOR shall obtain the ENGINEER's approval before fastening reinforcing steel at intersections by welding methods.

1. Splicing of reinforcement shall be held to a minimum and shall be placed at points of minimum stress. Bars shall be lapped at splices a minimum of 24 bar diameters unless otherwise shown on the DRAWINGS or directed by the ENGINEER, and shall be rigidly wired or clamped.

2. Wire fabric shall be straightened before placing and shall overlap one full space of mesh at ends and edges and shall be securely fastened. Fabric shall be supported so as to occupy its proper location in the concrete as shown on the DRAWINGS. Fabric shall not cross any expansion joints.

C. Embedded Items: In addition to steel reinforcement, pipes, inserts and other metal objects as shown, specified or ordered shall be built into, set in, or attached to, the concrete. All necessary precautions shall be taken to prevent these objects from being displaced, broken or deformed. Embedded items shall be thoroughly clean and free from paint or other coating, rust, scale, oil, or any foreign matter. No wood shall be embedded in concrete. The concrete shall be packed tightly around pipes and other metal work to prevent leakage and to secure perfect adhesion. Drains shall be adequately protected from intrusion of concrete. Before concrete is placed, care shall be taken to determine that all embedded parts are firmly and securely fastened in place as indicated.

D. Concrete:

1. General: Reinforcement shall be secured in position, inspected and approved before placing concrete. Runways for transporting concrete shall not rest on reinforcing steel. Concrete not placed within 90 minutes from the time mixing is started will be rejected and shall be removed from the job by the CONTRACTOR. Concrete shall be deposited as nearly as practicable in final position. Concrete shall not be allowed to drop freely more than six feet. All concrete shall be placed in daylight and (excepting seal concrete) shall be placed in the dry unless otherwise authorized by the ENGINEER in writing.

2. Slabs Placed On Subgrade: Slab concrete placed on earth or fill subgrade shall be separated from direct contact with the subgrade by 6-mil polyethylene film or other approved membrane material. Sidewalks and walkways will not require a separation membrane. The membrane shall be lapped 4 inches on sides and 12 inches on ends.

3. Compaction: Concrete shall be compacted by internal vibrating equipment, supplemented by hand rodding and tamping as required. Vibrators shall in no case be used to move the concrete laterally inside the forms. Internal vibrators shall maintain a speed of at least 5000 impulses per minute when submerged in concrete. (At least one spare vibrator in working condition shall be maintained at the site during concrete placing operations.) Duration of vibration shall be limited to time necessary to produce satisfactory consolidation without causing segregation. Vibrator shall be moved constantly and placed in each specific spot only once.

4. Bonding: Before depositing new concrete on or against concrete that has set, the surfaces of the set concrete shall be thoroughly cleaned so as to expose the coarse aggregate and be free of laitance, coatings, foreign matter and loose particles. Forms shall be retightened. The cleaned surfaces shall be dampened, but not saturated, and then thoroughly covered with a coat of cement grout of similar proportions to the mortar in the concrete. The grout shall be as thick as possible on vertical surfaces and at least 1/2 inch thick on horizontal surfaces. The fresh concrete shall be placed before the grout has attained its initial set.

5. Protection: Rainwater shall not be allowed to increase the ratio of mixing water nor to damage the surface finish. Concrete shall be protected from disfigurement, damage, vibration, internal fractures and construction overloads.

    a. Keep forms in place, as outlined in this Specification, to provide curing and to protect concrete surfaces and edges from damage.

    b. Immediately after forms are removed, carefully examine concrete surfaces, and repair any irregularities in surfaces and finishes as specified.

    c. Loading of concrete members:

        1) Placement of loads on or against green concrete is not permitted.

E. Curing:

1. All concrete, including gunite, shall be water cured by covering with a double thickness of clean burlap, cotton mats, or other approved material kept thoroughly saturated with water. The forms shall be kept wet until removed and upon removal, the curing specified herein shall be started immediately. Concrete shall be cured for a period of 7 days for normal Portland cement or 4 days for high early strength cement. Concrete poured in the dry shall not be submerged until it has attained sufficient strength to adequately sustain the stress involved nor shall it be subjected to flowing water across its surface until it has cured 4 days. Curing of gunite shall be started as soon as possible without damaging surface and not later than 2 hours after placing.

2. In lieu of wet burlap or cotton mats as specified above, concrete slabs may be covered with wet sand and kept moist for the specified curing period. The initial curing period of not less than 24 hours shall consist of the wet burlap or cotton mat method, then the wet sand method may be utilized until the end of the curing period.

3. Concrete surfaces which are not to be coated, painted, plastered, stuccoed, covered with tile or floor covering or require a bonding surface may be cured by means of a membrane curing compound in lieu of the wet cure method. The curing compound shall be applied immediately after a satisfactory surface finish has been completed or forms have been removed. The rate of application of membrane curing compound shall be at least one gallon to every 200 square feet of exposed surface to be cured. The membrane curing compound and impervious covering shall be continuous and without defects and shall retain the required moisture in the concrete. Membrane curing compound that becomes damaged by rain, foot traffic or other conditions within 5 days of application shall be reapplied.

F. Finishes:

1. As soon as forms can safely be removed, all irregular projections shall be chipped off flush with the concrete surfaces. All voids produced by spacers or any honeycombing shall be pointed up with grout and troweled flush with the concrete surface immediately after removal of forms and water cured to prevent shrinkage. Honeycombing shall be cut out to expose a sound concrete surface prior to pointing. The use of mortar pointing or patching shall be confined to the repair of small defects in relatively green concrete. Where in the opinion of the ENGINEER substantial repairs are required, the defective concrete shall be cut out to sound concrete and repaired with gunite or the concrete shall be removed and reconstructed with equal or greater strength as directed.

2. Concrete surfaces that are not exposed in the completed work shall require no special finish other than such pointing up and rubbing as is necessary to leave them smooth and impervious.

3. Other surfaces which will be exposed in the completed work shall be finished by being rubbed smooth with a float and water or a carborundum brick. The final surface shall be smooth and dense, without pits, irregularities, blow holes or bubbles.

3.7 FIELD QUALITY CONTROL

A. General: The quality of the concrete as to conformance to the SPECIFICATIONS is the entire responsibility of the CONTRACTOR until it is accepted in place in the structure and verified by the final cylinder tests made by the laboratory. Arrangements and costs for field testing shall be made by the CONTRACTOR.

B. Temperature: Temperature of concrete at delivery in accordance with the requirements of ASTM C 1064 and as specified in this section.

C. Unit Weight: Unit weight of concrete in accordance with ASTM C 138.

D. Air Entrainment: In accordance with ASTM C 173. Test air content at the following intervals:

1. At the beginning of each placement.
2. As often as necessary to keep entrained air within specified range, but not less than every 6th truck.
3. When requested to do so by the Engineer.
4. Test air entrainment in concrete in accordance with ASTM C173. If air entraining admixtures used for the Work require alternate testing procedures, advise the independent testing laboratory well in advance of the dates of testing, and confirm that appropriate equipment and personnel are provided for the test.
5. Make air test at point of delivery (discharge from mixer). For pumped concrete, make air tests at point of delivery and at point where expelled after pumping for placement.

E. Compressive Tests: Standard laboratory compressive test cylinders shall be obtained by the laboratory when concrete is discharged from the mixer at the site of the WORK. A set of 6 cylinders, 4 inches in diameter by 8 inches long, shall be obtained for each 60 cubic yards or fraction thereof placed each day, for each type of concrete. The cylinders shall be cured under laboratory conditions and shall be tested in two groups of three at 7 and 28 days of age, respectively.

F. Slump Tests: The ENGINEER or the ENGINEER'S representative shall make slump tests of Class A and Class B concrete as it is discharged from the mixer at the site of the WORK. Slump tests shall use slump cone in accordance with requirements of ASTM C 143. Slump tests shall be made for each 25 cubic yards or "pour" of concrete placed. Slump tests may be made on any batch and failure to meet specified slump requirements shall be sufficient cause for rejection of that batch.

G. Reports: Proper reports of all tests performed by the laboratory shall be prepared by the laboratory and submitted promptly to the ENGINEER and OWNER. Such reports shall be properly labeled so as to identify the portions of the project into which the materials have been placed.

3.8 NON-CONFORMING WORK

A. Remove and replace or repair non-conforming and defective work.

1. Provide repairs having strength equal to or greater than specified concrete for areas involved.
2. Provide replacement or repair of non-conforming work by means acceptable to the Engineer and at no additional cost to the Owner.
3. Project schedule will not be extended based on work to address non-conforming concrete.

B. Concrete not conforming to the specified requirements for properties of plastic concrete: Remove from the Site and replace with conforming materials at no additional cost to the Owner.

1. Temperature: Do not use concrete having a temperature above or below the limits specified in this Section.

2. Slump: Do not place concrete that does not conform to requirements for slump.

3. Air entrainment: Do not use concrete that does not conform to requirements for percentage of entrained air.

C. Concrete not conforming to the specified requirements for compressive strength:

1. Concrete is expected to reach a compressive strength equal to or greater than the minimum specified compressive strength outlined in this Specification.

2. Strength of concrete will be considered acceptable if the following conditions are satisfied.

a. Averages of all sets of 3 consecutive strength test results is greater than or equal to the specified compressive strength f'c.

b. No individual strength test (average of 3 cylinders) falls below the strength specified in Table 6 of this Section.

c. Where relationships between 7-day and 28-day compressive strength, or between 28-day and 56-day compressive strength, have been provided as part of the mix design submittals:

1) 7-day strength may be considered as an indication of 28 day strength provided effects of temperature and humidity between 7 days and 28 days are taken into account.

2) 28-day strength may be considered as indication of 56 day strength provided effects of temperature and humidity between 28 days and 56 days are taken into account.

Table 6. Strength Compliance Requirements

Minimum Specified Compressive Strength, f'c (pounds per square inch)	**Lower Bound of an Individual Compressive Strength Test (pounds per square inch)**
Less than 5,000	f'c - 500
Over 5,000	f'c - (0.10 x f'c)

3. Non-compliant strength tests.
   1. Mark non-compliant strength test reports to highlight the non-complying results and immediately forward copies to all parties on the test report distribution list.

2. Initial treatment may consist of additional curing of affected portion(s) followed by not less than 3 cores at each affected area, taken in accordance with ASTM C42 and ACI CODE-318. Obtain the Engineer's acceptance of proposed coring locations before proceeding with that work.
3. Submit report of compressive strength testing for the Engineer's review.
4. If requested by the Engineer, provide additional cores, and obtain petrographic testing in accordance with ASTM C856. Submit results for the Engineer's review.
5. If additional curing does not bring the average strength of 3 cores taken in affected area to at least specified compressive strength f'c, designate such concrete in affected area will be considered defective.
6. Engineer may require the Contractor to strengthen defective concrete by means of additional concrete, additional reinforcing steel, or replacement of defective concrete, all at the Contractor's expense.

D. Concrete sections or surfaces with honeycombing and voids:

1. Provide repairs having surface appearance and finish consistent with that of the surrounding work and acceptable to the Engineer.

2. Do not patch, repair, or cover defective work without prior inspection by the Engineer.

3. Preparation of concrete for repair:

   a. Make no repair until the Engineer has accepted methods for preparing surfaces and for making and curing repairs.

   b. Chip out and key-in imperfections in the Work to make them ready for repair.

   c. Coat bonding surfaces and edges of repair area with one of the following bonding agents as accepted by the Engineer.

      1) Epoxy bonding agent as specified in Section 03071 - Epoxies; or,

      2) Epoxy resin/portland cement bonding agent as specified in Section 03072 - Epoxy Resin/Portland Cement Bonding Agent.

4. Methods of repair:

   a. Dry pack mortar method:

      1) Use for holes having depth nearly equal to or greater than least surface dimension of hole, for cone-bolt holes, and for narrow slots cut for repair.

      2) Smooth holes: Clean and roughen by heavy sandblasting before repair.

      3) Install dry-pack mortar as specified in Section 03366 - Concrete Finishes.

b. Cement mortar method:

1) Use for holes too wide to dry pack and too shallow for concrete replacement; and for comparatively shallow depressions, large or small, that extend no deeper than nearest surface reinforcement.

2) Install cement mortar as specified in Section 03366 - Concrete Finishes.

c. Concrete replacement:

1) Use when holes extend entirely through the concrete section or when holes are more than 1 square foot in area and extend halfway or more through the section.

2) Form, place, consolidate, and cure concrete of same mix as the surrounding work.

END OF SECTION

SECTION 03600

GROUT

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Provide all labor, materials, tools and equipment and perform all grouting as specified hereinafter and indicated on the Drawings.

1.2 RELATED WORK

A. Section 03000, Concrete.

1.3 SUBMITTALS

A. Submit manufacturer's literature for review on the following items:

1. Non shrink grout data including grout properties, mixing, surface preparation and installation instructions.

B. For site-mixed grouts, submit the following for review:

1. Product data for materials used in mixes.
2. Mix designs with proportions of materials to be used.
3. Test results demonstrating compliance with grout properties specified.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store grouting materials in unbroken containers with seals and labels intact as packaged by the manufacturer.

B. As specified in Section 01600 – Product Requirements, and the manufacturer's instructions.

PART 2 - PRODUCTS

2.1 2.01 MATERIALS

A. Nonshrink, Nonmetallic Grout: The Burke Company's Non-Ferrous, Non-Shrink Grout, Sauereisen F-100 Level Fill, Master Builders Masterflow 713, Euclid NS Grout, or equal.

B. Nonshrink, Metallic Grout: The Burke Company's Metallic Spec Grout, Master Builders Embeco 636 Grout pre-mixed type, or equal.

C. Epoxy Grout: Sikadur 42 Grout-Pak, or equal, for grouting sleeves for anchor bolts, etc.

PART 3 - EXECUTION

3.1 PREPARATION

A. General:

1. Protect surfaces adjacent to grouting operations. Prevent grout staining.

B. Surface Preparation:

1. General:

a. Clean all bonding surfaces of grease, oil, dirt, dust, curing compounds, laitance, paint and other deleterious materials that reduce grout bond to substrate.

2. Concrete surfaces receiving grout:

a. Roughen surface in accordance with the grout manufacturer's recommendations.

3. Concrete surfaces receiving cement-based grouts:

a. Saturate concrete surface receiving the grout, and adjacent concrete surfaces 6 inches beyond limits of grout, with clean water or not less than 24 hours before grout placement.

b. Immediately prior to grout placement, remove standing water from concrete and anchor holes. Use clean rags or oil-free compressed air to leave saturated surface-dry (SSD) condition.

4. Concrete surfaces receiving expoxy-based grouts:

a. Do not wet surfaces with water. Provide dry surface with moisture content not exceeding the grout manufacturer's recommended limits.

b. Prepare surfaces as recommended by the grout manufacturer.

c. Before placing epoxy-based grouts, wet surfaces with epoxy.

C. Base plates:

1. For large or complex base plates, including base plates with shear lugs:

a. Provide plates with air relief holes at least 1/8 inch in diameter and spaced to prevent entrapment of air for complete filling under the plate.

2. Remove grease, oil, dirt, dust, ice and frost, debris, and other materials that would contaminate grout or result in uneven bearing below plates.

a. Clean anchor holes and block-outs.

b. Clean surfaces in accordance with SSPC-SP 1.

3. Base plates over non-shrink epoxy grout:

a. At locations where equipment will be removed for maintenance or replacement, coat base plate with 2 coats of heavy duty paste wax to prevent bonding to grout.

D. Forms for grout:

1. Construct forms:

a. With adequate strength and stiffness to withstand grout placement and consolidation procedures without deformation.

b. That provide a smooth and uniform finish for grout surfaces.

c. That are liquid tight. Caulk cracks and joints with elastomeric sealant compatible with the trout to be placed.

d. That allow venting of displaced air.

e. That allow grout to flow horizontally beyond the perimeter of the base plate a distance not less than the thickness of the grout or 1 inch.

f. Line forms with polyethylene, or coat with 2 coats of heavy paste wax, to allow for easy form release.

2. Construct forms with "head box."

a. Make head box continuous over entire length of one side of form.

b. For larger placements, space head boxes to maintain continuous flow of grout from one side of the base plate to the other.

c. Make head box height sufficient to force grout to flow under full dimensions of base and to the surrounding form faces.

d. Position bottom of head box not less than 4 to 6 inches higher than bottom of the base plate.

3.2 INSTALLATION

A. Nonshrink Grout:

1. Use nonshrink, nonmetallic grout for grouting precast concrete wall panel connections, column base plates, anchor bolts, reinforcing bars, pipe sleeves, machinery supports and pump base plates.

2. Mix and place nonshrink grout as recommended by the manufacturer.

3. Mix grout as close to the work area as possible and transport quickly to its final position in a manner which will not permit segregation of materials.

4. Cure nonshrink grout with water saturated burlap for at least three days or with an application of Super Rez Seal cure and seal compound applied immediately after grout placement.

5. Do not operate machinery set on grout pads until the grout has cured for at least 24 hours.

END OF SECTION

SECTION 05051

ANCHOR BOLTS, TOGGLE BOLTS AND CONCRETE INSERTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment and incidentals as shown specified, and required to furnish and install anchorage systems such as anchor bolts, toggle bolts and concrete inserts.

B. This Section includes all anchor bolts, toggles bolts and concrete inserts required for the WORK, but not specified under other Sections.

C. Coordination:

1. Review installation procedures under this and other Sections and coordinate the installation of items that must be installed with, or before the anchor bolts, toggle bolts and concrete inserts WORK.

D. Related Sections:

1. Division 11, Equipment.

1.2 REFERENCES

A. Standards referenced in this Section are listed below:

1. American Society for Testing and Materials, (ASTM).

a. ASTM A 36/A 36M, Specification for Carbon Structural Steel.

b. ASTM A 123/A 123M, Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

c. ASTM A 153/A 153M, Specification for Zinc Coating (Hot- Dip) on Iron and Steel Hardware.

d. ASTM A 276, Specification for Stainless Steel Bars and Shapes.

e. ASTM A 307, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.

f. ASTM A 484/A 484M, Specification for General Requirements for Stainless Steel Bars, Billets and Forgings.

g. ASTM A 493, Specification for Stainless Steel Wire and Wire Rods for Cold Heading and Cold Forging.

h. ASTM A 525, Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.

i. ASTM A 536, Specification for Ductile Iron Castings.

j. ASTM A 563, Specification for Carbon and Alloy Steel Nuts.

k. ASTM A 570/A 570M, Specification for Structural Steel, Sheet and Strip, Carbon, Hot-Rolled.

l. ASTM A 653/A653M, Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-dip Process.

m. ASTM A 1011/A1011M, Specification for Steel, Sheet and Strip, Hot-Rolled Carbon, Structural, High Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

n. ASTM B 633, Specification for Electrodeposited Coatings of Zinc on Iron and Steel.

o. ASTM C 881, Specification for Epoxy-Resin-Base Bonding System for Concrete.

p. ASTM F 436, Specification for Hardened Steel Washers.

q. ASTM F 593, Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.

r. ASTM F 1554, Specification for Anchor Bolts, Steel, 36, 55 and 105-KSI Yield Strength.

2. Factory Mutual System, (FM).

3. Federal Specification, (FS).

   a. Federal Specification FF-B-588, Bolt, Toggle and Expansion Sleeve, Screw.

   b. Federal Specification FF-S-325, for Concrete Expansion Anchors.

   c. Federal Specification WW-H-171E, for Malleable Iron.

4. International Conference of Building Officials, (ICBO).

5. Manufacturer's Standardization Society, (MSS).

   a. ANSI/MSS SP-58 Pipe Hangers and Supports-Materials, Design and Manufacturer.

6. Underwriters Laboratories, (UL).

7. US General Services Administration (GSA).

   a. Federal Specification A-A-1923A for Concrete Expansion Anchors.

   b. Federal Specification FF-S-325 for Concrete Expansion Shield Anchors.

1.3 QUALITY ASSURANCE

A. Inserts shall be ICBO, UL or FM approved.

B. Toggle Bolts: Federal Specification FF-B-588, Type I, Class A, Style 1.

C. Installers: Post-installed mechanical anchors:

1. Conduct a training session with the manufacturer's authorized technical representative for the Project on site:

a. Training shall cover the complete installation process for each type of anchor to be used and shall include, but not be limited to, hole drilling procedures and techniques, hole preparation and cleaning, bolt installation, and bolt proof loading and torquing.

b. Use only trained and qualified personnel for anchor installation.

2. Installations shall be performed by trained installers having at least 3 years of experience performing similar installations with similar types of anchors.

1.4 SUBMITTALS

A. General:

1. Submit as specified in Section 01300 – Contractor Submittals and Section 01600 – Product Requirements.

B. Shop Drawings: Submit the following:

1. Setting drawings and templates for location and installation of anchorage devices.

2. Copies of manufacturer's specifications, load tables, dimension diagrams, storage, handling and installation instructions for the devices.

3. Copies of ICBO, UL or FM Reports certifying load carrying capacities and installation requirements for the anchorage devices.

4. Product data:

a. Cast-in anchors:

1) Manufacturer's data, including catalog cuts showing anchor sizes and configuration, materials, and finishes.

b. Post-installed anchors:

1) For each anchor type, manufacturer's data, including catalog cuts showing anchor sizes and construction, materials and finishes, and load ratings.

C. Samples: Submit the following:

1. Representative samples of anchor bolts, toggle bolts and concrete inserts as may be requested by ENGINEER. Review will be for type and finish only. Compliance with all other requirements is exclusive responsibility of CONTRACTOR.

D. Qualification Statements: Submit the following:

1. Post-installed anchors: Installer qualifications:

a. List of personnel performing installations. Include letter of training from manufacturer indicating date of manufacturer's training for each installer.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Post installed anchors shall be in accordance with building code specified in Section 01410 – Regulatory Requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 01600 – Product Requirements.

B. Deliver post-installed anchors in manufacturer's standard packaging with labels visible and intact. Include manufacturer's installation instructions.

C. Handle and store anchors and fasteners in accordance with manufacturers' recommendations and as required to prevent damage.

D. Protect anchors from weather and moisture until installation.

E. Store and protect adhesives or adhesive components as follows, unless more restrictive requirements are recommended by the manufacturer:

1. Store adhesives and adhesive components on pallets or shelving in a covered-storage area protected from weather.

2. Control temperature to maintain storage within the manufacturer's recommended temperature range.

a. If products have been stored at temperatures outside the manufacturer's recommended range, test by methods acceptable to the Engineer to confirm acceptability before installing in the Work.

3. Dispose of products that have passed their expiration date.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

A. General:

1. Furnish threaded fasteners with flat washers and hex nuts fabricated from materials corresponding to the material used for threaded portion of the anchor.

   a. Cast-in anchors: Provide flat washers and nuts as listed in the ASTM standard for the anchor materials specified.

   b. Post-installed anchors: Provide flat washers and nuts supplied for that product by the manufacturer of each anchor.

2. Adhesives shall have a current Evaluation Report documenting testing and compliance in accordance with ACI 355.4 and ICC-ES AC308 for use with un cracked concrete and with cracked concrete in the seismic design category specified.

3. Bond reinforcing bars and all thread rods in concrete using epoxy adhesive unless other adhesives specified are specifically indicated on the Drawings or approved in writing by the Engineer.

B. Materials:

1. Provide and install anchors of materials as specified in this Section.

2.2 DESIGN CRITERIA

A. When the size, length, embedment depth, or load carrying capacity of an anchor system is not shown, provide the following:

1. For anchor bolts, provide the size, length, minimum effective embedment depth and capacity required to carry the design load based on the values and requirements provided in the latest governing building codes for concrete.

2. For adhesive and expansion anchors and concrete inserts, provide the size, length, type, and capacity required to carry the design load based on the values and requirements given in the manufacturers load tables, ICBO Evaluation Report, or similar certifications by UL or FM, for the proposed anchor. Alternately the capacity may be based on independent testing lab capacities for tension and shear strength using a minimum safety factor of four. Consideration for the capacity due to embedment length, strength of base fastening materials, spacing and edge distance shall be made.

B. Determine design loads as follows:

1. For equipment anchors, use the design load recommended by the equipment manufacturer and approved by ENGINEER.

2. For pipe hangers and supports, use one half of the total weight of: pipe, fittings, and water contained in pipe, plus the full weight of valves and accessories located between the hanger or support in question.

3. Allowances for vibration are included in the safety factor specified above.

4. Anchors bolts shall develop ultimate shear and pull-out loads of not less than the following values in 4,000 psi concrete:

Bolt Diameter (Inches)	Min. Shear (Pounds)	Min. Pull-Out Load (Pounds)
1/2	5,000	7,600
5/8	11,000	12,000
3/4	14,240	18,000
7/8	16,200	20,400
1	21,200	29,200

2.3 APPLICATION

A. Anchor Bolts:

1. Where an anchor bolt is indicated, only a cast-in-place anchor bolt shall be used, unless another anchor type is accepted by the ENGINEER.

2. Straight steel rod having one end with an integrally forged head, and one threaded end. Embedded into concrete with the headed end cast into concrete at the effective embedment depth indicated on the Drawings or specified, and with the threaded end left to project clear of concrete face as required for the connection to be made.

3. Provide anchor bolts with heavy hex forged head as shown or as required to secure structural element to the appropriate anchor surface.

   a. Rods or bars with angle bend for embedment in concrete (i.e., "L" or "J" shaped anchor bolts) are not permitted in the Work.

B. Expansion Anchors:

1. Where expansion anchors are indicated or shown to be installed in concrete or grout-filled concrete masonry units, use expansion anchors in interior locations. Use adhesive anchors for exterior locations subject to freezing.

2. Do not use where subjected to vibration.

3. Do not use in exterior locations, subjected to freezing.

4. Use for pipe supports.

5. Use in concrete and masonry.

6. Use in ceilings.

7. Use for pipe hangers.

C. Adhesive Anchors:

1. Where adhesive anchors are indicated or shown to be installed in concrete or grout-filled concrete masonry units.
2. Use where subjected to vibration or where buried or submerged.
3. Use for pipe supports.
4. Use in concrete and masonry.
5. Do not use in ceilings.
6. Do not use for pipe hangers.

D. Concrete Inserts:

1. Use only where shown.
2. Use for pipe hangers and supports for the pipe size and loading recommended by the insert manufacturer.

2.4 MATERIALS

A. Anchor Bolts:

1. Provide carbon steel bolts complying with ASTM F 1554, Grade 55, headed, threaded and nutted anchor, unless otherwise indicated.
    a. Nuts: ASTM A563, heavy hex, threads to match bolt.
    b. Washers: ASTM F436, Type 1.
2. In exterior, buried or submerged locations provide stainless steel bolts complete with washers complying with ASTM F 593, AISI Type 316 and with nitronic 60 stainless steel nuts and locknuts. Other AISI types may be used subject to ENGINEER'S approval.
3. For equipment, provide anchor bolts, which meet the equipment manufacturer's recommendations for size, material, and strength. Comply with manufacturer's required embedment length and necessary anchor bolt projection.
4. For anchoring structural elements, provide anchor bolts of the size, material and strength as shown or as specified.
5. Locate and accurately set the anchor bolts using templates or other devices as required.
6. Protect threads and shank from damage during installation of equipment and structural steel.

B. Adhesive Anchors:

1. Provide stainless steel adhesive anchors complying with ASTM F 593, AISI Type 316 with nitronic 60 stainless steel nuts and locknuts.

2. Adhesive anchors shall be of the embedment length and size required for the fastening material strength specified.

3. In accordance with the physical requirements of ASTM C881, Type IV, Grade 3, Class B or C, depending on Site conditions.

4. Adhesive anchors shall consist of reinforcing bars anchored with an adhesive system into hardened concrete or grout-filled masonry. The adhesive system shall use a two-component adhesive mix, 100-percent solids, insensitive to moisture, and shall be injected with a static mixing nozzle following manufacturer's instructions. Cure temperature, pot life, and workability shall be compatible with the intended use and environmental conditions. The embedment depth of the bar shall provide a minimum allowable bond strength that is equal to the allowable yield capacity of the rod, unless otherwise noted.

5. Repair Materials:

   a. Epoxy grout: As specified in Section 03600 – Grouting.

6. Packaging:

   a. Disposable, self-contained cartridge system furnished in side-by-side cartridges designed to fit into a manually or pneumatically operated caulking gun, and with resin and hardener components isolated until mixing through the manufacturer's static mixing nozzle.

   b. Nozzle designed to dispense components in the proper ratio and to thoroughly blend the components for injection from the nozzle directly into the prepared hole.

   c. Provide nozzle extensions as required to allow full-depth insertion and filing from the bottom of the hole.

   d. Container markings: Include the manufacturer's name, product name, batch number, mix ratio by volume, product expiration date, ANSI hazard classification, and appropriate ANSI handling precautions.

7. Products and Manufacturers: Provide one of the following:

   a. Epcon System Ceramic 6, as manufactured by ITW Ramset/Redhead.

   b. HIT HY-150 Injection Adhesive Anchor System, as manufactured by Hilti.

   c. Powerfast, as manufactured by Powers/Rawl.

   d. Or approved equal.

C. Wedge Expansion Anchors:

1. Where expansion anchors are shown or specified to be installed in concrete or grout-filled masonry, provide wedge type expansion anchors.

2. Post-installed anchor assembly consisting of a threaded stud and a surrounding wedge expansion sleeve that is forced outward by torquing the center stud to transfer loads from the stud to the concrete through bearing, friction, or both. Sometimes referred to as "expansion anchors" or "wedge anchors."

    a. Do not use slug-in, lead cinch, and similar systems relying on deformation of lead alloy or similar materials to develop holding power.

3. Concrete expansion bolts for anchorage to concrete:

    a. Shall have a current ICC-ES report demonstrating that the anchors have been tested and qualified for performance in both cracked and un-cracked concrete, and for short-term loading due to wind and seismic forces for Seismic Design Categories A through F in accordance with ACI 355.2 and with ICC-ES AC193 (including all mandatory tests and optional tests for seismic tension and shear in cracked concrete).

    b. Performance in the current ICC-ES report shall be "Category 1" as defined in ACI 355.2.

4. In interior locations, provide carbon steel anchors complete with nuts and washers, zinc plated, in accordance with ASTM B 633, and meet the requirements of Federal Specification A-A-1923A for wedge expansion anchors.

5. In exterior, submerged or buried locations provide expansion anchors complete with nuts and washers, Type 316 stainless steel, in accordance with ASTM A 276 or ASTM A 493 and meet the requirements of Federal Specification for expansion anchors.

6. Products and Manufacturers: Provide one of the following:

    a. Kwik-Bolt 3 Expansion Anchors, as manufactured by Hilti Fastening Systems, Incorporated.

    b. Trubolt Wedge Anchors, as manufactured by ITW Ramset/Red Head, Incorporated.

    c. Or approved equal.

D. Sleeve Expansion Anchors:

1. Where expansion anchors are shown or specified to be installed in hollow concrete unit masonry or solid brick, provide sleeve type expansion anchors.

2. Post-installed, torque-controlled anchor assembly consisting of an externally threaded stud with a spacer sleeve near the surface of the base material, and an expansion sleeve on the lower part of the stud. Expansion sleeve is forced outward by torquing of the center stud to transfer load.

    a. Do not use slug-in, lead cinch, and similar systems relying on deformation of lead alloy or similar materials in order to develop holding power.

3. Sleeve anchors for anchorage to concrete:

   a. Shall have a current ICC-ES report demonstrating that the anchors have been tested and qualified for performance in both cracked and un-cracked concrete, and for short-term loading due to wind and seismic forces for Seismic Design Categories A through F in accordance with ACI 355.2 and with ICC-ES AC193 (including all mandatory tests and optional tests for seismic tension and shear in cracked concrete).

   b. Performance in the current ICC-ES report shall be "Category 1" as defined in ACI 355.2.

4. In interior locations, provide carbon steel anchors complete with nuts and washers, zinc plated, in accordance with ASTM B 633, and meet the requirements of Federal Specification A-A-1923A for sleeve expansion anchors.

5. In exterior, submerged or buried locations provide expansion anchors complete with nuts and washers, Type 316 stainless steel, in accordance with ASTM A 276 or ASTM A 493 and meet the requirements of Federal Specification for expansion anchors.

6. Products and Manufacturers: Provide one of the following:

   a. HLC Sleeve Anchors, as manufactured by Hilti Fastening Systems, Incorporated.

   b. Dynabolt Sleeve Anchors, as manufactured by ITW Ramset/Red Head, Incorporated.

   c. Or approved equal.

E. Drop-In Expansion Anchors:

1. Where light-duty expansion anchors, to be installed in concrete or grout-filled concrete unit masonry, are required by CONTRACTOR to support pipe or conduit 2-inches in diameter or smaller properly sized drop-in anchors are acceptable for use.

2. In all locations, provide carbon steel anchors complete with nuts and washers, zinc plated, in accordance with ASTM B 633, and meet the requirements of Federal Specification FF-S-325 for expansion shield anchors.

3. Products and Manufacturers: Provide one of the following:

   a. HDI Drop-In Anchors, as manufactured by Hilti Fastening Systems, Incorporated.

   b. Multi-Set II Drop-In Anchors, as manufactured by ITW Ramset/Red Head, Incorporated.

   c. Or approved equal.

F. Concrete Inserts:

1. For piping, grating, floor plate and masonry lintels, provide malleable iron inserts. Comply with ANSI/MSS SP-58. Provide those recommended by the manufacturer for the required loading.

2. Provided with flange for nailing to forms and female threaded coupler at the exposed concrete face, and washer-faced hex headed foot to resist pullout from concrete at the embedded end.

3. Finish shall be black.

4. Products and Manufacturers: Provide one of the following:

   a. Figure 282, as manufactured by Anvil International Inc.

   b. No. 380E, as manufactured by Hohmann and Barnard, Incorporated.

   c. Or approved equal.

G. Appurtenances for Anchoring and Fastening:

H. Anchor bolt sleeves:

1. Fabricated steel sleeves:

   a. Construct as specified in this Section.

   b. Fabricate to the following dimensions unless otherwise indicated on the Drawings:

      1) Inside diameter: At least 2 inches greater than bolt diameter.

      2) Inside length: Not less than 10-bolt diameters.

      3) Bottom plate:

         a) Square plate with dimensions equal to the outside diameter of the sleeve plus 1/2 inch each side.

         b) Thickness equal to or greater than one-half of the anchor bolt diameter.

   c. Carbon steel:

      1) Fabricated from ASTM A36 plate and ASTM A53, Grade B pipe.

      2) Welded connections: Conform to requirements of AWS D1.1.

      3) Hot dip galvanized in accordance with ASTM A153.

   d. Stainless steel:

      1) Fabricated from ASTM A240 plate and pipe. Type 304L or Type 316L to match type of the anchor bolt.

      2) Welded connections: In accordance with AWS D1.6.

I. Isolating sleeves and washers:

1. Manufacturers: One of the following or equal:

a. Allied Corrosion Industries.

b. Central Plastics Co.

2. Sleeves: Mylar, 1/32-inch thick, 4,000 volts per mil dielectric strength, of proper size to fit bolts and extending half way into both steel washers.

3. One sleeve required for each bolt.

4. Washers: Inside diameter of washers shall fit over the isolating sleeve, and both the steel and isolating washers shall have the same inside diameter and outside diameter.

a. Proper size to fit bolts.

b. Two 1/8-inch thick steel washers for each bolt.

c. G3 Phenolic: 2 insulating washers are required for each bolt:

1) Thickness: 1/8 inch.

2) Base material: Glass.

3) Resin: Phenolic.

4) Water absorption: 2 percent.

5) Hardness (Rockwell): 100.

6) Dielectric strength: 450 volts per mil.

7) Compression strength: 50,000 pounds per square inch.

8) Tensile strength: 20,000 pounds per square inch.

9) Maximum operating temperature: 350 degrees Fahrenheit.

J. Coating for repair of galvanized surfaces:

1. Manufacturers: The following or equal:

a. Jelt, Galvinox.

K. Thread coating: For use with threaded stainless steel fasteners:

1. Manufacturers: One of the following or equal:

a. Bostik, Never-Seez.

b. Oil Research, Inc., WLR No. 111.

L. Powder activated fasteners and other types of bolts and fasteners not specified herein shall not be used, unless approved by ENGINEER.

PART 3 - EXECUTION

3.1 GENERAL

A. Adhesive-Bonded Reinforcing Bars in Concrete:

1. Execution of this Work is restricted to installers who have personally completed the adhesive manufacturer's on-site training for the products to be installed, and who are personally certified through a qualified certification program described under the Quality Assurance article and accepted by the Engineer and the building official.

   a. Do not install holes or adhesive until training is complete.

2. Perform Work in compliance with the accepted MPII and the following instructions. Where the accepted MPII and the instructions conflict, the MPII shall prevail.

3. Install reinforcing bars and all thread rods to embedment depth and at spacing and locations indicated on the Drawings.

   a. If embedment depth is not indicated, contact the Engineer for requirements.

3.2 INSPECTION

A. CONTRACTOR shall examine areas and conditions under which anchor bolts, toggle bolts and concrete insert WORK is to be installed, and notify ENGINEER, in writing, of conditions detrimental to proper and timely completion of WORK. Do not proceed with WORK until unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.

3.3 PREPARATION

A. Adhesive-Bonded Reinforcing Bars in Concrete:

1. Do not begin installation of adhesive bonded anchors until:

   a. Concrete has achieved an age of at least 21 days after placement.

   b. On-site training in installation of adhesive bonded anchors by the manufacturer's technical representative is complete. Do not drill holes in concrete or install adhesive and embeds in holes.

2. Review the MPII and "Conditions of Use" stipulated in the Evaluation Report before beginning work.

   a. Bring to the attention of the adhesive manufacturer's technical representative any discrepancies between these documents and resolve before proceeding with installation.

3. Install adhesive bonded anchors in full compliance with the MPII using personnel who have successfully completed the manufacturer's on-site training for products to be used and who hold certifications specified in this Section.

4. Confirm that adhesive and substrate receiving adhesive are within the manufacturer's recommended range for temperature and moisture conditions and will remain so during the curing time for the product.

3.4 INSTALLATION

A. Assure that embedded items are protected from damage and are not filled in with concrete.

B. Use concrete inserts for pipe hangers and supports for the pipe size and loading recommended by the insert manufacturer.

C. For the adhesive anchors and adhesive material, CONTRACTOR shall comply with the manufacturer's installation instructions on the hole diameter and depth required to fully develop the tensile strength of the adhesive anchor or reinforcing bar. CONTRACTOR shall properly clean out the hole utilizing a wire brush and compressed air to remove all loose material from the hole, prior to installing adhesive capsules or material.

D. Adhesive-Bonded Reinforcing Bars in Concrete:

1. Drilling holes:

a. Determine location of reinforcing bars or other obstructions with a nondestructive indicator device and mark locations with construction crayon on the surface of the concrete.

b. Do not damage or cut existing reinforcing bars, electrical conduits, or other items embedded in the existing concrete without prior acceptance by the Engineer.

2. Hole-drilling equipment:

a. Electric or pneumatic rotary impact type with medium or light impact.

1) Installation of anchors in cored holes is not permitted.

2) Set drill to "rotation only" mode, or to "rotation plus hammer" mode in accordance with the manufacturer's installation instructions and the requirements of the Evaluation Report.

3) Where edge distances are less than 2 inches and "rotation plus hammer" mode is permitted, use lighter impact equipment to prevent micro-cracking and concrete spalling during the drilling process.

b. Drill bits: Carbide-tipped in accordance with ANSI B212-15, unless otherwise recommended by the manufacturer or required as a condition of use in the Evaluation Report.

1) Hollow drill bits with flushing air systems are preferred. Air supplied to drill bits shall be free of oil, water, or other contaminants that will reduce bond.

3. Hole diameter: As recommended in the manufacturer's installation instructions and the Evaluation Report.

4. Hole depth: As recommended in the manufacturer's installation instructions to provide minimum effective embedment indicated on the Drawings.

5. Obstructions in drill path:

    a. If an existing reinforcing bar or other obstruction is hit while drilling a hole, unless otherwise accepted by the Engineer, stop drilling. Prepare and fill the hole with dry-pack mortar. Relocate the hole to miss the obstruction and drill another hole to the required depth.

        1) Obtain the Engineer's acceptance of distance between abandoned and relocated holes before proceeding with the relocation.

        2) Allow dry-pack mortar to cure to a strength equal to that of the surrounding concrete before resuming drilling in the area.

        3) Epoxy grout may be substituted for dry-pack mortar when accepted by the Engineer.

    b. Avoid drilling an excessive number of holes in an area of a structural member, which would excessively weaken the member and endanger the stability of the structure.

    c. When existing reinforcing steel is encountered during drilling and when specifically accepted by the Engineer, enlarge the hole by 1/8 inch, core through the existing reinforcing steel at the larger diameter, and resume drilling at original hole diameter using pneumatic rotary impact drill.

    d. Bent bar reinforcing bars: Where edge distances are critical and interference with existing reinforcing steel is likely, if acceptable to the Engineer, drill hole at 10 degree (or less) angle from axis of reinforcing bar or all thread rod being installed.

6. Cleaning holes:

    a. Insert air nozzle to bottom of hole and blow out loose dust.

        1) Use compressed air that is free of oil, water, or other contaminants that will reduce bond.

        2) Provide minimum air pressure of 90 pounds per square inch for not less than 4 seconds.

    b. Using a stiff bristle brush with diameter that provides contact around the full perimeter of the hole, vigorously brush hole to dislodge compacted drilling dust.

        1) Insert brush to the bottom of the hole and withdraw using a simultaneous twisting motion.

        2) Repeat at least 4 times.

c. Repeat the preceding steps as required to remove drilling dust or other material that will reduce bond, and in the number of cycles required by the MPII and the Evaluation Report.

d. Leave prepared holes clean and dry.

e. Protect prepared and cleaned holes from contamination and moisture until adhesive is installed.

f. Re-clean and dry previously prepared holes if, in the opinion of the Engineer, the hole has become contaminated after initial cleaning.

7. Clean and prepare inserts reinforcing bars and all thread rods:

a. Prepare embedded length of reinforcing bars by cleaning to bare metal. Inserts shall be free of oil, grease, paint, dirt, mill scale, rust, or other coatings that will reduce bond.

b. Solvent clean prepared reinforcing bars over the embedment length in accordance with SSPC-SP 1. Provide an oil and grease free surface for bonding of adhesive to steel.

8. Fill holes with adhesive:

a. Fill hole with adhesive only when dry. Do not fill when the hole is filled with water or damp, except with written authorization by the Engineer.

b. Starting at the bottom of the hole, fill hole with adhesive inserting the reinforcing bar or all thread rod.

c. Fill hole as nozzle is withdrawn without creating air voids.

d. Unless otherwise indicated on the Drawings, fill hole with sufficient adhesive so that excess adhesive is extruded out of the hole when the reinforcing bar or all thread rod is inserted.

e. Where necessary, seal hole at surface of concrete to prevent loss of adhesive during curing.

9. Installing reinforcing bars and all thread rods.

a. Unless otherwise indicated on the Drawings, install bars perpendicular to the concrete surface.

b. Insert reinforcing bars into adhesive in accordance with the manufacturer's recommended procedures.

c. Confirm that insert has reached the designated embedment in the concrete and that adhesive completely surrounds the embedded portion.

d. Securely brace bars in place to prevent displacement while the adhesive cures. Bars and rods displaced during curing will be considered damaged and replacement will be required.

e. Clean excess adhesive from the mouth of the hole.

10. Curing and loading.

    a. Provide and maintain curing conditions recommended by the adhesive manufacturer for the period required to fully cure the adhesive at the temperature of the concrete.

    b. Do not disturb or load bonded embeds until the manufacturer's recommended cure time, based on temperature of the concrete, has elapsed.

11. Do not bend bars or all thread rods after bonding to the concrete, unless accepted in advance by the Engineer.

E. Mechanical Anchoring and Fastening to Concrete

1. Installation – General:

    a. Where anchors and fasteners are not specifically indicated on the Drawings or specified, make attachments with materials specified in this Section.

    b. Substitution of anchor types:

2. Post-installed anchors may not be used as an alternative to cast in/built in anchors at locations where the latter are indicated on the Drawings.

3. Cast-in/built-in anchors may be used as an alternative to post-installed mechanical anchors at locations where the latter are indicated on the Drawings.

    a. Protect products from damage during installation. Protect threads and threaded ends.

    b. Accurately locate and position anchors and fasteners:

4. Unless otherwise indicated on the Drawings, install anchors perpendicular to the surfaces from which they project.

5. Install anchors so that at least 2 threads, but not more than 1/2 inch of threaded rod, projects past the top nut.

    a. Interface with other products.

6. Where steel anchors come in contact with dissimilar metals (aluminum, stainless steel, etc.), use stainless steel anchors and separate or isolate dissimilar metals using isolating sleeves and washers.

7. Prior to installing nuts, coat threads of stainless steel fasteners with thread coating to prevent galling of threads.

8. Installation – Cast-in Anchors.

9. Accurately locate cast-in and built-in anchors.

    a. Provide anchor setting templates to locate anchor bolts and anchor rods. Secure templates to formwork.

    b. Brace or tie off embedments as necessary to prevent displacement during placement of plastic concrete or of surrounding masonry construction.

c. Position and tie cast-in and built-in anchors in place before beginning placement of concrete or grout. Do not "stab" anchors into plastic concrete, mortar, or grout.

d. Do not allow cast-in anchors to touch reinforcing steel. Where cast-in anchors are within 1/4 inch of reinforcing steel, isolate the metals by wrapping the anchors with a minimum of 4 wraps of 10-mil polyvinyl chloride tape in area adjacent to reinforcing steel.

10. For anchoring at machinery bases subject to vibration, use 2 nuts, with 1 serving as a locknut.

11. Where anchor bolts or anchor rods are indicated on the Drawings as being for future use, thoroughly coat exposed surfaces that project from concrete or masonry with non-oxidizing wax. Turn nuts down full length of the threads, and neatly wrap the exposed thread and nut with a minimum of 4 wraps of 10-mil waterproof polyvinyl tape.

    a. Anchor bolts.

12. Minimum effective embedment: 10-bolt diameters, unless a longer embedment is indicated on the Drawings.

13. Where indicated on the Drawings, set anchor bolts in galvanized steel or stainless steel sleeves to allow for adjustment.

    a. Seal top of sleeve to prevent grout from filling sleeve.

    b. Post-installed Mechanical Anchors.

14. General:

    a. Install anchors in accordance with the manufacturer's instructions, ACI 355.2, the anchor's ICC-ES report. Where conflict exists between the ICC-ES report and the requirements specified in this Section, the requirements of the ICC-ES report shall control.

    b. Where anchor manufacturer recommends the use of special tools and/or specific drill bits for installation, provide and use such tools.

    c. After anchors have been positioned and inserted into concrete or masonry, do not:

        1) Remove and reuse/reinstall anchors.

        2) Loosen or remove bolts or studs.

15. Holes drilled into concrete and masonry:

    a. Do not drill holes in concrete or masonry until the material has achieved its minimum specified compression strength (f'c or f'm).

b. Accurately locate holes:

1) Before drilling holes, use a reinforcing bar locator to identify the position of reinforcing steel, conduit, and other embedded items within a 6-inch radius of each proposed hole.

2) If the hole depth exceeds the range of detection for the rebar locator, the Engineer may require radiographs of the area designated for investigation before drilling commences.

c. Exercise care to avoid damaging existing reinforcement and other items embedded in concrete and masonry.

1) If embedments are encountered during drilling, immediately stop work and notify the Engineer. Await the Engineer's instructions before proceeding.

d. Unless otherwise indicated on the Drawings, drill holes perpendicular to the concrete surface into which they are placed.

e. Drill using anchor manufacturer's recommended equipment and procedures:

1) Unless otherwise recommended by the manufacturer, drill in accordance with the following:

a) Drilling equipment: Electric or pneumatic rotary type with light or medium impact. Where edge distances are less than 2 inches, use lighter impact equipment to prevent micro-cracking and concrete spalling during drilling process.

b) Drill bits: Carbide-tipped in accordance with ANSI B212.15. Hollow drills with flushing air systems are preferred.

f. Drill holes at manufacturer's recommended diameter and to depth required to provide the effective embedment indicated.

g. Clean and prepare holes as recommended by the manufacturer and as required by the ICC-ES report for that anchor.

a) Unless otherwise recommended by anchor manufacturer, remove dust and debris using brushes and clean compressed air.

b) Repeat cleaning process as required by the manufacturer's installation instructions.

c) When cleaning holes for stainless steel anchors, use only stainless steel or non-metallic brushes.

16. Insert and tighten (or torque) anchors in accordance with the manufacturer's installation instructions.

a. Once anchor is tightened (torque), do not attempt to loosen or remove its bolt or stud.

17. Concrete anchors: Minimum effective embedment lengths unless otherwise indicated on the Drawings:

Concrete Anchors			
	Minimum Effective Embedment Length		Minimum Member Thickness
Nominal Diameter	In Concrete	In Grouted Masonry	
3/8 inch	2-1/2 inch	2-5/8 inch	8 inch
1/2 inch	3-1/2 inch	3-1/2 inch	8 inch
5/8 inch	4-1/2 inch	4-1/2 inch	10 inch
3/4 inch	5 inch	5-1/4 inch	12 inch

18. Sleeve anchors:

    a. Minimum effective embedment lengths unless otherwise indicated on the Drawings:

Sleeve Anchors			
	Minimum Effective Embedment Length		Minimum Member Thickness
Nominal Diameter	In Concrete	In Grouted Masonry	
M8 (1/2 inch)	70 mm (2-3/4 inch)	Not accepted	100 mm (8 inch)
M10 (5/8 inch)	76 mm (3 inch)	Not accepted	250 mm (10 inch)
M12 (3/4 inch)	80 mm (3-1/4 inch)	Not accepted	300 mm (12 inch)

3.5 CLEANING

A. After embedding concrete is placed, remove protection and clean bolts and inserts.

3.6 FIELD QUALITY CONTROL

A. CONTRACTOR shall employ a testing laboratory to perform field quality testing of installed anchors. Field engineer is to determine the level of testing which is required for the various types of adhesive anchors and anchor bolts. A minimum of ten percent of the adhesive anchors and reinforcing bars are to be tested to 50 percent of the ultimate tensile capacity of the adhesive anchor or reinforcing bar.

B. If failure of any of the adhesive anchors occurs, CONTRACTOR will be required to pay for the costs involved in testing the remaining 90 percent.

C. CONTRACTOR shall correct improper workmanship, remove and replace, or correct as directed by the ENGINEER, all adhesive anchors or bars found unacceptable or deficient, at no additional cost to the OWNER.

D. Cast-in and built-in anchors.

E. Post-installed anchors:

1. Review anchor manufacturer's installation instructions and requirements of the Evaluation Service report (hereafter referred to as "installation documents") for each anchor type and material.

2. Observe hole-drilling and cleaning operations for conformance with the installation documents.

3. Certify in writing that the depth and location of anchor holes, and the torque applied for setting the anchors conforms to the requirements of the installation documents.

F. Concrete anchor testing:

G. Adhesive-Bonded Reinforcing Bars in Concrete:

1. Do not allow Work described in this Section to be performed by individuals who do not hold the specified certifications and who have not completed the specified jobsite training.

2. Manufacturer's services:

a. Before beginning installation, adhesive manufacturer's technical representative to conduct on-site training in proper storage and handling of adhesive, drilling and cleaning of holes, and preparation and installation of reinforcing bars and all thread rods.

1) Provide notice of scheduled training to the Engineer and to special inspector(s) not less than 10 working days before training occurs. Engineer and special inspector may attend training sessions.

3. Submit record, signed by the manufacturer's technical representative, listing the Contractor's personnel who completed the training. Only qualified personnel who have completed the manufacturer's on-site training shall perform installations.

4. Field inspections and testing:

a. Hole drilling and preparation.

b. Results: Submit records of inspections and testing to the Engineer by electronic copies within 24 hours after completion.

3.7 FIELD QUALITY ASSURANCE

A. Adhesive-Bonded Reinforcing Bars in Concrete:

1. Provide field quality assurance over the Work of this Section as specified in Section 01450 - Quality Control.

2. Special inspections, special tests, and structural observation:

a. Provide as specified in Section 01455 - Regulatory Quality Assurance.

b. Frequency of inspections:

1) Unless otherwise indicated on the Drawings or in this Section, provide periodic special inspection as required by the Evaluation Report for the product installed.

2) Provide continuous inspection for the initial installation of each type and size of adhesive bonded reinforcing bar and all thread rod. Subsequent installations of the same anchor may be installed with periodic inspection as defined in subsequent paragraphs.

3) Provide continuous inspection of drilling, cleaning and bonding activities for bars and rods installed in horizontal and upwardly inclined positions.

c. Preparation:

1) Review Drawings and Specifications for the Work to be observed.

2) Review the adhesive manufacturer's MPII and recommended installation procedures.

3) Review Evaluation Report "Conditions of Use" and "Special Inspection" requirements.

d. Inspection: Periodic:

1) Initial inspection. Provide an initial inspection for each combination of concrete and reinforcing bar strength or concrete strength and all thread rod material being installed. During initial inspection, observe the following for compliance with the installation requirements.

a) Concrete: Class (minimum specified compressive strength) and thickness.

b) Environment: Temperature conditions at the work area and moisture conditions of concrete and drilled hole.

c) Holes: Locations, spacing, and edge distances; verification of drill bit compliance with requirements; cleaning equipment and procedures; cleanliness of hole. Before adhesive is placed, confirm that depth and preparation of holes conforms to the requirements of the Contract Documents, the MPII, and the "Conditions of Use" listed in the Evaluation Report.

d) Adhesive: Product manufacturer and name, lot number and expiration date, temperature of product at installation, installation procedure. Note initial set times observed during installation.

e) Reinforcing bars and all thread rods: Material diameter and length; steel grade and/or strength; cleaning and preparation; cleanliness at insertion; minimum effective embedment provided.

2) Subsequent inspections: Subsequent installations of the same reinforcing bars or all thread rods may be performed without the presence of the special inspector, provided that:

a) There is no change in personnel performing the installation, the general strength and characteristics of the concrete receiving the inserts, or the reinforcing bars and all thread rods being used.

b) For ongoing installations, the special inspector visits the Site at least [once per day][once for every 4 hours of work] during each day of installation to observe the Work for compliance with material requirements and installation procedures.

e. Inspection: Continuous.

1) Make observations as described under "Inspection - Periodic, Initial Inspection" during drilling, cleaning, and bonding activities for all bars and rods installed.

f. Records of inspections:

1) Provide a written record of each inspection using forms acceptable to the Engineer and to the building official.

2) Submit electronic copies of inspection reports to the Engineer within 24 hours after completion of inspection.

B. Mechanical Anchoring and Fastening to Concrete and Masonry:

1. Engineer will provide on-site observation and field quality assurance for the Work of this Section.

a. Expenses associated with work described by the following paragraphs shall be paid by the Owner.

2. Field inspections and special inspections:

a. Required inspections: Observe construction for conformance to the approved Contract Documents, the accepted Submittals, and the manufacturer's installation instructions for the products used.

b. Record of inspections:

1) Maintain record of each inspection.

2) Submit copies to the Engineer upon request.

c. Statement of special inspections: At the end of the Project, prepare and submit to the Engineer and the authority having jurisdiction inspector's statement that the Work was constructed in general conformance with the approved Contract Documents, and that deficiencies observed during construction were resolved.

3. Special inspections: Anchors cast into concrete and built into masonry.

a. Provide special inspection during positioning of anchors and placement of concrete or masonry (including mortar and grout) around the following anchors:

1) Anchor bolts.

2) Concrete inserts (all types).

3) Deformed bar anchors.

4) Welded studs.

b. During placement, provide continuous special inspection at each anchor location to verify that the following elements of the installation conform to the requirements of the Contract Documents.

1) Anchor:

a) Type and dimensions.

b) Material: Galvanized steel, Type 304 stainless steel or Type 316 stainless steel, as specified in this Section or indicated on the Drawings.

c) Positioning: Spacing, edge distances, effective embedment, and projection beyond the surface of the construction.

d) Reinforcement at anchor: Presence, positioning, and size of additional reinforcement at anchors indicated on the Drawings.

c. Following hardening and curing of the concrete or masonry surrounding the anchors, provide periodic special inspection to observe and confirm the following:

1) Base material (concrete or grouted masonry):

a) Solid and dense concrete or grouted masonry material within required distances surrounding anchor.

b) Material encapsulating embedment is dense and well-consolidated.

4. Special inspections: Post-installed mechanical anchors placed in hardened concrete and in grouted masonry.

a. Provide special inspection during installation of the following anchors:

1) Concrete anchors.

b. Unless otherwise noted, provide periodic special inspection during positioning, drilling, placing, and torquing of anchors.

1) Provide continuous special inspection for post-installed anchors in "overhead installations" as defined in this Section.

c. Requirements for periodic special inspection:

1) Verify items listed in the following paragraphs for conformance to the requirements of the Contract Documents and the Evaluation Service report for the anchor being used. Observe the initial installation of each type and size of anchor, and subsequent installation of the same anchor at intervals of not more than 4 hours.

a) Any change in the anchors used, in the personnel performing the installation, or in procedures used to install a given type of anchor shall require a new "initial inspection."

2) Substrate: Concrete or masonry surfaces receiving the anchor are sound and of a condition that will develop the anchor's rated strength.

3) Anchor:

a) Manufacturer, type, and dimensions (diameter and length).

b) Material (galvanized, Type 304 stainless steel, or Type 316 stainless steel).

4) Hole:

a) Positioning: Spacing and edge distances.

b) Drill bit type and diameter.

c) Diameter, and depth.

d) Hole cleaned in accordance with the manufacturer's required procedures. Confirm multiple repetitions of cleaning when recommended by the manufacturer.

e) Anchor's minimum effective embedment.

f) Anchor tightening/installation torque.

5) Requirements for continuous special inspection:

a) Special inspector shall observe all aspects of anchor installation, except that holes may be drilled in their absence provided that they confirm the use of acceptable drill bits before drilling, and later confirms the diameter, depth, and cleaning of drilled holes.

d. Field tests:

1) Engineer may, at any time, request testing to confirm that materials being delivered and installed conform to the requirements of the Specifications.

a) If such additional testing shows that the materials do not conform to the specified requirements, the Contractor shall pay the costs of these tests.

b) If such additional testing shows that the materials do conform to the specified requirements, the Owner shall pay the costs of these tests.

C. Non-Conforming Work:

1. Remove misaligned or non-performing anchors.

2. Fill empty anchor holes and repair failed anchor locations using non-shrink cement grout as specified in Section 03600 - Grouting, unless otherwise directed by the Engineer.

3. If more than [10] percent of all tested anchors of a given diameter and type fail to achieve their specified torque or proof load, the Engineer will provide directions for required modifications. Make such modifications, up to and including replacement of all anchors, at no additional cost to the Owner.

D. CONTRACTOR shall pay for all corrections and subsequent tests required to confirm the integrity of the adhesive anchor or bar.

E. The independent testing and inspection agency shall complete a report on each area. The report should summarize the observations made by the inspector and be submitted to ENGINEER.

F. Contractor shall provide access for the testing agency to places where work is being produced so that required inspection and testing can be accomplished.

G. For the adhesive anchor systems, CONTRACTOR shall comply with the manufacturer's installation instructions on the hole diameter and depth required to fully develop the yield strength of the adhesive anchor. The embedment depth shall be based on f'c=2000 psi for existing concrete and f'c=4000 psi for new concrete. CONTRACTOR shall also provide a minimum adhesive anchor spacing and edge distance of 14 anchor diameters. CONTRACTOR shall properly clean out the hole utilizing a synthetic brush and compressed air to remove all loose material from the hole, prior to installing adhesive capsules or material. Proper mixing of the two-component system shall be performed according to the manufacturer's instructions.

END OF SECTION

SECTION 07900

JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Synthetic rubber sealing compound.
2. Synthetic sponge rubber filler.
3. Related materials.

1.2 REFERENCES

A. ASTM International (ASTM):

1. C920 - Standard Specification for Elastomeric Joint Sealants.
2. C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.
3. C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints.
4. D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension.
5. D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomer.

1.3 SUBMITTALS

A. Product data.

B. Samples, include color selections.

C. Manufacturer's Installation Instructions.

D. Warranty.

1.4 QUALITY ASSURANCE

A. Manufacturer qualifications: Manufacturer of proposed product for minimum 5 years with satisfactory performance record.

B. Installer qualifications: Manufacturer approved installer of products similar to specified products on minimum 5 projects of similar scope as Project with satisfactory performance record.

1.5 PROJECT/SITE CONDITIONS

A. Environmental requirements: Do not apply sealant on wet or frosty surfaces or when surface temperature is higher than 100 degrees Fahrenheit or lower than recommended by the manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products in accordance with manufacturer's recommendations.

B. Code date packages. Do not use material older than manufacturer's published shelf life. Store materials at temperatures lower than 80 degrees Fahrenheit. Condition materials in accordance with manufacturer's instructions prior to installation.

1.7 SEQUENCING AND SCHEDULING

A. Caulk joints prior to painting.

1.8 WARRANTY

A. Warrant to correct defective products for minimum 1 year in accordance with manufacturer's standard warranty.

PART 2 - PRODUCTS

2.1 SEALANTS

A. General:

1. Provide colors matching materials being sealed.
2. Where compound is not exposed to view in finished work, provide manufacturer's color which has best performance.
3. Nonsagging sealant for vertical and overhead horizontal joints.
4. Sealants for horizontal joints: Self-leveling pedestrian/traffic grade.
5. Joint cleaner, primer, bond breaker: As recommended by sealant manufacturer.
6. Sealant backer rod and/or compressible filler made from closed cell polyethylene, polyethylene jacketed polyurethane foam, or other flexible, nonabsorbent, non-bituminous material recommended by sealant manufacturer to:
    a. Control joint depth.
    b. Break bond of sealant at bottom of joint.
    c. Provide proper shape of sealant bead.
    d. Serve as expansion joint filler.

2.2 SYNTHETIC RUBBER SEALING COMPOUND

A. Manufacturer: One of the following or equal:

1. Sika Corporation, Sikaflex 2c NS or SL.
2. Sika Corporation, Sikaflex 2c NS EZ Mix.
3. Pacific Polymers, Elastothane 227R.

B. Material: In accordance with ASTM C920 Type M, Grade P (pourable), Class 25 and Type M, Grade NS (non-sag), Class 25; multi-part polyurethane; able to cure at room temperature to firm, highly resilient polymer; able to perform satisfactory when continuously submerged in water or sewage and exposed to direct sunlight in dry condition; with the following properties determined at 75 degrees Fahrenheit and 50 percent relative humidity:

1. Base: Polyurethane rubber.
2. Application time: Minimum 2 hours.
3. Cure time: Maximum 3 days.
4. Tack free time: Maximum 24 hours.
5. Ultimate hardness: Non-sag 25, Pourable/SL 40, within 5 Shore A.
6. Tensile strength: Non-sag 95 pounds per square inch minimum and self-leveling minimum 170 pounds per square inch when tested in accordance with ASTM D412.
7. Ultimate elongation: Minimum 340 percent when tested in accordance with ASTM D412.
8. Tear resistance: Non-sag 45 pounds per inch minimum and self-leveling minimum 85 pounds per inch when tested in accordance with ASTM D624, Die C.
9. Service temperature range: Minus 25 degrees to 158 degrees Fahrenheit.

C. Color: Gray to match concrete, unless indicated on the Drawings.

2.3 SYNTHETIC SPONGE RUBBER FILLER

A. Closed-cell expanded sponge rubber manufactured from synthetic polymer neoprene base, or resilient polyethylene foam backer rod. In accordance with ASTM C1330, Type C:

1. Manufacturers: The following or equal:
   a. Presstite, No. 750.3 Ropax Rod Stock.

B. Characteristics:

1. Suitable for application intended.
2. Strength: As necessary for supporting sealing compound during application.
3. Resiliency: Resistance to environmental conditions of installation.
4. Bonding: No bonding to the sealing compound.

5. Structure: Cellular, prevents absorption of water.

6. Compatibility with other materials in joint and acceptance by manufacturer of sealing compound.

7. Size: Minimum 25 percent greater than nominal joint width.

2.4 RELATED MATERIALS

A. Primer: Nonstaining type, recommended by sealant manufacturer to suit application.

B. Joint cleaner: Noncorrosive, nonstaining, compatible with joint forming materials and as recommended by sealant manufacturer.

C. Bond breaker tape: Pressure-sensitive tape recommended by sealant manufacturer to suit application.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify acceptability of joint dimensions, physical, and environmental conditions.

B. Verify that surfaces are dry, clean, and free of dirt, grease, curing compound, and other residue which might interfere with adhesion of sealants.

3.2 PREPARATION

A. Allow concrete to cure thoroughly before caulking.

B. Synthetic sponge rubber filler:

1. Prepare surfaces designated to receive filler in accordance with manufacturer's installation instructions.

2. Do not stretch filler beyond its normal length during installation.

C. Caulking:

1. Verify that surfaces are dry, clean, and free of dirt, grease, curing compounds, and other residue that might interfere with adhesion of sealant.

2. Concrete, masonry, wood, and steel surfaces: Clean and prime in accordance with manufacturer's instructions prior to caulking.

D. Synthetic rubber sealing compound:

1. Ensure surfaces to which synthetic rubber must bond are dry and free of dust, dirt, and other foreign residue.

2. Heavy sandblasted caulking groove to sound surface, and prime with manufacturer's recommended primer for particular surface.

E. For sidewalks, pavements, and similar joints sealed with elastomeric sealants and subject to traffic and other abrasion and indentation exposures, fill joints to depth equal to 75 percent of joint width, but neither more than 5/8 inches deep nor less than 3/8 inches deep.

F. For normal moving building joints sealed with elastomeric sealants not subject to traffic, fill joints to depth equal to 50 percent of joint width, but neither more than 1/2 inch deep nor less than 1/4 inch deep.

G. Use joint filler to achieve required joint depths, to allow sealants to perform properly.

H. Prepare surfaces and install synthetic sponge rubber filler in accordance with manufacturer's recommendations.

I. Do not stretch filler beyond normal length during installation.

J. Apply bond breaker when recommended by joint sealer manufacturer.

3.3 INSTALLATION

A. Synthetic sponge rubber filler: Install filler in accordance with manufacturer's installation instructions.

B. Caulking, joints, and sealing:

1. Construct expansion, contraction, and construction joints as indicated on the Drawings.
2. Install pipe and conduit in structures as indicated on the Drawings.
3. Caulk doors, windows, louvers, and other items installed in or over concrete openings inside and out.
4. Use synthetic rubber sealing compound for caulking where indicated on the Drawings or as specified, except for masonry construction and where specified otherwise.
5. Complete caulking prior to painting.
6. Verify that concrete is thoroughly cured prior to caulking.
7. When filler compressible material is used, use untreated type.
8. Apply caulking with pneumatic caulking gun.
9. Use nozzles of proper shape and size for application intended.
10. Maintain continuous bond between caulking and sides of joint to eliminate gaps, bubbles, or voids and fill joint in continuous operation without layering of compound.
11. Employ experienced applicators to caulk joints and seams in neat workmanlike manner.
12. To hasten curing of compound when used on wide joints subject to movement, apply heat with infrared lamps or other convenient means.
13. Apply synthetic rubber sealing compound with pneumatic caulking tool or other acceptable method.

3.4 CLEANING

A. Clean surfaces adjacent to sealant as work progresses.

B. Remove excess uncured sealant by soaking and scrubbing with sealant cleaning solvent.

C. Remove excess cured sealant by sanding with Number 80 grit sandpaper.

D. Leave finished work in neat, clean condition.

3.5 SCHEDULE

A. Synthetic rubber sealing compound, non-sag Type II:

1. Use where indicated on the Drawings.
2. Water-bearing and earth-bearing concrete structures.
3. Joints in masonry, concrete vertical surfaces, and metal-faced panels in vertical surfaces.
4. Joints between sheet metal flashing and trim.
5. Joints between sheet metal flashing and trim, and vertical wall surfaces.
6. Small voids between materials requiring filling for weathertight performance in vertical surfaces.
7. Perimeters of frames of doors, windows, louvers, and other openings where bonding is critical to airtight performance.
8. Expansion and control joints in masonry vertical surfaces.

B. Synthetic rubber sealing compound, self-leveling Type I:

1. Use where indicated on the Drawings.
2. Expansion and control joints in masonry, concrete horizontal surfaces, and metal panels in horizontal surfaces.
3. Small voids between materials requiring filling for weathertight performance in horizontal surfaces.
4. Pavement joints.
5. Perimeters of frames of doors, windows, louvers, and other openings in horizontal surfaces where bonding is critical to airtight performance.

3.6 FIELD QUALITY CONTROL

A. Adhesion testing:

1. Perform adhesion tests in accordance with ASTM C1521 per the following criteria:
    a. Water bearing structures: 1 test per every 1,000 LF of joint sealed.
    b. Exterior precast concrete wall panels: 1 test per every 2,000 LF of joint sealed.
    c. Chemical containment areas: 1 test per every 1,000 LF of joint sealed.

d. Building expansion joints: 1 test per every 500 LF of joint sealed.

e. All other type of joints except butt glazing joints: 1 test per every 3,000 LF of joint sealed.

f. Manufacturer's authorized factory representative provide written recommendations for remedial measures on failing tests.

END OF SECTION

SECTION 09940

PROTECTIVE COATINGS

PART 1 - GENERAL

1.1 SCOPE

A. This Section covers field applied protective coatings, including surface preparation, protection of surfaces, inspection, and other appurtenant work for equipment and surfaces designated to be coated with heavy-duty maintenance coatings. Regardless of the number of coats previously applied, at least two field coats in addition to any shop coats or field prime coats shall be applied to all surfaces unless otherwise specified.

1.2 GENERAL

A. Cleaning, surface preparation, coating application, and thickness shall be as specified herein and shall meet or exceed the coating manufacturer's recommendations. When the manufacturer's minimum recommendations exceed the specified requirements, Contractor shall comply with the manufacturer's minimum recommendations. When equivalent products are acceptable to Engineer, Contractor shall comply with this specification and the coating manufacturer's recommendations.

B. Governing Standards:

1. All cleaning, surface preparation, coating application, thickness, testing, and coating materials (where available) shall be in accordance with the referenced standards of the following AWWA, ANSI, NACE, SSPC, NSF, and ASTM.

C. Delivery and Storage:

1. All coating products shall be received and stored in accordance with the coating manufacturer's recommendations.

1.3 SUBMITTALS

A. Contractor shall submit color cards for all coatings proposed for use, together with complete descriptive specifications and the completed Coating System Data Sheets, to Engineer for review and color selection. Requests for review submitted directly to Engineer by coating suppliers will not be considered.

B. When the proposed products will be in contact with treated or raw water in potable water treatment facilities, Contractor shall submit certifications that the proposed systems are in compliance with ANSI/NSF 61.

C. Contractor shall submit a Coating System Data Sheet for each separately identified surface in the Coating Schedule that will be used in the project, using the appropriate Coating System Data Sheet forms (Figures 1-09940 and 2- 09940) at the end of this section. Each field coating system shall be acceptable to the coating material manufacturer. Each Coating System Data Sheet shall include application temperature limits including recoat time requirements for the ambient conditions at the site, including temperatures up to 130°F [54°C]. Temperature requirements shall be specified by the coating manufacturer.

D. Each proposed coating system shall be assigned a unique number with a prefix letter based on the following:

Prefix	Surfaces	Figure
A	Iron and steel	2
C	Concrete and concrete block	1
E	Equipment - submerged nonsubmerged	1 2
F	Nonferrous metal	1
G	Galvanized	1
H	High temperature	1
P	PVC and FRP	1

E. Each coating system that will be applied entirely in the field shall be assigned only a prefix letter and no suffix letter. When appropriate under the indicated conditions, the following suffix shall be added to the coating system numbers:

- Each shop-applied coating system that includes a finish coat applied in the field.

F. A separate Coating System Data Sheet shall be developed and submitted for each variation or change in a coating system or surface to be coated.

G. The manufacturer's standard colors will be acceptable for all coatings.

1.4 QUALITY ASSURANCE

A. Coating System Data Sheet Certifications:

1. The coating applicator and coating manufacturer shall review and approve in writing the coating manufacturer's written recommendations for the coating system and the intended service. Any variations from the specifications or the coating manufacturers

published recommendations shall be submitted in writing and approved by the coating manufacturer. The coating manufacturer shall observe the surface preparation, mixing, and application of the coating systems and submit a written report of his observations and any additional recommendations.

B. The Coating System shall be provided with a 3-year manufacturer's warranty.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Alternative Manufacturers:
1. In addition to the coatings listed herein, equivalent products of the following manufacturers will also be acceptable:
   - PPG
   - Sigma
   - Rust-Oleum

B. Equivalent Coatings:
1. Whenever a coating is specified by the name of a proprietary product or of a particular manufacturer or vendor, it shall be understood as establishing the desired type and quality of coating. Other manufacturers' coatings will be accepted, provided that sufficient information is submitted to enable Engineer to determine that the proposed coatings are equivalent to those named. Information on proposed coatings shall be submitted for review in accordance with the Submittals section. Requests for review of equivalency will be accepted only from Contractor and will be considered only after the contract has been awarded.

2.2 MATERIALS

A. All coatings shall be delivered to the job in original, unopened containers, with labels intact. Coatings shall be stored indoors and shall be protected against freezing. No adulterant, unauthorized thinner, or other material not included in the coating formulation shall be added to the coating for any purpose.

B. All coatings shall conform to the air quality regulations applicable at the location of use. Coating materials that cannot be guaranteed by the manufacturer to conform, whether or not specified by product designation, shall not be used.

C. The coatings specified have been selected on the basis of the manufacturer's statement that the VOC content of the product is 2.8 lbs per gallon or less; however, it shall be the Contractor's responsibility to use only coating materials that are in compliance with the requirements of all regulatory agencies. Local regulations may require some coatings to have a lower VOC content than specified herein. The coatings specified may meet the VOC limits in the unthinned (as shipped) condition, but may

exceed the limits if thinned according to the manufacturer's recommendations. In such case, the coatings shall not be thinned beyond the 2.8 lbs per gallon limit, and if the product cannot be thinned to suit the application method or temperature limits, another manufacturer's coating shall be used, subject to acceptance by Engineer.

D. Contractor shall be responsible for ensuring the compatibility of field coatings with each other or with any previously applied coatings. Coatings used in successive field coats shall be produced by the same manufacturer. The first field coat over shop coated or previously coated surfaces shall cause no wrinkling, lifting, or other damage to underlying coats.

E. All coatings used on surfaces that will be in contact with potable or treated water shall be certified as being in compliance with ANSI/NSF 61. Coatings that cannot be so certified, whether or not specified by manufacturer and by product designation, shall not be used.

F. Primers

Universal Primer	Ameron "Amercoat 385 Epoxy", Carboline "Rustbond", ICI Devoe "Devran 224HS", Tnemec "Series 27 F.C. Typoxy", or Sherwin- Williams "Macropoxy 646".
Epoxy Concrete Block Filler	Ameron "Amerlock 400BF Epoxy Block Filler", Carboline "Sanitile 600", ICI Devoe "Blox Filler 4000", Tnemec "Series 54-660", or Sherwin-Williams "Kem Cati-Coat HS".
Epoxy Concrete Filler and Surfacer	Tnemec "Series 63-1500", Ameron NuKlad 114A, or Carboline "Carboguard 510", or Sherwin-Williams "Dura-Plate 2300".

G. Intermediate and Finish Coatings

Epoxy Enamel (NSF certified systems)

Ferrous Metal Surfaces and Concrete Surfaces in Contact with Treated or Raw Water in Potable Water Facilities	Ameron "Amerlock 400 High-Solids Epoxy Coating", Carboline in Hydroplate 1086 ", ICI Devoe "Bar-Potable Water Facilities Rust 233H" Tnemec "Series N140 Pota-Pox Plus", or Sherwin-Williams "SHERPLATE 600"; immersion service.

Epoxy Enamel

Concrete Floors	Ameron "Amerlock 400", Carboline "Carboguard 890", ICI Devoe "Devran 224HS", Tnemec "Series N69 Hi-Build Epoxoline II", or Sherwin-Williams "Armorseal 1000HS"; nonskid.
Ferrous Metal Surfaces and Masonry or Concrete Surfaces Other Than Floors	Ameron "Amercoat 385 Epoxy", Carboline "Carboguard 890", ICI Devoe Devran "224HS", Tnemec "Series N69 Hi-Build Epoxoline II", or Sherwin-Williams "Macropoxy 646".
Aliphatic Polyurethane	Ameron "Amercoat 450H", Carboline "Carbothane 134HG", ICI Devoe "Devthane 379H" Tnemec "Series 1074 Endura-Shield II", or Sherwin-Williams "Acrolon Ultra".
Coal Tar Epoxy	High-build coal tar epoxy; Ameron "Amercoat 78HB Coal Tar Epoxy", Carboline "Bitumastic 300 M", Tnemec "46H-413 Hi-Build Tneme-Tar", or Sherwin-Williams "Hi-Mil Sher-Tar Epoxy".
Medium Consistency Coal Tar	Carboline "Bitumastic 50" or Tnemec "46-465 H.B. Tnemecol".

Chemical Resistant	Tnemec "Series 120 Vinester" Carboline "Plasite 4110" or Sherwin-Williams "Dura-Plate 8200".
Heat-Resistant	Suitable for temperatures up to 400°F [207°C]; Ameron "Amerlock 400", Carboline "Thermaline 450", Tnemec "43-36 Chrome Aluminum", or Sherwin-Williams "Heat-Flex Hi-Temp 500".
High Heat-Resistant	Suitable for temperatures up to 1000°F [537°C]; Ameron "Amercoat 878", Carboline "Thermaline 4700 VOC", Tnemec "Series 39 Silicone Aluminum" or Sherwin-Williams "Heat-Flex Hi-Temp 1200".

H. Vinyl Ester With Graphite Filler Coating System:

1. The corrosion protection system shall be a two component, 100 percent solids, solvent-free, vinyl ester resin, graphite filled, high-build protective and waterproofing coating, Dudick "Protecto-Coat 805". Concrete surface primer shall be a catalyzed vinyl ester resin containing conductive fillers, 100 percent solids, Dudick "Primer 27C". Finish coats shall be a two component, 100 percent solids, solvent-free, graphite filled vinyl ester resin. This option would be preferred for spot treatment where this existing coating system is present in secondary containments. For brand new secondary containment coatings, the use of chemical resistant products mentioned above should be considered.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

A. All surfaces to be coated shall be clean and dry and shall meet the recommendations of the coating manufacturer for surface preparation. Freshly coated surfaces shall be protected from dust and other contaminants. Oil and grease shall be completely removed by use of solvents or detergents before mechanical cleaning is started. The gloss on previously coated surfaces shall be dulled if necessary for proper adhesion of topcoats.

B. Surfaces shall be free of cracks, pits, projections, or other imperfections that would interfere with the formation of a smooth, unbroken coating film, except for concrete block construction where a rough surface is an inherent characteristic.

C. When applying touchup coating or repairing previously coated surfaces, the surfaces to be coated shall be cleaned as recommended by the coating manufacturer, and the edges of the repaired area shall be feathered by sanding or wire brushing to produce a smooth transition that will not be noticeable after the coating is applied. All coatings made brittle or otherwise damaged by heat of welding shall be completely removed.

D. Galvanized Surfaces:

1. Galvanized surfaces shall be prepared for coating according to the instructions of the manufacturer of the epoxy enamel. Any chemical treatment of galvanized surfaces shall be followed by thorough rinsing with clean water.

E. Ferrous Metal Surfaces:

1. Ungalvanized ferrous metal surfaces shall be prepared for coating by using one or more of the following cleaning procedures as specified: solvents (SSPC-SP1); blasting (SSPC-SP5, -SP6, -SP7, or -SP10); power tools (SSPC-SP3 or -SP11); or hand tools (SSPC-SP2). Oil and grease shall be completely removed in accordance with SSPC-SP1 before beginning any other cleaning method. Surfaces of welds shall be scraped and ground as necessary to remove all slag and weld spatter. Tools which produce excessive roughness shall not be used.

2. All components of equipment that can be properly prepared and coated after installation shall be installed prior to surface preparation. Components that will be inaccessible after installation shall have the surfaces prepared and coated before installation. Motors, drive trains, and bearings shall be protected during surface preparation in accordance with the equipment manufacturer's recommendations.

3. All cut or sheared edges shall be ground smooth to a 1/8-inch minimum radius for all material 1/4 inch thickness and larger. For material thickness less than 1/4 inch all cut or sheared edges shall be ground smooth to a radius equal to 1/2 the material thickness. Grinding of rolled edges on standard shapes with a minimum radius of the 1/16 inch will not be required.

4. All ferrous metal surfaces shall have all welds ground smooth and free of all defects in accordance with NACE Standard RPO178, Appendix C, Designation C and sharp edges ground smooth, if not previously prepared in the shop. Instead of blending of the weld with the base metal as required by the NACE standard, it will be acceptable to furnish a welded joint that has a smooth transition of the weld to the base metal. All welds shall be ground smooth to ensure satisfactory adhesion of paint.

5. The cleaning methods and surface profiles specified herein are minimums, and if the requirements printed in the coating manufacturer's data sheets exceed the limits specified, the value printed on the data sheets shall become the minimum requirement.

F. Ferrous Metal Surfaces – Non-immersion Service:

1. Ferrous metal surfaces, including fabricated equipment, in non-immersion service shall be cleaned to the degree recommended by the coating manufacturer for surfaces to be coated with coal tar epoxy, epoxy enamel, and heat-resistant coatings, except galvanized surfaces. Blast cleaning to at least SSPC-SP6 shall be used where recommended by the coating manufacturer and may be used elsewhere at the option of Contractor, provided that no dust is permitted to settle on adjacent wet coating. Surface profile shall be as recommended by coating manufacturer, but not less than 2 mils.

G. Ferrous Metal Surfaces - Immersion Service:

1. Surface preparation of ferrous metal surfaces in immersion service shall consist of blast cleaning to at least SSPC-SP10 and the first application of coating shall be performed on the same day. If more surface area is prepared than can be coated in one day, the uncoated area shall be blast cleaned again to the satisfaction of Engineer. Surface profile shall be as recommended by coating manufacturer, but not less than 3.5 mils.

H. Concrete Surfaces:

1. All concrete surfaces shall be free of objectionable substances and shall meet the coating manufacturer's recommendations for surface preparation. Any other surface preparation recommended by the coating material manufacturer shall be brought to Engineer's attention and may be incorporated into the work if acceptable to Engineer.

2. All concrete surfaces shall be dry when coated and free from dirt, dust, sand, mud, oil, grease, and other objectionable substances. Oil and grease shall be completely removed by use of solvents or detergents before mechanical cleaning is started.

3. New concrete shall have cured for at least 4 weeks before coating is applied as recommended by the material manufacturer. Concrete surfaces shall be tested for capillary moisture in accordance with ASTM D4263. There shall be no capillary moisture when coatings are applied on concrete.

4. All surfaces to be coated shall be cleaned in accordance with ASTM D4258 and abraded in accordance with ASTM D4259. Surface profile shall be at least 25 percent of the dry film thickness specified for the coating system. Prior to application

of the coating, the surfaces shall be thoroughly washed or cleaned by air blasting to remove all dust and residue. Spalled areas, voids, and cracks shall be repaired in accordance with the Concrete section and as acceptable to the Engineer. Fins and other surface projections shall be removed to provide a flush surface before application of coating.

5. Except where epoxy enamel is applied as damp-proofing, the concrete surfaces, including those with bug holes less than 1 inch in any dimension, shall be prepared when required and as recommended by the manufacturer, using an epoxy concrete filler and surfacer. Where coating with a vinyl ester the concrete filler and surfacer shall be as recommended by the manufacturer to be compatible with vinyl ester.

I. Concrete Block Surfaces:

1. Voids and openings in concrete block surfaces shall be pointed. All exposed exterior surfaces and surfaces to be coated with epoxy enamel, including the joints, shall be filled so that a continuous unbroken coating film is obtained.

J. Copper Tubing:

1. All flux residue shall be removed from joints in copper tubing. Immediately before coating is started, tubing shall be wiped with a clean rag soaked in xylol.

K. Plastic Surfaces:

1. All wax and oil shall be removed from plastic surfaces that are to be coated, including PVC and FRP, by wiping with a solvent compatible with the specified coating.

L. Hardware:

1. Hardware items such as bolts, screws, washers, springs, and grease fittings need not be cleaned prior to coating if there is no evidence of dirt, corrosion, or foreign material.

M. Aluminum:

1. When a coating system is required, remove all oil or deleterious substance with neutral detergent or emulsion cleaner or blast lightly with fine abrasive.

N. Stainless Steel:

1. When a coating system is required, surface preparation shall conform to the coating manufacturer's recommendations.

3.2 MIXING AND THINNING

A. Coating shall be thoroughly mixed each time any is withdrawn from the container. Coating containers shall be kept tightly closed except while coating is being withdrawn.

B. Coating shall be factory mixed to proper consistency and viscosity for hot weather application without thinning. Thinning will be permitted only as necessary to obtain recommended coverage at lower application temperatures. In no case shall the wet film thickness of applied coating be reduced, by addition of coating thinner or otherwise, below the thickness recommended by the coating manufacturer. Thinning shall be done in compliance with all applicable air quality regulations.

3.3 APPLICATION

A. Coating shall be applied in a neat manner that will produce an even film of uniform and proper thickness, with finished surfaces free of runs, sags, ridges, laps, and brush marks. Each coat shall be thoroughly dry and hard before the next coat is applied. In no case shall coating be applied at a rate of coverage greater than the maximum rate recommended by the coating manufacturer.

B. Coating failures will not be accepted and shall be entirely removed down to the substrate and the surface recoated. Failures include but are not limited to sags, checking, cracking, teardrops, fat edges, fisheyes, or delamination.

C. Priming:

1. Edges, corners, crevices, welds, and bolts shall be given a brush coat (stripe coat) of primer before application of the primer coat. The stripe coat shall be applied by a brush and worked in both directions. Special attention shall be given to filling all crevices with coating.

2. Abraded and otherwise damaged portions of shop-applied coating shall be cleaned and recoated as recommended by the manufacturer of the finish coating. Welded seams and other uncoated surfaces, heads and nuts of field-installed bolts, and surfaces where coating has been damaged by heat shall be given a brush coat of the specified primer. Before the specified spot or touchup coating of metal surfaces, edges, corners, crevices, welds, and bolts in the area of the spot or touchup coating shall be given a brush coat of
primer. This patch, spot, or touchup coating shall be completed, and the paint film shall be dry and hard, before additional coating is applied.

D. Epoxy Enamel:

1. When used, epoxy enamel shall be applied in accordance with the coating manufacturer's recommendations, including temperature limitations and protection from sunlight until top-coated.

2. When concrete is to be coated, coatings shall not be applied to concrete surfaces in direct sunlight or when the temperature of the concrete is rising. Preferably the coating shall be applied when the temperature of the concrete is dropping.

3. When applying high build epoxy coatings with a roller or brush and where a dry film thickness of at least 4-6 mils per coat is required, two or more coats shall be applied to achieve the recommended dry film thickness equal to a spray applied coating.

E. Coal Tar Epoxy:

1. When used, the application of coal tar epoxy, including time limits for recoating, shall conform to the recommendations of the coating manufacturer.

2. When concrete is to be coated, coatings shall not be applied to concrete surfaces in direct sunlight or when the temperature of the concrete is rising. Preferably the coating shall be applied when the temperature of the concrete is dropping.

F. Vinyl Ester:

1. When used, the application of vinyl ester coating system, including time limits for recoating and temperature requirements of the materials, shall conform to the recommendations of the coating manufacturer.

G. Film Thickness:

1. The total coating film thickness including intermediate coats and finish coat, shall be not less than the following:

Type of Coating	Minimum Dry Film Thickness
Medium consistency coal tar	20 mils.
Coal tar epoxy (two coats)	20
mils. Epoxy enamel	
Floors	5 mils.
Surfaces with first coat of epoxy enamel and final coat of aliphatic polyurethane	7 mils (5 mils DFT for epoxy plus 2 mils DFT for aliphatic polyurethane).
Surfaces with first and second coat of epoxy enamel and final coat of aliphatic polyurethane	12 mils (10 mils DFT for epoxy plus 2 mils DFT for aliphatic polyurethane).
Other surfaces (two coats)	10 mils.
Immersion service (three coats)	15 mils.

Type of Coating (cont.)	Minimum Dry Film Thickness (cont.)
Vinyl ester	30 mils.
Heat-resistant (silicone)	3 mils.
High heat-resistant (silicone)	3 mils.
Other surfaces (one coat)	5 mils.
Other surfaces (two coats)	10 mils.

H. Weather Conditions:

1. Coatings shall not be applied, except under shelter, during wet, damp, or foggy weather, or when windblown dust, dirt, debris, or insects will collect on freshly applied coating.

2. Coatings shall not be applied at temperatures lower than the minimum temperature recommended by the coating manufacturer, or to metal surfaces such as tanks or pipe containing cold water, regardless of the air temperature, when metal conditions are likely to cause condensation. When necessary for proper application, a temporary enclosure shall be erected and kept heated until the coating has fully cured.

3. Coatings shall not be applied at temperatures higher than the maximum temperature recommended by the coating manufacturer. Where coatings are applied during periods of elevated ambient temperatures, Contractor and the coatings manufacturer shall be jointly responsible to ensure that proper application is performed including adherence to all re-coat window requirements. Precautions shall be taken to reduce the temperature of the surface application, especially for metal, at elevated temperatures above 100℉ [38℃] including shading application area from direct sunlight, applying coating in the evening or at night, and ventilating the area to reduce the humidity and temperature,

4. Vinyl ester coating materials, when required, shall be maintained during transportation, storage, mixing, and application at the temperature required by the coating manufacturer, 35℉ [2℃] to 90℉ [32℃].

3.4 REPAIRING FACTORY FINISHED SURFACES

A. Factory finished surfaces damaged prior to acceptance by Owner shall be spot primed and recoated with materials equivalent to the original coatings. If, in the opinion of Engineer, spot repair of the damaged area is not satisfactory, the entire surface or item shall be recoated.

3.5 PROTECTION OF SURFACES

A. Throughout the work Contractor shall use drop cloths, masking tape, and other suitable measures to protect adjacent surfaces. Contractor shall be responsible for correcting and repairing any damage resulting from its or its subcontractors' operations. Coatings spilled or spattered on adjacent surfaces which are not being coated at the time shall be immediately removed. Exposed concrete or masonry not specified to be coated which is damaged by coatings shall be either removed and rebuilt or, where authorized by Owner, coated with two coats of masonry coating.

3.6 FIELD QUALITY CONTROL

A. The following inspection and testing shall be performed: surface profile, visual inspection, and wet and dry film thickness testing. All inspection and testing shall be witnessed by ENGINEER.

1. Surface Profile Testing. The surface profile for ferrous metal surfaces shall be measured for compliance with the specified minimum profile. The surface profile for concrete shall comply with SSPC 13/NACE 6 Table 1 for severe service.

2. Visual Inspection. The surface of the protective coatings shall be visually inspected.

3. Film Thickness. Coating film thickness shall be verified by measuring the film thickness of each coat as it is applied and the dry film thickness of the entire system. Wet film thickness shall be measured with a gauge that will measure the wet film thickness within an accuracy of ±0.5 mil. Dry film thickness shall be measured in accordance with SSPC-PA 2.

3.7 FIELD PRIMING SCHEDULE

A. In general, steel and cast-iron surfaces of equipment are specified to be shop primed. Any such surfaces which have not been shop primed shall be field primed. Damaged or failed shop coatings which have been determined unsuitable by Engineer shall be removed and the surfaces shall be field coated, including prime coat (if any). Galvanized, aluminum, stainless steel, and insulated surfaces shall be field primed. Primers used for field priming, unless otherwise required for repair of shop primers, shall be:

Surface To Be Primed	Materia
l Equipment, surfaces to be coated with	
Aliphatic polyurethane	Universal primer.
Epoxy enamel	Same as finish coats.
Coal tar coating	Same as finish coats.

Vinyl ester	Same as finish coats.
Steel and cast iron, surfaces to be coated with	
Epoxy enamel	Same as finish coats.
Coal tar coating	Same as finish coats.
Aluminum	Epoxy enamel.
Galvanized	Epoxy enamel.
Copper	Epoxy enamel.
Stainless steel	Epoxy enamel.
Plastic surfaces, including PVC and FRP	Same as finish coats.
Insulated piping	As recommended by manufacturer of finish coats.
Concrete, surfaces to be coated with epoxy enamel	
For damp-proofing	Epoxy enamel.
For all other surfaces	Epoxy concrete filler and surfacer.
Concrete block exposed in exterior locations	Epoxy concrete block filler.
Concrete block to be coated with epoxy enamel	Epoxy concrete block filler.

B. Unless otherwise recommended by the coating manufacturer or specified herein, priming will not be required on concrete, or concrete block, nor on metal surfaces specified to be coated with epoxy enamel, coal tar epoxy, and heat-resistant coatings. Concrete surfaces to be coated with epoxy enamel shall be filled with epoxy concrete filler and surfacer so that a continuous film is obtained, except where concrete is damp-proofed with epoxy enamel.

3.8 FINISH COATING SYSTEMS

A. The following schedule lists coatings systems and coating system designations.

No.	Finish Coating Systems	Coating System Designation						
		A	C	E	F	G	H	P
1.	Epoxy enamel – One coat	x			x	x		
2.	Epoxy enamel – Two coats	x	x	x	x	x		x
3.	Epoxy enamel / NSF – Two coats		x	x				
4.	Epoxy enamel – Three coats	x	x	x				
5.	Epoxy enamel / NSF – Three coats		x	x				
6.	Epoxy enamel – First coat Aliphatic polyurethane – Finish coat	x	x	x	x	x		x
7.	Epoxy enamel – First and second coat Aliphatic polyurethane – Finish coat			x	x	x		
8.	Universal primer – First coat Aliphatic polyurethane – Finish coat	x		x				
9.	Medium consistency coal tar – Two coats	x	x	x				
10.	Coal tar epoxy – Two coats	x	x	x				
11.	Vinyl ester – Two coats			x				
12.	Heat resistant – Two coats						x	
13.	High heat resistant – Two coats						x	

B. Surfaces Not To Be Coated. Unless otherwise specified, the following surfaces shall be left uncoated:

1. Exposed aluminum, except ductwork.
2. Polished or finished stainless steel. Unfinished stainless steel, except flashings and counter flashings, shall be coated.
3. Nickel or chromium.
4. Galvanized surfaces, except piping, conduit, ductwork, and other items specifically noted.
5. Rubber and plastics, except as specified.
6. Exterior concrete.
7. Surfaces specified to be factory finished.

C. Shop Finishing. Items to be shop finished include the following. Shop finishing shall be in accordance with the coating schedule and the manufacturer's recommendations.

1. Other surfaces where blast cleaning cannot be or is not recommended to be performed in the field.
2. Other items as otherwise specified.

D. Field Coating. Items to be field coated include the following. Field coating shall be in accordance with the field priming schedule, the coating schedule, and the manufacturer's recommendations.

1. Surfaces not indicated to be shop finished and surfaces where blast cleaning can be performed in the field.
2. All interior ferrous metal surfaces.
3. Other items as otherwise specified.

3.9 METAL SURFACES COATING SCHEDULE

Surface To Be Coated	Finish Coating System
Non-galvanized structural and miscellaneous steel exposed to view or to the elements in exterior locations.	A6
Non-galvanized structural and 2 miscellaneous steel exposed to view inside buildings.	A
Unless otherwise specified, pumps, 8 motors, speed reducers, and other machines and equipment exposed to view.	E
Heating and air conditioning units, 8 convector covers, electrical equipment cabinets, and similar items and equipment (unless factory finished) exposed to view.	E
Cast Iron and steel piping inside buildings, 2 including valves, fittings, flanges, bolts, supports, and accessories, and galvanized surfaces after proper priming.	A
Supports and miscellaneous metal for equipment handling corrosive chemicals.	Indoor - A2
Aluminum in contact with concrete.	F1

Aluminum and galvanized ductwork and conduit indoors.	
Aluminum and galvanized ductwork and conduit exposed to elements outdoors.	
F2 or G2	F7 or G7

Surface To Be Coated	Finish Coating System
Ductile iron piping, fittings, supports, A8 valves, bolts, and accessories exposed above grade	

3.10 CONCRETE AND MASONRY SURFACES COATING SCHEDULE

Surface To Be Coated	Finish Coating System
Concrete adjacent to corrosive chemical storage and feed equipment.	Vinyl Ester With Graphite Filler

3.11. PIPING IDENTIFICATION SCHEDULE

A. Exposed piping and piping in accessible chases shall be identified with lettering or tags designating the service of each piping system, marked with flow directional arrows, and color coded.

B. Piping scheduled to be color coded shall be completely coated with the indicated colors, except surfaces specified to remain uncoated shall include sufficiently long segments of the specified color to accommodate the lettering and arrows. All other piping shall be coated to match adjacent surfaces, unless otherwise directed by ENGINEER.

C. Location:

1. Lettering and flow direction arrows shall be provided on pipe near the equipment served, adjacent to valves, on both sides of wall and floor penetrations, at each branch or tee, and at least every 50 feet in straight runs of pipe. If, in the opinion of Engineer, this requirement will result in an excessive number of labels or arrows, the number required shall be reduced as directed.

D. Lettering:

1. Lettering shall be a vinyl label on piping or shall be applied as snap-on markers. Snap-on markers shall be plastic sleeves, Brady "Bradysnap-On B- 915" or Seton "Setmark". Letter size shall be as follows:

Outside Diameter of Pipe or Covering	Minimum Height of Letters
5/8 inch and smaller	Metal tags -1/4 inch
3/4 to 4 inches	3/4 inch
5 inches and larger	2 inches

E. Color Coding and Lettering:

1. All piping for the following services shall be color coded. Bands shall be 6 inches wide spaced along the pipe at 5 foot intervals. For services not listed, the color coding and lettering shall be as directed by the ENGINEER.

Piping Identification		
Service	**Color of Pipe**	**Color of Letters**
Ammonia	White	Black
Chlorine (solution)	Yellow	Black
Drain	Dark gray	White
Fire Protection Water	Red	White
Nonpotable or Raw Water	Clover (Tenemic)	Black
Plumbing Vents	Dark gray	White
Potable Water (hot or cold)	Safety blue	Black
Sample	Safety blue	Black
Service Water	Safety blue	Black
Caustic	Yellow with green bands	Black

2. Electrical conduit (with the exception of galvanized) shall be coated to match adjacent ceiling or wall surfaces as directed by ENGINEER. Vent lines shall be coated to match surfaces they adjoin.

3. Numerals at least 2 inches high shall be painted on or adjacent to all accessible valves, pumps, flowmeters, and other items of equipment which are identified on the drawings or in the specifications by number.

END OF SECTION

SECTION 09941

SHOP APPLIED COATINGS FOR PUMPS, MOTORS, AND PUMP AND MOTOR BASES

PART 1 - GENERAL

1.1 SCOPE. This section covers shop applied coatings, including surface preparation, protection of surfaces, inspection, and other appurtenant work for pumps, motors, and pump and motor bases. The methods, materials, application equipment, and other details of shop coating shall comply with this section.

1.2 GENERAL. Cleaning, surface preparation, coating application, and thickness shall be as specified herein and shall meet or exceed the coating manufacturer's recommendations. When the manufacturer's minimum recommendations exceed the specified requirements, contractor shall comply with the manufacturer's minimum recommendations. When equivalent products are acceptable to engineer, contractor shall comply with these specifications and the coating manufacturer's recommendations.

A. Governing Standards. All cleaning, surface preparation, coating application, thickness, testing, and coating materials (where available) shall be in accordance with the referenced standards of the following AWWA, ANSI, NACE, SSPC, NSF, and ASTM.

B. Delivery and Storage. All coating products shall be received and stored in accordance with the coating manufacturer's recommendations.

1.3 SUBMITTALS

A. CONTRACTOR shall submit:

1. coating manufacturer’s data sheet for shop coating product proposed, including a statement on the suitability of the material for the intended use;
2. technical and performance information that demonstrates compliance with the system performance and material requirements;
3. coating manufacturer’s instructions and recommendations on surface preparation and application;
4. compatibility of shop and field applied coatings;
5. Material Safety Data Sheet for proposed coatings.
6. Schedule of proposed coating materials.
7. Schedule of surfaces to be coated with each coating material.

8. Dehumidification and heating plan.

9. Methods for tenting blasting areas and methods to protect existing equipment from dust and debris.

10. Abrasives and abrasive blast cleaning disposal.

11. Compliance with regulatory requirements:

    a. VOC limitations.

    b. Hazardous lead compounds and polychlorinated biphenyls (removal and disposal methods).

12. Manufacturer's standard color samples.

13. Include 8-inch square drawdowns or brushouts of topcoat finish when requested. Identify each sample as to finish, formula, color name and number, sheen name, and gloss units.

14. Affidavits signed by an officer of the Coating System Manufacturer's (CSM's) corporation attesting to full compliance of each coating system component with current federal, state, and local air pollution control regulations and requirements.

15. Thick film coating systems (greater than 25 mils):

    a. CSM's detailed written instructions for coating system treatment and graphic details for coating system terminations in coated structures, including pipe penetrations, metal embedments, gate frames, and other terminations encountered.

    b. Include detailed treatment for coating system at concrete joints.

16. Quality assurance Submittals:

    a. Quality assurance plan.

    b. Qualifications:

        1) Shop coating applicator includes:

            a) Provide a minimum of 5 project references where similar coating work has been performed by the company in the past 5 years:

                (1) Name and address of project.

                (2) Year of installation.

                (3) Year placed in operation.

                (4) Point of contact: Name and phone number.

                (5) SSPC-QP 3 certified as required.

c. CSA reports:

1) Written daily quality control inspection reports.

2) Reports to observe and approve surface preparation of structures to be coated.

3) Reports to observe and approve coating application procedures.

4) Reports on visits to plants to observe and approve surface preparation and coating application on shop-coated items.

17. For each substituted coating material "equal" to specified product in the coating tabulation:

a. List of not less than 5 similar successful material applications:

1) Project name, location, type of structure, and application dates.

2) Owner's name, address, and telephone number.

b. Certification that material meets or exceeds specified requirements:

1) Manufacturer's certification, including technical representative's signature and date of signature.

2) Independent laboratory's certified test reports.

B. Submittal shall be within 60 calendar days of Notice of Award to permit ENGINEER's review and then CONTRACTOR's coordination with affected pump, motor, and base suppliers to assure their use of approved shop coats of same manufacturer as field coats.

1.4 QUALITY ASSURANCE

A. Compatibility. For shop and field applied coating systems, only compatible materials from a single manufacturer shall be used in the WORK. Particular attention shall be directed to compatibility of primers and finish coats.

B. TAMPA BAY WATER Shop Coating Witnessing. A TAMPA BAY WATER or TAMPA BAY WATER's authorized representative is not required to observe and witness the shop coating surface preparation, mixing, and application of the shop coating systems and a written report shall be provided by the CONTRACTOR of the noted observations and any additional recommendations. The CONTRACTOR shall notify TAMPA BAY WATER at least 10 days in advance of the time of each shop coating event. The number of shop coating events for this project shall be one maximum.

1. If a shop coating event does not meet the specified requirements, or more than one shop coating events are required, the labor, travel, and expenses associated with the observation of additional shop coating events shall be paid by the pumping equipment supplier.

C. Coating inspector:

1. Coating system application inspector and/or third-party inspector shall be trained and knowledgeable in the specified coating's application.

2. Provide calibrated inspection instruments and demonstrate use as required.

3. Applicator's quality assurance inspector foreman shall oversee all aspects of coating work and shall be NACE Level III certified or an SSPC Protective Coatings Inspector (PCI).

    a. Oversees lesser qualified inspectors and provides them training and guidance for testing and report preparations, provides documentation for all inspection equipment showing calibrations, and verifies the equipment is free from damage and is in proper working condition.

D. Regulatory requirements. Comply with governing agencies' regulations by using coatings in accordance with their VOC limits.

1. Lead-based coatings are not permitted.

2. Do not use coal-tar epoxy in contact with drinking water or exposed to ultraviolet radiation.

E. Pre-installation conference. Conduct as specified in Section 01200 – Project Meetings.

1. Coordinate Hold Point Schedule.

F. Coating Systems Manufacturer services.

1. Coating system applicator shall arrange for coating system manufacturer's technical representative to attend pre-installation conferences.

2. Visit the Project Site periodically to consult on and inspect specified surface preparation and application Hold Points.

3. Visit coating plants to observe and approve surface preparation procedures and coating application of items to be shop primed and coated.

4. Coating system manufacturer's technical representative shall provide written inspection reports.

G. Quality control requirements.

1. Applicator shall be responsible for the workmanship and quality of the coating system installation.

    a. Inspections by the Owner, Engineer, or CTR will not relieve or limit the CSA's responsibilities.

2. In accordance with this Specification's requirements and the standards referenced in this Section. Changes in the coating system application requirements will be allowed only with the Engineer's written acceptance.

3. Specially trained crews with experience applying the specified coating system coating are required for:
    a. Coating application using plural component spray equipment or other specialty equipment.
4. CTR shall specially train personnel for coating systems as specified in Attachment B - Coating Detail Sheets.
    a. CSM shall approve personnel in writing applying the coating system.
5. Do not use contaminated, outdated, diluted materials, and/or materials from previously opened containers.
6. Identify inspection access points used by the Owner's or Engineer's personnel.
7. Provide ventilation, ingress, egress, or other means as necessary for the Owner's or Engineer's personnel to safely access the work areas.
8. Conduct and continually inspect Work so the coating system is installed as specified. CSM shall provide written directions to correct coating work not in accordance with the specifications or is otherwise unacceptable.
9. Provide written daily reports summarizing test data, work progress, surfaces covered, ambient conditions, quality control inspection test findings, and other information pertinent to the coating system application.
    a. Determine relative humidity in accordance with ASTM E337. Confirm other conditions, such as proper protective measures for surfaces not to be coated and safety requirements for personnel.
        1) Measure daily at the shift's beginning and end and at intervals not to exceed 4 hours during the shift.
        2) Determine the acceptability of weather and/or environmental conditions within the structure in accordance with the CSM's requirements.
    b. Monitoring surface preparation: Spot check cleanliness, surface profile, and surface pH testing at least 3 times daily. Check each surface at least once. In accordance with:
        1) ASTM D4262.
        2) ASTM D4263.
        3) ASTM D4417.
        4) ICRI 310.2 requirements.
        5) SSPC surface preparation standards.
    c. Confirm that compressed air used for surface preparation or blow-down cleaning is free of oil and moisture.

d. Monitor surface preparation daily at the shift's beginning and end and at intervals not to exceed 4 hours during the shift.

e. Do not apply coatings when environmental conditions are outside of the CSM's published limits.

f. Monitoring coatings application: Continuously inspect, measure, and record the wet film thickness and general film quality (visual inspection) for runs, sags, pinholes, holidays, etc., during coating.

1) Perform WFT measurements in accordance with ASTM D4414.

g. Post cure evaluation: Measure and inspect the overall dry film thickness on all surfaces.

1) Conduct a DFT survey and perform adhesion testing, holiday detection, or cure testing as specified in this Section and/or the CSM's written instructions.

2) Perform applicable tests in accordance with ASTM D4541, ASTM D4787, ASTM D5162, ASTM D7234, SSPC-PA 1, SSPC PA 2, SSPC-PA 9, and other pertinent standards and recommended practices.

H. Inspection at Hold Points.

1. Conduct inspections at Hold Points during the coating system application and record the results.

2. Coordinate Hold Points with the Engineer so the Engineer can observe the Contractor's inspections on a scheduled basis.

3. Provide the Engineer with a minimum of 24 hours of notice before conducting Hold Point inspections.

4. Hold Points shall be as follows:

a. Coatings application: At the beginning of coating system application, measure, record, and confirm acceptability of surface and ambient air temperature and humidity. Inspect applicator's equipment for serviceability and suitability for coatings application.

1) Observe conditions during the pre-application meeting.

1.5 MAINTENANCE

A. Provide extra materials:

1. Minimum 1 gallon of each type and color of coating applied or provide additional quantities if specified in the Contract Documents:

a. Deliver unopened factory-labeled cans when the manufacturer packages material in gallon cans.

b. Deliver material in new gallon containers, properly sealed and identified with permanently affixed, durable, printed labels indicating brand, type, and color, when the manufacturer does not package material in gallon cans.

1.6 TECHNICAL REPRESENTATIVES' RESPONSIBILITIES

A. General:

1. Attend pre-installation conference.

2. Perform on-site application training.

B. Coating system installation training:

1. Provide a minimum of 8 hours of classroom and off-site training for application personnel and supervisory personnel in one of the following ways:

a. Train a minimum of 2 supervisory personnel and 2 application personnel.

b. Submit a letter from the CSM stating that CSM approves the supervisory and application personnel, listed by name and responsibility, and no additional training is required.

2. CTR can train up to 14 application personnel and 3 supervisory personnel at a time.

3. Minimum training requirements:

a. Explain in detail the mixing, application, curing, and termination requirements.

b. Provide hands-on demonstration of coating system mixing.

c. Explain in detail the ambient condition requirements for temperature and humidity.

d. Explain in detail the surface preparation requirements.

e. Explain in detail the re-coat times, cure times, and related ambient condition requirements.

f. Write a letter stating that training was satisfactorily completed by the personnel, listed by name and responsibility.

4. Provide special training as specified in the coating detail sheets.

5. Visit the Site at the following intervals:

a. On the first day of application of any coating system.

b. As necessary during surface preparation and application to ensure installations are made in accordance with the manufacturer's recommendations.

c. As required to resolve field problems attributed to or associated with the manufacturer's products.

6. Routinely inspect and verify in writing that application personnel have successfully performed surface preparation, filler/surfacer application, coating system application, and quality control inspection in accordance with this Section and to warrantable quality.

a. Be on site to periodically observe and oversee:

1) Coating application.

2) End of surface preparation.

3) During coating application.

4) Post-cure inspection.

7. Conduct final review of completed coating system installation and submit detailed report to the Owner.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Alternative Manufacturers. In addition to the coatings listed herein, equivalent products of other manufacturers that distribute globally will also be acceptable.

B. Equivalent Coatings. Whenever a coating is specified by the name of a proprietary product or of a particular manufacturer or vendor, it shall be understood as establishing the desired type and quality of coating. Other manufacturers' coatings will be accepted, provided that sufficient information is submitted to enable ENGINEER to determine that the proposed coatings are equivalent to those named. Information on proposed coatings shall be submitted for review in accordance with the Submittals section. Requests for review of equivalency will be accepted only from CONTRACTOR, and will be considered only after the contract has been awarded.

2.2 SERVICE CONDITIONS. All coatings shall be suitable for service in raw groundwater, raw surface water, or potable water with a chloramine residual of 6 mg/L.

2.3 MATERIALS. All coatings shall be delivered to the shop coating site in original, unopened containers, with labels intact. Coatings shall be stored indoors and shall be protected against freezing. No adulterant, unauthorized thinner, or other material not included in the coating formulation shall be added to the coating for any purpose.

A. All coatings shall conform to the air quality regulations applicable at the location of use. Coating materials that cannot be guaranteed by the manufacturer to conform, whether or not specified by product designation, shall not be used.

B. The coatings specified have been selected on the basis of the manufacturer's statement that the VOC content of the product is 2.8 lbs per gallon or less; however, it shall be the CONTRACTOR's responsibility to use only coating materials that are in compliance with the requirements of all regulatory agencies. Local regulations may require some coatings to have a lower VOC content than specified herein. The coatings specified may meet the VOC limits in the unthinned (as shipped) condition, but may exceed the limits if thinned according to the manufacturer's recommendations. In such case, the coatings shall not be thinned beyond the 2.8 lbs per gallon limit, and if the product cannot be thinned to suit the application method or temperature limits, another manufacturer's coating shall be used, subject to acceptance by ENGINEER.

C. All coatings used shall be certified as being in compliance with ANSI/NSF 61. Coatings that cannot be so certified, whether or not specified by manufacturer and by product designation, shall not be used.

D. Shop primed and shop finish coated equipment shall be suitable for recoating within 1 year.

E. Primers.

Epoxy	PPG Amercoat "Amerlock 400 High-Solids Epoxy Coating", Carboline "Carboguard 891", ICI Devoe "Bar-Rust 233H", Tnemec "Series N140 Pota-Pox Plus", or Sherwin-Williams "Macropoxy 646NSF".

1. All coatings used on surfaces that will be in contact with potable or treated water shall be certified as being in compliance with ANSI/NSF 61. Coatings that cannot be so certified, whether or not specified by manufacturer and by product designation, shall not be used.

F. Intermediate and Finish Coatings.

Epoxy	PPG Amercoat "Amerlock 400 High-Solids Epoxy Coating", Carboline "Carboguard 891", ICI Devoe "Bar-Rust 233H", Tnemec "Series N140 Pota-Pox Plus", or Sherwin-Williams "Macropoxy 646NSF".
Aliphatic Polyurethane	PPG Amercoat "Amercoat 450H", Carboline "Carbothane 134HG", ICI Devoe "Devthane 379H" Tnemec "Series 1074 Endura-Shield II", or Sherwin-Williams "Acrolon 218HS".

PART 3 - EXECUTION

3.1 SHOP COATING REQUIREMENTS. Pumps, motors, and pump and motor bases shall be shop primed or shop finish coated. An additional finish coat(s) will be applied in the field after installation. If the shop primer requires top-coating within less than a year, the equipment and/or equipment base shall be finish coated in the shop with color selected by Tampa Bay water which is safety blue.

3.2 SURFACE PREPARATION. All surfaces to be coated shall be clean and dry and shall meet the recommendations of the coating manufacturer for surface preparation. Freshly coated surfaces shall be protected from dust and other contaminants. Oil and grease shall be completely removed by use of solvents or detergents before mechanical cleaning is started. The gloss on previously coated surfaces shall be dulled if necessary for proper adhesion of topcoats.

A. Surfaces shall be free of cracks, pits, projections, or other imperfections that would interfere with the formation of a smooth, unbroken coating film.

B. When applying touchup coating or repairing previously coated surfaces, the surfaces to be coated shall be cleaned as recommended by the coating manufacturer, and the edges of the repaired area shall be feathered by sanding or wire brushing to produce a smooth transition that will not be noticeable after the coating is applied. All coatings made brittle or otherwise damaged by heat of welding shall be completely removed.

3.3 FERROUS METAL SURFACES OF PUMPS, MOTORS, AND PUMP AND MOTOR BASES. Ungalvanized ferrous metal surfaces shall be prepared for coating by using one or more of the following cleaning procedures specified here-in: solvents (sspc-sp1); abrasive blasting (sspc-sp5, -sp10, -sp6, or -sp7) power tools (sspc-sp3 or -sp11); or hand tools (sspc-sp2). Oil and grease shall be completely removed in accordance with sspc-sp1 before beginning any other cleaning method. Surfaces of welds shall be scraped and ground as necessary to remove all slag and weld spatter. Tools which produce excessive roughness shall not be used.

A. All components of equipment that can be properly prepared and coated after installation shall be installed prior to surface preparation. Components that will be inaccessible after installation shall have the surfaces prepared and coated for the life of the equipment. Motors, drive trains, and bearings shall be protected during surface preparation in accordance with the equipment manufacturer's recommendations.

B. The cleaning methods and surface profiles specified herein are minimums, and if the requirements printed in the coating manufacturer's data sheets exceed the limits specified, the value printed on the data sheets shall become the minimum requirement.

C. Machined, polished, and nonferrous surfaces which are not to be painted shall be coated with rust-preventive compound as recommended by the equipment manufacturer.

1. Ferrous Metal Surfaces - Immersion Service. Surface preparation of ferrous metal surfaces in immersion service shall consist of abrasive blast cleaning to at least SSPC-SP10 and the first application of coating shall be performed on the same day. If more surface area is prepared than can be coated in one day, the uncoated area shall be blast cleaned again to the satisfaction of Engineer. Surface profile shall be as recommended by coating manufacturer, but not less than 3.5 mils (88 μm).

3.4 HARDWARE. Hardware items such as bolts, screws, washers, springs, and grease fittings need not be cleaned prior to coating if there is no evidence of dirt, corrosion, or foreign material.

3.5 MIXING AND THINNING. Coating shall be thoroughly mixed each time any is withdrawn from the container. Coating containers shall be kept tightly closed except while coating is being withdrawn.

A. Coating shall be factory mixed to proper consistency and viscosity for hot weather application without thinning. Thinning will be permitted only as necessary to obtain recommended coverage at lower application temperatures. In no case shall the wet film thickness of applied coating be reduced, by addition of coating thinner or otherwise, below the thickness recommended by the coating manufacturer. Thinning shall be done in compliance with all applicable air quality regulations.

3.6 APPLICATION. Coating shall be applied in a neat manner that will produce an even film of uniform and proper thickness, with finished surfaces free of runs, sags, ridges, laps, and brush marks. Each coat shall be thoroughly dry and hard before the next coat is applied. Each coat shall be a different color, if available. In no case shall coating be applied at a rate of coverage greater than the maximum rate recommended by the coating manufacturer.

A. Coating failures will not be accepted and shall be entirely removed down to the substrate and the surface recoated. Failures include but are not limited to sags, checking, cracking, teardrops, fat edges, fisheyes, or delamination.

B. Priming. Edges, corners, crevices, welds, and bolts shall be given a brush coat (stripe coat) of primer before application of the primer coat. The stripe coat shall be applied by a brush and worked in both directions. Special attention shall be given to filling all crevices with coating. When using zinc primers the stripe coat shall follow the initial prime coat.

C. Epoxy. When used, epoxy shall be applied in accordance with the coating manufacturer's recommendations, including temperature limitations and protection from sunlight until top-coated.

D. When concrete is to be coated, coatings shall not be applied to concrete surfaces in direct sunlight or when the temperature of the concrete is rising. Preferably the coating shall be applied when the temperature of the concrete is dropping.

E. When applying high build epoxy coatings with a roller or brush and where a dry film thickness of at least 4-6 mils (100-150 μm) per coat is required, two or more coats shall be applied to achieve the recommended dry film thickness equal to a spray applied coating.

F. When concrete is to be coated, coatings shall not be applied to concrete surfaces in direct sunlight or when the temperature of the concrete is rising. Preferably the coating shall be applied when the temperature of the concrete is dropping.

G. Film Thickness. The total coating film thickness including intermediate coats and finish coat, shall not be less than the following:

Type of Coating	Minimum Dry Film Thickness
Primer	5 mils DFT
Epoxy	
Surfaces with first and second coat of epoxy and final coat of aliphatic polyurethane	12 mils (10 mils DFT for epoxy plus 2 mils DFT for aliphatic polyurethane).
Surfaces with first and second coat of epoxy	10 mils DFT.

H. Weather Conditions. Coatings shall not be applied, except under shelter, during wet, damp, or foggy weather, or when windblown dust, dirt, debris, or insects will collect on freshly applied coating.

1. Coatings shall not be applied at temperatures lower than the minimum temperature recommended by the coating manufacturer, or to metal surfaces, regardless of the air temperature, when metal conditions are likely to cause condensation. When necessary for proper application, a temporary enclosure shall be erected and kept heated until the coating has fully cured.

2. Coatings shall not be applied at temperatures higher than the maximum temperature recommended by the coating manufacturer. Where coatings are applied during periods of elevated ambient temperatures, CONTRACTOR and the coatings manufacturer shall be jointly responsible to ensure that proper application is performed including adherence to all re-coat window requirements. Precautions shall be taken to reduce the temperature of the surface application, especially for metal, at elevated temperatures above 100°F including shading application area from direct sunlight, applying coating in the evening or at night, and ventilating the area to reduce the humidity and temperature.

3.7 PROTECTION OF SURFACES. Shop painted surfaces shall be protected during shipment and handling by suitable provisions including padding, blocking, and the use of canvas or nylon slings.

3.8 SHOP QUALITY CONTROL. The following inspection and testing shall be performed: surface profile, visual inspection, spark testing, ADHESION testing, and wet and dry film thickness testing. All inspection and testing shall be witnessed by engineer or an inspection report from the manufacture shall be provided.

A. Surface Profile Testing. The surface profile for ferrous metal surfaces shall be measured for compliance with the specified minimum profile.

B. Visual Inspection. The surface of the protective coatings shall be visually inspected.

C. Spark Testing (holiday/continuity testing). The owner may perform additional testing of the coatings or contract with a third party to perform the following testing. Coatings shall be spark tested by a qualified NACE SP0188 coatings inspector using an acceptable electrical spark tester set at the recommended voltage. ENGINEER shall observe the spark testing and shall verify the testing equipment is working properly before the spark testing of the coating is started. The electrode movement shall be continuous and shall proceed in a systematic manner that will cover 110 percent of the coated surface.

1. Spark testing for coatings on metal shall be done in accordance with ASTM D5162.
2. All detected holidays and pinholes shall be marked and repaired as recommended by the coating material manufacturer.

D. Shop Coating Schedule.

Surface To Be Coated	Number Of Coats And Material
Pump	One coat of epoxy primer or if shop finish coated two coats of epoxy with topcoat of aliphatic polyurethane.
Pump base	One coat of epoxy primer or if shop finish coated two coats of epoxy with topcoat of aliphatic polyurethane.
Motor	One coat of epoxy primer or if shop finish coated two coats of epoxy with topcoat of aliphatic polyurethane.
Motor base	One coat of epoxy primer or if shop finish coated two coats of epoxy with topcoat of aliphatic polyurethane.

END OF SECTION

SECTION 11312H

AXIALLY-SPLIT CENTRIFUGAL PUMPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Split-case centrifugal pumps with drivers and components.

B. Tag numbers: As specified in the Drawings.

1.2 REFERENCES

A. American Bearing Manufacturers' Association (ABMA):

1. 9 - Load Ratings and Fatigue Life for Ball Bearings.
2. 11 - Load Ratings and Fatigue Life for Roller Bearings.

B. American Society of Mechanical Engineers (ASME):

1. B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.
2. B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24, Metric/Inch Standard.

C. ASTM International (ASTM):

1. A48 - Standard Specification for Gray Iron Castings.
2. A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.
3. A276 - Standard Specification for Stainless Steel Bars and Shapes.
4. A283 - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.
5. A582 - Standard Specification for Free-Machining Stainless Steel Bars.
6. B505 - Standard Specification for Copper Alloy Continuous Castings.
7. B584 - Standard Specification for Copper Alloy Sand Castings for General Applications.
8. E10 - Standard Test Method for Brinell Hardness of Metallic Materials.

D. Hydraulic Institute (HI):

1. 9.1-9.5 - Pumps - General Guidelines.
2. 9.6.4 - Rotodynamic Pumps for Vibration Measurement and Allowable Values.

3. 14.1-14.2 - Rotodynamic Pumps for Nomenclature and Definitions.

4. 14.3 - Rotodynamic Pumps for Design and Application.

E. 14.6 - Rotodynamic Pumps for Hydraulic Performance Acceptance Tests. National Electrical Manufacturers Association (NEMA).

F. NSF International (NSF):

1. 61 - Drinking Water System Components - Health Effects.

2. 372 - Drinking Water System Components - Lead Content.

1.3 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section have the indicated meaning.

1. Allowable operating region (AOR): Region over which the service life of the pump is not seriously compromised by hydraulic loads, vibration, or flow separation where the pump's vibration, noise, and cavitation are within acceptable limits.

2. Preferred operating region (POR): Region over which the service life of the pump will not be significantly affected by hydraulic loads, vibration, or flow separation where the pump's vibration, noise, and cavitation are within acceptable limits.

3. Pump head (total dynamic head, TDH), flow capacity, pump efficiency, net-positive suction head available (NPSHa), and net-positive suction head required (NPSHr): As defined in HI 9.1-9.5, 9.6.4, 14.1-14.2, 14.3, 14.6, rand as modified in the Specifications.

4. Suction head: Gauge pressure available at pump intake flange or bell in feet of fluid above atmospheric; average when using multiple suction pressure taps, regardless of variation in individual taps.

1.4 SUBMITTALS

A. Furnish Submittals as specified in Section 01300 – Contractor Submittals.

B. Product Submittals.

1. As specified in Section 01600 - Product Requirements.

2. Product data.

a. For pumps in contact with drinking water, submit one of the following:

1) Pump lead free certification.

2) Weighted average lead calculations.

3. Shop Drawings.

4. Manufacturer's instructions.

5. Calculations.

6. Schedules.

C. Commissioning Submittals:

1. As specified in Section 01756 - Commissioning, including the following:

a. Manufacturer's representative qualifications.

b. Certificates:

1) Requirements as specified in this Section.

c. Test Plans:

1) Test requirements as specified in this Section.

d. Test Reports.

e. Manufacturer's representatives field notes and data.

f. Owner Training.

D. Operation and maintenance manuals:

1. As specified in Section 01730 - Operation and Maintenance Data and Section 01821 Instruction of Operations and Maintenance Personnel.

1.5 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 01600 - Product Requirements, Section 15050 - Common Work Results for Mechanical Equipment and the manufacturer's instructions.

1.6 WARRANTY

A. As specified in Section 01740 - Warranties and Bonds.

1.7 MAINTENANCE

A. Special tools: Deliver 1 set for each furnished pump type and size needed to assemble and disassemble pump system.

B. Spare parts: Deliver the following as specified in Section 01600 - Product Requirements:

1. Pump thrust bearing set.

2. Pump radial bearing set.

3. Motor bearing set of each type.

4. Mechanical seal set.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. One of the following or equal:

1. Fairbanks Nijhuis, Series 2825A CW, to match the existing pumps.

2.2 DESIGN AND PERFORMANCE CRITERIA

A. Split-case centrifugal pumps with components: Pumps, drivers, motors, variable frequency drives, and drive arrangements as scheduled with seals or packing, couplings, base plates, guards, supports, anchor bolts, necessary valves, gauges, taps, lifting eyes, stands, and other items as specified and as required for a complete and operational system.

B. Pumps suitable for intermittent or continuous service with up to 10 milligrams per liter residual chlorine concentration.

C. Design requirements:

1. Pump performance characteristics:

a. As specified in the Pump Schedule.

b. Rotordynamic analysis level: As scheduled and as specified in Section 15050 - Common Work Results for Mechanical Equipment.

1) Vibration analysis expert: Provide when scheduled.

c. Performance tolerances shall be the same as the test tolerances specified in Section 15958 - Mechanical Equipment Testing.

2. Motor characteristics: As specified in the Drawings.

D. Product requirements:

1. As specified in Section 01600 - Product Requirements and Section 15050 - Common Work Results for Mechanical Equipment.

2.3 MATERIALS

A. General:

1. Materials in the Drawings shall be the type and grade as specified in this Section.

2. Drinking Water Pumps:

a. Provide materials in conformance with Section 15050 – Common Work Results for Mechanical Equipment.

b. Pumps shall be NSF61 certified.

B. Cast iron: In accordance with ASTM A48, Class 30 minimum.

C. Low lead bronze: As required for drinking water service meeting the requirements of Section 15050 - Common Work Results for Mechanical Equipment.

D. Bronze: In accordance with ASTM B584, UNS Alloy C83600.

E. Zincless bronze: In accordance with ASTM B584, UNS Alloy C93700.

F. Stainless steel:

1. In accordance with ASTM A276, Type 316 stainless steel.
2. Impellers and casing: ASTM A276, CF8M stainless steel.
3. In accordance with ASTM A582, Type 416 stainless steel.

G. Steel: ASTM A108, Grade as scheduled.

2.4 PUMP CASINGS

A. Type: Axially split case; allow removal of rotating element without disturbing piping connections or alignment; mounted horizontally or vertically as scheduled.

B. Material: Cast Iron, ASTM A48, Class 30.

C. Construction: Of sufficient strength, weight, and thickness to provide accurate alignment and prevent excessive deflection.

D. Design working pressure: Minimum 1.10 times maximum shutoff total dynamic head with maximum installable impeller diameter at maximum operating speed plus maximum suction static head.

E. Hydrostatic test: 5-minute hydrostatic test minimum 1.5 times design working pressure.

F. Casing assembly: Lifting eye bolts for removable half and doweling to facilitate alignment of bolted halves.

G. Suction and discharge: Single or dual suction as scheduled; piping connections in lower half of casing with side entry and exit unless otherwise indicated on the Drawings.

H. Suction and discharge piping connections: Flanged, meeting ASME B16.1, Class 125; or ASME B16.5, Class 150; or higher pressure class as required to meet design working pressure.

I. Vent and taps:

1. Provide casings with bolt 3/4-inch threaded high-point and low-point drain taps.
2. Provide 1/2-inch threaded tap with valve and pressure gauge on the suction and discharge flanges.

2.5 IMPELLERS

A. Type: As scheduled.

B. Material: Nickel Aluminum Bronze, ASTM B148 C95800.

C. Water passages: Smooth, machined to reduce turbulence.

D. Method of securing to shafts: Keyed and axially secured by bronze sleeves with nuts.

E. Rotation: Clockwise looking from driver, unless otherwise indicated on the Drawings.

F. Balance: As specified in Section 15050 - Common Work Results for Mechanical Equipment to meet the vibration criteria as specified in Section 15958 - Mechanical Equipment Testing.

2.6 WEAR RINGS

A. Impeller wear-ring material:

1. Provide 416 stainless steel impeller wear ring.

B. Casing wear-ring material: Same material as impeller wear ring.

C. Features:

1. Able to allow compensation for minimum 1/8-inch wear.
2. Removable.
3. Fastened with recessed screws or keyed to casing to prevent relative rotation.

2.7 PUMP SHAFTS

A. Material:

1. Provide ASTM A582, Type 416 stainless steel shaft.

B. Strength: Able to withstand minimum 1.5 times maximum operating torque and other loads.

C. Resonant frequency: As specified in Section 15050 - Common Work Results for Mechanical Equipment and Section 15958 - Mechanical Equipment Testing.

D. Deflection: Maximum 0.002 inches under operating conditions.

E. Shaft sleeve:

1. Provide 400 stainless steel (190-241 BHN) shaft sleeve.
2. Renewable, key locked or set screws in stuffing box, gland area, and bearings; able to protect shaft from pumped liquid and wear.

2.8 BEARINGS AND BEARING FRAME

A. Bearing type: Anti-friction, oil lubricated as scheduled, meeting ABMA standards; self-aligning spherical-roller-type radial bearings; angular-contact ball type or tapered roller for thrust bearings.

B. Bearing lubrication:

1. When oil lubrication is scheduled, provide:

a. Internal oil reservoir with separate constant-level external oil makeup reservoir type system.

b. External level indication.

2. Lubrication system sized sufficiently to safely absorb heat energy normally generated in bearing under maximum ambient temperature of 140 degrees Fahrenheit.

C. Bearing life: Minimum L10 life of 100,000 hours at rated design point but not less than 24,000 hours in accordance with ABMA 9 or 11 at bearing design load imposed by pump shutoff with maximum-sized impeller at rated speed, whichever provides longest bearing life in intended service.

D. Pump bearing frames:

1. 1-piece rigid construction with bearing housing at outboard (pump) end and at inboard (driver) end.

2. Materials:

a. Pump bearing frame: ASTM A48, Class 30 minimum, cast iron.

b. Bearing housing and end cover: ASTM A48, Class 30 minimum, cast iron.

E. Bearing frame drain hole: Tapped, located as low as possible to drain leakage when adjacent to packing or seal.

2.9 SHAFT STUFFING BOX

A. Provide ASTM A48 cast iron solid gland stuffing box and as specified in Section 15050 - Common Work Results for Mechanical Equipment.

B. Sealing Faces: Provide silicon carbide – silicon carbide sealing faces.

C. Seal flushing: Use pumped fluid; pipes and passages by pump manufacturer with external replaceable filter, pressure-regulating device, seal-flush pressure gauge (with shutoff valve), and site flow indicator.

2.10 SUPPORTS, PEDESTALS, AND BASEPLATES

A. Type: As specified below and in Section 15050 - Common Work Results for Mechanical Equipment.

B. Materials:

1. Baseplate: Provide BPI ASTM A276, Type 316 stainless steel baseplate.

C. Pump and driver support strength: Able to withstand minimum 1.5 times maximum imposed operating loads or imposed seismic loads, whichever is greater.

D. Configuration: Allow easy access to stuffing boxes, bearing frames, and couplings.

E. Anchor bolts: As specified in Section 05051- Anchor Bolts, Toggle Bolts, and Concrete Inserts.

2.11 COUPLINGS

A. Types: Flexible coupling as recommended by the manufacturer and as specified in Section 15050 - Common Work Results for Mechanical Equipment.

B. Flexible coupling life: Infinite at up to 0.30-degree misalignment angle total or per disk for disk type at maximum operating loads.

C. Design coupling to withstand a minimum of 1.5 times the maximum operating torque and other imposed loads.

2.12 EQUIPMENT GUARDS

A. Provide equipment safety guards as specified in Section 15050 - Common Work Results for Mechanical Equipment.

2.13 DRIVERS

A. Horsepower:

1. 250 HP:

2. Listed driver horsepower is the minimum to be supplied:

a. Increase driver horsepower, if required, to prevent driver overload while operating at any point of the supplied pump operating head-flow curve, including runout.

b. When scheduled driver is a motor, increase motor horsepower if required to prevent operation in the service factor.

c. Make structural, mechanical, and electrical changes required to accommodate increased horsepower.

B. Motors: Provide motors as specified in Section 16222 - Motors and as specified in this Section:

1. Revolutions per minute: As scheduled.

2. Enclosure: As scheduled.

3. Electrical characteristics: As scheduled.

4. Efficiency, service factor, insulation, and other motor characteristics: As specified in Section 16222 - Motors.

5. Motor accessories: As specified in Section 16222 - Motors and in this Section.

6. Coordinate motors with the variable frequency drive manufacturer to ensure compatibility between the motor and variable frequency drive.

C. Other drivers: As scheduled and as specified in sections listed in the Drawings.

2.14 PUMP ACCESSORIES

A. Bearing Temperature Detectors:

1. One per bearing or as indicated on the Drawings.

2. Provide RTD type 100-ohm platinum.

2.15 FINISHES

A. Impeller:

1. C-10 polish on impeller as needed.

B. Interior Coating:

1. Prime coat shall be Scotchkote 134.

C. Exterior Coating:

1. First Coat shall be Tnemec N140 in 39BL, Delft Blue color.

PART 3 - EXECUTION

3.1 PREPARATION

A. Anchoring and bracing to structures:

1. Prepare equipment anchor setting template(s) and use to position anchors during construction of supporting structure(s).

2. Install anchors of type and material indicated on approved anchoring designs.

3. Install anchors with embedment indicated on approved anchoring designs.

3.2 INSTALLATION

A. Install the equipment in accordance with the accepted installation instructions and anchorage details.

B. Pump drainpipes:

1. Connect galvanized steel pipe drains from drip pockets to point indicated on the Drawings or as directed by the Engineer.

2. Carry drainpipes on continuous downgrade to point of discharge using plugged tees and crosses for changes in direction.

3.3 COMMISSIONING

A. As specified in Section 01756 - Commissioning.

B. Factory Testing:

1. Test as specified in Section 15958 – Mechanical Equipment Testing.

C. Source Testing (Factory Acceptance Tests):

1. The Contractor shall be responsible for scheduling the source testing and all associated costs.

a. Cost may include but are not limited to:

1) Transportation and lodging for Owner and Engineer representative.

2. Witnessed, in-person or virtually:

a. Owner and Engineer representatives shall be notified when source testing will occur.

b. The Owner and Engineer representatives may attend source testing in-person or virtually at their discretion.

3. Furnish test reports and Manufacturer's Certificate of Source Testing.

4. Equipment testing:

a. Performance test: Test level as scheduled; test as specified in Section 15958 - Mechanical Equipment Testing.

b. Vibration test: Test level as scheduled; test as specified in Section 15958 - Mechanical Equipment Testing.

c. Noise test: Test level as scheduled; test as specified in Section 15958 - Mechanical Equipment Testing.

d. Pump casing: Hydrostatic pressure tests if specified in this Section.

D. Installation Verification:

1. Furnish Manufacturer's Certificate of Installation Verification.

E. Functional Testing:

1. Equipment testing:

a. Performance test: Test level as scheduled; test as specified in Section 15958 - Mechanical Equipment Testing.

b. Vibration test: Test level as scheduled; test as specified in Section 15958 - Mechanical Equipment Testing.

c. Noise test: Test level as scheduled; test as specified in Section 15958 - Mechanical Equipment Testing.

3.4 OWNER TRAINING

A. Perform Owner Training as specified in Section 01756 - Commissioning.

3.5 PUMP SCHEDULE

Tag Numbers	**PMP-4**
Application	**Potable Water**
Service	Lake Bridge Booster Pumps
Quantity	1
First Named Manufacturer's Model Number	**2825A**
Maximum Pumped Fluid Temperature, degrees Fahrenheit	68
Rotordynamic Analysis Level	1
Vibration Analysis Expert	Not Required
Pump and Driver Mounting	Horizontal
Suction Configuration	Single
Impeller Type	Francis Vane, Enclosed Type
Bearing Lubrication	Oil
Shaft Seal Type	Crane Type 21 Code BF171
Speed Control	Variable Frequency Drive
Rated Pump rpm	1190
Flow, gpm	5700
Head, Feet	140
Minimum Efficiency, Percent	88
Maximum Shutoff Head, Feet	215.5
Minimum NPSHa at Every Specified Flow, Feet	11.41
Pump Casing	Cast Iron
Impeller	Stainless Steel
Driver Type	Motor
Drive Arrangement	Horizontal, Flexibly Coupled
Rated Horsepower	250
Inverter Duty Rated	Yes
Motor Voltage/Phases/hertz	460/3/60
Enclosure Type	TEFC

Tag Numbers	PMP-4
Performance Test Level	2
Vibration Test Level	2
Noise Test Level	2

END OF SECTION

SECTION 15010

VALVE INSTALLATION

PART 1 - GENERAL

1.1 SCOPE. This section covers the installation of new valves and actuators purchased by contractor as part of this work.

A. Cleaning, disinfection, pressure and leakage testing, insulation, and pipe supports are covered in other sections.

B. The following specification sections are applicable to valves to be installed:

Section	Title
15093	Check Valves
15101	AWWA Butterfly Valves
15108	Air Release/Combination Air Valves

1.2 GENERAL. Equipment installed under this section shall be erected and placed in proper operating condition in full conformity with drawings, specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by Engineer.

A. Coordination. Flanged connections to valves including the bolts, nuts, and gaskets are covered in the appropriate pipe specification section.

1.3 DELIVERY, STORAGE, AND HANDLING.

A. Storage. Upon delivery, all equipment and materials shall immediately be stored and protected by the Contractor in accordance with Handling and Storage section and the manufacturer's instructions until installed in the Work. Stored equipment shall be protected by Contractor against damage and exposure from the elements. At no time shall the equipment be stored on earth or grass surfaces or come into contact with earth or grass. Contractor shall keep the equipment dry at all times.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

3.1 INSPECTION. All valves and accessories shall be inspected for damage and cleanliness before being installed. Any material damaged or contaminated in handling on the job shall not be used unless it is repaired and re-cleaned to the original requirements by Contractor. Such material shall be segregated from the clean material and shall be inspected and approved by Owner or his representative before its use.

3.2 INSTALLATION.

A. General. Valves shall be installed with sufficient clearance for proper operation of any external mechanisms, and with sufficient clearance to dismantle the valve for in-place maintenance. Installation shall be in accordance with the valve manufacturer's recommendations.

1. Unless otherwise indicated on the drawings, all valves installed in horizontal runs having handles at elevations 4 feet or less above the finish floor shall be installed with their operating stems vertical. Valves installed in horizontal runs having handles at elevations between 4 feet and 6 feet 9 inches above the finish floor shall be installed with their operating stems horizontal. If adjacent piping prohibits this, the stems and operating handwheel shall be installed above the valve horizontal centerline as close to horizontal as possible. Valves installed in vertical runs of pipe shall have their operating stems oriented to facilitate the most practicable operation, as reviewed by Engineer.

B. Installation Checks. When specified in the valve sections, the valve manufacturer will provide installation checks. For installation checks, the manufacturer's field representative will inspect the valve installation immediately following installation by Contractor. The manufacturer's representatives will revisit the site as often as necessary to ensure installation satisfactory to Owner.

1. Contractor shall perform no Work related to the installation or operation of materials or equipment furnished by others without direct observation and guidance of the field representative, unless Engineer and manufacturer furnishing such materials concur otherwise.

C. AWWA Butterfly Valves. Butterfly valves shall be installed with the shaft horizontal unless otherwise necessary for proper operation or as acceptable to Engineer.

1. Whenever an actuator must be removed to permit installation of a valve, the actuator shall be promptly reinstalled and shall be inspected and readjusted by a representative of the valve manufacturer.

D. Check Valves.

1. Lift Check Valves. Not used.

2. Swing Check Valves. Install valves oriented for the correct flow direction. Only valves designed for vertical installation shall be installed in vertical piping.

3. Low Pressure Air Service Check Valves. Not used.

4. Eccentric Plug Valves. Not used.

5. Resilient Seated Gate Valves. Not used.

6. Double Disc Gate Valves. Not used.

7. Air Release and Combination Air Valves. The exhaust from each valve shall be piped to a suitable point acceptable to Engineer. Air release valve exhaust piping leading to a trapped floor drain shall terminate at least 6 inches (150 mm) above the floor.

8. Valve Boxes. Not used.

9. Yard Hydrants. Not used.

10. Fire Hydrants. Not used.

3.3 VALVE ACTUATORS

1. Power Valve Actuators. Not used.

2. Manual Valve Actuators.

3.4 FIELD QUALITY CONTROL

A. Field Testing. After installation, all valves shall be tested in conjunction with the Pipeline Pressure and Leakage Testing section as specified in Section 15060 – Ductile Iron Pipe and Fittings 42-inch Diameter and Smaller.

1. Pressure Tests. Pressure testing shall be in accordance with the Pipeline Pressure and Leakage Testing section as specified in Section 15060 – Ductile Iron Pipe and Fittings 42-inch Diameter and Smaller.

2. Leakage Tests. All valves shall be free from leaks. Each leak that is discovered within the correction period stipulated in the General Conditions shall be repaired by and at the expense of Contractor. This requirement applies whether pressure testing is required or not.

3.5 ADJUSTING. After installation, the opening and closing time shall be adjusted as needed for each pneumatic, hydraulic and electric actuated valve.

END OF SECTION

SECTION 15050

COMMON WORK RESULTS FOR MECHANICAL EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Mechanical equipment requirements for:

a. Basic design and performance criteria.

b. Prescriptive requirements for common components.

c. Installation requirements.

1.2 REFERENCES

A. American Bearing Manufacturers Association (ABMA):

1. 9 - Load Ratings and Fatigue Life for Ball Bearings.

2. 11 - Load Ratings and Fatigue Life for Roller Bearings.

B. American Gear Manufacturers Association (AGMA) Standards.

C. American Petroleum Institute (API):

1. 682 - Pumps—Shaft Sealing Systems for Centrifugal and Rotary Pumps.

D. ASTM International (ASTM):

1. A193 - Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.

2. A194 - Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.

3. A320 - Standard Specification for Alloy-Steel and Stainless Steel Bolting for Low-Temperature Service.

4. F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.

5. F594 - Standard Specification for Stainless Steel Nuts.

E. Hydraulic Institute (HI):

1. 9.6.8 - Guideline for Dynamics of Pumping Machinery.

F. International Concrete Repair Institute (ICRI):

1. Guideline No. 310.2R, Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair.

G. International Organization for Standardization (ISO):

1. 21940 - Mechanical Vibration - Rotor Balancing - Part 1: Introduction.

H. National Electrical Manufacturers Association (NEMA):

1. MG-1 - Motors and Generators.

I. Society for Protective Coatings (SSPC):

1. SP 1 - Solvent Cleaning.

1.3 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning:

1. Definitions used in this specification and equipment Submittals for terms related to rotor-dynamic pumps shall be in accordance with HI 9.6.8, Appendix A, as clarified below.

2. These definitions shall be applied to equipment other than pumps, unless otherwise specified in Technical Sections.

3. Resonant frequency:

a. Frequency of a periodic excitation force that is close to the natural frequencies of an object. Also known as critical frequency, critical speed, or resonant speed.

b. An undamped resonant frequency within the separation margin is always considered harmful under Level 1 analysis.

c. A resonant frequency that occurs within a separation margin of 15 percent above or below the operating speed range and has a log decrement greater than +0.3 is considered harmful under Level 2 and Level 3 analysis.

4. Rotordynamic analysis level:

a. Level of detail required for rotordynamic analysis is indicated in the Technical Sections schedules as None (no analysis required), Analysis Level 1, Analysis Level 2, or Analysis Level 3, which correlate to increasing levels of required detailed equipment design analysis. Analysis Levels 1, 2, and 3 are based on HI 9.6.8.

b. Where these specifications differ from HI the more stringent shall apply.

5. Separation margin:

a. Span of operating speeds within which interference between excitation orders and resonant frequencies indicate the possibility of harmful vibrations.

b. Separation margin for a specific application extends 15 percent above and 15 percent below the span of operating speed required for the specified performance conditions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Roof coordination.

1. Show roof penetrations for mechanical equipment on roof drawing Submittal and include mechanical equipment information:

a. Type.

b. Size.

c. Location.

d. Configuration of penetration and the surround.

e. Weight.

f. Anchoring and support details.

1.5 SUBMITTALS

A. Items in this Section are components of equipment or systems specified in other Sections.

1. Include data for this Section's components with the equipment or system Submittal.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

A. General:

1. Equipment manufacturer's responsibility extends to selection and mounting of gear drive units, motors or other prime movers, accessories, and auxiliaries to provide a complete, operable unit.

2. Manufacturer shall analyze rubber-bearing vertical-column pumps and equipment identified as non-reversing in the Technical Sections for reverse rotation and provide non reversing motor ratchets.

3. Equipment that prevents reverse rotation shall be capable of both:

a. Handling 150 percent of the maximum torque at maximum operating speed.

b. 150 percent of torque that will be generated in reverse direction due to equipment shutoff head as calculated by the manufacturer.

4. Motor shall be designed to run safely in the reverse direction at up to 140 percent times the reverse runaway speed under shutoff head conditions.

B. Rotordynamic analysis and vibration testing:

1. Submit information for the rotordynamic analysis level specified for each piece of equipment as shown in the Technical Sections prior to manufacture of the equipment.

2. Rotordynamic analysis shall be performed on "like-new" and "as-worn" conditions, representing conditions when first installed and conditions when parts wear to the manufacturer's maximum allowable operating tolerances:

    a. Conditions assumed for the "as-worn" condition shall be 2 times the "like-new" tolerances unless specified otherwise.

3. Rotordynamic analysis criteria:

    a. Torsional excitation forcing function magnitudes shall be no less than 1 percent of the maximum transmitted torque at given speed.

    b. Motor mass elastic information in accordance with NEMA MG-1 shall be obtained from the original equipment manufacturer and included in the analysis. Motors shall be precision balanced to ISO 21940 Grade G2.5.

    c. Bearings:

        1) At maximum bearing loads an L-10 life of 100,000 hours in accordance with ABMA 9-11 to be proven.

4. Submit factory and field testing requirements as specified in the Technical Sections and specified in Section 15958 - Mechanical Equipment Testing after manufacture and installation respectively.

5. Repair, replace, and modify equipment exhibiting vibration performance that does not meet criteria specified in this Section at no additional cost to the Owner:

    a. Acceptable remedies include adjustments to equipment component geometry, materials, energy absorbing couplings, etc.

    b. Locking out speed interval(s) within equipment specified operating range is unacceptable.

6. Vibration analysis expert:

    a. Provide when specified in the equipment Technical Sections:

        1) Must be a 3rd party, unaffiliated with the equipment vendor or Contractor.

    b. Analysis shall be provided by one of the following or equal:

        1) Engineering Dynamics Inc. (EDI, Texas).

        2) Mechanical Solutions, Inc. (MSI, New Jersey).

    c. Analysis shall be:

        1) Stamped by a registered professional mechanical engineer.

        2) Verified in-situ by the vibration analysis expert, including certification that installation conforms to field conditions assumed in the reports.

        3) Verified in-situ by the vibration analysis expert, including witness of at least 1 field vibration test, and certification that vibration measurements corroborate the rotordynamic analysis.

4) Supplemented with additional field investigation and analysis should conditions during field vibration testing activity indicate non-compliance with these specifications; supplemental field investigation and analysis shall indicate remedies to comply with the specifications and shall be stamped by a registered professional mechanical engineer.

7. Rotordynamic Analysis Level 1:

   a. Before the equipment is released for manufacture it shall be determined that the equipment/motor structures do not have any harmful resonant frequencies in the lateral and torsional modes. Representative analysis results for identical equipment may be submitted.

   b. Calculate rotor lateral and torsional and equipment structural components' lateral frequencies with a spreadsheet calculation or finite element analysis software:

      1) Equipment structure lateral frequency shall include the motor.

      2) Speed changing drive systems (belt, gear) effects on rotational inertia and stiffness shall be incorporated.

   c. Determine the equipment system components (rotor and structure) resonant frequencies.

   d. An intersection of an equipment component resonant frequency with the 1x run speed excitation order that occurs within separation margin is unacceptable.

8. Rotordynamic Analysis Level 2:

   a. Before the equipment and motor are released for manufacture it shall be determined that the equipment/motor structures do not have any harmful critical speeds in the lateral and torsional modes.

   b. Calculate rotor lateral and torsional and structure lateral frequencies with finite element analysis software:

      1) Equipment structure lateral frequency shall include the motor.

      2) Speed changing drive systems (belt, gear) effects on rotational inertia and stiffness shall be incorporated.

      3) Rotational inertia of water within the impeller, in the wet well, and inside the equipment structure, e.g., the column of a vertical pump, shall be included in the calculation at both the high level and low level conditions.

   c. Potentially harmful critical speeds shall be investigated further with a forced, damped analysis to determine component stresses do not exceed material properties.

d. Forced damped analysis:

1) Forced lateral analysis shall include forcing function magnitudes at least 10 percent of rotor disc weight at each disc position and hydraulic imbalance at 5 operating conditions spaced equally over the equipment operating range. If synchronous motors are used ensure that the rotor analysis includes startup, shutdown, and motor control transients.

2) Forced torsional analysis shall include not less than 1 percent of the maximum permitted torque at any given speed. Damping shall be 1 percent of critical at all shaft elements.

3) Equipment rotor total stress (steady-state and alternating torque components plus lateral-bending stresses) shall not exceed:

a) Constant torque: Total stress limited to 30 percent of the material fatigue limit and to a maximum of 18 percent of ultimate tensile strength.

b) Variable torque (including variable speed equipment): Total stress limited to 50 percent of the material fatigue limit and to a maximum of 4 percent of the material ultimate tensile strength.

c) Submit documentation of material fatigue limit.

e. Report Submittals:

1) Confirmation of compliance with this Section, or detailed exceptions taken.

2) Software used for analysis.

3) Results with interpretation.

4) Preparer's professional engineering stamp and seal.

5) Input data, including component properties, materials and connectivity to other components.

6) Schematic diagram of model mode shapes, nodes and elements.

7) Bearing stiffness and damping properties, impeller/diffuser interaction coefficients, and seal dynamic properties.

8) Campbell diagrams showing the system natural frequencies, excitation orders, and operating speed range for both lateral and torsional analysis:

a) Include equipment operating range; excitation lines at 1x, 2x run speed, and vane pass (or equivalent); and critical speeds associated with equipment system components, including the rotor, each major equipment structural component and the motor.

9) Forced, damped analysis indicating acceptable material stress limits are maintained at interference points shown on the Campbell diagram.

9. Rotordynamic Analysis Level 3:

   a. Before the equipment and motor are released for manufacture it shall be determined that the equipment/motor structures do not have any harmful critical speeds in the lateral and torsional modes.

   b. Calculate rotor lateral and torsional and structure lateral frequencies with finite element analysis software:

      1) Equipment structure lateral frequency shall include the motor.

      2) Speed changing drive systems (belt, gear) effects on rotational inertia and stiffness shall be incorporated.

      3) Rotational inertia of water within the impeller, in the wet well, and inside the equipment structure, e.g., the column of a vertical pump, shall be included in the calculation at both the high level and low level conditions.

   c. Potentially harmful critical speeds shall be investigated further with a forced, damped analysis to determine component stresses do not exceed material properties.

   d. Forced damped analysis:

      1) Forced lateral analysis shall include forcing function magnitudes at least 10 percent of rotor disc weight at each disc position and hydraulic imbalance at 5 operating conditions spaced equally over the equipment operating range. If synchronous motors are used ensure that the rotor analysis includes startup, shutdown, and motor control transients.

      2) Forced torsional analysis shall include 1 percent of the maximum permitted torque at any given speed. Damping shall be 1 percent of critical at all shaft elements.

      3) Equipment rotor total stress (steady-state and alternating torque components plus lateral-bending stresses) shall not exceed:

         a) Constant torque: Total stress limited to 30 percent of the material fatigue limit and to a maximum of 18 percent of ultimate tensile strength.

         b) Variable torque (including variable speed equipment): Total stress limited to 50 percent of the material fatigue limit and to a maximum of 4 percent of the material ultimate tensile strength.

         c) Submit documentation of material fatigue limit.

   e. Report Submittals:

      1) Report 1: Executive Summary, including:

         a) Confirmation of compliance with this Section, or detailed exceptions taken.

         b) Software used for analysis.

c) Results with interpretation.

d) Preparer's professional engineering stamp and seal.

e) Campbell diagrams showing the system natural frequencies, excitation orders, and operating speed range for both lateral and torsional analysis.

(1) Include equipment operating range; excitation lines at 1x, 2x run speed, vane pass (or equivalent), line- and twice-line frequency, motor-pole frequency, torsional harmonics from reciprocating drivers (including up to 6 times operating speed), control pulse frequencies induced by variable frequency drives (VFDs) (with certification from VFD manufacturer of frequencies up to 24 times motor running speed), any torque harmonic greater than 1 percent of steady torque at primary excitation, and synchronous motor requirements; and critical speeds associated with equipment system components, including the rotor and each major equipment structural component.

f) Report 1 shall not include detailed analysis elements listed for Submittal under Report 2 below, Submittal of full analysis details in Report 1 is unacceptable.

g) Following Submittal of Report 1, submit Report 2: Detailed Analysis, including responses to comments made on Report 1: Rotor-dynamic Executive Summary.

2) Report 2: Rotor-dynamic detailed analysis, including:

a) Input data, including component properties, materials and connectivity to other components.

b) Schematic diagram of model mode shapes, nodes and elements.

c) Bearing stiffness and damping properties, impeller/diffuser interaction coefficients, and seal dynamic properties.

d) Forced, damped analysis indicating acceptable material stress limits are maintained at interference points shown on the Campbell diagram.

e) Synchronous motor information, including time-integration study results showing transient peak stresses at startup, shutdown and motor control transient events. Provide tomographic diagrams, including root and keyway stress concentration locations and the corresponding speeds that result in reported peak stresses.

2.2 POWER TRANSMISSION SYSTEMS

A. V-belts, sheaves, shaft couplings, chains, sprockets, mechanical variable-speed drives, VFDs, gear reducers, open and enclosed gearing, clutches, brakes, intermediate shafting, intermediate bearings, and U-joints:

1. Rated for 24 hour-a-day continuous service, or for intermittent service with frequent stops-and-starts, whichever is most severe.
2. Sized with a service factor of 1.5 or greater:
    a. Apply service factor to nameplate horsepower and torque of prime source of power and not to actual equipment loading.
    b. Apply service factors in accordance with AGMA, or as specified in the Technical Sections.

2.3 BEARINGS

A. Oil or grease lubricated, ball or roller antifriction type, of standard manufacture.

1. Design lubrication system based on the equipment location to operate in the temperatures as specified by the manufacturer.
    a. To safely start after being shut off for 24 hours and operate safely:
        1) Suitable for the outdoor winter temperature as specified by the manufacturer.

B. Oil-lubricated:

1. Provide either pressure lubricating system or separate oil reservoir splash-type system as specified in the Technical Section.
2. Design system to safely absorb heat energy generated in bearings when equipment is operating in the following conditions:
    a. With the highest load and the temperature 15 degrees Fahrenheit above the outdoor summer temperature as specified by the manufacturer.

C. Grease lubricated, except those specified to be factory sealed:

1. Fit with easily accessible grease supply, flush, drain, and relief fittings.
2. Lubrication lines and fittings:
    a. Lines: Minimum 1/4-inch diameter stainless steel tubing.
    b. Multiple fitting assemblies: Mount fittings together in easily accessible location.
    c. Use standard hydraulic-type grease supply fittings:
        1) Manufacturers: One of the following or equal:
            a) Alemite.
            b) Zerk.

D. Ratings: In accordance with ABMA 9 or ABMA 11 L10 life for bearings rating life of not less than 50,000 hours.

2.4 BELT DRIVES

A. Sheaves:

1. Separately mounted on bushings by means of at least 3 pull-up bolts or cap tightening screws.
2. When 2 sheave sizes are specified, provide separate belts sized for each set of sheaves.
3. Statically balanced for all; dynamically balanced for sheaves that operate at a peripheral speed of more than 5,500 feet per minute.
4. Key bushings to drive shaft.

B. Belts:

1. Anti-static type when explosion-proof equipment or environment is specified.
2. When spare belts are specified, furnish 1 spare belt for every different type and size of belt-driven unit:
    a. Where 2 or more belts are involved, furnish matched sets.
    b. Identify as to equipment, design, horsepower, speed, length, sheave size, and use.
    c. Package in boxes labeled with identification of contents.

C. Manufacturers: One of the following or equal:

1. Dodge, Dyna-V belts with matching Dyna-V sheaves and Taper-Lock bushings.
2. T.B. Woods, Ultra-V belts with matching Sure-Grip sheaves and Sure-Grip bushings.

2.5 FLANGED PIPING CONNECTIONS

A. Unless specified otherwise in the Technical Sections or indicated on the Drawings, provide flat face flanges.

2.6 ASSEMBLY FASTENERS

A. General service: Stainless steel, Type 316:

1. Bolts: In accordance with ASTM F593, Alloy Group 2.
2. Nuts: In accordance with ASTM F594, Alloy Group 2.
3. Washers: Alloy group matching bolts and nuts.

B. High-temperature service or high-pressure service: Stainless steel, Type 316:

1. Bolts: In accordance with ASTM A193, Grade B8M, Class 1, heavy hex.
2. Nuts: In accordance with ASTM A194, Grade 8, heavy hex.

3. Washers: Alloy group matching bolts and nuts.

C. Low-temperature service: Stainless steel, Type 316:

1. Bolts: In accordance with ASTM A320, Grade B8M, Class 1, heavy hex.

2. Nuts: In accordance with ASTM A194, Grade B8M, heavy hex.

3. Washers: Alloy group matching bolts and nuts.

2.7 GUARDS AT HIGH-TEMPERATURE SURFACES

A. Exposed surfaces having an external surface temperature of 120 degrees Fahrenheit or higher and located within 7 feet, measured vertically from floor or working level, or within 15 inches measured horizontally from stairways, ramps, or fixed ladders.

B. Cover with a thermal insulating material unless otherwise guarded against contact.

1. Insulation thickness such that the insulation exterior temperature is below 120 degrees Fahrenheit.

2. Insulation Type 3 and cover Type 5.

2.8 GUARDS AT MOVING COMPONENTS

A. On rotating components that are within 7.5 vertical feet of an operating floor or platform.

B. Allow visual inspection of moving parts without removal.

C. Allow access to lubrication fittings.

D. Easily removable for maintenance.

E. Prevent entrance of rain or dripping water for outdoor locations.

F. Size belt and sheave guards to allow for installation of sheaves 15 percent larger and addition of 1 belt.

G. Materials:

1. Sheet metal: Carbon steel, 12-gauge minimum thickness, hot-dip galvanized after fabrication.

2. Fasteners: Type 316 stainless steel.

2.9 SHOP FINISHES

A. Manufacturer's standard primer and finish coatings.

1. Primer only if field coatings are to be applied.

2.10 GEAR MOTORS

A. Parallel shaft drives: Helical gearing.

B. Right-angle drives: Worm gearing.

C. Manufacturers: One of the following or equal:

1. Baldor Electric Company.
2. Bodine Electric Company.

2.11 GEAR REDUCTION UNITS

A. Design and performance criteria:

1. Gear type:
    a. Helical or herringbone.
2. AGMA Class II service:
    a. Use more severe service condition when such is recommended by unit's manufacturer.
3. Cast-iron housing with gears running in oil.
4. Anti-friction bearings.
5. Thermal horsepower rating based on maximum horsepower rating of prime mover, not actual load.

2.12 MOUNTING AND LIFTING PROVISIONS FOR EQUIPMENT

A. Equipment bases and base plates:

1. Provide equipment bases with machined support pads, dowels for alignment for mating of adjacent items, openings for electrical conduits, and openings to facilitate grouting.
2. Provide jacking screws in bases and supports for equipment and for equipment weighing 500 pounds or more.
3. Materials:
    a. Match equipment material or steel.
    b. Coating: Match equipment.

B. Steel support frames:

1. Carbon steel:
    a. At exterior locations and at interior wet or moist locations, provide continuous welds on both sides to close seams and edges between steel members.
    b. Grind closure welds smooth.

C. Lifting lugs or eyes:

1. Equipment units weighing 50 pounds or more:

a. Provide with lifting lugs or eyes to allow removal with lifting device.

2.13 NAMEPLATES

A. Fastened to equipment at factory in an accessible and visible location.

B. Metal engraved or stamped with text, holes drilled or punched for fasteners.

C. Material: Aluminum or stainless steel.

D. Fasteners: Number 4 or larger oval head stainless steel screws or drive pins.

E. Text:

1. Manufacturer's name, equipment model number, equipment serial number, and identification tag number.
2. Additional items indicated in the Technical Sections.
3. Indicate the following additional information as applicable:
   a. Maximum and normal rotating speed.
   b. Service class in accordance with applicable standards.
4. Include for pumps:
   a. Rated total dynamic head in feet of fluid.
   b. Rated flow in gallons per minute.
   c. Impeller, gear, screw, diaphragm, or piston size.
5. Include for motors:
   a. Drive speed.
   b. Motor horsepower with rated capacity.
6. Include for gear reduction units:
   a. AGMA class of service.
   b. Service factor.
   c. Input and output speeds.

2.14 PUMP SHAFT COUPLINGS

A. General:

1. Type and ratings: Non-lubricated designed for not less than 50,000 hours of operating life.

2. Sizes: Provide as recommended by manufacturer for specific application, considering horsepower, speed of rotation, balance, and type of service.

3. Suitable for an ambient temperature range between -40 degrees to +200 degrees Fahrenheit.

B. Close-couplings for electric-motor-driven equipment:

1. Manufacturers: One of the following or equal:

a. Lovejoy.

b. T.B. Woods.

2. Provide flexible couplings designed to accommodate angular misalignment, parallel misalignment, and end float.

3. Manufacture flexible component of coupling from synthetic rubber or urethane.

4. Provide service factor of 2.5 for electric motor drives and 3.5 for engine drives.

5. Do not allow metal-to-metal contact between driver and driven equipment.

C. Flexible couplings for direct connected electric-motor-driven equipment:

1. Manufacturers: One of the following or equal:

a. Rexnord.

b. T.B. Woods.

2. Provide flexible couplings designed to accommodate shock loading, vibration, and shaft misalignment or offset.

3. Provide flexible connecting element of rubber and reinforcement fibers.

4. Provide service factor of 2.0.

5. Connect stub shafts through collars or round flanges, firmly keyed to their shafts with neoprene cylinders held to individual flanges by through pins.

D. Spacer couplings:

1. Where cartridge-type mechanical seals or non-split seals are specified, provide a spacer-type coupling of sufficient length to remove the seal without disturbing the driver or driven equipment.

2.15 PUMP SEAL CHAMBER AND SEALS

A. Seal chamber (stuffing box):

1. Large enough to retrofit with double mechanical seal.

B. Seal types: Based on the following and as specified in the Technical Section:

1. Type 1: Packing:

a. Provide when specified in the Technical Section for wastewater, non-potable water, and sludge applications:

1) Asbestos free.

2) PTFE (Teflon™) free.

3) Braided graphite.

4) Manufacturers: One of the following or equal:

a) Chesterton, 1400.

b) John Crane.

b. Provide when specified for drinking water service:

1) Asbestos free.

2) Material: Braided PTFE (Teflon™).

3) Manufacturers: One of the following or equal:

a) Chesterton, 1725.

b) John Crane.

c. Design:

1) Packing gland to allow adjustment and repacking without dismantling pump, except to open up stuffing box.

2) Seal chamber (stuffing box) large enough to retrofit with double mechanical seal.

3) Manufacturers: One of the following or equal:

a) Chesterton, 1725.

b) John Crane.

2. Type 2: Mechanical seal, flushing, cartridge, single O-ring.

a. Manufacturers: One of the following or equal:

1) Chesterton, S10.

2) John Crane, 5610 Series.

3. Type 3: Mechanical seal, flushing, cartridge, double O-ring:

a. Manufacturers: One of the following or equal:

1) Chesterton, S20.

2) John Crane, 5620 Series.

4. Type 4: Mechanical seal, flushing, cartridge, double split-ring:
    a. Manufacturers: One of the following or equal:
        1) Chesterton, S20.
        2) John Crane, 5620 Series.
5. Type 5: Mechanical seal, flushing, cartridge, single split-ring:
    a. Manufacturers: One of the following or equal:
        1) Chesterton, 442.
        2) John Crane, 5860.
6. Type 6: Mechanical seal, flushless, cartridge, single split-ring:
    a. Manufacturers: One of the following or equal:
        1) Chesterton, 156.
        2) John Crane, 3740 Series.

C. Mechanical seals, Types 2 to 6:
1. Balanced hydraulically.
2. Spring:
    a. Stationary, out of pumping fluid.
    b. Material as specified in the Technical Section. Hastelloy C; Type Elgiloy or 17-7 PH stainless steel for split seals.
3. O-ring: Viton™ 747.
4. Gland: Type 316L stainless steel.
5. Set screws: Type 316L stainless steel.
6. Faces: Reaction bonded, silicon carbide/carbon.
7. Minimum differential pressures in either direction: 300 pounds per square inch gauge.
    a. Manufacturers: One of the following or equal:
        1) Chesterton, 1400.
        2) John Crane, equivalent product.
8. Drinking water service:
    a. Asbestos free.
    b. Material: Braided PTFE (Teflon™).
    c. Manufacturers: One of the following or equal:
        1) Chesterton, 1725.
        2) John Crane, equivalent product.

D. Flushing system:

1. Provide flushing connections:
    a. 3/4-inch size.
    b. Provide API 682 seal water plan arrangement as specified in the Technical Section:
        1) Plan 11 - Product stream seal water from discharge thru seal.
        2) Plan 13 - Product stream seal water through seal to suction.
        3) Plan 23 - Closed loop seal water with cooler and pumping ring.
        4) Plan 32 - Production seal water discharged to product stream.
        5) Plan 54 - Production seal water excluded from product stream.

2.16 SHIPPING

A. Prior to shipment of equipment:
    1. Bearings (and similar items):
        a. Pack separately or provide other protection during transport.
        b. Greased and lubricated.
    2. Gear boxes:
        a. Oil filled or sprayed with rust preventive protective coating.
    3. Fasteners:
        a. Inspect for proper torques and tightness.

PART 3 - EXECUTION

3.1 PRE-INSTALLATION

A. Field measurements:
    1. Prior to Shop Drawings preparation, take measurements and verify dimensions indicated on the Drawings.
    2. Ensure equipment and ancillary appurtenances fit within available space.

B. Sequencing and scheduling:
    1. Coordinate details of equipment with other related parts of the Work, including verification that structures, piping, wiring, and equipment components are compatible.
    2. Equipment anchoring: Obtain anchoring material and setting drawings from equipment manufacturers in adequate time for templates to be constructed and anchors to be cast-in-place.

3.2 LUBRICATION LINES AND FITTINGS

A. Support and protect lines from source to point of use.

B. Fittings:

1. Bring fittings to outside of equipment in manner such that they are readily accessible from outside without necessity of removing covers, plates, housings, or guards.

2. Mount fittings together wherever possible using factory-mounted multiple fitting assemblies securely mounted, parallel with equipment lines, and protected from damage.

3. For underwater bearings: Bring fittings above water surface and mount on edge of structure above.

3.3 ALIGNMENT OF DRIVERS AND EQUIPMENT

A. Where drive motors or other drivers are connected to driven equipment by flexible coupling, disconnect coupling halves and align driver and equipment after driven equipment has been leveled on its foundation.

B. Comply with procedures of appropriate HI, AGMA standards, alignment tolerances of equipment manufacturers and the following requirements to bring components into angular and parallel alignment:

1. Maximum total coupling offset (not the per-plane offset): Not to exceed 0.5 mils per inch of coupling length for spacer couplings based on coupling length (not dial separation).

2. Utilize jacking screws, wedges, or shims as recommended by the equipment manufacturer and as specified in the equipment sections.

C. Use reverse-indicator arrangement dial-type or laser-type alignment indicators:

1. Mount on the driver/coupling flange and equipment/coupling flange.

2. Alignment instrumentation accuracy shall be sufficient to read angular and radial misalignment at 10 percent or less of the manufacturer's recommended acceptable misalignment.

D. Alignment and calculations shall include measurement and allowance for thermal growth, spacer coupling length, indicator separation, and axial spacing tolerances of the coupling.

E. When alignment satisfies most stringent tolerance of system components, grout between base and foundation.

1. Allow minimum 48 hours for grout to harden.

2. After grout hardens, remove jacking screws, tighten anchor bolts and other connections, and recheck alignment.

3. Correct alignment as required.

3.4 EQUIPMENT SUPPORT AND ANCHORING TO STRUCTURES

A. Anchor equipment to structures as indicated on the Drawings and as specified.

B. Obtain final anchor bolt layouts for equipment prior to:

1. Detailing reinforcement for equipment pads.
2. Preparation of Shop Drawings for metal structures supporting equipment.

C. Anchor bolt templates:

1. Provide templates as specified in the Technical Sections.
2. Use final anchor bolt layout to construct templates for setting anchor bolts.
3. Make templates:
    a. Rigid, and non-deformable during use.
    b. With longitudinal axes of anchors parallel.
    c. With longitudinal axes of anchors perpendicular to surface supporting the equipment.
4. Templates may be reused for multiple locations of the same equipment only if:
    a. Templates are in "like-new" condition prior to each reuse.
    b. Anchor layout has not been deformed or damaged by previous installation, removal, or handling of templates.
5. Sequence:
    a. Set and support templates prior construction of structures surrounding anchors.
    b. Position anchors in templates to provide designated embedment in supporting structure, with required projection for installation of grout, base plates, and hardware for tightening.
    c. Construct concrete or masonry around anchors using methods that preserve required anchor positions and alignment, and clearances to edges of supports or structures.

D. Anchor adjustment sleeves:

1. Use of adjustment sleeves around anchors:
    a. Is at the option of the Contractor.
    b. Does not relieve the Contractor of obligation to construct and use templates for setting of anchors.
    c. May require increased anchor embedment length to develop the strength of the anchor in the embedded length below the adjustment sleeve.
2. Submittal requirements for anchor adjustment sleeves:
    a. Provide within sufficient time for Engineer approval and not less than 10 working days before setting those items.
    b. Proposed locations of sleeves.

c. Details and dimensions of sleeves.

d. Sleeve materials of construction, and coatings.

e. Information on sleeve filler material and means of filler removal.

f. Type, details, and dimensions of anchor bolts or anchor rods to be used with sleeves.

g. Calculations showing development of anchor load capacity below the bottom of the sleeve.

h. Plan for removal of sleeve fillers, if any.

i. Plan for placement and consolidation of flowable grout inside sleeves and to a level equal to top of concrete slab or equipment pad surrounding the sleeve.

3.5 GROUTING UNDER EQUIPMENT BASES, BASE PLATES, SOLE PLATES, AND SKIDS

A. General:

1. In accordance with the equipment manufacturer's installation instructions, including:

   a. Tolerances for level.

   b. Tolerances for vertical and horizontal alignment.

   c. Requirements or recommendations for grouting spaces and grout installation.

   d. Recommendations for tightening of equipment anchors after grout has cured.

2. Install equipment over grout as indicated on the Drawings or specified only after:

   a. Equipment is leveled and in proper alignment.

   b. Piping connections are complete and in alignment with no strain transmitted to equipment.

3. Install flowable grout, as specified in Section 03600 - Grout, placed with forms and head boxes.

   a. Use flowable, non-shrink cement grout.

   b. Use flowable, non-shrink epoxy grout, only where indicated on the Drawings, where specified in Technical Sections, or when approved in advance by the Engineer.

   c. Grouting with dry-pack materials is not permitted.

B. Prepare equipment bases, base plates, soleplates, and skids for grouting:

1. Concrete equipment bases:

   a. Roughen surface in accordance with ICRI, Guideline No. 310.2R, Surface Preparation Profiles CSP-3 and CSP-4.

   b. Clean roughened concrete surfaces.

2. Base plates, soleplates, and skids:

    a. Clean surfaces in accordance with SSPC-SP 1-Solvent Cleaning, to remove dirt, dust, oil, grease, paint, and other material.

C. Level equipment for grouting:

1. Use removable jack screws, or removable steel wedges and shims to support and level equipment bases, base plates, sole plates, and skids.

    a. Do not use leveling nuts placed on equipment anchors to support or level equipment bases, base plates, sole plates, and skids.

2. Removable jack screws:

    a. Provide number, size, and locations of jack screws required to support and level equipment in accordance with the manufacturer's recommendations.

    b. Drill and tap equipment base plates, sole plates, and skids for jack screws.

    c. Support jack screws on circular steel plates that have been epoxy bonded to the equipment foundation.

        1) Provide plates fabricated from Type 316 stainless steel where edges of support plates will have grout side cover of 3 inches or less in the finished Work.

    d. Make provision for removal of jack screws after grouting:

        1) Prevent grout from bonding to jack screws by wrapping jack screw threads that will be in contact with grout with multiple layers of tape or other material acceptable to the Engineer.

    e. Place and cure grout.

    f. After grout is placed and cured:

        1) Remove jack screws and material used to prevent grout from bonding to jack screws.

        2) Provide jack screws to the Owner for future use.

        3) Fill jack screw holes with grout.

        4) Cure grout as specified.

3. Removable steel wedges and shims:

    a. Use for equipment bases, base plates, sole plates, and skids where it is not practical to use jack screws.

    b. Provide number, size, and locations of wedges and shims required to support and level equipment in accordance with the manufacturer's recommendations.

    c. Make provision for removal of wedges and shims after grouting:

        1) Prevent grout from bonding to wedges and shims by wrapping wedges and shims that contact grout with multiple layers of tape or other material acceptable to the Engineer.

2) Locate and orient wedges and shims to allow for removal after grouting, and to facilitate placement of grout in the remaining voids.

d. Place and cure grout.

e. After grout is placed and cured:

1) Remove wedges and shims, and material used to prevent grout from bonding to them.

2) Fill jack screw holes with grout.

3) Cure grout as specified.

D. Construct grout forms:

1. Provide forms:

a. Rigid with adequate strength to withstand placement of grout.

b. With surfaces that will produce a smooth, uniform finish for grout edges exposed in the finished Work.

c. That allow grout to flow horizontally beyond the perimeter of the equipment base plate a distance not less than the thickness of the grout, and not less than 1 inch.

2. Install forms:

a. Seal form cracks and joints with elastomeric sealant to make form watertight.

b. Line form surfaces in contact with grout with polyethylene film, or coat with 2 coats of heavy-duty paste wax.

3. Construct grout "head box" over entire length of one side of form.

a. Make head box height sufficient to force grout to flow under full dimensions of equipment base and to the surrounding form faces.

E. Pre-grouting procedures:

1. Concrete surfaces receiving flowable, non-shrink cement grout:

a. Saturate concrete surface in contact with grout and concrete surfaces extending not less than at least 6 inches beyond limits of grout with clean water for a minimum of 24 hours prior to grouting.

b. Just prior to grout placement, remove standing water using clean rags or oil-free compressed air. Provide saturated surface dry (SSD) concrete for grout placement.

2. Concrete surfaces receiving flowable, non-shrink epoxy grout:

a. Do not saturate concrete prior to grout placement.

F. Grout placement and curing:

1. Place and cure grout as specified in Section 03600 - Grout and in this Section.

2. Grouting:

   a. Keep level of grout in head box above bottom of equipment bases, base plates, sole plates, and skids always to drive flow under base.

   b. Maintain continuous grout flow from head box to opposite sides of forms without trapping air or forming voids.

   c. Vibrate, rod, or chain grout to facilitate grout flow, to consolidate grout, and to remove entrapped air.

3. After grout sets, remove forms and trim grout edges at 45-degree angle from bottom edge of equipment bases, base plates, sole plates, and skids.

4. Cure grout as specified in Section 03600 - Grouting.

G. After grout is cured:

1. Remove jack screws or wedges and shims, and material used to prevent grout from bonding to leveling devices.

2. Fill pockets from removed leveling devices with grout.

3. Cure filled voids as specified in Section 03600 - Grouting.

4. Tighten equipment anchors in accordance with the equipment manufacturer's requirements.

3.6 FIELD FINISHES

A. When touchup or repair is required, apply primer and coating systems as recommended by the equipment manufacturer.

END OF SECTION

SECTION 15052

COMMON WORK RESULTS FOR GENERAL PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Basic materials and methods for metallic and plastic piping systems.

1.2 REFERENCES

A. American Society of Mechanical Engineers (ASME):

1. B1.1 - Unified Inch Screw Threads (UN, UNR, and UNJ Thread Forms).
2. B18.2.1 - Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, and Lag Screws (Inch Series).
3. B18.2.2 - Nuts for General Applications: Machine Screw Nuts; and Hex, Square, Hex Flange, and Coupling Nuts (Inch Series).
4. PCC-1 - Pressure Boundary Bolted Flange Joint Assembly.

B. American Water Work Association (AWWA):

1. C105 - Polyethylene Encasement for Ductile-Iron Pipe Systems.
2. C110 - Ductile-Iron and Gray-Iron Fittings.
3. C111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
4. C115 - Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.
5. C151 - Ductile-Iron Pipe, Centrifugally Cast.

C. ASTM International (ASTM):

1. A193 - Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
2. A194 - Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.
3. A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength.
4. A563 - Standard Specification for Carbon and Alloy Steel Nuts.
5. B88 - Standard Specification for Seamless Copper Water Tube.
6. D395 - Standard Test Methods for Rubber Property—Compression Set.
7. D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension.

8. D573 - Standard Test Method for Rubber—Deterioration in an Air Oven.
9. D1149 - Standard Test Methods for Rubber Deterioration—Cracking in an Ozone Controlled Environment.
10. D1330 - Standard Specification for Rubber Sheet Gaskets.
11. D2513 - Standard Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing and Fittings.
12. F37 - Standard Test Methods for Sealability of Gasket Materials.
13. F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
14. F594 - Standard Specification for Stainless Steel Nuts.
15. F2329 - Standard Specification for Zinc Coating, Hot-Dip, Requirements of Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners.

D. NSF International (NSF):

1. 61 - Drinking Water System Components - Health Effects.

1.3 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.

1. Buried pipes: Pipes that are buried in the soil with or without a concrete pipe encasement.
2. Exposed pipe: Pipes that are located above ground, or located inside a structure, supported by a structure, or cast into a concrete structure.
3. Pipes adjacent to a wet wall: Pipe centerline within 10 inches of the wet wall.
4. Underground pipes: Buried pipes - see 1. above.
5. Underwater pipes: Pipes below the top of walls in basins or tanks containing water.
6. Wet wall: A wall with water on at least one side.

PART 2 - PRODUCTS

2.1 GENERAL

A. Pipes:

1. Provide new pipe.
2. Piping provided from manufacturers/distributors inventory is subject to the following condition:
    a. Provide proof pipe manufactured more than 6 months prior to delivery was stored properly and the material and/or coating was not subjected to ultraviolet (UV) degradation.

3. Mark each piece of pipe in accordance with applicable standards.

B. Materials in contact with drinking water:

1. As specified in Section 01410 - Regulatory Requirements.

C. Coatings and linings requirements shown in the Pipe Schedule, as modified in the individual pipe Technical Sections, and as specified in Section 09940 - Protective Coatings.

2.2 LINK TYPE SEALS

A. Characteristics:

1. Modular mechanical type, consisting of interlocking neoprene or synthetic rubber links shaped to continuously fill the annular space between the pipe and wall opening.
2. Links to form a continuous rubber belt around the pipe.
3. Provide a nylon polymer pressure plate with Type 316 stainless steel hardware. Isolate pressure plate from contact with wall sleeve.
4. Hardware to be Type 316 stainless steel.
    a. Provide anti-galling lubricant for threads.

B. One of the following or equal:

1. Link-Seal.
2. Pipe Linx.

2.3 FLANGE BOLTS AND NUTS

A. General:

1. Washer: Provide for each nut.
    a. Shall be of the same material as the nut.
2. Nuts: Heavy hex-head.
3. Cut and finish flange bolts to project:
    a. Face of the bolt shall exceed face of nut by 1/16-inch minimum.
    b. A maximum of 1/4 inch beyond outside face of nut after assembly.
4. Tap holes for cap screws or stud bolts when used.
5. Lubricant for stainless steel bolts and nuts:
    a. Chloride-free.
    b. Manufacturers: One of the following or equal:
        1) Huskey, FG-1800 Anti-Seize.
        2) Weicon, Anti-Seize High-Tech.

B. Ductile iron pipe:

1. On exposed pipes with pressures equal to or less than 150 pounds per square inch gauge (psig):

a. Bolts: In accordance with ASTM A307, Grade B.

b. Nuts: In accordance with ASTM A563, Grade A.

c. Bolts and nuts: Hot-dip galvanized in accordance with ASTM F2329.

2. On exposed pipes with pressures greater than 150 psig:

a. Bolts: In accordance with ASTM A193, Grade B7.

b. Nuts: In accordance with ASTM A194, Grade 2H.

c. Bolts and nuts: Hot-dip galvanized in accordance with ASTM F2329.

3. On underwater pipes and pipes adjacent to wet walls:

a. Bolts: In accordance with ASTM A193, Grade B8M.

b. Nuts: In accordance with ASTM A194, Grade 8M.

C. Plastic pipe:

1. On exposed pipes:

a. Bolts: In accordance with ASTM A307, Grade B.

b. Nuts: In accordance with ASTM A563, Grade A.

c. Bolts and nuts: Hot-dip galvanized in accordance with ASTM F2329.

2. On underwater pipes and pipes adjacent to wet walls:

a. Bolts: In accordance with ASTM A193, Grade B8M.

b. Nuts: In accordance with ASTM A194, Grade 8M.

D. Steel pipe:

1. Exposed flange bolts, nuts, and washers:

a. Bolts: ASTM A193, Grade B7 Steel, ASME B1.1 Class 2A Threads, with dimensions in accordance with ASME B18.2.1.

b. Nuts: ASTM A194, Grade 2H Steel, ASME B1.1 Class 2A Fit, with square or heavy hex dimensions in accordance with ASME B18.2.2.

c. Washers: In accordance with ASME PCC-1, Appendix M, Type 4.

d. Bolts and nuts: Hot-dip galvanized in accordance with ASTM F2329.

2.4 MECHANICAL JOINTS BOLTS AND NUTS

A. Bolts, including T-bolts:

1. High strength low alloy steel in accordance with AWWA C111.

a. Fluoropolymer coated.

2. Type 304 stainless steel in accordance with ASTM F593.

3. Type 316 stainless steel in accordance with ASTM F593.

B. Heavy hex nuts:

1. High strength low alloy steel in accordance with AWWA C111.

a. Fluoropolymer coated.

2. Type 304 stainless steel in accordance with ASTM F594.

3. Type 316 stainless steel in accordance with ASTM F594.

2.5 GASKETS

A. General:

1. Suitable for the specific fluids, pressure, and temperature conditions.

2. Capable of being applied on surface of piping with cavities to provide for an improved seal with the internal piping pressure.

B. For flanged joints in ductile iron drinking water piping in accordance with NSF 61 requirements:

1. Application: Full faced type with one or more annular rings molded into the gasket as described in AWWA C110, C111, and C115.

2. Material: Styrene butadiene copolymer (SBR):

a. Temperature range: 20 to 150 degrees Fahrenheit.

b. Operating pressure:

1) Pipe size 4-inch through 24-inch: 350 psi.

2) Pipe size 24 inch and greater: 250 psi.

3. Thickness, minimum: 1/8 inch.

4. Manufacturers: One of the following or equal:

a. American Cast Iron Pipe Co., Tomseal Flange Gasket.

b. U.S. Pipe, Flange-Tyte II.

C. For mechanical joints or wedge action joint restraints in ductile iron drinking water piping in accordance with NSF 61 requirements:

1. In accordance with AWWA C110, C111, and C115.

2. Material: Vulcanized styrene butadiene copolymer (SBR).

a. Temperature range: 20 to 150 degrees Fahrenheit.

b. Operating pressure: 250 psi.

c. Durometer, Shore A (within 5): 75.

d. ASTM D412 tensile strength: 1,500 psi.

e. ASTM D412 elongation: 150 percent.

f. ASTM D395 B, compression set, 25 percent deflection, maximum percentage 22 hours at 158 degrees Fahrenheit: 20.

g. ASTM D573 minimum aging: 60 percent.

h. ASTM D1149 resistance to surface ozone: No cracking.

3. Manufacturers: One of the following or equal:

a. American Cast Iron Pipe Co, Fastite.

b. U.S. Pipe.

D. For push-on joints in ductile iron drinking water piping in accordance with NSF 61 requirements:

1. In accordance with AWWA C110, C111, and C115.

2. Material: Vulcanized styrene butadiene copolymer (SBR).

a. Temperature range: 20 to 150 degrees Fahrenheit.

b. Operating pressure: 250 psi.

c. Durometer, Shore A:

1) Main body: 50 to 65.

2) Harder portion (if used): 80 to 85.

d. ASTM D412 tensile strength:

1) Main body: 2,000 psi.

2) Harder portion (if used): 1,200 psi.

e. ASTM D412 elongation:

1) Main body: 300 percent.

2) Harder portion (if used): 125 percent.

f. ASTM D395 B, compression set, 25 percent deflection, maximum percentage 22 hours at 158 degrees Fahrenheit: 20.

g. ASTM D573 minimum aging: 60 percent.

h. ASTM D1149 resistance to surface ozone: No cracking.

3. Manufacturers: One of the following or equal:

a. American Cast Iron Pipe Co, Fastite Gasket.

b. McWane Ductile, Tyton Gasket.

c. U.S. Pipe.

E. For integrally restrained push-on joints in ductile iron drinking water piping in accordance with NSF 61 requirements:

1. In accordance with AWWA C110, C111, and C115.

2. Material: Vulcanized styrene butadiene copolymer (SBR).
    a. Temperature range: 20 to 150 degrees Fahrenheit.
    b. Operating pressure: 250 psi.
    c. Durometer, Shore A:
        1) Main body: 50 to 65.
        2) Harder portion (if used): 80 to 85.
    d. ASTM D412 tensile strength:
        1) Main body: 2,000 psi.
        2) Harder portion (if used): 1,200 psi.
    e. ASTM D412 elongation:
        1) Main body: 300 percent.
        2) Harder portion (if used): 125 percent.
    f. ASTM D395 B, compression set, 25 percent deflection, maximum percentage 22 hours at 158 degrees Fahrenheit: 20.
    g. ASTM D573 minimum aging: 60 percent.
    h. ASTM D1149 resistance to surface ozone: No cracking.
3. Manufacturers: One of the following or equal:
    a. American Cast Iron Pipe Co, Fast-grip gasket.
    b. U.S. Pipe, Field Lok 350 Gaskets.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General:
1. Piping drawings:
    a. Except in details, piping is indicated diagrammatically. Not every offset and fitting, or structural difficulty that may be encountered has been indicated on the Drawings. Sizes and locations are indicated on the Drawings.
    b. Perform minor modifications to piping alignment where necessary to avoid structural, mechanical, or other type of obstructions that cannot be removed or changed.
        1) Modifications are intended to be of minor scope, not involving a change to the design concept or a change to the Contract Price or Contract Times.

2. Piping alternatives:

    a. Provide piping as specified in this Section, unless indicated on the Drawings or specified otherwise.

    b. Alternative pipe ratings:

        1) Piping with greater pressure rating than specified may be substituted in lieu of specified piping without changes to the Contract Price.

        2) Piping of different material may not be substituted in lieu of specified piping.

    c. Valves in piping sections: Capable of withstanding specified test pressures for piping sections and fabricated with ends to fit piping.

    d. Grooved joints: Use couplings, flange adapters, and fittings of the same manufacturer.

        1) Manufacturer's factory trained representative:

            a) Provide on-site training for the Contractor's field personnel.

            b) Periodically visit the jobsite to verify the Contractor is following best recommended practices.

        2) Distributor's representative is not considered qualified to conduct the training or jobsite visits.

    e. Flanged joints: Where one of the joining flanges is raised face type, provide a matching raised face type flange for the other joining flange.

3. Unless otherwise indicated on the Drawings, piping at pipe joints, fittings, couplings, and equipment shall be installed without rotation, angular deflection, vertical offset, or horizontal offset.

B. Exposed piping:

1. Install in straight runs parallel to the axes of structures, unless otherwise indicated on the Drawings.

    a. Install piping runs plumb and level, unless otherwise indicated on the Drawings.

        1) Slope plumbing drain piping with a minimum of 1/4 inch per foot downward in the direction of flow.

2. Install after installing equipment and after piping and fitting locations have been determined.

3. Route piping to preserve headroom, access space and workspace, and to prevent tripping hazards and clearance problems:

    a. Install piping so it does not interfere with the proper and safe operation of equipment and does not block or interfere with ingress or egress, including hatches.

4. Support piping: As specified in Section 15094 - Pipe Supports, Section 15062 - Preformed Channel Pipe Support System:
    a. Do not transfer pipe loads and strain to equipment.
5. In addition to the joints indicated on the Drawings, provide unions, flexible couplings, flanged joints, flanged coupling adapters, and other types of joints or means which are compatible with and suitable for the piping system, and necessary to allow ready assembly and disassembly of the piping.
6. Assemble piping without distortion or stresses caused by misalignment:
    a. Match and properly orient flanges, unions, flexible couplings, and other connections.
    b. Do not subject piping to bending or other undue stresses when fitting piping.
    c. Do not correct defective orientation or alignment by distorting flanged joints or subjecting flange bolts to bending or other undue stresses.
    d. Flange bolts, union halves, flexible connectors, and other connection elements shall slip freely into place.
    e. Alter piping assembly to fit when proper fit is not obtained.
    f. Install eccentric reducers or increasers with the top horizontal for pump suction piping.

C. Restraining above ground piping:
1. At valves and fittings where piping changes direction, changes size, and at ends:
    a. When piping is above ground or underwater, use mechanical or structural restraints.
    b. Determine thrust forces by multiplying the nominal cross-sectional area of the piping by design test pressure of the piping.
2. Provide restraints with ample size to withstand thrust forces resulting from test pressures:
    a. During testing, provide suitable temporary restraints where piping does not require permanent restraints.

D. Connections to existing piping:
1. Expose existing piping to which connections are to be made with sufficient time to permit, where necessary, field adjustments in line, grade, or fittings:
    a. Protect domestic water/potable water supplies from contamination:
        1) Make connections between domestic water supply and other water systems in accordance with requirements of public health authorities.
        2) Provide devices approved by the owner of the domestic water supply system to prevent flow from other sources into the domestic supply system.

2. Make connections to existing piping and valves after sections of new piping to be connected have been tested and found satisfactory.

3. Provide sleeves, flanges, nipples, couplings, adapters, and other fittings needed to install or attach new fittings to existing piping and to make connections to existing piping.

4. For flanged connections, provide stainless steel bolts with isolation bushings and washers, and full-face flange gaskets.

E. Connections between ferrous and nonferrous metals:

1. Connect ferrous and nonferrous metal piping, tubing, and fittings with dielectric couplings, especially designed for the prevention of chemical reactions between dissimilar metals.

2. Nonferrous metals include aluminum, copper, and copper alloys.

F. Flanged connections between dissimilar metals such as ductile iron pipe and steel pipe:

1. Provide stainless steel bolts with isolation bushings and washers, and full-face flange gaskets.

3.2 CLEANING

A. Piping cleaning:

1. Upon completion of installation, clean piping interior of foreign matter and debris.

2. Perform special cleaning when required by the Contract Documents.

B. Conduct pressure and leak test, as specified.

3.3 PIPE SCHEDULE

A. As indicated on the Drawings.

END OF SECTION

SECTION 15059

MISCELLANEOUS PIPING AND PIPE ACCESSORIES

PART 1 - GENERAL

1.1 SCOPE. This section covers the furnishing of miscellaneous piping and pipe accessories. Miscellaneous piping shall be furnished complete with all fittings, flanges, unions, and other accessories specified herein.

1.2 SUBMITTALS.

A. Drawings and Data. Complete specifications, data, and catalog cuts or drawings shall be submitted in accordance with the submittals section. Submittals are required for all piping, fittings, gaskets, sleeves, valves, hoses, and other accessories, and shall include the following data:

Name of Manufacturer.

Type and model.

Construction materials, dimensions, and finishes.

Pressure and temperature ratings.

B. Contractor shall obtain and submit a written statement from the gasket material manufacturer certifying that the gasket materials are compatible with the joints specified herein and are recommended for the specified field test pressures and service conditions (including chemical compatibility).

1.3 DELIVERY, STORAGE, AND HANDLING. Shipping shall be in accordance with the Shipping section. Handling and storage shall be in accordance with the Handling and Storage section. All materials shall be stored in a sheltered location above the ground, separated by type, and shall be supported to prevent sagging or bending.

PART 2 - PRODUCTS

2.1 ACCESESORIES. Accessories For Miscellaneous Piping Systems Shall Be As Indicated.

A. Floor Drain Piping:

1. Materials:

a. All floor drain piping and fittings shall be 2" industrial grade schedule 80 PVC, must match existing drain piping color.

B. Accessory Classification VL-2.

Stainless Steel Ball Valves by Parker, Apollo, or Metso Three-piece ½" through 2" Welded Body	Materials Standards Service	SS316 ball, body, and stem, SS316L ends, SS 18-8 or similar outer hardware, PTFE seats and packings, EPDM gaskets. 1000 psig working pressure at 100°F, Full-port body Ammonium Hydroxide, Sodium Hydroxide, Ammonium Sulfate

PART 3 - EXECUTION

3.1 INSTALLATION. Materials furnished under this section will be installed in accordance with Section 15052 – common work results for general piping.

END OF SECTION

SECTION 15060

DUCTILE IRON PIPE AND FITTINGS 42-INCH DIAMETER AND SMALLER

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope: The CONTRACTOR shall provide and install ductile iron pipe of the sizes 42-inch diameter and smaller and in the locations shown on the DRAWINGS and as specified herein.

B. Pipe shall be designed for a design working pressure of 150 psi with an additional surge pressure of 125 psi for a total working plus surge pressure of 275 psi.

1.2 QUALITY ASSURANCE

A. The pipe and fittings shall be manufactured, constructed and installed in accordance with established industry practices and methods and shall comply with these SPECIFICATIONS as applicable. All WORK specified herein shall conform to or exceed the requirements of the latest edition of the applicable portions of the latest versions of the following standards:

1. Cement mortar lining for water: AWWA C104.
2. Ductile iron fittings: AWWA C110.
3. Rubber gasket joints: AWWA C111.
4. Ductile iron pipe flanges: ANSI B 16.1 and AWWA C115.
5. Ductile iron pipe thickness: AWWA C150.
6. Ductile iron pipe centrifugally cast in metal or sand lined molds: AWWA C151.
7. Ductile iron compact fittings: AWWA C153.
8. AWWA C600 Standard for Installation of Ductile Iron Water Mains and Appurtenances.
9. Drinking water treatment chemicals -Health effects: NSF No. 60.
10. Drinking water system components -Health effects: NSF No. 61.

B. Qualifications: All ductile iron pipe and cast iron fittings shall be furnished by SUPPLIERS who are fully experienced, reputable, and qualified in the manufacture of the materials to be furnished. SUPPLIERS must produce iron and steel in the United States in accordance with the American Iron and Steel (AIS) requirement.

C. SUPPLIER (manufacturer): Pipe shall be as manufactured by the American Cast Iron Pipe Company, or equal.

1. SUPPLIER not ISO 9001 registered shall provide the services of an independent inspection agency. Independent inspection agency requirements:

    a. Submit names of at least two independent inspection agencies for approval a minimum of 2 weeks prior to the start of manufacturing.

    b. Approved inspection agency daily responsibilities: sample monitoring of chemical and mechanical tests, sample visual inspection of quality assurance tests performed on in-process pipe and fittings, and sample visual and dimensional inspection on finished products.

1.3 SUBMITTALS

A. SHOP DRAWINGS: The CONTRACTOR shall submit SHOP DRAWINGS of pipe and fittings in accordance with the requirements of the CONTRACT DOCUMENTS, the requirements of AWWA C110, C150, C151 and the following supplemental requirements as applicable:

1. Certified Dimensional Drawings of all pipe, specials, and fittings.

2. For pipes 24-inches through 42-inches diameter, a laying schedule and marking diagrams which indicate the specific number of each pipe and fitting, the location and direction of lay of each pipe and fitting in the completed line. In addition, the laying schedules shall include: the pipe station and invert elevation at all changes in grade or horizontal alignment; the station and invert elevation to which the bell end of each pipe will be laid; all elements of curves and bends, both in horizontal and vertical alignment; and the limits of each reach of restrained joints, or of concrete encasement.

3. Detailed and certified calculations of required joint restraint length.

B. Certifications: For pipe of all sizes the CONTRACTOR shall furnish a certified affidavit of compliance for all pipe and other products or materials furnished under this Section of the SPECIFICATIONS, as specified in ANSI/AWWA C105, C110, C150, and C151; respectively, and the following supplemental requirements:

1. Physical and chemical properties of all ductile iron.

2. Results of previously performed proof of design tests demonstrating that the proposed restrained joint arrangement can transmit the required forces.

3. Hydrostatic test reports.

4. Results of shop tests.

5. The SUPPLIER of the pipe shall submit through the CONTRACTOR an affidavit that the pipe, fittings and other products or materials furnished comply with all applicable provisions of these SPECIFICATIONS including all applicable AWWA standards.

C. All expenses incurred in making samples for certification of tests shall be borne by the CONTRACTOR.

1.4 DELIVERY, STORAGE AND HANDLING

A. All pipe shall be shipped and stored at the PROJECT site with wood lagging between pipes such that pipes do not make contact with one another.

B. The CONTRACTOR shall exercise extra care when handling lined pipe. Damage to the lining will render it unfit for use and shall require replacement.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Ductile Iron Pipe shall conform to ANSI A21.51 and AWWA C151. The pipe thickness shall be in accordance with AWWA C150 and shall meet the following minimum requirements:

1. The minimum thickness of ductile iron pipe shall be:
    a. For buried pipe 20 inches in diameter and smaller: Class 350.
    b. For buried pipe 24 inches through 42 inches in diameter: Class 250.
    c. For pipe with flanges: Class 53. (Special Class).
2. Pipe shall be supplied in lengths not in excess of 20 feet having rubber-ring type push-on joints, standard mechanical joints or restrained joints where required for underground piping and flanged joint piping, for all above ground piping as shown on the DRAWINGS.
3. Coatings and Linings shall be in accordance with the following:
    a. The exterior of ductile iron pipe and fittings shall be:
        1) Buried pipe and fittings: Factory applied asphaltic type, one-mil thick, in accordance with AWWA C115, AWWA C110, and AWWA C153.
        2) Buried ductile iron pipe shall be encased with virgin polyethylene sleeves as specified in AWWA C105 minimum 8 mils thick. For pipe 16-inches through 42-inches in diameter, two 8-mil layers shall be provided. Only prefabricated sleeves secured by 4-inch polyethylene tape will be allowed. Polyethylene sleeves shall be blue in color, manufactured with ultraviolet inhibitors and installed by Method A in AWWA C105.
        3) Exposed above ground pipe and fittings shall be coated in accordance with Section 09940 – Protective Coatings.
    b. The interior of ductile iron pipe and fittings shall be cement lined in accordance with ANSI A21.4 and AWWA C104.

B. Fittings: All ductile iron pipe fittings shall be rated for a minimum of 350 psi for pipe sizes 20-inches and smaller, and a minimum of 250 psi for 24-inches through 42-inches, and in accordance with AWWA C110. All flanged fittings shall be Class 125 (ANSI B16.1) unless otherwise specifically noted.

C. Joints:

1. General: Joints in "runs" of aboveground piping shall be flanged. Joints in "runs" of buried piping shall be of the push-on or mechanical-joint type per AWWA C111 except where flanged joints are required to connect to valves, meters, and other equipment.

2. Flanges:

   a. All flanged fittings shall be rated for a minimum of 350 psi for pipe sizes 20-inches and smaller, and a minimum of 250 psi for 24-inches through 42-inches, and in accordance with AWWA C110. All flanges shall be Class 125 (ANSI B16.1) unless otherwise specifically noted. Flanges shall be long-hub type screwed tightly on pipe by machine at the foundry prior to facing and drilling. Flange faces shall be coated with rust inhibitor immediately after facing and drilling. Field assembled screwed on flanges are prohibited.

   b. Gaskets: Gaskets shall be beaded ring-type, 1/4-inch thick; meeting the requirements of AWWA C111, rated for potable water service and suitable for service with chloramines. Gaskets shall be American "Tomseal", U.S. Pipe "Flange-Tyte" or approved equal.

   c. Bolts and Nuts for Flanges: Bolts and nuts for flanges shall be heavy head carbon steel, ASTM A 307, Grade B, "American Standard, Heavy". Bolts used in flange insulation kits shall conform to ASTM B193, Grade B7. Bolts and nuts shall comply with ASTM A 194, Grade 2H. All bolts and nuts shall be cadmium or zinc coated or galvanized.

3. Mechanical and push-on joints:

   a. Mechanical Joints: Jointing materials for mechanical joints shall be provided by the pipe and fitting SUPPLIER. Materials assembly and bolting shall be in strict accordance with ANSI/AWWA C111 and ANSI/AWWA C153, latest revisions. Tee head bolts and nuts for mechanical joints shall be manufactured of CORTEN, high strength, low alloy, corrosion resistant steel as manufactured by NSS Industries, Plymouth, Michigan or an approved equal.

   b. Single seal gasket push on type joints shall conform to the requirements of ANSI A21.1 1 and shall be "Tyton", "Fastite", "Super Bell Tite", "Altite", or approved equal.

4. Restrained Joints: Restrained joints shall be provided for all buried piping systems at the location required to restrain system thrust. Pipe joints and fittings shall be restrained as follows:

   a. Manufactured restrained joints shall be: Flex-Ring or Lok-Ring manufactured by the American Cast Iron Pipe Company; Lok-tyte or, Tr-Flex type manufactured by the United States Pipe Company or an equal approved by the ENGINEER. Joints shall be SUPPLIER'S (manufacturer's) standard specifically modified push-on type joints with joint restraint provided by ductile iron glands located behind welded on retainer rings joined together by corrosion resistant, high strength steel tee head bolts and nuts or with joint restraint provided by a welded-on retainer ring and a split flexible ring or

locking ring assembled behind the retainer ring. Restrained joint pipe and fittings shall be ductile iron only and shall comply with applicable portions of this SPECIFICATION. Manufactured restrained joints shall be capable of deflection after assembly. Deflection shall not exceed 75 percent of the SUPPLIER'S (manufacturer's) recommendations. Tee head bolts and nuts for restrained joints shall be manufactured of CORTEN, high strength, low alloy, corrosion resistant steel as manufactured by NSS Industries, Plymouth, Michigan, or an equal approved by the ENGINEER. Restrained joints utilizing tie rods, or retainer glands and set screws will not be allowed. Field Welding or grooving of the restrained joint or components will not be acceptable.

5. Gaskets: Gaskets shall be suitable for service with chloramines. Gaskets shall have plain tips unless otherwise specified and shall be fabricated and tested in accordance with AWWA C111.

6. Compression Sleeve Couplings:

   a. General: The CONTRACTOR shall furnish and install where required or where shown on the DRAWINGS, manufactured compression couplings equal to Style 38 or Style 39, as manufactured by the Dresser Manufacturing Division of Dresser Industries or an approved equal. The compression couplings shall consist of two (2) steel follower flanges, one (1) steel middle ring with pipe stops removed, and sufficient rolled thread track-head bolts to properly compress the gaskets. After fabrication, the middle and follower rings shall be cold expanded to size and dimension. Thickness of the middle ring shall be suitable for the pressures specified, and in no case be less than one-half (1/2) inch thick for pipes 30-inch through 42-inches, three-eights (3/8) inch thick for pipes 10-inch through 24-inch or one-quarter (1/4) inch thick for pipes less than 10 inches in diameter. All parts of the compression coupling shall be galvanized or heavily cadmium plated at the point of manufacture and shall be epoxy coated in accordance with AWWA C210 or AWWA C203.

   b. Rated Pressure: The entire compression sleeve coupling unit shall be rated for working pressure plus surge pressure as a minimum.

   c. Coatings: The CONTRACTOR shall provide field coating for buried couplings in accordance with AWWA C203.

   d. Deflections: Small deflections in the pipe alignment may be made at compression type coupling joints, but such deflections shall not exceed three (3) degrees between any two (2) adjacent pipe sections. Where changes in line and/or grade in excess of three (3) degrees are required the deflections shall be made by deflecting multiple joints or by using fittings approved by the ENGINEER. Joint deflection shall be limited to 75% of the SUPPLIER'S (manufacturer's) recommended maximum.

PART 3 - EXECUTION

3.1 INSPECTION AND TESTING

A. All pipe shall be inspected and tested at the foundry.

1. Factory Tests:
    a. Perform tests on pipe with metal thickness equal to that specified.
    b. The CONTRACTOR shall confirm that pipe passes hydrostatic test prior to shipment.
2. Hydrostatic Proof Test: Pipe 30 Inches and Larger:
    a. Test to 75 percent of minimum yield strength.
    b. Minimum test duration: 0 15 seconds.
    c. Record each test cycle on a strip chart.
    d. Mark test cycle for 30 inch and larger pipe by pipe number.
    e. Inspect pipe during testing for leaks.
    f. Reject pipe which shows evidence of leaks.
    g. Repair welding of leaks is not permitted.
3. Perform a 15-psi air test on welded-on outlet pipe.
4. Measure pipe ends (spigot end, bell and socket) with suitable gauges at sufficiently frequent intervals to confirm compliance to standard dimensions of AWWA C151/A21.51.
    a. Inspect each socket and spigot in a well lighted area for significant defects which could affect joint performance.
    b. Remove defects by cutting pipe ends.
    c. Reject pipe with significant defects in the bell.
    d. Document measurement of each end of each 18-inch diameter and larger pipe, including pipe number, and approval by manufacturer's quality assurance inspector to meet tolerances.
5. Document successful testing of restrained joints in the sizes specified to at least twice the specified pressure rating of the joint without leakage or failure.
6. Submit a certified inspection report of witnessed tests, with results organized by pipe number, within 10 days of the inspection.

B. The OWNER shall have the right to have any or all piping, fittings or special castings inspected and tested by an independent testing agency at the foundry or elsewhere. Such inspection and testing will be at the OWNER'S expense.

C. The CONTRACTOR shall mark as rejected and immediately remove from the PROJECT site, all pipe lengths showing a crack, damaged lining, or receiving a severe blow that may cause an incipient fracture, even though no such fracture can be seen.

3.2 INSTALLATION

A. The CONTRACTOR shall provide and install all required piping and accessories in strict accordance with the requirements of AWWA C600, CONTRACT DOCUMENTS and manufacturer's recommendations. The most stringent recommendations shall apply.

1. Push-on joints: SUPPLIER'S Recommendation and AWWA C600.

2. Bolted joints: SUPPLIER'S Recommendations and AWWA C600.

3. Flanged joints:

a. Bolt holes of flanges shall straddle the horizontal and vertical centerlines of the pipe. The CONTRACTOR shall clean flanges by wire brushing before installing flanged fittings. The CONTRACTOR shall clean flange bolts and nuts by wire brushing, lubricate bolts with non-seizing lubricant.

b. The CONTRACTOR shall insert the nuts and bolts (or studs) finger tighten and progressively tighten diametrically opposite bolts uniformly around the flange to the proper tension.

c. The CONTRACTOR shall carefully tighten joints to prevent undue strain upon valves, and other equipment.

d. If flanges leak under pressure testing, the CONTRACTOR shall loosen or remove the nuts and bolts, reset or replace the gasket, reinstall or retighten the bolts and nuts, and retest the joints. Joints shall be watertight.

B. Fabrication:

1. Tapped connections:

a. The CONTRACTOR shall make all tapped connections as shown on the DRAWINGS or as directed by the ENGINEER.

b. The CONTRACTOR shall make all connections watertight and of adequate strength to prevent pullout.

c. The CONTRACTOR shall drill and tap normal to the longitudinal axis of the pipe.

d. The maximum sizes of taps in pipes and fittings without bosses shall not exceed the sizes listed in the appendix of ANSI A 21.51 based on two full threads.

2. Cutting:

a. The CONTRACTOR shall perform all cutting with machines having rolling wheel cutters or knives designed to cut ductile iron. The use of a hammer and chisel to cut pipe is prohibited.

b. The CONTRACTOR shall, after cutting, examine all cut ends for possible cracks and advise the ENGINEER for observation.

c. The CONTRACTOR shall carefully 45-degree chamfer all cut ends to be used with push-on joints to prevent damage to gaskets when pipe is installed.

C. Pipe Deflection:

1. Push-on Mechanical Joints and Flexible Joints: The maximum deflection in any direction shall not exceed 75 percent of the SUPPLIER'S (manufacturer's) instructions and recommendations.

3.3 TESTING

1. After all piping has been placed, each run shall be tested between valves by the CONTRACTOR to the Field Test Pressure stated herein. A low-pressure test shall be conducted for a period of not less than four hours at a pressure of approximately 50 percent of the Field Test Pressure. The allowable leakage shall be one-half of the lesser amount as determined by the equations of Section 4.2.2 Allowable Leakage of AWWA C600. Upon successful completion of the low pressure test, the pipe segment shall be tested for the full field test pressure in accordance with AWWA C600. The observed leakage under full Field Test Pressure shall not exceed the lesser amount as determined by the equations of Section 4.2.2 Allowable Leakage of AWWA C600. The CONTRACTOR shall furnish all necessary meters, gauges, bulkheads, and other materials and appliances necessary to conduct the tests as herein required. A visual pressure test can replace the above test by filling the piping for the specified time and checking for leaks at connection points.

2. Every precaution must be taken to remove, valve-off or otherwise protect delicate control equipment in or attached to pipelines, to prevent damage or injury thereto.

3.4 DISENFECTION

A. After water lines are tested hydrostatically and immediately prior to being accepted for SUBSTANTIAL COMPLETION, disinfect pipes in accordance with AWWA C651 except as modified herein. Disinfection shall be done using calcium hypochlorite solution, liquid chlorine, or chlorine solution of strength to achieve not less than 50 parts per million of free chlorine in the pipeline, provided by the CONTRACTOR. Fill the line with water and maintain line under pressure of not less than ten (10) pounds per square inch for not less than 48 hours. During this period when the line is under pressure, open and close all valves within the section being tested, as required to affect disinfection of valve working parts. Following this period, flush the line clean for biological testing.

B. Any remaining super-chlorinated water shall be neutralized using sodium thiosulfate or other acceptable neutralizing agent before allowing controlled flushing to surface ditches. Discharges shall be controlled in accordance with the permitted stormwater pollution prevention plan requirements with turbidity barriers, monitoring and other acceptable measures. After flushing, bacteriological sampling will then be performed. The CONTRACTOR will be required to submit a complete testing, disinfection, and flushing plan for review and approval prior to the performance of any of these activities.

C. Repeat the disinfection process if biological testing shows unsatisfactory samples. All procedures shall be in conformance with the General Requirements. No cross-connection between the water mains and any pipe which has not been disinfected, shall be permitted. The CONTRACTOR shall furnish and install blind flanges or shall otherwise plug outlets for disinfection purposes.

3.5 WATER FOR USE IN THE TESTING AND DISINFECTION

A. The OWNER will provide the water required for pressure testing, flushing, and disinfection required by the CONTRACTOR up to a limit of 10,000 gallons for the entire pipeline PROJECT. For quantities of water required by the CONTRACTOR in excess of this amount, the CONTRACTOR shall pay to the OWNER the actual cost incurred to produce the water as determined by the OWNER.

END OF SECTION

SECTION 15093

CHECK VALVES

PART 1 - GENERAL

1.1 SCOPE

A. This section covers the furnishing of rubber flapper swing check valves as specified herein. Piping, pipe supports, insulation, and accessories that are not an integral part of the valves or are not specified herein are covered in other sections.

1.2 GENERAL

A. Equipment furnished under this section shall be fabricated and assembled in full conformity with DRAWINGS, SPECIFICATIONS, engineering data, instructions, and recommendations of the equipment manufacturer unless exceptions are noted by ENGINEER.

B. Valves shall be furnished with all necessary parts and accessories indicated on the DRAWINGS, specified, or otherwise required for a complete, properly operating installation and shall be the latest standard products of a manufacturer regularly engaged in the production of valves.

1.3 SUBMITTALS

A. Complete dimensional drawings, details, specifications, test certificates, parts list drawings, and operation and maintenance manuals covering the valves and their appurtenances shall be submitted in accordance with the Section 01300 Contractor Submittals.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Shipping shall be in accordance with the Shipping section, and handling and storage shall be in accordance with the Handling and Storage section.

PART 2 - PRODUCTS

2.1 RUBBER FLAPPER SWING CHECK VALVES

A. This section covers rubber flapper swing check valves for potable water service.

B. Standards, Approvals, and Verification.

1. Certifications. The valve shall be certified to NSF/ANSI 61 Drinking Water System Components – Health Effects and certified to be Lead-Free in accordance with NSF 372, Annex G.

2. Proof of Design Test. A valve shall be proof of design cycle tested through 1,000,000 cycles in the horizontal plan and leak tested at the rated pressure. The leakage rate shall be less than 1 fluid ounce per hour per inch of valve size after the test.

3. Quality Management System. The valve manufacturer shall have a quality management system that is certified to ISO 9001 by an accredited, certifying body.

C. Acceptable Products. The valve manufacturer shall have 5 years minimum experience in the manufacturing of rubber flapper swing check valves. The rubber flapper swing check valves shall be Surgebuster Swing Check Valve, as manufactured by Val-Matic, Elmhurst, Illinois; or equal.

D. Service Condition. The rubber flapper swing check valves shall be designed for a working pressure of not less than 250 psi. The rubber flapper swing check valves shall operate satisfactorily without excessive wear or flutter of the discs.

E. Materials. Materials used in the manufacture of the rubber flapper swing check valves shall be as follows:

Body and Cover	Ductile Iron ASTM A536 Gr.65-45-12 Class B
Disc	EPDM w/ Alloy Steel and Nylon Reinforcement
Flapper	EPDM or other elastomers
Shop Coatings:	
Universal Primer (tie coat)	PPG Amercoat "Amercoat 385 Epoxy", Carboline "Rustbond", ICI Devoe "Devran 224HS", Tnemec "Series 27 F.C. Typoxy", or Sherwin-Williams "Macropoxy 646".
Epoxy (NSF certified systems)	PPG Amercoat "Amerlock 400 High-Solids Epoxy Coating", Carboline "Carboguard 891", ICI Devoe "Bar-Rust 233H", Tnemec "Series N140 Pota-Pox Plus", or Sherwin-Williams "Sherplate 600"; immersion service.
Rust-Preventive Compound	As recommended by manufacturer

F. Valve Construction. The valves shall be designed, manufactured and tested in accordance with ANSI/AWWA C508.

1. Valves shall be full body flanged type, with a domed access cover and only one moving part – the valve disc. Flange diameter and drilling shall conform to ANSI B16.1, Class 125.

2. The rubber flapper swing check valves shall have a heavily constructed ductile Iron body and cover. The body shall be long pattern design (not wafer) with integrally cast-on end flanges. The flapper shall be EPDM having an O-ring seating edge and be internally reinforced with steel and nylon.

3. The flapper shall be captured between the body and the body cover in a manner to permit the flapper to flex from closed to full open position. The flapper shall be easily removed without the need to remove the valve from the pipeline. Rubber flapper swing check valves shall have full pipe size flow area. Seating surface shall be on a 45 degree angle requiring the flapper to travel only 35 degrees from closed to full open position for minimum head loss. Valves shall have non-slam closure characteristics.

4. The valve shall be proof of design cycle tested 1,000,000 times with no signs of wear or distortion to the valve disc or seat and shall remain drop tight at both high and low pressures. The test results shall be independently certified and submitted.

5. All valves shall be hydrostatically tested and seat tested to demonstrate zero leakage. The manufacturer shall provide test certificates.

2.2 SHOP PAINTING

A. All interior and exterior ferrous metal surfaces, except finished surfaces, bearing surfaces, and stainless steel components, of valves and accessories shall be shop painted for corrosion protection. The valve manufacturer's standard coating will be acceptable, provided it is functionally equivalent to the specified coating and is compatible with the specified field painting.

B. The following surfaces shall be painted:

1. Unfinished Surfaces:

a. Interior Surfaces Epoxy.

b. Exterior Surfaces Universal primer.

2. Polished or Machined Surfaces:

a. Flange Faces Rust-preventive compound.

b. Other Surfaces Epoxy.

C. Interior coatings shall comply with AWWA C550 and shall be free of holidays.

D. The total dry film thickness of shop-applied coatings shall be not less than:

Type of Coating	Minimum Dry Film Thickness
Epoxy	10 mils
Universal Primer	3 mils

PART 3 - EXECUTION

3.1 INSTALLATION

A. Materials furnished under this section will be installed in accordance with Section 15010 Valve Installation.

END OF SECTION

SECTION 15094

PIPE SUPPORTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified and required to design, furnish, and install all hangers, supports and appurtenances necessary to complete the Work.

B. Coordination:

1. Review installation procedures under other Sections and coordinate the installation of items that must be installed with the pipe hangers and supports Work.

C. Related Sections:

1. Section 09940, Protective Coatings.

1.2 REFERENCES

A. Standards referenced in this Section are listed below:

1. American Society for Testing and Materials, (ASTM).

a. ASTM A 575, Specification for Steel Bars Carbon, Merchant Quality, M-Grades.

b. ASTM E 84, Test Method for Surface Burning Characteristics of Building Materials.

2. Federal Specification, (FS).

a. FS A-A-1192, Hangers, Pipe.

3. Manufacturers Standardization Society of the Valve and Fittings Industry, (MSS).

a. MSS SP 58, Pipe Hangers and Supports-Materials, Design and Manufacture.

b. MSS SP 69, Pipe Hangers and Supports - Selection and Application.

4. Underwriters' Laboratories, Inc., (UL).

a. UL 203, Pipe Hanger Equipment for Fire Protection Service.

1.3 QUALITY ASSURANCE

A. Each type of pipe hanger or support shall be the product of one manufacturer.

B. Component Supply and Compatibility:

1. Obtain all equipment included in this Section regardless of the component manufacturer from a single pipe hanger and supports manufacturer.

2. The pipe hangers and supports equipment manufacturer to review and approve or to prepare all Shop Drawings and other submittals for all components furnished under this section.

3. All components shall be specifically constructed for the specified service conditions and shall be integrated into the overall assembly by the pipe hangers and supports equipment manufacturer.

1.4 SUBMITTALS

A. Action Submittals: Submit the following:

1. Shop Drawings:

a. Detailed drawings showing all hangers and supports for each piping system specified. Shop Drawings shall show location, installation, material, loads or forces, and deflection of all hangers and supports.

b. Submit and coordinate these with Shop Drawings required for all piping systems.

2. Product Data:

a. Submit manufacturers' catalogs, literature, and engineering data on all hangers and supports. Load ratings, materials and installation shall be consistent with the recommendations of the MSS SP 58, MSS SP 69 and Federal Specification A-A-1192.

1.5 DELIVERY, STORAGE AND HANDLING

A. Packing, Shipping, Handling and Unloading:

1. Deliver materials to the Site to ensure uninterrupted progress of the Work. Deliver anchor bolts and anchorage devices which are to be embedded in cast-in-place concrete in ample time to prevent delay of that Work.

B. Storage and Protection:

1. Store materials to permit easy access for inspection and identification. Keep all material off the ground, using pallets, platforms, or other supports. Protect steel members and packaged materials from corrosion and deterioration.

2. Store materials in covered storage off the ground and prevent condensation.

C. Acceptance at Site:

1. All boxes, crates and packages shall be inspected by CONTRACTOR upon delivery to the Site. CONTRACTOR shall notify ENGINEER, in writing, if any loss or damage exists to equipment or components. Replace loss and repair damage to new condition in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.1 GENERAL

A. Hangers and supports shall meet with the following requirements:

1. Standard and fabricated hangers and supports shall be furnished complete with necessary inserts, bolts, nuts, rods, washers, and other accessories.
2. Generally, run piping in groups where practicable and parallel to building wall. Provide minimum clearance of 1-inch between pipe and other work.
3. Install hangers or supports at all locations where pipe changes direction.
4. All hangers and supports shall be capable of adjustment after placement of piping.
5. Different types of hangers or supports shall be kept to a minimum.
6. All suspended or supported ductile iron pipe shall have a hanger or support adjacent to each hub.
7. Support vertical piping at each floor and between floors by stays or braces to prevent rattling and vibration.
8. Hanger rods shall be straight and vertical. Chain, wire, strap or perforated bar hangers shall not be used. Hangers shall not be suspended from piping.
9. Maximum support spacing unless otherwise shown or approved for standard weight steel pipe shall be as follows:

Pipe Size (inches)	Maximum Pipe Span [1] (feet)			
	Steel	Copper	Plastic [2]	Cast/Ductile Iron [4]
3/8 to 3/4	5	6	Cont. [3]	-
1	6	6	5	-
1-1/4	6	6	5	-
1-1/2	6	6	5	-
2	10	10	5	-
2-1/2	10	10	5	-
3	10	10	5	-

[1]Pipe shall not have pockets formed in the span due to sagging of the pipe between supports caused by the weight of the pipe, medium in the pipe, insulation, valves and fittings.

[2]Span shown is for Schedule 80 CPVC pipe at 100°F. Spans for other plastics, other CPVC pipe Schedules and pipes at higher temperatures shall be shortened in accordance with the pipe manufacturer's recommendations.

[3]Continuous means pipe shall be in unistrut or similar channel.

[4]Pipe hanger and support selection shall be as shown and in this Section.

10. Maximum support spacing, unless otherwise shown for plastic pipe at ambient temperature, shall be one-half of the values specified for steel pipe.

11. Plastic pipe at temperature greater than 130ºF shall be continuously supported in a metal cradle or tray.

12. Where proper hanger or support spacing does not correspond with joist or rib spacing, structural steel channels may be attached to joists or ribs and pipes suspended there from.

13. Prevent contact between dissimilar metals when supporting copper tubing, by use of copper plated, rubber or vinyl coated, or stainless steel hangers or supports.

14. Isolate thin walled stainless steel piping from carbon steel by use of plastic coated hangers or supports or by taping at points of contact with PVC or vinyl.

15. Supports and hangers shall be of a material that is compatible with the fluid being conveyed in such pipe being supported.

16. Anchors for pipe support systems shall be compatible or protected by a coating system which is compatible with the fluid being conveyed in such pipe being supported.

B. Expansion compensation shall be designed for individual exposed piping systems with the following Design Criteria:

1. $\Delta L = L \times \Delta T \times \alpha$

   a. Where ΔL = pipe length change (inches).

   b. L = pipe length between anchors (inches).

   c. ΔT = 100 (F).

   d. α = coefficient of thermal expansion (inches/inches/F).

2. Expansion compensation shall be designed as an integral part of the piping hanger, support and anchorage system.

3. Expansion compensation shall be achieved via expansion joints.

2.2 HANGERS AND SUPPORTS

A. Hangers and supports where shown shall be in accordance with detail drawings. Hangers and supports not shown shall be in accordance with MSS SP 58.

B. Floor Drain Piping Systems:

1. All pipe supports, accessories, hangers, pipe clamps, and fasteners shall be fiberglass.

a. Zinc plated concrete anchors shall be used at any point where the supports are anchored in concrete.

2. All base brackets shall be fiberglass.

3. Manufacturers: Provide products from one of the following:

a. Unistrut Company (Channel, concrete anchor, clamps, fasteners, and base brackets).

b. Or equal.

2.3 ACCESSORIES

A. Hanger rods shall be made from ASTM A 575, with square head nut on top and running thread on bottom end.

B. Fabricated Pipe Rack:

1. Pipes shall be supported and anchored to the fabricated pipe rack as shown. Clamps, rollers, and supports for piping shall conform to the general requirements of MSS SP 69.

2.4 PAINTING

A. Clean and prime ferrous metal surfaces in the shop in accordance with the requirements of Section 09940, Protective Coatings.

B. Field painting shall conform to the requirements of Section 09940, Protective Coatings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Locate hangers, supports, and accessories to support piping, valves, and at all concentrated loads.

B. Locate hangers, supports, and accessories within maximum span lengths specified to support continuous pipeline runs unaffected by concentrated loadings.

C. Locate hanger, supports to prevent vibration or swaying and to provide for expansion and contraction.

1. Temperature differential specified in this Section.
2. Support piping independently so that equipment is not stressed by piping weight or expansion.
3. For Uninsulated Copper Pipe or Tubing: Clamps and supports, electroplated copper finish. Instrumentation tubing shall be supported in steel or aluminum troughs with covers. All tubing layout and connections shall be as approved by the manufacturer of the equipment.
4. Uncoated Hangers, Rods and Supports: Dip in zinc chromate primer before installation.
5. Maximum spacing for horizontal piping:
    a. Steel 1-Inch and Smaller: 7 feet.
    b. Steel 1-1/2-Inch and Larger: 10 feet.
    c. Brass or Copper 3-Inch and Smaller: 7 feet.
    d. Brass or Copper 4-Inch and Larger: 10 feet.
    e. Additional supports at:
        1) Change in direction.
        2) Branch piping and runouts over 5 feet.
        3) Concentrated loads due to valves, strainers or other similar items.
    f. Maximum support spacing for plastic pipe at ambient temperature shall be one-half the above values.
6. Hanger types for horizontal piping, except as noted and shown:
    a. Forged steel adjustable clevis type, rod support for all services.
    b. Slide Bases:
        1) Pipe stand, brackets, trapeze or other equivalent structural support.
        2) For piping 2-inches or larger.
    c. For pipe and covering provide:
        1) Saddles for rollers or slide bases.
        2) Protective shields or saddles for all other types of supports.
    d. Threaded Steel Rods:
        1) Two inch vertical adjustment with two nuts each end for positioning and locking.

2) Size hanger rods according to the schedule below, unless otherwise noted:

Nominal Pipe	Rod Diameter
(Inches)	(Inches)
2 and less	3/8
2-1/2 to 3-1/2	1/2
4	5/8
6	3/4
8 through 12	7/8
14 through 18	1
20 through 30	1-1/4

3) For Double Rod Hangers: One size smaller than above.

4) Connection to Structure for Piping to 2-Inches: Concrete inserts, or expansion shields in shear into sides of beams.

5) Connection to Structure for Piping 2-1/2-Inch or Larger: Concrete inserts, beam clamps or suitable bridging.

7. Vertical Piping:

a. Base Support: Base elbow or welded equivalent.

1) Bearing plate on structural support.

b. Guides not to exceed:

1) 25 feet for piping to 2-inches.

2) 36 feet for piping 2-1/2-inches or larger.

c. Top Support:

1) Special hanger or saddle in horizontal connection.

2) Provisions for expansion.

d. Intermediate Supports: Steel pipe clamp at floor.

1) Bolted and welded to pipe.

2) Extension ends bearing on structural steel or bearing plates.

e. For Multiple Pipes: Coordinate guides, bearing plates and accessory steel.

D. Install items to be embedded before concrete placement.

E. Fasten embedded items securely to prevent movement during concrete placement.

F. Install hangers and support units on piping systems in accordance with manufacturer's recommendations.

G. Adjust hangers and supports and place grout for concrete supports to bring pipelines to specified elevations.

H. Bring all pipe systems up to operating pressures and temperatures. Cycle systems to duplicate operating conditions. Correct all support malfunctions.

END OF SECTION

SECTION 15101

AWWA BUTTERFLY VALVES

PART 1 - GENERAL

1.1 SCOPE. This section covers furnishing AWWA butterfly valves for cold water service in sizes 14 inches and larger and as indicated in the DRAWINGS. AWWA butterfly valves shall be furnished complete with actuators and accessories as specified herein, as indicated in the schedule, and as specified in the Valve Actuator section.

1.2 GENERAL. Equipment provided under this section shall be fabricated and assembled in full conformity with DRAWINGS, SPECIFICATIONS, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by ENGINEER.

1.3 Valves shall be furnished with all necessary parts and accessories indicated on the DRAWINGS, specified, or otherwise required for a complete, properly operating installation and shall be the latest standard products of one of the manufacturers specified in this section.

1.4 Governing Standard. Except as modified or supplemented herein, all butterfly valves and manual actuators shall conform to the applicable requirements of ANSI/AWWA C504 or ANSI/AWWA C516.

1.5 Marking. Supplementing the requirements of Section 6.1 of the governing standard, the country of origin of all castings and an identifying serial number shall be stamped on a corrosion-resistant plate attached to the valve body.

1.6 Permanent Number Plates. All buried and above ground AWWA butterfly valves shall be provided with a permanent TAMPA BAY WATER standard bronze identification plate. The location of identification plates shall be as mounted to the valves using a galvanized steel wire.

1.7 SUBMITTALS. Complete drawings, details, torque calculations and specifications covering the valves and their appurtenances shall be submitted in accordance with the SUBMITTALS section. Included in the SUBMITTAL shall be drawings by the valve manufacturer to indicate the position of the valve actuator and valve shaft. CONTRACTOR shall review and confirm the actuator orientation and handwheel clearances. SUBMITTAL drawings shall clearly indicate the country of origin of all cast gray iron and ductile iron valve components.

1.8 DRAWINGS shall include separate wiring diagrams for each electrically operated or controlled valve and the electrical control equipment. Each DRAWING shall be identified with the valve number or name as specified in this section.

Certified copies of test results for tests described in Section 4.1.3 Tests, 4.2.8.6.12, 4.2.8.6.14, 5.1.1 Performance tests, 5.1.2 Leakage tests, 5.1.3 Hydrostatic test, and 5.1.4 Proof-of-design tests of the governing standard, shall be submitted to ENGINEER before the valves are shipped. An affidavit of compliance with the governing standard for valves 72 inches and smaller shall be provided as indicated in Section 6.3 of ANSI/AWWA C504. For valves 78 inches and larger provide an affidavit of compliance that the valves provided comply with the applicable provisions of the governing standard ANSI/AWWA C516, including proof-of-design testing.

PART 2 - PRODUCTS

2.1 ACCEPTABLE PRODUCTS. Butterfly valves shall be limited to the following manufacturers. Butterfly valves by other manufacturers will not be acceptable.
Manufacturer.
Val-Matic or equal.

2.2 MATERIALS. Except as modified or supplemented herein, materials used in the manufacture of butterfly valves shall be suitable for chloramines service and shall conform to the requirements of the governing standard.

A. Acceptable shop coatings are listed in the following table.

Universal Primer (tie coat)	PPG Amercoat "Amercoat 385 Epoxy", Carboline "Rustbond", ICI Devoe "Devran 224HS", Tnemec "Series 27 F.C. Typoxy", or Sherwin-Williams "Macropoxy 646".
Epoxy (NSF Certified)	PPG Amercoat "Amerlockt 400 High Solids Epoxy", Carboline "Carboguard 891", Sherwin-Williams "Sherplate 600" or Tnemec "Series N140 Pota-Pox Plus".
Rust-Preventive Compound	As recommended by manufacturer.

2.3 VALVE CONSTRUCTION

A. Valve Bodies. Valves shall be short-body type. The use of a stop or lug cast integrally with or mechanically secured to the body for the purpose of limiting disc travel by means of direct contact or interference with the valve disc (in either the open or closed position) will not be acceptable.

B. Rubber-Seated Butterfly Valves 25 to 150 PSI Service (AWWA). Butterfly valves for steady-state water working pressures and steady-state differential pressure up to 150 psi shall conform to ANSI/AWWA C504 or ANSI/AWWA C516 and shall be Class 150B with actuator sized for Class 150B.

C. Rubber-Seated Butterfly Valves 250 PSI Service (AWWA). Butterfly valves for sizes 14 inches through 48 inches and for steady-state water working pressures and steady-state differential pressures up to 250 psi shall be designed and manufactured in accordance with ANSI/AWWA C504 Class 250B. Butterfly valves for sizes greater than 48 inches and for steady-state water working pressures and steady-state differential pressures up to 250 psi shall be designed and manufactured in accordance with the intent of ANSI/AWWA C504 except valves shall be suitable for 250 psi pressure service.

D. Flanges shall be finished to true plane surfaces within a tolerance limit of 0.005 inch. The finished face shall be normal to the longitudinal valve axis within a maximum angular variation tolerance of 0.002 inch per foot (0.017 percent) of flange diameter. Flanges for all Class 150B and Class 250B valves shall have diameter and drilling in accordance with ANSI B16.1 Class 125.

E. Mechanical Joint Ends. Mechanical joint ends shall be either mechanical joint or push-on ends conforming to ANSI/AWWA C111/A21.11.

F. Valve Shafts. Valve shafts for Class 150B valves shall be fabricated of AISI Type 304 or 316 stainless steel. Valve shafts for Class 250B valves shall be fabricated of ASTM A564 Type 630, UNS Designation S17400, condition H1150. The use of shafts having a hexagonal cross section will not be acceptable. The connection between shaft and disc shall be in accordance with the governing standard.

G. The connection between the shaft and the disc shall be mechanically secured by means of solid, smooth sided, stainless steel or monel taper pins or dowel pins. Each taper pin or dowel pin shall extend through or shall wedge against the side of the shaft and shall be mechanically secured in place. The use of set screws, knurled or fluted dowel pins, expansion pins, roll pins, tension pins, spring pins, or other devices instead of the pins specified herein will not be acceptable.

H. Valve Seats. Valve seats shall be Peroxide Cured EPDM. Acceptable seating surfaces mating with Peroxide Cured EPDM are AISI Type 304 or 316 stainless steel, monel, or plasma-applied nickel-chrome overlay for all valves; bronze for 20 inch and smaller valves; and alloy cast iron for 20 inch and smaller manually operated valves.

Table 15101-1 Butterfly Valve Seat Information

BFV Size (in.)	Seat Location	Type of Seat Retaining Methods Allowed
14 inches Through 42 inches	In Valve Body or On Disc	Molded Seat Bonded to the Valve Body or Disc Seat Retained Within a Dovetail Groove and Locked in Place by an Epoxy Wedge Seat Retaining Rings with Cap Screws
48 inches And Larger	In Valve Body or On Disc	Seat Retaining Rings with Cap Screws

1. Valve seat configurations which rely on the mating pipe flange to hold the seat in position in the valve body will not be acceptable.

I. Shaft Seals. Shaft seals shall be of the chevron type.

J. Thrust Bearings. Each valve shall be provided with one or more thrust bearings in accordance with the governing standard. Thrust bearings which are directly exposed to line liquid and which consist of a metal bearing surface in rubbing contact with an opposing metal bearing surface will not be acceptable.

K. Rotation. The direction of rotation of the handwheel or the wrench nut to open the valve shall be to the left (counterclockwise).

2.4 VALVE ACTUATORS. Requirements for MANUAL valve actuators shall be as specified herein, as indicated in the AWWA Butterfly Valve Schedule, and as specified in the Valve Actuators section.

A. If valves with an AWWA class designation higher than specified are furnished, actuator torque capabilities shall be increased accordingly and be acceptable to ENGINEER.

B. Actuators shall be installed at the factory by the valve manufacturer using the heaviest available grade of material.

C. Valve Actuator Sizing. The valve manufacturer shall size the actuator in accordance with the governing standard, the operating conditions and requirements indicated in the AWWA Butterfly Valve Schedule, and the valve manufacturer's requirements.

1. Unless otherwise indicated or specified, actuator torque requirements shall be based on a maximum differential pressure across the valve equal to the maximum pressure associated with the valve class and a maximum velocity through the valve of 16 feet per second or a safety factor of 1.5 to the required torque at the stated differential pressure, whichever is greater.

2. Valves with operating stands shall have the maximum actuator torques increased by 25 percent. Actuator torques determined by the above requirements shall be increased by any design factors required by paragraph 4.2.8 of ANSI/AWWA C504 for valves 72 inches and smaller, or paragraph.

3. The valve manufacturer shall provide torque calculations showing dynamic torque at maximum flow conditions, with valve seat on the correct side of flow direction and prove that actuators are sized correctly with the required safety factors.

4. Manual actuators shall be of the traveling nut design with characterized closure per AWWA C504 and equipped with externally adjustable closed position stops capable of withstanding 450 ft-lbs. Actuators shall be lubricated with EP-2 grease and fully enclosed in an iron housing sealed against the entry of water.

2.5 SHOP PAINTING. All interior and exterior ferrous metal surfaces, except finished surfaces, bearing surfaces, and stainless steel components, of valves and accessories shall be shop painted for corrosion protection. The valve manufacturer's standard coating will be acceptable, provided it is functionally equivalent to the specified coating and is compatible with the specified field painting. Epoxy coatings shall be ANSI/NSF 61 certified.

A. Surfaces shall be painted as follows:

Unfinished Surfaces	
Interior Surfaces	Epoxy.
Exterior Surfaces of Buried Valves	Epoxy.
Exterior Surfaces of Valves to be Submerged	Epoxy.
Exterior Surfaces of All Other Valves	Universal Primer.
Polished or Machined Surfaces	
Flange Faces	Rust-preventive Compound.
Other Surfaces	Epoxy.

B. Interior coatings shall comply with ANSI/AWWA C550 and shall be free of holidays. The total dry film thickness of shop-applied coatings shall be not less than:

Type of Coating	Minimum Dry Film Thickness
Epoxy	10 mils
Universal Primer	3 mils

2.6 ACCESSORIES. Requirements for extension stems and stem guides, position indicators, floor boxes, operating stands, torque tubes, valve boxes, and extension bonnets shall be as indicated in the AWWA Butterfly Valve Schedule and as specified in the Valve Actuators section.

PART 3 - EXECUTION

3.1 FACTORY LEAKAGE TESTS. Regarding Section 5 of the governing standard, valves shall be tested on both sides.

3.2 WITNESSING OF FACTORY TESTS. For valves 48 inches and larger, TAMPA BAY WATER or a designated representative will witness the tests specified in Section 5 of the governing standard.

3.3 INSTALLATION. Butterfly valves shall be installed with the shaft horizontal unless otherwise necessary for proper operation or as acceptable to ENGINEER.

A. Butterfly valves shall be installed with the flat face/adjustment side of the disc on the downstream side of the valve.

B. Whenever an actuator must be removed to permit installation of a valve, the actuator shall be promptly reinstalled and shall be inspected and readjusted by a representative of the valve manufacturer.

END OF SECTION

SECTION 15108

AIR RELEASE AND COMBINATION AIR VALVES

PART 1 - GENERAL

1.1 SCOPE. This section covers furnishing air release valves and combination air valves as required by the work.

1.2 GENERAL. Equipment provided under this section shall be fabricated and assembled in full conformity with DRAWINGS, SPECIFICATIONS, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by ENGINEER.

1.3 VALVES. shall be furnished with all necessary parts and accessories indicated on the drawings, specified, or otherwise required for a complete, properly operating installation and shall be the latest standard products of a manufacturer regularly engaged in the production of valves.

1.4 GOVERNING STANDARD. Except as modified or supplemented herein, all valves furnished under this section shall conform to the applicable requirements of ANSI/AWWA C512.

1.5 SUBMITTALS. Complete assembly drawings, together with detailed specifications and data covering materials used and accessories forming a part of the valves furnished, shall be submitted in accordance with the submittals section.

PART 2 - PRODUCTS

2.1 CONSTRUCTION. Air release valves for clean water applications with operating pressures of 150 psi or less shall be Val-Matic "No. 38". Air release valves for working pressures below 20 psi shall be provided with soft seats.

A. Two inch and smaller combination air valves for clean water applications shall be of the integral type with a valve assembly that functions as both an air and vacuum valve and an air release valve. The valves shall be Val-Matic “Combination Air Valves”.

2.2 MATERIALS. Except as modified or supplemented herein, materials of construction shall comply with the governing standard. The use of stressed thermoplastic components will not be acceptable.

Valve Trim	Bronze or austenitic stainless steel.
Float	Austenitic stainless steel.
Shop Coatings	
Universal Primer	PPG Amercoat “Amercoat 385 Epoxy”, Carboline “Rustbond”, ICI Devoe “Devran 224HS”, Tnemec “Series 27 F.C. Typoxy”, or Sherwin-Williams “Macropoxy 646”.

Epoxy (NSF-61 Certified)	PPG Amercoat "Amerlock 400 High Solids Epoxy", Carboline "Carboguard 891", Sherwin-Williams "Sherplate 600" or Tnemec "Series N140 Pota-Pox Plus".
Rust-Preventive Compound	As recommended by manufacturer.

2.3 SHOP PAINTING. All interior and exterior ferrous metal surfaces, except stainless steel components, shall be shop-painted for corrosion protection. The valve manufacturer's standard coating will be acceptable, provided it is functionally equivalent to the specified coating and is compatible with the specified field coating. Field painting is covered in the Protective Coatings section.

A. Surfaces shall be painted as indicated:

Interior Surfaces of Valves in Clean Water Applications (Raw or Treated Water in Potable Water Facilities)	NSF-61 Certified Epoxy.
Exterior Surfaces of Valves To Be Installed in Manholes or Valve Vaults	Epoxy.
Exterior Surfaces of All Other Valves	Universal primer.
Polished or Machined Surfaces	Rust-preventive compound.

B. Interior epoxy coatings for clean water valves shall comply with ANSI/AWWA C550/NSF 61. Interior coatings for all valves shall be free of holidays/pinholes that result in premature failures. The total dry film thickness of shop-applied coatings shall be not less than:

Type of Coating	Minimum Dry Film Thickness
Epoxy	10 mils
Universal Primer	3 mils

2.4 SHUTOFF VALVES. A shutoff valve shall be provided in the piping leading to each air valve. Shutoff valves 2 inches and smaller shall be ball valves. Shutoff valves 3 inches and larger for clean water service shall be butterfly valves.

PART 3 - EXECUTION

3.1 INSTALLATION. Air release and combination air valves will be installed in accordance with the Section 15010 Valve Installation.

END OF SECTION

SECTION 15110

COMMON WORK RESULTS FOR VALVES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Basic requirements for valves.

1.2 REFERENCES

A. American Water Works Association (AWWA):

1. C111/A21.11 - Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe Fittings.

B. ASTM International (ASTM):

1. A126 - Standard Specification for Gray Iron Casting for Valves, Flanges, and Pipe Fittings.
2. A480 - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.
3. A536 - Standard Specification for Ductile Iron Castings.

C. NSF International (NSF):

1. 61 - Drinking Water System Components - Health Effects.

D. Society for Protective Coatings (SSPC):

1. SP 7 - Brush-Off Blast Cleaning.
2. SP 10 - Near-White Blast Cleaning.

1.3 SUBMITTALS

A. Furnish Submittals as specified in Section 01300 – Contractor Submittals.

B. Product data:

1. Submit the following information for each valve:
   a. Type, size, pressure rating, Cv factor.
   b. Coatings.

c. Power valve actuators:

1) Information on valve actuator, including size, manufacturer, model number, limit switches, mounting and motor enclosure, seating and unseating torque coefficient, dynamic torque, and bearing friction for calculation of maximum operating torque.

2) Complete wiring diagrams and control system schematics.

d. Manual valve actuators:

1) Information on valve actuator, including size, manufacturer, and model number.

e. Certified drawings with description of component parts, dimensions, weights, and materials of construction.

f. Certifications of reference standard compliance:

1) Submit certification that the valves and coatings are suitable in potable water applications in accordance with NSF 61.

g. Clearly mark Submittal information to show specific items, materials, and accessories or options being furnished.

h. Factory test data.

C. Provide vendor operation and maintenance manual as specified in Section 01730 - Operation and Maintenance Data and Section 01821 Instruction of Operations and Maintenance Personnel:

1. Furnish bound sets of installation, operation, and maintenance instructions for each type of manual valve 4 inches in nominal size and larger, and non-manual valves. Include information on valve operators.

D. Provide Manufacturer's Certificate of Source Testing as specified in Section 01756 - Commissioning.

E. Provide Manufacturer's Certificate of Installation and Functionality Compliance as specified in Section 01756 - Commissioning.

1.4 QUALITY ASSURANCE

A. Manufacturer qualifications:

1. Valves manufactured by manufacturers whose valves have had successful operational experience in comparable service.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect valves and protective coatings from damage during handling and installation. Repair coating where damaged.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

A. Pressure rating:

1. Suitable for service under minimum working pressures of 150 pounds per square inch gauge.

2. When a piping system is specified in the Pipe Schedule to be tested at a pressure greater than 150 pounds per square inch gauge, provide valves for that piping system with design working pressure which is sufficient to withstand the test pressure.

B. Valve to piping connections:

1. Metallic valves:

a. 3 inches nominal size and larger: Flanged ends.

b. Less than 3 inches nominal size: Screwed ends.

2.2 MATERIALS

A. Stainless steel: In accordance with ASTM A480, Type 316 or Type 304, UNS Alloy S31600 or S30400.

B. Valve and operator bolts and nuts, not including flange bolts and nuts as specified in Section 15052 - Common Work Results for General Piping:

1. Fabricated of stainless steel for the following installation conditions:

a. Submerged in sewage or water.

b. In an enclosed space above sewage or water.

c. In structures containing sewage or water, below top of walls.

d. At openings in concrete or metal decks.

2. Where dissimilar metals are being bolted, use stainless steel bolts with isolation bushings and washers.

C. Bronze and brass alloys: Not more than 6 percent zinc and not more than 2 percent aluminum in the manufacture of valve parts.

1. UNS Alloy C83600 or C92200 unless specified otherwise.

D. Cast iron valve bodies: In accordance with ASTM A126, Class 30 minimum, unless specified otherwise.

E. Ductile iron valve bodies: In accordance with ASTM A536, Grade 65-45-12 minimum, unless specified otherwise.

2.3 INTERIOR PROTECTIVE LINING

A. When specified in the particular valve Specification, provide valves with type of protective lining specified in the particular valve Specification.

B. Apply protective lining to interior, non-working surfaces, except stainless steel surfaces.

C. Lining types:

1. Fusion bonded epoxy:

a. Manufacturers: The following or equal:

1) 3-M Company, ScotchKote 134; certified in accordance with NSF 61 for drinking water use.

b. Clean surfaces in accordance with SSPC-SP 7 or SSPC-SP 10, as recommended by the epoxy manufacturer.

c. Apply in accordance with the manufacturer's published instructions.

d. Lining thickness: 0.010 to 0.012 inch, except that:

1) In grooves for gaskets: 0.005 inch.

2) Do not coat seat grooves in valves with bonded seat.

e. Quality control:

1) Lining thickness: Measured with a non-destructive magnetic type thickness gauge.

2) Verify lining integrity with a wet sponge-testing unit operating at approximately 60 volts, or as recommended by the lining manufacturer.

3) Consider tests successful when lining thickness meets specified requirements and when no pinholes are found.

4) Correct defective lining disclosed by unsuccessful tests and repeat test.

5) Repair pinholes with liquid epoxy recommended by the manufacturer of the epoxy used for lining.

2. High solids epoxy:

a. Product equivalent to high solids epoxy as specified in Section 09940 - Protective Coatings.

1) Certified in accordance with NSF 61 for drinking water use.

2) Interior: Coat valve interior with the manufacturer's equivalent high performance high solids epoxy coating system with a certifiable performance history for the service conditions and as approved by the Engineer.

a) Manufacturer shall provide for approval, coating information sufficient to allow the Engineer to assess equivalence to the specified high solids epoxy as specified in Section 09960 - High-Performance Coatings.

b. Clean surfaces in accordance with SSPC-SP 7 or SSPC-SP 10, or as recommended by the coating manufacturer.

c. Quality control: After coating is cured, check coated surface for porosity with a holiday detector set at 1,800 volts, or as recommended by the coating manufacturer:

1) Repair holidays and other irregularities and retest coating.

2) Repeat procedure until holidays and other irregularities are corrected.

2.4 VALVE OPERATORS

A. Valve operator "Open" direction: Open counterclockwise.

B. Provide valves located below operating level or deck with extensions for key operation or floor stands and handwheels, as indicated on the Drawings.

C. Provide manually operated valves located not more than 6 feet above the operating level with tee handles, wrenches, or handwheels:

1. Make the valve operator more conveniently accessible by rolling valves, located more than 5 feet but less than 6 feet above the operating level, toward the operating side.

2. Secure tee handles and wrenches to the valve head or stem, except where a handle or wrench so secured constitutes a hazard to personnel; in which case, stow handle or wrench immediately adjacent to the valve on or in a suitable hanger, bracket, or receptacle.

D. Fit valves located more than 6 feet above operating level with chain-operated handles or valve wheels:

1. Chains: Sufficient length to reach approximately 4 feet above the operating level.

2. Where chains constitute a nuisance or hazard to operating personnel, provide holdbacks or other means for keeping the chains out of the way.

E. Provide an operator shaft extension from valve or valve operator to finished grade or deck level when buried valves and other valves located below the operating deck or level are specified or indicated on the Drawings to be key operated:

1. Provide 2 inches square AWWA operating nut, and box and cover as specified, or a cover where a box is not required.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Preparation prior to installation:

1. Determine the face-to-face dimensions of flanged valves and flanged check valves after they are selected.

B. Fabricate piping to lengths considering the dimensions of flanged valves and flanged check valves.

3.2 INSTALLATION

A. Install the valves in accordance with the manufacturer's installation instructions.

B. Provide incidental work and materials necessary for installation of valves, including flange gaskets, flange bolts and nuts, valve boxes and covers, concrete bases, blocking, and protective coating.

C. Provide additional valves for proper operation and maintenance of equipment and plant facilities under the following circumstances:

1. Where such additional valves are required for operation and maintenance of the particular equipment furnished by the Contractor.

2. Where such additional valves are required as a result of a substitution or change initiated by the Contractor.

D. Valve and actuator orientation:

1. Coordinate with the valve supplier final orientation of valve and actuator assembly based on the Contractor's selection of equipment manufacturers and the valve and piping arrangement as indicated on the Drawings:

a. Rotate valve and/or actuator mounting orientation as specified in this Section unless otherwise indicated on the Drawings.

2. Install valves with their stems in vertical position above the pipe, except as follows:

a. Butterfly valves, gate valves aboveground, globe valves, ball valves, and angle valves may be installed with their stems in the horizontal position.

3. Install valves so that handles clear obstructions when the valves are operated from fully open to fully closed.

E. Valves with threaded connections:

1. Install valves by applying wrench on end of valve nearest the joint to prevent distortion of the valve body.

2. Apply pipe joint compound or Teflon™ tape on external (male) threads to prevent forcing compound into valve seat area.

F. Valves with flanged connections:

1. Align flanges and gasket carefully before tightening flange bolts.
2. When flanges are aligned, install bolts and hand tighten.
3. Tighten nuts opposite each other with equal tension before moving to the next pair of nuts.

G. Valves with soldered connections:

1. Do not overheat connection to prevent damage to resilient seats and metal seat rings.
2. Position valves in full open position before starting soldering procedure.
3. Apply heat to piping rather than to valve body.

3.3 FIELD APPLIED COATING OF VALVE EXTERIOR

A. Match color and be compatible with the manufacturer's coating system and as specified in Section 09940 - Protective Coatings:

1. When shop-applied finish coating matches field applied coating on adjacent piping, touch up shop coating in damaged areas in accordance with instructions recommended by the paint manufacturer.
2. When shop-applied coating does not match field coating on adjacent piping, or when damage has occurred to the shop-applied coating that requires more than touchup, blast clean valve surfaces or utilize other surface preparation recommended by the manufacturer of the coating material and apply the coating system used for coating adjacent piping.

3.4 COMMISSIONING

A. As specified in Section 01756 - Commissioning, and this Section.

B. Manufacturer services from each manufacturer for all valves supplied:

1. Provide Manufacturer's Certificate of Source Testing.
2. Provide Manufacturer's Certificate of Installation and Functionality Compliance.

C. As specified elsewhere for specific valve types, sizes or actuators:

1. Source testing.
2. Manufacturers on-site services for Owner Training, Installation Testing, Functional Testing, and during the Process Operational Period.

END OF SECTION

SECTION 15121

PIPE COUPLINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Pipe couplings for ductile iron piping.

1.2 REFERENCES

A. American National Standards Institute (ANSI).

B. American Society of Mechanical Engineers (ASME):

1. B31.1 - Power Piping.
2. B31.9 - Building Services Piping.

C. American Water Works Association (AWWA):

1. C111 - Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
2. C207 - Standard for Steel Pipe Flanges for Waterworks Service - Sizes 4 In. Through 144 In.
3. C213 - Standard for Fusion-Bonded Epoxy Coatings and Linings for Steel Water Pipe and Fittings.
4. C219 - Bolted, Sleeve-Type Couplings For Plain-End Pipe.
5. C606 - Standard for Grooved and Shouldered Joints.

D. ASTM International (ASTM):

1. A36 - Standard Specification for Carbon Structural Steel.
2. A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
3. A193 - Standard Specification for Alloy Steel and Stainless Steel Bolting Materials for High Temperature or High Pressure Service and Other Special Purpose Applications.
4. A351 - Standard Specification for Castings, Austenitic, for Pressure-Containing Parts.
5. A449 - Standard Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/9 ksi Minimum Tensile Strength, General Use.
6. A536 - Standard Specification for Ductile Iron Castings.
7. A563 - Standard Specification for Carbon and Alloy Steel Nuts.
8. A576 - Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality.

9. C425 - Standard Specification for Compression Joints for Vitrified Clay Pipe and Fittings.
10. C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
11. C564 - Standard Specification for Rubber Gasket for Cast Iron Pipe and Fittings.
12. C1173 - Standard Specification for Flexible Transition Couplings for Underground Piping Systems.
13. D1869 - Standard Specification for Rubber Rings for Asbestos-Cement Pipe.
14. D2000 - Standard Classification System for Rubber Products in Automotive Applications.
15. D5926 - Standard Specification for Poly (Vinyl Chloride) (PVC) Gaskets for Drain, Waste, and Vent (DWV), Sewer, Sanitary, and Storm Plumbing Systems.
16. F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.

E. NSF International (NSF):

1. 61 - Drinking Water System Components - Health Effects.
2. 372 - Drinking Water System Components - Lead Content.

1.3 SUBMITTALS

A. Furnish Submittals as specified in Section 01300 – Contractor Submittals.

B. Product data:

1. For each product in this Section as applicable:
    a. Design features.
    b. Load capacities.
    c. Material designations by UNS alloy number or ASTM specification and grade.
    d. Data needed to verify compliance with the Specifications.
    e. Catalog data.
    f. Clearly mark Submittal information to show specific items, materials, dimensions, finishes, and accessories or options being furnished.
    g. Pressure and temperature rating.

C. Calculations:

1. Provide calculations in accordance with NSF 372 for materials in contact with drinking water.

D. Written statement:

1. Contractor shall submit a written statement from the gasket material manufacturer certifying that the gasket materials are compatible with the specified joints. This statement should also recommend for the specified field test pressures and service conditions (including chemical compatibility).

1.4 WARRANTY

A. Provide warranty as specified in Section 01740 - Warranties and Bonds.

PART 2 - PRODUCTS

2.1 GENERAL

A. As specified in Section 01600 - Product Requirements:

1. Materials in contact with drinking waters: In accordance with NSF 61 and NSF 372.

B. Known acceptable manufacturers are listed by specific products.

C. Provide references as specified in this Section by specific product.

D. Manufacturer's representative's requirements as specified in Section 01756 - Commissioning and this Section by specific product.

E. Gaskets for flexible couplings and flanged coupling adapters:

1. Provide gasket materials for piping applications as follows:

a. All Process piping applications: Peroxide-cured EPDM.

2.2 PIPE COUPLINGS FOR DUCTILE IRON PIPING

A. Rubber Expansion Joints:

1. Manufacturers: The following:

a. Mercer Rubber Co., Style 451 for sizes 10 inches or less.

1) 2 control rods required for expansion joints 10 inches or smaller.

b. Mercer Rubber Co., Style 901 for sizes 16 inches or larger.

1) 3 control rods required for expansion joints 16 inches or larger.

2. Provide rubber expansion joints complete with control units and split retaining rings.

3. Design:

a. Material: EPDM, reinforced with embedded steel rings, and a strong synthetic fabric.

b. Expansion rings, suitable for pressures of at least 125 pounds per square inch gauge, except as follows:

1) Expansion joints in pump suction piping and where indicated on the Drawings suitable for minimum 250 pounds per square inch gauge pressure, and minimum 30 inches mercury vacuum.

2) Ends of expansion joints, 150-pound ASME flanges with drilling to match that of the piping.

B. Bolts, nuts, control rods/plates, and retaining rings shall be galvanized steel unless otherwise specified.

PART 3 - EXECUTION

3.1 INSTALLATION

A. In underground and underwater installations, coat the exterior of coupling with a protective coating in accordance with the manufacturer's instructions.

B. Joints and flexible connections shall be installed centered with no angular deflection unless otherwise indicated on the Drawings.

C. Flexible couplings and flange coupling adapters: Install with gap between pipe ends in accordance with the following table unless a greater gap is indicated on the Drawings. Maximum gap tolerance shall be within 1/8 inch.

1. Install flexible coupling with pipe gap located in middle of center sleeve.

2. Install flanged coupling adapter with end of plain end pipe in middle of flanged coupling body.

Center Ring Length	**Gap Dimension and Tolerance**
4 inch through 6 inch	3/8 inch
7 inch	5/8 inch
10 inch and greater	7/8 inch

D. Provide harnesses (tie-downs) for flexible couplings unless otherwise indicated on the Drawings with a written note.

1. Design harnesses (tie-downs) for the test pressures as specified in the Piping Schedule in Section 15052 - Common Work Results for General Piping.

END OF SECTION

SECTION 15958

MECHANICAL EQUIPMENT TESTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Testing of mechanical equipment and systems.

1.2 REFERENCES

A. American Gear Manufacturers Association:

1. AGMA 6000-B96 - Specification for Measurement of Linear Vibration on Gear Units.

B. American National Standards Institute (ANSI):

1. S1.4 - Specification for Sound Level Meters.

C. Hydraulic Institute (HI).

D. National Institute of Standards and Technology (NIST).

1.3 SUBMITTALS

A. Provide Source Test Plans as specified in Section 01756 - Commissioning.

B. Provide Installation and Functional Testing Plans as specified in Section 01756 - Commissioning.

C. Operation and maintenance manuals:

1. As specified in Section 01730- Operation and Maintenance Data and Section 01821 Instruction of Operations and Maintenance Personnel.

2. Include motor rotor bar pass frequencies for motors larger than 500 horsepower.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL

A. Commissioning of equipment as specified in:

1. This Section.

2. Section 01756 - Commissioning.

3. Equipment sections:

a. If testing requirements are not specified, provide Level 1 tests.

B. Test and prepare piping as specified in Section 15060 – Ductile Iron Pipe 42 Inches and Smaller prior to equipment testing.

C. Operation of related existing equipment:

1. Owner will operate related existing equipment or facilities necessary to accomplish the testing.

2. Schedule and coordinate testing as specified in Section 01756 - Commissioning.

D. Provide necessary test instrumentation that has been calibrated within 1 year from date of test to recognized test standards traceable to the NIST or approved source.

1. Properly calibrated field instrumentation permanently installed as a part of the Work may be utilized for tests.

2. Prior to testing, provide signed and dated certificates of calibration for test instrumentation and equipment.

E. Test measurement and result accuracy:

1. Use test instruments with accuracies as recommended in the appropriate referenced standards. When no accuracy is recommended in the referenced standard, use 1 percent or better accuracy test instruments.

a. Improved (lower error tolerance) accuracies specified elsewhere prevail over this general requirement.

2. Do not adjust results of tests for instrumentation accuracy.

a. Measured values and values directly calculated from measured values shall be the basis for comparing actual equipment performance to specified requirements.

3.2 VARIABLE SPEED EQUIPMENT TESTS

A. Establish performance over the entire speed range and at the average operating condition.

B. Establish performance curves for the following speeds:

1. Speed corresponding to the rated maximum capacity.

2. Speed corresponding to the minimum capacity.

3. Speed corresponding to the average operating conditions.

3.3 PUMP TESTS - ALL LEVELS OF TESTING

A. Test in accordance with the following:

1. Applicable HI standards.

2. This Section.

3. Equipment sections.

B. Test tolerances: In accordance with appropriate HI standards, except the following modified tolerances apply:

1. From 0 to plus 5 percent of head at the rated design point flow.

2. From 0 to plus 5 percent of flow at the rated design point head.

3. No tolerance for head and flow when ranges are specified.

4. No negative tolerance for the efficiency at the rated design point, and other specified conditions.

5. Use of specified test tolerances shall not result in motor overload while operating at any point on the supplied pump operating head-flow curve, including runout.

6. No positive tolerance for vibration limits. Vibration limits and test methods in HI standards do not apply. Use limits and methods specified in this or other sections of the Specifications.

3.4 DRIVERS TESTS

A. Test motors as specified in Section 16222 - Motors.

B. Test other drivers as specified in the equipment section.

3.5 NOISE REQUIREMENTS AND CONTROL

A. Perform noise tests in conjunction with vibration test analysis.

B. Make measurements in relation to reference pressure of 0.0002 microbar.

C. Make measurements of emitted noise levels on sound level meter meeting or exceeding ANSI S1.4, Type II.

D. Set sound level meter to slow response.

E. Unless otherwise specified, maximum free field noise level not to exceed 85 dBA measured as sound pressure level at 3 feet from the equipment.

3.6 PRESSURE TESTING

A. Hydrostatically pressure test pressure containing parts at the appropriate standard or code required level above the equipment component specified design pressure or operating pressure, whichever is higher.

3.7 INSPECTION AND BALANCING

A. Statically and dynamically balance each of the individual rotating parts as required to achieve the required field vibration limits.

B. Statically and dynamically balance the completed equipment rotating assembly and drive shaft components.

C. Furnish copies of material and component inspection reports, including balancing reports for equipment system components and for the completed rotating assembly.

D. Critical speed of rotating equipment:

1. Satisfy the following:

a. The first lateral and torsional critical speed of all constant, variable, and 2-speed driven equipment that is considered rigid such as horizontal pumps, non-clog pumps, blowers, air compressors, and engines shall be at least 25 percent above the equipment's maximum operating speed.

b. The first lateral and torsional critical speed of all constant, variable, and 2-speed driven equipment that is considered flexible or flexibly mounted such as vertical pumps (vertical in-line and vertical non-clog pumps excluded) and fans shall at least 25 percent below the equipment's lowest operating speed.

c. The second lateral and torsional critical speed of all constant, variable, and 2-speed equipment that is considered flexible or flexibly mounted shall be at least 25 percent above the maximum operating speed.

E. Vibration tests:

1. Definitions:

a. Root mean square: For pumps operating at speeds greater than 600 revolutions per minute (rpm), the vibration measurement shall be measured as the overall velocity in inches per second root mean square (RMS).

b. Peak-to-peak displacement: The root means squared average of the peak-to-peak displacement multiplied by the square root of 2.

c. Peak velocity: The root mean squared average of the peak velocity multiplied by the square root of 2.

d. Peak acceleration: The root mean squared average of the peak acceleration multiplied by the square root of 2.

e. High-frequency enveloping: A process to extract very low amplitude time domain signals associated with impact or impulse events such as bearing or gear tooth defects and display them in a frequency spectrum of acceleration versus frequency:

1) Manufacturers: One of the following or equal:

a) CSI, PeakVue.

b) Rockwell Automation, Entek Group, Spike Energy analysis.

f. Rotor bar pass frequency (RBF): For detecting loose rotor bars.

g. Low speed equipment: Equipment or components of equipment rotating at less than 600 rpm.

h. High speed equipment: Equipment and equipment components operating at or above 600 rpm.

i. Preferred operating range: Manufacturer's defined preferred operating range (POR) for the equipment.

j. Allowable operating range: Manufacturer's defined allowable operating range (AOR) for the equipment.

2. Vibration instrumentation requirements:

a. Analyzers: Use digital type analyzers or data collectors with anti-aliasing filter, 12-bit A/D converter, fast Fourier transform circuitry, phase measurement capability, time wave form data storage, high-frequency enveloping capabilities, 35 frequency ranges from 21 to 1,500,000 cycles per minute, adjustable fast Fourier transform resolution from 400 to 6,400 lines, storage for up to one hundred 3,200 line frequency spectra, data output port, circuitry for integration of acceleration data to velocity or double integration to displacement.

1) Manufacturers: One of the following or equal:

a) Computational Systems Inc., (CSI) Division of Emerson Process Management, Model 2120A, Data Collector/analyzer with applicable analysis software.

b) Pruftechnik, VIBXPERT II.

b. Analyzer settings:

1) Units: English, inches/second, mils, and gravitational forces.

2) Fast Fourier transform lines: Most equipment 1,600 minimum; for motors, enough lines as required to distinguish motor current frequencies from rotational frequencies, use 3,200 lines for motors with a nominal speed of 3,600 rpm; 3,200 lines minimum for high-frequency enveloping; 1,600 lines minimum for low speed equipment.

3) Sample averages: 4 minimum.

4) Maximum frequency (Fmax): 40 times rotational frequency for rolling element bearings, 10 times rotational frequency for sleeve bearings.

5) Amplitude range: Auto select but full scale not more than twice the acceptance criteria or the highest peak, whichever is lower.

6) Fast Fourier transform windowing: Hanning window.

7) High pass filter: Minus 3 dB at 120 cycles per minute for high speed equipment. Minus 3 dB at 21 cycles per minute for low speed equipment.

c. Accelerometers:

1) For low speed equipment: Low frequency, shear mode accelerometer, 500 millivolts per gravitational force sensitivity, 10 gravitational force range, plus/minus 5 percent frequency response from 0.5 hertz to 850 hertz, magnetic mount.

a) Manufacturers: One of the following or equal:

(1) PCB, Model 393C.

(2) Wilcoxon Research, Model 797L.

2) For high speed equipment: General purpose accelerometer, 100 millivolts per gravitational force sensitivity, 50 gravitational force range, plus/minus 3 dB frequency response range from 2 hertz to 12,000 hertz when stud mounted, with magnetic mount holder.

a) Manufacturers: One of the following or equal:

(1) Entek-IRD, Model 943.

(2) Wilcoxon Research, Model 793.

3. Accelerometer mounting:

a. Use magnetic mounting or stud mounting.

b. Mount on bearing housing in location with best available direct path to bearing and shaft vibration.

c. Remove paint and mount transducer on flat metal surface or epoxy mount for high-frequency enveloping measurements.

4. Vibration acceptance criteria:

a. Testing of rotating mechanical equipment: Tests are to be performed by an experienced, factory trained, and independent authorized vibration analysis expert.

b. Vibration displacement limits: Unless otherwise specified, equipment operating at speeds 600 rpm or less is not to exhibit unfiltered readings in excess of the following:

Operating Conditions and Application Data	Overall Peak-to-Peak Displacement	
	Field (mils)	Factory (mils)
Operation within the POR	3.0	4.0
Operation within the AOR	4.0	5.0
Additive value when measurement location is greater than 5 feet above foundation.	2.0	2.0
Additive value for solids-handling pumps	2.0	N/A
Additive value for slurry pumps	2.0	N/A

c. Vibration velocity limits: Unless otherwise specified, equipment operating at speeds greater than 600 rpm is not to exceed the following peak velocity limits:

HI Pump Type	Horsepower	Field Test	Factory Test
		Overall RMS	Overall RMS
Non-Solids Handling Centrifugal Pumps HI Types BB1, BB2, BB3, BB4, BB5, OH1, OH2, OH3, OH4, OH5, and OH7	Below 268 hp	0.15	0.19
	268 hp and above	0.19	0.22
Motors		See applicable motor Specification	See applicable motor Specification
Gear Reducers, Radial		Not to exceed AGMA 6000-B96 limits	Not to exceed AGMA 6000-B96 limits
Other Reducers, Axial		0.1	N/A

d. Equipment operation: Measurements are to be obtained with equipment installed and operating within capacity ranges specified and without duplicate equipment running.

e. Additional criteria:

1) No narrow band spectral vibration amplitude components, whether sub-rotational, higher harmonic, or synchronous multiple of running speed, are to exceed 40 percent of synchronous vibration amplitude component without the manufacturer's detailed verification of origin and ultimate effect of such excitation.

2) The presence of discernable vibration amplitude peaks in test Level 2 or 3 vibration spectra at bearing inner or outer race frequencies shall be cause for rejection of the equipment.

3) For motors, the following shall be cause for rejection:

a) Stator eccentricity evidenced by a spectral peak at 2 times electrical line frequency that is more than 40 percent of the peak at rotational frequency.

b) Rotor eccentricity evidenced by a spectral peak at 2 times electrical line frequency with spectra side bands at the pole pass frequency around the 2 times line frequency peak.

c) Other rotor problems evidenced by pole pass frequency side bands around operating speed harmonic peaks or 2 times line frequency side bands around rotor bar pass frequency or around 2 times the rotor bar pass frequency.

d) Phasing problems evidenced by 1/3 line frequency side band spectral peaks around the 2 times electrical line frequency peak.

4) The presence of peaks in a high-frequency enveloping spectra plot corresponding to bearing, gear or motor rotor bar frequencies or harmonics of these frequencies shall be cause for rejection of the equipment; since inadequate lubrication of some equipment may be a cause of these peaks, lubrication shall be checked, corrected as necessary and the high-frequency envelope analysis repeated.

5. Vibration testing results presentation:

a. Provide equipment drawing with location and orientation of measurement points indicated.

b. For each vibration measurement take and include appropriate data on equipment operating conditions at the time vibration data is taken; for pumps, compressors, and blowers record suction pressure, discharge pressure, and flow.

c. When vibration spectra data required:

1) Plot peak vibration velocity versus frequency in cycles per minute.

2) Label plots showing actual shaft or part rotation frequency, bearing inner and outer race ball pass frequencies, gear mesh frequencies and relevant equipment excitation frequencies on the plot; label probable cause of vibration peaks whether in excess of specification limits or not.

3) Label plots with equipment identification and operating conditions such as tag number, capacity, pressure, driver horsepower, and point of vibration measurement.

4) Plot motor spectra on a log amplitude scale versus frequency.

d. For low speed equipment, plot peak vibration displacement versus frequency as well as velocity versus frequency.

e. Provide name of the manufacturer and model number of the vibration instrumentation used, including analyzer and accelerometer used together with mounting type.

3.8 TESTING LEVELS

A. Level 2 tests:

1. Level 2 Performance Test:

a. General:

1) For equipment, operate, rotate, or otherwise functionally test for at least 2 hours after components reach normal operating temperatures.

2) Operate at rated design load conditions.

3) Confirm that equipment is properly assembled.

4) Confirm the equipment moves or rotates in the proper direction.

5) Confirm shafting, drive elements, and bearings are installed and lubricated in accordance with proper tolerances.

6) Confirm that no unusual power consumption, lubrication temperatures, bearing temperatures, or other conditions are observed.

b. Pumps:

1) In accordance with general performance test requirements as specified in this Section.

2) Test 2 hours minimum for flow and head at the rated condition; for factory testing, testing may be at a reduced speeds with flow and head corresponding to the rated condition when adjusted for speed using the appropriate affinity laws.

a) Use of a test driver is permitted for factory tests when actual driver is given a separate test at its point of manufacture as specified in Section 16222 - Motors.

b) Use actual driver for field tests.

3) Test for flow and head at 2 additional conditions; one at 25 percent below the rated flow and one at 10 percent above the rated flow.

4) Record measured flow, suction pressure, discharge pressure, and observations on bearing temperatures and noise levels at each condition.

2. Level 2 Vibration Test:

a. Test requirement:

1) Measure filtered vibration spectra versus frequency and measure vibration phase in 3 perpendicular planes at each normally accessible bearing housing on the driven equipment, any gears and on the driver; 1 plane of measurement to be parallel to the axis of rotation of the component; measure actual rotational speeds for each vibration spectra measured using photometric or other tachometer input connected directly to the vibration data collector.

2) Vibration spectra versus frequency shall be in accordance with vibration acceptance criteria.

b. Equipment operating condition: Repeat test requirements at design specified maximum speed and at minimum speed for variable speed equipment.

c. Natural frequency test of field installed equipment:

1) Excite the installed equipment and support system in 3 perpendicular planes, use same planes as operating vibration measurement planes, and determine the as-installed natural resonant frequency of the driven equipment, the driver, gears, and supports.

2) Perform test at each bearing housing, at each support pedestal, and for pumps on the suction and discharge piping.

3) Perform with equipment and attached piping full of intended service or process fluid.

3. Level 2 Noise Test:

a. Measure filtered A-weighted overall sound pressure level in dBA for each of 8 octave band mid-points beginning at 63 hertz, measured at 3 feet horizontally from the surface of the equipment at mid-point height of the noise source.

B. Level 3 tests:

1. Level 3 Performance Tests:

a. General:

1) For equipment, operate, rotate, or otherwise functionally test for at least 4 hours after components reach normal operating temperatures.

2) Operate at rated design load conditions for 1/2 the specified time; operate at each of any other specified conditions for a proportionate share of the remaining test time.

3) Confirm that equipment is properly assembled.

4) Confirm the equipment moves or rotates in the proper direction.

5) Confirm shafting, drive elements, and bearings are installed and lubricated in accordance with proper tolerances.

6) Confirm that no unusual power consumption, lubrication temperatures, bearing temperatures, or other conditions are observed.

7) Take appropriate capacity, power or fuel consumption, torque, revolutions per minute, pressure, and temperature readings using appropriate test instrumentation to confirm equipment meets specified performance requirements at the design rated condition.

8) Bearing temperatures: During maximum speed or capacity performance testing, measure and record the exterior surface temperature of each bearing versus time.

b. Pumps:

1) In accordance with general performance test requirements as specified in this Section.

2) Test 4 hours minimum for flow and head; begin tests at or near the rated condition; for factory and field-testing, test at full speed.

a) Use of a test driver is permitted for factory tests when actual driver is given a separate test at its point of manufacture as specified in Section 16222 - Motors.

b) Use actual driver for field tests.

3) Test each specified flow and head condition at the rated speed and test at minimum as well as maximum specified speeds; operate at each test condition for a minimum of 15 minutes or longer as necessary to measure required performance, vibration, and noise data at each test condition.

4) Record measured shaft revolutions per minute, flow, suction pressure, discharge pressure; record measured bearing temperatures (bearing housing exterior surface temperatures may be recorded when bearing temperature devices are not required by the equipment section) and record observations on noise levels.

5) Perform efficiency and/or net positive suction head required (NPSHr) and/or priming time tests when specified in the equipment section in accordance with the appropriate HI standard and as follows:

a) Perform NPSHr testing at maximum rated design speed, head and flow with test fluids at ambient conditions; at maximum rated speed, test at 15 percent above rated design flow, and 25 percent below rated design flow.

b) Perform efficiency testing with test fluids at maximum rated speed.

c) Perform priming time testing with test fluids at maximum rated speed.

2. Level 3 Vibration Test:

a. Requirements: Same as Level 2 vibration test, except data taken at each operating condition tested and with additional requirements below.

b. Perform high-frequency enveloping analysis for gears and bearings.

1) Measure bearing element vibration directly on each bearing cap in a location close as possible to the bearing load zone that provides a smooth surface and direct path to the bearing to detect bearing defects.

2) Report results in units of acceleration versus frequency in cycles per minute.

c. Perform time wave form analysis for gears, low speed equipment and reciprocating equipment; plot true peak amplitude velocity and displacement versus time and label the period between peaks with the likely cause of the periodic peaks (relate the period to a cause).

d. Plot vibration spectra on 3 different plots; peak displacement versus frequency, peak acceleration versus frequency and peak velocity versus frequency.

3. Level 3 Noise Test:

a. Measure filtered, un-weighted overall sound pressure level in dB at 3 feet horizontally from the surface of the equipment at mid-point height and at 4 locations approximately 90 degrees apart in plain view; report results for each of 8 octave band mid-points beginning at 63 hertz.

END OF SECTION

SECTION 16050

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Requirements for electrical:

a. Basic design and performance criteria.

b. Prescriptive requirements for common components.

c. Installation.

B. Contract Drawings:

1. Schematic diagrams:

a. Controls are shown as de-energized.

b. Add relays, where required, to provide necessary contacts for the control system or where needed to function as interposing relays for control voltage coordination, equipment coordination, or control system voltage drop considerations.

c. Mount devices shown on motor controller schematic diagrams in the controller compartment enclosure, unless otherwise noted.

2. Plan drawings:

a. Electrical drawings show desired locations, arrangements, and components of the electrical Work in a diagrammatic manner.

b. Locations and sizes of equipment are approximate only.

3. Installation details:

a. Contract Drawings include typical installation details the Contractor is to use to complete the electrical Work. For cases where a typical detail does not apply, develop installation details that may be necessary for completing the Work, and submit these details for review by the Engineer.

b. Not all typical installation details are referenced within the drawing set. Apply and use typical details where appropriate.

1.2 REFERENCES

A. Abbreviations:

1. FAT: Factory acceptance test that is also referred to as source test.

2. ICSC: Instrumentation and controls subcontractor.

3. PCIS: Process control and instrumentation system.

B. Standards:

1. American National Standards Institute (ANSI).

2. National Electrical Manufacturers Association (NEMA):

a. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).

3. National Fire Protection Association (NFPA):

a. 70 - National Electrical Code (NEC).

4. Underwriters Laboratories, Inc. (UL).

1.3 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning:

1. LCP: Local control panel: Operator interface panel that may contain pilot type control devices, operator interface devices, control relays, etc., and does not contain a PLC or RIO.

2. PCM: Process control module: An enclosure containing any of the following devices: PLC, RTU, or RIO.

3. Space: Portion of a switchgear, motor control center, panelboard, switchboard, or control panel that does not physically contain a device but is capable of accepting a device with no modifications to the equipment:

a. Furnish hardware to accommodate installation of future circuit breakers, instruments, relays, and controls.

b. Wire relay and circuit breaker control power and network connections to the compartment and provide terminations.

c. Space for future devices shall include:

1) All necessary bus.

2) Device supports and mounting equipment.

3) Device connections to bus work.

4) Wire troughs or raceway space.

4. Spare: Portion of a switchgear, motor control center, panelboard, switchboard, or control panel that physically contains a device with no load connections to be made.

5. Unequipped space: Portion of a switchgear, motor control center, panelboard, switchboard, or control panel that does not physically contain a device, standoff, bus, hardware, or other equipment.

6. Vendor control panel (VCP): Control panels that are furnished with particular equipment by a vendor other than the ICSC. These panels may contain PLCs, RIO, OIT, HMI, etc.

1.4 DELEGATED DESIGN

A. Requirements for Delegated Design are specified in the Technical Sections.

1.5 SUBMITTALS (NOT USED)

1.6 QUALITY ASSURANCE

A. General:

1. Furnish equipment listed by and bearing the label of UL or of an independent testing laboratory acceptable to the Engineer and the Authority Having Jurisdiction.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Shipping precautions:

1. After completion of shop assembly and successful factory testing, pack equipment in protective crates, and enclose in heavy duty polyethylene envelopes or secured sheeting to provide complete protection from damage, dust, and moisture.
2. Place dehumidifiers, when required, inside the polyethylene coverings.
3. Skid-mount the equipment for final transport.
4. Provide lifting rings for moving without removing protective covering.
5. Display boxed weight on shipping tags together with instructions for unloading, transporting, storing, and handling at the job site.

1.8 PROJECT OR SITE CONDITIONS

A. As specified in Section 01010 Summary of Work.

1.9 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Loop drawings:
   a. Provide electrical information required in the preparation of loop drawings, including, but not limited to:
      1) Conduit numbers and associated signal(s) contained within each conduit.
      2) Wire numbers.
      3) Equipment terminal numbers.
      4) Junction boxes and signal(s) contained within each junction box.

5) Equipment power sources, and associated circuit numbers.

6) As-built drawings detailing wiring.

2. Roof penetrations:

a. Show roof penetrations for electrical equipment and conduit on the roof drawing Submittal and include equipment information:

1) Type.

2) Size.

3) Location.

4) Configuration of individual penetrations or large penetrations for multiple conduits.

5) Weight.

6) Anchoring and support details.

B. Meetings:

1. As specified in Section 01200 - Project Meetings.

C. Sequencing and scheduling:

1. Equipment anchoring: Project construction schedule must include an event for obtaining the anchor layout drawings from equipment manufacturers in adequate time for templates to be constructed and anchors to be cast-in-place.

PART 2 - PRODUCTS

2.1 GENERAL (NOT USED)

2.2 DESIGN AND PERFORMANCE CRITERIA

A. Provide field wiring and terminations.

B. Equipment mounting and anchoring:

1. Design equipment anchorage, supports, and connections for dead load, running loads, loads during start-up, and other loads as required for proper operation of equipment.

a. For equipment with an operating weight of 400 pounds or greater and equipment that is supported higher than 4 feet above the floor, provide calculations for:

1) Operating weight and location of the centroid of mass for the equipment.

2) Forces and overturning moments.

3) Shear and tension forces in equipment anchorages, supports, and connections.

4) Design of equipment anchorage, supports, and connections based on calculated shear and tension forces.

2. Anchorage of equipment to concrete or masonry:

a. Perform calculations and determine number, size, type, strength, and location of anchor bolts or other connections.

b. Unless otherwise indicated on the Drawings, select and provide anchors from the types specified in Section 05051 – Anchor Bolts, Toggle Bolts, and Concrete Inserts.

c. Provide bolt sleeves around cast-in anchor bolts for 400 pounds or greater equipment.

1) Adjust bolts to final location and secure the sleeve.

3. Anchorage of equipment to metal supports:

a. Perform calculations and determine number, size, type, strength, and location of bolts used to connect equipment to metal supports.

2.3 MANUFACTURERS (NOT USED)

2.4 MATERIALS

A. Enclosures:

1. Provide enclosures for electrical, instrumentation, and control equipment, regardless of Supplier or Subcontractor furnishing the equipment, that meet the requirements of NEMA Standard 250:

a. Provide metallic enclosures unless specifically indicated otherwise.

B. Stainless steel:

1. Where stainless steel is indicated or used for any portion of the electrical Work, provide a non-magnetic, corrosion-resistant alloy, ANSI Type 316, satin finish.

2. Provide exposed screws of the same alloys.

3. Use stainless steel hardware, when chemically compatible, in all chemical areas or areas requiring NEMA Type 4X construction.

4. Do not use stainless steel in any area containing chlorine, gas or solution, chlorine products or ferric chloride.

C. Plant area electrical work requirements:

1. Provide electrical materials in accordance with the following table, unless otherwise specifically indicated on the Drawings:

a. Conduit installation requirements: As specified in Section 16130 - Conduits.

Table 1. Electrical Material Requirements				
Plant Area	**Environment: W = Wet D = Damp C = Clean/dry X = Corrosive H = Hazardous**	**NEMA Enclosure Type**	**Exposed Conduit Type (as specified in Section 16130 - Conduits)**	**Support Materials**
Pump Room	**W**	**4X-SS**	**PCS**	**Stainless Steel**
Electrical Room/ Control Room	**C**	**12**	**GRC**	**Galvanized Steel**
Notes:				

PART 3 - EXECUTION

3.1 EXAMINATION

A. Portions of this Project involve installation in existing facilities and interfaces to existing circuits, power systems, controls, and equipment:

1. Perform and document comprehensive and detailed field investigations of existing conditions (circuits, power systems, controls, equipment, etc.) before starting any Work.

2. Determine information necessary to document, interface with, modify, upgrade, or replace existing circuits, power systems, controls, and equipment.

3. Provide and document interface with, modifications to, upgrades, or replacement of existing circuits, power systems, controls, and equipment.

3.2 PREPARATION (NOT USED)

3.3 INSTALLATION

A. Equipment:

1. Where the Drawings do not show dimensions for locating equipment, install equipment in the approximate locations indicated on the Drawings.

B. Provide NEC required working space in front of electrical equipment as if it could be worked on energized.

C. Circuits of different service voltage:

1. Voltage and service levels:

a. Medium voltage: Greater than 1.0 kV.

b. Low voltage:

1) Power and controls: 120 V to 480 V.

c. Instrumentation: Less than 50 VDC.

2. Install different service voltage circuits in separate raceways, boxes, manholes, and hand holes.

3. Low voltage and instrumentation circuits may be installed in a common metallic box, wireway, or cable tray with a grounded divider as indicated on the Drawings.

D. Conductors shall not pass through equipment they are not terminating in unless indicated on the Drawings or approved by the Engineer.

3.4 FIELD QUALITY CONTROL

A. Workmanship:

1. Leave wiring in panels, manholes, boxes, and other locations neat, clean, and organized:

a. Neatly coil and label spare wiring lengths.

b. Shorten, re-terminate, and re-label excessively long used, as well as spare, wire and cable lengths, as directed by the Engineer.

B. Inspection activities conducted during construction do not satisfy the inspection or testing requirements specified in Section 16950 - Field Electrical Acceptance Tests.

C. Provide on-site assistance for troubleshooting and correcting electrical issues discovered during installation and testing for the Project.

3.5 OWNER TRAINING (NOT USED)

3.6 ADJUSTING (NOT USED)

3.7 CLEANING

A. General:

1. Clean and vacuum enclosures to remove metal filings, surplus insulation and any visible dirt, dust, or other matter before energization of the equipment or system start-up:

a. Use of compressors or air blowers for cleaning is not acceptable.

2. Clean luminaries in the areas affected by the construction.

END OF SECTION

SECTION 16062

GROUNDING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Grounding electrode systems, consisting of concrete encased bare ground conductors and ground rods.

B. Related Sections:

1. Section 16950 - Electrical Testing.

1.2 REFERENCES

A. National Electrical Code (NEC), Article 250 - Grounding.

B. ASTM International (ASTM):

1. B3 - Standard Specification for Soft or Annealed Copper Wire.
2. B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.

C. Underwriters Laboratories, Inc. (UL):

1. 467 - Ground and Bonding Equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Ground Conductor: Bare copper.

1. Grounding electrode conductors, and bonding jumpers:
    a. Minimum size in accordance with the NEC.

B. Ground cable:

1. Manufacturers: One of the following or equal:
    a. Erico.
    b. Harger.
    c. Nehring.
    d. Southwire.

2. Requirements:
    a. Soft drawn (annealed).
    b. Concentric lay, coarse stranded in accordance with ASTM B8.
    c. Bare copper in accordance with ASTM B3.
3. Size is as indicated on the Drawings, but not less than required by the NEC. Use the following type of wire unless otherwise indicated on the Drawings:
    a. Size #6 AWG and smaller; solid conductor.
    b. Size #4 AWG and larger; stranded conductor.

C. Compression connectors:
1. Manufacturers: One of the following or equal:
    a. ABB.
    b. Burndy.
    c. Erico.
    d. Harger.
    e. Panduit.
2. Manufactured of high copper alloy specifically for the particular grounding application.
3. Identifying compression die number inscription to be impressed on compression fitting.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Bond electrical enclosures, including metallic raceways, panels, motor control center, enclosed circuit breaker and other similar metallic panels, cases and devices associated with power, instrumentation, and control systems to the grounding electrode system.

B. When size is not indicated on the Drawings, size grounding conductors in accordance with NEC Table 250-66 and Table 250-122.

C. Provide a green insulated equipment grounding conductor, or multi- conductor cable with integral green insulated grounding conductor, with each feeder and branch circuit from the power source grounding means to the pump motor, electrical load equipment, lighting fixtures, instruments, control panels and wiring devices.

D. Provide ground bushings at both ends of rigid conduit runs. Do not use locknuts. Bond ground bushings to the grounding system.

E. When not indicated on the Drawings, provide a minimum size of No. 2/0 or larger grounding electrode systems in compliance with NEC-250.

F. Grounding electrode system:

1. Where grounding conductors are exposed and subject to physical damage, install in Schedule 80 PVC conduit for protection.

G. Shield grounding:

1. Analog signal cables shields shall only be grounded at a single point in the loop. Unless otherwise noted, ground signal cable shields at control panel.
2. For communication and data line signal cable shields and drain wires should be grounded at both ends of the cable run.
3. Insulate the shielding and exposed drain wire for each signal cable with heat-shrink tubing.
4. Terminate the signal cable shield on a dedicated grounding terminal block.

3.2 FIELD QUALITY CONTROL

A. Test ground resistance, as specified in Section 16950, of entire system and at each building/structure where electrical equipment is installed.

B. Coordinate work schedule with ENGINEER to witness ground resistance testing.

C. Where maximum allowable ground resistance of 5 ohms is exceeded, install additional grounding mats or ground rods until ground resistance is equal to or below maximum allowable ground resistance required by the National Electrical Code.

END OF SECTION

SECTION 16070

HANGERS AND SUPPORTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Mounting and supporting electrical equipment and components.

1.2 REFERENCES

A. American National Standards Institute (ANSI).

B. ASTM International (ASTM):

1. A575 – Specification for Steel Bars Carbon, Merchant Quality, M-Grades.

2. A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

C. Federal Specifications (FS):

1. FS A-A-1192, Hangers, Pipe.

D. Manufacturers Standardization Society of the Valve and Fittings Industry, (MSS):

1. MSS SP 58, Pipe Hangers and Supports – Materials, Design and Manufacturer.

2. MSS SP 69, Pipe Hangers and Supports – Selection and Application.

1.3 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.

1. Anchor: Elements (including hardware) connecting hangers and supports to the structure.

2. Hardware: Nuts, bolts, straps, clamps, threaded rod, etc.

3. Supports: Preformed channel or other structural member on which the electrical equipment or raceway is mounted.

1.4 DELEGATED DESIGN

A. Anchoring and bracing.

1.5 SUBMITTALS

A. Furnish Submittals as specified in Section 01300 – Contractor Submittals.

B. Product data:

1. Hangers and Supports:

a. Materials.

b. Geometry.

c. Manufacturers' catalogs, literature, and engineering data on all hangers and supports.

d. Load rating and installation shall be consistent with MS SP 58, MSS SP 69 and FS A-A-1192.

2. Hardware:

a. Materials.

b. Manufacturer.

1.6 QUALITY ASSURANCE

A. Each type of pipe hanger or support shall be the product of one manufacturer.

B. Component supply and compatibility:

1. Obtain all equipment from a single pipe hanger and supports manufacturer.

2. All components shall be specifically constructed for the specified service conditions and shall be integrated into the overall assembly by the pipe hanger and supports manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Packaging, Shipping, Handling and Unloading:

1. Deliver materials to the site to ensure uninterrupted progress of the work.

B. Storage and Protection:

1. Store materials to permit easy access for inspection and identification.

2. Store all material off the ground using pallets, platforms, or other supports.

3. Protect steel members and packaged materials from corrosion and deterioration.

4. Protect all materials to prevent condensation.

C. Acceptance at Site:

1. All boxes, crates and packages shall be inspected by contractor upon delivery to the site.

2. Upon delivery, contractor shall notify engineer, in writing, if any loss or damaged items exist; Lost or damaged items shall be replaced in accordance with manufacturer's recommendations.

1.8 PROJECT OR SITE CONDITIONS

A. As specified in Section 01010 Summary of Work.

1.9 ADMINISTRATIVE REQUIREMENTS (NOT USED)

1.10 WARRANTY

A. As specified in Section 01740 - Warranties and Bonds.

PART 2 - PRODUCTS

2.1 GENERAL

A. Mount raceways, cabinets, boxes, fixtures, instruments, and devices on Contractor-fabricated supports unless otherwise indicated on the Drawings.

2.2 DESIGN AND PERFORMANCE CRITERIA

A. Hangers and supports individually and as a system shall resist weights and code-required forces without deflections and deformations that would damage the supporting elements, the raceway or equipment supported, or the surrounding construction:

1. Provide the necessary sway bracing to keep support structures from swaying due to lateral forces, including wire and cable pulling forces.
2. Lateral deflection at top of slab mounted supports shall not exceed support height divided by 240, unless otherwise approved by the Engineer.

2.3 MANUFACTURERS

A. One of the following or equal:

1. Preformed channel:
    a. Eaton B-line.
    b. Power-Strut.
    c. Robroy.
    d. Tyco.
    e. Unistrut.

2.4 MATERIALS

A. Hot dip galvanized steel:

1. Supports:
    a. In accordance with ASTM A123 or A153.
    b. Minimum zinc coating thickness of 2.5 mils.

c. Nominal dimensions: 1-5/8 inch by 1-5/8 inch.

2. Hardware:

a. Electro-galvanized.

b. In accordance with ASTM A153.

B. Stainless steel:

1. Supports:

a. In accordance with ASTM A240.

b. ANSI Type 316 material.

c. Nominal dimensions: 1-5/8 inch by 1-5/8 inch.

2. Hardware:

a. ANSI Type 316 material.

2.5 MANUFACTURED UNITS (NOT USED)

2.6 EQUIPMENT (NOT USED)

2.7 COMPONENTS

A. Fabricated metal supports: As specified in Section 05500 - Metal Fabrications.

2.8 ACCESSORIES

A. Anchors:

1. As specified in Section 05051- Anchor Bolts, Toggle Bolts, and Concrete Inserts.

2.9 FABRICATION (NOT USED)

2.10 FINISHES

A. Paint and finish structures as specified in Section 09940 - Protective Coatings.

PART 3 - EXECUTION

3.1 EXAMINATION (NOT USED)

3.2 PREPARATION

A. Anchoring and bracing to structures:

1. Prepare equipment anchor setting template(s) and use to position anchors during construction of supporting structure(s).

2. Install anchors of type and material indicated on approved anchoring designs.

3. Install anchors with embedment indicated on approved anchoring designs.

3.3 INSTALLATION

A. Use materials appropriate for the area as specified in Section 16050 - Common Work Results for Electrical.

B. General:

1. Refer to the Drawings for details. Equipment, cabinets, boxes, instruments, and devices in damp or wet locations on minimum of 7/8-inch preformed mounting channel.

2. Mount channel vertically along the length of the device so that water or moisture may run freely behind the device.

C. Corrosion protection:

1. Isolate dissimilar metals, except where required for electrical continuity.

   a. Use neoprene washers, 9-mil polyethylene tape, or gaskets for isolation.

D. Anchoring methods:

1. Solid concrete:

   a. Anchor bolts, anchor rods or post-installed anchors as specified in Section 05051 – Anchor Bolts, Toggle Bolts, and Concrete Inserts.

2. Metal surfaces: Machine screws or bolts.

3. Hollow masonry units:

   a. Post installed anchors as specified in Section 05051 – Anchor Bolts, Toggle Bolts, and Concrete Inserts.

4. Wood and metal studs:

   a. When supporting devices on metal or wood stud construction, bridge studs with preformed channel, and mount the devices to the channel.

E. Recoat or seal drilled holes, cut or scratched surfaces or with products recommended by the manufacturer.

F. Group raceway and position on racks to minimize crossovers.

END OF SECTION

SECTION 16075

ELECTRICAL IDENTIFICATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Identification of electrical conductors, raceways and equipment, and electrical equipment signs.

1.2 REFERENCES

A. National Electrical Manufacturers Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).

B. National Electrical Code (NEC):
   1. Article 110-22 - Disconnecting Means.
   2. Article 210-4 - Multiwire Branch Circuits.
   3. Article 200 - Use and Identification of Grounded Conductors.
   4. Article 384 - Switchboards and Panelboards.
   5. Article 300 - Wiring Methods.

C. Occupational Safety and Health Administration (OSHA).

1.3 SUBMITTALS

A. Shop Drawings:
   1. Cross Reference: Diagram shall carry a uniform and coordinated set of wire numbers and terminal block numbers to permit cross-referencing between the contract document drawings, the drawings prepared by the CONTRACTOR, and equipment O&M Manual Drawings.
   2. Drawing number cross references and continuation references shall also be provided. Contractor-prepared drawings shall reference applicable Contractor drawings such as P&IDs, control and logic diagrams, interface wiring diagrams, panel drawings, etc. CONTRACTOR-prepared drawings shall be submitted in 11-inch by 17-inch or larger paper size and drawn with AutoCAD software and they shall also reference applicable drawings provided by equipment manufacturers.
   3. On any drawing prepared for this project, if a wire, circuit, enclosure, panel, or device is continued on another drawing, the continuation drawing shall be referenced (and vice-versa). Wherever wires are shown connected to terminals, the drawings which show the continuation of the circuits on those terminals must be referenced.

4. Interconnection Diagrams: Cables shall not be installed into raceways until the wiring interconnection diagrams are reviewed by the design engineer.

5. Sample schematics and diagrams are indicated on typical detail drawings for reference and understanding of minimum information required for submittal of shop drawings schematics and diagrams, and submittal of O&M schematics and diagrams.

6. Include tagging system, labels, markers, hazard tape, nameplates, and signs.

B. Product Data: Include tagging system, labels, markers, and hazard tape.

C. Project Record Documents:

1. Document wire, cable, and conductor tags, and bundle tags installed in accordance with the Contract Documents.

2. Document installed wire, cable, and conductor tags and bundle tags when not specifically indicated.

3. Indicate on Record Drawings deviations from accepted shop drawing conductor identification.

PART 2 - PRODUCTS

2.1 LABELS

A. Manufacturers: One of the following or equal:
1. Brady.

2. Seton.

B. Type: Sleeve type.

2.2 CONDUCTOR AND CABLE MARKERS

A. Wire Markers

1. All conductors including field conductors and internal panel conductors shall be permanently marked with wire numbers at each end.

2. Markers shall consist of machine printed, black characters on white tubing.

a. General.

1) Tubing shall be sized for the wire and insulation on which it is to be placed.

2) Tubing shall be tight on the wire.

3) Characters shall face the open panel, and shall read from left to right or top to bottom.

4) Machine printed.

5) Wire marker shall start within 1/32-inch of end of stripped insulation point.

a) Heat-shrinkable tubing.

6) Tubing shall be shrunk using a heat gun which produces low temperature heated air.

7) Manufactured by:

a) Raychem.

b) Brady.

c) Thomas & Betts.

d) Kroy.

b. Pre-printed slip on sleeve markers.

1) Manufactured by:

a) Grafoplast.

B. Markers used in tunnels or other wet locations and for all security system labels shall be on heat-shrinkable marking sleeves.

C. Use self-laminating vinyl on white background for markers within electrical equipment such as panels, termination cabinets, motor control centers.

2.3 RACEWAYS IDENTIFICATION (TAGS)

A. Conduit numbers shall be pressure stamped into a noncorrosive 2 inch long, 1/2 inch wide stainless steel tape, Dymo marking system or equal. A tag with number shall be fixed with No. 18 AWG or larger type 304 stainless steel wire, to each conduit segment and at the end of each conduit and within 3 feet of each pull box, panelboard and motor control center.

2.4 NAMEPLATES, LABELS AND SIGNS

A. Nameplates:

1. Type: Black lamacoid with white letters.

2. Fastener: Round head stainless steel screws.

B. Automatic Equipment and High Voltage Warning Signs:

1. Type: Suitable for exterior use and meeting OSHA regulations.

C. Security System Cable Circuit Raceway Labels: Vinyl plastic.

1. Manufacturers: One of the following or equal:

a. Brady.

b. Seton.

D. Underground Hazard Tape: 6 inches wide.

1. Manufacturers: One of the following or equal:

a. Panduit.

b. Thomas and Betts.

PART 3 - EXECUTION

3.1 CIRCUIT IDENTIFICATION

A. Identify 3-phase system conductors and cables as Phases A, B, and C and identify 1-phase system conductors and cables at electrical equipment including, but not limited to, panelboards, motor control centers, and motors.

1. Match OWNER's existing electrical system identification scheme or meet requirements of the authority responsible for the project.

2. 3-phase 480 Volts AC System Conductors: Phase A, brown; Phase B, orange; Phase C, yellow.

3. Three-Phase Conductors for 120/208 VAC Circuits: Phase A, black; Phase B, red; Phase C, blue.

4. Neutral Conductor: White for 120 VAC and gray for 277 VAC.

5. Insulated Equipment Grounding Conductor: Green.

6. General Purpose AC Control Conductors: Purple.

7. General Purpose DC Control Conductors: Purple with white stripes.

8. Single-Phase Conductors for 120/240 VAC Circuits: Phase A, Black; Phase B, red.

B. Use color coding and phasing consistent throughout the site. Bus bars at panelboards and motor control centers to be connected Phase A-B-C, top to bottom, or left to right facing connecting lugs.

C. Conductors Number 2 American Wire Gauge (AWG) and smaller to be factory color coded with a separate color for each phase and neutral, which shall be used consistently throughout the system. Larger cables to be coded by the use of colored tape.

D. In addition to color coding, for all 1-phase and 3-phase systems, identify each cable (single or multi-conductor) and conductor at each end, in each manhole, pullbox, cable tray, or other component of the raceway system. This identification is applicable to all power, control, alarm, signal, and instrumentation cables, and conductors.

E. Identify each cable (single or multi-conductor) and groups or bundles of individual single conductors in each manhole, pullbox, cable tray or other component of the raceway system with circuit identification markers. Implement a "from-to" cable/conductor bundle tagging system as part of this identification effort. Label cables/conductors in wireways at 30-foot intervals.

F. Identify each individual conductor at each termination. This includes such locations as motor control centers, control panels, junction/terminal boxes, all field devices, security panels and junction boxes, and all other locations where conductors are terminated. Identify the termination of these conductors in accordance with the accepted shop drawings. Tag conductors with sleeve type labels.

G. Where more than 1 nominal voltage system exists, identify each ungrounded system conductor by phase and system. Permanently post means of identification at each branch-circuit panelboard, motor control center, or other type of power distribution equipment.

H. Include the following minimum information for wire and cable identification:

1. Circuit number or load identification tag number.

2. Origin (from source).

I. Destination (to load).

J. Wire Numbers:

1. The CONTRACTOR shall coordinate the wire numbering system with all vendors of equipment so that each and every field wire has a unique wire number associated with it for the entire system.

   a. Wire numbers shall correspond to the wire numbers on the control drawings, or panel and circuit numbers for receptacles and lighting.

   b. Wire numbers shall correspond to the terminal block number to which they are attached in the control panel.

   c. Internal panel wires on a common terminal shall have the same wire number assigned.

   d. Multiconductor cable shall be assigned a number which shall be attached to the cable at intermediate pull boxes and at stub-up locations beneath free-standing equipment. All individual control conductors and instrumentation cable shall be identified at pull points as described above.

      1) Armored multiconductor cable shall be labeled using the conduit number shown on the plans, following the requirements for conduit markers in Section 16075.

2. The following wiring numbering scheme shall be followed throughout the project and used for field wire numbers between MCCs, field starters, field instruments, etc.

(ORIGIN LOC.) – (ORIGIN TERM.) / (DEST. LOC.) – (DEST. TERM.)

OR

(ORIGIN LOC.) – (ORIGIN TERM.) (DEST. LOC.) – (DEST. TERM.)

Where:

ORIGIN LOC. = Designation for originating panel or device. ORIGIN TERM. = Terminal designation at originating panel or device.

DEST. LOC. = Designation for destination panel or device. DEST. TERM. = Terminal designation at destination panel or device, OR

DEST. TERM. = PLC or RTU I/O address at destination panel.

a. Equipment and field instruments are always identified as the origin.

b. PCMs are always identified as the destination.

c. Location is the panel designation for RTU and panelboard. For connections to MCCs, location is the specific starter tag and loop number. Location is the tag and loop number for motor starters, field instruments and equipment. Any hyphen in the panel designation or tag and loop number shall be omitted.

d. Terminal designations at motor leads shall be the motor manufacturer's standard terminal designation (T1, T2, T3, etc.)

e. Terminal designations at PCMs where the field conductor connects to a RTU input or output shall be the RTU address (Note: the following PLC I/O numbering scheme is typical for Allen Bradley, the numbering scheme should be modified to match that of the actual RTU manufacturer used for the project).

1) W:X:Y/Z for a discrete point or W:X:Y.Z for an analog point. W = I for input, O for Output.
X = PLC number (1,2,3...).

Y = Slot number (01, 02, 03...).

Z = Terminal number (00, 01, 02...) for a discrete point. Z = Word Number (1,2,3...) for an analog point.

2) Examples of discrete points: I:1:01/01, O:2:10/07

3) Examples of analog points: I:1:01.2, O:2:02.3

f. Terminal designations at PCMs where the conductor does not connect to a PLC I/O point shall be the terminal number with a "C" prefix (C0010). For common power after a fuse or neutrals after a switch the subsequent points will have an A, B, C, etc. suffix (C0010A).

3. Case 2: Field instrument to RTU: Field wire number/label: E-F/C-D

R = Process control module without hyphen (RTU100).

D = Either RTU address if the field terminal is connected directly to a RTU input or output point or the terminal number with a "C" prefix if not connected directly to a RTU I/O point (C0010).

E = Field mounted instrument tag and loop numbers without hyphen (PITA300).

F = Manufacturer's standard terminal number within instrument. Use both terminal numbers for analog points separated by a comma.

Examples: PITA300-2,3/PCM300-I:1:01.1.

TSHA101-1/PCM200-I:2:01/00.

4. Case 3: Motor Control Center (MCC) to RTU: Field wire number/label: G-B/C-D

B = Terminal number within, MCC, or starter (manufacturer/vendor's standard will be acceptable).

R = Process control module without hyphen (RTU100).

D = Either PLC address if the field terminal is connected directly to a PLC input or output point or the terminal number with a "C" prefix if not connected directly to a PLC I/O point (C0010).

G = MCC use actual starter designation in MCC i.e., MSA131 without hyphen located in MCC-120.

Examples: MSA131-10/PCM100-I:1:01/01. MSA131-10/PCM100-O:1:10/07. MSA131-10/PCM100-C0100.

5. Case 5: Motor leads to MCC Field wire number/label: H-I/G-B

B = Terminal number within VCP, MCC, or starter (manufacturer/vendor's standard with be acceptable).

G = MCC use actual starter designation in MCC i.e., MSA131 without hyphen located in MCC-120.

H = Equipment tag and loop number without hyphen (RWP131).

I= Motor manufacturer's standard motor lead identification (T1, T2, T3, etc.)

Example: RWP131-T1/MSA131-T1.

6. All spare conductors shall be terminated on terminal blocks and shall be identified as required for other field wires, with an "S" prefix.

Example: S MSA315-21/PCM200-C0125.

3.2 NAMEPLATES

A. Furnish and install nameplates for all electrical equipment indicated on the Drawings or specified. Also, use single line and panel schedule legends for nameplate data.

B. Each disconnect means for service, feeder, branch, or equipment conductors and pushbutton stations shall have nameplates indicating its purpose or identifying the load.

3.3 AUTOMATIC EQUIPMENT WARNING SIGNS

A. Mount permanent warning signs at mechanical equipment which may be started automatically or from remote locations. Fasten warning signs with round head stainless steel screws or bolts, located and mounted in a manner acceptable to ENGINEER.

B. Mount permanent and conspicuous warning signs on (front and back) equipment, doorways to equipment rooms, pull boxes, manholes, where the voltage exceeds 600 volts.

C. Place warning signs on utilization equipment that has 120 VAC control voltage source used for interlocking. Provide panel, circuit number, and conductor tag of control voltage source disconnect.

END OF SECTION

SECTION 16100

ELECTRICAL EQUIPMENT INSTALLATION

PART 1 - GENERAL

1.1 SCOPE. This section covers the installation of electrical equipment.

1.2 GENERAL. Equipment specified to be installed under this section shall be erected, and placed in proper operating condition in full conformity with drawings, specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by ENGINEER.

A. The electrical equipment identified as being provided by others will be furnished complete for installation by CONTRACTOR. Technical specifications under which the equipment will be purchased are available.

B. Coordination. When manufacturer's field services are provided by the equipment manufacturer, CONTRACTOR shall coordinate the services with the equipment manufacturer. CONTRACTOR shall give ENGINEER written notice at least 14 days prior to the need for manufacturer's field services furnished by others.

C. Submittals for equipment furnished under the original procurement contract will be furnished to CONTRACTOR upon completion of review by ENGINEER. CONTRACTOR shall review equipment submittals and coordinate with the requirements of the Work and the Contract Documents. CONTRACTOR accepts sole responsibility for determining and verifying all quantities, dimensions, and field construction criteria.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Delivery. When sills are required for electrical equipment, they shall be shipped ahead of the scheduled equipment delivery to permit installation before concrete is placed.

B. Storage. Upon delivery, all equipment and materials shall immediately be stored and protected by CONTRACTOR, in accordance with manufacturer's written instructions, until installed in the Work. Equipment shall be protected by CONTRACTOR against damage and exposure from the elements. At no time shall the equipment be stored on earth or grass surfaces or come into contact with earth or grass. CONTRACTOR shall keep the equipment clean and dry at all times. Openings shall be plugged or capped (or otherwise sealed by packaging) during temporary storage.

C. Handling. Electrical equipment shall be moved by lifting, jacking, or skidding on rollers as described in the manufacturer's instructions. Special lifting harness or apparatus shall be used when required. Lifting and jacking points shall be used when identified on the equipment. CONTRACTOR shall have required unloading equipment on site to perform unloading work on the date of equipment delivery.

1.4 ARC FLASH HAZARD LABELS. Switchgear, switchboards, motor control centers, motor control line-ups, and transfer switches shall be provided with permanent labels warning the risk of arc flash and shock hazard. Labels shall be designed in accordance with ANSI Z535.4-1998 and shall include the following information:

WARNING
Arc Flash and Shock Hazard
Appropriate personal protection equipment (PPE) required. See NFPA 70E.
Equipment must be accessed by qualified personnel only.
Turn off all power sources prior to working on or inside equipment.

A. Additional information shall be provided on the labels where specified in the Arc Flash Hazard Analysis section of specification 16050.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

3.1 INSTALLATION, TESTING, AND COMMISSIONING. All installation work shall be in accordance with manufacturer's written instructions.

A. All material, equipment, and components specified to be installed according to this Section shall be installed, tested, and commissioned for operation in compliance with NECA 1000 – NEIS Specification System. Where required in NECA 1000, testing and commissioning procedures shall be followed prior to energizing equipment.

B. Electrical equipment cubicles and vertical sections shall be installed plumb and level. Drawout equipment carriages, circuit breakers, and other removable components shall operate free and easy without binding or distortion.

C. Unless otherwise indicated or specified, all indoor floor-mounted electrical equipment and control cabinets shall be installed on concrete equipment pads four inches (102 mm) in height.

D. Indoor metalclad switchgear shall be bolted to steel floor channels which are installed level and flush with the top of the concrete floor or equipment pad.

E. Outdoor metalclad switchgear and interrupter gear with integral floor channels or beams shall be secured to concrete pads with anchor bolts and clips.

F. Motor control centers with integral floor sills shall be secured to concrete floors or equipment pads with anchor bolts.

G. Cleaning. All deposits of oil, grease, mud, dirt or debris shall be cleaned from the electrical equipment following installation and field wiring. A detergent water based solution, or other liquid cleaners not harmful to material or equipment finishes, shall be used as recommended by the manufacturer.

END OF SECTION

SECTION 16120

LOW VOLTAGE WIRE CONNECTIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Wire connecting devices.
2. Terminations.
3. Splices.

B. Related sections:

1. The following sections are related to the Work described in this section.
   a. Section 16123 - 600 Volt or Less Wires and Cables.

1.2 SYSTEM DESCRIPTION

A. Provide a complete system of wiring connectors, terminators, fittings, etc. for a complete wiring system suitable for the cables and conductors used.

1.3 SUBMITTALS

A. Furnish submittals with product data.

B. Product data:

1. Catalog cut sheets.
2. Installation instructions.

1.4 QUALITY ASSURANCE

A. All materials shall be UL listed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers for each type of technology are specified with the equipment herein.

2.2 EQUIPMENT

A. Control connections:

1. Use insulated ring type wire terminators for connections to all screw terminals:

a. With chamfered/funneled terminal barrel entry.

b. Deep internal serrations.

c. Long barrel design to reduce electrical resistance and increased insulator-barrel surface area to ensure that the insulator remains in contact with the barrel.

d. Electroplated-tin copper conductor.

e. Manufacturer: One of the following or equal:

1) Thomas and Betts, Stakon.

2. For process equipment connections work from manufacturer's drawings.

B. Joints, splices, taps, and connections:

1. 600-volt conductors:

a. Use solderless connectors.

b. Use only plated copper alloy connectors or lugs:

1) Aluminum connectors or lugs are not acceptable for copper conductors.

c. Under those specific conditions where aluminum conductors have been allowed or are specified then the connectors for aluminum conductors shall be specifically designed for that purpose.

d. For wire Number 10 AWG and smaller use compression splice caps, with insulating caps:

1) Manufacturer: One of the following or equal:

a) Buchanan 2006S or 2011S, with 2007 or 2014 insulating caps.

e. For wire Number 8 AWG and larger, use heavy duty copper compression connectors:

1) Manufacturer: One of the following or equal:

a) Burndy.

b) Thomas and Betts.

f. Heat shrink tubing:

1) Suitable for indoors, outdoors, overhead, direct burial or submerged applications.

2) Minimum shrink ratio: 4 to 1.

3) Continuous operating temperature: -55 degrees Celsius to 110 degrees Celsius.

4) Internally applied adhesive sealant.

5) Cross-linked polyolefin:

a) Manufacturers, one of the following or equal:

(1) 3M ITCSN.

(2) Thomas & Betts Shrink-Kon.

2. Instrumentation class cable splices:

a. Suitable for indoor, outdoors, weather exposed, direct buried, or submersed applications.

b. Utilizing an epoxy, polyurethane, and re-enterable compounds.

c. For use with shielded or unshielded plastic- and rubber-jacketed, signal, control, and power cables rated up to 1 kV.

d. Two-part mold body with tongue and groove seams and built in spacer webbing.

e. Manufacturer: One of the following or equal:

1) 3M - Scotchcast 72-N.

C. Insulating tape:

1. General purpose insulating tape:

a. Minimum 7 mil vinyl tape.

b. Suitable for application in an ambient of -18 degrees Celsius (0 degrees Fahrenheit).

c. Operating range up to 105 degrees Celsius (220 degrees Fahrenheit).

d. Flame retardant, hot- and cold- weather resistant, UV resistant.

e. For use as a primary insulation for wire cable splices up to 600 VAC.

f. Meeting and complying with:

1) ASTM D-3005 Type I.

2) UL 510.

3) CSA C22.2.

g. Manufacturer: One of the following or equal:

1) 3M - Scotch Number Super 33+.

h. General-purpose color-coding tape:

1) Minimum 7 mil vinyl tape.

2) Suitable for application on PVC and polyethylene jacketed cables.

3) For use indoors and outdoors in weather protected enclosures.

4) Available with the following colors:

a) Red.

b) Yellow.

c) Blue.

d) Brown.

e) Gray.

f) White.

g) Green.

h) Orange.

i) Violet.

i. For use as phase identification, marking, insulating, and harnessing.

2.3 MEETING AND COMPLYING WITH

2.4 UL 510.

1. CSA C22.2.

2. Manufacturer: One of the following or equal:

a. 3M - Scotch Number 35.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Load connections:

1. Connect loads to the circuits as indicated. Color-code all branch circuits as specified in Section 16123 600 Volt or Less Wires and Cables.

B. Zero to 600-volt systems:

1. Make all connections with the proper tool and die as specified by the device manufacturer.

2. Use only tooling and dies manufactured by the device manufacturer.

3. Insulate all connections and splices with Scotch 33+ tape and Scotchfill, or pre-molded plastic covers, or heat shrink tubing and caps.

4. Number all power and control wires before termination.

C. Motor connections (600 volts and below):

1. Terminate wires with compression type ring lugs at motors.

2. Connection at both the motor leads and the machine wires shall have ring type compression lugs.

3. Cover bolted connectors with a heat shrinkable, cross-linked polyolefin material formed as a single opening boot:

    a. In damp and wet locations, use a complete kit containing mastic that shall seal out moisture and contamination.

    b. Shrink cap with low heat as recommended by manufacturer.

4. Wire markers shall be readable after boot installation.

5. Manufacturer: One of the following or equal:

    a. Raychem MCK.

END OF SECTION

SECTION 16122

MOTORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: 3-phase induction motors provided together with the pump by the Supplier of the Axially-Split Centrifugal Pump specified in section 11312H.

B. Related Sections:

1. Section 11312H Axially-Split Centrifugal Pumps.
2. Section 16950 Field Electrical Acceptance Tests.
3. Section 16951 Electrical Functional Testing.

1.2 REFERENCES

A. American Bearing Manufacturers Association (ABMA):

1. ABMA 9 - Load Ratings and Fatigue Life for Ball Bearings.
2. ABMA 11 - Load Ratings and Fatigue Life for Roller Bearings.

B. Institute of Electrical and Electronic Engineers (IEEE):

1. IEEE 112 - Test Procedure for Polyphase Induction Motors and Generators.
2. IEEE 841 - Recommended Practice For Chemical Industry Severe Duty Squirrel Cage Induction Motors.
3. IEEE 43 - Recommended Practice For Testing Insulation Resistance of Rotating Machinery.

C. National Electrical Manufacturers' Association (NEMA):

1. MG-1 - Motors and Generators.
2. NEMA MG-2 - Safety Standards for Construction and Guide for Selection, Installation and Use of Electric Motors and Generators.

1.3 DEFINITIONS

A. Solid-State Motor Controller: Includes solid-state reduced voltage starters.

B. NEMA Premium Efficiency: The required full load premium efficiency as define by the Energy Independence and Security Act (EISA) of 2007.

1.4 SUBMITTALS

A. Product Data:

1. Descriptive bulletins.
2. Outline drawings with dimensions.
3. Cut-away and exploded view drawings.
4. Parts list with material designations.
5. Nameplate data.
6. Motor weight, frame size and conduit box location.
7. Description of insulation system.

B. Design and Performance Data:

1. Bearing design and bearing life calculations.
2. Performance Data Required, Nameplate Data, and Following Information:
    a. Service factor.
    b. Efficiency at 1/2 and 3/4 load.
    c. Power factor at 1/2 and 3/4 load.
3. Special features including condensation heaters and winding temperature detectors.
4. Motor grounding devices for VFD driven motors.
    a. Shaft grounding rings.
5. Performance data for motors with synchronous speed of 1,800 revolutions per minute and below.
6. Factory test reports with test reference standard identified.

C. Certification:

1. When motors are driven by variable speed drive systems, submit certification that selected motor:
    a. Is capable of satisfactory performance under the intended load.
    b. In accordance with the requirements of the latest edition of NEMA MG 1, Part 31.

1.5 PROJECT/SITE CONDITIONS

A. Provide motors designed to produce their nameplate horsepower, service factor, Speed (RPM) and suitable enclosure for the project altitude, temperature, humidity and process environment.

1.6 WARRANTY

A. Provide motors with warranty in accordance with requirements specified in general conditions, but not less than one year from the date of substantial completion.

B. In addition to the required motor equipment warranty, the premium motor efficiency shall be warranty by the Manufacturer for a period of 36 months effective from the date of beneficial use and final acceptance for each pump- motor installation respective of each well site.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Motors: One of the following:

1. General Electric.
2. U. S. Motors.

2.2 ELECTRICAL MOTORS

A. General:

1. Manufactured with cast iron frames in accordance with NEMA MG 1, and in accordance with specified requirements.
2. Alternating Current Motors: Squirrel cage induction type suitable for 60 hertz power.
3. Where not otherwise specified or indicated on the Drawings:
    a. Motors shall be: 3-phase, rated for 460 volt.
4. Temperature Rating and Altitude Requirements: Where not otherwise specified or indicated on the Drawings, provide motors that are rated suitable for continuous operation in 40 degrees Celsius ambient temperature at project site altitude.
    a. Temperature Rise under Full Load: Not to exceed that for Class B insulation (80 degrees Celsius).
5. Motor Data: Specific motor data including horsepower and speed are indicated on the Drawings and specified under section 11312H for pump equipment for which motor is required.
6. Torque and Power of Motors:
    a. Provide motors that develop sufficient torque for required service throughout acceleration range at voltage 10 percent less than motor nameplate rating.
    b. Provide motors that develop sufficient torque when started using reduced voltage starters.
7. Motor Leads and Insulating Material: Insulated leads with non-wicking, non-hydroscopic material. Class F insulation.

8. Grounding Lugs: Provide inside conduit boxes for motor frame grounding.

9. Hardware: Type 316 stainless steel.

B. Motors Efficiency:

1. Provide motors with the highest available premium efficiency, in accordance with NEMA standards and it shall be equal or higher than the required efficiency value specified in section 11312H – for motors of Axially-Split Centrifugal Pumps.

C. Condensation Heaters:

1. Type: Cartridge or flexible wrap-around type installed within motor enclosure adjacent to core iron.

2. Rating, Phase and Wattage: Rated for 120-volt, single phase with wattage as required for the pertinent motor size and application.

3. Bring power leads for heaters into conduit box.

D. Winding Temperature Detectors:

1. Provide factory installed winding temperature detector with leads terminating in conduit box.

2. Provide detectors that protect motor against damage from overheating caused by single phasing, overload, high ambient temperature, abnormal voltage, locked rotor, frequent starts, or ventilation failure.

a. For Motors More than 200 hp: Provide RTD type, 2 per phase, 100-ohm platinum.

b. Internal Cooling Motors: Design motors with special provisions for internal cooling, as necessary for operation with reduced voltage solid state controllers.

3. Bring signal leads for RTDs into same conduit box as condensation heaters.

E. Bearing temperature detectors:

1) Where required by the driven equipment specification or as indicated on the Drawings.

2) RTD type and wiring matches the winding RTDs.

2.3 3-PHASE MOTORS

A. Suitable for 460 volt 3-phase power unless otherwise specified or indicated on the Drawings.

B. NEMA Design B except where driven load characteristics require other than normal starting torque.

1. Starting kilovolt ampere per horsepower (locked rotor) are not to exceed values specified in NEMA MG-1-10.37.

2. Motors for use with variable frequency drives:

   a. Shall be inverter duty rated.

   b. Compatible with the variable frequency drives specified.

   c. Meet the requirements of NEMA MG 1, Part 31.

   d. Winding insulation meets the requirements of NEMA MG 1, Part 31.4.4.2.

   e. Capable of running continuously at 1/10th of full speed, with no harmful effects or overheating.

   f. Shaft grounding ring:

      1) Designed specifically to protect bearings from capacitive EDM current and high frequency circulation current.

      2) Provide 360 degrees circumferential conductive microfiber ring.

      3) Provide a motor manufacturer-installed shaft grounding ring for each VFD-driven motor.

      4) Aluminum frame and internal components.

      5) Conductive microfiber brushes.

      6) Maintenance free design.

      7) Colloidal silver compound installed on shaft under the shaft grounding ring.

      8) High frequency ground strap.

         a) AEGIS® HF, as manufactured by Electro Static, or equal.

      9) Grounding ring:

         a) Installed inside motor housing on drive end (DE).

         b) Installed on exterior of motor housing on drive end with written permission from the Engineer.

      10) Refer to the following table for specific requirements based upon the driven motor:

Motor Size	<100 hp	100 hp to 500 hp	>500 hp
Voltage	<600 VAC	<600 VAC	<600 VAC
AEGIS® Ring	SGR	SGR	PRO
Bearing Insulation	No	NDE	NDE and DE
Colloidal Silver	Recommended	Required	Required
HF Grounding Straps	Required	Required	Required

Notes:
DE - drive end.
HF - AEGIS® High Frequency Grounding Strap.
NDE - non-drive end.
PRO - AEGIS® PRO Series Shaft Grounding Rings.
SGR - AEGIS® Shaft Grounding Ring Series.

11) AEGIS® bearing protection ring, as manufactured by Electro Static Technology, or equal.

g. Insulated bearings:

1) Provide the motor manufacturer's standard insulated sleeve or ceramic bearings.

2) Motors 100 hp to 500 hp: Provide insulated bearing on non-drive end (NDE) of the motor the end opposite the shaft grounding ring as recommended by the motor manufacturer.

C. Motor Bearings: Antifriction and filled initially with pertinent oil or grease suitable for ambient temperatures to 40 degrees Celsius.

1. Provide special high trust top bearings on vertical motors, suitable for applications on vertical turbine water pumps and reliable for long term life rating not less than 100,000 hours.

2. The top bearing shall be oil lubricated. The bottom bearing shall be oil or grease lubricated.

3. Fit bearings with easily accessible grease supply, flush, drain, and relief fittings using extension tubes where necessary.

D. Insulation Systems:

1. Comply with NEMA 1-1.65.

2. Class F system with Class B temperature rise.

3. Resistant to deterioration by moisture, acids, alkalies, and mechanical or thermal shock.

4. Winding Coils for motors 150 horsepower and smaller shall be of 100 percent copper material and the coils may be random wound.

E. Conduit Boxes: Cast iron or stamped steel, split from top to bottom and capable of being rotated to 4 positions.

1. Provide gaskets between following:

a. Frames and conduit boxes.

b. Conduit boxes and box covers.

2. Provide oversize conduit boxes for terminating power cable leads and separate boxes for instrumentation and control wire leads.

a. Provide two lugs per phase, in motor power conduit box, to accept two parallel cables per phase with size as indicated on the drawings.

F. Motor Enclosures:

1. Totally Enclosed Fan Cooled (TEFC): Cast iron conduit box; 1.15 service factor at 40 degrees Celsius ambient; tapped drain holes with Type 316 stainless steel plugs for frames 286T and smaller, and automatic breather and drain devices for frames 324T and larger; upgraded insulation by minimum of 3 dips and bakes and sealer coat of epoxy or silicone. The TEFC enclosure shall be provided for all motors in wet and humid indoor locations where the application may requires periodic water hose cleaning.

2. All motors installed indoors and in humid areas shall have TEFC enclosures.

2.4 MOTOR SIZES

A. Motor horsepower sizes specified in the process equipment specifications section 11312H - Axially-Split Centrifugal Pumps.

B. Provide motors, electrical circuits, and equipment of ample horsepower capacity to operate equipment without exceeding rated nameplate horsepower, full-load current at rated nameplate voltage, or overheating at maximum load capacity.

2.5 SOURCE QUALITY CONTROL

A. Factory Testing of 3-Phase Motors:
   1. Motors 250 hp and larger:
      a. Perform tests in accordance with IEEE 112 or IEEE 43.
      b. Tests shall include the following:
         1) Winding resistance (cold).
         2) Locked rotor test.
         3) Temperature rise test.
         4) Load test.
         5) Breakdown torque test.
         6) No-load test.
         7) High-potential test.
         8) Insulation resistance test.
         9) Vibration test in accordance with NEMA MG 1.
         10) Polarization index.
         11) Speed-torque curve.
         12) Shaft voltage.
         13) Bearing insulation resistance.
         14) Efficiency and power factor versus load test performed at rated speed and 50 percent, 75 percent, 90 percent, and 100 percent of rated load. Curves from the motor tests shall be submitted for information.
         15) Maximum allowable residual unbalance in each correction plane (journal) shall be calculated using the following equation:

             U = 4 W/N

             where:

             U = residual correction plane unbalance, in ounces-inches
             W = static correction plane journal loading, in pounds

N = maximum specified operating speed, in revolutions per minute

2. Furnish test reports and Manufacturer's Certificate of Source Testing.

B. Efficiency Testing: Factory test in accordance with IEEE 112, using method A or B of Section 5, as appropriate for motor rating.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install motors in accordance with motor manufacturer's instructions and the water pump manufacturer, including necessary provisions to avoid vibration on the pump and motor.

B. VFD driven motors:

1. Install shaft grounding ring on VFD-driven motors in accordance with the manufacturer's instructions.

2. Bond the motor frame to earth ground using a high frequency ground conductor.

C. If earth ground (either grounding electrode system or building steel) is within reach of the high frequency ground strap, the ground strap may be connected directly to the earth ground.

3.2 FIELD QUALITY CONTROL

A. Field electrical acceptance testing:

1. As specified in Section 16950 - Field Electrical Acceptance Tests.

B. Before start-up, perform insulation resistance test on each motor furnished or installed on this Project:

1. Windings energized to 1,000 volts DC for 1 minute.

2. Resistance measured at the end of the test, recorded, and submitted to the Engineer for review.

3. Inform the Engineer of any unusual or unacceptable test results.

4. This test is in addition to the acceptance tests in Section 16950 - Field Electrical Acceptance Tests.

END OF SECTION

SECTION 16123

600 VOLT OR LESS WIRES AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. 600 volt class wire and cable.
2. Instrumentation class wire and cable.
3. Communication and Security System wire and cable.
4. Requirements for identification of existing wiring terminations.

B. Related Sections:

1. Section 16075 - Electrical Identification.
2. Section 16134 - Boxes.
3. Section 16950 - Field Electrical Acceptance Testing.
4. Section 16130 - Conduits.

1.2 REFERENCES

A. Abbreviations:

1. AWG: American wire gauge.
2. BCCS: Bare copper-covered steel.
3. CPE: Chlorinated polyethylene.
4. FHDPE: Foam high-density polyethylene.
5. FPE: Foam polyethylene.
6. OD: Outside diameter.
7. PVC: Polyvinyl chloride.
8. XHHW: Cross-linked high heat water resistant insulated wire.

B. American Society for Testing and Materials (ASTM):

1. B 3 - Standard Specification for Soft or Annealed Copper Wire.
2. B 8 - Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.

C. Insulated Cable Engineers Association (ICEA).

D. National Electrical Code (NEC):

1. Article 250 - Grounding.
2. Article 310 - Conductors for General Wiring.
3. Article 725 - Class 1, Class 2, and Class 3 Remote - Control, Signaling, and Power-Limited Circuits.
4. Article 800 - Communication Circuits.

E. Underwriters' Laboratories, Inc., (UL):

1. UL 1277 Subject - Electrical Power and Control Tray Cables with Optional Optical-Fiber Members.

1.3 SUBMITTALS

A. Shop Drawings: Show splice locations. Submit cable pulling calculations for all cable feeder larger than 2/0 AWG and pulling lengths longer than 200 feet. Submit cable pulling calculations for all conductor runs longer than 400 feet.

B. Product Data: Include wires, cables, pulling compounds, and splicing materials.

C. Test reports:

1. Submit test reports for meg-ohm tests.

D. Calculations:

1. Submit cable pulling calculations to the Engineer for review and comment for cables that will be installed using mechanical pulling equipment. Show that the maximum cable tension and sidewall pressure will not exceed manufacturer recommended values:
    a. Provide a table showing the manufacturer's recommended maximum cable tension and sidewall pressure for each cable type and size included in the calculations.
    b. Submit the calculations to the Engineer a minimum of 2 weeks before conduit installation.
    c. Provide the wire and cable pulling plan identified under Shop Drawings with the cable pulling calculations Submittal.

1.4 QUALITY ASSURANCE

A. Conform to ASTM and ICEA standards.

B. Wires and cables shall be UL listed and labeled.

C. Furnish mechanical conductor connector and heat-shrink type insulation by same manufacturer.

PART 2 - PRODUCTS

2.1 GENERAL

A. Color-coding:

1. Color-coding shall be consistent throughout the facility.

B. The following color code shall be followed for 240/120-volt and 208/120-volt systems:

1. Phase A: Black.
2. Phase B: Red.
3. Phase C: Blue.
4. Single phase system: Black for 1 hot leg, red for the other.
5. Neutral: White.
6. Equipment ground: Green.

C. The following color code shall be followed for 480/277-volt systems:

1. Phase A: Brown.
2. Phase B: Orange.
3. Phase C: Yellow.
4. Neutral: Gray.
5. Equipment ground: Green.

D. The following color code shall be followed for 120 VAC control wiring:

1. Power: Red.
2. Neutral: White.

E. The following color code shall be followed for general purpose DC control circuits:

1. Grounded conductors: White with blue stripe.
2. Ungrounded conductors: Blue.

F. Switch legs shall be violet. 3-way switch runners shall be pink.

G. Wires in intrinsically safe circuits shall be light blue.

H. Wire colors shall be implemented in the following methods:

1. Wires manufactured of the desired color.
2. Continuously spiral wrap the first 6 inches of the wire from the termination point with colored tape:
    a. Colored tape shall be wrapped to overlap half of the width of the tape.

2.2 WIRE AND CABLE MATERIALS

A. Conductors: ASTM B 8, soft drawn copper, maximum 12 months old, minimum 97 percent conductivity. American Wire Gauge (AWG) sizes as indicated on the Drawings, Class B or C stranded.

B. Insulation Thickness: Minimum specified by NEC Article 310.

C. Conductor Sizes: As indicated on wiring schedules and Drawings.

2.3 600-VOLT CLASS CABLE

A. Power Wire and Cable:

1. Manufacturers: One of the following or equal:

a. Okonite Company.

b. General Cable.

c. Rockbestos Company.

d. Southwire Company.

B. Control Wire and Cable:

1. Manufacturers: One of the following or equal:

a. Okonite Company.

b. General Cable.

c. Rockbestos-Surprenant Cable Corp.

d. Southwire Company.

C. Insulation for Individual Wires or Multiple Conductor Cable for Power and Control Circuits:

1. Type XHHW-2 insulation for use in dry and wet locations and underground ductbanks.

D. Jackets for Multiple Conductor Cable for Power and Control Circuits: Type CPE.

E. Multi-Conductor Cable Insulated Grounding Conductors:

1. Color: Integral green.

2. Sizes: In accordance with NEC 250-122.

F. Solid-conductor wire, Number 12 AWG and smaller, may be used only for lighting and receptacle circuits.

2.4 INSTRUMENTATION CLASS CABLE

A. Single Pair or Triad Applications:

1. Manufacturers: One of the following or equal:

a. The Okonite Company, Okoseal-N Type P-OS.

b. Equivalent manufactured by Belden Wire and Cable.

B. Multiple Pair or Triad Applications:

1. Manufacturers: One of the following or equal:

a. The Okonite Company, Okoseal-N Type SP-OS.

b. Equivalent manufactured by Belden Wire and Cable.

C. Approved for cable tray installation in accordance with the National Electrical Code.

D. Number of Individually Shielded, Twisted Pairs and Triads: As indicated on the Drawings or as necessary for the application.

E. Voltage Rating: 600 volts.

F. Cable Type: TC.

G. Temperature Rating: 90 degrees Celsius dry location, 75 degrees Celsius wet location.

H. Conductors: Bare, soft annealed copper in accordance with ASTM B 3, Class B, 7-strand concentric in accordance with ASTM B 8.

I. Conductor Insulation: Flame-retardant polyvinyl chloride, 15 mils nominal thickness, with nylon jacket 4 mils nominal thickness, 90 degrees Celsius temperature rating in accordance with Underwriter's Laboratory Subject 1277.

J. Color Code: Provide conductor color code as specified in Section 16075.

K. Single Pair or Triad Shielding:

1. Group Shielding: Minimum 1.35 mil double-faced aluminum/synthetic polymer-backed tape overlapped to provide 100 percent coverage.

2. Drain Wire: 7-strand tinned copper drain wire, 2 sizes smaller than conductor.

L. Multiple Pair or Triad Shielding:

1. Group Shield: 1.35 mil aluminum-polyester tape overlapped to provide 100 percent coverage and a 7-strand tinned copper drain wire, 2 sizes smaller than conductor. Completely isolate group shields from each other.

2. Cable Shield: 2.35 mils double-faced aluminum and synthetic polymer backed tape overlapped to provide 100 percent coverage and a 7- strand tinned copper drain wire, same size as conductors.

M. Jacket: Black, flame-retardant in accordance with Underwriters' Laboratory Subject 1277, 90 degrees Celsius temperature rating, rip cord laid longitudinally under jacket to facilitate removal.

N. Conductor Size: Number 16 AWG minimum unless otherwise indicated on the Drawings.

O. Numerically identify one conductor within each pair and triad.

2.5 COMMUNICATION CABLE

A. Manufacturers: One of the following or equal:

1. Belden Wire and Cable.
2. American Telephone and Telegraph.
3. Belden, Inc. model 7953A, or 7958A multi-pair shielded CAT6 for ethernet or Modbus communication from PLC to VFDs, with 600V insulation.

B. Number of Twisted Pairs: As indicated on the Drawings.

C. Voltage Rating: 600 volts.

D. Insulation: Thermoplastic, color coded in accordance with telephone industry standards.

E. Jacket: High molecular weight polyethylene, surface printed with year of manufacture and cable description at maximum 24-inch intervals.

F. Shield: 8 mil aluminum or copper, overlapped to provide 100 percent coverage, covered totally on both sides with copolymer or equal coating able to provide an effective moisture barrier.

G. Inner Jacket: High molecular weight polyethylene, able to provide strength and surge barrier.

H. Conductors: ASTM B3, solid, soft, bare copper.

I. Conductor Size: Minimum Number 22 AWG , unless otherwise indicated on the Drawings.

J. Fabrication:

1. Twist insulated conductors into pairs with varying lengths of lay.
2. Apply non-hygroscopic core tape over cable core as a dielectric and heat barrier.

2.6 RELATED MATERIALS

A. Splicing Material:

1. In conformance with ANSI C119.1, IEEE 383, and ICEA 5-19-81.
2. Manufacturers: One of the following or equal:
    a. Elastimold.
    b. Thomas-Betts.
    c. Raychem, FCSM Series.

B. Wire Nuts:

1. Rated 600 volt with live-spring feature for tight fitting connections.
2. Manufacturers: One of the following or equal:
    a. 3M.
    b. Thomas and Betts.

C. Wire ties:

1. One of the following, or equal:
    a. Panduit, cable ties.
    b. T&B, "Ty-Rap" cable ties.

D. Wire markers:

1. As specified in Section 16075.

E. Junction Boxes and Terminal Cabinets: As specified in Section 16134.

F. Pulling Compound: As recommended by conductor manufacturer.

2.7 WIRE AND CABLE FABRICATION

A. Permanently mark American Wire Gauge (AWG) size, grade of insulation, voltage, and manufacturer's name on outer covering at maximum 24-inch intervals.

B. Identify and mark conductors in accordance with NEC Article 310.

C. Color code wire and cable as specified in Section 16075 Electrical Identification.

1. Integral color insulation for Number 2 AWG and smaller.
2. Wrap colored tape around cable larger than Number 2 AWG.

D. Fabricate cable ends with provisions for field testing.

2.8 SOURCE QUALITY CONTROL

A. Test full lengths in accordance with ASTM and ICEA Standards.

B. Assembly and testing of cable shall be in accordance with the applicable requirements of NEMA WC 70/ICEA S-95-658-1999.

C. Test type XHHW-2 in accordance with the requirements of UL 44.

PART 3 - EXECUTION

3.1 IDENTIFICATION OF EXISTING WIRING TERMINATION

A. Perform functional testing at each well house building of existing wiring connections, between existing motor control center (to be removed) and other remaining equipment such RTU equipment, security equipment, ventilation fan, miscellaneous receptacles, instruments and lighting systems.

B. Create and provide necessary wiring diagrams of existing electrical and control system at each well house building, with identification of all wiring connections and terminations on remaining existing equipment that will be connected to new equipment in new motor control center. The required wiring diagrams shall be produced on 11"x17" drawing size paper or full size 22"X34" size paper, using AutoCAD drafting software, version 12 or newer version. Also, the diagrams shall include clear numeric identification of existing terminal blocks, for the termination of new wiring associated with new equipment in new motor control center.

3.2 INSTALLATION

A. Install continuous circuit conductors from source to load without splices or terminations in intermediate pull boxes, except for Number 10 AWG and smaller conductors for lighting and receptacles.

B. Splices:

1. Where splices are necessary because of extremely long wire or cable lengths that exceed standard manufactured lengths, install and label junction boxes for power conductors or termination cabinets for control and instrument conductors.

2. Power and control conductors routed in common raceways may be spliced in common junction boxes.

3. Install NEMA 4X junction and terminal boxes in wet and outdoor locations. Clearly label junction and terminal boxes containing splices with the word "SPLICE."

4. Leave sufficient slack at junction boxes and termination boxes to make proper splices and connections. Do not pull splices into conduits.

5. Splices in below grade pull boxes or in any box subject to flooding shall be made watertight using:

   a. A heat shrink insulating system listed for submersible applications.

   b. Or an epoxy resin splicing kit.

C. Properly coat wires and cables with pulling compound before pulling into conduits and prevent mechanical damage to conductors during installation.

3.3 600-VOLT CLASS CABLE

A. Size power conductors in accordance with National Electrical Code when sizes are not indicated on the Drawings.

B. Install Number 12 AWG wiring and larger gauge where required per Code for power circuits unless otherwise specified or indicated on the Drawings, and Number 14 AWG for control wiring unless otherwise specified.

C. Install minimum 16 AWG for internal panel control wiring with type MTW or SIS insulation.

D. Do not exceed cable manufacturer's pulling tension and side-wall pressures.

E. Terminations and Splices (600 Volt or Less):

1. Terminations: Terminate control and instrument conductors in terminal boxes in accordance with Section 16134.

2. Splicing: Join conductors mechanically with splice connectors and install heat-shrink type insulation. Splice conductors in accordance with manufacturer's instructions. Make waterproof heat shrink type splices in wet and below grade locations.

3. Splice or weld grounding conductors of different sizes.

4. Conductor Number 10 AWG and smaller for lighting and receptacle circuits may be spliced in junction boxes with wire nuts.

F. All conductors for installation in underground conduits, in sizes No. 10 AWG and smaller shall be of the multi-conductor type with overall jacket.

3.4 INSTRUMENTATION CLASS CABLE

A. Install instrumentation class cables in separate raceway systems.

1. Install instrument cable in metallic conduit within non-dedicated pull boxes.

2. Install cable without splices between instruments or between field devices and instrument enclosures or panels.

B. Do not make intermediate terminations, except in designated terminal boxes indicated on the Drawings.

C. Ground cable shields at only one location, typically at panels, not at field instruments.

3.5 SIGNAL CABLE AND CONDUIT INSTALLATION

A. Separate and isolate electrical signal cables from sources of electrical noise and power cables by minimum 12 inches.

B. Install signal cables in dedicated raceways, including through underground vaults and pull boxes.

3.6 FIELD QUALITY CONTROL

A. Testing: Provided cable testing in accordance with requirements specified in Section 16950 Field Electrical Acceptance Testing.

3.7 WIRING SUPPLEMENTAL REQUIREMENTS

A. CONTRACTOR shall include necessary conductors and wiring termination to provide complete functioning of any and all motorized equipment, electrical outlets, fixtures, communication outlets, instruments, and devices within 10 linear feet of location shown on the Drawings.

B. CONTRACTOR shall include necessary conductors and related materials to provide any and all pull boxes within 20 linear feet of location shown on the Drawings.

C. Prior to installation of any raceway or related items identified in paragraphs A and B above, the OWNER shall have the right to make changes related to preferred location, at no additional cost.

D. CONTRACTOR shall provide necessary conductors for all equipment specified, identified in wiring/raceway schedules, equipment schedules, panelboards schedules, electrical single line diagrams, block diagrams, process and instrumentation diagrams (P&IDs), fixture schedules, and devices. Said necessary conductors may not be shown on the plan drawings, but they shall be sized by CONTRACTOR in accordance with requirements of the National Electrical Code, and included in this allowance if the conductor are necessary for the complete operation of the included device or equipment.

END OF SECTION

SECTION 16125

FIBER OPTIC CABLE AND APPURTENANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Fiber optic cable.
2. Fiber splices and terminations.
3. Accessories.

1.2 REFERENCES

A. Abbreviations:

1. N/Cm: Newtons per centimeter.
2. OTDR: Optical Time Domain Reflectometer (Tier 2 test).
3. OTLS: Optical Loss Test Set (Tier 1 test).

B. Standards:

1. Bellcore Standards:
   a. GR-409 - Generic Requirements for Indoor Fiber.
2. Electronic Industry Association (EIA):
   a. FOTP-25 - Impact testing of Fiber Optic Cables and Cable Assemblies.
   b. FOTP-33 - Fiber Optic Cable Tensile Loading and Bending Test.
   c. FOTP-41 - Compressive Loading Resistance of Fiber Optic Cables.
   d. FOTP-81 - Compound Flow (Drip) Test for Filled Fiber Optic Cable.
   e. FOTP-104 - Fiber Optic Cable Cyclic Flexing Test.
   f. FOTP-181 - Lightning Damage Susceptibility Test for Fiber Optic Cables with Metallic Components.
3. Insulated Cable Engineer's Association (ICEA):
   a. S-83-596 - Optic Fiber Premises Distribution Cables.
   b. S-87-640 - Optic Fiber Outside Plant Communications Cable.
   c. S-104-696 - Indoor-Outdoor Optic Fiber Cable.
4. TIA/EIA Standards:
   a. 598 - Optical Fiber Cable Color Coding.

b. 11801 - Information technology - Generic cabling for customer premises.

5. Underwriters Laboratories, Inc. (UL):

a. 1666 - Test for Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts.

b. 1685 - Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables.

1.3 TERMINOLOGY

A. As specified in Section 17500 – Instrumentation and Control Systems.

1.4 DELEGATED DESIGN (NOT USED)

1.5 SUBMITTALS

A. Furnish Submittals as specified in Section 01300 – Contractor Submittals.

B. Product data:

1. Complete manufacturer's brochures that identify materials and options.

2. Completed datasheets, including catalog number and source for determining catalog number.

3. Manufacturer's installation instructions.

4. Include the following:

a. Manufacturer's data on testing equipment used on this Project.

b. Manufacturer's specifications and datasheets for all fiber types.

c. Manufacturer's specifications and datasheets for all connectors, bulkheads, splicing kits, breakout devices, and appurtenances used in connecting and terminating fiber spans.

5. Catalog data on testing devices proposed for use plus certifications of accuracy, calibration, and traceability to standards of the NIST.

6. Manufacturer's test procedures and quality assurance procedures:

a. After review, the Engineer may require that additional tests be performed before installation.

C. Shop Drawings:

1. Interconnection cabling diagrams for the complete system including every fiber in each cable.

2. Drawings indicating locations of all pull boxes including pull box identifiers and lengths.

3. Submit optical power budget calculations for fiber segments. Include the following:

a. Minimum transmit power of active devices.

b. Minimum receive sensitivity.

c. Available power, in dBm.

d. Loss for each segment in dBm, including cable attenuation and connector losses. Use manufacturer's data for cable attenuation at the wavelength to be used. Assume 0.5 dB per connector.

e. Demonstrate that remaining power budget at each receiver is equal to or greater than 3.0 dBm.

D. Calculations:

1. Cable pulling calculations for conduit runs:

a. Indicate on the Submittal any additional pull boxes that are required, including pull box identifiers and a written description of the location.

E. Installation instructions:

1. Submit a cable pulling and splicing work plan that includes the following:

a. Pull tension calculations.

b. Detailed description of pull operation methods for conduit runs.

c. Tools and equipment to be used for cable installation and testing.

d. Physical location of equipment setup and type.

e. Exact locations of splice points.

f. Safety and manual assist cable-pulling operations.

g. Detailed schedule for pulling and testing cables.

h. Name and qualifications of the supervisory personnel directly responsible for installation of the conduit system.

i. Sample fiber optic cable test sheets.

j. Signed test sheet results.

F. Quality Control Submittals:

1. Manufacturer's representative qualifications.

2. Manufacturer's Certificate of Source Testing as specified in Section 01756 - Commissioning.

3. Manufacturer's Certificate of Installation as specified in Section 01756 - Commissioning.

G. Test reports:

1. Submit results of specified tests to the Engineer.

2. Submit 3 copies of test reports showing results of tests specified in this Section or in Section 16950 - Field Electrical Acceptance Tests:

   a. Test forms shall include the following information at a minimum:

      1) Test type.

      2) Test location.

      3) Test date.

      4) Wavelength.

      5) Index of refraction.

      6) Cable identification.

      7) Fiber type.

      8) Fiber number.

      9) Fiber color.

      10) Result of the value of the tested parameter.

3. Furnish hard copy and electronic copy for OTDR traces.

4. Submit certification that the fiber optic cable has passed each testing stage:

   a. Submit separate documentation for each testing stage result.

H. Operation and maintenance manuals:

1. As specified in Section 01730 - Operation and Maintenance Data and 01821 Instruction of Operation and Maintenance Personnel.

I. Record documents:

1. Furnish updated electrical drawings, network diagrams, and fiber cable block diagrams at the end of construction and submit as record drawings.

1.6 QUALITY ASSURANCE

A. Furnish cable and appurtenances manufactured within 1 year of installation.

B. Proof test optical fibers by the fiber manufacturer at a minimum load of 50 kpsi.

C. Provide 100 percent attenuation testing for optical fibers:

1. Include with each cable reel the attenuation of each fiber.

D. Provide information on at least 5 successful fiber optic cable installations of comparable size and complexity in the past 3 years with name, address, and telephone number of facility owner, name of project with completion date, and type of conduit system and length of cable pulled.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Package cable for shipment on wooden reels:

1. Seal both ends of cable to prevent ingress of moisture.
2. Place fiber cable assemblies on reels such that both cable ends are available for testing.
3. Weatherproof cable reel markings shall include the following:
    a. Manufacturer.
    b. Date of manufacture.
    c. Shipping date.
    d. Cable identification.
    e. Cable configuration/fiber count.
    f. Cable length.
    g. Gross weight.
    h. Cable test date.
    i. Handling instructions.
    j. Direction to unreel.

1.8 PROJECT OR SITE CONDITIONS

A. As specified in Section 01010 – Summary of Work.

1.9 ADMINISTRATIVE REQUIREMENTS

A. Sequencing:

1. Submit a cable pulling and splicing work plan a minimum of 45 days before the planned initiation of cable pulling. Cable pulling and splicing work plan must be approved a minimum of 15 days before pulling cable.
2. Testing sequence:
    a. Perform testing of each fiber in each cable as follows:
        1) At factory before shipment.
        2) At Project Site upon delivery.
        3) Submit copies of test results to the Engineer within 5 days after the delivery to the site.
        4) After installation, before breakout and terminations.
        5) After installation is complete.
    b. Submit test reports following each set of tests as specified in this Section.

B. Scheduling:

1. Schedule Engineer, 5 days before installation, to witness cable installations.
2. Notify the Engineer and Owner a minimum of 15 days before post-installation testing.

1.10 WARRANTY

A. As specified in Section 01740 - Warranties and Bonds.

PART 2 - PRODUCTS

2.1 GENERAL

A. Furnish a complete fiber optic network as indicated on the Drawings.

2.2 DESIGN AND PERFORMANCE CRITERIA

A. Install fiber optic system components in accordance with the recommendations of the manufacturer.

2.3 MANUFACTURERS

A. Acceptable manufacturers are indicated with each component type as listed in the remainder of this Specification.

2.4 MATERIALS (NOT USED)

2.5 MANUFACTURED UNITS

A. General fiber cable requirements:

1. Suitable for the installed environment.
2. Color-coded fibers according to TIA/EIA-598.
3. Color-coded buffer tubes according to TIA/EIA-598.
4. Furnish buffer tubes of a single layer nylon construction or of a material with similar mechanical performance.
5. Fillers may be included in the cable core to lend symmetry to the cable cross-section where needed.
6. Apply binders with sufficient tension to secure buffer tubes to the central member without crushing the buffer tubes:
    a. Provide binders that are:
        1) Non-hygroscopic.
        2) Non-wicking (or rendered so by the flooding compound).
        3) Dielectric with low shrinkage.
7. Provide a minimum of 1 ripcord under the cable sheath.

8. Provide high tensile strength Aramid yarns, Kevlar, and/or fiberglass helically stranded evenly around the cable core:
    a. No metallic elements whatsoever are allowed in non-armored cable.
9. Jacket or sheath shall be free of holes, splits, and blisters.
10. Mark jacket or sheath with:
    a. Manufacturer's name.
    b. "Optical Cable".
    c. Year of manufacture.
    d. Sequential meter marks.
    e. Repeat markings every 1-meter.
    f. Actual length of the cable to be within 1 percent of the length marking.
    g. Marking must be in a contrasting color to the cable jacket.
    h. Height of the marking:
        1) Approximately 2.5 millimeters.
11. Shipping, storage, and operating temperature range of the cable shall be -40 degrees Celsius to +70 degrees Celsius.
12. General performance characteristics:
    a. Rated tensile load of the cables:
        1) Indoor/outdoor:
            a) Short term: 1,330 N.
            b) Long term: 400 N.
    b. Non-armored fiber optic cables: Compressive load withstand of 220 N/cm applied uniformly over the length of the cable.
    c. Armored fiber optic cables: Compressive load withstand of 440 N/cm applied uniformly over the length of the cable.
    d. Average increase in attenuation for the fibers: Less than or equal to 0.10 dB at 1,550 nm for a cable subjected to this load:
        1) With no measurable increase in attenuation after load removal.
    e. Test in accordance with EIA FOTP-41 except that the load must be applied at the rate of 3 millimeters to 20 millimeters per minute and maintained for 10 minutes.
    f. Capable of withstanding 25 cycles of mechanical flexing at a rate of 30 within 1 cycles/minute.
    g. Average increase in attenuation for the fibers: Less than or equal to 0.10 dB at 1,550 nm at the completion of the test.

h. For armored cables, any visible cracks causing separation of the armor and propagating more than 5 millimeters constitutes failure.

i. Outer cable jacket cracking or splitting observed under 10X times magnification, constitutes failure.

B. Indoor cable:

1. Cable construction:

a. General:

1) Cable type: Indoor - Flame retardant, low smoke, zero halogen.

2) Fiber count: As indicated on the Drawings.

3) Fiber type: As indicated on the Drawings.

4) Buffer tube: Tight buffer.

5) Armoring: None.

6) Strength member: For cables with more than 12 strands, utilize a central nonmetallic strength member with a coefficient of thermal expansion similar to the fibers.

7) Approvals and Listings: NEC OFN approved for general purpose indoor applications.

8) Design and test criteria: In accordance with ICEA S-83-596.

b. Testing:

1) Fibers in the cable: Proof test of 100 kpsi.

2) Each optical fiber: Bellcore GR-409 strip force testing.

3) No gaps are allowed between the coating material and the buffer material, visible under a 50-power microscope.

c. Outer jacket material:

1) Linear low-density polyethylene.

2) Meet requirements of the NEC for use in indoor areas without being enclosed in conduit.

3) Flame retardant riser rated in accordance with UL 1666.

4) Printed with necessary UL marks and manufacturer identification.

5) With sequential printing of footage in 2-foot increments.

6) With a ripcord incorporated under the cable jacket.

C. Indoor/outdoor cable:

1. Cable construction:

a. General:

1) Cable type: Indoor/Outdoor - Flame retardant, low smoke, zero halogen, UV resistant.

2) Fiber count: As indicated on the Drawings.

3) Fiber type: As indicated on the Drawings.

4) Buffer tube: Tight buffer.

5) Armoring: Plastic coated corrugated aluminum armor.

6) Waterproofing: Water blocking layer.

7) Strength member:

a) Tight buffer: For cables with more than 12 fiber strands, utilize a central, nonmetallic strength member with a coefficient of thermal expansion similar to the fibers.

8) Approvals and listings: UL 1666 and UL 1685.

9) Design and test criteria: In accordance with ICEA S-104-696.

b. Testing:

1) Fibers in the cable:

a) Proof test of 100 kpsi.

b) Each optical fiber: Bellcore GR-409 strip force testing.

c) No gaps are allowed between the coating material and the buffer material visible under a 50-power microscope.

c. Outer jacket material:

1) Linear low-density polyethylene.

2) Meet requirements of the NEC for use in indoor/outdoor areas (excluding plenums) without being enclosed in conduit.

3) Flame retardant OFNR riser rated conforming to UL 1666.

4) Printed with necessary UL marks and manufacturer identification.

5) Sequential printing of footage in 2-foot increments.

6) With a ripcord incorporated under the cable jacket.

D. Multimode fibers:

1. Fibers in the cable must be usable fibers and meet required specifications.

2. Each optical fiber shall consist of a doped silica core surrounded by a concentric silica cladding.

3. Multimode fiber characteristics:
    a. Category: OM3 compliant with ISO/IEC 11801.
    b. Jacket color: Aqua.

E. Indoor (tight buffer):
1. Corning Cable Systems, Freedm® One.
2. Optical Cable Corporation, DX-Series.

F. Indoor/outdoor:
1. Tight buffer:
    a. Corning Cable Systems, Freedm® One.
    b. Optical Cable Corporation, DX-Series.
    c. CommScope, LazrSPEED/TerraSPEED.
    d. Provide multiple fiber optic jumper cables as needed from new VFD to existing fiber optic converter in existing PLC cabinet.

2.6 EQUIPMENT (NOT USED)

2.7 COMPONENTS (NOT USED)

2.8 ACCESSORIES

A. Patch cords:
1. General:
    a. Connector types to match supplied equipment and patch panel terminations.
    b. Maximum length of patch cords: 25 feet.
    c. Provide 2 spare patch cords (or 1 duplex patch cord) of each type used at each PLC or network cabinet.
    d. Factory assembled and optically tested.
    e. Provide mode-conditioning cords for multimode fibers operating at 1,310 nm.
2. Manufacturers: One of the following or equal:
    a. CommScope.
    b. Corning Cable Systems.

B. Fiber connectors:
1. As specified in Section 17560 – Instrumentation General Requirements.

C. Fiber optic identification/warning tags:
1. Black letters on orange or yellow background.

2. UV resistant polyethylene or other suitable material:

a. Manufacturers: The following or equal:

1) Almetek.

2.9 SOURCE QUALITY CONTROL

A. Source Testing:

1. Before shipment and while on the shipping reel, test 100 percent of fibers for attenuation:

a. Copies of the results shall be:

1) Maintained on file.

2) Attached to the cable reel in a waterproof pouch.

3) Submitted before the delivery of the cable to the job Site to the Engineer for approval.

2. Conduct the flex test in accordance with EIA FOTP-104 test condition I and III with a maximum sheave diameter of 20 times the cable OD.

3. Verify that the cable withstands 25 impact cycles with:

a. Average increase in attenuation for fibers less than 0.20 dB at 1,550 nm.

b. No evidence of cracking or splitting.

c. Conduct test in accordance with EIA FOTP-25.

4. Certify that the cable withstands a tensile load of 2,700 N (600 pounds):

a. Without exhibiting an average increase in attenuation of greater than 0.10 dB.

b. Test in accordance with EIA FOTP-33 using a maximum mandrel and sheave diameter of 560 millimeters.

c. Apply the load for 1 hour in test condition II.

5. Certify that the cable withstands a simulated lightning strike:

a. Peak value of the current pulse greater than 105 kA.

b. Use a test current with a damped oscillatory maximum time-to-peak value of 15 μs (which corresponds to a minimum frequency of 16.7 kHz) and a maximum frequency of 30 kHz.

c. Time to half-value of the waveform envelope 40 to 70 μs.

d. Conduct the test in accordance with the EIA FOTP-181.

e. In addition to the analysis criterion set forth in EIA FOTP-181, the integrity of the buffer tubes (or analogous loose tube, i.e., core tube) and strength members must be intact after removal of the cable specimens from the test box.

6. Furnish test reports and Manufacturer's Certificate of Source Testing.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify the condition of the conduit system before installation of the fiber optic cable or inner duct.

B. Pass a test mandrel through fiber optic conduits prior to pulling fiber or installing inner duct.

1. Run the mandrel in both directions.

C. Examine materials and equipment before installation and verify they are free from physical damage and defects.

3.2 PREPARATION

A. Equipment support and anchoring to structures:

1. Prepare anchor setting template(s) and use to position anchors during construction of supporting structures.

2. Install anchors of type and material indicated on approved anchoring designs.

3. Install anchors with embedment indicated on approved anchoring designs.

B. Before fiber splicing terminating or testing activities, verify sufficient workspace is available to perform the activity without interferences from other trades.

C. Pre-installation test:

1. Upon arrival at the site:

a. Inspect the cable and reel for damage.

b. Test fibers with an optical time domain reflectometer (OTDR) for fiber integrity.

c. Verify that the fiber lengths are consistent with the cable manufacture.

d. Verify that traces yield no point discontinuities.

2. Complete test sequence and obtain approval from the Engineer of submitted test results before cable installation.

3.3 INSTALLATION

A. Install fiber optic patch cords in open network trays or in dedicated conduits no longer than 25 feet in length.

B. Install fiber optic cable in continuous lengths without intermediate splices, except where approved by the Engineer.

C. Cable installation:

1. Properly attach the fiber optic cable's strength elements to a 600-pound breakaway swivel containing tension or shear pins using Kellums pulling grips that are a minimum of 18 inches long.
2. Certify that cable tensile limits do not exceed cable pull tension and bend limits using tension monitoring devices.
3. Leave an extra loop of fiber optic cable in each pull box.
4. Conform with the cable manufacturer's specifications, practices, and the following requirements:
    a. When power equipment is used to install fiber optic cables, use low speeds and do not exceed a rate of 30 meters per minute.
    b. Do not exceed the tensile and bending limitation for fiber optic cables under any circumstances.
    c. Use large diameter wheels, pulling sheaves, and cable guides to maintain the specified bending radius.
    d. Use commercial dynamometers or load cells to monitor pulling tension.
    e. A nonfreezing type of swivel inserted between the pulling line and cable pulling grip to prevent twisting under strain.
    f. Cable to be installed using a breakaway swivel.
5. Apply to conduits a lubricant at each conduit ingress and egress location during the pull operation:
    a. Pour or pump lubricant into the end of the conduit at the feed location at a nominal application rate of 3 gallons per 1,000 feet of cable.
    b. If the conduit is open at intermediate locations, then apply the appropriate proportion of lubricant at each opening.
    c. Continuously lubricate the cable as it is being pulled by pouring or pumping the lubricant into the conduit at the feed location and at each intermediate location.
    d. Station workers at each intermediate location as required.
    e. Remove excess lubricant that has collected.
    f. Remove and clean the surrounding area after cable installation.
6. Install using a hydraulic capstan or winch equipped with a recording running line dynamometer graph which measures and records pulling tensions:
    a. Use pulling equipment with slip-load capability to allow the winch to maintain a constant pulling force without taking up the winch line.
    b. Use pulling equipment equipped with a hydraulic bypass set so that a maximum tension of 600 pounds is not exceeded.
    c. Use only equipment designed to prevent a preset pulling tension from being exceeded.

d. Fiber optic cable manufacturer to provide the pulling tension setpoint.

e. If during the pulling operation excessive tension is detected, cease operations and notify the Engineer.

7. Position the cable reel at the feed point in alignment with the raceway and in such a position that the cable can be passed from the top of the reel in a long, smooth bend into the raceway system:

   a. Use of a cable feeder is required unless the cable is hand-pulled.

8. Supply bull wheels, blocks, split wheels, cable feeders, and necessary equipment required to provide a clean and safe operation:

   a. Cable shall not be allowed to travel over any wheel or block that has a radius less than the minimum radius allowed by the cable manufacturer.

9. Minimize the use of snatch blocks and rollers to guide the cable into the conduit at the feed point:

   a. Slack feed by hand the cable into the feed point and raceway without the use of rollers.

10. Tend the cable reel at all times and turn by hand to provide the required cable slack:

    a. Under no circumstances shall the cable tension be allowed to turn the cable reel.

11. Use a rim roller, with a wheel radius greater than the minimum cable bending radius placed at the manhole or vault opening to prevent the cable from dragging on the manhole rim or steps.

12. Perform a continuous thorough visual inspection for flaws, breaks, and abrasions in the cable sheath as the cable leaves the reel and maintain a slow pulling speed to permit this inspection.

13. Damage to the sheath or finish of the cable is cause for rejecting the cable:

    a. Replace any cable damaged in any way during installation.

14. If the cable becomes damaged during installation, stop operations and notify the Engineer immediately:

    a. Engineer to determine whether to replace the entire reel of cable or to install a termination panel to eliminate the damaged section.

15. Document pulls by a graph which is annotated with the following information:

    a. Reel number.

    b. Pull point ID.

    c. Date and time.

    d. Explanations for abnormalities in readings or interruptions.

    e. Sign-off by the Contractor and Engineer.

16. Under no conditions shall the fiber optic cable be left exposed or unattended.

D. After the cables are installed and spliced:

1. Rack the cables:

a. Loosely secure in racked position with wire ties.

b. Attach imprinted plastic-coated cloth identification/warning tags to each cable in at least 2 locations in each handhole/manhole.

E. Ground armored fiber optic cables list any other conductive cable containing metallic members in accordance with NEC.

F. Splices:

1. Provide field splices in a splice tray located in a waterproof splice enclosure:

a. Manufacturers: The following or equal:

1) Tyco/Raychem, FOSC style splice enclosure.

2. Loop the individual fibers a minimum of 1 full turn within the splice tray to avoid macro/micro bending.

3. After completion of cable terminations, neatly dress cables.

4. Protect splices with a thermal shrink sleeve.

5. Provide fusion type fiber optic cable splicing meeting the following requirements:

a. Joins multimode or single mode fibers.

b. Establishes a permanent fusion splice.

c. Waterproof.

d. Re-enterable, rearrangeable, and reusable.

e. Splice loss less than 0.10 dB.

f. Protected by a splice enclosure.

6. Requirement for outdoor fiber splice enclosures:

a. Seal.

b. Bond.

c. Anchor.

d. Protect fiber optic cable splices.

e. Stand-alone unit that does not require an outer enclosure.

f. Provide for a maximum of 6 cable entries in a butt-end configuration.

g. Used in aerial, underground, and direct buried applications.

7. Requirement for indoor fiber splice enclosures:

a. Anchor.

b. Protect fiber optic cable splices.

c. Stand-alone unit that does not require an outer enclosure.

d. Suitable for the minimum number of splices at that location plus additional capacity for reconfigurations.

8. Re-splice any splice that has a loss greater than 0.10 dB.

9. Leave a minimum of 20 feet of fiber optic cable at each end of splice.

G. Terminations:

1. Terminate fiber inside a patch panel:

a. Direct landing to a switch, router hub, or PLC will not be allowed.

2. Terminate outdoor cables using a breakout kit that seals the cable and provides physical protection for the fiber strands.

3. Terminate indoor cables using factory assembled terminations pig tail spliced to the cable ends.

4. Labeling:

a. Permanently label cable terminations. Use labels produced by a wire printer using pressure sensitive polyester labels.

b. Label patch panels as specified in Section 16075 - Identification for Electrical Systems.

H. Installation Verification:

1. Furnish Manufacturer's Certificate of Installation Verification.

3.4 FIELD QUALITY CONTROL

A. Field electrical acceptance testing:

1. As specified in Section 16950 - Field Electrical Acceptance Tests.

B. Utilize personnel certified by the manufacturer with specific knowledge of the cable manufacturer's recommended installation procedures.

C. General:

1. Test results shall meet or exceed manufacturer specifications:

a. Test each fiber of each cable for breaks, abnormalities, and overall attenuation characteristics.

2. Pre-installation tests and post-installation tests to be witnessed and signed off by the Engineer and Owner.

3. Perform OLTS test with equipment capable and calibrated to show anomalies of 0.1 dB as a minimum:

a. Test multimode fibers at 850 nm and 1,300 nm.

b. Test single mode fibers at 1,310 nm and 1,550 nm.

4. Perform OTDR tests on fiber cables less than 100 meters with the aid of a launch cable:

   a. Adjust OTDR pulse width settings to a maximum setting of 1/1,000th of the cable length or 10 nanoseconds.

3.5 OWNER TRAINING (NOT USED)

3.6 ADJUSTING (NOT USED)

3.7 CLEANING

A. Clean fiber optic connectors after termination and before testing. After cleaning, cover unterminated connectors with a protective boot.

B. At the completion of construction, touch up the finish on fiber patch panels and enclosures.

3.8 PROTECTION

A. Protect the fiber system from physical damage and the encroachment of dust, before, during, and after installation.

END OF SECTION

SECTION 16130

CONDUITS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Galvanized rigid steel conduit.
2. Flexible conduit, polyvinyl chloride-coated rigid steel conduit, and rigid nonmetallic polyvinyl chloride conduit.

B. Related Sections:

1. Section 16050 - Common Work Results for Electrical.
2. Section 16134 - Boxes.

1.2 REFERENCES

A. American National Standards Institute (ANSI):

1. C80.1 - Rigid Steel Conduit, Zinc Coated.

B. Electrical Manufacturers Association (NEMA):

1. RN-1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.

C. National Electrical Code (NEC):

1. Table 300-5 - Minimum Cover Requirements (0 to 600 volts, Nominal).
2. Article 500 - Hazardous (Classified) Locations.
3. Table 10-4(b) - Minimum Cover Requirements (over 600 volts, Nominal).

D. Underwriters' Laboratories, Inc (UL):

1. UL 6 - Rigid Metal Conduit.

1.3 SUBMITTALS

A. Product data.

B. Shop Drawings:

1. Installation drawing shall include individual conduit numbers, routing, conduit sizes, circuit numbers contained in each conduit, and number and size of wires in each conduit.

PART 2 - PRODUCTS

2.1 CONDUIT

A. Galvanized Rigid Steel Conduit:

1. Domestic raw steel, made smooth, clean, and free of burrs and rough spots to enhance wire pulling; interior and exterior surfaces coated with solid, unbroken layer of zinc; threads hot dip galvanized after cutting; entire surface finish coated with secondary bichromate treatment applied over galvanizing able to extend surface protection and prevent oxidation; threads protected by color coded end caps to provide quick trade size identification.

2. Manufacturers: One of the following or equal:

a. LTV Steel Tubular Products Company, Galvite.

b. Triangle PWC, Inc.

c. Allied Tube and Conduit Corporation.

B. Liquid-tight Flexible Conduit: Grounding type, weatherproof, watertight, maximum 60-inch lengths.

1. Manufacturers: One of the following or equal:

a. American Brass Company.

b. General Electric.

C. Polyvinyl Chloride-coated Rigid Steel Conduit:

1. Galvanized rigid steel conduit with coating conforming to ANSI C80.1 and UL 6; bendable without damage to coatings.

2. Manufacturers: One of the following or equal:

a. Perma Kote by Robroy Industries.

b. OCAL, Inc.

2.2 RELATED MATERIALS

A. Couplings, Connectors, and Fittings:

1. Threaded.

2. Manufactured with same materials and process as corresponding conduit.

B. Condulet Fittings:

1. With wedge nut covers, weathertight when located outdoors or in wet or corrosive locations indicated on the Drawings, matching type for corresponding conduit systems.

2. Manufacturers: One of the following or equal:

a. Crouse-Hinds.

b. Appleton.

C. Polyvinyl Chloride-coated Rigid Steel and Aluminum Conduit Couplings: One provided loose with each length of conduit.

D. Fasteners for Polyvinyl Chloride-Coated Rigid Steel Conduit: Polyvinyl chloride-coated steel fasteners with Type 316 stainless steel bolts, nuts, and hardware.

E. Fasteners for Galvanized Rigid Steel Conduit: Galvanized steel fasteners with Type 316 stainless steel bolts, nuts, and hardware.

F. Conduit Mounting Strut:

1. Type 316 stainless steel for mounting of polyvinyl chloride-coated rigid steel conduit.

2. Hot-dip galvanized for other conduit types.

G. Conduit Thruwall Seals:

1. Hot-dip galvanize.

2. Polyvinyl chloride oversize sleeve.

3. Manufacturers: One of the following or equal:

a. O-Z/Gedney, Type "WSK."

2.3 POLYVINYL CHLORIDE-COATED RIGID STEEL CONDUIT FABRICATION

A. Coat rigid steel conduit, conduit fittings, and hangers with polyvinyl chloride.

B. Conduit:

1. Ensure that surfaces, including galvanizing, remain intact and undisturbed on both inside and outside of conduit throughout preparation and application processing.

2. Bond polyvinyl chloride coating to outer surfaces of conduit except threads.

3. Provide bond between polyvinyl chloride coating and conduit surface that is greater than tensile strength of plastic.

4. Provide minimum 40 mil thick coating on conduit.

5. Coat interior of conduit and condulet fittings with nominal 2 mil thick corrosion-resistant urethane finish.

6. Coat threads with clear urethane finish.

C. Couplings:

1. Bond polyvinyl chloride coating to outer surfaces of couplings.

2. Extend polyvinyl chloride sleeve equal to outside diameter of uncoated conduit beyond both ends of coupling approximately 1 pipe diameter or 1-1/2 inches, whichever is smaller.

3. Provide minimum 40 mil thick coatings on couplings and sleeves.

4. Bond polyvinyl chloride coating to outer surface of conduit bodies and fittings.

5. Extend polyvinyl chloride sleeves from hubs.

6. Provide same coating thickness on conduit bodies, fittings, and sleeve walls as on couplings in length and thickness.

7. Coat covers on conduit bodies on both sides so covers are completely interchangeable.

8. Coat interior of conduit couplings, sleeves, and conduit bodies with corrosion-resistant urethane finish.

D. Ensure that inside of conduit bodies remain undisturbed during processing and retain manufacturer's finish.

E. Polyvinyl Chloride Coated, Mounting Hardware, and Associated Fittings:

1. All mounting hardware and associated fittings shall be polyvinyl chloride coated in accordance with the intent of reference NEMA RN-1.

2. The polyvinyl chloride exterior coating shall have a normal thickness of 40 mils (.040 inch) except where part configuration or application otherwise dictate.

3. All fasteners for polyvinyl chloride coated fittings and mounting hardware shall be of the Type 316 stainless steel.

F. Pullboxes: As specified in Section 16134 Boxes.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install conduit runs in accordance with schematic representation as indicated on the Drawings and as specified. Modify conduit runs to suit field conditions, as accepted by the ENGINEER.

B. Provide necessary conduits for wiring of existing lighting fixtures and receptacle outlets to be interconnected with new panelboard included in new motor control center, whether or not conduits are indicated on the Drawings.

C. Install straight and true conduit runs with uniform and symmetrical elbows, offsets, and bends. Make changes in direction with long radius bends or with condulet fittings.

D. Install conduit runs so that runs do not interfere with proper and safe operation of equipment and not block or interfere with ingress or egress, including equipment removal hatches.

E. Install exposed conduit runs within the well house buildings.

F. Securely fasten exposed conduits with clamps or straps. Run exposed conduit on walls and ceilings only, parallel to planes of walls or ceilings. Do not run conduit diagonally. Securely fasten exposed polyvinyl chloride- coated rigid steel conduits with Type 316 stainless steel clamps or straps.

G. Use flexible conduit for short lengths required to facilitate connections between rigid conduit and motors, vibrating equipment, or control equipment. Maximum length shall be per NEC, Article 350.

H. Support conduit runs on water-bearing walls 1 inch away from wall on an accepted channel. Use hot-dip galvanized steel or stainless steel channels, consistent with type of conduit being installed unless otherwise indicated on the Drawings. Do not run conduit in water-bearing walls unless otherwise indicated on the Drawings.

I. Thoroughly ream conduit after threads have been cut to remove burrs. Seal joints with accepted conductive sealant compound and make watertight. Set up joints tight. Use bushings or conduit fittings at conduit terminations.

J. Install runs between pull boxes or junction boxes with total bends equaling not more than 270 degrees. Install NEC required pull boxes at locations acceptable to the ENGINEER. Plug conduits brought into pull boxes, manholes, handholes, and other openings until used to prevent entrance of moisture. Cap spare conduits and provide plastic pulling tape below threaded cap. Provide bonding bushing and bond wire.

K. Provide appropriate hangers, supports, and fasteners to suit applications.

L. After complete installation of 2 inch and larger conduit runs, snake conduits with conduit cleaner equipped with a cylindrical mandrel of a diameter not less than 85 percent of nominal diameter of conduit. Remove and replace conduits through which mandrel will not pass.

M. Clean and ensure that new and existing conduit runs are not crushed or creased. Verify internal dimensions of existing conduit prior to installation of conductors. Verify that no foreign objects or obstructions are present in conduit prior to installing conductors.

N. Install conduit system to provide firm mechanical assemblies with electrical conductivity throughout.

O. Install expansion fittings across expansion joints and at other locations where necessary to compensate for thermal or mechanical expansion and contraction as indicated on the Drawings.

P. Install conduits complete between outlets, boxes, and circuit source before conductors are installed.

Q. Provide 1/4-inch polypropylene pull line in each empty electrical conduit.

R. Open-ended conduits containing SO (or similar) cable that continues outside the conduit to the utilization equipment shall be sealed with conduit sealing bushings.

S. Conduits terminating at a wireway shall be supported independently from the wireway. Provide a conduit support within 1 foot of the wireway. The weight of the conduit shall not bear on the wireway.

T. Rigid galvanized steel conduits which have been field cut and threaded shall be painted with cold galvanizing compounds. Provide polyvinyl chloride coating to match original on field cut threads for polyvinyl chloride coated rigid galvanized steel conduit.

U. PVC-coated galvanized rigid steel elbows shall be used for conduit stub-ups from underground conduit to exterior main circuit breaker for each well house.

V. Underground conduits shall be temporarily sealed to prevent intrusion of foreign material before conductors are installed.

3.2 POLYVINYL CHLORIDE-COATED RIGID STEEL

A. Attach cover to conduit body with Type 316 stainless steel screws.

B. Where patching is required, apply 40 mil thick polyvinyl chloride coating in accordance with manufacturer's instructions.

3.3 RIGID NONMETALLIC POLYVINYL CHLORIDE

A. Install at underground depths required by code. Provide clean backfill material for all underground conduit trenches.

B. Underground conduit trench backfill shall be compacted and final surface shall be patched to match new condition similar to existing surface finish.

3.4 SCHEDULES

A. Provided Conduit Sizes: In accordance with NEC, unless otherwise indicated on the Drawings or specified as follows:

1. Concealed Conduit in Partitions or Accessible Ceilings: Minimum 3/4 inch.
2. Exposed Conduit: Minimum 3/4 inch.
3. Rigid Steel Encased in Concrete: Minimum 1 inch.
4. Rigid Non-Metallic Polyvinyl Chloride Encased in Concrete where subject to mechanical damage: Conduit Minimum size 2 inches.
5. Direct Buried Conduit Size: Minimum 2 inches.

B. Conduit Uses and Applications:

1. Rigid Steel Conduit: Typical, Exposed Conduit Runs in dry and non- corrosive locations, unless otherwise noted.

2. Liquid Tight Flexible Conduit: Final motor and instrument connection in non-hazardous areas.

3. Flexible Metal Conduit: Allowed only within accessible ceilings at Operations/Control Building, for the connection of lighting fixtures. No other applications allowed.

4. Polyvinyl Chloride-Coated Rigid Steel Conduit: Entering or exiting concrete including minimum 12 inches above and below grade or finished floor, in corrosive NEMA 4X designated areas, plus exposed outdoor locations, and where indicated on the Drawings.

5. See "Table 1. Electrical Material Requirements" in specification "16050 – Common Work Results for Electrical", section 2.04.(C).1 for further details regarding conduits, boxes and support material requirements in various areas at the pump station.

3.5 RACEWAYS SUPPLEMENTAL REQUIREMENTS

A. CONTRACTOR shall include necessary raceways and supports to provide any and all motorized equipment, electrical outlets, fixtures, communication outlets, instruments and devices within 10 linear feet of location shown on the Drawings.

B. CONTRACTOR shall provide necessary raceways for all equipment specified, identified in wiring schedules, equipment schedules, panel boards schedules, electrical single line diagrams, block diagrams, process and instrumentation diagrams (P&IDs), fixtures schedules, and devices. Said necessary conduits may not be shown on the plan drawings, but they shall be sized by CONTRACTOR in accordance with requirements specified and the National Electrical Code, and include in this allowance, the raceways necessary for the installation of the conductors and for the complete operation of the included device or equipment.

3.6 RACEWAYS IDENTIFICATION

A. Each new conduit, new wireway, and new boxes shall be identified by a specific number. The numbering system shall be in accordance with identification named on the Drawings or the process equipment identification. Products for identification of raceways is specified in Section 16075 Electrical Identification.

END OF SECTION

SECTION 16134

BOXES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Outlet boxes, device boxes, metallic pull boxes, junction boxes, and termination boxes.

2. Fasteners used with wiring devices.

B. Related Sections:

1. Section 16050 - Common Work Results for Electrical.

2. Section 16075 - Electrical Identification.

3. Section16123 - 600 Volt or Less Wires and Cables.

1.2 REFERENCES

A. American National Standards Institute/National Electrical Manufacturers Association (ANSI/NEMA):

1. OS1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers and Box Supports.

2. OS2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.

B. National Electrical Code (NEC):

1. Article 370 - Outlet, Device, Pull and Junction Boxes, Conduit Bodies and Fittings.

C. National Electrical Safety Code (NESC).

D. National Electrical Manufacturers Association (NEMA):

1. NEMA FB1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.

2. NEMA 250 - Enclosures for Electrical Equipment (1,000 Volts Maximum).

1.3 SUBMITTALS

A. Product Data.

B. Shop Drawings: Include identification and sizes of pull boxes for ENGINEER's acceptance prior to fabrication and installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Device Boxes, Metallic Pull Boxes and Junction Boxes: One of the following or equal:

1. Crouse-Hinds.
2. Appleton.
3. O - Z Gedney.

2.2 DEVICE BOXES AND JUNCTION BOXES

A. Materials: Heavy-duty rigid steel or rigid copper free aluminum, compatible with the location and conduit system being used, unless otherwise specified or indicated on the Drawings.

B. For Indoor or Non-corrosive Areas: Provide cast FD type device boxes with epoxy finish, and compatible with the location and conduit system being used.

A. For Outdoor Locations, Corrosive Areas, or Wet Process Locations: Provide cast FD type boxes with PVC coating for outdoor locations, corrosive areas and wet process locations and compatible with the location and conduit system being used.

C. Coverplates:

1. Indoor: Provide lighting switch and receptacle boxes of Type 302 stainless steel cover plates with cover gaskets, except where otherwise specified or indicated on the Drawings. Provide other boxes with Type 304 stainless steel cover screws and with cover gaskets.
2. Outdoor and Corrosion Resistant: Provide lighting switch and receptacle boxes, weatherproof with yellow fiberglass lift cover plates with cover gaskets.

2.3 METALLIC PULL BOXES

A. Boxes for applications in dry and non-corrosive location:

1. Fabricated from 11 gauge (minimum) galvanized steel or aluminum, completely weatherproof with gasketed removable covers; compatible with type of conduit systems being used; manufactured, furnished, and installed complete with grounding lug.

B. Boxes for applications in wet areas, outdoor locations and NEMA 4X designated areas: Fabricated from 11 gauge, 316 stainless steel, with gasketed covers and labeled NEMA 4X. Boxes shall include a drain fitting to facilitate continuous draining of moisture condensation.

2.4 FASTENERS

A. Electroplated or stainless steel in boxes with wiring devices.

B. Screws, Nuts, Bolts, and Other Threaded Fasteners: Stainless steel.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Comply with the National Electrical Code.

B. Existing outdoor utility power pull box:

1. Coordinate with utility power company for disconnecting of service power from existing utility power transformer.

2. Remove existing service cable splice at underground pull box, without damaging cables from the utility power transformer and maintaining the longer length of cables at the pull box, for splicing with new service cables, from the pull box to the new main circuit breaker at each well house building.

3. Perform splices of new service cables from the well house building to the existing cables towards the utility service transformer.

4. Perform all necessary work without damaging existing service pull box.

C. Terminal blocks installed in junction/terminal boxes as specified in Section 16050.

D. Provide weatherproof conduit hubs for all conduit connections to metallic pull boxes.

E. Phosphatize and prime with rust-resistant paint metallic pull box surfaces. Finish shall be 2 coats of ANSI 61 gray enamel paint.

F. Size pull boxes to meet National Electrical Code requirements and to provide sufficient room for the future conduits and cables indicated on the Drawings.

G. Furnish and install pull boxes as indicated on the Drawings and as specified. Install additional pull boxes as required to meet cable manufacturer's pulling tension requirements.

H. Install pull boxes such that access to them is not restricted by obstructions such as pipes, valves, ladders.

I. Secure metallic pull box covers with Type 316 stainless steel screws or bolts with coated threads.

J. Provide adequate supporting pillar(s) for boxes to be located above ground or above decks, where there is no structural wall or surface for box mounting.

END OF SECTION

SECTION 16150

LOW-VOLTAGE VARIABLE FREQUENCY DRIVES

PART 1 - GENERAL

1.1 SCOPE

A. The CONTRACTOR shall furnish all the materials, labor, tools, supervision and appliances and shall properly install, connect in place, test and place in service the low-voltage variable frequency drive (VFD) system as indicated on the DRAWINGS, specified or required for the proper completion of the WORK.

B. This specification covers the complete labor, materials, equipment and incidentals required to place into operation an integrated low-voltage variable frequency drive (VFD) system and covers all components of the engineered system. This specification may be applied to any type of AC motor application.

C. Every variable frequency drive system shall consist of all system components required to meet the performance, protection, safety, testing, and certification criteria of this specification. These components may include incoming harmonic filter / power factor correction unit, multi-pulse, phase-shifting input rectifier-grade isolation transformer, VFD converter/DC-link/inverter, and output filter.

D. The VFD system must include all material and labor necessary to interconnect any VFD system elements, even if shipped separately. These elements may include (but not limited to) power factor / harmonic filter and transformer units. The CONTRACTOR shall provide installation labor. All materials for field interconnection of any VFD system elements are to be provided by the VFD manufacturer or VFD factory authorized representative. The installation shall be supervised and certified by VFD manufacturer or factory authorized representative.

E. Any modifications to a standard product required to meet this specification shall be performed by the VFD manufacturer or factory authorized modification center.

F. Codes and Standards. Provide equipment in full accordance with the latest applicable rules, regulations, and standards of:

1. National Electric Code (NEC).
2. Underwriters' Laboratories (UL).
3. American National Standards Institute (ANSI).
4. National Electrical Manufacturers Association (NEMA).
5. Institute of Electrical and Electronics Engineers (IEEE).
6. Canadian Standards Association (CSA).

7. International Electro-technical Commission (IEC).

8. Federal Communications Commission (FCC).

G. Where conflicts arise between different rules, regulations, and standards, the more stringent standard shall apply.

1.2 SUBMITTALS

A. Quality Standards.

1. VFDs shall be manufactured, assembled, tested, and provided with a UL Mark label.

2. The VFD manufacturer shall have a quality assurance program that is certified in conformance with ISO Standard 9001.

B. Acceptable Manufacturers.

C. Adjustable frequency drives shall be Yaskawa, no equal, meeting the requirements of these specifications.

D. Experience. It is the intention of this specification to purchase dependable and reliable equipment offering the best performance available from currently proven technology. All equipment furnished under this contract must, therefore, have documentation showing proof of actual operation for a minimum of two years in similar service. New components or design topologies that have less than two years of actual operating experience will not be acceptable.

E. The VFD manufacturer shall document ten years experience in manufacturing VFD's to demonstrate their capability to provide parts and service support. A users list of similar design equipment, complete with contact names and telephone numbers, shall be furnished upon request.

F. Coordination. The design of each variable frequency drive shall be coordinated with the driven equipment. The manufacturer of the driven equipment shall be responsible for furnishing the variable frequency drive, for matching the motor and the drive, and for coordinating the collection of data and the design effort to limit harmonics to the levels specified.

PART 2 - PRODUCTS

2.1 PERFORMANCE

A. Operating Envelope. VFD shall meet the following speed and torque requirements:

1. The VFD shall be capable of producing a variable AC voltage/frequency output to provide continuous operation over the normal system 30-100% speed range. The VFD must be capable of sustained operation at 1/10 speed to facilitate checkout and maintenance of the driven equipment. As a commissioning and troubleshooting feature, the VFD power circuit shall be capable of operating without a motor connected to the VFD output.

2. VFD shall be capable of operating any standard AC motor of equivalent rating (horsepower and speed) over the specified speed range as well as the inverter duty motors specified for this application.

3. The VFD shall be capable of momentary overload of 110% for one minute for variable torque loads (centrifugal fans, pumps, etc.) and 150% for one minute at rated temperature for constant torque loads (extruders, mixers, reciprocating compressors and pumps, conveyors, etc.).

4. The VFD shall be able to produce full rated torque at any speed in the operating range (constant torque capability).

5. If high breakaway/starting torque is specified, the VFD shall provide full rated torque at standstill and be capable of sustaining that level of torque indefinitely.

B. Input Harmonics:

1. VFD's shall comply with the latest edition of IEEE 519 for total harmonic voltage and current distortion calculation and measurement and meet the following distortion limits:

   a. Voltage Harmonics. Individual or simultaneous operation of the VFD's shall not add more than 5 percent total harmonic voltage distortion while operating from the utility source, or more than 15 percent while operating from standby generator.

   b. Current Harmonics. Maximum allowable total and individual harmonic current distortion limits for each odd harmonic shall not exceed limits set forth in the 1992 edition of IEEE 519 Table 10.3. The utility connection shall be the secondary point of common coupling for current distortion.

2. The VFD converter section shall be eighteen pulse to eliminate the need for harmonic filters. All VFD's of 50HP or greater will be provided with multi-pulse (twelve pulse or greater) rectification. If harmonic filters are required to meet power factor requirements, stricter local requirements, or telephone interference factor restrictions, the VFD manufacturer must provide the filter, and is fully responsible for the design, manufacturing, and installation of the filter as an integral part of the VFD package.

3. Compliance shall be verified by the VFD manufacturer with field measurements of harmonic distortion differences at point of common coupling with and without VFD's operating. The point of common coupling (PCC) for all harmonic calculations and field measurements for both voltage and current distortion shall be defined as the load side of the utility power input breaker.

C. Motor Compatibility:

1. The VFD shall be suitable for use with any standard NEMA-B squirrel-cage induction motor(s) having a 1.15 Service Factor or with existing standard NEMA-B squirrel-cage induction motor(s) with nameplate data as shown on the plans. The drive can be located up to 300 feet from the motor without requiring special cabling or separate motor protection devices. If special cabling or separate motor protection devices are required, they shall be supplied by the VFD supplier at the VFD manufacturer's expense. At any time in the future, it shall be possible to substitute any standard motor (equivalent horsepower, voltage and RPM) in the field.

2. The inverter output shall be generated by IGBTs. Pulse Width Modulation strategy will be of the space vector type implemented to generate a sine-coded output voltage. The worst case RMS motor line current measured at rated speed, torque, and voltage shall not exceed 1.05 times the rated RMS motor current for pure sine wave operation.

D. Performance:

1. The drive system shall be 96 percent efficient at full load and full speed and 95.5 percent efficient at 51 percent load and 80 percent speed. Losses to be utilized in drive system efficiency calculation shall include input transformer, harmonic filter and power factor correction if applicable, VFD converter and output filter if applicable. Auxiliary controls, such as internal VFD control boards, cooling fans or pumps, shall be included in all loss calculations.

E. Power Factor. VFD system shall maintain a .95 minimum power factor at all speeds and loads.

F. Speed Regulation. VFD speed regulation shall be ±0.5 percent without encoder or tachometer feedback.

G. Motor Sound Level. All VFDs must be tested at the VFD's maximum specified carrier frequency for audible noise without de-rating to provide quiet motor operation. Audible motor noise, while operating under VFD control, shall be limited to 3 dB(A) above the amount of noise generated across the line measured at one meter from the motor. Should the motor generate more audible noise than specified the vendor shall, at no charge, provide sound shielding for the motor such that the installation meets the above performance specification.

2.2 AVAILABILITY

A. Power Interrupt Ride-Through:

1. The VFD system must be capable of producing full rated torque in the event of a power loss of 5 cycles or less.

2. The VFD system must be capable of automatically restarting in the event of a momentary loss of power, or a clearing of a drive trip. The VFD system shall provide the user with the choice of automatically restarting or not.

B. Power Sag Ride-Through. VFD shall include a power loss ride through of 2 seconds. The VFD must operate without fault or failure, when voltage varies plus or minus 10 percent from rating, and frequency varies plus or minus 5 percent from rating.

C. "Catch-A-Spinning-Load" Capability. The VFD system must be able to catch and take control of a spinning load if started while rotating equipment is already spinning. Appropriate safeguards must be included in this operation to prevent damaging torques, voltages or currents from impacting any of the equipment. The user shall have the option of employing this feature or disabling it.

D. Auto-Restart Capability. The VFD system must be capable of being automatically restarted in the event of a momentary loss of power, or a clearing of a drive trip. The VFD system shall provide the user with the choice of automatically restarting or not.

2.3 SERVICEABILITY/MAINTAINABILITY

A. Front Access. VFD system should be designed for front access only. Manufacturer shall state in his proposal if rear or side access is required. An explanation of reason for any required rear or side access shall be given.

B. Remote Diagnostics. The VFD system shall be provided with the capability for remote diagnostics via RS232 communication.

C. Marking/Labeling. Sleeve type wire marker tags shall be applied to power and control wiring connecting VFD to external 480 volt and door operated control devices. Individual nameplates shall be provided for all major components of the VFD system.

2.4 PHYSICAL REQUIREMENTS

A. Environmental Requirements. The VFD system shall be capable of continuous operation in an average ambient temperature between 0°C and 40°C without de-rating. The VFD system shall also be simultaneously suitable for continuous operation in a maximum humidity between 0 and 95 percent non-condensing.

B. Heat Dissipation/Cooling System. VFD system shall have circulating fan(s) for force ventilation to assure air circulation through the filter.

C. Enclosure:

1. All VFD system components including transformer shall be mounted and wired in a grounded enclosure meeting the following requirements without exception.

2. Input filters, transformer, power conversion, output filters and auxiliary equipment enclosure sections shall be NEMA-1 or NEMA12 (as indicated on drawings) design. Units shall be NEMA 1 Ventilated, or NEMA 12 (as indicated on drawings), with gasketed doors. Units shall have cleanable filter media covering all air inlets. Inlet air filters shall be 100 percent washable, with a progressively structured, corrosion-free media. Filters shall be front replaceable (for cleaning) while the VFD is in operation without exposing maintenance personnel to any of the power components. Unless specified otherwise, cabinet color shall be ANSI 61 Gray. Paint procedures and materials shall be manufacturer's system designed and proven for resistance to chemical attack in industrial powerhouse environments.

3. Where indicated that corrosive gasses are present, VFD equipment shall be mounted in a painted white NEMA 4X stainless steel (or aluminum) enclosure with air conditioning and heat exchanger equipment as necessary to isolate VFD from corrosive gasses.

4. Where indicated that corrosive gasses are present, all circuit boards shall be conformal coated to help protect circuit boards from hydrogen sulfide gasses.

5. Cabinets and doors shall be fabricated using minimum 12-gauge steel for sturdy construction and dimensional integrity to assure long-term fit and function. All doors shall be gasketed to provide environmental protection and secure fits.

6. Provide IR window in the enclosure meeting the following requirements:

   a. Manufacturers – one of the following or equal:

      1) Flir.

      2) Fluke.

   b. 4-inch diameter.

   c. Crystal lens infrared (IR) scanning window.

D. Installation / Cabling. CONTRACTOR will provide labor to set equipment in place and wired per VFD manufacturer's recommendations and in compliance with all applicable code requirements, ENGINEER requirements, and Tampa Bay Water electrical specifications.

E. Space Limitations – Footprint. The VFD system must fit in the space indicated on the project drawings.

F. Constant Speed By-pass. Where indicated on the drawings, a constant speed bypass shall be provided to allow the motor to run across the line in the event of VFD shutdown. The transfer from the VFD to the line shall be accomplished manually by means of a selector switch.

G. The bypass cabinet shall include a door-interlocked input circuit breaker, a UL rated VFD isolation contactor, and a NEMA rated full-voltage starting contactor (both contactors electrically interlocked), a thermal overload relay to provide motor protection, and a control power transformer. Mounted on the cabinet door shall be the bypass selector switch, motor fault light, power "ON" light, motor "ON" VFD light, and motor "ON LINE" light. All externally mounted indicating lights shall be of he LED type, without exception.

H. Control Power. All VFD control circuits shall be 120 VAC single phase. Manufacturer shall provide an internal control power transformer suitably rated to provide all VFD required control power.

I. Thermal magnetic molded case circuit breaker(s) shall be sized (if not specifically shown on the drawings) to provide a short circuit interrupting capacity of 65,000 symmetrical amperes. Circuit breakers with 250 ampere frame and above shall have solid state trip units with integral ground fault protection similar to Square D type ME. The input circuit breakers shall be mechanically interlocked with the unit door enclosure and shall be lockable in the "off" position.

2.5 PROTECTIVE DEVICES/DIAGNOSTICS

A. Power Component Protection:

1. VFD input power stage shall convert three-phase AC line power into a fixed DC voltage via a solid state full wave diode rectifier, with MOV (metal oxide varistor) protection.
    a. Provide Surge Protective Device meeting requirements of specification 16416.
2. The VFD system shall include power fuses on the input to the converter rectifier.

B. Protective Features and Circuits:

1. The controller shall include the following alarms and protective features:
    a. Static instantaneous over-current and over-voltage trip.
    b. Under-voltage, voltage unbalance and phase loss protection.
    c. Over-temperature protection.
    d. Electronic motor inverse time overload protection.
    e. Responsive action to motor winding temperature detectors or thermostatic switches. A dry contact (NC) input to the VFD is required.
    f. When power is restored after a complete power outage, the VFD shall be capable of catching the motor while it is still spinning and restoring it to proper operating speed without the use of an encoder.
2. The VFD system shall be protected from damage due to the following, without requiring an output contactor:
    a. Single-phase fault or three-phase short circuit on VFD system output terminals.

b. Loss of input power due to opening of VFD input disconnect device or utility power failure during VFD operation.

c. Loss of one (1) phase of input power.

d. Motor regeneration due to backspin or loss of VFD input power.

e. The VFD shall be able to withstand the following fault conditions without damage to the power circuit components:

1) Failure to connect a motor to the VFD output.

2) VFD output open circuit that may occur during operation.

3) VFD output short circuit that may occur during operation.

3. The VFD shall include a customer selectable automatic restart feature. When enabled, the VFD shall automatically attempt to restart after a trip condition resulting from over-current, over-voltage, or under-voltage. For safety, the drive shall shut down and require manual reset and restart if the automatic reset/restart function is not successful within a maximum of three attempts within a customer programmable time period.

4. A door-mounted LCD display shall be furnished, capable of displaying the VFD operational status and drive parameters. The digital display must present all diagnostic message and parameter values in English Engineering units when accessed, without the use of codes.

5. As a minimum, the following door mounted digital indications shall be supplied:

a. Speed demand in percent.

b. Output current in amperes.

c. Output Frequency in hertz.

d. Input voltage.

e. DC bus voltage.

f. Input current.

g. Output voltage.

h. Total 3-phase KW output.

i. Kilowatt hour meter.

j. Elapsed time running meter.

C. Diagnostics & Fault Recording:

1. The control logic section shall be fully digital and not require analog adjustment pots or fixed selector resistors.

2. Fault log data storage memory shall be stored in non-volatile memory. A "FAULT LOG" shall record, store, and display the following for the 4 most recent events:
   a. Type and sequence of fault(s).

b. Time of fault(s) or Elapsed running time of fault(s).

3. The VFD shall include a comprehensive microprocessor based digital diagnostic system which monitors its own control functions and displays faults and operating conditions. Microprocessor systems must be products of the same manufacturer as the VFD (to assure single source responsibility, availability of service and access to spare parts).

4. VFD shall be capable of direct communication to an IBM or compatible computer for serial link configuration via a vendor software package to allow setup of parameters, fault diagnostics, configuration of parameters, trending and diagnostic log downloading. The software package shall be capable of printing to a standard printer all configurations and fault information.

2.6 PROGRAMMING AND COMMUNICATIONS

A. User Input/Keypad:

1. The door of each power unit shall include manual speed device, a mode selector marked "Manual/Automatic", a "POWER ON" light, a VFD "FAULT" light, and a VFD "RUNNING" light. 'Start', 'Stop' and 'Reset' functions shall be available via pushbuttons or other operator device if the functionality is not present on VFD keypad.

2. A door-mounted membrane keypad with integral digital LCD display shall be furnished, capable of controlling the VFD and setting drive parameters. The display must present all diagnostic message and parameter values in English Engineering units when accessed, without the use of codes. The keypad shall allow the operator to enter exact numerical settings in English Engineering units. A plain English user menu (rather than codes) shall be provided in software as a guide to parameter setting.

3. Drive parameters shall be factory set in non-volatile EEPROM registers and re-settable in the field through the keypad. One (1) level of password security shall be available to protect drive parameters from unauthorized personnel. The EEPROM stored drive variables must be able to be transferred for programming of new or spare boards.

4. The keypad module shall contain a "self-test" software diagnostic program.

5. The VFD system shall have the user selectable option of programming up to three speed avoidance bands. This gives the user the ability to block out and prevent operation at any undesirable speed, such as one that may be coincident with a mechanical resonance condition.

6. The VFD shall include an integral PID controller utilizing a programmable internal or external setpoint, and a programmable process variable input. All PID loop tuning parameters (proportional band, integral band, derivative band, etc.) shall be accessible at the local operator interface or via remote communications.

B. I/O Communication:

1. A minimum of two programmable analog output signals shall be provided for speed, KW and volts or other operator configurable VFD data.

2. A minimum of two analog input signals shall be provided to accept externally provided analog process signals for configurable functions including remote PID set-point and PID process variable.

3. A minimum of six digital inputs shall be provided to accept externally provided digital control functions (start/stop, drive fault reset, PID local/remote set-point selection, etc.).

4. A minimum of three programmable digital outputs shall be available for generating various configurable drive status information.

C. Digital Communication/Protocols/Modem or Cable:

1. VFD shall be capable of direct communication to an IBM or compatible computer for serial link setup of parameters, fault diagnostics, trending and diagnostic log downloading. VFD parameters, fault log and diagnostic log shall be downloadable.

2. The VFD shall be provided with a second digital communications port to allow direct control and status communication with a PLC, SCADA or other control system. The communication protocol shall be selectable Modbus RTU slave. The communications link shall be used to remotely control, monitor and configure the VFD. Provide Modbus i/o mapping tables for the signals relayed from the VFD to the PLC program.

2.7 COMPONENT REQUIREMENTS

A. Printed Circuit Boards. All printed circuit boards shall be new. They shall be coated for protection against moisture and chemical resistance in addition to any dielectric coating properties. All boards shall be tested individually prior to assembly to minimize any impact faulty boards may have on delivery schedules and system reliability. Each board must be tested to minimize infant mortality failures.

B. Input Transformer:

1. The VFD system is to be supplied with a drive transformer to provide common mode voltage protection and phase shifting for 12 pulse or higher converter bridge. VFD systems utilizing input three phase AC line reactors which require motors equipped with special higher voltage rated insulation systems are not acceptable and will not be allowed as an alternate bid.

C. DC Link Inductors. The DC bus section shall include a DC bus reactor to minimize reflected harmonics. If DC bus reactor is not included an input line reactor must be included and enclosed in the VFD enclosure.

D. DC Link Capacitors:

1. Capacitors used in the converter DC link shall contain discharge resistors and SCRs for crowbar firing which reduces the residual charge to 50 volts or less within five minutes after the capacitor is disconnected from the source of supply. A visual indication of discharge status must be provided.

E. Power disconnect:

1. Flange mounted thermal magnetic circuit breaker:

a. Lockable in the OFF position.

F. Output Filter:

1. dv/dt filter:

a. Common mode reduction: 30 percent minimum.

b. Motor terminal peak voltage limit: 150 percent of DC bus voltage with a motor lead length up to 1,000 feet.

c. Carrier frequency range: Up to 12 kHz.

d. Efficiency: 98 percent minimum.

e. Class H insulation minimum.

G. Control power transformer:

1. Mounted and wired inside the drive enclosure:

a. Primary and secondary fusing.

2. Size transformer to supply power to all VFD controls and options as well as any external devices indicated on the Drawings, including the motor winding heater.

2.8 ACCESSORIES

A. Motor RTD Monitor and Optional Power Metering. All motors of 250 horsepower and greater shall include motor winding and bearing RTDs and require RTD monitoring. A motor RTD monitor shall be supplied with a minimum of eight (12) channels (two winding RTDs per phase, one RTD for each motor bearing, and three user RTD connections) to monitor motor temperatures and alarm or trip on user-selectable set points. RTDs shall be 100 ohms and of the platinum type. The RTD monitor shall provide relay contact trips, Modbus serial communications and four (4) analog outputs of user selectable parameters.

1. Provide Pump Protection Relay:

a. GE Multilin 369-HI-R-0-0-0-0-E or suitable replacement as recommended by the manufacturer.

B. Analog Communication. Output 4-20 mA signals shall be provided as indicated on the drawings. If direct wired analog communication is needed for process control, these shall be optically isolated 4-20 mA DC signals that can be sent to a remote location. Where significant amounts of data are required for monitoring purposes or process control, digital Modbus RTU communication is recommended (see Section 2.06.C).

C. The requirements for motor protection and/or metering shall be as indicated on the drawings.

D. Air filters:

1. Mounted on the outside of the VFD enclosure:

a. Replaceable without requiring that the VFD be turned off or the door opened.

2. Located on the front or top of the VFD enclosure:

a. Side or rear mounted air filters are not acceptable.

PART 3 - INSTALLATION

3.1 TESTING

A. Subassembly Tests:

1. Power assemblies shall be visually inspected and then HIPOT tested. Complete diagnostics and logic shall be tested. The complete power conversion circuit shall be thoroughly tested at 100 percent load for a minimum of one hour and then tested for one minute at momentary overload rating, to weed out any potential problems in advance of final system testing.

B. Factory Tests:

1. All electronic components, i.e. power transistors, diodes, insulated gate bipolar transistor (IGBT), and micro chips shall be functionally tested to insure reliability.

2. All drives shall be functionally tested with a motor before shipment to assure proper operation after final installation.

3.2 DELIVERY

A. Setting equipment in place, aligning and anchoring will be done by the CONTRACTOR. The VFD system manufacturer shall be responsible for all system interconnection across shipping splits at the site.

B. Complete instructions for handling and storage shall be submitted to the ENGINEER prior to delivery of the equipment. All equipment shall have adequate provisions for handling by overhead crane or fork lift truck.

3.3 WARRANTY

A. All equipment furnished under this section shall be warranted by the CONTRACTOR and the equipment manufacturer(s) under the terms of the manufacturer's and supplier's standard warranty. In no event shall it be for a period of less than 12 months from start-up. Warranty shall include all parts, labor and travel expenses required to perform necessary repair work at the job site.

3.4 TRAINING

A. The VFD system SUPPLIER shall provide training for OWNER's operations, maintenance and service personnel. The training shall follow completion of the installation and field testing work. Training shall be for up to six employees of the OWNER, shall be conducted by a qualified representative of the VFD manufacturer and shall consist of at least 8 hours of combined classroom and hands-on instruction. The training shall include classroom discussion on the theory of operation of the equipment, as well as maintenance and service methods for the purchased equipment. Topics covered shall include hardware layout and functions, power & control wiring, diagnostic indicators, keypad/display interface, software mapping, programming, setup, configuration, control loop tuning, operational indicators, faults, diagnostic tools, troubleshooting, and preventive maintenance. Hands-on training shall be provided on the installed equipment. Documentation shall be provided which shall include actual manuals for the equipment and drawings and schematics of equipment supplied for this project. Training shall be conducted at a place and time mutually agreeable to the OWNER and the drive manufacturer. The VFD supplier shall video tape the training sessions and provide to the OWNER the video on DVD media format. The VFD supplier shall provide written certificates of training completion to all training session attendees.

3.5 START-UP AND FIELD ACCEPTANCE TESTING

A. VFD system manufacturer shall provide the field services of a factory-trained and certified technician as necessary to supervise/inspect installation, perform field acceptance testing, start-up all equipment, and instruct the OWNER's personnel in the operation and maintenance of the VFD units provided as part of the fixed price proposal. The firm price shall include all travel and living expenses in addition to the factory technician's time required to complete supervision of the installation, testing, start-up and training. All equipment required for testing, start-up, and training shall be provided by the start-up technician. The OWNER shall witness all field acceptance testing. The SUPPLIER shall provide written notice at least two days before proceeding with testing and two weeks notice before scheduling training.

3.6 SPARE PARTS

A. One set of spare parts shall be supplied for each family of drives provided. The spare parts set shall consist of the following:

   1. Three of each type and size of fuse.

2. Two of each type of power semiconductor (SCR, GTO, IGBT, IGCT, power diode, etc.) used in the converter/rectifier or inverter.

3. Two spare lamp lenses of each color and type.

4. Six of each type of panel LED lamp.

5. One of each control printed circuit board, include all diagnostic system printed circuit boards.

6. Set of special tools required for maintenance of VFD units.

7. One fan and one blower of each type.

B. All parts supplied with the equipment shall be properly labeled for ease of identification and to permit the shortest possible time to repair. Any parts that come from a sub-supplier shall be labeled with that manufacturer's name and part number. Manufacturer shall state closest point where spare parts are stocked and where service can be obtained. Minimum response time for trouble calls shall be two hours. A qualified service technician shall be on site within twenty-four hours of a qualified request. A Factory authorized service center must be located within 200 miles of OWNER installation. Manufacturer shall warrant that all parts shall be available for a minimum of ten years.

END OF SECTION

SECTION 16305

ELECTRICAL ARC FLASH STUDY

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Short circuit fault analysis study.
2. Protective device coordination study.
3. Arc-flash hazard study.

B. Related sections:

1. 16100 - Electrical Equipment Installation.

1.2 REFERENCES

A. As specified in Section 16100 - Tampa Bay Water to confirm applicability.

B. Institute of Electrical and Electronics Engineers (IEEE):

1. 141 - IEEE Recommended Practice for Electric Power Distribution for Industrial Plants (Red Book).
2. 242 - IEEE Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems (Buff Book).
3. 315 - IEEE Standards Electrical and Electronics Graphic and Letter Symbols and Reference Designations.
4. 399 - IEEE Recommended Practice for Industrial and Commercial Power Systems Analysis (Brown Book).
5. 902 - IEEE Guide for Maintenance, Operation and Safety on Industrial and Commercial Power Systems (Yellow Book).
6. 1015 - IEEE Recommended Practice for Applying Low Voltage Circuit Breakers Used in Industrial and Commercial Power Systems - Corrigendum 1 (Blue Book).
7. 1584 - Guide for Performing Arc Flash Hazard Calculations.
8. 1584.1 - Guide for the Specification of Scope and Deliverable Requirements for an Arc-Flash Hazard Calculation Study.
9. 3002.2 - Recommended Practice for Conducting Load-Flow Studies and Analysis of Industrial and Commercial Power Systems.
10. 3002.3 - IEEE Recommended Practice for Conducting Short-Circuit Studies and Analysis of Industrial and Commercial Power Systems.

C. National Fire Protection Association (NFPA):

1. 70 - National Electrical Code.
2. 70E - Standard for Electrical Safety in the Workplace.

1.3 SYSTEM DESCRIPTION

A. General study requirements:

1. Scope:

a. Construct the model for analysis using SKM Power Tools Version 11. Maintain model in organized fashion for delivery to Tampa Bay Water. **Native SKM "Back-up" files shall be provided as a deliverable for each submittal.** Utilize the component Data State as follows:

1) **Complete**. Confirmed that all attributes for the component in the model match the equipment installed in the field.

2) **Verified**. To be used for existing to remain equipment, components adjacent to the design that match what is seen in the field but not supplied under this contract.

3) **Estimated**. Where conditions exist that some of the component fields require a value in order to run the analysis but are not able to be field verified.

4) **Incomplete**. For components where not all fields associated with short-circuit, load-flow, protective device coordination, and arc-flash analysis are able to be populated.

b. The short-circuit fault analysis, load-flow analysis, protective device coordination and arc flash hazard studies shall include all electrical equipment from the point of service, throughout the electrical power distribution to each motor, load, or panelboard including but not limited to:

1) Utility Short Circuit Data.

2) Utility Transformers.

3) Main Circuit Breaker.

4) Motor Control Center.

2. Obtain, for all equipment, the required data for preparation of the study, including, but not limited to:

a. Transformer kilovolt-ampere (kVA) and impedances.

b. Bus withstand ratings.

c. Cable and bus data.

d. Protective device taps, time dials, instantaneous pickups, and time delay settings.

3. Obtain the Electric Utility information on the minimum and maximum available fault current (3-phase bolted and Line-to-ground), minimum and maximum utility impedances, utility protective device settings including manufacturer and model number, interrupting ratings, X/R ratios, and model information one level above the point of connection:

    a. Utility tolerances and voltage variations.

4. The individual performing the studies shall visit the site and collect all necessary field data in order to perform and complete comprehensive electrical system studies.

5. Obtain equipment layouts and configurations from the manufacturer's final submittal requirements and project layout drawings as required.

6. Bus and conductor data:

    a. Use impedances of the actual installed or specified conductors, unless otherwise indicated.

    b. Use cable and bus impedances calculated at 25 degrees Celsius, unless otherwise indicated.

    c. Use 600-volt cable reactance based on typical dimensions of actual installed or specified conductors, unless otherwise indicated.

    d. Use bus withstand values for all equipment having buses.

7. Motors:

    a. Each motor shall be individually modeled.

8. Use the equipment, bus, and device designations as indicated on the Drawings for all studies.

B. Short-circuit fault analysis study additional requirements:

1. Perform the following short-circuit fault analysis:

    a. Initial short-circuit fault analysis:

        1) Based on the Contract Documents and Electric Utility information.

        2) The initial short-circuit fault analysis report shall indicate the estimated available short-circuit current at the line side terminals of each piece of equipment covered by the scope of the study.

    b. Final short-circuit analysis will be the Initial short-circuit analysis updated with the following.

        1) Utilize the actual equipment to be installed.

        2) Utilize the actual cable lengths measured in the field.

2. Calculate 3-phase bolted fault, line-to-line fault, line-to-ground fault, double line-to-ground fault, short-circuit 1/2 cycle momentary symmetrical and asymmetrical RMS, 1-1/2 and 4 cycle, interrupting symmetrical RMS, and 30 cycle steady state short-circuit current values at each piece of equipment in the distribution system.

3. Evaluate bus bracing, short circuit ratings, fuse interrupting capacity and circuit breaker adjusted interrupting capacities against the fault currents, and calculate X/R values:

    a. Identify and document all devices and equipment as either inadequate or acceptable.

    b. Identify and document all devices and equipment that are rated for calculated short circuit when based on a series rating.

4. Calculate line-to-ground and double line-to-ground momentary short circuit values at all buses having ground fault devices.

5. Provide calculation methods, assumptions, one-line diagrams, and source impedance data, including Utility X/R ratios, typical values, recommendations, and areas of concern.

C. Protective device coordination study additional requirements:

1. Furnish protective device settings for all functions of the main circuit breaker.

2. Provide log-log form time-current curves (TCCs) graphically indicating the coordination proposed for the system:

    a. Include with each TCC a complete title and one-line diagram with legend identifying the specific portion of the system covered by the particular TCC.

D. Arc-flash hazard study additional requirements:

1. Include the calculated arc-flash boundary and incident energy (calories/square centimeter) at each piece of equipment in the distribution system:

    a. Perform study with 15 percent arcing fault variation as defined by IEEE 1584.

    b. Perform arc-flash calculations at minimum and maximum utility fault contributions.

    c. Perform arc-flash calculations for both the line side and load side of outdoor main circuit breaker, motor control center and panelboard main breakers.

    d. Perform arc-flash calculations for all short-circuit scenarios with pump motor on for 3 to 5 cycles.

    e. Protective device clearing time shall be limited to 2 seconds, maximum.

2. Provide executive summary of the study results.

    a. Provide summary based upon worst case results.

3. Provide a detailed written discussion and explanation of the tabulated outputs.

    a. Include all scenarios.

4. Provide alternative device settings to allow the OWNER to select the desired functionality of the system:

    a. Minimize the arc-flash energy by selective trip and time settings for equipment maintenance purposes.

    b. Identify the arc-flash energy based upon the criteria of maintaining coordination and selectivity of the protective devices.

E. Electrical system study meetings:

1. The individual conducting the short circuit analysis, protective device coordination, and the arc-flash hazard studies shall meet with the OWNER and ENGINEER two (2) times.

2. The purpose of the 2 meetings is as follows:

    a. Preliminary results meeting:

        1) This meeting will be held after the studies have been completed, reviewed, and accepted by the ENGINEER.

        2) The purpose of this meeting is to inform the OWNER of the results of the study and impacts on normal operation and maintenance including:

            a) Protective device coordination problems and recommended solutions.

            b) Explanation of the arc-flash study results and its potential impact on operations.

            c) Recommendations for reduction of arc-flash category levels including reduction of protective device settings or changes in operational practices.

    b. Final meeting:

        1) Discuss changes to the reports based on the previous meeting.

        2) Discuss with the OWNER how changes to the electrical system may change the arc-flash hazard category.

        3) Deliver the final electrical system studies report.

3. The meetings will be at the OWNER's facility:

    a. Provide a minimum of 3 weeks' notice to the OWNER and ENGINEER in advance of the projected meeting date.

    b. Submit a draft of the meeting agenda when each meeting is requested.

4. Meeting materials:

    a. Prepare and provide the following materials:

        1) Meeting agenda. Include at a minimum the scope of the meeting, estimated time length for the meeting and meeting goals.

1.4 SUBMITTALS

A. Studies and reports:

1. Format and quantity:

a. Provide two bound copies of all final reports.

b. Provide 3 complete sets of electronic files on CD or DVD media, including the electrical system model(s), configuration files, custom libraries, any other files used to perform the studies and produce the reports. Also provide an electronic version of the bound reports in PDF format.

2. Include, at a minimum, the sections below in the final report:

a. General:

1) In narrative:

a) Executive Summary.

b) Scope of the system included in the study.

c) Revision History – If updating an existing model.

d) Description of where data was collected from (field investigation, design documentation, AS-BUILT drawings, owner provided one-lines, etc.).

2) In appendix:

a) Copies of correspondence and data obtained from the Electric Utility Company when project is served by utility service or copies of correspondence and data obtained from Tampa Bay Water when project is served by Tampa Bay Water distribution equipment.

b) Single Line Diagram with equipment data that indicates basic input attributes including, but not limited to nominal voltage, transformer sizes and impedances, feeder sizes and lengths.

c) Input Data Report – (Does Tampa Bay Water want to specify specific Crystal report or text file?)

b. Short Circuit Analysis:

1) In narrative:

a) Description of approach, including any assumptions or engineering judgement applied.

b) Provide table listing all identified over-dutied equipment.

c) Provide recommendations for each device or equipment identified as not being rated for its intended use.

2) In appendix:

a) Provide table that lists each device or equipment modeled with nominal voltage, rated kAIC, calculated kAIC, X/R ratio and "PASS/FAIL" evaluation.

c. Overcurrent Protective Device Coordination:

1) In narrative:

a) Description of approach.

b) Relay Settings Table.

c) Static Trip Settings Table.

2) In appendix:

a) Provide Time-Current Curve for unique coordination paths indicating:

(1) Transformer damage curves and inrush point.

(2) Cable damage curves.

(3) Protective device trip curves.

(4) Arcing Fault Flags.

d. Arc Flash Hazard Analysis:

1) In narrative:

a) Provide a summary of equipment that fall in the following ranges:

(1) Less than 1.2 cal/cm^2

(2) Between 1.2 cal/cm^2 and 12 cal/cm^2

(3) Between 12 cal/cm^2 and 40 cal/cm^2

(4) Above 40 cal/cm^2

2) In appendix:

a) Copies of correspondence and data obtained from the Electric Utility Company.

e. Letter certifying the inspection and verification of existing equipment.

f. One-line diagrams:

1) The following information shall be included at a minimum:

a) Motor horsepower.

b) Transformer data:

(1) kVA.

(2) Configuration.

c) Cable data:

(1) Insulation.

(2) Size.

(3) Length.

2) One-line diagrams shall be fully legible at 11-inch by 17-inch size.

g. Include in the short-circuit fault analysis study:

1) Descriptions, purpose, basis, assumptions, recommendations, and scope of the study.

2) Normal system connections and those, which result in maximum fault conditions.

3) Tabulation of circuit breaker, fuse, and other protective device ratings compared to maximum calculated short-circuit duties.

4) Fault current calculations for the cases run including a definition of terms and guide for interpretation of computer software printouts.

h. Protective device coordination study shall include:

1) Manufacturer's time-current curves for circuit breakers, fuses, motor circuit protectors, and other protective devices for all new equipment.

2) TCCs graphically indicating the coordination proposed for the system on log-log graphs. At least 3 of the copies shall be in color.

3) Tabulation of relay, fuse, circuit breaker, and other protective devices in graphical form with a one-line diagram to display area coordination.

4) Where coordination could not be achieved, an explanation shall be included in the report to support the statement along with recommendations to improve coordination. Recommended equipment modifications or settings shall be in a tabulated form.

i. Include in the arc-flash study:

1) Normal system connections and those, which result in maximum arc-flash conditions.

2) Arc-flash raw data, calculations, and assumptions.

3) Arc-flash label data:

a) Identifying the content of each label.

b) Identifying the location of each label.

B. Certification:

1. Submit written certification, sealed, and signed by the professional engineer conducting the study, equipment supplier, and electrical subcontractor stating that the data used in the study is correct.

C. Submit the credentials of the individual(s) performing the study and the individual in responsible charge of the study.

D. The ENGINEER will review all studies and reports. After review, the ENGINEER will make recommendations and/or require changes to be made to the short-circuit analysis, protective device coordination or arc-flash studies. These changes shall be provided as part of the scope of work.

1.5 QUALITY ASSURANCE

A. Qualifications of the entity responsible for electrical system studies:

1. The studies shall be performed, stamped, and signed by a professional engineer registered in the state where the project is located.

2. A minimum of 5 years' experience in power system analysis is required for the individual in responsible charge of the studies.

3. The short-circuit analysis, protective device coordination, and arc-flash hazard studies shall be performed with the aid of a digital computer program:

a. Point-to-point calculations are not acceptable.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Electrical system study software no equal or substitutions:

1. Powertools by SKM Systems Analysis.

2.2 COMPONENTS

A. Arc-flash hazard labels:

1. Dimensions:

a. Minimum 5 inches by 3.5 inches.

2. Materials:

a. Polyester with polyvinyl polymer over-laminate.

b. Self-adhesive.

c. Resistant to:

1) UV.

2) Chemicals and common cleaning solvent resistant.

3) Scuffing.

4) Wide temperature changes.

3. Contents:
    a. Short-circuit bus identification.
    b. Calculated incident energy (calories/square centimeter) range.
        1) Based on worst case study results.
    c. Hazard/risk, personnel protective equipment category number.
    d. Arc-flash protection boundary.
    e. Shock hazard boundary:
        1) The CONTACTOR may provide separate labels for indication of the shock hazard boundary.
    f. Description of the combined level of personnel protective equipment.
4. Color scheme:
    a. For locations above 40 calories/square centimeter:
        1) White label with red "DANGER" strip across the top.
        2) Black lettering.
    b. For locations below 40 calories/square centimeter:
        1) White label with orange "WARNING" strip across the top.
        2) Black lettering.

PART 3 - EXECUTION

3.1 INSTALLATION

A. After review and acceptance of the arc-flash hazard study by the ENGINEER, install all arc-flash hazard labels:
    1. Install labels at all locations required by NFPA, ANSI, or IEEE standards.
    2. At a minimum, install labels in the following locations:
        a. The front of each main circuit breaker.
        b. Each motor control center.
    3. Install labels prior to equipment energization.

B. After review and acceptance of the arc-flash hazard study and coordination study by the ENGINEER, adjust protective device settings per final study prior to equipment energization.
    1. Devices which require power for configuration may be set during energization, but before any subfed loads are energized.
    2. Ensure that settings for upstream equipment are set prior to energizing downstream devices.

3.2 DEMONSTRATION AND TRAINING

A. Training:

1. Provide a minimum of two training sessions for the OWNER's electrical maintenance personnel:
    a. Each session shall be a minimum of 4 hours.
2. The training shall cover at a minimum:
    a. Hazards associated with arc-flash.
    b. Causes of arc-flash.
    c. Explanation of the arc-flash labels installed on the OWNER's electrical equipment.
    d. Proper use of personal protective equipment.
    e. PPE requirements for maintenance work.

END OF SECTION

SECTION 16416

SURGE PROTECTIVE DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Surge Protective Devices (SPD) for use on 480 and 208 volt, alternating current systems, including separate enclosure for mounting adjacent to motor control center, and separate enclosure for unit protecting power distribution panelboard in motor control center.

1.2 REFERENCES

A. Underwriters' Laboratories, Inc. (UL):

1. 1449 5th edition - High Performance Suppression System.
2. 1283 - High Frequency Extended Range Power Filter.

B. American National Standards Institute (ANSI):

1. C62.41 - Category C3 (Service Entrance).
2. C62.45 - Category C Surge.

1.3 SUBMITTALS

A. Shop Drawings: Include component layout and wiring terminations.

B. Product data.

C. Manufacturer's installation instructions.

D. Operating and maintenance data.

E. Warranties.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer of surge protective device systems for minimum 5 years with satisfactory performance record.

B. Regulatory Requirements: UL rating of surge protective device shall meet or exceed UL rating of panelboard, motor control center, or other equipment in which suppressor is installed. UL rating of equipment in which suppressor is installed shall not be affected by suppressor.

1.5 SEQUENCING AND SCHEDULING

A. Coordinate with and furnish suppressors to motor control center, switchgear switchboard, and distribution panel manufacturer prior to shipment of equipment to site.

1.6 WARRANTY

A. Provide equipment with SPD protection and warranty to correct defective products for minimum period of 3 years in accordance with manufacturer's standard warranty.

PART 2 - PRODUCTS

2.1 SURGE PROTECTIVE DEVICES

A. Ratings: 277/480-volt grounded wye and 120/208 volt grounded wye.

B. Manufacturers: One of the following or equal:

1. Current Technology, TransGuard Model for internal installation or Series TG300 for external mounting.
2. Transtector, equivalent product.
3. Advanced Protection Technologies, equivalent product.
4. If furnished with switchboard and/or panelboard, the manufacturer of the SPD unit can be the same as the equipment.

C. Components:

1. 30 ampere circuit breaker and disconnect.
2. Status indicating pilot lights.
3. Two dry contacts for remote status annunciation.
4. NEMA 12 enclosure.

D. Characteristics:

1. Single Pulse Surge Current Capacity per Phase: 600,000 amperes.
2. Capacity Per Protection Modes:
    a. L-N Mode: 300,000 amperes.
    b. L-G Mode: 300,000 amperes.
    c. N-G Mode: 300,000 amperes.
    d. L-L Mode: 300,000 amperes.
3. Surge Life Cycle: 1.2 by 50 micro-seconds 20 kilovolt open circuit voltage, 8/20 micro-second waveform 10 kiloamperes short circuit current Category C3 Bi-wave in accordance with ANSI C62.41 and C62.45.

4. Suppression and Filter Technology: Manufacturer's standard.

5. Continuous Operating Voltage: Minimum 115 percent of nominal.

6. Suppression Voltage In Protective Modes: As follows when tested in accordance with UL 1449:

   a. For 480 volt systems:

      1) L-N: 800.

      2) L-G: 800.

      3) N-G: 800.

      4) L-L: 2000.

   b. For 208 volt systems:

      1) L-N: 500.

      2) L-G: 500.

      3) N-G: 400.

      4) L-L: 600.

7. EMI/RFI High Frequency Noise Power Filter:

Frequency	100 KHz	1 MHz	10 MHz	100 MHz
Attenuation (dB)	34	51	54	48
Attenuation Ratio	50:1	350:1	500:1	250:1

8. Minimum American Wire Gauge Copper in Surge or Noise Suppression Path: Number 6.

9. Field Replaceable Fusing: Current limiting, protecting each pole.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install suppressors in accordance with manufacturer's instructions.

END OF SECTION

SECTION 16950

FIELD ELECTRICAL ACCEPTANCE TESTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Responsibilities for testing the electrical installation.
2. Routine tests during installation.
3. Adjusting and calibration.
4. Acceptance tests.
5. Demonstration of electrical equipment.
6. Commissioning and water well system start-up.

B. Related sections:

1. The following sections are related to the Work described in this Section.
   a. Section 16062 - Grounding and Bonding.
   b. Section 16122 - Motors.
   c. Section 16123 - 600 Volts or Less Wire and Cables.

C. Copyright information:

1. Some portions of this Section are copyrighted by the InterNational Electrical Testing Association, Inc (NETA). See NETA publication ATS for details.

1.2 REFERENCES

A. Manufacturer's testing recommendations and instruction manuals.

B. Specification sections for the electrical equipment being tested.

C. Pertinent Shop drawings of electrical equipment.

1.3 DEFINITIONS

A. Specific definitions:

1. Testing Entity: The subcontractor or business entity performing acceptance tests.

1.4 SYSTEM DESCRIPTION

A. Testing of all electrical equipment installed under this Contract in accordance with the manufacturer's requirements and as specified in this section.

B. The testing and inspections shall verify that the equipment is operational within the tolerances required and expected by the manufacturer, and these Specifications. The results of the tests shall determine the suitability for continued reliable operation.

C. Responsibilities:

1. Electrical subcontractor responsibilities:

a. Perform routine tests during installation.

b. Demonstrate operation of electrical equipment.

c. Commission the electrical installation.

d. Provide the necessary services during testing including but not limited to:

1) Activating and shutting down electrical circuits.

2) Making and recording electrical measurements.

3) Replacing blown fuses.

4) Installing temporary jumpers.

2. Testing Entity responsibilities:

a. Perform all acceptance tests as defined in this section.

b. Provide all required equipment, materials, labor, and technical support during acceptance tests.

D. Upon completion of testing or calibration, attach a label to all serviced devices:

1. The label shall indicate the date serviced and the company that performed the service.

1.5 SUBMITTALS

A. Test report:

1. Include the following:

a. Summary of Project.

b. Description of all equipment tested.

c. Description of tests performed.

d. Test results for each related equipment tested.

e. Conclusions and recommendations.

f. Completed test forms.

g. List of test equipment used and calibration dates.

B. Testing Entity qualifications:

1. Submit a complete resume and statement of qualifications from the proposed testing entity detailing their experiences in performing the tests specified:

a. This statement will be used to determine whether the Testing Entity is acceptable, and shall include:

1) Company experience and references.

2) Resume of personnel performing test.

3) Equipment list and test calibration data.

1.6 PROJECT OR SITE CONDITIONS

A. Tests shall be performed in construction sequence according to the construction schedule for each well pump building.

1.7 COMMISSIONING

A. Commissioning and well pump house start-up, as described in the Specifications, shall not begin until acceptance testing is complete, and operation has been demonstrated to the satisfaction of the ENGINEER.

PART 2 - PRODUCTS

2.1 SOURCE QUALITY CONTROL

A. General:

1. Test instrument calibration:

a. Utilize a testing laboratory with a calibration program which maintains all applicable test instrumentation within rated accuracy.

PART 3 - EXECUTION

3.1 PREPARATION

A. Do not begin testing until the following conditions have been met:

1. All water pumping equipment are available or scheduled.

3.2 FIELD QUALITY CONTROL

A. Cables, 600 volts and less:

1. Visual and mechanical inspection:

a. Compare cable data with that indicated on the Drawings and specified in the Specifications.

b. Inspect exposed sections of cable for physical damage and correct connection as indicated on the Drawings.

c. Inspect bolted electrical connections for high resistance by one of the following methods:

1) Use of low-resistance ohmmeter.

2) Verify tightness of accessible bolted electrical connections by the calibrated torque wrench method:

a) Refer to the manufacturer's instructions for proper foot-pound levels or NETA ATS tables.

d. Inspect cable jacket insulation and condition.

2. Electrical tests:

a. Perform insulation-resistance tests on each conductor with respect to ground and adjacent conductors.

b. Perform insulation resistance test on each conductor sized #8 AWG or larger with respect to ground and adjacent conductors:

1) Applied potential shall be 500 volts DC for 300-volt rated cable and 1,000 volts DC for 600-volt rated cable.

2) Test duration shall be 1 minute.

c. Perform continuity tests on power and control conductors to ensure correct cable connection.

d. Verify uniform resistance of parallel conductors.

3. Test values:

a. Compare bolted connection resistance values to values of similar connections:

1) Investigate values which deviate from those of similar bolted connections by more than 50 percent of the lowest value.

b. Insulation-resistance values shall be in accordance with the manufacturer's published data:

1) Refer to NETA ATS tables in the absence of the manufacturer's published data.

2) Investigate values of insulation-resistance less than the allowable minimum.

c. Cable shall exhibit continuity.

d. Deviations in resistance between parallel conductors shall be investigated.

B. Grounding systems:

1. Visual and mechanical inspection:

a. Inspect ground system for compliance with that indicated on the Drawings, specified in Specifications, and in the National Electrical Code.

2. Test values:

a. Grounding system electrical and mechanical connections shall be free of corrosion.

C. Rotating machinery:

1. Electrical tests:

a. Perform insulation resistance test in accordance with ANSI/IEEE 43:

1) On motors 200 hp and smaller, test duration shall be 1 minute. Calculate dielectric absorption ratio.

b. Verify operation of motor space heater.

c. Perform a rotation test to ensure correct shaft rotation.

d. Measure running current and evaluate relative to load conditions and nameplate full-load amperes.

e. Temperature switches circuits shall conform to the design intent and machine protection device manufacturer's published data.

f. Heaters shall be operational.

D. Existing Switchboard:

1. Visual and mechanical inspection:

a. Verify that wiring connections are tight and that wiring is secure to prevent damage during routine operation of moving parts.

b. Inspect bolted electrical connections for high resistance using one of the following methods:

1) Use of low-resistance ohmmeter.

2) Verify tightness of all new bolted electrical connections by the calibrated torque wrench method:

a) Refer to the manufacturer's instructions for proper foot-pound levels or NETA ATS tables.

c. Perform tests on existing spare breaker per specification section 16950.(3.2).E.

E. Low voltage molded case and insulated case circuit breakers:

1. Visual and mechanical inspection:

a. Compare equipment nameplate data with the Contract Documents.

b. Inspect physical and mechanical condition.

c. Inspect anchorage and alignment.

d. Verify the unit is clean.

e. Operate the circuit breaker to ensure smooth operation.

f. Inspect bolted electrical connections for high resistance by one of the following methods:

1) Use of low-resistance ohmmeter.

2) Verify tightness of accessible bolted electrical connections by the calibrated torque wrench method:

a) Refer to the manufacturer's instructions for proper foot-pound levels or NETA ATS tables.

g. Perform adjustments for final protective device settings in accordance with the coordination study.

2. Electrical tests:
    a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter.
    b. For breakers 100 A and higher:
        1) Perform insulation-resistance tests for 1 minute on each pole, phase-to-phase and phase-to-ground with the circuit breaker closed, and across each open pole:
            a) Apply voltage in accordance with the manufacturer's published data.
            b) Refer to NETA ATS tables in the absence of the manufacturer's published data.
        2) Perform a contact/pole-resistance test.
        3) Determine long-time pickup and delay by primary current injection.
        4) Determine short-time pickup and delay by primary current injection.
        5) Determine ground-fault pickup and delay by primary current injection.
        6) Determine instantaneous pickup value by primary current injection.
        7) Perform minimum pickup voltage tests on shunt trip and close coils in accordance with the manufacturer's published data.
        8) Verify correct operation of any auxiliary features such as trip and pickup indicators, zone interlocking, electrical close and trip operation, trip-free, anti-pump function and trip unit battery condition:
            a) Reset trip logs and indicators.
        9) Verify operation of charging mechanism.
3. Test values:
    a. Compare bolted connection resistance values to values of similar connections:
        1) Investigate values which deviate from those of similar bolted connections by more than 50 percent of the lowest value.
    b. Bolt-torque levels shall be in accordance with the manufacturer's published data:
        1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
    c. Insulation-resistance values shall be in accordance with the manufacturer's published data:
        1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
        2) Investigate values of insulation-resistance less than the allowable minimum.
    d. Micro-ohm or DC millivolt drop values shall not exceed the high levels of the normal range as indicated in the manufacturer's published data:
        1) If the manufacturer's data is not available, investigate any values which deviate from adjacent poles or similar breakers by more than 50 percent of the lowest value.

e. Long-time pickup values shall be as specified, and the trip characteristic shall not exceed the manufacturer's published time-current characteristic tolerance band, including adjustment factors:
    1) If the manufacturer's curves are not available, trip times shall not exceed the value shown in NETA ATS tables.
f. Short-time pickup values shall be as specified, and the trip characteristic shall not exceed the manufacturer's published time-current tolerance band.
g. Ground fault pickup values shall be as specified, and the trip characteristic shall not exceed the manufacturer's published time-current tolerance band.
h. Instantaneous pickup values shall be as specified and within the manufacturer's published tolerances:
    1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
i. Pickup values and trip characteristics shall be within the manufacturer's published tolerances.
j. Determine energy reducing maintenance switch pickup value by primary current injection.
k. Breaker open, close, trip, trip-free, anti-pump, and auxiliary features shall function as designed.
l. Charging mechanism shall operate in accordance with the manufacturer's published data.

END OF SECTION

SECTION 16951

ELECTRICAL FUNCTIONAL TESTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Electrical equipment and system testing requirements for the complete facility, including the following:

1. Testing for each pump system.

2. Operational Testing.

1.2 SUBMITTALS - START-UP PLAN

A. Provide functional testing plans and procedures for all project equipment and systems and for all modes of operation. Functional testing procedures shall be in the cause and effect format.

1.3 GENERAL TESTING PROCEDURES

A. Electrical Systems: As specified in Section 16950 Field Electrical Acceptance Tests and the individual equipment specification sections.

1. Electrical testing shall be performed in two stages. The first stage shall consist of electrical equipment testing prior to energization and operation of electrical equipment. The following shall be submitted for OWNER and ENGINEER review prior to equipment startup and energization:

a. Completed field calibration, loop acceptance, and end-to-end acceptance testing data forms.

b. The following completed electrical equipment testing data forms:

1) Low-Voltage Cables.

2) Grounding Systems.

3) Rotating Machinery: AC Motors.

2. The second stage of testing shall involve the completion of functional testing which include all possible operating scenarios, alarm conditions, prohibitive interlocks, and indication functions. Contractor shall perform a "dry run" for all functional tests to ensure that systems are working properly prior to witnessing by the OWNER. After the "dry run" is successfully completed, CONTRACTOR shall provide minimum 48 hours notice to the OWNER that systems are ready for witnessed functional testing. The OWNER will witness functional testing and will initial all functional testing forms upon successful operation of systems.

1.4 FUNCTIONAL TESTING

A. Functional testing shall not begin until Stages 1 of Electrical Testing have been completed for individual systems or pieces of equipment.

B. Functional testing shall be perform in multiple phases according to the completion and construction schedule, that would be modified, in order to maintain the station in continuous operation.

C. The CONTRACTOR is responsible for functional testing for all project equipment and systems in all modes of operation.

D. The functional testing plan shall be reviewed an approved by the OWNER and Owner's Representative prior to testing.

E. Functionally test mechanical and electrical equipment for proper operation after general start-up and testing tasks have been completed for individual systems or pieces of equipment.

F. Verify that Controls of the pump operate to the satisfaction of the Owner Representative.

G. Interconnection of the well pump controls and monitoring system with existing site RTU and SCADA command center controls shall be tested, and operation of the control system shall include verification with (Tampa Bay Water District) SCADA command center that the local controls are functioning in remote mode, including control features such as existing security system, controls and existing ancillary instrumentation, such as water pressure transmitters and water flow meters.

1.5 RECORD KEEPING

A. Maintain and submit following records generated during functional testing:

1. Daily logs of equipment testing identifying all tests conducted and outcome.
2. Data sheets of testing.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 16990

CONDUIT
SCHEDULE AREA 10

PART 1 GENERAL

1.01 SUMMARY

A. Conduit requirements:
   1. As defined in Section 16050 and Section 16130.

B. Cable requirements and definitions:
   1. As defined in Section 16050 and Section 16123.
   2. 2/CS#16: 2 conductor, 16 gauge, twisted shielded pair.
   3. MFR: Manufacturer or vendor furnished cable.
   4. Pull: Pull Rope.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 CONDUIT SCHEDULE

A. Conduit Schedule is presented on the following pages.

CONDUIT SCHEDULE AREA

LAKE BRIDGE HSPS PUMP #4

HIGH SERVICE PUMP STATION

ENGINEER SK

REVISION

DATE 3/19/25

CONDUIT			CONDUCTORS			GROUND				
NUMBER	DWG	SIZE	#	SIZE	TYPE	#	SIZE	TYPE	DESCRIPTION	CONNECTING SEGMENTS
C-10-010		0.75"	2	#14	XHHW-2	1	#14	XHHW-2	FR: PSH-1 (EXISTING)	C-10-012
									TO: CONDUIT TEE	
									2 #14 >> PSH-1 (EXISTING) CONTROL	
C-10-011		0.75"	2	#12	XHHW-2	1	#12	XHHW-2	FR: FSL-1	C-10-012
			2	#14	XHHW-2				TO: CONDUIT TEE	
									2 #12 >> FSL-1 POWER	
									2 #14 >> FSL-1 CONTROL	
C-10-012 (EXISTING)		0.75"	2	#12	XHHW-2	1	#12	XHHW-2	FR: CONDUIT TEE	
			4	#14	XHHW-2				TO: PLC-1-1	
									2 #14 >> PSH-1 (EXISTING) CONTROL	C-10-010
									2 #12 >> FSL-1 POWER	C-10-011
									2 #14 >> FSL-1 CONTROL	C-10-011
C-10-020		0.75"	2	#14	XHHW-2	1	#14	XHHW-2	FR: PSH-2 (EXISTING)	C-10-022
									TO: CONDUIT TEE	
									2 #14 >> PSH-2 (EXISTING) CONTROL	
C-10-021		0.75"	2	#12	XHHW-2	1	#12	XHHW-2	FR: FSL-2-2	C-10-022
			2	#14	XHHW-2				TO: CONDUIT TEE	
									2 #12 >> FSL-2-2 POWER	
									2 #14 >> FSL-2-2 CONTROL	
C-10-022 (EXISTING)		0.75"	2	#12	XHHW-2	1	#12	XHHW-2	FR: CONDUIT TEE	
			4	#14	XHHW-2				TO: PLC-1-1	
									2 #14 >> PSH-2 (EXISTING) CONTROL	C-10-020
									2 #12 >> FSL-2-2 POWER	C-10-021
									2 #14 >> FSL-2-2 CONTROL	C-10-021
C-10-030		0.75"	2	#14	XHHW-2	1	#14	XHHW-2	FR: PSH-3 (EXISTING)	C-10-032
									TO: CONDUIT TEE	
									2 #14 >> PSH-3 (EXISTING) CONTROL	
C-10-031		0.75"	2	#12	XHHW-2	1	#12	XHHW-2	FR: FSL-3	C-10-032
			2	#14	XHHW-2				TO: CONDUIT TEE	
									2 #12 >> FSL-3 POWER	
									2 #14 >> FSL-3 CONTROL	
C-10-032 (EXISTING)		0.75"	2	#12	XHHW-2	1	#12	XHHW-2	FR: CONDUIT TEE	
			4	#14	XHHW-2				TO: PLC-1-1	
									2 #14 >> PSH-3 (EXISTING) CONTROL	C-10-030
									2 #12 >> FSL-3 POWER	C-10-031
									2 #14 >> FSL-3 CONTROL	C-10-031
C-10-040		1.5"	2	#12	XHHW-2	1	#12	XHHW-2	FR: PMP-4 MOTOR TERMINAL BOX (STATOR RTD, AND MWH)	
			6	MFR	CABLE				TO: J-BOX	
									2 #12 >> PMP-4 MWH POWER	
									6 MFR >> PMP-4 MOTOR STATOR RTD	
C-10-041 (EX. SPARE)		0.75"	2	#12	XHHW-2	1	#12	XHHW-2	FR: FSL-4	
			2	#14	XHHW-2				TO: PLC-1-1	
									2 #12 >> FSL-4 POWER	
									2 #14 >> FSL-4 CONTROL	
C-10-042		0.75"	2	#14	XHHW-2	1	#14	XHHW-2	FR: LCP-4 (E-STOP)	C-10-046
									TO: J-BOX	
									2 #14 >> LCP-4 (E-STOP) CONTROL	
C-10-043		0.75"	2	#14	XHHW-2	1	#14	XHHW-2	FR: PSH-4	C-10-046
									TO: J-BOX	
									2 #14 >> PSH-4 CONTROL	
C-10-044		0.75"	2	#12	XHHW-2	1	#12	XHHW-2	FR: J-BOX	C-10-046
									TO: J-BOX	
									2 #12 >> PMP-4 MWH POWER	
C-10-045		0.75"	2	#14	XHHW-2	1	#14	XHHW-2	FR: PSL-4	C-10-046
									TO: J-BOX	
									2 #14 >> PSL-4 CONTROL	
C-10-046 (EXISTING)		0.75"	2	#12	XHHW-2	1	#12	XHHW-2	FR: J-BOX	
			6	#14	XHHW-2				TO: VFD-4	
									2 #14 >> LCP-4 (E-STOP) CONTROL	C-10-042
									2 #14 >> PSH-4 CONTROL	C-10-043
									2 #12 >> PMP-4 MWH POWER	C-10-044
									2 #14 >> PSL-4 CONTROL	C-10-045
C-10-047 (EX. SPARE)		0.75"	9	#14	XHHW-2	1	#14	XHHW-2	FR: VFD-4	
									TO: PLC-1-1	
									2 #14 >> VFD-4 CONTROL; PLC-OUTPUT	
									7 #14 >> VFD-4 FEEDBACK; PLC-INPUT	

CONDUIT SCHEDULE AREA

LAKE BRIDGE HSPS PUMP #4

HIGH SERVICE PUMP STATION

ENGINEER SK

REVISION

DATE 3/19/25

CONDUIT			CONDUCTORS			GROUND				
NUMBER	DWG	SIZE	#	SIZE	TYPE	#	SIZE	TYPE	DESCRIPTION	CONNECTING SEGMENTS
P-10-040 (EXISTING)		2.5"	3	#3/0	XHHW-2	1	#3	XHHW-2	FR: VFD-4 TO: SWBD-LB 3 #3/0 >> VFD-4 POWER I	
P-10-041 (EXISTING)		2.5"	3	#3/0	XHHW-2	1	#3	XHHW-2	FR: VFD-4 TO: SWBD-LB 3 #3/0 >> VFD-4 POWER II	
P-10-042 (EXISTING)		2.5"	3	#3/0	XHHW-2	1	#3	XHHW-2	FR: PMP-4 MOTOR TERMINAL BOX (POWER) TO: VFD-4 3 #3/0 >> PMP-4 MOTOR POWER I	
P-10-043 (EXISTING)		2.5"	3	#3/0	XHHW-2	1	#3	XHHW-2	FR: PMP-4 MOTOR TERMINAL BOX (POWER) TO: VFD-4 3 #3/0 >> PMP-4 MOTOR POWER II	
S-10-040		0.75"	1	MFR	CABLE	1	#14	XHHW-2	FR: PMP-4 BEARING RTD 1 TO: J-BOX 1 MFR >> PMP-4 BEARING RTD 1 SIGNAL	S-10-044
S-10-041		0.75"	1	MFR	CABLE	1	#14	XHHW-2	FR: PMP-4 BEARING RTD 2 TO: J-BOX 1 MFR >> PMP-4 BEARING RTD 2 SIGNAL	S-10-044
S-10-042		0.75"	1	MFR	CABLE	1	#14	XHHW-2	FR: PMP-4 MOTOR BEARING RTD 1 TO: J-BOX 1 MFR >> PMP-4 MOTOR BEARING RTD 1 SIGNAL	S-10-044
S-10-043		0.75"	1	MFR	CABLE	1	#14	XHHW-2	FR: PMP-4 MOTOR BEARING RTD 2 TO: J-BOX 1 MFR >> PMP-4 MOTOR BEARING RTD 2 SIGNAL	S-10-044
S-10-044 (EX. SPARE)		1.5"	10	MFR	CABLE	1	#14	XHHW-2	FR: J-BOX TO: VFD-4 6 MFR >> PMP-4 MOTOR STATOR RTD 1 MFR >> PMP-4 BEARING RTD 1 SIGNAL S-10-040 1 MFR >> PMP-4 BEARING RTD 2 SIGNAL S-10-041 1 MFR >> PMP-4 MOTOR BEARING RTD 1 SIGNAL S-10-042 1 MFR >> PMP-4 MOTOR BEARING RTD 2 SIGNAL S-10-043	
S-10-045 (EX. SPARE)		0.75"	2	2/CS-#16		1	#14	XHHW-2	FR: VFD-4 TO: PLC-1-1 1 2/CS-#16 >> VFD-4 SPEED CONTROL; PLC-OUTPUT 1 2/CS-#16 >> VFD-4 SPEED FEEDBACK: PLC-INPUT	
X-10-040 (EX. SPARE)		0.75"	1	PULL	ROPE				FR: PMP-4 TO: PLC-1-1 1 PULL >> SPARE	

END OF CONDUIT SCHEDULE

END OF SECTION

SECTION 17101

SPECIFIC CONTROL STRATEGIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Loop descriptions:

a. Specific control requirements and functional descriptions for individual control loops associated for each well pump house and related instruments.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.1 APPLICATION AND OPERATION

A. High Service Pump Controls:

1. References:

a. P&ID drawing 10N01, 10N02, 10N03.

b. Schematic Drawing 06N05.

2. Hardwired control:

a. The Systems Integrator sub-contractor shall copy and convert the existing PLC program (Automation Direct C-More) and transfer it to the new CPU program (Automation Direct Do-More). The Program shall be edited to add the fourth High Service Pump and the additional functionality described below.

b. The fourth Pump's controls have a selector switch for local or remote control selection.

c. In local control mode, the pump can be started and stopped using the Start/Stop pushbuttons located on the door of the pump VFD. There shall also be an Enable/Disable Switch mounted near the Pump.

d. In remote control mode, the pump can be started and stopped using the Start/Stop pushbuttons located on the SCADA display screen.

3. Hardwired interlocks

a. The pump is stopped and prohibited from starting if:

1) Motor high temperature is detected. Motor shut-down occurs, and an alarm is sent to SCADA.

2) The discharge side of the existing high service pumps was installed with a limit switch on the check valves to shut-down the pump if the valve does not open a short time after the pump is turned on. This system will be disconnected and replaced. The replacement will be a thermal-mass type flow switch (low), installed on the discharge side of each pump. If pump flow is not verified (15 GPM or greater) within 20 seconds (operator adjustable time delay) of the PLC commanding the pump to run, the PLC will shut-down the pump and display an alarm at the SCADA HMI screen. The Systems Integrator Contractor shall edit the existing and new pump screens and PLC/VFD function block logic to accommodate this new pump protection function.

b. Pilot Devices, Field:

1) PI-1A High Service Pump 1 Suction side Pressure Gauge.

2) PSL-1 High Service Pump 1 Suction side Pressure Switch Low.

3) PI-1B High Service Pump 1 Discharge side Pressure Gauge.

4) PSH-1 High Service Pump 1 Discharge side Pressure Switch High.

5) FSL-1 High Service Pump 1 Discharge side Flow Switch Low.

6) TSH-1 High Service Pump 1 motor Temperature Switch High.

7) PI-2A High Service Pump 2 Suction side Pressure Gauge.

8) PSL-2 High Service Pump 2 Suction side Pressure Switch Low.

9) PI-2B High Service Pump 2 Discharge side Pressure Gauge.

10) PSH-2 High Service Pump 2 Discharge side Pressure Switch High.

11) FSL-2 High Service Pump 2 Discharge side Flow Switch Low.

12) TSH-2 High Service Pump 2 motor Temperature Switch High.

13) PI-3A High Service Pump 3 Suction side Pressure Gauge.

14) PSL-3 High Service Pump 3 Suction side Pressure Switch Low.

15) PI-3B High Service Pump 3 Discharge side Pressure Gauge.

16) PSH-3 High Service Pump 3 Discharge side Pressure Switch High.

17) FSL-3 High Service Pump 3 Discharge side Flow Switch Low.

18) TSH-3 High Service Pump 3 motor Temperature Switch High.

19) PI-4A High Service Pump 4 Suction side Pressure Gauge.

20) PSL-4 High Service Pump 4 Suction side Pressure Switch Low.

21) PI-4B High Service Pump 4 Discharge side Pressure Gauge.

22) PSH-4 High Service Pump 4 Discharge side Pressure Switch High.

23) FSL-4 High Service Pump 4 Discharge side Flow Switch Low.

24) TSH-4 High Service Pump 4 motor Temperature Switch High.

c. LCP Devices:

1) Enable/Disable push-button station (shut-down push-button mounted adjacent to the pump).

d. Drive/Starter enclosure Devices:

1) LOCAL-OFF-REMOTE selection switch.

2) START push-button.

3) STOP push-button.

4) Emergency STOP push-button. (RED)

5) Alarm RESET push-button. (BLACK)

6) RUNNING Status indication light. (GREEN)

7) FAIL alarm indication light. (RED)

8) POWER available indication light. (WHITE)

9) High Discharge PRESSURE indication light. (AMBER)

10) Motor Over Temperature indication light. (AMBER)

11) Motor Protection Trip. (RED)

12) Manual Speed Control and feedback (via VFD HIM module on front of VFD door).

4. SCADA RTU control:

a. The SCADA operating personnel makes decisions based on water demand and determines the number of well pumps required to maintain the necessary water production.

3.2 DEMONSTRATION

A. The complete functioning of each well pump and related ancillary controls with existing RTU and SCADA system shall be demonstrated to the OWNER and ENGINEER.

END OF SECTION

SECTION 17500

INSTRUMENTATION AND CONTROL SYSTEM

PART 1 - GENERAL

1.1 SCOPE. This section covers the furnishing and installation of an instrumentation and control system the system shall be furnished as specified, complete with all software, hardware, input/output hardware, instrumentation, and all devices, accessories, appurtenances, testing, system commissioning and training necessary for proper operation.

A. The drawings and specifications are based on the best information available, but there may be some undocumented wiring requiring the Contractor to field investigate in order to maintain existing functionality.

B. The Contractor shall be responsible for the integration of the PCS with existing plant devices, devices as specified herein, and devices provided under other sections, with the objective of providing a completely integrated control system free of signal incompatibilities and all required functionality for a properly operating facility. Contractor shall coordinate with Tampa Bay Water to develop a software migration strategy to transfer the old program into the new program on the new PLC processor (Automation Direct C-More to Automation Direct Do-More software transition).

1.2 ASSOCIATED SECTIONS. This section also includes the equipment and services specified in the following sections.

A.	Section 17530	PROGRAMMABLE LOGIC CONTROLLERS
B.	Section 17550	SOFTWARE CONTROL BLOCK DESCRIPTIONS
C.	Section 17560	INSTRUMENTATION – GENERAL REQUIREMENTS
D.	Section 17561	PANEL MOUNTED INSTRUMENTS
E.	Section 17563	PRESSURE AND LEVEL INSTRUMENTS
F.	Section 17564	ANALYTICAL INSTRUMENTS
G.	Section 17565	MISCELLANEOUS INSTRUMENTS
H.	Section 17570	PANELS, CONSOLES, AND APPURTENANCES
I.	Section 17580	UNITERRUPTIBLE POWER SUPPLY
J.	Section 16075	ELECTRICAL IDENTIFICATION

K. Section 16100 ELECTRICAL EQUIPMENT INSTALLATION

L. Section 16123 600 VOLT OR LESS WIRES AND CABLES

1.3 GENERAL. Equipment furnished and installed under this section shall be fabricated, assembled, erected, and placed in proper operating condition in full conformity with the drawings, specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by designer.

A. General Equipment Stipulations. If requirements in this specification differ from those in a referenced General Equipment Stipulations, the requirements specified herein shall take precedence.

B. Drawings. The drawings indicate locations and arrangements of equipment and may include installation details, block DIAGRAMS, and one-line diagrams showing connections and interfaces with other equipment. The input/output (I/O) lists are attached as an appendix to the Programmable Logic Controllers section:

1. Principal components of the instrumentation systems shall be as indicated on the P&ID drawings and instrument device schedule attached to this section.

C. Codes, Permits and Agency Approvals. All work performed and all materials used shall be in accordance with the 2023 National Electrical Code, and with applicable local regulations and ordinances. Where mandated by codes, panels, assemblies, materials, and equipment shall be listed by Underwriters' Laboratories. The Contractor shall, as part of his work, arrange for and obtain all necessary permits, inspections, and approvals by the authorities having local jurisdiction of such work. This shall include any third-party inspections and testing of panels and equipment.

D. Supplier's Qualifications. Equipment and software furnished under this section and under other related sections listed in the Scope paragraph above shall be designed, coordinated, and supplied by a single manufacturer or supplier, hereinafter referred to as the System Supplier. The System Supplier shall be regularly engaged in the business of supplying computer-based monitoring, control, and data acquisition systems. The Contractor shall utilize the services of a Tampa Bay Water pre-qualified System Supplier to coordinate all control system related items, to approve installation, calibrate and commission field instruments, and to perform all testing, training, and startup activities specified to be provided. Tampa Bay Water will supply an approved System Supplier list upon request.

E. Coordination. Systems supplied under this section shall be designed and coordinated by System Supplier for proper operation with related equipment and materials furnished by other suppliers under other sections of these specifications, under other contracts, and, where applicable, with related existing equipment. All equipment shall be designed and installed in full conformity with the drawings, specifications, engineering data, instructions, and recommendations of the manufacturer, and the manufacturer of the related equipment.

F. Related Equipment and Materials. Related equipment and materials may include, but will not be limited to, instrumentation, motor controllers, valve actuators, chemical feeders, analytical measuring devices, conduit, cable, and piping as described in other sections or furnished under other contracts.

G. Device Tag Numbering System. All devices shall be provided with permanent identification tags. The tag numbers shall agree with System Supplier's equipment drawings and shall be as close as practical to the tag numbers used on the project drawings and device schedules. All field-mounted transmitters and devices shall have stamped stainless steel identification tags. Panel, subpanel, and rack-mounted devices shall have laminated phenolic identification tags securely fastened to the device. Hand-lettered or tape labels will not be acceptable. Panel identification tags shall be held in place with rivets or epoxy. Nema 4, 4x, or 7 panel tags shall be held in place with epoxy.

1.4 GENERAL REQUIREMENTS. The drawings and specifications indicate the extent and general arrangement of the systems. If any departures from the drawings or specifications are deemed necessary by system supplier, details of such departures and the reasons shall be submitted to engineer for review with or before the first stage submittal. No departures shall be made without prior written acceptance.

A. The specifications describe the minimum requirements for hardware and software. Where System Supplier's standard configuration includes additional items of equipment or software features not specifically described herein, such equipment or features shall be furnished as a part of the system and shall be warranted as specified herein.

B. Governing Standards. Equipment furnished under this section shall be designed, constructed, and tested in accordance with IEEE 519, ANSI C37.90, FCC Part 15 - Class A, and NEMA ICS-1-109.60.

C. Dimensional Restrictions. Layout dimensions will vary between manufacturers and the layout area indicated on the drawings is based on typical values. The System Supplier shall review the contract drawings, the manufacturer's layout drawings and installation requirements, and make any modifications requisite for proper installation subject to acceptance by ENGINEER. At least three feet of clear access space shall be provided in front of all components of the instrumentation and control system components.

D. Workmanship and Materials. System Supplier shall guarantee all equipment against faulty or inadequate design, improper assembly or erection, defective workmanship or materials, and leakage, breakage, or other failure. Materials shall be suitable for service conditions:

1. All equipment shall be designed, fabricated, and assembled in accordance with recognized and acceptable engineering and shop practice. Individual parts shall be manufactured to standard sizes and thicknesses so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate units shall be interchangeable. Equipment shall not have been in service at any time prior to delivery, except for testing.

E. Corrosive Fluids. All parts which are exposed to corrosive conditions shall be made from corrosion resistant materials. System Supplier shall submit certification that the instrument manufacturer approves the selection of materials of primary elements that are in contact with the specified process fluid to be inert to the effects of the process fluid.

F. Appurtenances. Signal converters, signal boosters, amplifiers, special power supplies, special cable, special grounding, and isolation devices shall be furnished as needed for proper performance of the equipment.

G. Programming Devices. A programming or system-configuring device shall be provided for systems that contain any equipment that requires such a device for routine calibration, maintenance, and troubleshooting. The programming device shall be complete, newly purchased for this project, and shall be in like-new condition when turned over to OWNER at completion of start-up.

1.5 SUBMITTALS. Complete dimensional, assembly, and installation drawings, wiring and schematic diagrams; and details, specifications, and data covering the materials used and the parts, devices and accessories forming a part of the system furnished, shall be submitted in accordance with the submittals section, and as described below.

A. Submittal data shall be grouped and submitted in three separate stages. The submittals for each stage shall be complete before submittals of subsequent stages are submitted. Incomplete submittals, submittals not conforming to the submittal requirements, individual drawings and data sheets submitted at random intervals will not be accepted for review and returned.

B. Review or approval of submittals shall not relieve the Contractor from providing a complete and functional system.

C. Submit, in accordance with any referenced project submittals section and Section 01340, shop drawings to establish compliance with the project specifications and drawings. These shop drawings shall fully demonstrate that the equipment and services to be furnished will comply with the provisions of this Section and shall provide a true and complete record of the equipment as manufactured and delivered.

D. Submittals shall be made in both electronic and hardcopy format. Electronic submittal shall be in Adobe Portable Document Format 'pdf'. Hardcopy of submittals shall be bound in separate three-ring 'D' binders no larger than 3 inches, with an index, sectional dividers, and with all drawings reduced to a minimum size of 11-in by 17-in for inclusion within the binder. Submittals shall be made as follows:

1. First Stage Submittal. The first stage submittal shall include the following items.

    a. A detailed list of any exceptions, functional differences, or discrepancies between the system proposed by System Supplier and this specification.

    b. A tabulation of all the System Supplier's planned submittals and a preliminary submittal schedule.

c. A tabulation of all the System Suppliers contractually required meetings including preliminary dates, System Supplier's personnel attending, specified meeting duration, and meeting purpose.

d. A detailed PLC and computer system network diagram showing all computers, computer components, network components, PLCs, and network connectivity hardware and media. Indicate equipment shown on the network diagram that is furnished by OTHERS. Cross reference equipment to specification P&ID tags, and include basic model numbers and manufacturer.

e. A tabulation of all proposed licensed software provided with the system, including all operating systems, enterprise software, virus protection and firewall software, PLC programming software, HMI software, database software, and reporting software. Indicate the number and type of licenses provided. For software products with multiple 'option' modules, indicate modules provided within each license.

f. A tabulation of all control panels the System Supplier plans to provide.

g. A tabulation and brief outline of all proposed training courses, content, and duration. Include specification reference.

h. A brief, concise description of the proposed personnel, their title, contact information (Phone and e-mail), and project function.

2. Second Stage Submittals. All first stage submittals must be submitted and approved before any second stage submittals can be submitted. Before any equipment is released for shipment to the site, and before factory testing is scheduled, the following data shall be submitted and approved.

3. Field Instruments. This submittal shall provide complete documentation of all field instruments using ISA-S20 format. A complete Bill of Materials (BOM) listing all instrumentation equipment shall be provided.

4. Provide ISA data sheets and/or equipment specification sheets for each instrument listing model numbers, options, and ancillary devices that are being provided. Provide an index, proper identification, and P&ID tag cross referencing. The sheets shall include, but not be limited to, the following information:

a. Instrument P&ID ISA tag number.

b. Instrument description, location and process function.

c. Manufacturer's complete model number.

d. Instrument maximum performance specifications.

e. Instrument calibrated range.

f. Instrument input - output signal characteristics.

g. Instrument accuracy.

h. Instrument repeatability.

i. Instrument materials of construction.

j. Environmental specifications.

k. Electrical and/or pneumatic requirements.

l. Electrical hazardous area classification.

m. Physical size with dimensions, enclosure NEMA classification, and mounting details.

n. Specific mounting or installation details including calibration manifolds, mounting brackets, etc. furnished with the instrument.

o. Calibration or communications protocols provided (Hart, fieldbus, etc).

p. Isolation diaphragm provided.

q. Additional instrument options or calibration/ test equipment provided.

r. Instrument sizing calculations where applicable.

5. PLC Control System Hardware: This submittal shall provide complete documentation of the proposed hardware (PLC's, termination cabinets, communication equipment, cables, peripherals, etc.). A complete Bill of Materials (BOM) listing all equipment shall be provided. The submittal shall include the following as a minimum:

   a. A complete schematic system block diagram(s) showing the interconnections between major hardware components including, but not limited to: panels, power supplies, consoles, telemetry equipment, local PLC processors, Uninterruptible Power Supplies (UPS), and vendor supplied PLC equipment. Include Ethernet address, field bus node address, Modbus node address, etc. as applicable.

   b. Furnish a manufacturer's cut sheet for each hardware component listing all model numbers, options, auxiliary and ancillary devices that are being provided. Provide an index, proper identification, and cross referencing. The cut sheets shall include, but not be limited to the following data: P&ID Drawing ISA tag number (if applicable), device name and function, manufacturer's complete model number, device location, device environmental and electrical requirements, communications protocols, and device hazardous area classification (if applicable).

   c. Provide a PLC Input/Output(I/O) list for all signals connected to each PLC and Remote I/O cabinet. The list shall be organized by PLCs. The I/O list shall be submitted in a Microsoft Excel™ 2024 or later electronic file format on a CD and on 8 ½ by 11 hard copy. The list shall contain the following fields: PLC tag, point ISA tag, point description, I/O type (AI, AO, DI, DO, Spare), analog calibrated range in engineering units, digital point active state and analog signal alarm limits.

6. Computer System and Network Hardware. This submittal shall provide complete documentation of all computer systems hardware, network communications hardware, and network communication devices. The submittal shall include the following:

a. A complete schematic system block diagram(s) showing the interconnections between all hardware components including, but not limited to: computer work stations, servers, peripheral devices (printers, switches, routers, etc.), communications racks and fiber optic patch panels, computer UPSs, computer and device network addresses, and communications media and protocol.

b. A loss budget and loss margin for each fiber optic link including patch panels, patch cables, splices, and connectors. Provide a power budget for each link based on the supplied equipment specifications.

c. Furnish a manufacturer's cut sheet for each hardware component listing all model numbers, options, auxiliary and ancillary devices that are being provided. Provide an index, proper identification, and cross referencing. The cut sheets shall include, but not be limited to the following data: P&ID Drawing ISA tag number (if applicable), device name and function, manufacturer's complete model number, device location, device environmental and electrical requirements, communications protocols, and device hazardous area classification.

7. PLC Control Software. This submittal shall provide complete documentation of all PLC control functions including the HMI interface as required by Section 17530, or as determined by the System Integrator by field investigation, or as required to provide a system meeting the functional intent of the specifications. The control schemes shall be submitted on a loop basis in narrative form and will become the format for factory and acceptance testing. The submittal shall include the following:

   a. Submit control schemes in narrative form based on information from field investigation, and information in the Drawings and Specifications. For each control function, the control scheme narratives shall included:

      1) A brief description of the control function.

      2) A brief narrative of the control strategy.

      3) A tabulation of all real inputs and outputs (AI, AO, DI, DO) associated with the control function.

      4) A tabulation of all PLC calculated (pseudo) inputs and outputs (AI, AO, DI, DO) associated with the control function.

      5) A tabulation and description of all Operator entered setpoints or parameters associated with the control function including initial values.

      6) A tabulation of HMI graphic screens associated with the control function including tag names.

      7) Status and alarms associated with the control function.

      8) Recovery from equipment failures for equipment controlled by the control function.

      9) Recovery from utility power failures and PLC startup as applicable.

b. Provide a complete listing of database tags developed for this project. The list shall be submitted in electronic, editable file format on a CD. The list shall contain as a minimum for each point:

1) Point physical location. (Panel, PLC, rack, slot, etc.).

2) Point tag name.

3) Point type (AI, AO, DI, DO, Pseudo).

4) Point description.

5) Point range.

6) Point alarm limits, set-points, and control points.

c. Note that all analog alarms shall be calculated in PLC logic, all timers reside in the PLC and shall be adjustable, and all set-points and control variables shall be Operator adjustable from the HMI.

d. Provide a tabulation of all HMI screens and associated signals used on each screen.

8. HMI and Reporting Software - Initial Submittal. This submittal shall cover the specific plant HMI software functionality, proposed graphic display standards, process graphic displays, and HMI/Operator interfaces.

a. Furnish manufacturer's data sheets and part numbers for the proposed HMI software clearly identifying all optional modules included with the base software. Indicate the HMI software version, tag size, and any ancillary software or drivers required for the system to function as specified.

b. Furnish manufacturer's data sheets and part numbers for the proposed reporting software clearly identifying all options provided. Indicate the software version, number of licensed users, quantity and type of license, and any ancillary software or drivers required for the system to function as specified.

c. Provide an agenda for the required OWNER, ENGINEER, and System Supplier meetings specified in section 1-4.01.c.

d. The submittal shall contain tabulations and semi-final details of all logs, reports, process graphic displays, and popup graphic displays including the specifics of what shall appear on each display and what calculations are required to support them. Submitted process graphic displays shall be 8 ½ inches by 11 inches and in full color.

e. Provide a tabulation of the System Supplier's graphic configuration standards proposed for use on the project.

f. Provide a tabulation of all HMI trend displays including the tags for each signal on each display including the frequency of data sampling.

g. Provide a tabulation of all HMI alarm displays including the tags for each signal on each display.

h. Provide a description of the HMI/Operator interface describing Operator device controls, graphic screen controls and selection, hierarchical organization of screens.

i. Provide a tabulation of HMI and graphic standards proposed including device symbols, color assignments, user security, device control methodology, graphic conventions, screen background/foreground and text sizes and colors.

j. If applicable, provide a complete listing of all signals proposed for long term historical data storage including any calculated signals. Include frequency of data sampling, data resolution, data formats, and historical data access and reporting capabilities.

k. If applicable, provide a template for each report proposed with simulated data in each report field accurately representing the repot format, data format, data units, and row and column headings. Include a complete tabulation of data variables that will appear on the report with tag name and description.

9. Control Panels and Panel Mounted equipment. This submittal shall provide complete documentation of all control panels, panel instruments, field surge protection devices, and panel components. A complete Bill of Materials (BOM) listing all instrumentation and control equipment shall be provided. The submittal shall include the following:

a. Provide equipment specification cut sheets for each panel component provided clearly listing all model numbers, options, electrical characteristics, environmental characteristics and performance ratings. Provide an index, proper identification, and cross referencing to P&ID tags as applicable.

b. Provide a field wiring, panel wiring, panel field terminals, and conduit identification scheme for use in panel construction and field terminations.

c. Provide detailed drawings for all control panels, consoles and/or enclosures which shall include:

1) Panel assembly and layout Drawings to scale. Drawings shall include base, front, and interior subpanel layouts.

2) Panel materials of construction, NEMA rating, mounting details, and optional accessories (sun shields, air conditioning).

3) Panel internal wiring diagrams showing all power connections, panel power derivation and distribution, fuse and circuit breaker sizes, surge protection devices, and grounding arrangement.

4) Panel external loop wiring diagrams showing interconnections between panels and all field equipment including the field equipment terminal numbers and intermediate termination panel numbering if applicable.

5) Provide power requirements and heat dissipation calculations for each panel.

6) Provide color selection samples for selection by the OWNER.

d. General:

1) Adhere to the wiring numbering scheme as specified herein:

2) Uniquely number each wire.

3) Wire numbers must appear on equipment drawings.

4) Some items of Work are represented schematically, and are designated for the most part by numbers, as derived from criteria in ISA-5.1:

a) Employ the nomenclature and numbers specified in this Section and indicated on the Drawings exclusively throughout Shop Drawings, datasheets, and similar Submittals.

10. Specific Submittal requirements:

a. Control panel drawings.

b. General requirements:

1) Submit panel, enclosure, console, furniture, and cabinet layout drawings for items provided.

2) Use equipment and instrument tags as depicted on the P&IDs for all Submittals.

c. Nameplates and wire labeling:

1) Nameplate legend, including text, letter size, materials, and colors.

2) As indicated on the Drawings.

d. Structural requirements:

1) Anchoring method and leveling criteria, including manufacturer's recommendations for the Project Site seismic criteria.

2) Weight.

e. Clearly show modifications to existing circuits:

1) Show existing unmodified wiring to clearly depict the functionality and electrical characteristics of the complete modified circuits.

2) Required for materials and equipment listed in this and other Technical Sections.

3) Front, side, rear, internal, external elevations, and top and bottom views, showing all dimensions and all to scale.

4) Locations of conduit entrances and access plates.

5) Component layout and identification.

f. Complete and detailed bills of materials:

1) Including quantity, description, manufacturer, and part number for each assembly or component for each control panel.

2) Include all items within an enclosure.

3) Requirements for physical separation between control system components and 120 VAC, 480 VAC, and medium voltage power cables.

4) Complete grounding requirements for each system component, including any requirements for PLCs, process LANs, and control system equipment.

g. PLC rack and card layout:

1) Provide a count of current I/O allocation.

2) Future I/O allocation.

3) Quantity of spares provided.

4) NEMA rating.

5) Material and finish.

11. Schematics and wiring diagrams:

a. General requirements:

1) Submit panel wiring diagrams for every panel that contains wiring.

2) Use equipment and instrument tags as depicted on the P&IDs for all Submittals.

b. Nameplates and wire labeling:

1) As indicated on the Drawings.

c. Clearly show modifications to existing circuits:

1) Show existing unmodified wiring to clearly depict the functionality and electrical characteristics of the complete modified circuits.

d. Include the following information:

1) Name of panel.

2) Wiring sizes and types.

3) Terminal strip numbers.

4) Terminal identification for device and field connections.

5) Wire tags and labels.

6) Functional name and manufacturer's designation for items to which wiring is connected.

7) Set points for relays and control or alarm contact settings.

8) Incorporate equipment manufacturer's Shop Drawing information into the schematic diagrams in order to document the entire control system.

12. Loop drawings:

a. Submit loop drawings after an accepted Commissioning Test Reports Submittal as specified in Section 16950 – Field Electrical Acceptance Tests.

b. Engineer recommends submitting a sample/template loop drawing for review prior to this Submittal.

c. General requirements:

1) Submit loop drawings for every analog, discrete, fieldbus signal, vendor-supplied equipment packages, and control panels.

2) Includes monitoring, alarming, interlocks, and control devices.

3) Use equipment and instrument tags as depicted on the P&IDs for all Submittals.

4) Show and identify each component of each loop or system using requirements and symbols from ISA-5.4.

d. Provide drawings for every instrumentation loop system:

1) Furnish a separate drawing sheet for each system or loop diagram.

e. Nameplates and wire labeling:

1) As indicated on the Drawings.

f. Clearly show modifications to existing circuits:

1) Show existing unmodified wiring to clearly depict the functionality and electrical characteristics of the complete modified circuits.

2) Provide loop drawings in the format indicated in the Contract Drawings.

g. Provide a complete index in the front of each bound volume:

1) Index the loop drawings by systems or process areas.

2) In addition to the ISA-5.4 requirements, show the following details:

a) Functional name of each loop.

b) Reference name, drawing, and loop diagram numbers for any signal continuing off the loop diagram sheet.

c) Show all terminal numbers, regardless of the entity providing the equipment.

d) MCC panel, circuit, and breaker numbers for power feeds to the loops and instrumentation.

e) Terminal assignments associated with every manhole, pull-box, junction box, conduit, and panel through which the loop circuits pass.

f) Show VCP, instrument panel, conduit, junction box, equipment and PCS terminations, termination identification, wire numbers and colors, power circuits, and ground identifications.

3) Cables required for communication requirements.

13. PLC I/O list:

    a. A complete listing of the PCS system point I/O database:

        1) Include for each data point relevant parameters such as range, contact orientation, limits, incremental limits, I/O hardware address, and PLC assignment.

        2) Organize on a site-by-site basis and separate by point type.

        3) In addition to the active l/O points, list the implemented spare l/O points and the available l/O points remaining on each card, as well as other defined future points specified or shown.

    b. Upon completion of the Work, update I/O lists to indicate the final as built configuration of the systems:

        1) Organize as-built I/O list on a site-by-site basis, separated by equipment and point type.

14. Control descriptions:

    a. For each control loop, provide programming logic in the form of a written functional description indicating the operation of the equipment, signals, and controls based on the requirements specified in Section 17101 - Specific Control Strategies, and as shown on the P&IDs:

        1) Start from the specific control strategies provided in the Specifications.

        2) Maintain same organization and format, and expand/edit the specific control strategies as needed.

        3) Functional descriptions shall be modified to reflect the actual programming to be implemented in the PLCs.

        4) Include each function depicted or described in the Contract Documents.

    b. Include within the control description content:

        1) Specific requirements.

        2) Common requirements that pertain in general to all loops.

        3) Listing ranges, setpoints, timers, values, counter values, etc.

        4) Manual keyboard entries.

        5) Entry codes.

        6) System responses.

        7) Modes:

            a) Startup.

            b) Routine and normal operation.

            c) Regulation and control.

d) Shutdown under specified modes of operation.

e) Emergency operating shutdown.

c. Instrument datasheets:

1) Datasheets provided with the instrument specifications are preliminary and are not complete but are provided to assist with the completion of final instrument datasheets. Additional datasheets may be required.

2) Furnish fully completed datasheets for each instrument and component according to ISA-20 Specification Forms for Process Measurement and Control Instruments, Primary Elements and Control Valves.

3) Format: Microsoft Word or Microsoft Excel.

4) Features and options that are furnished.

5) Provide completed datasheet as specified in the Technical Sections and for each control system component.

d. Instrument installation drawings:

1) Provide instrument installation, mounting, and anchoring details for components and assemblies, including access requirements and conduit connection or entry details.

2) Each installation shall be identified by the equipment or instrument by tag number.

3) Provide certification by the instrument manufacturer that the proposed installation is in accordance with the instrument manufacturer's recommendations and is fully warrantable.

4) Provide, at a minimum, the following contents for each detail:

a) Necessary sections and elevation views required to define instrument location by referencing tank, building, or equipment names and numbers, and geographical qualities such as north, south, east, west, basement, first floor, etc.

b) Ambient temperature and humidity where the instrument is to be installed.

c) Corrosive qualities of the environment where the instrument is to be installed.

d) Hazardous rating of the environment where the instrument is to be installed.

e) Process line pipe or tank size, service, and material.

f) Process tap elevation and location.

g) Upstream and downstream straight pipe lengths between instrument installation and pipe fittings and valves.

h) Routing of tubing and identification of supports.

i) Mounting brackets, stands, anchoring devices, and sunshades.

j) Conduit entry size, number, location, and delineation between power and signal.

k) NEMA ratings of enclosures and components.

l) Clearances required for instrument servicing.

m) List itemizing manufacturer makes, model numbers, quantities, lengths required, and materials of each item required to support the implementation of the detail.

e. Product data:

1) Provide a technical brochure or bulletin (cutsheet) for each instrument or equipment on the Project, labeled with equipment and instrument tags as depicted on the P&IDs.

2) Submit with the corresponding datasheets.

3) Organization: Index product data in the Submittal by systems or loops.

4) Engineering data:

a) Test data and performance curves, when applicable.

b) Manufacturer's technical reference manuals.

f. Quality Control Submittals:

1) As specified herein.

2) Manufacturer representative qualifications.

3) Manufacturer certificates.

4) Test Plans.

5) Test Reports.

6) Owner Training Submittals.

7) As specified in Section 17500.

8) Replace any other symbols, designations, and nomenclature unique to a manufacturer's, Supplier's, or Subcontractor's standard methods with those specified in this Section and indicated on the Drawings.

g. Operation and maintenance manuals:

1) As specified in Section 17500.

2) Organize the operation and maintenance manuals for each process in the following manner:

a) Section A - Process and Instrumentation Diagrams.

b) Section B - Control Panel Drawings.

c) Section C - Schematics and Wiring Diagrams.

d) Section D - Loop Drawings.

e) Section E - Network Diagrams.

f) Section F - PLC I/O List.

g) Section G - Control Descriptions.

h) Section H - Instrument Datasheets.

i) Section I - Instrument Installation Drawings.

j) Section J - Product Data.

k) Section K - Sizing Calculations.

l) Section L - Test Results.

m) Section M - Operational Manual.

n) Section N - Spare Parts List.

15. Training Within 90 days of contract award to the General Contractor, the System Supplier shall submit an outline for the proposed training plan. The outline for each training course shall include:

    a. Course title, objectives, duration (hours, days), prerequisites, recommended and number of attendees, and the number of times the course is repeated.

    b. Recommended OWNER target audience for each course.

    c. Course content outline.

    d. Course location (OWNER facility, System Supplier's facility, or Manufacturer's facility). Specify travel and living expenses arrangements for any off-site course attendees.

    e. Preliminary schedule for all training.

    f. Summary of all training hours provided including manufacture's training hours.

16. The ENGINEER shall review the preliminary training plan submittal with the OWNER. Upon receipt of the OWNER and ENGINEER comments on the preliminary training plan, submit the specific proposed training plan. The final training plan shall include:

    a. A detailed outline for each course.

    b. Schedule of training courses including dates, number of occurrences, duration, class size, and location of each class.

    c. Resumes of the instructors who will actually conduct the training.

17. Spare Parts This submittal shall provide a combined and complete listing of all spare parts from all specification sections on the project provided by the System Supplier.

    a. The submittal shall be indexed by specification section number and list all spare parts and disposables provided under that specification section.

b. The submittal shall contain the specific specification paragraph reference for the component, the tag, description and complete model number, and the supplier and supplier's contact number.

18. Factory Acceptance Test. Within 90 days of the scheduled Factory Acceptance Test, the System Supplier shall submit a preliminary test plan outline. The plan should support all requirements specified in Paragraph 3.4. The plan shall include at a minimum:

    a. A preliminary testing schedule including dates, anticipated duration of testing, location of testing, and Travel & Living arrangements for OWNER and ENGINEER witnessed testing.

    b. Sample testing sign-off documents which support the proposed testing procedure.

    c. An outline of the proposed testing sequence including anticipated duration for each test module. At a minimum, test outline and test documentation should provide for:

        1) PLC I/O verification.

        2) PLC communication verification.

        3) Network communication verification.

        4) HMI communication verification.

19. Third Stage Submittals. All Stage 1 and Stage 2 submittals must be completed and approved before any Stage 3 submittals can be submitted.

20. Operation and Maintenance Manuals. Complete system documentation, in the form of Operation and Maintenance Manuals shall be submitted and approved before the commencement of field acceptance testing. O&M Manuals shall include:

    a. Manufacturer's instruction manuals for each type of equipment furnished. When instruction booklets cover more than one specific model or range of device, product data sheets shall be included which indicate the device model number and other special features.

    b. ISA type data sheets and calibration sheets for every instrument furnished. Include any additional calibration sheets for instruments not furnished, but require calibration for proper operation of the system.

    c. As-Built panel fabrication and wiring drawings from control panel to final device including intermediate panels if used. Drawings include all terminal numbers and wire numbers.

    d. Panel interconnection drawings to field device drawings including field terminal numbers.

    e. Inventory and location list of all available spare parts provided including part description, quantity provided, model number, ordering part number, on site storage location, and supplier contact information. Any spare parts used during startup shall be replaced by the System Supplier.

21. Final Factory Acceptance Test Plan Within 45 days of the scheduled Factory Acceptance Test, and after approval of the Preliminary Factory Test Plan, the System Supplier shall submit the final Factory Acceptance Test plan. All documentation shall be submitted and approved before the commencement of any acceptance testing. The final plan is the completion of the approved preliminary test plan, but with all forms, testing procedures, and signoff sheets compiled into an official Test Notebook to be used by the OWNER and ENGINEER as a record for all subsequent testing. The final test plan shall include as a minimum (submitted in both electronic and hardcopy):

    a. A three ring 'D" notebook organized and indexed per the approved preliminary test plan, all signoff forms, all test procedures and methods, testing schedule, and any other pertinent data required for the test.

    b. A list of other suppliers PLCs or equipment that can not be tested or simulated at the FAT and must be tested in the field.

22. System Installation, Startup and Site Demonstration Plan. Within 30 days of the scheduled Factory Acceptance Test, and after approval of the Final Factory Test Plan, the System Supplier shall submit an equipment installation, I/O field testing and commissioning plan. The System Supplier, Contractor, and other Equipment Suppliers shall jointly determine a sequence and schedule for the installation of SCADA components and subsequent testing. The plan for a retrofit project is extremely important if the facility is to be kept in continuous operation. All installation and startup activities must be coordinated and approved by the OWNER before they can proceed. The plan shall include as a minimum:

    a. An OWNER approved sequence of construction plan.

    b. A listing of any temporary facilities or equipment, or emergency standby equipment or personnel, required for safety or to keep the facility in continuous operation for each switchover task.

    c. An emergency backup plan in the event the switchover is unsuccessful.

23. Final System Documentation. Within 30 days of the successful completion of startup and commissioning, the Contractor shall submit final documentation for the project. The documentation shall reflect the As Installed and As Accepted final state of the system. This shall include:

    a. Updated field wiring, panel wiring, or network drawings including any test or startup data.

    b. Final calibration data sheets for all instrumentation.

    c. Final configuration data for all devices including alarm and control setpoints, all device switch settings, and network settings.

1.6 PREPARATION FOR SHIPMENT. All electronic equipment and instruments shall be suitably packaged to facilitate handling and to protect against damage during transit and storage. All equipment shall be boxed, crated, or otherwise completely enclosed and protected during shipment, handling, and storage. All equipment shall be protected from exposure to the elements, shall be kept dry at all times, and shall not be exposed to adverse ambient conditions.

A. Painted surfaces shall be protected against impact, abrasion, discoloration, and other damage. Painted surfaces that are damaged prior to acceptance of equipment shall be repainted to the satisfaction of ENGINEER.

B. Each shipment shall include an appropriate shipping list that indicates the contents of the package, including the specific instrument tags. The shipping list shall be accessible without exposing the instruments to the atmosphere. The shipping list shall also contain any cautionary notes regarding storage of the instruments, including requirements to protect the instrument from static discharge, desensitizing chemicals (solvents, paints, etc.), or ambient atmospheric conditions.

C. Individual instruments shall be appropriately tagged or labeled to positively identify the device. All identification shall be visible without the need to unpack the instrument from its protective packaging.

D. Instrument shipment and storage requirements shall be coordinated with ENGINEER or OWNER prior to shipment. System Supplier shall provide adequate storage and be ready to accept the shipment before shipping any equipment to the site. Additional shipping and storage requirements shall be as detailed in the individual instrument specifications.

E. Components which are shipped loose due to transportation limitations shall be assembled and disassembled by the manufacturer prior to shipment to assure that all components fit together and are adequately supported.

1.7 DELIVERY, STORAGE, AND SHIPPING. Shipping shall be in accordance with the shipping section. Handling and storage shall be in accordance with the handling and storage section.

1.8 SPARE PARTS. Spare parts and consumable items are specified in other sections.

A. Packaging. All spare parts shall be delivered to OWNER before final acceptance of the system. Packaging of spare parts shall provide protection against dust and moisture and shall be suitable for storage. Circuit boards and other electronic parts shall be enclosed in anti-static material. All packages shall be clearly marked with the manufacturer's name, part number or other identification, date of manufacture, and approximate shelf life.

B. Replacement. System Supplier may utilize spare parts and supplies during system installation, de-bugging, startup, or training, but shall restore all such materials and supplies to the specified quantities before final acceptance of the systems.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS. All equipment furnished under each section referenced in scope is a part of this section and shall be selected by system supplier for its superior quality and intended performance. Equipment and materials used shall be subject to review. Specific equipment shall be furnished as specified with no exceptions. These items are indicated in the applicable sections.

A. Standard Products. The systems furnished shall be standard products. When two or more units of the same type of equipment are supplied, they shall be the products of the same manufacturer; however, all components of the systems furnished hereunder need not be the products of one manufacturer unless specified herein.

B. To the extent possible, instruments used for similar types of functions and services shall be of the same brand and model line. Similar components of different instruments shall be the products of the same manufacturer to facilitate maintenance and stocking of repair parts. Whenever possible, identical units shall be furnished.

2.2 PERFORMANCE AND DESIGN REQUIREMENTS. The design of the systems furnished hereunder shall utilize concepts, techniques and features that provide maximum reliability and ease of maintenance and repair. The systems shall include board-level devices such as light emitting diodes or other indicators to facilitate quick diagnosis and repair. Diagnostic software shall be furnished to facilitate system-level troubleshooting.

A. When redundant hardware is provided, the system shall be capable of performing all specified functions, without reconfiguring hardware or software, with only one device of each category in service.

B. Factory Assembly. Equipment shall be shipped completely factory assembled, except where its physical size, arrangement, configuration, or shipping and handling limitations make the shipment of completely assembled units impracticable.

2.3 POWER SUPPLY AND INSTRUMENT SIGNALS. The power supply to all control system equipment will be 120 volts, 60 hz, single phase. System supplier shall be responsible for distribution of power among enclosures, consoles, peripherals, and other components of the system from the power supply receptacles and junction boxes indicated on the drawings. Power distribution hardware shall include cables and branch circuit over-current protection installed in accordance with the electrical section.

A. Unless otherwise indicated, the AC power to the instrumentation will be unregulated 120 volts ac. Unless otherwise indicated, all transmitted electronic analog instrument signals shall be 4-20 mA dc and shall be linear with the measured variable.

B. Facility Distribution System. Equipment not indicated to be powered from an uninterruptible power source shall be suitable for being supplied from the facility distribution system and shall be capable of withstanding voltage variations of ±10 percent and harmonics up to the limits of IEEE 519 without affecting operation. System Supplier shall provide voltage conditioning or filtering equipment if necessary to meet the requirements specified.

C. Power Supplies. Power supplies for voltages other than those listed above shall be an integral part of the equipment furnished. Internal power supplies shall be regulated, current limiting, and self-protected.

D. Surge Withstand. All equipment shall meet all surge withstand capability tests as defined in ANSI C37.90 without damage to the equipment.

2.4 SERVICE CONDITIONS AND ENVIRONMENTAL REQUIREMENTS. The equipment provided for the instrumentation and control system shall be suitable for the service conditions specified in the attached equipment sections.

A. All equipment shall be designed and selected to operate without degradation in performance throughout the environmental extremes specified. Equipment shall be designed to prevent the generation of electromagnetic and radio frequency interference and shall be in compliance with FCC Rules and Regulations, Part 15, for Class A computing devices.

B. Ambient Temperature and Elevation. All system equipment located in air conditioned rooms shall be suitable for operation in ambient temperatures from 10°C to 35°C and a relative humidity of 10 to 80 percent, non-condensing. All equipment located in non air conditioned indoor areas shall be suitable for an ambient temperature range of 0°C to 50°C and a relative humidity of 10 to 95 percent, non-condensing. All equipment located outdoors shall be suitable for operation in an ambient temperature range 0°C to 60°C and a relative humidity of 5 to 100 percent. Heaters and air conditioning/cooling equipment shall be provided where essential to maintain equipment within its manufacturer-recommended operating ranges.

1. All equipment and instruments shall be designed to operate at the site elevation of 500 ft.

C. Deleterious Effects. All system equipment will be installed in areas without anti-static floor construction and without any provisions for control of particulates or corrosive gases other than ordinary office-type HVAC filtering. System Supplier shall furnish any additional air cleaning equipment, anti-static chair pads, or other protective measures necessary for proper operation of the system.

1. All input/output hardware shall meet or exceed, without false operation, all requirements of NEMA ICS-1-109.60, Electrical Noise Tests.

D. Noise Level. The equivalent "A" weighted sound level for any system equipment located in the control room, except printers, shall not exceed 35 dBA. The sound level for printers shall not exceed 65 dBA. Sound reduction enclosures shall be provided where necessary to comply with these limits.

E. Lightning Protection. In addition to other environmental protection specified herein, the entire system shall be provided with lightning protection. Lightning protection measures shall include the following:

F. Grounding. All major components of the system shall be grounded in accordance with Section 16050-3-10. Any modifications recommended by System Supplier shall be submitted to OWNER and ENGINEER for review and approval.

G. Surge Suppressors. Surge and lightning suppressors shall be non-faulting, non-interrupting, self clearing, and shall protect against both line-to-line and line-to-ground surges. Surge devices shall be as specified in other Sections. Surge protective devices shall be applied for the following:

a. All 120 vac power connections to control panels, field instruments, and equipment.

b. All analog signal circuits shall be protected at both the transmitter and the control system end of the circuit. Surge protection devices shall not impede or interfere with the use of smart transmitter calibration/communication.

c. All metallic pair (twisted and untwisted) conductor local area network and data highway termination points where any part of the data highway cable is routed outside of the building envelope.

d. All serial PLC data highway and remote I/O network termination points where any part of the circuit is routed outside of the building envelope.

e. All telephone lines at points of connection to the system.

2.5 SOFTWARE DOCUMENTATION. The system supplier shall furnish complete documentation on all software supplied with the systems specified herein. Operating systems, compilers, assemblers, and utility and diagnostic programs that are standard commercial products of third parties need not be included in the magnetic media backup. Where standard commercial product documentation is inadequate or limited such as for microsoft operating systems, provide secondary source standard published reference books. Reference to manufacturer 'on-line help' does not constitute software documentation. Software documentation shall consist of the following principal items.

a. Two backup sets of any integrated circuit or solid-state memory-based plug-in firmware used.

b. Two complete backup copies of system and application software in executable format on media compatible with the system furnished.

c. Two complete backup copies of 'System Restore' software on media compatible with the system furnished suitable for completely restoring the system after a major hardware failure. The software media will be used in conjunction with a step-by-step recovery procedure which shall provide a recovery sequence and all configuration parameters required by the software.

d. Three sets of user reference manuals for all standard system and application software.

e. Two sets of user reference manuals for all operating system software.

f. Three sets of printed as-built reference documentation for any special software provided specifically for this contract.

g. For each licensed software product, all documentation provided by the product manufacturer shall be provided. This includes all reference manuals and any other documents that were provided by the manufacturer. There should be two sets of this documentation for each and every piece of equipment provided.

2.6 SOFTWARE LICENSES. All software programs supplied as a standard part of system supplier's products for this project shall be licensed to owner for use on the system specified herein. Such license shall not restrict owner from using the software on the system provided hereunder or its replacement. Owner shall have the right to make copies of the software for use on the system provided. Specific requirements of system supplier's software license are subject to review and approval by owner and engineer.

2.7 INSTALLATION TEST EQUIPMENT. All necessary testing equipment for calibration and checking of system components shall be provided by system supplier. System supplier shall also furnish calibration and maintenance records for all testing and calibration equipment used on the site if requested by engineer.

PART 3 - EXECUTION

3.1 INSTALLATION REQUIREMENTS. The installation of equipment furnished hereunder shall be by the contractor or their assigned subcontractors.

A. Field Wiring. Field wiring materials and installation shall be in accordance with the electrical section.

B. Instrument Installation. Instruments shall be mounted so that they can be easily read and serviced and so that all appurtenant devices can be easily operated. Installation details for some instruments are indicated on the drawings.

C. Salvage of Existing Equipment. Existing equipment and materials removed or replaced under this contract shall be delivered to OWNER at a location designated by OWNER, or shall be properly disposed of at OWNER discretion. Care shall be taken to avoid damage to equipment delivered to OWNER.

1. Any mounting brackets, enclosures, stilling wells, piping, conduits, wiring, or openings that remain after removal of equipment and support hardware shall be removed or repaired in a manner acceptable to OWNER and ENGINEER.
2. Transmitters or switches containing mercury shall be removed and disposed of by personnel trained in the handling of hazardous materials and using approved procedures.

3.2 THE SYSTEM SUPPLIER SHALL CONFIRM HARDWARE SIZING REQUIREMENTS WITH ENGINEER AND OWNER.

3.3 SYSTEM SOFTWARE CONFIGURATION. System software shall be configured by the system supplier. Configuration services shall consist of the creation of the system database, report formats, operator interface graphic and tabular display screen formats, password and security implementation, and programming of control units to provide a fully functioning system. The system supplier shall fully configure the system using data provided herein or supplied by the engineer and/or the owner after award of the contract.

A. The system that is delivered to the field for installation, checkout, and startup shall have all files, or databases, that are configurable in size, be sized in a manner in which there will be a 50 percent available space available for future work after the completion of this project. This sizing should include the addition of memory modules, disk drives, or any other device to insure the 50 percent spare space availability. All "tuning" of software that is dependent on memory or database space requirements shall be done prior to the completion of this project.

B. Tuning of software programs shall be accomplished is such a manner that the program operates at its highest performance level. These programs include, but are not limited to Microsoft SQL Server, all PLC ladder logic, communication software, and others. The System Supplier shall confirm hardware sizing requirements with Tampa Bay Water I&C personnel.

C. Control System Database. The control system database shall be developed and configured by the System Supplier. The System Supplier shall enter information obtainable from the Contract Documents into the database prior to soliciting input from the Engineer and the Owner. The System Supplier shall determine the need for any "pseudo" database points and shall ascertain and enter all information needed to define these points. The System Supplier is responsible for entering all information associated with each point. This includes but is not limited to, descriptions, engineering units, control parameters, alarm set-points, associated displays, security access, etc. All fields associated with each database point must be completely and accurately completed.

D. HMI Graphic Screen Displays. The System Supplier shall be responsible for developing and configuring the custom graphic displays. Each piece of major process equipment that is monitored by the control system shall be displayed on one or more graphic screens. Graphic screens shall be representations of the equipment and piping. The screens must accurately show all devices and equipment that are part of the control loops. These items must be shown in accordance with the Configuration Standards and Conventions as described later in this section. The requirement for alarm and/or event displays shall also be provided and proven functional prior to acceptance of the system. A means of capturing and printing of all graphic screens shall also be included. The software program provided must be capable of printing the screen in color format.

1. The use of pictures taken by digital cameras will be considered as an alternative to custom developed equipment symbols when appropriate and approved by the OWNER. All equipment symbols shall be animated to indicate the current state of the piece of equipment. The following minimum screens shall be provided.

    a. Main overview of facility with vectoring to all secondary screens.

    b. Overview of each major process area with vectoring to sub-areas, control pop-ups, and password protected configuration screens.

    c. Overview trend screen to vector to all preprogrammed trends and User configurable trends.

    d. System communications status screen.

    e. Major system equipment ‘Run time’ and ‘No. Starts’ screen.

f. Major system equipment time-stamped operating and fault sequences for 10 events screen(s).

g. Tabular User security and password protected parameter configuration screen.

h. Alarm Summary screen.

i. Event Summary screen.

2. A minimum of 30 custom graphic displays excluding control pop-ups shall be provided by the System Supplier. Multiple instances of the same display on multiple HMI workstations shall count as one display.

E. Report Formats. Report formats shall be developed and programmed by the System Supplier using tag names defined in the database creation. Reports shall be provided as summarized below. All reports will be provided with a header on each page to indicate the contents of each column of information. Each page shall be numbered and indicate the name of the report, the date the report was printed, and the time of the printout. The printout shall also include the time span of the information shown on the report. Reports shall be as tabulated below:

1. Daily Operating Report. A daily report, listing the major plant variables shall be provided. The report shall include hourly values and minimum/maximum/average values where appropriate. A minimum of 15 separate daily reports shall be provided by the System Supplier.

2. Monthly Operating Report. A monthly operating report, which averages the values from the above daily reports, shall be provided. The report shall include monthly minimum/maximum/average values where appropriate.

3. Custom Reports. The System Supplier shall provide a minimum of 15 custom reports as defined by the OWNER, or as required. Multiple instances of the same report template shall count as a single report.

F. Configuration Standards and Conventions. A "Software Configuration Standards and Conventions" document shall be prepared and submitted by the System Supplier. The document shall be submitted for review and approval before software configuration commences. The document shall describe and define such items as proposed graphic display process line colors and representations; color standards for "on", "off", "opened", "closed", and "alarm" conditions; alarm handling conventions; how items will be selected for control; methods for navigation between displays; address usage/naming conventions; and security setup. Before submitting the initial draft document, the System Supplier shall meet with the Engineer and/or Owner to review any of the Owner's existing standards and conventions. All copies of this submittal shall be provided in color to ensure the accuracy of each item. No black and white copies will be accepted. The colors used in the printed submittal shall accurately depict the colors and shapes proposed for use on the final system.

1. In addition to submitting the document for review, an updated version of the document shall be submitted as part of the O&M Manuals. The document shall be revised to document any additional standards that are established throughout the configuration process.

G. Software Functional Requirements. General functional requirements for system configuration are indicated on the drawings and described in the specifications. The information presented herein and indicated on the drawings illustrates the general functional intent of the system, and may not be sufficient to fully configure the system.

1. The System Supplier shall be responsible for determining what additional information may be required to complete the configuration tasks.

3.4 COORDINATION AND STANDARDIZATION REVIEW MEETINGS. As a minimum, the following meetings shall be attended by the owner, engineer or his representative, and the system supplier. The system supplier shall be responsible for setting the meetings, providing a meeting agenda, and distributing the meeting minutes. The agenda shall be submitted to owner and engineer a minimum of two weeks prior to the scheduled meeting. The meetings will be held at the owner facility. One day should be allowed for each meeting.

1. The first meeting scheduled prior to the First Stage submittal is to review the general scope, procedures, contact information and concerns or questions the System Supplier may have prior to starting the First Stage submittal(s).

2. The second meeting is scheduled after the First Stage submittals have been reviewed by the OWNER and ENGINEER to review the System Suppliers preliminary schedule and scope, and resolve any remaining scope or methodology issues the System Supplier may have. OWNER standards, preferences, and procedures shall be reviewed.

3. The third meeting shall review with OWNER and ENGINEER the System Supplier initial graphics and reports submittal. Proposed graphic screens and report formats shall be reviewed by OWNER and ENGINEER throughout the configuration process.

4. The fourth meeting shall review with OWNER and ENGINEER the System Supplier final system graphics and report submittal(s), detailed control strategies, and coordination with other equipment supplier(s) and equipment systems.

5. The final coordination meeting shall be prior to field installation of equipment and startup to finalize all startup requirements, OWNER procedures, and emergency recovery plans.

6. Additional meetings may be required by the Contractor or OWNER as necessary.

3.5 SYSTEMS CHECK. System supplier shall provide the services of a trained and experienced field supervisor to assist the installation contractor during installation, and to calibrate, test, and advise others of the procedures for installation, adjustment, and operation.

A. Field Manager. The System Supplier shall appoint a field services manager who shall be responsible for the coordination of all system check-out and startup activities, and who shall be immediately available to Engineer and Owner by phone or on site for the duration of this project.

B. Field Inspection at Delivery. The field supervisor shall inspect major equipment items within five working days of delivery, to assure that the equipment was not damaged during shipment and shall supervise or assist with unpacking, initial placement, and initial wiring of the system.

C. Field Calibration of Instruments. After each instrument has been installed, a technical representative of System Supplier shall calibrate each instrument and shall provide a written calibration report for each instrument, indicating the results and final settings. The adjustments of calibrated instruments shall be sealed or marked, insofar as possible, to discourage tampering. Instrument calibration shall be done before checkout of the system operation. A typical instrument calibration report is attached to the end of this section. This shall include all new instrumentation provided by the System Supplier, and all existing instrumentation required by his control system for proper operation of the plant. If the existing instrumentation is unable to be calibrated, the System Supplier shall notify the OWNER and ENGINEER in writing and it will become the OWNER responsibility to repair or replace the instrument.

D. Training for Installation Personnel. The field supervisor shall train the installation personnel in reading and understanding submittal drawings, review any OWNER special coordination requirements or procedures, and in the correct installation and wiring procedures for the equipment. Two days shall be included for this training.

E. Field Inspection Prior to Start Up. After installation and wiring connections are complete, the field supervisor, with additional System Supplier's personnel shall verify that each external connection to the system is correctly wired and field process components and devices are functioning as intended.

1. Analog Signals. Analog input signals shall be simulated at the transmitting source, and verified to be received at the proper register addresses in the control system. Analog outputs shall be generated at the control system, and verified to be received with the correct polarity, at the respective receiving device.

2. Discrete Signals. Discrete input and output signals shall be simulated and verified that they are received at the respective receiving device, and at the proper voltage.

3. Devices by Other Suppliers. If interrelated devices furnished by other suppliers or under other contracts, such as valve actuators, motor controls, chemical feeders, and instruments, do not perform properly at the time of system checkout, the field supervisor shall use suitable test equipment to introduce simulated signals to and/or measure signals from these devices to locate the sources of trouble or malfunction.

4. System Check Out Report. The System Supplier shall submit a written report on the results of such tests to ENGINEER & OWNER. System Supplier shall prepare a testing procedure to be approved by OWNER and ENGINEER that shall demonstrate that the system conforms to the specifications. The testing procedure shall be submitted at least 30 days in advance of testing. The testing shall be conducted by System Supplier and witnessed by OWNER and/or ENGINEER.

F. System Supplier shall notify ENGINEER and OWNER in writing at least 14 days before any proposed testing date. If a test is concluded unsuccessfully, the test shall be repeated. System Supplier shall reimburse OWNER and ENGINEER for all expenses incurred in connection with attending repeated factory or site testing necessitated by system failure or inadequate preparation.

3.6 TESTING. The system supplier shall test all provided equipment at his facility prior to shipment and again after installation. Unless specified in other specification sections, all equipment provided by the system supplier shall test as a single, fully integrated system.

A. The System Supplier shall provide all required testing hardware and software to fully test the hardware functionality of the system. All components of the system shall be completely networked as shown on the system block diagram and all aspects of the communication system functional.

1. As a minimum, testing shall include:

a. Factory Acceptance Test (FAT).

b. Site Demonstration Test (SDT).

B. Factory Acceptance Testing (FAT). After system assembly at System Supplier's facility, the system shall be tested before the system is shipped to the site. Testing shall be conducted which progressively demonstrate that the supplier supplied component subsystems conform to the specifications. Testing shall be in two phases, an unwitnessed phase and a witnessed phase.

1. The System Supplier shall be responsible for staging the equipment required for the FAT in a neat and orderly manner in an environmentally conditioned location approved by OWNER and ENGINEER.

2. Preliminary (Unwitnessed) Factory Acceptance Testing. The System Supplier shall be responsible for conducting an ongoing testing process during system assembly and staging to ensure that the system hardware meet the functional requirements as defined by the specifications. Preliminary testing will normally be unwitnessed; however the OWNER reserves the right to have OWNER staff and/or ENGINEER witness portions of the preliminary testing. At a minimum, preliminary testing shall be as described below.

3. The System Supplier shall perform a complete, end-to-end checkout for every I/O point from the field termination assembly to HMI graphic display. The I/O Point Checkout shall be conducted on all System Supplier furnished PLCs. System Supplier shall test every input and output point for proper operation, including wired spares. Test signals shall be injected to verify the operation of each Analog Input (AI) and Discrete Input (DI). Each Analog Output (AO) and Discrete Output (DO) shall be also tested for proper operation. The System Supplier shall configure each HMI to display a representative sample of the associated PLC I/O points to verify communications between each PLC and HMI. The System Supplier shall provide all test software required to verify complete hardware functionality.

4. The System Supplier shall develop a Point Checkout Form for each I/O point. The checkout form shall include the point tag, descriptor, all checks performed for the point, date and time of the check, and a signoff block for the System Supplier's representative. The completed I/O Checkout forms for all points shall be submitted for OWNER and ENGINEER review prior to scheduling the FAT.

5. The following items shall be checked for each I/O point:

   a. For each analog input point:

      1) Value at 0 percent, 25 percent, 50 percent, 75 percent, and 100 percent of full scale (ramped in both directions).

   b. For each analog output point:

      1) Milliamp reading at 0 percent, 25 percent, 50 percent, 75 percent, and 100 percent of full scale (ramped in both directions).

   c. For each analog (input and output) point:

      1) Constant 50 percent signal for two (2) minutes to verify the absence of signal drift (test conducted with surge and isolator in circuit).

   d. For each discrete input point:

      1) Status and Alarm points - proper indication.

   e. For each discrete output point:

      1) Proper operation (latching or momentary).

6. Witnessed Factory Acceptance Testing. Prior to scheduling the witnessed FAT, the System Supplier shall have successfully completed the un-witnessed test using the approved test procedures. At least 14 days prior to the requested start date, the System Supplier shall submit a written request for scheduling the FAT. This written request shall include a certification by the System Supplier Project Manager that the FAT un-witnessed testing has been successfully completed and include and copies of the completed test documentation.

   a. Using the approved FAT Procedures, System Supplier, ENGINEER and OWNER shall jointly conduct a Factory Acceptance Test replicating the un-witnessed tests referenced in 3-5.11 under simulated operating conditions. All basic functions shall be demonstrated, including I/O processing, communications, alarm handling, HMI display functions, fault recovery, run time accumulation, parameter totalization, alarms, as well as any specific functions listed herein. Both normal operating sequences and fault conditions shall be simulated, including redundancy and failover testing.

7. The following equipment shall be staged for the factory test:

   a. All PLCs provided by the System Supplier. These PLCs shall be fully constructed and installed in panels ready for shipment to the project site.

   b. All Communications cables, including fiber optics and media converters, switches, routers, simulated networks, etc. as required.

8. The test results shall be recorded in the test procedure document.

9. Daily Testing Schedule. The System Supplier shall begin each day of witnessed testing by meeting with the OWNER and ENGINEER. The purpose of this meeting is to review the test results from the previous day and to preview the testing for the current day.

    a. The System Supplier shall make two sets of the following documentation available for use by the OWNER and ENGINEER during the FAT:

        1) All drawings, specifications, addenda and change-orders.

        2) All FAT Procedures.

        3) Approved Shop drawings and hardware submittals for equipment being tested.

        4) Preliminary O&M Manuals.

10. System Hardware Testing. Prior to the beginning of testing, all system components shall be inventoried. The System Supplier shall prepare a System Configuration Inventory List which contains each separate system component including manufacturer, model and part number, description, and serial number. This list shall be annotated to reflect the status of all system components at the time of FAT. The System Supplier shall maintain the System Configuration Inventory List until Final Acceptance. The Inventory List shall be updated to reflect any equipment replacement or substitutions.

    a. A physical inspection shall be conducted for all hardware devices to assess structural integrity and component layout. As a minimum, the following items shall be inspected and verified:

        1) Control panel frame structure, sub-panel mounting, paint work and finish, and panel dimensions.

        2) Control panel wiring layout and control and power wire routing.

        3) Equipment mounting and equipment tagging.

        4) PLC and I/O system physical layout.

        5) Panel ventilation, device clearances, and environmental.

        6) conditioning.

        7) UPS installation.

    b. Processors, processor modules, and peripheral devices associated with the system shall be assembled together as they will be installed in the field and shall be tested. The test shall demonstrate proper operation of each hardware device and communications among devices. All standard hardware diagnostic programs shall also be demonstrated.

11. HMI Software Functionality. The HMI Software Functionality tests shall verify all features and functions of the HMI System. Test simulations shall be used to test system functions if hardware or instrumentation equipment is not available. The functional tests shall include, but not be limited to, the following demonstrations:

    a. Accuracy of hardware and software documentation.

b. Device and system power failure/restart.

c. Simulation of PLC and network communication error conditions and subsequent satisfactory system recovery.

d. Graphic display development.

e. Report Development.

f. HMI Server failure, automatic failover.

g. Verify the accuracy of hardware and software documentation.

12. HMI Graphic Displays and Reports Functionality. The System Supplier shall provide an inventory of all required HMI graphic displays and reports. The test procedures shall verify all features and functions of all HMI graphic displays and reports, in accordance with the specifications and the Software Configuration Standards and Conventions document.

    a. Confirm accuracy and resolution of each analog signal and analog signal totalization on each display and report that it occurs.

    b. Confirm accuracy of mapping of each device total 'Run Timer' and 'No. Starts' on each display that it occurs.

    c. Confirm correct status and mapping of each digital status point on each display and report that it occurs.

    d. Confirm correct status and mapping of each digital alarm point on each display that it occurs.

    e. Confirm correct operability of all graphic screen navigation functions.

    f. Confirm correct operability and mapping of each control point on the control pop-ups.

13. PLC Software Functionality. The System Supplier shall demonstrate all programs installed in the PLC. The following functions, as a minimum, shall be tested:

    a. PLC Power-Fail and Restart logic.

    b. PLC Failover and Recovery (as applicable).

    c. PLC program uploading and downloading.

    d. Network diagnostics.

    e. Alarm generation and acknowledgement.

    f. HMI communications and functionality of all HMI displays and commands.

    g. Correct operation when switching between Control Modes for each device.

    h. Calculation of Totalizers, Run Timers and Count Starts.

    i. Demonstrate ability to create, modify, and download control strategies to the PLCs.

14. PLC Control Function Testing. The System Supplier shall test the control logic in the PLC to verify proper operation as specified in Section 13550, System Control Block Descriptions, and the System Supplier's Controls submittal. The testing shall include, as a minimum:

    a. Local/Remote Check - This test will confirm that the SCADA system software and operator can control equipment only when the equipment is in the REMOTE control mode.

    b. Alarms - This test will confirm the operation of all alarms generated specifically by the strategy.

    c. Operator Adjustable Values - This test will confirm that all such values may be adjusted from SCADA and the HMI, that values shown are correct and in the correct engineering units, are coordinated between SCADA and the HMI, and that default values are loaded at PLC startup.

    d. PID Loops – This test will confirm the correct operation of PID loops, including Auto/Manual operation, and tuning parameters.

    e. Remote-Manual Operation of Devices, according to the strategy.

    f. Remote-Automatic Operation of Devices, according to the strategy.

    g. Enable/Disable of Control Strategies.

15. Network Testing. All network components shall be configured as closely as possible to the final configuration; however, use of a temporary backbone fiber is acceptable.

16. Redundancy/Failover Testing. Failover and recovery for all redundant components shall be demonstrated.

17. Uninterruptable Power Supply Testing. Each UPS shall be fully tested to verify conformity with the specifications. Testing shall include:

    a. Load Capacity – Testing will confirm the UPS load capacity is greater than the system connected load plus specified excess capacity.

    b. Backup Time – Test will confirm the UPS meets the specified backup time.

    c. Bypass Mode – Test will confirm the UPS internal or external automatic (or manual) transfer switch transfers to utility power upon UPS failure, low battery power, (or under manual control as specified.

    d. UPS Status and Alarm Signals – Test will confirm the specified UPS status and alarm signals are functional.

    e. UPS Battery Recharge Time – Test will confirm the specified UPS fully discharged battery recharge time.

18. Packaged System Interface Testing. System Supplier shall develop a simulation routine for each packaged system interface. The simulation software shall demonstrate the proper interaction between the SCADA System and the packaged system equipment. Full functionality testing of the packaged system interface will be conducted during field testing.

19. Discretionary Tests. The FAT shall also include a minimum of four hours for discretionary tests to be conducted by ENGINEER or OWNER. OWNER personnel will exercise the System by randomly selecting functions to perform. The System shall perform as specified. Any deviations shall be corrected and demonstrated to the OWNER.

    a. System Supplier shall make available any required engineers and technicians to correct any problems with System Supplier equipment that may arise while OWNER personnel conduct PLC and HMI application software testing.

20. FAT Completion. Throughout the FAT, System Supplier shall maintain a listing of all discrepancies. At the conclusion of all formal testing, OWNER/ENGINEER shall review the FAT punch list with the System Supplier to determine resolution. If it is determined that discrepancies exist which affect critical system functions, the System Supplier shall correct those deficiencies and conduct an FAT retest prior to shipment. System Supplier shall reimburse OWNER and ENGINEER for all expenses incurred in connection with attending repeated factory or site testing.

    a. If it is determined that the system deficiencies do not significantly affect system functionality, the OWNER and ENGINEER may grant the System Supplier written approval for shipment. However, all FAT punch list items shall be corrected and demonstrated to OWNER and ENGINEER prior to the start of the Site Demonstration Test.

C. Site Demonstration Test (SDT) After a successful FAT and written approval from the OWNER, the system may be shipped to the site. Field testing shall be conducted in two phases. The un-witnessed Preliminary Phase performed by the System Supplier, and the witnessed phase.

1. After field installation of the system and calibration of all field instruments necessary to the proper operation of the control system, the System Supplier shall perform a preliminary test to insure all components and systems are still functioning properly, and that all field wiring is terminated correctly. The checkout shall be on a loop by loop basis.

2. Upon successful completion of the preliminary testing, the System Supplier shall notify the OWNER and ENGINEER and request a date to begin the witnessed SDT.

3. The SDT shall be performed to verify complete operation of the system, requiring a repeat of the Factory Acceptance Test but with the equipment installed at the permanent sites and connected to the process I/O, and shall include additional tests required to verify field-installed equipment which was not available at the factory.

4. The System Supplier shall:

    a. Repeat the hardware tests used during FAT (complete with actual field wiring) connected to physical end point devices and instruments rather than simulation.

    b. Demonstrate all equipment control and status monitoring functions. Actuation of field devices shall be closely coordinated with OWNER staff.

c. Record system performance parameters and system responses under field operational conditions.

d. Verify accuracy of documentation, especially operator's manuals, software documentation, record drawings, and site operating instructions.

5. Failure of Redundant Equipment. Failure of redundant equipment shall not be considered downtime provided that automatic failover occurs as specified and, in the opinion of Engineer, the failure was not caused by deficiency in design or installation. In the event of repeated failure of any hardware component or software module, the acceptance test shall be terminated and re-started.

6. Completion of Test. Successful completion of the site acceptance test, including the operational demonstration, is prerequisite to Substantial Completion as specified in the Supplementary Conditions.

D. System Availability Test (SAT). At the completion of SDT, the OWNER will conduct a System Availability Test (SAT) in the normal day-to-day operation of the facilities utilizing all equipment, software, and services provided under this Contract. All functional and performance requirements specified in the Contract Documents shall be met during the SAT. System Supplier personnel may participate in any and all parts of this demonstration as observers at the discretion of the OWNER.

1. The duration of the System Availability Test shall be not less than 7 calendar days. During the SAT, no downtime shall be permissible. If, at any time during the SAT, a failure occurs, which results in downtime being assessed, the test shall continue on a day-by-day basis, dropping off the oldest day's test results. This demonstration shall continue until it is completed successfully or until 30 calendar days have passed.

2. Any errors or abnormal occurrences shall be recorded by System Supplier's filed representative. System Supplier's field representative need not be continuously present during the site acceptance testing, but shall be available to respond to the site within one hour of notification. The representative shall inspect the system for faults at least once every 24 hours and shall log or record any noted problems. The log shall include a description of the problem, its apparent cause, and any corrective action taken.

3. Downtime accrues in three ways as defined below:

a. Downtime accrues when one or more functional capability can not be performed due to failure of equipment or software provided and/or installed by System Supplier. Downtime also accrues when any piece of OWNER field equipment can not be monitored /controlled due to failure of equipment or software provided and/or installed by System Supplier.

b. For failures that occur outside the period of 7:00 AM to 4:00 PM Monday through Friday, a four-hour travel time allowance will be made before downtime begins to accrue. It is System Supplier's responsibility to arrange suitable communications to enable the OWNER to notify the System Supplier's field representative of failures.

c. Downtime accrues if the same piece (or redundant pair) of equipment fails more than twice during the test period. In other words, repeated failover to backup equipment will not be allowed even though each individual failover action is successful and no functionality is lost.

d. Downtime accrues if backup equipment is not repaired and operational within eight hours after initial failure. Accrual begins after the grace period allotted for repair.

4. Downtime will not be accrued in the following circumstances:

a. Failures due to OWNER facilities and support equipment, including power sources.

b. Failures caused by OWNER personnel.

c. Malfunction of equipment not supplied by System Supplier.

E. The SAT may be suspended by mutual agreement between OWNER and System Supplier or by the OWNER if the test is adversely affecting facility operation.

3.7 TRAINING. System supplier shall conduct training courses for personnel selected by owner. Six categories of training; instrument, control system maintenance, operator training (pre-installation), operator training (post-installation), programmer (plc software), and supplemental training shall be provided. Training shall be conducted by experienced instructors who are familiar with the specific system supplied. Where noted, the system supplier shall contract the equipment manufacturer to provide the training. All training shall be at the owner facility.

Training Category	Hours/ Session	No. of Sessions	Provided by	Students per Session	Total Hours
Instrument Maintenance	1	2	Instrument Supplier	5	2
Control System	4	2	System Supplier	5	8
Operator Training	2	2	System Supplier	5	4
Supplementary	1	2	N/A	5	2

A. General Training Requirements. In general, the System Supplier's standard training courses may be used to meet the training objectives specified. Where standard courses do not meet these objectives, additional coursework shall be developed. Clock hour requirements for each level of training are listed on the data sheet. A "clock hour" is defined as one hour of instruction or supervised training exercise. Training hour requirements noted in the data sheet are the number of hours of training to be provided for each student. Additional training time shall be provided if considered necessary to meet the training objectives.

1. Training Costs. All costs associated with the training program, including travel, lodging, and per diem expenses for OWNER personnel to attend off-site training programs, shall be the responsibility of System Supplier and shall be included in the contract price.

2. Lessons. Training lesson plans and other information for the second stage submittal as defined herein shall be submitted at least 30 days prior to the start of training.

3. Video Recording. All training sessions shall be video recorded for OWNER future use in training other personnel at the OWNERs discretion. Video recorded sessions shall be saved to DVD/R media and flash drive (thumb drive) for delivery to OWNER. Videos of System Supplier's standard training programs may be substituted if they cover the same topics and are developed for the same versions of hardware and software. Furnishing videos of standard training programs shall not relieve System Supplier from any of the training requirements specified herein.

B. Instrument Training. Training on the calibration, maintenance, troubleshooting, and repair for the instrument devices provided under this project shall be provided. Training shall also be provided for any hand-held or computer-based calibration devices and their associated software.

C. Control System Software Training. System software training shall be provided to enable OWNER personnel to perform routine modifications to the hardware furnished with the system. Control concepts and software will be reviewed.

D. Operator Training. OWNER personnel will utilize the system for day-to-day monitoring and/or control of the facilities. The training program shall provide operators with sufficient knowledge to move from screen to screen within the system, understand the contents of group and detailed point displays, react to and acknowledge alarms, adjust control setpoints and alarm limits, configure and print shift reports, print preconfigured reports on demand, control equipment connected to the system, and react to and resolve minor system errors.

3.8 EXTENDED SUPPORT OR WARRANTY. The process control system shall be warranted for a period of one year(s) beginning immediately after written notice of final acceptance. The service shall include all travel and living expenses for repair of all equipment failures, and phone and personal support as needed.

END OF SECTION

INSTRUMENT CALIBRATION SHEET

INSTRUMENT NAME & SERVICE:		
BRAND & MODEL NO.:		
TAG OR LOOP NO.:		
MAXIMUM INPUT/OUTPUT RANGE:	CALIBRATED RANGE:	
CALIBRATION TEST INPUT:	INSTRUMENT MEASURED OUTPUT:	REQUIRED OUTPUT:
PROPORTIONAL BAND:		
RESET:		
POSITION OF SWITCHES, JUMPERS, ETC.		
COMMENTS:		
DATE OF CALIBRATION: CALIBRATED BY:		
Tampa Bay Water	INSTRUMENT CALIBRATION REPORT	Figure 1-17500

SECTION 17530

PROGRAMMABLE LOGIC CONTROLLERS

PART 1 - GENERAL

1.1 SCOPE. This section covers programmable logic controllers (PLCs), including associated input/output hardware to control process equipment and serve as the interface to field devices. The contractor through the use of a qualified system supplier shall furnish, install, modify, configure and commission the process control system (pcs).

A. Control System. The Instrumentation and Control System section shall apply to all equipment furnished or modified under this section. Additional PLC software requirements are indicated in Software Control Block Descriptions section.

1.2 GENERAL. Equipment furnished and installed under this section shall be fabricated, assembled, erected, and placed in proper operating condition in full conformity with the drawings, specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by engineer.

A. General Equipment Stipulations. The General Equipment Stipulations shall apply to all equipment and materials furnished under this section. If requirements in this specification differ from those in the General Equipment Stipulations, the requirements specified herein shall take precedence.

B. Drawings. Supplementing this section, the drawings indicate the number and sizes of PLCs, locations of PLCs, and provide diagrams and schematics regarding connection and interaction with other equipment. All hardware, including power supplies, special cables, and other appurtenant equipment, shall be provided to meet the functional requirements described herein and indicated on the drawings.

C. I/O List. An input/output (I/O) field device signal listing is included as an appendix attached to this section.

1.3 SUBMITTALS. Submittals shall be as specified in the instrumentation and control system section.

1.4 DELIVERY, STORAGE, AND SHIPPING. Delivery, storage and shipping shall be as specified in the instrumentation and control system section.

1.5 SPARE PARTS. Spare parts shall be furnished as follows:

Spare Part	Quantity
Processor modules:	10%, Minimum 1 of each type used
Power supply modules:	10%, Minimum 1 of each type used
I/O modules:	10%, Minimum 1 of each type used
Communications modules:	10%, Minimum 1 of each type used
SPD units:	20%, Minimum 3 of each type used

PART 2 - PRODUCTS

2.1 GENERAL. All equipment furnished under this section shall be expressly selected by system supplier for its superior quality for the intended purpose and shall comply with the following requirements. The system supplier shall select the cpu model with sufficient speed to have an installed processor scan time of 100 ms or less.

A. Interchangeability. All programmable logic controller systems shall be products of the same manufacturer and of the same series or product line. Processors, local and remote input/output hardware, communications modules, and specialty modules such as coprocessors and ASCII modules shall be interchangeable among all I/O panels and systems.

B. Initial, Spare, and Future Memory (RAM). The System Supplier shall provide the maximum memory available for the processor type.

C. Spare I/O . Each PLC input/output enclosure shall be provided with a minimum of 10% spare inputs and outputs of each type (AI,AO,DI,DO) (or greater quantity as indicated in Table 1 below). Spare I/O shall be installed, wired, and interfaced properly to the terminal strip including surge suppressors, signal isolators and interposing relays. The spare I/O shall be in addition to any I/O installed and reserved for future process signals as may be indicated on the I/O list.

1. In addition, each PLC input/output enclosure shall be capable of accommodating 20 percent of additional input/output capacity of each type as originally assembled, without the need for additional expansion racks, communication adapters, cables, or field or PLC power supplies.

D. Acceptable Manufacturers. The PLCs shall be as manufactured by Automation Direct, or OWNER and ENGINEER pre-approved equal without exception.

E. Signal Power Supplies. Separate regulated dc power supplies shall be provided in each PLC enclosure for analog I/O and digital I/O. Output voltage regulation shall be as required by the instrumentation equipment supplied under another sections:

1. The analog and digital loop power supplies shall be separate from the PLC power supply circuit for the processor and racks.

2. The power source for all digital inputs from field devices shall be separately fused for each digital input module. Unless otherwise noted, all field devices will be provided with dry contacts that close to provide an input to the PLC.

3. Each power supply shall be sized to accommodate all installed and future I/O plus an additional 30 percent load.

F. Appurtenances. The PLC processor and I/O hardware shall be provided as complete systems, as shown on the block diagram drawings. The PLCs shall include all necessary hardware and software for a complete working system. All special rack or panel mounted power supplies, special interconnecting and programming cables, special grounding hardware, or isolation devices shall be furnished for proper operation of the equipment. Signal converters, signal boosters, amplifiers, special power supplies, special cable, special grounding, intrinsically safe relays and current repeaters, surge suppression devices, and isolation devices shall be furnished and installed for proper operation of the equipment:

1. PLC I/O Surge Protection Devices (SPD):

a. Analog Signals. All analog require SPDs at both ends of the circuit. The SPD shall:

1) The SPD shall consist of a multistage hybrid unit that does not use metal oxide varistors (MOVs), not interfere with the normal operation of the device, and have a trip level less than the surge withstand level of the instrument.

2) The SPD shall be designed to withstand a 10 kA test current of a (8/20) us waveform per IEEE C62.41.-2002, category C Area.

3) SPDs used in Division 1 hazardous areas will conform to EN 020/DIN EN 50 020/VDE 0170/0171 part 7: 1996-04. SPDs in hazardous areas shall provide at least 500V isolation between intrinsic safety ground and earth ground.

4) The SPD shall have a series resistance less than 10 ohms and a maximum operating load of 250 mA.

5) The SPD shall have an operating temperature range of -40^C to +80^C.

6) The SPD shall provide line-to-line and line-to-ground protection.

7) The SPD shall be DIN rail mountable or pipe mountable depending on the application.

8) No more than two analog signals per SPD will be allowed.

b. The SPD shall be Phoenix Contact PlugTrab PT 2x2 series or MTL SD-32 series for DIN rail mounting, and Phoenix Contact PipeTrab S-PT 1 series, or MTL TP-P pipe series for conduit installation at the instrument.

c. Digital Signals. All PLC digital input and output signals shall be protected with a Surge Protection Device (SPD) in the PLC enclosure. Relay isolated outputs do not require a SPD, but do require surge suppression across the relay coil:

1) The SPD shall consist of a multistage hybrid unit that does not use metal oxide varistors (MOVs), not interfere with the normal operation of the device, and have a trip level less than the surge withstand level of the instrument.

2) The SPD shall be designed to withstand a 10 kA test current of a (8/20) us waveform per IEEE C62.41.-2002, category C Area.

3) SPDs used in Division 1 hazardous areas will conform to EN 020/DIN EN 50 020/VDE 0170/0171 part 7: 1996-04. SPDs in hazardous areas shall provide at least 500V isolation between intrinsic safety ground and earth ground.

4) The SPD shall have a series resistance less than 10 ohms and a maximum operating load of 250 mA.

5) The SPD shall have an operating temperature range of -40^C to +80 ^C.

6) The SPD shall provide line-to-line and line-to-ground protection.

7) The SPD shall be DIN rail mountable.

8) No more than two signals per SPD will be allowed.

d. The SPD shall be Phoenix Contact PlugTrab PT 2x2 series or MTL SD-32 series selected for the application and voltage range.

e. Communications Signals. All copper serial communications links (RS-232, RS-485) shall be protected at both ends of the circuit, or as shown on the system block diagram:

1) The SPD shall consist of a multistage hybrid unit that does not use metal oxide varistors (MOVs), not interfere with the normal operation of the device, and have a trip level less than the surge withstand level of the instrument.

2) SPDs for shall be UL497B listed.

3) SPDs used in Division 1 hazardous areas will conform to EN 020/DIN EN 50 020/VDE 0170/0171 part 7: 1996-04. SPDs in hazardous areas shall provide at least 500V isolation between intrinsic safety ground and earth ground.

4) SPDs for data communication shall have a minimum cutoff frequency (3 dB) of 100MHz for 50 ohm systems.

5) The SPD shall have a series resistance less than 2.2 ohms and a maximum operating load of 250 mA.

6) The SPD shall have an operating temperature range of -40^C to +80^C.

7) The SPD shall provide line-to-line and line-to-ground protection.

8) The SPD shall have a peak clamping voltage of +/- 25 V dc.

9) The SPD shall be DIN rail mountable.

10) The SPD shall be designed to withstand a 10 kA test current of a (8/20) us waveform per IEEE C62.41.-2002, category C Area.

f. The SPD shall be Phoenix Contact Data-PlugTrab PT PT5-HF Series, or MTL SD-32 series selected for the application and voltage range.

2. PLC Analog I/O Signal Isolation. All PLC analog signals will be provided with 3-way signal isolating amplifiers. Signal isolation power supplies shall be separate from field digital input power supplies.

G. PLC Arrangement. The PLCs shall be distributed and arranged as indicated on the drawings. The System Supplier shall meet all of the PLC manufacturer's installation and operational requirements.

H. Service Conditions. PLCs will be installed in air-conditioned, non-air conditioned, and outdoor environments. PLCs shall be furnished with sunshades, heated, and air-conditioned enclosures as required for the installation.

2.2 PLC PROCESSOR. The programmable logic controller processor shall be an industrial-type rack-mounted unit that utilizes battery-backed cmos type or nonvolatile type memory. Battery backed memory shall include integral batteries with sufficient capacity for at least 6 months memory retention without power to the processing unit. Standby and shelf life of the batteries shall be at least 5 years. A mode selection switch (run/stop/term) shall be provided on the processor for selection of the operating mode. The PLC shall be the automation direct H2-DM1E CPU, or owner and engineer pre-approved equal without exception.

A. Diagnostics. The processor shall utilize self-monitoring diagnostic techniques and shall contain easily visible LED diagnostic indicators for "run" and "halt" conditions as well as memory and input/output error conditions. Diagnostic codes shall also be available through the programming device to facilitate troubleshooting.

B. Programming Port. The processor shall include a programming port that is available for programming and monitoring on-line after the system is fully functional, and after all communications, human machine interface (HMI), and network connections have been made. Removal or disruption of network communications, remote I/O communications, and HMIs to allow for on-line programming and monitoring will not be acceptable.

C. Communications. The processor shall be programmed to operate autonomously, regardless of communications status with other units. Each programmable controller shall be furnished complete with communication modules for local and remote input/output hardware communications, communications with other programmable controllers, and communication with host computers as shown on the system block diagram. The processor shall support:

1. Serial RS-232/RS-485 Modbus RTU Master/Slave.
2. Modbus-TCP (over Ethernet).
3. Serial RS-232 ASCII.
4. Ethernet 10/100Base-T.

D. Environment. The processor shall be suitable for operation in the environments indicated on the drawings.

E. Programming. The processor shall be programmable using the PLC manufacturer's programming software for ladder logic programming. The programming software shall support the following:

1. Ladder logic programming shall include a minimum of the following capabilities:
    a. Contacts, coils, branching.
    b. Data comparisons.
    c. On-delay and off-delay timers.
    d. Counters with comparators.
    e. Floating point Math and Logical instructions.
    f. PID loop control for up to 16 loops.
    g. Jumps and Subroutine functions.
    h. Master control relay.
    i. Transitional or one-shot outputs.
    j. Standard and user-defined data tables for digital and analog value storage.
    k. Remote I/O capability.
    l. Fault-mode sub-routine.

F. Programming Capabilities. The processor shall include the following capabilities for programming, debugging of programs, and troubleshooting:

1. Off-line programming.
2. On-line programming.

3. On-line status of coils and registers.

4. Input/output forcing.

G. Hardware Configuration. Processors shall be configured for standard rack mounting. Each programmable logic controller processor shall include integral communications ports for the programming device, remote input/output device, HMI device, or remote communications interfaces.

H. Input/Output Hardware. Input/output hardware shall be arranged as indicated on the drawings. Programmable logic controller systems shall support the following types of input/output modules.

1. 24 volt dc, 16 point max./module, digital input and output modules.

2. 4-20 mA dc, 8 point max./module, analog input modules.

3. 4-20 ma, 4 point max./module, analog output modules.

I. All digital input/output hardware shall include isolation against surges of at least 1500 volts. All output hardware connected to inductive loads shall be supplied with surge suppression devices and recommended by the PLC manufacturer to prevent damage to output hardware. All I/O modules shall have status indication LEDs.

1. Wiring Terminals. All input/output modules shall utilize removable module terminal blocks to allow removal of modules without disconnecting individual wires. Where available from the PLC manufacturer or ENGINEER and OWNER-approved third-party supplier, pre-fabricated I/O module connection cables and DIN rail panel mountable field terminal block assemblies shall be provided for panel field wiring connections to interposing relays, SPD, or signal isolator.

2. I/O Circuit Power Supply. Outputs for motor driven equipment will typically be powered from the driven equipment. Digital outputs for miscellaneous equipment shall be powered either from the controlled equipment, or the PLC enclosure as indicated on the drawings, or as coordinated with the controlled equipment supplier. Outputs that control process equipment specified under other sections or provided under other contracts shall be fully isolated or shall operate either interposing relays or relay-type digital output modules in the PLC cabinet.

3. Digital Input Modules. Digital input modules shall sense voltages between 20 and 28 volts dc and shall have individual channel LED indicators to display the status of the field contact. Each input module shall be suitable for being connected to a separate voltage source and return. Return voltage may be common to the entire input module. Digital input modules shall have a maximum sixteen input channels per module.

4. Digital Output Modules. Digital output modules shall control voltages from 20 and 28 volts dc and shall be rated at least 1 ampere. Outputs shall be fused and shall have individual channel LED indicators to display output status. Outputs shall withstand a surge of at least 80 amperes for one cycle and shall have an off-state leakage current not to exceed 2.0 mA. Outputs shall be connected to panel mounted interposing relays on each individual channel. Digital output modules shall have a maximum of sixteen output channels per module.

5. Analog Input Modules. Analog input modules shall accept linear 4-20 mA dc signals from field transmitters. Analog to digital conversion accuracy shall be at least 12-bit (0-4095 count) resolution. Analog input modules shall have multiple a maximum of eight input channels per module. ENGINEER and OWNER approved single loop externally powered analog isolator shall be provided for each analog input channel.

6. Analog Output Modules. Analog output modules shall transmit linear 4-20 mA dc signals to field devices. Loop power for all analog outputs shall be provided by regulated power supplies in each PLC enclosure and shall be capable of driving a 0 to 600 ohm load. Digital to analog conversion accuracy shall be at least 12-bit (0-4095 count) resolution. Analog output modules shall have multiple a maximum of four output channels per module. ENGINEER and OWNER approved single loop externally powered analog isolator shall be provided for each analog output channel.

7. Panel Terminations. All PLC input/output signals for field connections shall be terminated through panel, DIN rail mounted terminals. Direct connection of field wiring to the I/O module or surge/isolator module terminals is not acceptable.

8. Interposing Relays. Interposing relays shall be incorporated on all I/O output circuits. Interposing relays shall be mounted in the PLC enclosure containing the output module that activates the relays. Relays shall utilize 24 VDC coils, form C five (5) amp contacts and coil status LED indication. External relay coil surge suppression at the relay terminals shall be provided if not an integral part of the relay.

2.3 COMMUNICATIONS. Each programmable controller system shall be furnished complete with any communication hardware modules required for communications to local input/output hardware, remote input/output hardware, other programmable controllers, or to host computers as shown on plans or indicated in description of operation.

A. The programmable controller shall include capabilities for communications via:

1. Serial RS-232/RS-485 Modbus RTU.

2. Modbus TCP via Ethernet 10/100BaseT port.

3. Ethernet 10/100BaseT.

4. Serial RS-232C ASCII.

B. Communication hardware shall be compatible with the cable, data highway, fiber optic, or radio communication media. Ethernet components and cable are specified in other specification sections.

C. Addressability. Each programmable logic controller shall be individually addressable so that only the selected controller responds when queried. IP addressing shall be used. Designation of a controller's network address may be either a software or hardware function.

D. Communications Hardware. System Supplier shall provide all necessary communications hardware. Hardware shall be included for, but not be limited to, remote I/O, data highway, host computer, fiber optics, Ethernet and radio.

1. PLC to PLC Communications Hardware. Each PLC shall communicate to other PLCs over an Ethernet communications network. System Supplier shall include all rack mounted, enclosure mounted, or desktop mounted communications modules required for a complete working system.

2. PLC to Remote Communications Hardware. The master PLC shall communicate with any remote PLC rack over an Ethernet remote I/O communications network. System Supplier shall include all rack mounted, enclosure mounted, or desktop mounted communications modules required for a complete working system.

3. PLC to Host Communications Hardware. Each PLC shall communicate to host computer(s) utilizing Modbus protocol (Modbus serial and / or Modbus-TCP via Ethernet) as required per project requirements. System Supplier shall include all rack mounted, enclosure mounted, or desktop mounted communications modules required for a complete working system. The computer system hardware is covered in another section.

E. Communications Media. System Supplier shall provide all necessary cabling for the PLC communications network and PLC remote I/O communications network. Communications cables shall meet the requirements of the manufacturers of the PLCs and communications modules. PLC communications media shall be as specified under the section 17530, and the drawings.

1. Media Converters. Media Converters shall be supplied to provide conversion between fiber optic cable and copper cable where not included as an integral component of a communications device. All converters shall be mounted in the network panels. All converters within a panel shall share a common power supply independent from all other panel power supplies. The System Supplier shall coordinate the media converter and termination requirements with the fiber optic cable and network protocols. Converters shall be as specified under the Section 17530, and the drawings.

2.4 SPECIAL DEVICES. System supplier shall provide two sets of any special devices (such as null modems, adapter cards, interface converters, etc.) Required to establish an operational programming line between the programmable logic controllers and programming device.

2.5 STANDARD PRODUCT. The programming software shall be personal computer based and a standard product of the plc manufacturer.

A. Programming Software Features. The programming software shall allow off-line development of all PLC-related programming, including user annotation of the program, and creation and printing of application programs and I/O cross-reference lists. Special programming tasks originally provided by System Supplier shall also be included.

B. On-line features shall include IEC-1311 standards program modification, ladder-logic modification, program language modification, monitoring of real-time ladder-logic execution, monitoring of program execution, monitoring and manipulation of timer and counter preset and present values, monitoring and forcing of physical I/O, and monitoring and manipulation of analog (register) and bit (binary) data table values. PLC and I/O hardware diagnostic and status information shall be accessible using the software in on-line mode.

2.6 SYSTEM ENCLOSURES. Programmable logic controllers and input/output hardware shall be housed in shop-assembled panels as indicated on the drawings and as described in the panels, consoles, and appurtenances section.

2.7 HUMAN MACHINE INTERFACE TERMINALS. Human machine interface terminals (HMI) shall be microprocessor-based, flat panel, touchscreen type. The unit shall have data entry capabilities and shall include a password security function. The unit shall be connected to the plc and shall display status, alarm, and diagnostic information.

A. The HMI shall:

1.	Size:	12.1 inch
2.	Color Scale	65,536 colors
3.	Pixels	800 x 600 (SVGA)
4.	Brightness	260 cd/m^2
5.	Dot Pitch	0.267 mm x 0.267 mm
6.	System Memory	64 MBytes
7.	Flash Memory	64 MBytes
8.	Serial RS232 Port	Yes
9.	USB port	Type A & B
10.	Ethernet port	10/100 Base-T

11.	Power	24 VDC, 20W
12.	Temperature	0 to 50 Deg C
13.	Enclosure	NEMA 4/4X

B. The HMI shall be mounted on front of enclosure door as shown on the drawings. Unit shall be provided with all accessories as required for this application.

C. The HMI shall be Model EA7-12C as manufactured by C-More or OWNER/ENGINEER pre-approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION REQUIREMENTS. PLCS INSTALLATION REQUIREMENTS ARE SPECIFIED IN INSTRUMENTATION AND CONTROL SYSTEM SECTION EXCEPT AS DESCRIBED HEREIN.

A. Field check, testing, and training shall be as specified in the Instrumentation and Control System section.

3.2 3-2. CONFIGURATION.

A. PLC Programming and Configuration. Configuration services are as specified below.

B. Programming Responsibilities. System Supplier will have all PLC and HMI programming responsibilities for the project as tabulated below. The System Supplier shall provide all programming services or any Test software required for acceptance testing.

	PROCESSOR ID	RESPONSIBILITY
a.	Existing PLC rack, new processor PLC-1-1	Contractor
b.		
c.		
d.		

C. Communications Configuration. The communications devices shall be fully configured and installed by System Supplier. Communications shall be configured as shown on the drawings.

END OF SECTION

SECTION 17560

INSTRUMENTATION GENERAL REQUIREMENT

PART 1 - GENERAL

1.1 SCOPE. This section covers the furnishing of all instrumentation equipment required for the computer control system as indicated on the drawings and as required.

A. Principal components of the instrumentation systems shall be as indicated on the P&ID drawings; as indicated on the instrument device schedules attached to this Section 17560, or appended to Sections 17561 through 17565.

1. Note: Not all instruments shown in these sections may be required to be provided by the CONTRACTOR (or CONTRACTOR System Supplier), but may be provided by Others, or included for future use as specifically designated.

2. Control System. Section 17500 Instrumentation and Control Systems shall apply to all systems described in this section. All applicable requirements defined in Section 17500 shall apply to equipment and services provided under Section 17560.

B. Section includes:

1. Process control and instrumentation systems requirements for common components including installation, including, but not limited to, the following:

a. Hardware.

b. Software.

c. Programming.

d. Testing.

e. Commissioning.

2. Loop drawings:

a. Provide complete loop drawings for all systems, including packaged equipment furnished as part of a vendor furnished package, and pre-purchased equipment.

b. The form, minimum level of detail, and format for the loop drawings must match that of the sample loop drawings included in the Contract Documents.

c. Owner and Engineer are not responsible for providing detailed loop diagrams for Contractor-furnished equipment.

3. Requirements of the Instrumentation and Control Specifications apply to all Instrumentation and Control Work specified in Technical Sections, including packaged mechanical systems, local control panels (LCPs), vendor control panels (VCPs), etc.

4. As specified in this Section, some SCADA/HMI software configuration will be provided by the Owner, hereinafter referred to as the programmer.

C. Qualifications:

1. Contractor performing the programming shall have the following qualifications:

   a. Well-versed in Automation Direct Do-More PLC programming software.

   b. CSIA certified.

D. Contract Drawings:

1. Schematic diagrams:

   a. Use schematic diagrams in conjunction with the descriptive operating sequence in the Technical Sections to furnish a coordinated and fully functional control system.

   b. Schematic diagrams show control function only.

      1) Incorporate other necessary functions for proper operation and protection of the system.

   c. Controls are indicated on the Drawings as de-energized.

   d. Add relays, where required, to provide necessary contacts for the control system or where needed to function as interposing relays for control voltage coordination, equipment coordination, or control system voltage drop considerations.

   e. Mount devices shown on motor controller schematic diagrams in the controller compartment enclosure, unless otherwise noted or indicated on the Drawings.

E. System description:

1. Existing system:

   a. The existing station operates 3 high service pumps that are controlled by VFDs.

2. New system:

   a. The proposed addition to the station includes one additional high service pump with VFD control and associated appurtenances.

3. The existing PLC cabinet will be reused to house new equipment. The existing Automation Direct D2-260 CPU shall be replaced with a new Automation Direct H2-DM1E CPU. The System Integrator sub-contractor shall migrate the existing program (Automation Direct C-More) and modify it to (Automation Direct Do-More) to provide control functionality for the new fourth pump and the additional pump protection features shown in the drawings. The System Integrator sub-contractor shall use the existing Automation Direct C-more PLC programming software and upgrade to the newest Automation Direct DO-More service pack edition. The System Integrator sub-contractor shall edit the existing HMI screens and Historian files to accommodate the new control and data collection features for the existing three High Service Pumps and the new fourth High Service Pump described in the contract documents. The Contractor shall coordinate with the Owner to develop a software

migration strategy to transfer the existing program into the proposed (new) program on the new PLC processor (Automation Direct C-More to Automation Direct Do-More software transition). The Contractor shall functionally test the revised program off-line on the proposed (new) PLC processor prior to coordinating with the Owner to remove the existing processor and install the proposed (new) processor.

F. System Shut-down coordination:

1. The Contractor shall coordinate with the Owner to develop a software migration strategy to transfer the existing program into the proposed (new) program on the proposed PLC processor (Automation Direct C-More to Automation Direct Do-More software transition). The Contractor shall functionally test the revised program off-line on the new PLC processor, before coordinating with the Owner to remove the existing processor and install the new processor into the existing Automation Direct PLC rack.

2. Physical systems (pumps and piping) shutdowns shall be planned in advance and shall last less than 4 hours. Electrical and control equipment shutdowns shall be coordinated with the Owner and can last up to 8 hours, provided that the pump station can still be operated manually.

G. Terminology. When the phrase "as required" is stated in this section it shall mean "as required in any attached Data Sheet(s)" or shown on the DRAWINGS.

1.2 REFERENCES

A. Abbreviations:

1. ACB: Automatic current balance.

2. ATS: Automatic transfer switch.

3. CCS: The PCS central computer system (CCS) consisting of computers and software. The personal computer-based hardware and software system that includes the operator interface, data storage, data retrieval, archiving, alarming, historian, reports, trending, and other higher level control system software and functions.

4. DPDT: Double-pole, double-throw.

5. ECP: Electronic circuit protector.

6. ES: Ethernet switch.

7. FAT: Factory acceptance test, also known as Source Test.

8. HART: Highway addressable remote transducer.

9. HMI: Human machine interface is a software application that presents information to an operator or user about the state of a process, and to accept and implement the operators control instructions. Typically, information is displayed in a graphical format.

10. HOA: Hand-Off-Auto control function that is totally PLC based. In the Hand mode, equipment is started or stopped, valves are opened or closed through operator direction under the control of the PLC software. In the Auto mode, equipment is started or stopped, and valves are opened or closed through a control algorithm within the PLC software. In the Off mode, the equipment is prohibited from responding from the PLC control.

11. I/O: Input/Output.

12. ICSC: Instrumentation and control system contractor: Subcontractor who specializes in the design, construction, fabrication, software development, installation, testing, and commissioning of industrial instrumentation and control systems.

13. IJB: Instrument junction boxes: A panel designed with cord sets to easily remove, replace, or relocate instrument signals.

14. IP: Internet protocol or ingress protection.

15. LAN: Local area network: A control or communications network that is limited to the physical boundaries of the facility.

16. LCP: Local control panel: Operator interface panel that may contain an HMI, pilot type control devices, operator interface devices, control relays, etc. and does not contain a PLC or RIO.

17. LOI: Local Operator Interface is an operator interface device consisting of an alphanumeric or graphic display with operator input functionality. The LOI is typically a flat panel type of display mounted on the front of an enclosure with either a touch screen or tactile button interface.

18. LOR: Local-Off-Remote control function. In the Remote mode, equipment is started or stopped, and valves are opened or closed through the PLC based upon the selection of the HOA. In the Local mode, equipment is started or stopped, valves are opened or closed based upon hardwired control circuits completely independent of the PLC with minimum interlocks and permissive conditions. In the Off mode, the equipment is prohibited from responding to any control commands.

19. NJB: Network junction box. An enclosure that contains multiple access points to various networks within the facility. Networks could be Ethernet, Ethernet/IP, Fieldbus, RIO, etc.

20. P&ID: Process and instrumentation diagram.

21. PC: Personal computer.

22. PCIS: Process control and instrumentation system: Includes the entire instrumentation system, the entire control system, and all of the Work specified in the Instrumentation and Control Specifications and depicted on the Instrumentation Drawings. This includes all the PCS and instruments and networking components as well as the various servers, workstations, thin clients, etc.

23. PCM: Process control module: An enclosure containing any of the following devices: PLC, RTU, or RIO.

24. PCS: Process control system: A general name for the computerized system that gathers and processes data from equipment and sensors and applies operational controls to the process equipment. It includes the PLCs and/or RIOs, LOIs, HMIs, both LCPs, VCPs, and all data management systems accessible to staff.

25. PJB: Power junction box: An enclosure with terminal blocks that distribute power to multiple instruments.

26. PLC: Programmable logic controller.

27. PS: Power supply.

28. RIO: Remote I/O device for the PLC consisting of remote I/O racks or remote I/O blocks.

29. RTU: Remote telemetry unit: A controller typically consisting of a PLC, and a means for remote communications. The remote communications devices typically are radios, modems, etc.

30. SCADA: Supervisory control and data acquisition system: A general name for the computerized system that gathers and processes data from sensors and equipment located outside of the facility, such as wells, lift stations, metering stations, etc.

31. SELV: Safety extra-low voltage.

32. SFP: Small form-factor pluggable.

33. SPDT: Single-pole, double-throw.

34. SPST: Single-pole, single-throw.

35. UPS: Uninterruptible power supply.

36. VCP: Vendor control panel: Control panels that are furnished with particular equipment by a vendor other than the ICSC. These panels may contain PLCs, RIO, LOI, HMI, etc.

37. WAN: Wide area network: A control or communications network that extends beyond the physical boundaries of the facility.

B. Standards:

1. American Petroleum Institute (API):

   a. RP 550 - Manual on Installation of Refinery Instruments and Control Systems; Part II-Process Stream Analyzers; Section 5-Oxygen Analyzers.

   b. RP 551 - Process Measurement Instrumentation.

2. International Organization for Standardization (ISO):

   a. 9001 - Quality Management Systems - Requirements.

3. International Society of Automation (ISA):

   a. 5.1 - Instrumentation Symbols and Identification.

   b. 5.4 - Instrument Loop Diagrams.

c. 20 - Instrument Forms Plus Pro-Combo-Enterprise Version (Microsoft SQL Server Express Database Software based).

4. National Electrical Manufacturers Association (NEMA).

5. National Fire Protection Association (NFPA):

a. 70 - National Electrical Code (NEC).

6. National Institute of Standards and Technology (NIST).

7. NSF International (NSF):

a. 61 - Drinking Water System Components - Health Effects.

b. 372 - Drinking Water System Components - Lead Content.

8. Underwriters Laboratories, Inc. (UL):

a. 508 - Standard of Safety for Industrial Control Equipment.

b. 508A - Standard of Safety for Industrial Control Panels.

1.3 GENERAL. Contractor or system supplier shall select the equipment furnished under this section for its superior quality and the intended performance. The contractor or system supplier shall install all equipment in accordance with the manufacturer's instructions. Equipment and materials used shall be subject to review and shall comply with the following requirements.

A. General Equipment Requirements. When required, the General Equipment Requirements shall apply to all equipment provided under this section.

B. DRAWINGS. Supplementing this section, the drawings indicate locations and arrangement of instruments and enclosures, provide mounting details, and may show device schedules and other information regarding the connection and interaction with other equipment.

C. Governing Standards. Governing Standards for instruments shall be as indicated in Section 17500.

D. Corrosive Fluids. All parts, which are exposed to corrosive conditions, shall be made from corrosion resistant materials. CONTRACTOR shall submit certification that the instrument manufacturer approves the selection of materials of primary elements which are in contact with the specified process fluid to be inert to the effects of the process fluid.

E. Elevation and Temperature. All instruments shall be designed to operate within an elevation range of 1000 feet above sea level and temperature range of 0 to 104 degrees Fahrenheit. Provide heaters, pipe heat tracing, air conditioning, and equipment enclosures and sub shields as required.

F. Power and Instrument Signals. Unless otherwise indicated, electric power supply to the instrumentation equipment will be unregulated 120 volts ac. Unless otherwise indicated, all transmitted electronic analog instrument signals shall be 4-20 mA dc and shall be linear with the measured variable.

G. Appurtenances. Signal converters, signal boosters, amplifiers, special power supplies, special cable, special grounding, calibration manifolds, isolation valves, and electronic isolation devices shall be furnished as needed for proper performance of the equipment. All field power supplies shall be redundant with bumpless transfer in the event of a failure:

1. Provide control panel signal isolators for all analog signals.
2. Provide surge suppression for all analog signals both at the transmitter and control panel termination.
3. Provide manufacturer's stainless steel calibration manifolds for transmitters.
4. Provide manufacturer's recommended stainless steel mounting brackets and hardware.
5. Provide all instruments with Hart communications if available.

H. Field Mounted Transmitter Analog Surge Protectors. All analog input and output circuits shall be protected at both the panel and field ends with surge protection. Field (at instrument) surge protectors shall provide line-to line and line-to-ground protection. The suppression circuit shall be a multistage hybrid device utilizing surge arresting diodes and gas discharge tubes:

1.	Nominal Voltage	24 VDC
2.	Max. Operating Voltage	28 VDC
3.	Max. Operating Current	250 ma
4.	Nominal Discharge Current (8 x 20 uS Waveform)	Normal Mode 10 kA Common Mode 10 kA
5.	Response Time	Normal Mode 1 nSec Common Mode 100 Sec
6.	Series Resistance	10 ohm
7.	Pipe Nipple	Material 304 SS Thread ¾" NPT Length 4"

I. The surge suppressor shall be a Phoenix Contact PipeTrab Model S-PT1-2PE-24DC without exception for compatibility with existing installations.

J. Four Wire Field Mounted Transmitter Surge Protectors.

1. All four-wire transmitters (120 VAC plus 4 to 20 ma) that are not UPS powered and/or are located outside of the building housing the monitoring PLC shall have power and signal surge protection at the transmitter. Refer to electrical drawings for exceptions. The surge protector is a single hybrid unit contained in a NEMA 4X polycarbonate case. Field wiring is terminated with quick disconnect or barrier terminal strips:

a.	AC Input Voltage	120 VAC, 60 Hz. with LED indicator

b.	AC Max. Output Current	15 Amps fused
c.	AC Surge Protection	Technology: 3-Stage Series Hybrid Max Surge Amps (8x20uS):10 kA Response Time: < 5 nanoseconds
d.	DC Signal Protection	Technology: Series Hybrid Peak Surge Amps: 10kA Response Time: < 1 nanosecond Voltage Clamp: 8 to 200 Volt Selectable
e.	DC Resistance	5 Ohms typical
f.	Nominal Outside Dimensions-Polycarbonate Case	6.9"H x 6.9"W x 3"D

K. The surge suppressor shall be an Emerson Network Power Schneider/ASCO model 265 (EDCO SLAC series) without exception.

L. Interchangeability and Appearance. To the extent possible, instruments used for similar types of functions and services shall be of the same brand and model line. Similar components of different instruments shall be the products of the same manufacturer to facilitate maintenance and stocking of repair parts. Whenever possible, identical units shall be furnished. Where devices have standardized by the OWNER, no substitutions shall be allowed.

M. Programming Devices. For systems that require a dedicated programming or configuring device for calibration, maintenance, or troubleshooting; one such programming device shall be provided for each Owner facility (quantity and type required shall be as indicated in Paragraph 1-5). The programming device shall include appropriate operation manuals and shall be included in the training requirements. For systems that allow the programming device functions to be implemented in software running on a laptop computer, the software shall be provided instead of the programming device. The programming device shall be complete, newly purchased for this project, and shall be in like-new condition when turned over to OWNER at completion of startup:

1. Configuration Software/Serial Interface. Devices indicated as requiring a serial interface shall be provided with all accessories required to properly communicate over the serial link. An appropriate cable shall be provided to allow the transmitter serial interface to be connected to a personal computer.

2. One licensed copy of the diagnostic/interface software shall be provided for each Owner facility (quantity and type required shall be as indicated in Paragraph 1-5). Software shall be capable of running under the latest version of Microsoft's Windows 12 operating system. If the software furnished performs the same functions as the programming device, specified elsewhere, then the programming device shall not be furnished.

N. Interconnecting Cable. For systems where the primary element and transmitter are physically separated, interconnecting cable from the element to the transmitter shall be provided. The cable shall be the type approved by the instrument manufacturer for the intended purpose of interfacing the element to the transmitter. Length of cable shall be a minimum of three meters or as indicated in the drawings or Instrument Device Schedule.

O. Device Tag Numbering System. All devices shall be provided with permanent identification tags. The tag numbers shall agree with tag numbers used on the project DRAWINGS and device schedules. All field-mounted transmitters and devices shall have stamped stainless steel identification tags. Panel, subpanel, and rack-mounted devices shall have laminated phenolic identification tags securely fastened to the panel or subpanel using machine screws with tapped holes where possible. Hand-lettered or tape labels will not be acceptable.

1.4 QUALITY ASSURANCE

A. Manufacture instruments at facilities certified to the quality standards of ISO 9001.

B. Provide equipment listed by and bearing the label of UL or of an independent testing laboratory acceptable to the Engineer and the Authority Having Jurisdiction.

C. ICSC must have their own operating UL listed panel fabrication facility.

1. Panels must be fabricated at this facility and meet UL 508/508A requirements.

1.5 SUBMITTALS. Submittals shall be as required in Section 17500.

1.6 DELIVERY, STORAGE, AND SHIPPING. Delivery, storage and shipping shall be as required in Section 17500.

A. Upon receipt of instruments in the field:

1. Outside of the package: Prominently display tag number identification.

2. On each instrument: Provide a nameplate (stainless steel dog-tag) as specified in this section.

1.7 SPARE PARTS. Spare parts shall be provided specified below, and as specified in the applicable instrument section.

a.		
b.		

PART 2 - PRODUCTS

2.1 INDIVIDUAL DEVICE SPECIFICATIONS. Individual instruments and related devices shall be provided as specified in one or more of the following sections, as required:

A. Section 17562 Flow Instruments.

B. Section 17563 Pressure and Level Instruments.

C. Section 17565 Miscellaneous Instruments.

PART 3 - EXECUTION

3.1 INSTRUMENTATION INSTALLATION REQUIREMENTS. ADDITIONAL instrumentation installation requirements are outlined in Section 17500. Instruments shall be installed and calibrated in accordance with the following requirements.

A. Section includes:

1. Process control and instrumentation systems requirements for common components including installation, including, but not limited to, the following:
    a. Hardware.
    b. Software.
    c. Programming.
    d. Testing.
    e. Commissioning.
2. Loop drawings:
    a. Provide complete loop drawings for all systems, including packaged equipment furnished as part of a vendor furnished package, and pre-purchased equipment.
    b. The form, minimum level of detail, and format for the loop drawings must match that of the sample loop drawings included in the Contract Documents.
    c. Owner and Engineer are not responsible for providing detailed loop diagrams for Contractor-furnished equipment.
3. Requirements of the Instrumentation and Control Specifications apply to all Instrumentation and Control Work specified in Technical Sections, including packaged mechanical systems, local control panels (LCPs), vendor control panels (VCPs), etc.

B. Field Calibration. After each instrument has been installed, a technical representative of CONTRACTOR shall calibrate each instrument and shall provide a written calibration report for each instrument, indicating the results and final settings. The adjustments of calibrated instruments shall be sealed or marked, insofar as possible, to discourage tampering. Instrument calibration shall be done before checkout of the system operation. A typical instrument calibration report is attached to the end of each section. Calibration Data Sheets shall be submitted in a single 3-ring binder when calibration of all instruments has been completed. Instruments shall be calibrated at 0, 25, 50, 75 and 100 percent of its calibrated range.

C. Systems Check. A technical representative of CONTRACTOR shall participate in the checkout of instrumentation systems. Systems check requirements shall be as specified in Section 17500.

D. Qualifications:

1. Contractor performing the programming shall have the following qualifications:

   a. Well-versed in Automation Direct Do-More PLC programming software.

   b. CSIA certified.

E. Installation Test Equipment. Unless specified otherwise, all test equipment for the calibration and checking of system components shall be provided by CONTRACTOR for the duration of the testing work and this test equipment will remain the property of CONTRACTOR.

F. Mounting of Field Instruments. Instruments shall be mounted so that they can be easily read and serviced, and so that all appurtenant devices can be easily operated. Typical installation details for some instruments are indicated on the DRAWINGS:

1. Instruments shall be mounted such that all readouts upright and are easily readable from directly in front of the instrument.

2. Instruments and process or electrical connections shall be made in a neat and professional manner such that they are not a trip hazard or interfere with routine maintenance.

3. Instruments which require bleeding of process lines for calibration shall be located such that liquid is not spilled on other equipment or in areas where it could be considered a hazard or nuisance. If this is not possible, provide a means to drain or convey the liquid to a suitable location. The ENGINEER and OWNER shall make the final to determination if an installation is acceptable. Installations deemed not acceptable shall be modified by the CONTRACTOR at no additional cost to the OWNER.

3.2 CUSTOMER TRAINING. Instrumentation training requirements are outlined in Section 17500.

INSTRUMENT NAME & SERVICE:		
MANUFACTURER, MODEL NO., SERIAL NO.:		
TAG OR LOOP NO.:		
INPUT/OUTPUT RANGE:		
INPUT	ACTUAL OUTPUT	DESIRED OUTPUT
PROPORTIONAL BAND:		
RESET:		
POSITION OF SWITCHES, JUMPERS, ETC.		
COMMENTS:		
DATE OF CALIBRATION: CALIBRATED BY:		
Tampa Bay Water	INSTRUMENT CALIBRATION REPORT	Figure 1-17560

END OF SECTION

Pressure Gauge

SPECIFICATION 17563

PROJECT INFORMATION

PLANT LAKE BRIDGE WTP
PROJECT 203160
CUSTOMER TAMPA BAY WATER
LOCATION

ELEMENT/SWITCH

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

TAG	P&ID	SERVICE	PRESSURE INDICATOR				
PI-4A	_10N02	FLUID	HIGH SERVICE WATER	CONNECTION TYPE	1/2 IN NPT	BOTT. HOUSING MAT.	MFR. STD.
		TEMPERATURE	85 DEG F	ISOLATION SEALS	N/A	INSTRUMENT VALVES	INSTRUMENT VALVE TREE
		MEASURING PRINCIPLE	DIRECT	CASE MATERIAL	PHENOLIC	DIAPHRAGM MAT.	MFR. STD.
		PRESSURE RANGE:	0-100 PSIG	TYPICAL DETAILS	[*]	DIAL SIZE	4-1/2"
		GAUGE RANGE	0-100 PSI	OPTIONS	[*]	AMBIENT TEMP	85 DEG F DEG F

TAG	P&ID	SERVICE	PRESSURE INDICATOR				
PI-4B	_10N02	FLUID	HIGH SERVICE WATER	CONNECTION TYPE	1/2 IN NPT	BOTT. HOUSING MAT.	MFR. STD.
		TEMPERATURE	85 DEG F	ISOLATION SEALS	N/A	INSTRUMENT VALVES	INSTRUMENT VALVE TREE
		MEASURING PRINCIPLE	DIRECT	CASE MATERIAL	PHENOLIC	DIAPHRAGM MAT.	MFR. STD.
		PRESSURE RANGE:	0-100 PSIG	TYPICAL DETAILS	[*]	DIAL SIZE	4-1/2"
		GAUGE RANGE	0-100 PSI	OPTIONS	[*]	AMBIENT TEMP	85 DEG F DEG F

Flow Switch

SPECIFICATION 17562

PROJECT INFORMATION

PLANT LAKE BRIDGE WTP
PROJECT 203160
CUSTOMER TAMPA BAY WATER
LOCATION

ELEMENT/SWITCH

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

TAG	P&ID				
FSL-1	_10N01	**SERVICE** THERMAL FLOW SWITCH			
FE-1		**FLUID** HIGH SERVICE WATER	**HAZARDOUS APP** N/A	**POWER** [*]	
		MEASURING PRINCIPLE THERMAL	**ELEM. ENC. CLASS** NEMA 4X	**POWER LOCATION** PLC-1-1	
		SET POINT 15 GPM	**SWITCH ENCL. CLASS** NEMA 4X	**OUTPUT** RELAY	
		PROCESS CONNECTION 1 1/4" NPT	**PRESSURE** 0-100 PSIG	**RELAY FORM** SPDT	
		CONNECTION MATERIAL DUCTILE IRON	**TEMPERATURE** 85 DEG F	**PLC** PLC-1-1	
		INSERTION LENGTH 12"	**VISCOSITY** N/A	**SURGE PROTECTION** NO	
		TYPICAL DETAILS NF111			

TAG	P&ID				
FSL-2-2	_10N01	**SERVICE** THERMAL FLOW SWITCH			
FE-2-2		**FLUID** HIGH SERVICE WATER	**HAZARDOUS APP** N/A	**POWER** [*]	
		MEASURING PRINCIPLE THERMAL	**ELEM. ENC. CLASS** NEMA 4X	**POWER LOCATION** PLC-1-1	
		SET POINT 15 GPM	**SWITCH ENCL. CLASS** NEMA 4X	**OUTPUT** RELAY	
		PROCESS CONNECTION 1 1/4" NPT	**PRESSURE** 0-100 PSIG	**RELAY FORM** SPDT	
		CONNECTION MATERIAL DUCTILE IRON	**TEMPERATURE** 85 DEG F	**PLC** PLC-1-1	
		INSERTION LENGTH 12"	**VISCOSITY** N/A	**SURGE PROTECTION** NO	
		TYPICAL DETAILS NF111			

TAG	P&ID				
FSL-3	_10N02	**SERVICE** THERMAL FLOW SWITCH			
FE-3		**FLUID** HIGH SERVICE WATER	**HAZARDOUS APP** N/A	**POWER** [*]	
		MEASURING PRINCIPLE THERMAL	**ELEM. ENC. CLASS** NEMA 4X	**POWER LOCATION** PLC-1-1	
		SET POINT 15 GPM	**SWITCH ENCL. CLASS** NEMA 4X	**OUTPUT** RELAY	
		PROCESS CONNECTION 1 1/4" NPT	**PRESSURE** 0-100 PSIG	**RELAY FORM** SPDT	
		CONNECTION MATERIAL DUCTILE IRON	**TEMPERATURE** 85 DEG F	**PLC** PLC-1-1	
		INSERTION LENGTH 12"	**VISCOSITY** N/A	**SURGE PROTECTION** NO	
		TYPICAL DETAILS NF111			

Flow Switch

SPECIFICATION 17562

PROJECT INFORMATION

PLANT LAKE BRIDGE WTP
PROJECT 203160
CUSTOMER TAMPA BAY WATER
LOCATION

ELEMENT/SWITCH

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

TAG	P&ID						
FSL-4	_10N02	**SERVICE**	THERMAL FLOW SWITCH				
FE-4		**FLUID**	HIGH SERVICE WATER	**HAZARDOUS APP**	N/A	**POWER**	[*]
		MEASURING PRINCIPLE	THERMAL	**ELEM. ENC. CLASS**	NEMA 4X	**POWER LOCATION**	PLC-1-1
		SET POINT	5 GPM	**SWITCH ENCL. CLASS**	NEMA 4X	**OUTPUT**	RELAY
		PROCESS CONNECTION	1 1/4" NPT	**PRESSURE**	0-100 PSIG	**RELAY FORM**	SPDT
		CONNECTION MATERIAL	DUCTILE IRON	**TEMPERATURE**	85 DEG F	**PLC**	PLC-1-1
		INSERTION LENGTH	12"	**VISCOSITY**	N/A	**SURGE PROTECTION**	NO
		TYPICAL DETAILS	NF111				

Pressure Switch

SPECIFICATION 17563

PROJECT INFORMATION

PLANT LAKE BRIDGE WTP
PROJECT 203160
CUSTOMER TAMPA BAY WATER
LOCATION

ELEMENT/SWITCH

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

TAG	P&ID	SERVICE	PRESSURE SWITCH LOW				
PSL-4	_10N02	**FLUID**	HIGH SERVICE WATER	**HAZARDOUS APP**	N/A	**POWER**	[*]
PE1-4		**FLUID TEMPERATURE**	85 DEG F	**ELEM. ENCL. CLASS**	NEMA 4X	**POWER LOCATION**	LOOP
		MEASURING PRINCIPLE	PRESS SW	**ELEMENT MATERIAL**	MFR. STD.	**OUTPUT**	RELAY
		SET POINT	30 PSIG OPEN	**SWITCH ENCL. CLASS**	NEMA 4X	**RELAY FORM**	SPDT
		ADJUSTABLE RANGE	0-100 PSIG	**ENCL. MATERIAL**	MFR. STD.	**PLC**	PLC-1-1
		TYPICAL DETAILS	NP501	**SURGE PROTECTION**	NO	**MANUAL RESET**	NO
		CONN. MOUNTING	BOTTOM	**BOTT. HOUSING MAT.**	MFR. STD.	**SEAL TYPE**	N/A
		CONNECTON TYPE	1/2 IN NPT	**INSTRUMENT VALVES**	INSTRUMENT VALVE TREE	**DIAPHRAGM/WET MAT**	MFR. STD.

TAG	P&ID	SERVICE	PRESSURE SWITCH HIGH				
PSH-4	_10N02	**FLUID**	HIGH SERVICE WATER	**HAZARDOUS APP**	N/A	**POWER**	[*]
PE2-4		**FLUID TEMPERATURE**	85 DEG F	**ELEM. ENCL. CLASS**	NEMA 4X	**POWER LOCATION**	LOOP
		MEASURING PRINCIPLE	PRESS SW	**ELEMENT MATERIAL**	MFR. STD.	**OUTPUT**	RELAY
		SET POINT	90 PSIG OPEN	**SWITCH ENCL. CLASS**	NEMA 4X	**RELAY FORM**	SPDT
		ADJUSTABLE RANGE	0-100 PSIG	**ENCL. MATERIAL**	MFR. STD.	**PLC**	PLC-1-1
		TYPICAL DETAILS	NP501	**SURGE PROTECTION**	NO	**MANUAL RESET**	NO
		CONN. MOUNTING	BOTTOM	**BOTT. HOUSING MAT.**	MFR. STD.	**SEAL TYPE**	N/A
		CONNECTON TYPE	1/2 IN NPT	**INSTRUMENT VALVES**	INSTRUMENT VALVE TREE	**DIAPHRAGM/WET MAT**	MFR. STD.

SECTION 17562

FLOW INSTRUMENTS

PART 1 - GENERAL

1.1 SCOPE. The flow instrument section covers the furnishing of flow instruments and accessories required for the instrumentation and control system as indicated on the drawings.

A. Equipment and services provided under this section shall be subject to the Instrumentation and Control System section. This section shall be used and referenced only in conjunction with the Instrumentation and Control System section. Supplementing the Instrumentation and Control System section, instrument data, special requirements, and options are indicated on the drawings or the Instrument Device Schedule.

B. When multiple instruments of a particular type are specified, and each requires different features, the required features are described on the drawings or the Instrument Device Schedule.

1.2 DESIGN CRITERIA. Each device shall be a pre-assembled, packaged unit. Upon delivery to the work site, each device or system shall be ready for installation with only minor piping and electrical connections required by contractor.

A. Primary elements shall derive any required power from the transmitter, unless otherwise indicated.

B. The instruments shall be installed to measure, monitor, or display the specified process at the ranges and service conditions indicated on the drawings or as indicated in the Instrument Device Schedule. The instruments shall be installed at the locations indicated on the drawings or in the Instrument Device Schedule.

C. Where possible, each instrument shall be factory wet flow calibrated to the full scale flow range of the sensors or calibration ranges indicated on the drawings or in the Instrument Device Schedule. Transmitters or similar measurement instruments shall be calibrated using National Institute of Standards and Testing (NIST) approved bench calibration procedures, when such procedures exist for the instrument type. Calibration and configuration data shall be stored digitally in each device, including the instrument tag designation indicated on the drawings or Instrument Device Schedule.

1.3 SUBMITTALS. Submittals shall be made as specified in the instrumentation and control system section.

1.4 SHIPMENT, PROTECTION, AND STORAGE. Equipment provided under this section shall be shipped, protected, and stored as specified in the instrumentation and control system section. Identification of packaging shall be as specified in the instrumentation and control system section.

PART 2 - PRODUCTS

2.1 GENERAL. The following paragraphs provide minimum device requirements. The drawings or instrument device schedule shall be used to determine any additional instrument options, requirements, or service conditions.

A. Interconnecting Cable. For instruments where the primary element and transmitter are physically separated, interconnecting cable from the element to the transmitter shall be provided. The cable shall be the type approved by the instrument manufacturer for the intended purpose of interfacing the element to the transmitter. Length of cable shall be a minimum of three meters or as indicated on the drawings or in the Instrument Device Schedule. The interconnecting cable shall be provided in the length necessary for installation. Splices shall not be allowed in the installed cable.

B. Programming Device. For instruments that require a dedicated programming device for calibration, maintenance, or troubleshooting, one such programming device shall be provided for each Owner facility (quantity required shall be as indicated in the Instrumentation and Control System section). The programming device shall include appropriate operation manuals and shall be included in the training requirements. For systems that allow the programming device functions to be implemented in software, running on a laptop computer, the software shall be provided instead of the programming device.

C. Configuration Software/Serial Interface. Devices indicated as requiring a serial interface shall be provided with all accessories required to properly communicate over the serial link. As a minimum, an appropriate cable shall be provided to allow the transmitter serial interface to be connected to a personal computer. One licensed copy of the diagnostic/interface software shall be provided for each Owner facility (quantity required shall be as indicated in the Instrumentation and Control System section). Software shall be capable of running under the Windows 12 operating system. If the software furnished performs the same functions as the programming device, specified elsewhere, then the programming device shall not be furnished.

2.2 FLOW INSTRUMENTATION.

A. Premium Accuracy Differential Pressure (Flow) Transmitters. Transmitters shall be an all solid state, electronic, loop powered two-wire Premium Smart transmitters and have the minimum ratings as listed below:

1. Transmitters shall be the capacitance or single-crystal silicon resonant sensor type.
2. Process fluid shall be isolated from the sensing elements by AISI Type 316 stainless steel, Hastelloy-C, ceramic, or cobalt-chromium-nickel alloy diaphragms as indicated on the drawings. The isolation diaphragm shall use a silicone oil fluid fill.
3. Differential pressure transmitters shall be furnished with a manufacturer supplied integral 3-way 316 SS isolation and calibration manifold with easy access calibration ports.

4. Transmitters shall have self-diagnostics and electronically adjustable span, zero, and damping.

5. The transmitter shall have a 2-wire, isolated, 4-20 ma analog output that is user selectable for linear or square root output.

6. Transmitters shall be enclosed in a NEMA Type 4X housing. All parts shall be stainless steel, or other corrosion-resistant materials as required by the application.

7. Transmitters shall have microprocessor-based smart electronics with HART protocol interface.

8. Transmitters shall be provided with integral lightning surge protection.

9. Transmitters shall not be damaged by reverse polarity.

10. Transmitters shall be factory calibrated to the required range.

11. Transmitters shall be provided with an engraved stainless steel tag with instrument tag ID and calibration data.

12. Transmitters installed outdoors or in a potentially corrosive environment shall be installed within a NEMA 4X enclosure with appropriate temperature controls to prevent freezing or overheating.

13. Transmitters shall be installed using 2" pipe bracket only unless alternative is pre-approved by OWNER. No direct mounting of the transmitter or manifold to a sub-panel or other fixture will be allowed:

    a. Physical Specifications:

1)	Enclosure	NEMA 4X aluminum
2)	Wetted Parts	316 SS or Hastelloy C-276
3)	Mounting Hardware	Manufacturer supplied 316 SS mounting brackets and hardware
4)	Analog Output	Linear, isolated 4-20 ma, 2-wire, 24 VDC
5)	Power Supply	12 to 45 VDC (Nominal 24 VDC)
6)	Transmitter LCD Display	5 digit LCD displaying 4 transmitter variables in rotation.
7)	FM Approvals	Explosion Proof For Class 1, 2 & 3 Division 1

    b. Performance Specifications:

1)	Accuracy	+/- 0.065 % of calibrated span
2)	Installed Stability	+/- 0.125% of URL (Upper Range Limit) for 5 years
3)	Operating Temperature	-40 to 185 Deg. F

4)	Relative Humidity	0 to 100% noncondensing
5)	Temperature Effect per 50 Deg. F	+/1(0.025% URL + 0.125% span) from 5:1 to 100:1 rangeability
6)	Ranageablility	100:1
7)	Span & Zero Adjustment	Continuous over range
8)	Static Overpressure Limit	3626 psig minimum

14. Transmitter shall be Rosemount model 3051CF (for flow meter applications) or Yokogawa Model EJX110A series or pre-approved equal.

B. Thermal Dispersion Flow Switch. Each flow switch shall utilize a thermal dispersion type, explosion-proof, 316 stainless steel sensing element installed in the process piping. The insertion length of the element shall be approximately one-half of the pipe diameter, and all mounting accessories shall be provided to allow a threaded installation of flow switch:

1. The electronic transmitter shall be of the 24 Vdc -powered type housed in a powder-coated aluminum explosion-proof enclosure suitable for hazardous locations. Flow switches shall have a dual DPDT field configurable relay with 6 amp resistive rating 115vac or 24vdc.

2. Accuracy shall be +/- 5 percent reading (or +/- 0.04 fps) whichever is larger. Trip setpoint, contact closure, will be factory set at 0.5 fps rising. Repeatability shall be +/-0.5 percent reading. Flow switch shall be FCI FlexSwitch Model FLT93S as manufactured by Fluid Components International or pre-approved equal.

C. Thermal Dispersion Flowmeters. Each flowmeter shall utilize a thermal dispersion type, explosion-proof, and stainless steel or Hastelloy C sensing element installed in the process piping. The insertion length of the element shall be approximately one-half of the pipe diameter, and all mounting accessories shall be provided. The sensor shall have a 1 inch (25 mm) MNPT mounting connection, and an isolation valve and packing gland that allows insertion and removal while the piping is under pressure:

1. The electronic transmitter shall be locally mounted onto the sensing element assembly or remotely mounted within 30 feet (9.1 m) of the sensor with interconnecting cable provided, as indicated on the drawings or in the Instrument Device Schedule. The transmitter shall be of the ac-powered type. The unit shall be housed in a NEMA Type 4 enclosure or an explosion-proof enclosure suitable for hazardous locations, as indicated on the drawings or in the Instrument Device Schedule. The transmitter shall have a 4-20 mA dc analog output and a local indicator with a multi-line LCD display calibrated in engineering units of flow. The transmitter shall also display a totalized flow value and the temperature of the process fluid.

2. Accuracy of the flowmeter shall be 1 percent of full scale over a 20 to 1 operating range. The flowmeter shall be Fluid Components Incorporated FCI ST100 Series; Kurz Instrument Series 454FTB WGF (for wet gas applications), or pre-approved equal.

PART 3 - EXECUTION

3.1 FIELD SERVICES. Manufacturer's field services shall be provided for installation, field calibration, startup, and training as specified in the instrumentation and control system section.

A. Instruments shall not be shipped to the Work Site until two weeks prior to the scheduled installation. The System Supplier shall be responsible for coordinating the installation schedule with the Installation Contractor. Each shipment shall contain a listing of protective measures required to maintain sensor operation, including a listing of any common construction or cleaning chemicals that may affect instrument operation.

END OF SECTION

SECTION 17563

PRESSURE AND LEVEL INSTRUMENTS

PART 1 - GENERAL

1.1 SCOPE. The pressure and level instruments section covers the requirements for pressure and level instruments and accessories required for the instrumentation and control system as indicated on the drawings and documents. All instruments shown in this section may not be required to be provided by the contractor or system supplier. Refer to the instrumentation device schedule, 17560-a and P&ID drawings for a tabulation of required instruments.

A. Equipment and services provided under this section shall be subject to the requirements of Instrumentation and Control System, Section 17500. This section shall be used and referenced only in conjunction with this section. Supplementing the Instrumentation and Control System section, instrument data, special requirements, and options are indicated on the drawings or the Instrument Device Schedule.

B. When multiple instruments of a particular type are specified, and each requires different features, the required features are described on the drawings or the Instrument Device Schedule.

C. Instrument wetted materials shall be selected by the System Supplier based on the application and are subject to approval by the ENGINEER and OWNER.

1.2 DESIGN CRITERIA. Each device shall be a pre-assembled, packaged unit. Upon delivery to the work site, each device or system shall be ready for installation with only minor piping and electrical connections required by contractor.

A. Primary elements shall derive any required power from the transmitter, unless otherwise indicated.

B. The instruments shall be installed to measure, monitor, or display the specified process at the ranges and service conditions indicated on the drawings or as indicated in the Instrument Device Schedule. The instruments shall be installed at the locations indicated on the drawings or in the Instrument Device Schedule.

C. Where possible, each instrument shall be factory calibrated to the calibration ranges indicated in the drawings or in the Instrument Device Schedule. Transmitters or similar measurement instruments shall be calibrated using National Institute of Standards and Technology (NIST) approved bench calibration procedures, when such procedures exist for the instrument type. Calibration data shall be stored digitally in each device, including the instrument tag designation indicated on the drawings and/or Instrument Device Schedule.

1.3 SUBMITTALS. Submittals shall be made as specified in the instrumentation and control system section.

1.4 SHIPMENT, PROTECTION, AND STORAGE. Equipment provided under this section shall be shipped, protected, and stored in accordance with the requirements of the instrumentation and control system section. Identification of packaging shall be as described in the instrumentation and control system section.

PART 2 - PRODUCTS

2.1 GENERAL. The following paragraphs provide minimum device stipulations. The drawings or instrument device schedule shall be used to determine any additional instrument options, requirements, or service conditions. Section 17560 stipulates general requirements applicable to all instruments.

2.2 PRESSURE AND LEVEL INSTRUMENTATION

A. Premium Accuracy Gage Pressure Transmitters. Transmitters shall be an all solid state, electronic, loop powered two-wire Premium Smart transmitters and have the minimum ratings as listed below:

1. Transmitters shall be the capacitance or piezo-resistive type.
2. Process fluid shall be isolated from the sensing elements by AISI Type 316 stainless steel, Hastelloy-C, ceramic, or cobalt-chromium-nickel alloy diaphragms as indicated on the drawings. The isolation diaphragm shall use a silicone oil fluid fill.
3. Transmitters shall be provided with the manufacturers integral 316 SS 2-way isolation and calibration manifold.
4. Transmitters shall have self-diagnostics and electronically adjustable span, zero, and damping.
5. Transmitters shall be enclosed in a NEMA Type 4X housing. All parts shall be stainless steel, or other corrosion-resistant materials as required by the application.
6. Transmitters shall have microprocessor-based smart electronics with HART protocol interface.
7. Transmitters shall be provided with integral lightning surge protection.
8. Transmitters shall not be damaged by reverse polarity.
9. Transmitters shall be factory calibrated to the required range.
10. Transmitters shall be provided with an engraved stainless steel tag with instrument tag ID and calibration data.

11. Physical Specifications:

a.	Enclosure	NEMA 4X aluminum
b.	Wetted Parts	316 SS or Hastelloy C-276
c.	Mounting Hardware	Manufacturer supplied 316 SS mounting brackets and hardware
d.	Analog Output	Linear, isolated 4-20 ma, 2-wire, 24 VDC
e.	Power Supply	12 to 45 VDC (Nominal 24 VDC)
f.	Transmitter LCD Display	5 digit LCD displaying 4 transmitter variables in rotation.
g.	FM Approvals	Explosion Proof For Class 1, 2 & 3 Division 1

12. Performance Specifications:

a.	Accuracy	+/- 0.065 % of calibrated span
b.	Installed Stability	+/- 0.125% of URL (Upper Range Limit) for 5 years
c.	Operating Temperature	-40 to 185 Deg. F
d.	Relative Humidity	0 to 100% noncondensing
e.	Temperature Effect per 50 Deg. F	+/1(0.025% URL + 0.125% span) from 5:1 to 100:1 rangeability
f.	Ranageablility	100:1
g.	Span & Zero Adjustment	Continuous over range
h.	Static Overpressure Limit	3626 psig minimum

13. Transmitter shall be Rosemount Model 3051C (for gage and absolute pressure) Rosemount Model 3051T (for inline gage and absolute pressure), Rosemount model 3051CF (for flow meter applications), Rosemount 3051L (for level applications), or Yokogawa Model EJX430A series or pre-approved equal.

14. Premium Accuracy Differential Pressure Transmitters. Differential pressure indicating transmitters shall have the requirements and specifications as the gage pressure transmitters above except for body type and as noted below.

15. Differential pressure transmitters shall be furnished with a manufacturer supplied integral 3-way 316 SS isolation and calibration manifold with easy access calibration ports.

16. The transmitter shall have a 2-wire, isolated, 4-20 ma analog output that is user selectable for linear or square root output.

17. A 8.5 by 11-inch laminated flow verse differential pressure curve shall be provided.

18. Transmitter shall be Rosemount Model 3051C or Yokogawa Model EJX430A series or pre-approved equal.

B. Premium Accuracy Flange Mounted Level Indicating Pressure Transmitters. Flange mounted level pressure indicating transmitters shall have the requirements and specifications as the gage pressure transmitters above except for body type and as noted below:

1. The flange mounted sensor shall consist of a non-corrosive isolating diaphragm with fill fluid in a sealed capillary system to transmit pressure to the sensing diaphragm. an isolating diaphragm and fill fluid shall be provided on the opposite side of the sensing diaphragm to convey atmospheric pressure.

2. The transmitter flange shall be a ASME Class 150 lb, 2 inch, 316L stainless steel with a flushing connection ring.

3. Transmitter shall be Rosemount Model 3051L or Yokogawa Model EJX430A series or pre-approved equal.

C. Ultrasonic Level Transmitters. Each ultrasonic level transmitter shall be a microprocessor-based electronic unit consisting of a sensor assembly, a signal converter/transmitter, and an interconnecting cable. The sensor shall be encapsulated in a chemical and corrosion-resistant material such as kynar or CPVC, and shall be suitable for operation over a temperature range of -20° to +150°F and a relative humidity of 10 to 100 percent. The sensor shall be compatible with the process media being measured. Where indicated on the drawings or in the Instrument Device Schedule, the sensor shall be an explosion-proof or intrinsically safe design suitable for use in all hazardous areas. Sensors mounted in areas subject to freezing shall be provided with special transducers or protected against icing by heaters. Sensors mounted in direct sunlight shall be provided with sunshades:

1. The supplier shall coordinate the sensor mounting requirements and furnish drawings complete with dimensions and elevations. General installation requirements are indicated on the drawings.

2. The ultrasonic level transmitter shall have automatic compensation for changes in air temperature at the sensor location. If separate temperature sensing probes are provided, they shall be mounted with or adjacent to the ultrasonic sensor, as recommended by the manufacturer. The transmitter shall have a four-digit LCD display scaled to read in engineering units. Digit height shall be approximately 1/2 inch (12 mm). The transmitter shall be designed to ignore momentary level spikes, false targets, or momentary loss-of-echo. A loss-of-echo condition shall be indicated on the transmitter unit and shall be available as an alarm contact output. The transmitter output shall be an isolated 4-20 mA dc signal linearly proportional to the measured level range, or where indicated on the drawings or in the Instrument Device Schedule, shall be characterized to be proportional to the tank volume. Calibration parameters shall be entered through a keypad on the unit and shall be stored in nonvolatile EEPROM memory. Accuracy of the transmitted signal shall be ±0.5 percent of the level range.

3. Where indicated on the drawings or in the Instrument Device Schedule, the transmitter shall be a differential level-sensing unit that accepts inputs from two ultrasonic level sensors. The transmitter output shall be proportional to the difference in level. The differential value shall be displayed on the unit. An adjustable alarm contact, actuated by differential level, shall be provided.

4. Where indicated on the drawings or in the Instrument Device Schedule, the transmitter shall contain four independently adjustable level alarm contact outputs. Contacts shall be single-pole, single-throw, or double pole where indicated in the device schedule, rated not less than 5 amperes at 120 V ac.

5. A sufficient length of sensor-to-transmitter signal cable shall be furnished with the instrument to locate the sensor 25 to 200 feet from the signal converter.

6. For indoor installation, the signal converter electronics shall be housed in a NEMA Type 12 enclosure suitable for wall or pipe stand mounting and for operating temperatures of +30° to +120°F.

7. For outdoor installation, the signal converter electronics shall be housed in a weatherproof, corrosion-resistant NEMA Type 4 enclosure suitable for wall or pipestand mounting and for operating temperatures of -5° to +122°F (-20° to +50°C) and a relative humidity of 10 to 100 percent. A thermostatically controlled strip heater shall be provided in the signal converter enclosure.

8. Lightning surge protection shall be provided with instrument for incoming 120vac power and 4-20ma output signals.

9. The signal converter shall be of the ac-powered type. The ultrasonic level transmitter shall be Siemens HydroRanger 200, or Endress+Hauser Prosonic FDU90 series.

D. Fixed-Mount Float Type Level Switches. Switches shall be of the floating ball type, with a nominal 5-1/2-inch diameter, coated stainless steel float ball that contains a sealed switch assembly. The float shall be supported with a flexible synthetic rubber hinge fastened to an adjustable mounting bracket. The hinge shall also act as housing for the lead wires from the alarm switch. The lead wire shall be a waterproof cable of such length that no splice or junction box is required in the wet well. Stainless steel mounting accessories shall be furnished. The switch contacts shall be single-pole-double-throw rated 4-amperes at 250 V ac. Switches shall be Siemens/U.S. Filter Control Systems "9G-EF" or Contegra “FS90”.

E. Weighted Float Type Level Switches. Each level switch shall consist of a single-pole, double-throw mercury switch, rated not less than 3 amperes ac, sealed and housed in a chemical-resistant polypropylene casing. The switch assembly shall be weighted and suspended on a waterproof, three-conductor, synthetic covered flexible cable with19 AWG conductors and of such length that no splice or junction box is required in the wet well. Switches shall be suitable for operation at up to 150 V ac within an ambient temperature range of 0 to 60°C. Switches shall be suitable for use in a sanitary wastewater wet well. Adjustable mounting hardware shall be provided for supporting each level switch. Switches shall be Ametek B/W Controls "Series 7010", U.S. Filter Control Systems "Model LSC", Xylem/Flygt "Type ENM-10", or Gems/Warrick Controls "Series M".

F. Adjustable Deadband Float Type Level Switches. Level switches shall consist of a non-mercury type switch element encapsulated in a nominal 5 inch (127 mm) diameter PVC float housing. The switch contact shall be single-pole, double-throw, rated 10 amperes at 120 V ac. The float shall be supported from a flexible three-conductor 18 AWG cable that also acts as the float hinge. The cable shall be suitable for fixed mount or weighted suspension type installation as indicated on the drawings or in the Instrument Device Schedule. All necessary mounting hardware shall be provided. The hinge-cable length shall be field adjustable in a manner that allows the deadband to be adjusted between 9 inches and 3 feet. The switch shall be Ametek/Magnetrol "Series T10" float switch.

G. Pressure Switches. Pressure switches shall be diaphragm actuated type switches. Switches shall be field adjustable type, with trip point repeatability better than 1 percent of actual pressure. Switches shall have over-range protection to maximum process line pressure. Switches mounted inside panels shall have NEMA Type1 housings. All other switches shall have weatherproof housings. Switches shall be differential type where indicated in the Instrument Device Schedule. Switch wetted parts shall be compatible with the process fluid. Where the process is not defined, all wetted parts shall be Teflon-coated or Viton and the connection port shall be stainless steel:

1. Panel-mounted and surface-mounted switches shall be provided with 1/4-inch (6 mm) NPT connections. All stem-mounted switches shall be provided with 1/2-inch NPT connections.

2. All pressure switches shall be ranged in psi and all vacuum switches in inches (mm) of water. Unless otherwise indicated, switches shall have a fixed deadband and shall be auto-reset type. As a minimum, switches shall be SPDT, rated 10 amperes at 120 V ac.

3. Each switch shall be provided with a threaded end, ball-type shutoff valve. Shutoff valve materials shall be compatible with the process fluid. Where the process is not specified, valves shall have AISI Type 316 stainless steel wetted parts and Teflon seals. Multi-port valves shall have all unused ports plugged. Shutoff valve construction shall be as detailed in Section 17565.

4. Where indicated on the drawings or in the Instrument Device Schedule, the switch shall be provided with a pressure snubber. Each snubber shall be of a size and pressure range compatible with the switch served. Snubbers shall be Ashcroft "Pulsation Dampers", or approved equal.

5. Where indicated on the drawings or in the Instrument Device Schedule, a diaphragm seal shall be provided for the respective switch. Diaphragm seals shall be thread-attached type with removable AISI Type 316 stainless steel diaphragm, zinc or cadmium plated carbon steel upper housing, and stainless steel lower housing. The upper housing shall be contoured to fit and provide a seat and seal for the diaphragm and shall be designed to permit removal of the switch with the system under pressure. The lower housing shall be provided with a tapped and plugged 1/4-inch NPT flushing connection. Each diaphragm seal and the switch served shall be factory assembled, filled with a suitable fluid, and calibrated as a unit.

6. Where indicated on the drawings or in the Instrument Device Schedule, a stainless steel calibration manifold shall be provided for the respective switch.

7. Switches shall be installed at the locations indicated on the drawings, with installation conforming to the installation details. The installation shall include heat tracing, switch enclosures, mounting stand, or other requirements as indicated in the Instrument Device Schedule. The installation shall be neat and professional and not form an area interference or trip hazard. The Contractor shall coordinate the installation with the OWNER.

8. All switches, snubbers, and diaphragm seals shall be installed in the vertical, upright position. Thread sealer, suitable for use with the associated process, shall be used in the assembly of threaded connections. All connections shall be free from leaks. Lines shall be purged of trapped air at switch locations prior to installation of the switch or diaphragm seal.

H. Switches shall be manufactured by Mercoid Controls, Ashcroft B-series, or Barksdale D1T/B1T Series.

I. Flood Level Switches. The flood detecting level switches shall be float actuated and shall be suitable for wall bracket or sump mounting, as indicated on the drawings or in the Instrument Device Schedule. The switch float mechanism shall actuate when the water level rises to 1 inch above the bottom of the housing. The switch contacts shall be hermetically sealed, rated for 0.1 amperes at 120 V ac, and shall be field changeable from normally open to normally closed. Flood switches shall be U.S. Filter Control Systems "Model 101G".

J. Field Mounted Pressure Gauges. Pressure gauges shall be of the indicating dial type, with C-type phosphor bronze Bourdon tube; stainless steel rotary geared movement; phenolic or polypropylene open front turret case; adjustable pointer; stainless steel, phenolic, or polypropylene ring; and acrylic plastic or shatterproof glass window.

K. Gauge dial shall be 4-1/2-inch size, with white background and black markings. The units of measurement shall be indicated on the dial face. Subdivisions of the scale shall conform to the requirements of the governing standard. Pointer travel shall be not less than 200 degrees or more than 270 degrees of arc.

1. Surface-mounted gauges shall be provided with 1/4-inch NPT connections. All stem-mounted gauges shall be provided with 1/2-inch NPT connections. Where indicated in the drawings or on the Instrument Device Schedule, stem mounted gauges shall have an adjustable viewing angle to allow the gauge to be positioned for optimum viewing.

2. All pressure gauges shall measure in psi and all vacuum gauges in inches water. All gauges shall have a suitable range to give mid-scale readings under normal conditions. Gauge accuracy shall be 0.5 percent of scale range.

3. Each gauge shall be provided with a threaded end, ball-type gauge valve. Gauge valve materials shall be compatible with the measured process. Where the process is not defined, gauge valves shall have AISI Type 316 stainless steel wetted parts and Teflon seals. Multi-port gauge valves shall have all unused ports plugged. Gauge valve construction shall be as detailed in Section 17565.

4. Where indicated on the drawings or the Instrument Device Schedule, the pressure gauge shall be provided with a pressure snubber. Each snubber shall be of a size and pressure range compatible with the gauge served. Snubbers shall be Ashcroft "Pulsation Dampers", or approved equal.

5. Where indicated on the drawings or in the Instrument Device Schedule, a diaphragm seal shall be provided for the respective gauge. Diaphragm seals shall be thread-attached type with removable AISI Type 316 stainless steel diaphragm, zinc or cadmium plated carbon steel upper housing, and stainless steel lower housing. The upper housing shall be contoured to fit and provide a seat and seal for the diaphragm and shall be designed to permit removal of the gauge with the system under pressure. The lower housing shall be provided with a tapped and plugged 1/4-inch NPT flushing connection. Each diaphragm seal and the gauge served shall be factory assembled, filled with a suitable fluid, and calibrated as a unit.

6. Gauges shall be installed at the locations indicated on the drawings, with installation conforming to the installation details. All gauges, snubbers, and diaphragm seals shall be installed in the vertical, upright position. Thread sealer, suitable for use with the associated process, shall be used in the assembly of threaded connections. All connections shall be free from leaks. Lines shall be purged of trapped air at gauge locations prior to installation of the gauge or diaphragm seal.

7. Each gauge shall be provided with all required mounting hardware to securely mount the unit according to the mounting requirements indicated in the drawings or the Instrument Device Schedule.

8. Unless otherwise indicated, mounting and installation hardware shall be Type 316L stainless steel.

9. Pressure gauges shall be Ashcroft "1279 Duragauge", or ENGINEER and OWNER approved equal.

PART 3 - EXECUTION

3.1 FIELD SERVICES. Manufacturer's field services shall be provided for installation, field calibration, startup, and training as specified in the instrumentation and control system section.

A. Instruments shall not be shipped to the Work Site until two weeks prior to the scheduled installation. System Supplier shall be responsible for coordinating the installation schedule with the Installation Contractor. Each shipment shall contain a listing of protective measures required to maintain sensor operation, including a listing of any common construction or cleaning chemicals that may affect instrument operation.

END OF SECTION

SECTION 17565

MISCELLANEOUS INSTRUMENTS

PART 1 - GENERAL

1.1 SCOPE. The section covers the requirements for all miscellaneous instruments and accessories required for the instrumentation and control system as indicated on the drawings and documents. All instruments shown in this section may not be required to be provided by the system supplier. Refer to the instrumentation device schedule, 17560-a and P&ID drawings for a tabulation of required instruments.

A. Equipment and services provided under this section shall be subject to the requirements of Instrumentation and Control System, Section 17500. This section shall be used and referenced only in conjunction with this section. Supplementing the Instrumentation and Control System section, instrument data, special requirements, and options are indicated on the drawings or the Instrument Device Schedule.

B. When multiple instruments of a particular type are specified, and each requires different features, the required features are described on the drawings or the Instrument Device Schedule.

C. Instrument wetted materials shall be selected by the System Supplier based on the application and are subject to approval by the Engineer.

D. Terminology. When the phrase "as required" is stated in this section it shall mean "as required in any attached Data Sheet(s)" or shown on the DRAWINGS.

1.2 DESIGN CRITERIA. Each device shall be a pre-assembled, packaged unit. Upon delivery to the work site, each device or system shall be ready for installation with only minor piping and electrical connections required by system supplier.

A. Primary elements shall derive any required power from the transmitter, unless otherwise indicated.

B. The instruments shall be installed to measure, monitor, or display the specified process at the ranges and service conditions indicated on the Instrument Device Schedule. The instruments shall be installed at the locations indicated on the Instrument Device Schedule.

C. Where possible, each instrument shall be factory calibrated to the calibration ranges indicated in the Instrument Device Schedule. Transmitters or similar measurement instruments shall be calibrated using National Institute of Standards and Technology (NIST) approved bench calibration procedures, when such procedures exist for the instrument type. For "smart" devices, calibration data shall be stored digitally in each device, including the instrument tag designation indicated on the Instrument Device Schedule.

1.3 SUBMITTALS. Submittals shall be made in accordance with the requirements of Section 17500.

1.4 SHIPMENT, PROTECTION, AND STORAGE. Equipment provided under this Section shall be shipped, protected, and stored in accordance with the requirements of Section 17500. Identification of packaging shall be as described in Section 17500.

PART 2 - PRODUCTS

2.1 GENERAL. The following paragraphs provide minimum device requirements. The instrument device schedule shall be used to determine any additional instrument options, requirements, or service conditions.

A. Interconnecting Cable. For systems where the primary element and transmitter are physically separated, interconnecting cable from the element to the transmitter shall be provided. The cable shall be the type approved by the instrument manufacturer for the intended purpose of interfacing the element to the transmitter. Length of cable shall be a minimum of three meters or as indicated in the Instrument Device Schedule.

2.2 MISCELLANEOUS INSTRUMENTS.

A. Resistance Temperature Detectors. Each temperature detector shall be a nominal 100 ohm, three or four wire, hermetically sealed, platinum resistance element. The sensing element shall be enclosed in an AISI Type 316 stainless steel outer sheath. Accuracy shall be ± 1°F over the specified operating range:

1. Each temperature detector shall be provided with a thermowell. Unless otherwise indicated in the drawings or Instrument Device Schedule, thermowells shall be weld mount style. Thermowell materials shall be compatible with the process fluid. Where the process fluid is not defined, thermowells shall be AISI Type 316 stainless steel. The approximate process insertion length of the thermowell shall be as indicated on the drawings or in the Instrument Device Schedule. The temperature element shall be spring-loaded in the thermowell. Appropriate temperature head hardware shall be provided with the assembly.

B. Panel Door Proximity Switches. Proximity switches shall be magnetic proximity type, consisting of two sensors. One sensor shall be fixed to the door and the other to the door frame. The sensor mounted to the door shall have no electrical connections. Switches shall be provided with DPDT contacts rated 5 amperes at 120 V ac. All necessary mounting hardware shall be provided to allow both the sensors to be installed at the locations indicated on the drawings.

C. Vibration Transmitter: Vibration transmitters shall use velocity as the vibration monitoring parameter. The transmitters shall be loop powered and provide a 4-20ma analog output:

1. The transmitter shall be provided with integral lightning surge protection for the 4-20ma analog output signal.

2. The transmitters shall be case mounted. The transmitter range and mounting location shall be selected by the monitored equipment supplier and approved by ENGINEER. The vibration transmitter shall:

a.	Accuracy	+/- 10% of range
b.	Repeatability	+/- 2%
c.	Range	0 to 2 ips
d.	Sensitivity	100 mV/g
e.	Frequency Response	Velocity 3 to 3000 Hz
e.	Output	4 to 20 ma
f.	Supply Voltage	Loop powered 11 to 30 VDC, non-polarity sensitive
g.	Temperature	-40 to 248 Deg F
h.	Axis Orientation	Any

3. Accessories shall include mounting stud, connector and armored SS cable assembly.

4. The transmitter shall be as manufactured by Metrix Instrument Co, Series ST6900.

D. Instrument Shutoff Valves. Instrument shut-off valves shall be provided for instruments as indicated on the drawings and as detailed in the specifications. The indicated shutoff valves shall be provided by System Supplier for all instruments furnished under the Instrumentation – General Requirements section, the Panel Mounted Instruments section, the Flow Instruments section, the Pressure and Level Instruments section, the Analytical Instruments section, and the Miscellaneous Instruments section. Shutoff valves shall be compatible with the measured process and shall be selected in accordance with the manufacturer's recommendations for the specified process. Unused ports of multi-port gauge valves shall be plugged. An instrument shutoff valve schedule shall be submitted indicating the quantity, material, size, and associated instrument. Permanent tagging of the instrument valves is not required. However, temporary hand-written tags or other means of identification shall be provided to ensure that the appropriate valve is installed for a given instrument.

1. Instrument shutoff valves shall be D/A Manufacturing, Anderson-Greenwood, or equal.

PART 3 - EXECUTION

3.1 FIELD SERVICES. Manufacturer's field services shall be provided for installation, field calibration, startup, and training as specified in Section 17560.

A. Instruments shall not be shipped to the Work Site until two weeks prior to the scheduled installation. The SYSTEM SUPPLIER shall be responsible for coordinating the installation schedule with the Installation Contractor. Each shipment shall contain a listing of protective measures required to maintain sensor operation, including a listing of any common construction or cleaning chemicals that may affect instrument operation.

END OF SECTION

PLC I/O Listing for PLC-1-1

Drawing	Tag	I/O	Location	Description	Service	(E/F)
10N01	F-2	AI	PLC-1-1		VENTURI FLOW METER	E
10N01	SI-1	AI	PLC-1-1	PUMP SPEED	HIGH SERVICE PUMP 1	E
10N01	SI-2	AI	PLC-1-1	PUMP SPEED	HIGH SERVICE PUMP 2	E
10N02	SI-3	AI	PLC-1-1	PUMP SPEED	HIGH SERVICE PUMP 3	E
10N02	SI-4	AI	PLC-1-1	PUMP SPEED	HIGH SERVICE PUMP 4	
PLC-1-1	Total AI Points = 5					
10N01	HS-1	AO	PLC-1-1	SPEED	HIGH SERVICE PUMP 1	E
10N01	HS-2	AO	PLC-1-1	SPEED	HIGH SERVICE PUMP 2	E
10N02	HS-3	AO	PLC-1-1	SPEED	HIGH SERVICE PUMP 3	E
10N02	HS-4	AO	PLC-1-1	SPEED	HIGH SERVICE PUMP 4	
PLC-1-1	Total AO Points = 4					

PLC I/O Listing for PLC-1-1

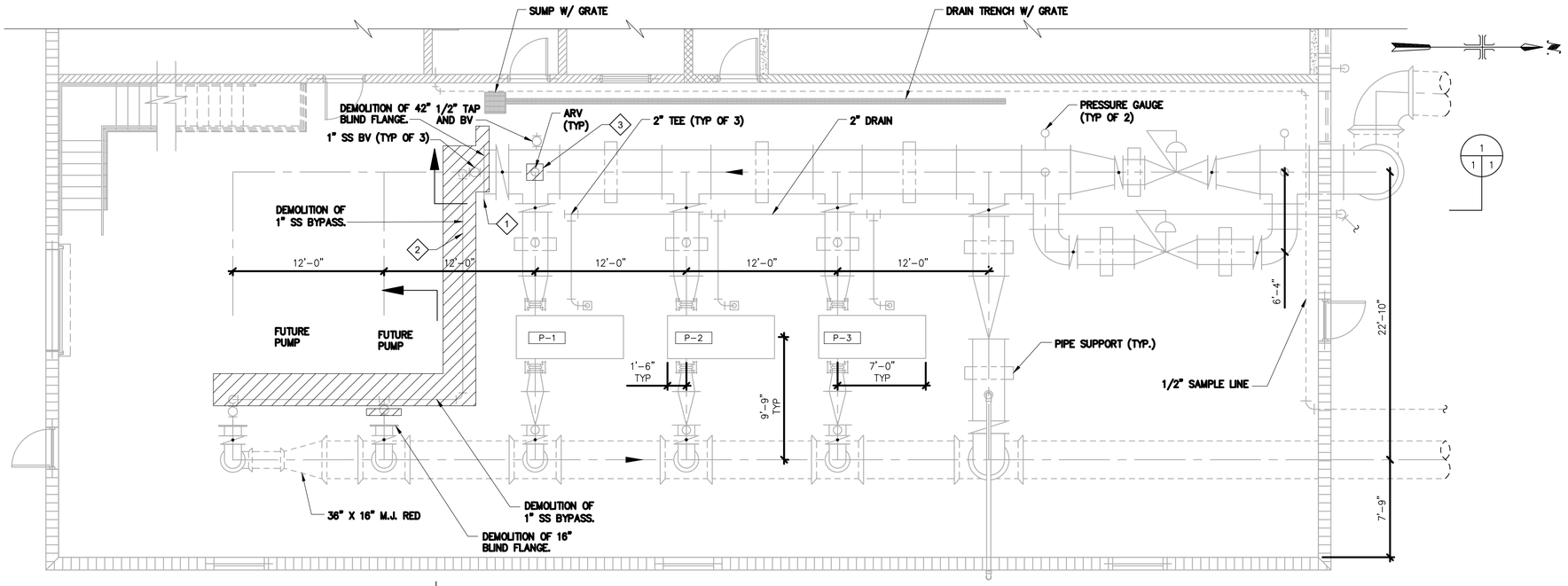
Drawing	Tag	I/O	Location	Description	Service	(E/F)
10N01	FAL-1	DI	PLC-1-1	LOW FLOW	THERMAL FLOW SWITCH	
10N01	FAL-2-2	DI	PLC-1-1	LOW FLOW	THERMAL FLOW SWITCH	
10N01	HS-1	DI	PLC-1-1	LOCAL/REMOTE	HIGH SERVICE PUMP 1	E
10N01	HS-2	DI	PLC-1-1	LOCAL/REMOTE	HIGH SERVICE PUMP 2	E
10N01	PAH-1	DI	PLC-1-1	PRESS HI	PRESSURE SWITCH HIGH	E
10N01	PAH-2	DI	PLC-1-1	PRESS HI	PRESSURE SWITCH HIGH	E
10N01	PAL-1	DI	PLC-1-1	PRESS LOW	PRESSURE SWITCH LOW	E
10N01	PAL-2	DI	PLC-1-1	PRESS LOW	PRESSURE SWITCH LOW	E
10N01	YA-1	DI	PLC-1-1	VFD FAULT	HIGH SERVICE PUMP 1	E
10N01	YA-2	DI	PLC-1-1	VFD FAULT	HIGH SERVICE PUMP 2	E
10N01	YI-1	DI	PLC-1-1	VFD RUN	HIGH SERVICE PUMP 1	E
10N01	YI-2	DI	PLC-1-1	VFD RUN	HIGH SERVICE PUMP 2	E
10N02	FAL-3	DI	PLC-1-1	LOW FLOW	THERMAL FLOW SWITCH	
10N02	FAL-4	DI	PLC-1-1	LOW FLOW	THERMAL FLOW SWITCH	
10N02	HS-3	DI	PLC-1-1	LOCAL/REMOTE	HIGH SERVICE PUMP 3	E
10N02	HS-4	DI	PLC-1-1	LOCAL/REMOTE	HIGH SERVICE PUMP 4	
10N02	PAH-3	DI	PLC-1-1	PRESS HI	PRESSURE SWITCH HIGH	E
10N02	PAH-4	DI	PLC-1-1	PRESS HI	PRESSURE SWITCH HIGH	
10N02	PAL-3	DI	PLC-1-1	PRESS LOW	PRESSURE SWITCH LOW	E
10N02	PAL-4	DI	PLC-1-1	PRESS LOW	PRESSURE SWITCH LOW	
10N02	TSH-4	DI	PLC-1-1	ENCL TEMP	HIGH SERVICE PUMP 4	
10N02	YA-3	DI	PLC-1-1	VFD FAULT	HIGH SERVICE PUMP 3	E
10N02	YA-4	DI	PLC-1-1	VFD FAULT	HIGH SERVICE PUMP 4	
10N02	YI-3	DI	PLC-1-1	VFD RUN	HIGH SERVICE PUMP 3	E
10N02	YI-4	DI	PLC-1-1	VFD RUN	HIGH SERVICE PUMP 4	
PLC-1-1	Total DI Points = 25					

PLC I/O Listing for PLC-1-1

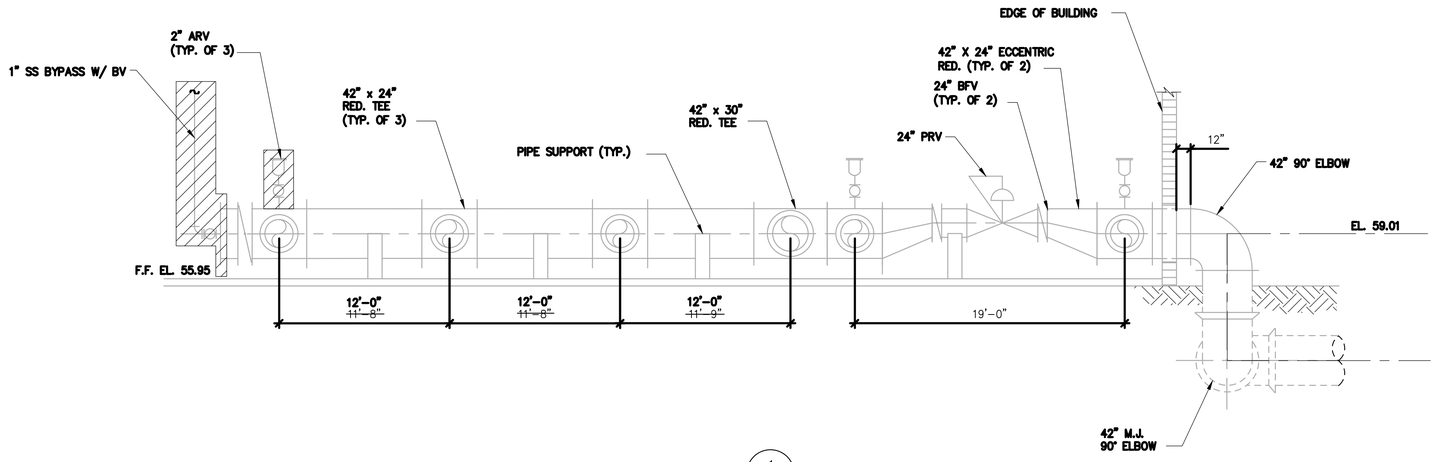
Drawing	Tag	I/O	Location	Description	Service	(E/F)
10N01	HS-1	DO	PLC-1-1	START/STOP	HIGH SERVICE PUMP 1	E
10N01	HS-2	DO	PLC-1-1	START/STOP	HIGH SERVICE PUMP 2	E
10N02	HS-3	DO	PLC-1-1	START/STOP	HIGH SERVICE PUMP 3	E
10N02	HS-4	DO	PLC-1-1	START/STOP	HIGH SERVICE PUMP 4	
PLC-1-1	Total DO Points = 4					

11.0 DRAWINGS

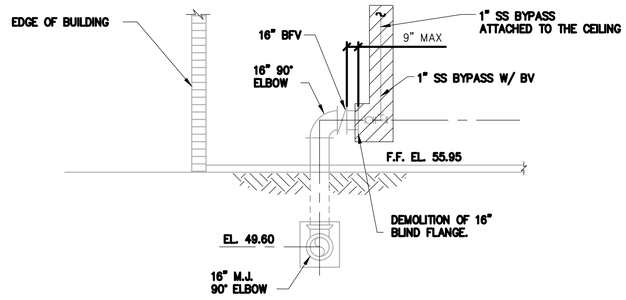
(Consisting of 37 pages)



PLAN
SCALE: N.T.S.



SECTION
SCALE: 3/16" = 1'- 0"



SECTION
SCALE: 3/16" = 1'- 0"

0 4 12
SCALE: 3/16" = 1'-0"

GENERAL NOTES:

1. DRAWING BASED ON INFORMATION SHOWN ON RECORD DRAWINGS DATED 08/26/09 BY MALCOLM PIRNIE FOR TAMPA BAY WATER CENTRAL PASCO IMPROVEMENTS PROJECT.

◇# KEY NOTES:

1. REUSE EXISTING 42" BLIND FLANGE.
2. REUSE 1" SS BV AND PIPING WHERE POSSIBLE.
3. DEMO AND CAP THE EXISTING 2" ARV.

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY KUNAL NAYEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

KUNAL NAYEE LICENSE No 83294 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: KN Date: APRIL 2025
Drawn By: EP Date: APRIL 2025
Checked By: KN Date: APRIL 2025
KN Date: APRIL 2025
APPROVED BY:

carollo®
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

DEMOLITION
PLAN AND SECTIONS

REV	DESCRIPTION	DATE

TBW Drawing No.:
Sheet 00D01
File Name:
Scale: TBW Project No.: 07542
Sheet No.: 5 OF 37

665

PROJECT NO. 203160-400000 FILE NAME: 203160_00D01.dwg

LAST SAVED BY: eparker
XREFS: ..\Xref\CLBPPR.dwg ..\Xref\ALBPPSTF1.dwg ..\Xref\SLBPPSTF1.dwg ..\Xref\WLBPPSTF1.dwg ..\Xref\39780-441TB.dwg IMAGES: None
Users\CARTI1842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW STYLE STANDARD REVIT\CAD\Std Plotter: NAT-12x24.ctb Spec: NAT-12x24 Scale:1:1 SavedDate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1

ELECTRICAL PLAN SYMBOLS

IDENTIFICATION SYMBOLS

EQUIP # — EQUIPMENT AND INSTRUMENT IDENTIFICATION

EQUIPMENT/INSTRUMENT LOCATOR

LUMINAIRE IDENTIFICATION
a = CIRCUIT DESIGNATION
b = DEVICE SWITCHED FROM
c = MOUNTING HEIGHT IN FEET TO BOTTOM OF FIXTURE
X = LUMINAIRE TYPE, REFER TO THE LUMINAIRE SCHEDULE

XXXX — CONDUIT IDENTIFICATION
XXXX = CONDUIT NUMBER, REFER TO CONDUIT SCHEDULE
UNLESS OTHERWISE NOTED, GROUPED CONDUITS ARE LABELED LEFT TO RIGHT OR TOP TO BOTTOM.

INDICATES KEYNOTE X
(PERTAINS ONLY TO SHEET WHERE NOTE IS FOUND)

DISCONNECT SWITCH
A = TYPE, REFER TO DISCONNECT SCHEDULE

CAMERA

LUMINAIRES

LINEAR FIXTURE

2' X 2' LAY-IN TROFFER

2' X 4' LAY-IN TROFFER

LUMINAIRE POLE MOUNTED

LUMINAIRE, EMERGENCY BATTERY-POWERED

LUMINAIRE, EMERGENCY/EXIT BATTERY-POWERED

LUMINAIRE, EMERGENCY BATTERY-POWERED REMOTE

LUMINAIRE, SURFACE OR PENDANT MOUNTED

LUMINAIRE, WALL MOUNTED

LUMINAIRE, FLOOD/SPOT

LUMINAIRE, EXIT ONE OR TWO FACES AS INDICATED. ARROW POINTS IN DIRECTION OF EGRESS.

SWITCHES/RECEPTACLES

SINGLE POLE SWITCH
a = CIRCUIT DESIGNATION
b = DEVICE SWITCHED DESIGNATION
c = TYPE
2 = DOUBLE POLE SWITCH
3 = THREE-WAY SWITCH
3P = THREE POSITION SWITCH
4 = FOUR-WAY SWITCH
K = KEY OPERATED SWITCH
F = SWITCH AND FUSESTAT HOLDER
P = SWITCH AND PILOT LIGHT
T = THERMOSTAT
D = DIMMER SWITCH
L = LOW VOLTAGE LIGHT SWITCH
M = MANUAL MOTOR STARTER
N = NETWORKED SINGLE OR MULTIPLE SWITCH LOCATIONS
WP = WEATHER PROOF
REFER TO ABBREVIATIONS LEGEND FOR ALL OTHER DESIGNATIONS.

OCCUPANCY SENSOR
X = REFERENCE LIGHTING CONTROL COMPONENT SCHEDULE
a = CIRCUIT DESIGNATION
b = DEVICE SWITCHED DESIGNATION
c = MOUNTING HEIGHT IN FEET TO BOTTOM OF SENSOR

PE — PHOTOCELL

SWITCH AND SINGLE RECEPTACLE
a = CIRCUIT DESIGNATION
b = DEVICE TYPE DESIGNATION

DUPLEX RECEPTACLE

QUADRUPLEX RECEPTACLE

IN FLOOR DUPLEX RECEPTACLE

IN FLOOR QUADRUPLEX RECEPTACLE

DUPLEX RECEPTACLE w/SPLIT WIRE

DEDICATED RECEPTACLE

SPECIAL PURPOSE RECEPTACLE

WELDING RECEPTACLE
a = CIRCUIT DESIGNATION
b = DISCONNECT TYPE

TWIST LOCK RECEPTACLE
a = AMP RATING

TELEPHONE OUTLET

DATA COMMUNICATIONS OUTLET
a = NETWORK SWITCH

FIRE ALARM

FACP — FIRE ALARM CONTROL PANEL

RACEWAY

EXPOSED CONDUIT

BREAK AND CONTINUATION IN CONDUIT RUN

EXPOSED CONDUIT HIDDEN BEHIND WALLS, FLOORS OR OTHER STRUCTURES

UNDERGROUND CONDUIT, DIRECT BURIED OR IN DUCT BANK

CONDUIT IN SLAB

CONDUIT VERTICAL CHANGE IN DIRECTION

CONDUIT CAP

JUNCTION BOX

CONDUIT SEAL

CONDUIT TEE

DUCT BANK
APPROXIMATE DIMENSIONS SHOWN ON DUCT BANK SECTIONS

CONDUIT SIZE AND CONDUCTORS

INDIVIDUAL CONDUCTORS

W"C-(3-X (Ø), 1-Y (N) & 1-Z (G))

W"C (WHERE INDICATED): W = CONDUIT TRADE SIZE

3-X (Ø):
3 = QUANTITY
X = SIZE OF CONDUCTORS
(Ø) = DESIGNATES PHASE CONDUCTORS

1-Y (N) (WHERE INDICATED):
1 = QUANTITY
Y = SIZE OF CONDUCTORS
(N) = DESIGNATES NEUTRAL CONDUCTORS

1-Z (G) (WHERE INDICATED):
1 = QUANTITY
Z = SIZE OF CONDUCTORS
(G) = DESIGNATES GROUND CONDUCTORS

U{3-X (Ø) & 1-X (G)}
U = NUMBER OF PARALLEL RUNS

VFD CONDUCTORS

U{[N/C-X (Ø) & INTEGRAL (G)]:VFD}
U = NUMBER OF PARALLEL RUNS
N/C = NUMBER OF PHASE CONDUCTORS IN CABLE
X = SIZE OF CONDUCTORS
VFD = VFD CABLE

MULTI CONDUCTOR CABLES

K/2/C#16S
K (WHERE INDICATED) = NUMBER OF PAIRS
2/C#16S = TWO CONDUCTOR, 16 GAUGE, TWISTED SHIELDED PAIR

K/3/C#16S
K (WHERE INDICATED) = NUMBER OF TRIPLETS
3/C#16S = THREE CONDUCTOR, 16 GAUGE, TWISTED SHIELDED TRIPLETS

U{[N/C-X (Ø) & INTEGRAL (G)]:MC}
U = NUMBER OF PARALLEL RUNS
MC = MULTICONDUCTOR CABLE
N/C = NUMBER OF PHASE CONDUCTORS IN THE CABLE
X = SIZE OF CONDUCTORS

FIBER OPTIC CABLES

FO/N
N = NUMBER OF INDIVIDUAL FIBERS

GROUNDING

UNDERGROUND GROUND CABLE
#4/0 SDBC UNLESS OTHERWISE NOTED

GROUND ROD

GROUND ROD AND GROUND WELL

ELECTRICAL ONE-LINE SYMBOLS

MEDIUM VOLTAGE

CIRCUIT BREAKER, MEDIUM VOLTAGE
a = CIRCUIT BREAKER NUMBER
b = FRAME SIZE

ANSI RELAY DEVICE
a = ANSI DEVICE FUNCTION
b = QUANTITY

MEDIUM VOLTAGE DISCONNECT SWITCH NON-FUSED CUT OUT

MEDIUM VOLTAGE DISCONNECTING FUSE SINGLE FUSE CUT OUT

MEDIUM VOLTAGE DISCONNECTING FUSE DOUBLE FUSE CUT OUT

MEDIUM VOLTAGE SINGLE FUSE

MEDIUM VOLTAGE DOUBLE FUSE

MEDIUM VOLTAGE LIVE FRONT TERMINATOR

MEDIUM VOLTAGE ELBOW

MEDIUM VOLTAGE TEE

MEDIUM VOLTAGE CONTACTOR

MEDIUM VOLTAGE STARTER

MOV-ELBOW ARRESTER

LOW VOLTAGE

LOW VOLTAGE CIRCUIT BREAKER
a = TYPE
MCP = MOTOR CIRCUIT PROTECTOR
TM = THERMAL MAGNETIC
SS = SOLID STATE
b = FRAME SIZE (MANUFACTURER TO DETERMINE FRAME SIZE UNLESS INDICATED)
c = NUMBER OF POLES
d = TRIP SETTING (AT = AMP TRIP) (AC = MCP CONTINUOUS RATING)
e = DESIGNATION
f = INTERRUPTING RATING

LOW VOLTAGE CIRCUIT BREAKER AUXILIARY OPERATOR
* = S = SHUNT TRIP
= G = GROUND FAULT INTERRUPTER
= V = SOLENOID KEY RELEASE

DISCONNECT SWITCH
A = TYPE, REFER TO DISCONNECT SCHEDULE

FUSED DISCONNECT SWITCH
B = TYPE, REFER TO DISCONNECT SCHEDULE
b = FUSE RATING

FUSE

COMBINATION STARTER WITH CONTROL POWER TRANSFORMER
a = CIRCUIT BREAKER DISCONNECT, TYPE AS NOTED
b = STARTER TYPE
REFER TO THE SPECIFICATIONS FOR STARTER DEFINITIONS.
c = NEMA STARTER SIZE
d = OVERLOAD

MOTOR STARTER/DRIVES:
a = DEVICE TYPE
VFD-6 = 6-PULSE VFD
VFD-18 = 18-PULSE VFD
VFD-RH = REDUCED HARMONIC VFD (18-PULSE OR ACTIVE FRONT END AS DEFINED IN THE SPECIFICATIONS)
RVSS = REDUCED VOLTAGE SOLID STATE STARTER
RVAT = REDUCED VOLTAGE AUTO TRANSFORMER
a/B = DEVICE WITH BYPASS STARTER. REFER TO THE SPECIFICATIONS

b = INPUT OPTIONS
LL = LINE REACTOR
PHF = PASSIVE HARMONIC FILTER

c = OUTPUT OPTIONS
LR = LOAD REACTOR
DV/DT = Dv/dt FILTER
SWF = SINE WAVE FILTER

EQUIPMENT ENCLOSURE

MISCELLANEOUS

MOTOR
HP = HORSEPOWER RATING
FULL LOAD AMPS AS NOTED

PACKAGED EQUIPMENT
LOAD RATING AS INDICATED
a = RATED LOAD
b = UNIT(HP, KW, KVA) AS INDICATED

TRANSFORMER
a = DEVICE I.D.
b = KVA RATING
c = NUMBER OF PHASES
d = PRIMARY VOLTAGE
e = SECONDARY VOLTAGE
f,g = CONNECTION TYPE SYMBOL
h = IMPEDANCE

GROUNDED WYE CONNECTION

DELTA CONNECTION

ENGINE-GENERATOR RATINGS AS INDICATED ON THE DRAWINGS
a = KVA/KW
b = VOLTAGE/CONNECTION
c = PHASE
d = WIRE
e = PF

CURRENT TRANSFORMER WITH SHORTING TERMINAL BLOCK
a = QUANTITY
b = RATIO

POTENTIAL TRANSFORMER
a = QUANTITY
b = RATIO
c,d = CONNECTION TYPE SYMBOL

SSM — SOLID STATE MULTIFUNCTION METER

ATP — AMPERE TEST POINT

VTP — VOLTAGE TEST POINT

UTILITY METER

LIGHTNING ARRESTER

SPD — SURGE PROTECTIVE DEVICE

DRAWOUT CONNECTION

GROUND

CAPACITOR

BATTERY

KIRK KEY INTERLOCK

LOAD BANK

TAMPA BAY WATER
Supplying Water To The Region
2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL
THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY MARK PELLISH ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET
PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

MARK A. PELLISH LICENSE No 46906 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: CE Date: APRIL 2025
Drawn By: CE Date: APRIL 2025
Checked By: MP Date: APRIL 2025
MP Date: APRIL 2025
APPROVED BY:

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

ELECTRICAL
ELECTRICAL LEGEND

REV	DESCRIPTION	DATE

TBW Drawing No.:
Sheet 00GE01
File Name:
Scale:
TBW Project No.: 07542
Sheet No.: 8 OF 37

LAST SAVED BY: eparker
User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 Savedate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn; 9/25/2017; 15:33 ; Layout:LAYOUT1

ABBREVIATIONS

A	AMP
ABS	ABSOLUTE
AC	ALTERNATING CURRENT
ACK	ACKNOWLEDGE
ACTR	ACTUATOR
AF	AMP FRAME
AFC	AUTOMATIC FREQUENCY CONTROL
AIC	AMP INTERRUPTING CAPACITY
AM	AMMETER
ANN	ANNUNCIATOR
ANT	ANTENNA
APU	AUXILIARY POWER UNIT
ARM	ARMORED CABLE
AS	AMMETER SWITCH
ASYM	ASYMMETRICAL
AT	AMP TRIP
ATO	AUTOMATIC THROW OVER
ATP	AMMETER TEST POINT
ATS	AUTOMATIC TRANSFER SWITCH
AUTO XFMR	AUTOMATIC TRANSFORMER
AUX	AUXILIARY
AWG	AMERICAN WIRE GAGE
B	BELL
BAT	BATTERY
BFG	BELOW FINISHED GRADE
BHP	BRAKE HORSEPOWER
BKR	BREAKER
BRF	BELOW RAISED FLOOR
C	CONDUIT / CONTINUOUS LOAD
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CCW	COUNTER CLOCKWISE
CKT	CIRCUIT
COAX	COAXIAL CABLE
COM	COMMON
COMM	COMMUNICATION
CPT	CONTROL POWER TRANSFORMER
CR	CONTROLLED RECEPTACLE
CS	CONTROL SWITCH
CT	CURRENT TRANSFORMER
CV	CONTROL VALVE
CW	CLOCKWISE / COOL WHITE
DC	DIRECT CURRENT
DCS	DISTRIBUTED CONTROL SYSTEM
DCU - X	DISTRIBUTED CONTROL UNIT NO. X
DEMO	DEMOLITION
DISC	DISCONNECT SWITCH
DM	DEMAND METER
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
DS	DOOR SWITCH
E/G	EMERGENCY GENERATOR
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
ENG	ENGINE
ENT	ELECTRICAL NON-METALLIC TUBING
EP	EXPLOSION PROOF
ETM	ELAPSED TIME METER
F	SUB-FED
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FDR	FEEDER
FLA	FULL LOAD AMPS
FLX	FLEXIBLE CONDUIT
FO	FIBER OPTIC
FRC	FIBERGLASS RIGID CONDUIT
FREQ	FREQUENCY
FU	FUSE
FU SW	FUSED SWITCH
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
FWD	FORWARD

G	GROUND / EQUIPMENT GROUND / GROUND FAULT
GEN	GENERATOR
GRC	GALVANIZED STEEL RIGID CONDUIT
GFCI	GROUND FAULT CIRCUIT INTERRUPTER (RECEPTACLE)
GFI	GROUND FAULT INTERRUPTER (BREAKER)
GFR	GROUND FAULT RELAY
H	HOT-LEG
HF	HIGH FREQUENCY
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
HR	HOUR
HSTAT	HUMIDISTAT
HV	HIGH VOLTAGE
HVAC	HEATING/VENTILATION/AIR CONDITIONING
HZ	HERTZ
I	INSTANTANEOUS / INTERMITTENT LOAD
IC	INTERRUPTING CAPACITY
IJB	INSTRUMENT JUNCTION BOX
IMC	INTERMEDIATE METAL CONDUIT
INST	INSTANTANEOUS
INT	INTERLOCK
INTERCOM	INTERCOMMUNICATION
J	JUNCTION BOX
K	KEY INTERLOCK
KA	KILOAMP
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KVAR	KILOVAR (REACTANCE)
KW	KILOWATT
KWD	KILOWATT DEMAND
KWH	KILOWATT HOUR
L	LONG-TIME
L-B	LINE-BUS
L-G	LINE-GROUND
LA	LIGHTNING ARRESTOR
LBL	LABEL
LC	LIGHTING CONTACTOR
LCP- X	LOCAL CONTROL PANEL NO. X
LL	LEAD-LAG LOAD REACTOR
LP	LIGHT POLE
LP - X	LIGHTING PANEL NO. X
LTG	LIGHTING
LV	LOW VOLTAGE
LVL	LEVEL
M-X	MOTOR CONTROLLER NO. X
MA	MILLIAMPERE
MCA	MOTOR CIRCUIT AMPS
MCC - X	MOTOR CONTROL CENTER NO. X
MCP	MOTOR CIRCUIT PROTECTOR
MH	MANHOLE / MOUNTING HEIGHT
MLO	MAIN LUGS ONLY
MOD	MOTOR OPERATED DAMPER
MOV	METAL OXIDE VARISTOR
MPR	MOTOR PROTECTION RELAY
MS-X	MOTOR STARTER NO. X
MSP	MOTOR STARTING PANEL
MTO	MANUAL THROW OVER
MTR-X	MOTOR NO. X
MTS	MANUAL TRANSFER SWITCH
MV	MEGAVOLT
MVA	MEGAVOLT-AMPERES
MVS	MEDIUM VOLTAGE SWITCH
MW	MEGAWATT
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NFC	NONMETALLIC FLEXIBLE CONDUIT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NP	NAMEPLATE

O	OPEN OR OPENED
OH	OVERHEAD
OL	OVERLOAD RELAY
P	POLE
PA	PUBLIC ADDRESS
PB	PUSHBUTTON / PULL BOX
PCS	PVC COATED GALVANIZED STEEL CONDUIT
PCM	PROCESS CONTROL MODULE
PE	PHOTOCELL
PF	POWER FACTOR
PFCC	POWER FACTOR CORRECTION CAPACITOR
PFR	PHASE FAILURE RELAY
PH	PHASE
PNL	PANEL
PPX	POWER PANEL NO. X
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE RIGID PLASTIC CONDUIT
PWR	POWER
RAC	RIGID ALUMINUM CONDUIT
RECPT	RECEPTACLE
REV	REVERSE
RF	RADIO FREQUENCY
RMS	ROOT MEAN SQUARED
RVAT	REDUCED VOLTAGE AUTO TRANSFORMER
RVNR	REDUCED VOLTAGE NON-REVERSING
RVSS	REDUCED VOLTAGE SOLID STATE
S	SHIELD / SHORT-TIME
SA	SURGE ARRESTER
SC	SHORT CIRCUIT
SDBC	SOFT DRAWN BARE COPPER
SFL	SUB FEED LUGS
SLT	SEALTIGHT LIQUIDTIGHT FLEXIBLE CONDUIT
SM	SURFACE MOUNTED
SP	SINGLE POLE
SPD	SURGE PROTECTIVE DEVICE
SPDT	SINGLE POLE DOUBLE THROW
SPST	SINGLE POLE SINGLE THROW
SPKR	SPEAKER
SS	SOLID STATE
STB	SHORTING TERMINAL BLOCK
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYM	SYMMETRICAL
TACH	TACHOMETER
TB - X	TERMINAL BLOCK - UNIT X
TC	THERMOCOUPLE / TIME CLOCK / TRAY CABLE
TD	TEMPERATURE DETECTOR RELAY
TE	TOTALLY ENCLOSED
TEFC	TOTALLY ENCLOSED FAN COOLED
TENV	TOTALLY ENCLOSED NON-VENTILATED
TERM	TERMINAL
TJB	TERMINAL JUNCTION BOX
TM	THERMAL MAGNETIC
TP	TWISTED PAIR
TS	TEMPERATURE SWITCH
TS1W	TWO SPEED CONSEQUENT POLE, ONE WINDING
TS2W	TWO SPEED SEPARATE WINDING
TSTAT	THERMOSTAT
UHF	ULTRA HIGH FREQUENCY
UNG	UNGROUNDED
UPS	UNINTERRUPTIBLE POWER SUPPLY
UVR	UNDER VOLTAGE RELAY

V	VOLT
VA	VOLT AMPERE
VAR	VARMETER
VCP	VENDOR CONTROL PANEL
VFD	VARIABLE FREQUENCY DRIVE
VHF	VERY HIGH FREQUENCY
VM	VOLTMETER
VP	VAPORPROOF
VR	VOLTAGE REGULATOR
VS	VOLTAGE SWITCH
VT	VOLTAGE TRANSFORMER
VTP	VOLTAGE TEST POINT
W	WATT / WEST
WT	WATER TIGHT
WP	WEATHER PROOF
XFMR	TRANSFORMER

NOTES:

1. REFER TO SPECIFICATIONS AND OTHER DRAWINGS FOR ADDITIONAL ABBREVIATIONS.

POWER DEVICE FUNCTION NUMBERS

1	MASTER ELEMENT
2	TIME-DELAY STARTING OR CLOSING RELAY
3	CHECKING OR INTERLOCKING RELAY
4	MASTER CONTACTOR
5	STOPPING DEVICE
6	STARTING CIRCUIT BREAKER
7	ANODE CIRCUIT BREAKER
8	CONTROL POWER DISCONNECTING DEVICE
9	REVERSING DEVICE
10	UNIT SEQUENCE SWITCH
11	MULTIFUNCTION DEVICE
12	OVER-SPEED DEVICE
13	SYNCHRONOUS-SPEED DEVICE
14	UNDER-SPEED DEVICE
15	SPEED OR FREQUENCY MATCHING DEVICE
16	DATA COMMUNICATIONS DEVICE
17	SHUNTING OR DISCHARGE SWITCH
18	ACCELERATING OR DECELERATING DEVICE
19	STARTING-TO-RUNNING TRANSITION CONTACTOR
20	ELECTRICALLY OPERATED VALVE
21	DISTANCE RELAY
22	EQUALIZER CIRCUIT BREAKER
23	TEMPERATURE CONTROL DEVICE
24	VOLTS PER HERTZ RELAY
25	SYNCHRONIZING OR SYNCHRONISM-CHECK DEVICE
26	APPARATUS THERMAL DEVICE
27	UNDERVOLTAGE RELAY
27N	GROUND FAULT UNDERVOLTAGE RELAY
28	FLAME DETECTOR
29	ISOLATING CONTACTOR
30	ANNUNCIATOR RELAY
31	SEPARATE EXCITATION DEVICE
32	DIRECTIONAL POWER RELAY
33	POSITION SWITCH
34	MASTER SEQUENCE DEVICE
35	BRUSH-OPERATING OR SLIP-RING SHORT-CIRCUITING DEVICE
36	POLARITY DEVICE
37	UNDERCURRENT OR UNDERPOWER RELAY
38	BEARING PROTECTIVE DEVICE
39	MECHANICAL CONDITION MONITOR
40	FIELD RELAY
41	FIELD CIRCUIT BREAKER
42	RUNNING CIRCUIT BREAKER
43	MANUAL TRANSFER OR SELECTOR DEVICE
44	UNIT SEQUENCE STARTING RELAY
45	ABNORMAL ATMOSPHERIC CONDITION MONITOR
46	REVERSE-PHASE OR BALANCE CURRENT RELAY
47	PHASE-BALANCE OR PHASE-SEQUENCE VOLTAGE RELAY
48	INCOMPLETE SEQUENCE RELAY
49	MACHINE OR TRANSFORMER THERMAL RELAY
50	INSTANTANEOUS OVERCURRENT RELAY
51	AC TIME OVERCURRENT RELAY
52	AC CIRCUIT BREAKER
53	FIELD EXCITATION RELAY
54	TURNING GEAR ENGAGING DEVICE
55	POWER FACTOR RELAY
56	FIELD APPLICATION RELAY
57	SHORT-CIRCUITING OR GROUNDING DEVICE
58	RECTIFICATION FAILURE RELAY
59	OVERVOLTAGE RELAY
60	VOLTAGE OR CURRENT BALANCE RELAY
61	DENSITY SWITCH OR SENSOR
62	TIME-DELAY STOPPING OR OPENING RELAY
63	PRESSURE SWITCH
64	GROUND DETECTOR RELAY
65	GOVERNOR
66	NOTCHING OR JOGGING DEVICE
67	AC DIRECTIONAL OVERCURRENT RELAY
68	BLOCKING OR OUT OF STEP RELAY
69	PERMISSIVE CONTROL DEVICE
70	RHEOSTAT
71	LIQUID LEVEL SWITCH
72	DC CIRCUIT BREAKER
73	LOAD-RESISTOR CONTACTOR
74	ALARM RELAY
75	POSITION CHANGING MECHANISM
76	DC OVERCURRENT RELAY
77	TELEMETERING DEVICE
78	PHASE-ANGLE MEASURING RELAY
79	AC RECLOSING RELAY
80	FLOW SWITCH
81	FREQUENCY RELAY
82	DC LOAD MEASURING RECLOSING RELAY
83	AUTOMATIC SELECTIVE CONTROL OR TRANSFER RELAY
84	OPERATING MECHANISM
85	PILOT COMMUNICATIONS, CARRIER OR PILOT-WIRE RELAY
86	LOCKOUT RELAY
87	DIFFERENTIAL PROTECTIVE RELAY
88	AUXILIARY MOTOR OR MOTOR GENERATOR
89	LINE SWITCH
90	REGULATING DEVICE
91	VOLTAGE DIRECTIONAL RELAY
92	VOLTAGE AND POWER DIRECTIONAL RELAY
93	FIELD-CHANGING CONTACTOR
94	TRIPPING OR TRIP-FREE RELAY

COMMONLY USED SUFFIX LETTER APPLIED TO POWER DEVICE FUNCTION NUMBERS

A	ALARM ONLY
B	BUS PROTECTION
G	GROUND FAULT PROTECTION (RELAY CT IN A SYSTEM NEUTRAL CIRCUIT OR GENERATOR PROTECTION)
GS	GROUND FAULT PROTECTION (RELAY CT IN TOROIDAL OR GROUND SENSOR TYPE)
L	LINE PROTECTION
M	MOTOR PROTECTION
N	GROUND FAULT PROTECTION (RELAY COIL CONNECTED IN RESIDUAL CT CIRCUIT)
T	TRANSFORMER PROTECTION
V	VOLTAGE
P	PHASE PROTECTION

ABBREVIATIONS

AFD	ARC FLASH DETECTOR
CLK	CLOCK OR RIMING SOURCE
DDR	DYNAMIC DISTURBANCE RECORDER
DFR	DIGITAL FAULT RECORDER
ENV	ENVIRONMENTAL DATA
HIZ	HIGH IMPEDANCE FAULT DETECTOR
HMI	HUMAN MACHINE INTERFACE
HST	HISTORIAN
LGC	SCHEME LOGIC
MET	SUBSTATION METERING
PDC	PHASOR DATA CONCENTRATOR
PMU	PHASOR MEASUREMENT UNIT
PQM	POWER QUALITY MONITOR
RIO	REMOTE I/O DEVICE
RTU	REMOTE TELEMETRY UNIT/REMOTE TERMINAL UNIT
SER	SEQUENCE OF EVENTS RECORDER
TCM	TRIP CIRCUIT MONITOR

TAMPA BAY WATER
Supplying Water To The Region
2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY MARK PELLISH ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

MARK A. PELLISH LICENSE No 46906 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: CE Date: APRIL 2025
Drawn By: CE Date: APRIL 2025
Checked By: MP Date: APRIL 2025
MP Date: APRIL 2025
APPROVED BY:

carollo®
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT PLANT – PUMP #4

ELECTRICAL

ELECTRICAL ABBREVIATIONS

REV	DESCRIPTION	DATE

TBW Drawing No.:

Sheet 00GE02

File Name:

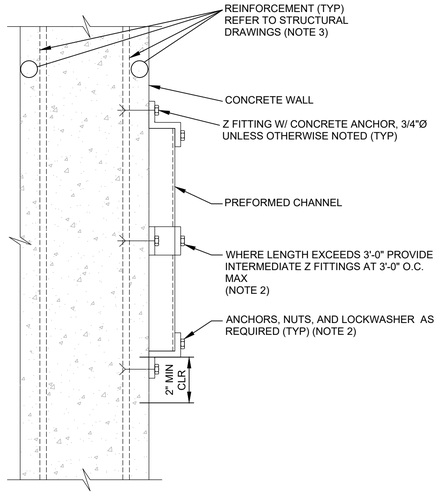
Scale: TBW Project No.: 07542

Sheet No.: 9 OF 37

LAST SAVED BY: eparker

User: CAR1111842 Spec: NAT CADD STD File: C:\USERS\CAR1111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale: 1:1 Saved Date: 8/9/2022 Time: 10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout: LAYOUT1

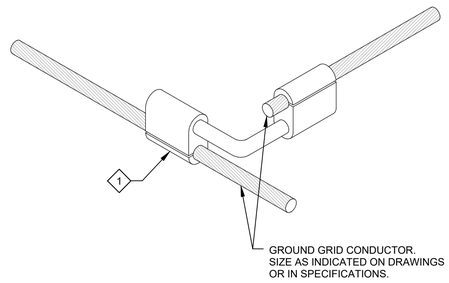
PROJECT NO. 203160-400000 FILE NAME: 203160_00GE02.dwg



GENERAL NOTES:

1. THIS DETAIL TYPICAL FOR BOTH VERTICAL AND HORIZONTAL MOUNTING.
2. SUPPORTS TO BE SPACED IN ACCORDANCE WITH NEC REQUIREMENTS. CONCRETE ANCHORS SHALL BE PER THE SPECIFICATIONS.
3. REFER TO STRUCTURAL DRAWINGS FOR ORIENTATION OF REINFORCEMENT AND BARS.

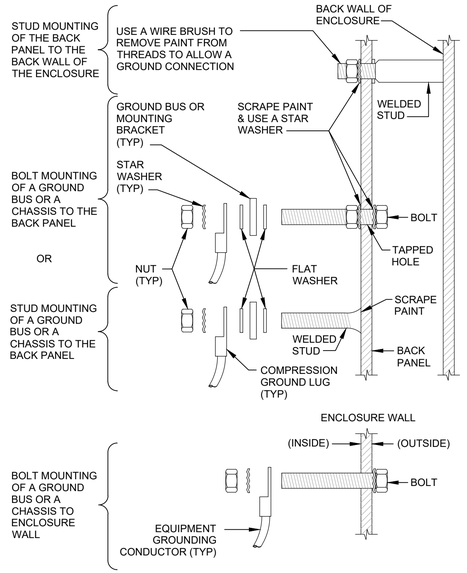
EA070 TYP — PREFORMED CHANNEL ATTACHMENT TO CONCRETE WALL



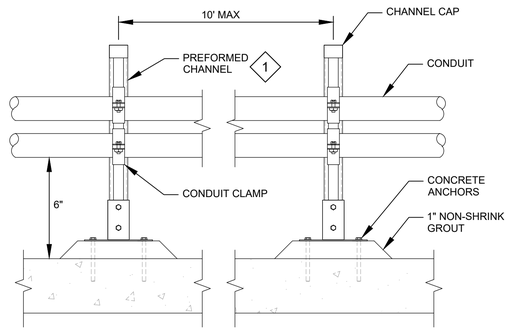
KEY NOTES:

1. GROUND GRID CROSS CONNECTOR. SIZE FOR CABLE PER CONNECTOR MANUFACTURERS GUIDELINES.

EG101 TYP — COPPER GROUNDING CABLE CONNECTION COMPRESSION CONNECTION



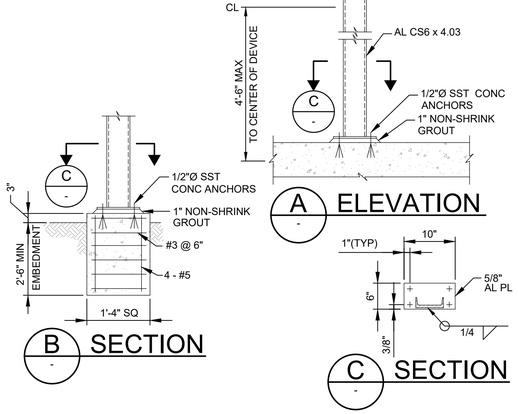
EG205 TYP — ENCLOSURE GROUNDING DETAILS



KEY NOTES:

1. SIZE PREFORMED CHANNEL FOR CONDUITS INDICATED ON THE DRAWINGS.

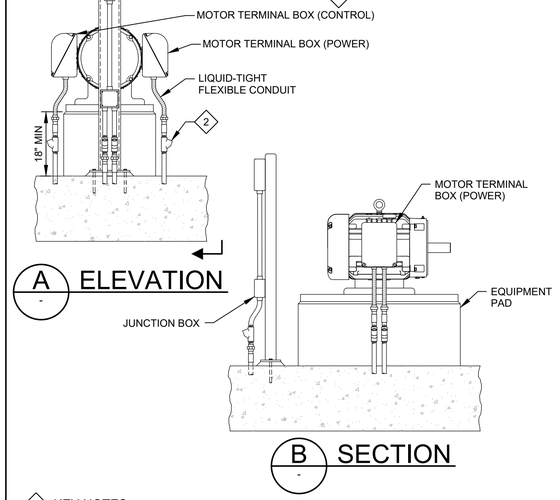
EM104 TYP — CONDUIT FLOOR SUPPORT FOR ELECTRICAL CONDUITS



GENERAL NOTES:

1. WHERE SEPARATE FOUNDATION IS REQUIRED, SEE SECTION B.
2. COAT ALUMINUM SURFACES IN CONTACT WITH CONCRETE PER SPECIFICATIONS.
3. USE STAINLESS STEEL FASTENERS FOR MOUNTING DEVICES.
4. WEIGHT OF DEVICE(S) SHALL NOT EXCEED 100 POUNDS.

EM201 TYP — DEVICE SUPPORT AND MOUNTING



KEY NOTES:

1. SIZE AS REQUIRED WITH CONTROLS INDICATED ON THE CONTRACT DOCUMENTS.
2. CONDUIT SEALS WHERE REQUIRED FOR THE AREA CLASSIFICATION. REFER TO THE SPECIFICATIONS.

EM301 TYP — TYPICAL MOTOR INSTALLATION

User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 Saved Date:8/9/2022 Time:10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1
LAST SAVED BY: eparker

TAMPA BAY WATER
Supplying Water To The Region
2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY MARK PELLISH ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

MARK A PELLISH LICENSE No 46908 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: CE Date: APRIL 2025
Drawn By: CE Date: APRIL 2025
Checked By: MP Date: APRIL 2025
MP Date: APRIL 2025
APPROVED BY:

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

ELECTRICAL

TYPICAL DETAILS 1

REV	DESCRIPTION	DATE

TBW Drawing No.:

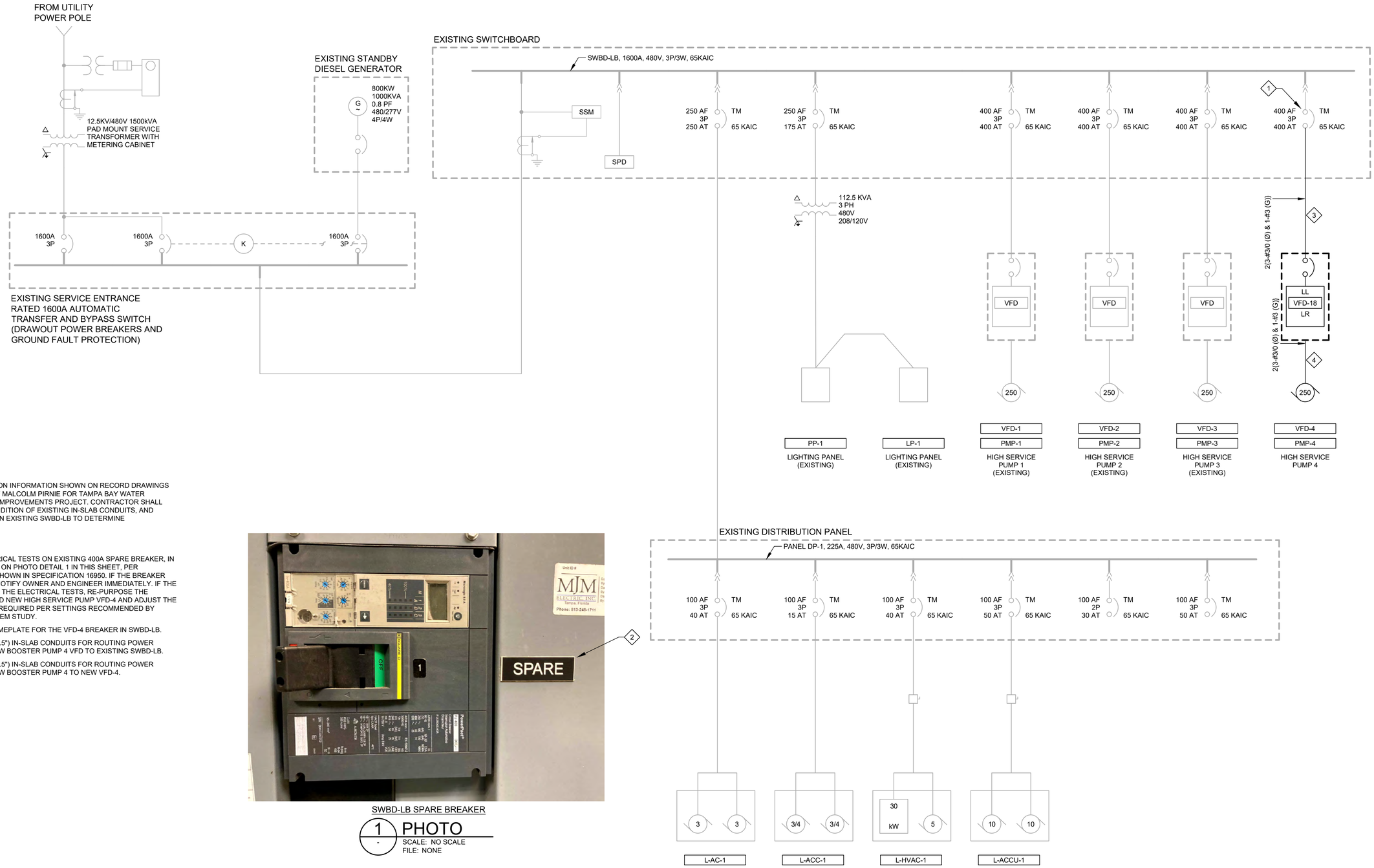
File Name:

Scale: TBW Project No.: 07542

Sheet 00TE01

Sheet No.: 32 OF 37

PROJECT NO. 203160-400000 FILE NAME: 203160_00TE01.dwg



GENERAL NOTES:

1. DRAWING BASED ON INFORMATION SHOWN ON RECORD DRAWINGS DATED 08/26/09 BY MALCOLM PIRNIE FOR TAMPA BAY WATER CENTRAL PASCO IMPROVEMENTS PROJECT. CONTRACTOR SHALL FIELD VERIFY CONDITION OF EXISTING IN-SLAB CONDUITS, AND SPARE BREAKER IN EXISTING SWBD-LB TO DETERMINE REUSABILITY.

(#) KEY NOTES:

1. PERFORM ELECTRICAL TESTS ON EXISTING 400A SPARE BREAKER, IN SWBD-LB, SHOWN ON PHOTO DETAIL 1 IN THIS SHEET, PER REQUIREMENTS SHOWN IN SPECIFICATION 16950. IF THE BREAKER FAILS THE TEST, NOTIFY OWNER AND ENGINEER IMMEDIATELY. IF THE BREAKER PASSES THE ELECTRICAL TESTS, RE-PURPOSE THE BREAKER, TO FEED NEW HIGH SERVICE PUMP VFD-4 AND ADJUST THE TRIP SETTING AS REQUIRED PER SETTINGS RECOMMENDED BY ELECTRICAL SYSTEM STUDY.
2. PROVIDE NEW NAMEPLATE FOR THE VFD-4 BREAKER IN SWBD-LB.
3. USE EXISTING 2 (2.5") IN-SLAB CONDUITS FOR ROUTING POWER CABLES FROM NEW BOOSTER PUMP 4 VFD TO EXISTING SWBD-LB.
4. USE EXISTING 2 (2.5") IN-SLAB CONDUITS FOR ROUTING POWER CABLES FROM NEW BOOSTER PUMP 4 TO NEW VFD-4.

SWBD-LB SPARE BREAKER

1 - PHOTO

SCALE: NO SCALE
FILE: NONE

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY MARK PELLISH ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

MARK A. PELLISH LICENSE No 46906 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: SK Date: APRIL 2025
Drawn By: DJB Date: APRIL 2025
Checked By: MP Date: APRIL 2025
MP Date: APRIL 2025
APPROVED BY:

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT PLANT – PUMP #4

ELECTRICAL

OVERALL PLANT ONE-LINE DIAGRAM

REV	DESCRIPTION	DATE

File Name:

Scale: TBW Project No.: 07542

TBW Drawing No.: 03E01

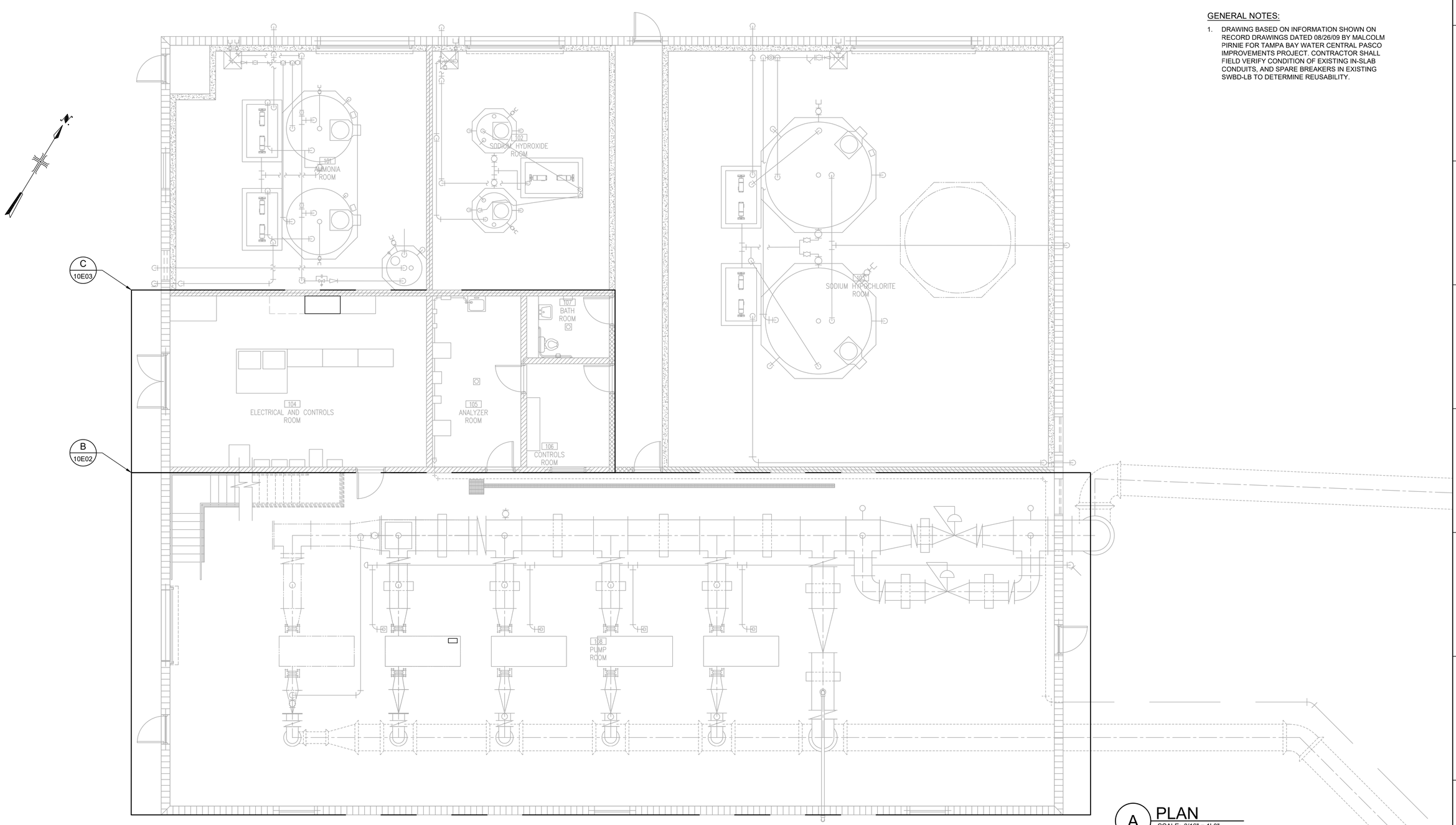
Sheet No.: 10 OF 37

LAST SAVED BY: eparker

User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 SavedDate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1

PROJECT NO. 203160-400000 FILE NAME: 203160_03E01.dwg

User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 SavedDate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1



A PLAN
SCALE: 3/16" = 1'-0"
FILE: 203160_10E0101

GENERAL NOTES:

1. DRAWING BASED ON INFORMATION SHOWN ON RECORD DRAWINGS DATED 08/26/09 BY MALCOLM PIRNIE FOR TAMPA BAY WATER CENTRAL PASCO IMPROVEMENTS PROJECT. CONTRACTOR SHALL FIELD VERIFY CONDITION OF EXISTING IN-SLAB CONDUITS, AND SPARE BREAKERS IN EXISTING SWBD-LB TO DETERMINE REUSABILITY.

LAST SAVED BY: eparker

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY MARK PELLISH ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

MARK A. PELLISH LICENSE No 46906 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: SK Date: APRIL 2025
Drawn By: GMG Date: APRIL 2025
Checked By: MP Date: APRIL 2025
MP Date: APRIL 2025
APPROVED BY:

carollo®
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

ELECTRICAL

LAKE BRIDGE WTP POWER, CONTROL, AND GROUNDING PLAN

REV	DESCRIPTION	DATE

TBW Drawing No.:

Sheet 10E01

File Name:

Scale: TBW Project No.: 07542

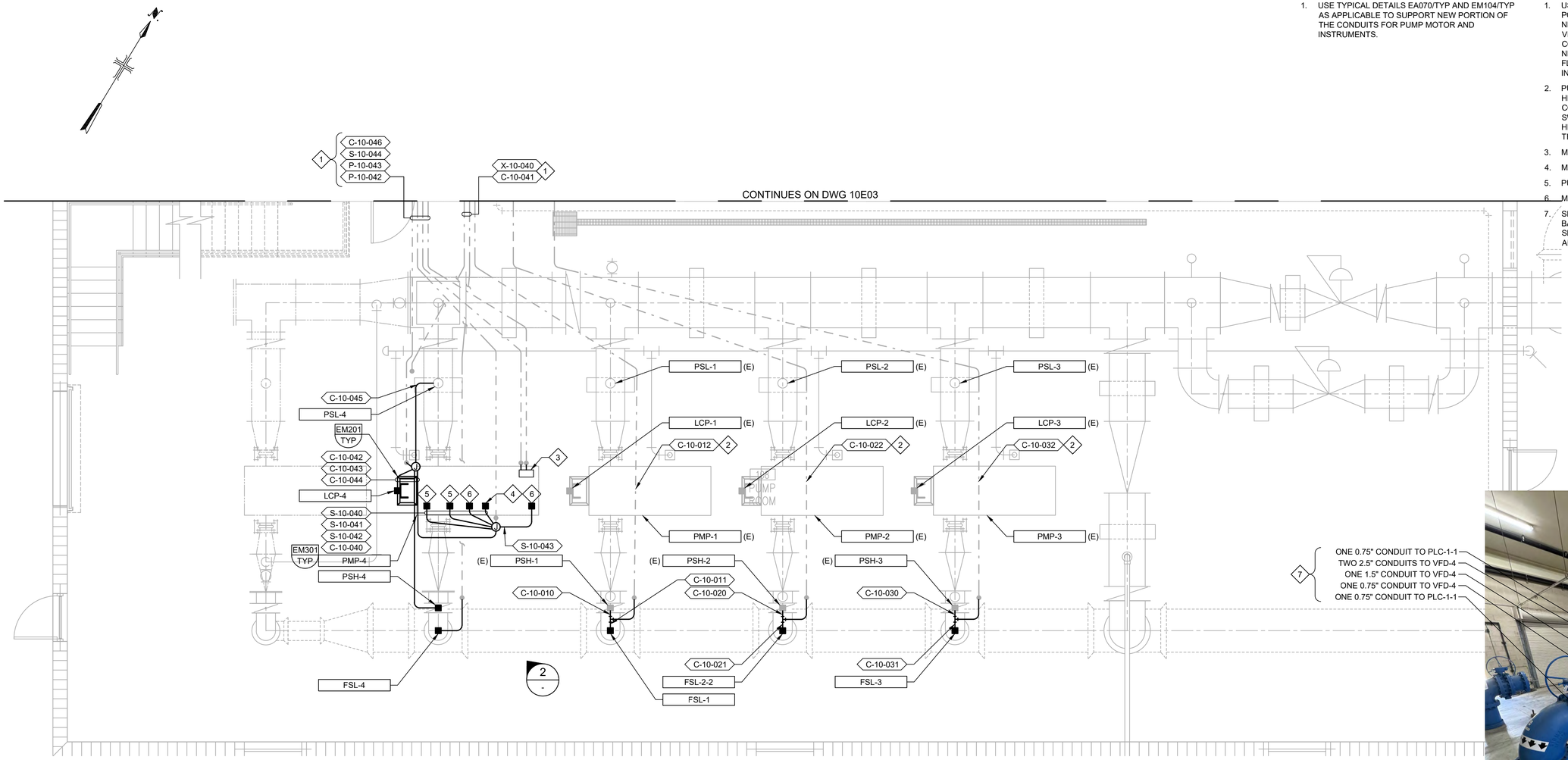
Sheet No.: 11 OF 37

GENERAL NOTES:

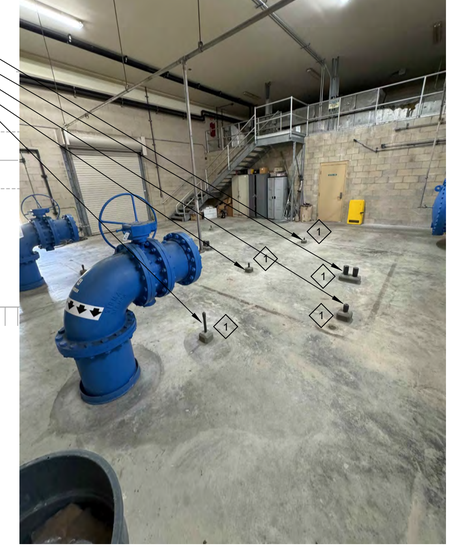
1. USE TYPICAL DETAILS EA070/TYP AND EM104/TYP AS APPLICABLE TO SUPPORT NEW PORTION OF THE CONDUITS FOR PUMP MOTOR AND INSTRUMENTS.

KEY NOTES:

1. USE EXISTING IN-SLAB CONDUITS FOR ROUTING POWER, CONTROL, AND SIGNAL WIRES FROM NEW BOOSTER PUMP 4, IN PUMP ROOM TO NEW VFD, AND EXISTING PLC-1-1 IN ELECTRICAL AND CONTROL ROOMS. IN THE PUMP ROOM, INSTALL NEW EXPOSED SEGMENT OF CONDUITS, AND FLEXIBLE CONDUITS FOR CONNECTING TO INDIVIDUAL EQUIPMENT AND INSTRUMENTS.
2. PULL BACK EXISTING CABLES FOR EFFLUENT HIGH PRESSURE SWITCH IN EXISTING IN-SLAB CONDUITS FROM EFFLUENT HIGH PRESSURE SWITCH TO PLC-1-1. RUN NEW CABLES FOR BOTH HIGH PRESSURE SWITCH AND FLOW SWITCH IN THE EXISTING IN-SLAB CONDUITS.
3. MOTOR TERMINAL BOX (POWER).
4. MOTOR TERMINAL BOX (STATOR RTD, AND MWH).
5. PUMP BEARING RTD.
6. MOTOR BEARING RTD.
7. SPARE CONDUIT INFORMATION FOR PMP-4 ARE BASED ON RECORD DRAWINGS. FIELD VERIFY ALL SPARE CONDUITS FOR PMP-4 FOR THEIR SIZES AND DESTINATION.



B PLAN
SCALE: 1/4" = 1'-0"
FILE: 203160_10E0101



PMP-4 SPARE CONDUITS

2 - PHOTO
SCALE: NO SCALE
FILE: 203160_10E02_1

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY MARK PELLISH ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

MARK A. PELLISH LICENSE No 46906 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: SK Date: APRIL 2025
Drawn By: GMG Date: APRIL 2025
Checked By: MP Date: APRIL 2025
MP Date: APRIL 2025
APPROVED BY:

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

ELECTRICAL

PUMP ROOM POWER, CONTROL, AND GROUNDING PLAN

REV	DESCRIPTION	DATE

File Name:

Scale: TBW Project No.: 07542

TBW Drawing No.:

Sheet 10E02

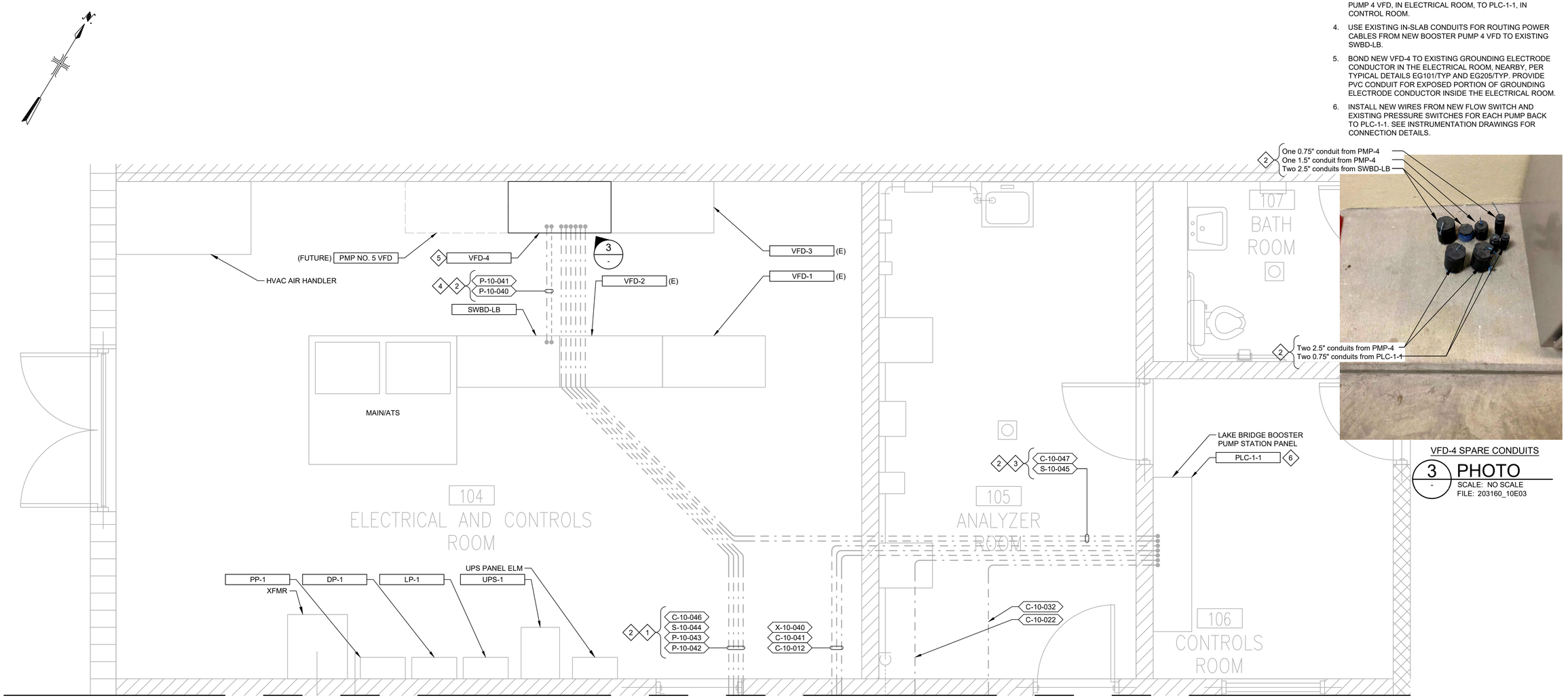
Sheet No.: 12 OF 37

LAST SAVED BY: eparker
User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 SavedDate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1

User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 Savedate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1

KEY NOTES:

1. USE EXISTING IN-SLAB CONDUITS FOR ROUTING POWER, CONTROL AND SIGNAL CABLES FROM NEW BOOSTER PUMP 4, IN PUMP ROOM TO NEW VFD, AND EXISTING PLC-1-1 IN ELECTRICAL AND CONTROL ROOMS.
2. SPARE CONDUIT INFORMATION FOR VFD-4 ARE BASED ON RECORD DRAWINGS. VERIFY ALL SPARE CONDUITS FOR VFD-4 FOR THEIR SIZES AND DESTINATION.
3. USE EXISTING IN-SLAB CONDUITS FOR ROUTING CONTROL AND SIGNAL CABLES FROM NEW BOOSTER PUMP 4 VFD, IN ELECTRICAL ROOM, TO PLC-1-1, IN CONTROL ROOM.
4. USE EXISTING IN-SLAB CONDUITS FOR ROUTING POWER CABLES FROM NEW BOOSTER PUMP 4 VFD TO EXISTING SWBD-LB.
5. BOND NEW VFD-4 TO EXISTING GROUNDING ELECTRODE CONDUCTOR IN THE ELECTRICAL ROOM, NEARBY, PER TYPICAL DETAILS EG101/TYP AND EG205/TYP. PROVIDE PVC CONDUIT FOR EXPOSED PORTION OF GROUNDING ELECTRODE CONDUCTOR INSIDE THE ELECTRICAL ROOM.
6. INSTALL NEW WIRES FROM NEW FLOW SWITCH AND EXISTING PRESSURE SWITCHES FOR EACH PUMP BACK TO PLC-1-1. SEE INSTRUMENTATION DRAWINGS FOR CONNECTION DETAILS.



CONTINUES ON DWG 10E02

C PLAN
SCALE: 1/2" = 1'-0"
FILE: 203160_10E0101

VFD-4 SPARE CONDUITS

3 - PHOTO
SCALE: NO SCALE
FILE: 203160_10E03

LAST SAVED BY: eparker

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY MARK PELLISH ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

MARK A. PELLISH LICENSE No.46906 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: SK Date: APRIL 2025
Drawn By: GMG Date: APRIL 2025
Checked By: MP Date: APRIL 2025
MP Date: APRIL 2025
APPROVED BY:

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT PLANT – PUMP #4

ELECTRICAL

ELECTRICAL ROOM POWER, CONTROL, AND GROUNDING PLAN

REV	DESCRIPTION	DATE

TBW Drawing No.:
Sheet 10E03
File Name:
Scale: TBW Project No.: 07542
Sheet No.: 13 OF 37

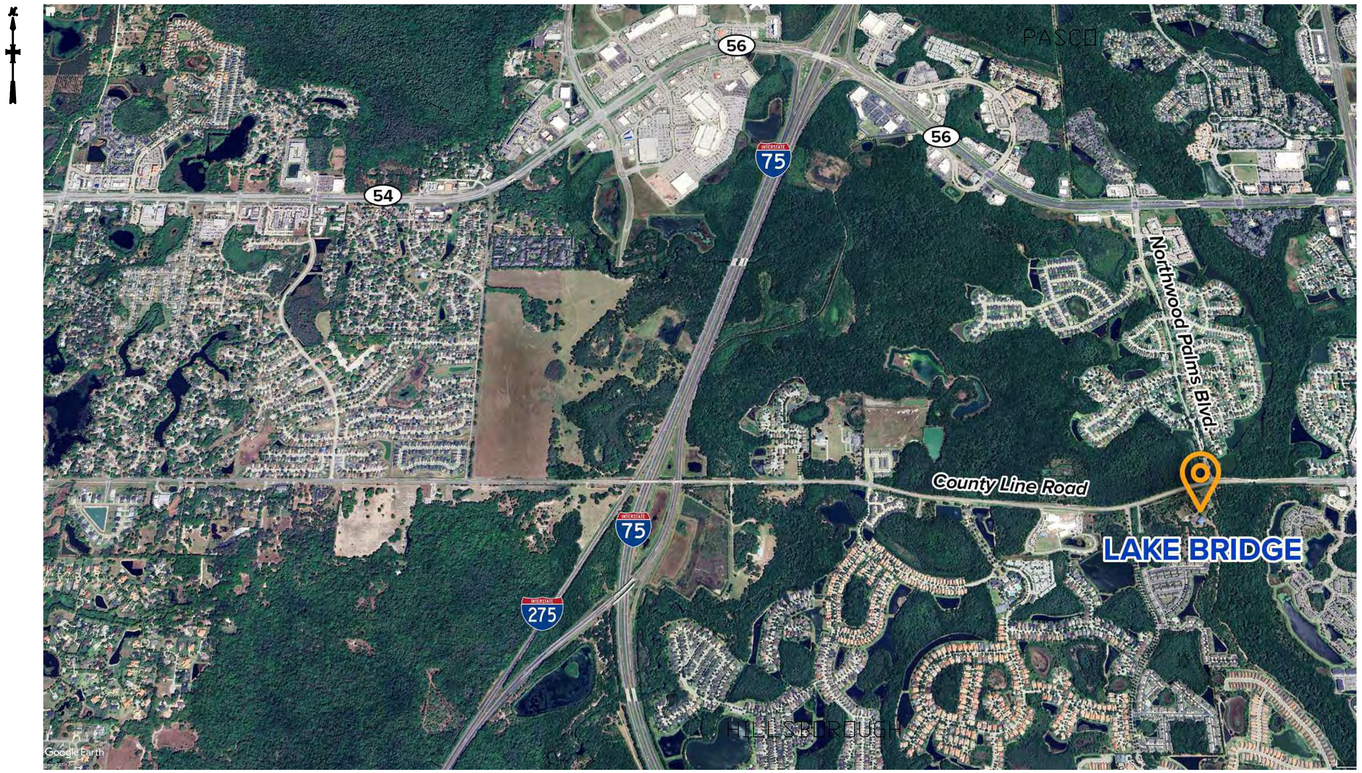
PROJECT NO. 203160-400000 FILE NAME: 203160_10E03.dwg

LAKE BRIDGE WTP PUMP #4

BID SET

TAMPA BAY WATER
Supplying Water To The Region

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA
33763
PH: 727.796.2355
www.tampabaywater.org



LOCATION MAP
TAMPA, FLORIDA

PRIME CONSULTANTS
STAMP AND SEAL

KUNAL NAYEE
LICENSE
No 83294
STATE OF FLORIDA
PROFESSIONAL ENGINEER

MECHANICAL

PRIME CONSULTANTS
STAMP AND SEAL

MARK A. PELLISH
LICENSE
No 46906
STATE OF FLORIDA
PROFESSIONAL ENGINEER

ELECTRICAL

PRIME CONSULTANTS
STAMP AND SEAL

BRETT A. LEE
LICENSE
No 68169
STATE OF FLORIDA
PROFESSIONAL ENGINEER

INSTRUMENTATION
AND CONTROL

carollo®
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

JOB NO. 203160
DRAWING NO. 00G01
SHEET NO. 1 OF 37

LAST SAVED BY: eparker

SHEET NO.	DRAWING NO.	DESCRIPTION
		(G) - GENERAL
1	00G01	COVER SHEET
2	00G02	DRAWING INDEX
3	00G03	GENERAL NOTES, LEGEND AND SYMBOLS
4	00G04	ABBREVIATIONS
		(D) - DEMOLITION
5	00D01	PLAN AND SECTIONS
		(M) - MECHANICAL
6	00M01	EXISTING PLAN AND SECTIONS
7	00M02	PLAN AND SECTIONS
		(E) - ELECTRICAL
8	00GE01	LEGEND
9	00GE02	ABBREVIATIONS
10	03E01	OVERALL PLANT ONE-LINE DIAGRAM
11	10E01	LAKE BRIDGE WTP POWER AND CONTROL PLAN
12	10E02	PUMP ROOM POWER AND CONTROL PLAN
13	10E03	ELETRICAL ROOM POWER AND CONTROL PLAN
		(N) - INSTRUMENTATION
14	00GN01	SYMBOLS AND ABBREVIATIONS 1
15	00GN02	SYMBOLS AND ABBREVIATIONS 2
16	00GN03	SYMBOLS AND ABBREVIATIONS 3
17	00GN04	SYMBOLS AND ABBREVIATIONS 4
18	00GN05	SCHEMATIC SYMBOLS
19	00GN06	SAMPLE LOOP DRAWING
20	00GN07	EQUIPMENT TAGGING (WATER TREATMENT)
21	04N01	NETWORK BLOCK DIAGRAM
22	05N01	PLC CABINET MODIFICATIONS 1
23	05N02	PLC CABINET MODIFICATIONS 2
24	06N01	PLC CABINET PUMP 1 SCHEMATIC MODIFICATION
25	06N02	PLC CABINET PUMP 2 SCHEMATIC MODIFICATION
26	06N03	PLC CABINET PUMP 3 SCHEMATIC MODIFICATION
27	06N04	PLC CABINET PUMP 4 SCHEMATIC MODIFICATION
28	06N05	SCHEMATIC 5 - HIGH SERVICE PUMP 4
29	07N01	I/O TABLES
30	10N01	HIGH SERVICE PUMPS P&ID 1
31	10N02	HIGH SERVICE PUMPS P&ID 2
		(T) - TYPICAL DETAILS
32	00TE01	ELECTRICAL TYPICAL DETAILS 1
33	00TN01	INSTRUMENTATION TYPICAL DETAILS 1
34	00TN02	INSTRUMENTATION TYPICAL DETAILS 2
35	00TN03	INSTRUMENTATION TYPICAL DETAILS 3
36	00TN04	INSTRUMENTATION TYPICAL DETAILS 4
37	00TS01	STRUCTURAL TYPICAL DETAILS 1

User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 SavedDate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : : Layout:LAYOUT1

LAST SAVED BY: eparker

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY KUNAL NAYEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

KUNAL NAYEE LICENSE No 83294 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: KN Date: APRIL 2025
Drawn By: EP Date: APRIL 2025
Checked By: KN Date: APRIL 2025
KN Date: APRIL 2025
APPROVED BY:

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

GENERAL
DRAWING INDEX

REV	DESCRIPTION	DATE

TBW Drawing No.:

Sheet 00G02

File Name:

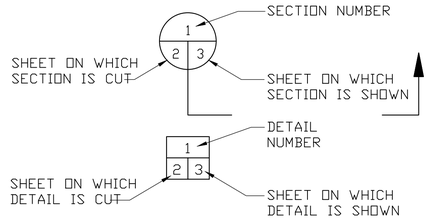
Scale: TBW Project No.: 07542

Sheet No.: 2 OF 37

GENERAL KEY

- POND
- NEW EQUIPMENT, PIPING, BURIED PIPING, STRUCTURE, ETC
- NEW BURIED EQUIPMENT, PIPING, STRUCTURE, ETC
- EXISTING STRUCTURE
- EXISTING EQUIPMENT, PIPING AND BURIED PIPING
- 10 — PROPOSED CONTOUR LINE
- 5 — EXISTING CONTOUR LINE
- CENTERLINE
- SWALE
- WETLAND
- EASEMENT
- PROPERTY LINE
- X 67.05 — SPOT ELEVATION
- X 63.3 — EXISTING SLOT ELEVATION
- FENCE
- EXISTING FENCE
- S — SOLENOID VALVE
- PLUG VALVE
- GLOBE VALVE
- BALL VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- DUCKBILL CV
- GATE VALVE
- PRESSURE RELIEF VALVE
- AIR RELEASE VALVE
- UNION
- REDUCER
- PIPING ELBOW, 90° TURNED DOWN
- PIPING ELBOW, 90° TURNED UP
- PIPING TEE, OUTLET TURNED DOWN
- PIPING TEE, OUTLET TURNED UP
- DRAINAGE FLOW ARROW
- PROPOSED PIPING WITH DIRECTION OF FLOW
- PROPOSED PUMP
- TEE
- 90° BEND
- 45° BEND
- CROSS
- HOSE BIBB
- FIRE HYDRANT
- FD — FLOOR DRAIN OR AREA DRAIN
- CO — CLEANOUT
- U.P. — UTILITY POLE
- U.L.P. — UTILITY & LIGHT POLE
- E — ELECTRIC UTILITY BOX
- E.C.M.P. — ELLIPTICAL CORRUGATED METAL PIPE
- ELEC — OVERHEAD ELEC. LINES
- OR — PLUG OR CAP
- BLIND FLANGE
- OR — STRAINER
- MECHANICAL JOINT (MJ)
- FLANGE JOINT (FLG)
- WELDED JOINT
- PIPE JOINT (SINGLE LINE)
- FLEXIBLE COUPLING
- HARNESSED FLEXIBLE COUPLING
- HARNESSED FLANGED COUPLING ADAPTER
- FLANGED COUPLING ADAPTER
- EXPANSION JOINT
- HARNESSED EXPANSION JOINT
- WALL SLEEVE W/MECHANICAL SEAL
- BLIND FLANGE

SECTION AND DETAIL KEY



TREE LEGEND

- = OAK
- = JACARANDA
- = CHINABERRY
- = MULBERRY
- = PALM
- = BAY
- = MAGNOLIA
- = CITRUS
- = PECAN
- = EUCALYPTUS
- = SYCAMORE
- = PINE
- = AUSTRALIAN PINE
- = CEDAR
- = ELM
- = MAPLE
- = MYRTLE
- = PUNK
- = CYPRESS
- = EAR
- = CAMPHOR
- = CHERRY
- = COTTONWOOD
- = ASH
- = BEECH
- = GUM
- = HICKORY
- 7-12" = TWIN 7" & 12"

HATCH LEGEND

- GRATING
- EXISTING ASPHALT PAVEMENT
- CONCRETE IN SECTION
- STONE
- ASPHALT PAVEMENT
- GROUND SURFACE
- CONSTRUCTION AREA WITHIN THE 30' WCA BUFFER
- ABANDONED
- DEMOLITION

LAST SAVED BY: eparker
User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 SavedDate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY KUNAL NAYEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

KUNAL NAYEE LICENSE No.83294 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: KN Date: APRIL 2025
Drawn By: EP Date: APRIL 2025
Checked By: KN Date: APRIL 2025
KN Date: APRIL 2025
APPROVED BY:

carollo®
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

GENERAL

NOTES, LEGEND, AND SYMBOLS

REV	DESCRIPTION	DATE

File Name:

Scale: TBW Project No.:07542

TBW Drawing No.:

Sheet 00G03

Sheet No.: 3 OF 37

675

PROJECT NO. 203160-400000 FILE NAME: 203160_00G03.dwg

GENERAL ABBREVIATIONS

@	AT
APPROX	APPROXIMATELY
ARV	AIR RELEASE VALVE
AWWA	AMERICAN WATER WORK ASSOCIATION
BF	BLIND FLANGE
BFP	BACK FLOW PREVENTOR
BFV	BUTTERFLY VALVE
BLDG	BUILDING
BV	BALL VALVE
℄	CENTERLINE
CAV	COMBINATION AIR VALVE
CO	CLEAN OUT
CCTM	CYPRESS CREEK TRANSMISION MAIN
CONC	CONCRETE
CONT	CONTINUATION
CV	CHECK VALVE
D.C.	DOUBLE CONTAINMENT
DEG OR °	DEGREE
DI	DUCTILE IRON
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
ECC	ECCENTRIC
EJ	EXPANSION JOINT
EL	ELEVATION
EP	EDGE OF PAVEMENT
EX/EXIST	EXISTING
FCV	FLOW CONTROL VALVE
FES	FLARED END SECTION
FF	FINISHED FLOOR
FLGD	FLANGE
GALV	GALVANIZED
H-H	HAND HOLE
INV	INVERT
LF	LINEAR FOOT
MAX	MAXIMUM
MAX	MAXIMUM
MES	METERED END SECTION
MH	MANHOLE
MIN	MINIMUM
MJ	MECHANICAL JOINT
NTS	NOT TO SCALE
NO OR #	NUMBER
O/F	OUTSIDE FACE
PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
PCUD	PASCO COUNTY UTILITIES DEPARTMENT
PRV	PRESSURE RELEASE VALVE
PVC	POLYVINYL CHLORIDE
R/RAD	RADIUS
RCP	REINFORCED CONCRETE PIPE
RED	REDUCER
REINF	REINFORCEMENT
REQ'D	REQUIRED
RJ	RESTRAINED JOINT
RWGV	RESILIANT WEDGE GATE VALVE
SS	STAINLESS STEEL
T/	TOP OF
T.O.P	TOP OF PIPE
TOB	TOP OF BANK
TOS	TOE OF SLOPE
TS	TAP SLEEVE
TYP	TYPICAL
ULP	UTILITY LIGHT POLE
UN	UNDER DRAIN
UON	UNLESS OTHERWISE NOTED
WTP	WATER TREATMENT PLANT
W/	WITH
WWF	WELDED WIRE FABRIC

GENERAL NOTES:

1. ALL WORK PERFORMED SHALL BE IN FULL COMPLIANCE WITH THE REQUIREMENTS OF TAMPA BAY WATER, DESIGN ENGINEER, AND ALL OTHER AGENCIES WHICH MAY EXERT JURISDICTION. WHEN CONFLICTS OCCUR BETWEEN REQUIREMENTS SHOWN ON THESE DRAWINGS/SPECIFICATIONS AND REGULATORY CRITERIA, THE MORE STRINGENT REQUIREMENT SHALL PREVAIL. THE CONTRACTOR SHALL VERBALLY BRING ANY CONFLICT TO THE ATTENTION OF THE DESIGN ENGINEER IMMEDIATELY, FOLLOWED BY AN OFFICIAL WRITTEN NOTIFICATION WITHIN 24 HOURS.
2. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND PAYING FOR SITE, BUILDING PERMITS WHICH MAY BE REQUIRED THAT PERTAIN TO HIS CONTRACTED WORK. SUCH PERMITS SHALL BE OBTAINED BY THE CONTRACTOR PRIOR TO THE CONTRACTOR BEGINNING WORK ON THE PORTION OF THE PROJECT REQUIRING SAID PERMITS.
3. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION STAKING TO INCLUDE HORIZONTAL AND VERTICAL CONTROL FOR ALIGNMENT OF WORK. ALL SURVEY WORK TO ESTABLISH THE HORIZONTAL AND VERTICAL CONTROL SHALL BE UNDER THE GUIDANCE AND DIRECT SUPERVISION OF A REGISTERED PROFESSIONAL SURVEYOR AND MAPPER.
4. RESTORE ALL PROPERTY AFFECTED AND/OR DAMAGED BY DEMOLITION AND/OR CONSTRUCTION ACTIVITIES TO A CONDITION EQUAL TO OR BETTER THAN EXISTED BEFORE COMMENCING CONSTRUCTION WORK, UNLESS SPECIFICALLY EXEMPTED BY THE DRAWINGS.
5. CONTRACTOR IS RESPONSIBLE FOR OBTAINING AREAS FOR STORAGE OF MATERIALS AND EQUIPMENT. SECURITY OF CONSTRUCTION EQUIPMENT AND MATERIALS IS THE RESPONSIBILITY OF THE CONTRACTOR.

User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 SavedDate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn; 9/25/2017; 15:33 ; Layout:LAYOUT1

TAMPA BAY WATER
Supplying Water To The Region
LAST SAVED BY: eparker

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY KUNAL NAYEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

KUNAL NAYEE LICENSE No 83294 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: KN Date: APRIL 2025
Drawn By: EP Date: APRIL 2025
Checked By: KN Date: APRIL 2025
KN Date: APRIL 2025
APPROVED BY:

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

GENERAL
ABBREVIATIONS

REV	DESCRIPTION	DATE

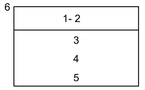
TBW Drawing No.:

Sheet 00G04

File Name:

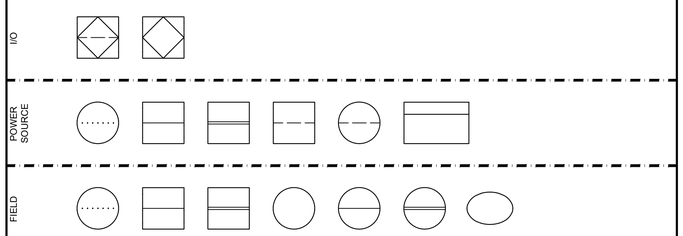
Scale: TBW Project No.: 07542

Sheet No.: 4 OF 37

SYMBOL	DRAWING VISIBLE FIELDS	FIELD - 1	FIELD - 2	FIELD - 3	FIELD - 4	FIELD - 5	FIELD - 6	FIELD - 7	FIELD - 8
HARDWIRED I/O POINT	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - DESCRIPTION 5 - LOCATION 6 - EXISTING/FUTURE 7 - IO TABLE	REFER	REFER	AI - ANALOG INPUT AO - ANALOG OUTPUT DI - DISCRETE INPUT DO - DISCRETE OUTPUT RTD - RTD INPUT	DESCRIPTION	PAC - PROGRAMMABLE AUTOMATION CONTROLLER NO. PLC - PROGRAMMABLE LOGIC CONTROLLER NO. RIO - REMOTE I/O VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE		
NETWORK / SOFT I/O	1 - TAG 2 - LOOP NUMBER 3 - PROTOCOL 4 - PANEL 5 - PLC 6 - EXISTING/FUTURE 7 - IO TABLE 8 - SWITCH/SEGMENT	REFER	REFER	COMMUNICATION PROTOCOL CNET - CONTROLNET DNET - DEVICENET EIP - ETHERNET/IP FF - FOUNDATION FIELDBUS HART-IP - HART OVER ETHERNET MANF - MFR. PROPRIETARY MBRTU - MODBUS RTU MB+ - MODBUS PLUS MBTCP - MODBUS TCP DP - PROFIBUS DP PA - PROFIBUS PA PNET - PROFINET SNMP - SNMPv3 HTTP - WEB SERVER (TCP/IP)	DESCRIPTION	PAC - PROGRAMMABLE AUTOMATION CONTROLLER NO. PLC - PROGRAMMABLE LOGIC CONTROLLER NO. RIO - REMOTE I/O VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE		
PILOT DEVICE OPERATOR INTERFACE	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - DESCRIPTION 5 - LOCATION 6 - EXISTING/FUTURE	REFER	REFER	AM - AUTO/MANUAL BYPASS - BY PASS ESD - EQUIPMENT SHUTDOWN HOA - HAND/OFF/AUTO LOR - LOCAL/OFF/REMOTE LOS - LOCK OUT STOP LS - LEAD/STANDBY LSR - LOCAL/STOP/REMOTE OC - OPEN/CLOSE OO - OFF/ON OSC - OPEN/STOP/CLOSE RST - RESET SEL - SELECT SPD - SPEED SS - START/STOP ST - STOP	DESCRIPTION	LCP - LOCAL CONTROL PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. RVSS - REDUCED VOLTAGE SOLID STARTER NO. VCP - VENDOR CONTROL PANEL NO. VFD - VARIABLE FREQUENCY DRIVE NO.	E - EXISTING F - FUTURE		
POWER DEVICE PRIMARY FUNCTION OPERATOR ACCESSIBLE	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - VOLTAGE-POLE 5 - LOCATION 6 - EXISTING/FUTURE	CB - CIRCUIT BREAKER DISC - DISCONNECT FU - FUSE	REFER	TM - THERMAL MAGNETIC CIRCUIT BREAKER	24VDC - 1P 24VDC - 2P 24VAC - 1P 48VDC - 2P 120VAC - 1P 208VAC - 2P 208VAC - 3P 240VAC - 2P 240VAC - 3P 480VAC - 3P 2400VAC - 3P 4160VAC - 3P	DP - DISTRIBUTION PANEL NO. LCP - LOCAL CONTROL PANEL NO. LP - LIGHTING PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. PP - POWER PANEL NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE		
POWER DEVICE AUXILIARY FUNCTION OPERATOR ACCESSIBLE	1 - TAG 2 - LOOP NUMBER 3 - DESCRIPTION 4 - DESCRIPTION 5 - DESCRIPTION 6 - EXISTING/FUTURE	DISC - DISCONNECT	REFER	DESCRIPTION	DESCRIPTION	DESCRIPTION	E - EXISTING F - FUTURE		
POWER DEVICE PRIMARY FUNCTION OPERATOR INACCESSIBLE	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - VOLTAGE-POLE 5 - LOCATION 6 - EXISTING/FUTURE	CB - CIRCUIT BREAKER FU - FUSE	REFER	MCP - MOTOR CIRCUIT PROTECTOR SS - SOLID STATE CIRCUIT BREAKER TM - THERMAL MAGNETIC CIRCUIT BREAKER	24VDC - 1P 24VDC - 2P 24VAC - 1P 48VDC - 2P 120VAC - 1P 208VAC - 2P 208VAC - 3P 240VAC - 2P 240VAC - 3P 480VAC - 3P 2400VAC - 3P 4160VAC - 3P	DP - DISTRIBUTION PANEL NO. LCP - LOCAL CONTROL PANEL NO. LP - LIGHTING PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. PP - POWER PANEL NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE		
FIELD EQUIPMENT STARTER / DRIVE CUBICLE / CABINET 	1 - TAG 2 - LOOP NUMBER 3 - TYPE 4 - VOLTAGE-POLE 5 - POWER SOURCE 6 - EXISTING/FUTURE	MS - MOTOR STARTER RVAT - REDUCED VOLTAGE AUTO TRANSFORMER STARTER RVSS - REDUCED VOLTAGE SOLID STATE STARTER VFD - VARIABLE FREQUENCY DRIVE	REFER	FVNR - FULL VOLTAGE NON-REVERSING STARTER FVR - FULL VOLTAGE REVERSING STARTER PWS - PART-WINDING STARTER RVAT - REDUCED VOLTAGE AUTO RVSS - REDUCED VOLTAGE SOLID STATE STARTER TS1W - TWO SPEED SINGLE WINDING TS2W - TWO SPEED TWO WINDINGS VFD - VARIABLE FREQUENCY DRIVE	120VAC - 1P 208VAC - 2P 208VAC - 3P 240VAC - 2P 240VAC - 3P 480VAC - 3P 2400VAC - 3P 4160VAC - 3P	LCP - LOCAL CONTROL PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE		

SYMBOL	DRAWING VISIBLE FIELDS	FIELD - 1	FIELD - 2	FIELD - 3	FIELD - 4	FIELD - 5	FIELD - 6	FIELD - 7	FIELD - 8
INSTRUMENT PRIMARY ELEMENT	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - FURNISHED BY 5 - LOCATION 6 - EXISTING/FUTURE	REFER	REFER	DESCRIPTION	DESCRIPTION	AREA NO. BUILDING NO. ROOM NO.	E - EXISTING F - FUTURE		
INSTRUMENT/ CONTROL ELEMENT PRIMARY FUNCTION OPERATOR ACCESSIBLE	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - FURNISHED BY 5 - DESCRIPTION 6 - EXISTING/FUTURE	REFER	REFER	DESCRIPTION	DESCRIPTION	DESCRIPTION INT - INTEGRAL REM - REMOTE	E - EXISTING F - FUTURE		OUT - OUTDOOR
INSTRUMENT/ CONTROL ELEMENT AUXILIARY FUNCTION OPERATOR ACCESSIBLE	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - FURNISHED BY 5 - LOCATION 6 - EXISTING/FUTURE	REFER	REFER	DESCRIPTION	DESCRIPTION	DESCRIPTION	E - EXISTING F - FUTURE		
INSTRUMENT/ CONTROL ELEMENT PRIMARY FUNCTION OPERATOR INACCESSIBLE	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - FURNISHED BY 5 - LOCATION 6 - EXISTING/FUTURE	REFER XR - PROTECTION RELAY CR - CONTROL RELAY XR - INTERPOSING RELAY	REFER	DESCRIPTION	DESCRIPTION	DESCRIPTION	E - EXISTING F - FUTURE		
INSTRUMENT/ CONTROL ELEMENT AUXILIARY FUNCTION OPERATOR INACCESSIBLE	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - FURNISHED BY 5 - LOCATION 6 - EXISTING/FUTURE	REFER XR - PROTECTION RELAY CR - CONTROL RELAY XR - INTERPOSING RELAY	REFER	DESCRIPTION	DESCRIPTION	DESCRIPTION	E - EXISTING F - FUTURE		
FIELD EQUIPMENT NON-POWERED	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION/SIZE 4 - FURNISHED BY 5 - LOCATION 6 - EXISTING/FUTURE	REFER	REFER	DESCRIPTION	DESCRIPTION	AREA NO. BUILDING NO. ROOM NO.	E - EXISTING F - FUTURE		
FIELD EQUIPMENT PRIMARY FUNCTION POWERED	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - FURNISHED BY 5 - LOCATION 6 - EXISTING/FUTURE	REFER	REFER	DESCRIPTION	DESCRIPTION	AREA NO. BUILDING NO. ROOM NO.	E - EXISTING F - FUTURE		
FIELD EQUIPMENT AUXILIARY FUNCTION POWERED	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - FURNISHED BY 5 - LOCATION 6 - EXISTING/FUTURE	MWH - MOTOR WINDING HEATER TSH - TEMPERATURE SWITCH XSH - TORQUE SWITCH	REFER	DESCRIPTION	DESCRIPTION	DESCRIPTION	E - EXISTING F - FUTURE		

INSTRUMENT BUBBLE LOCATIONS



NOTES

1. INSTRUMENT TAG IDENTIFICATION LETTERS TABLE
2. OPERATOR PILOT DEVICE LEGEND
3. EQUIPMENT TAGGING TABLE
4. I/O TYPE DESIGNATIONS
5. INSTRUMENT TYPE DESIGNATIONS TABLE
6. FURNISHED BY:
   - FBO FURNISHED BY OWNER
   - FBV FURNISHED BY VENDOR
7. PROVIDED BY:
   - PBO PROVIDED BY OWNER
   - PBV PROVIDED BY VENDOR

User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 Saved Date:8/9/2022 Time:10:21 Plot Date: Carl, Garyn; 9/25/2017; 15:33 ; Layout:LAYOUT1

LAST SAVED BY: LRivas

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY BRETT LEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

BRETT A. LEE LICENSE No 68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: BAL Date: APRIL 2025
Drawn By: BAL Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
BAL Date: APRIL 2025
APPROVED BY:

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION

SYMBOLS AND ABBREVIATIONS 1

REV	DESCRIPTION	DATE

TBW Drawing No.:

File Name:

Scale: TBW Project No.: 07542

Sheet 00GN01

Sheet No.: 14 OF 37

INSTRUMENT TAG IDENTIFICATION LETTERS

	MEASURED VARIABLE / INSTRUMENTATION FUNCTION	ELEMENT	TRANSMITTER	INDICATING TRANSMITTER	CONVERTER TRANSDUCER, RELAY SPECIAL DEVICES	INDICATOR	RECORDER	CONTROL/COMMAND	INDICATING CONTROLLER	RECORDING CONTROLLER	SWITCH	SWITCH LOW LOW	SWITCH LOW	SWITCH HIGH	SWITCH HIGH HIGH	SWITCH COMBINATION HIGH LOW	ACTION	ALARM LOW LOW	ALARM LOW	ALARM HIGH	ALARM HIGH HIGH	TOTALIZE INDICATOR TRANSMITTER	VALVE	GAUGE	LIGHT	SPEED SETTING
A	ANALYSIS	AE	AT	AIT	AY	AI	AR	AC	AIC	ARC	AS	ASLL	ASL	ASH	ASHH	ASHL		AALL	AAL	AAH	AAHH				AL	
C	CONDUCTIVITY	CE	CT	CIT	CY	CI	CR	CC	CIC	CRC	CS	CSLL	CSL	CSH	CSHH	CSHL		CALL	CAL	CAH	CAHH				CL	
D	DENSITY	DE	DT	DIT	DY	DI	DR	DC	DIC	DRC	DS	DSLL	DSL	DSH	DSHH	DSHL		DALL	DAL	DAH	DAHH				DL	
E	VOLTAGE												ESL													
F	FLOW	FE	FT	FIT	FY	FI	FR	FC	FIC	FRC	FS	FSLL	FSL	FSH	FSHH	FSHL		FALL	FAL	FAH	FAHH	FQI	FCV	FG	FL	
H	HAND (MANUAL)*					HC					HS*						HA*						HV		HL	HSS
I	CURRENT		IT	IIT	IY	II	IR	IC	IIC	IRC	IS	ISLL	ISL	ISH	ISHH			IALL	IAL	IAH	IAHH				IL	
J	POWER					JS																				
K	TIME				KY	KI	KR	KC	KIC	KRC	KS	KSLL	KSL	KSH	KSHH			KALL	KAL	KAH	KAHH		KV		KL	
L	LEVEL	LE	LT	LIT	LY	LI	LR	LC	LIC	LRC	LS	LSLL	LSL	LSH	LSHH	LSHL		LALL	LAL	LAH	LAHH		LCV	LG	LL	
M	MOISTURE OR HUMIDITY	ME	MT	MIT	MY	MI	MR	MC	MIC	MRC	MS	MSLL	MSL	MSH	MSHH			MALL	MAL	MAH	MAHH				ML	
N	USER'S CHOICE																									
P	PRESSURE OR VACUUM	PE	PT	PIT	PY	PI	PR	PC	PIC	PRC	PS	PSLL	PSL	PSH	PSHH	PSHL		PALL	PAL	PAH	PAHH		PCV		PL	
PD	DIFFERENTIAL PRESSURE		PDT	PDIT	PDY	PDI	PDR	PDC	PDIC	PDRC	PDS	PDSLL	PDSL	PDSH	PDSHH			PDALL	PDAL	PDAH	PDAHH		PDCV		PDL	
Q	QUANTITY	QE	QT	QIT	QY	QI	QR				QS	QSLL	QSL	QSH	QSHH			QALL	QAL	QAH	QAHH					
R	RADIATION																									
S	SPEED	SE	ST	SIT	SY	SI	SR	SC	SIC	SRC	SS	SSLL	SSL	SSH	SSHH			SALL	SAL	SAH	SAHH					
T	TEMPERATURE	TE	TT	TIT	TY	TI	TR	TC	TIC	TRC	TS	TSLL	TSL	TSH	TSHH	TSHL		TALL	TAL	TAH	TAHH		TCV		TL	
TD	DIFFERENTIAL TEMPERATURE		TDT	TDIT	TDY	TDI	TDR	TDC	TDIC	TDRC	TDS	TDSLL	TDSL	TDSH	TDSHH			TDALL	TDAL	TDAH	TDAHH		TDCV		TDL	
U	MULTIVARIABLE					UI	UR	UC	UIC	URC	US														UL	
V	VISCOSITY	VE	VT	VIT	VY	VI	VR	VC	VIC	VRC	VS	VSLL	VSL	VSH	VSHH			VALL	VAL	VAH	VAHH				VL	
W	WEIGHT	WE	WT	WIT	WY	WI	WR				WS	WSLL	WSL	WSH	WSHH			WALL	WAL	WAH	WAHH					
X	UNCLASSIFIED	XE	XT	XIT	XY	XI	XR	XC	XIC	XRC	XS	XSLL	XSL	XSH	XSHH			XALL	XAL	XAH	XAHH		XCV	XG	XL	
XV	VIBRATION	XVE	XVT		XVY	XVI	XVR				XVS			XVSH	XVSHH					XVAH	XVAHH				XVL	
Y	STATUS					YI																			YL	
Z	POSITION	ZE	ZT	ZIT	ZY	ZI		ZC**			ZS**												ZV		ZL**	

OPERATOR PILOT DEVICE LEGEND

DEVICE TYPE / PILOT DEVICE FUNCTION	LOCAL-OFF-REMOTE (LOR) OR LOCAL-STOP-REMOTE (LSR)	STOP(SP)	START (ST)	HAND-OFF-AUTO (HOA) HAND-OFF-REMOTE (HOR)	OFF-ON (OO)	SELECT (SEL)	OPEN-STOP-CLOSE (OSC)	JOG OPEN-HOLD-CLOSE (JOHC)	SEMI/AUTO-AUTO-MANUAL (SAAM)	LEAD-LAG-STANDBY (LLGS)	AUTO-MANUAL (AM)	OPEN-CLOSE (OC)	LOW-HIGH (LH)	RESET (RST)	SPEED (SPD)	START-STOP (STSP)	EQUIPMENT SHUTDOWN (ESD)	BYPASS (BYP)			SILENCE	POSITION (POS)
PILOT DEVICE TAG (HAND SWITCHES)	HSA	HSB	HSC	HSD	HSE	HSF	HSG	HSH	HIS	HSJ	HSM	HSO	HSQ	HSR	HSS	HST	HSU	HSV	HSW	HSX	HSY	HSZ

I/O TYPE DESIGNATIONS

RNG	RUNNING	SPDC	SPEED COMMAND
FAIL	FAILED/FAULT	SPDF	SPEED FEEDBACK
FWD	RUNNING FORWARD	REM	LOR IN REMOTE
FAST	RUNNING HIGH	LOC	LOR IN LOCAL
SLOW	RUNNING LOW	AUTO	HOA IN AUTO
REV	RUNNING REVERSE	HAND	HOA IN HAND
SVC	SOLENOID VALVE CLOSE	RST	RESET
SVO	SOLENOID VALVE OPEN	STOP	STOP
RUN	RUN		
SLWC	MOTOR START LOW		
REVC	MOTOR START REVERSE		

INSTRUMENT TYPE DESIGNATIONS

CGD	COMBUSTIBLE GAS DETECTOR	PTOF	PULSE TIME OF FLIGHT
COND	CONDUCTIVITY	RTD	RESISTANCE TEMP DETECTOR
DO	DISSOLVED OXYGEN	SB	SLUDGE BLANKET
FMCW	FREQ. MODULATED CONT. WAVE	SC	STREAMING CURRENT
ISB	INTRINSIC SAFETY BARRIER	SD	SLUDGE DEPTH
LEL	LOWER EXPLOSIVE LIMIT	TDR	TIME DOMAIN REFLECTOMETRY
MLSS	MIXED LIQUOR SUSPENDED SOLIDS	TOC	TOTAL ORGANIC CARBON
ORG	UV 504	TSS	TOTAL SUSPENDED SOLIDS
ORP	OXIDATION REDUCTION POTENTIAL	TURB	TURBIDITY
PSUB	PRESSURE SUBMERSIBLE	UVI	UV INTENSITY
PC	PARTICLE COUNTER	UVT	UV TRANSMITTANCE

SPECIFIC ABBREVIATIONS

HTR	HEATER
HTU	HEAT TRACE UNIT
MWH	MOTOR WINDING HEATER
SV	SOLENOID VALVE
SPD	SURGE PROTECTIVE DEVICE
UPS	UNINTERRUPTIBLE POWER SUPPLY
YLA	STATUS AUTO PILOT LIGHT
YLR	STATUS REMOTE PILOT LIGHT
YL1	STATUS RUNNING PILOT LIGHT
YL2	ALARM FAILED/FAULT PILOT LIGHT

P&ID LINE SYMBOLS

- INSTRUMENT OR CONNECTION TO PROCESS
- PNEUMATIC SIGNAL
- ELECTRIC SIGNAL
- HYDRAULIC SIGNAL
- CAPILLARY TUBE
- INTERNAL SYSTEM LINK (SOFTWARE OR DATA LINK)

PROCESS LINE SYMBOLS

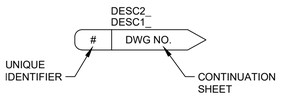
- PRIMARY PROCESS FLOW IN PIPE
- SECONDARY PROCESS FLOW IN PIPE
- PRIMARY PROCESS FLOW IN CHANNEL
- SECONDARY PROCESS FLOW IN CHANNEL
- HEAT TRACE

DESIGNATIONS

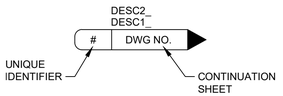
- EQUIPMENT ENCLOSURE
- EXISTING
- FUTURE

MISCELLANEOUS P&ID SYMBOLS

- PROCESS CONTINUATION



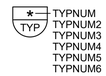
- SIGNAL CONTINUATION



- PIPE CALLOUT

- SCHEMATIC DETAIL

- TYPICAL DETAIL



TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY BRETT LEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

BRETT A. LEE LICENSE No 68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: BAL Date: APRIL 2025
Drawn By: BAL Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
APPROVED BY: BAL Date: APRIL 2025

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION

SYMBOLS AND ABBREVIATIONS 2

REV	DESCRIPTION	DATE

TBW Drawing No.:

Sheet 00GN02

File Name:

Scale: TBW Project No.: 07542

Sheet No.: 15 OF 37

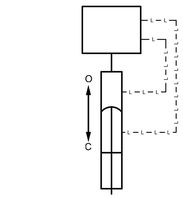
LAST SAVED BY: LRivas

User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 SavedDate:8/9/2022 Time:10:21 Plot Date: Cari, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1

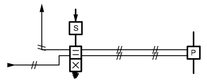
PROJECT NO. 203160-400000 FILE NAME: 203160_00GN02.dwg

ACTUATORS

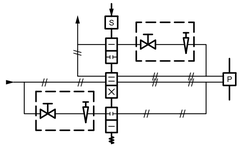
- DIAPHRAGM
- ELECTRIC HYDRAULIC
- ELECTRIC
- HAND
- HYDRAULIC
- MOTOR
- PNEUMATIC
- SOLENOID



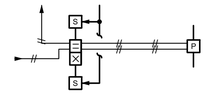
HYDRAULIC MODULATING



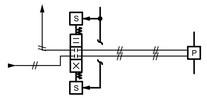
PNEUMATIC SINGLE SOLENOID OPEN/CLOSE



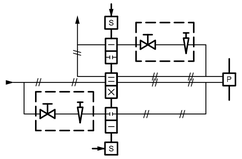
PNEUMATIC SINGLE SOLENOID w/ SPEED CONTROL



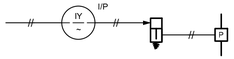
PNEUMATIC DUAL SOLENOID OPEN/CLOSE



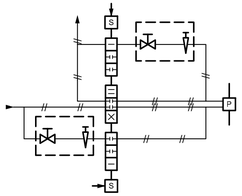
PNEUMATIC DUAL SOLENOID OPEN/HOLD/CLOSE



PNEUMATIC DUAL SOLENOID OPEN/CLOSE w/ SPEED CONTROL



PNEUMATIC MODULATING



PNEUMATIC MODULATING OPEN/CLOSE w/ SPEED CONTROL

PIPING

- AIR GAP
- BLIND FLANGE
- CAPPED OR PLUGGED
- CONCENTRIC INCREASER
- CONCENTRIC REDUCER
- DRAIN
- ECCENTRIC INCREASER
- FLANGED CONNECTION
- TEE
- UNION
- ECCENTRIC REDUCER
- EXPANSION COUPLING
- EXPANSION JOINT VIBRATION CENTER
- FLEXIBLE CONNECTION
- QUICK DISCONNECT

PUMPS

- AIR DRIVEN
- CENTRIFUGAL
- CHEMICAL FEED DIAPHRAGM
- DIAPHRAGM
- GEAR
- LOBE
- PERISTALTIC OR HOSE
- PISTON
- PROGRESSIVE CAVITY

OR SUBMERSIBLE

- VERTICAL TURBINE
- VERTICAL CHOPPER
- WATER CHAMP

BLOWERS/ COMPRESSORS/FANS

- CENTRIFUGAL SINGLE STAGE BLOWER/FAN
- CENTRIFUGAL MULTI STAGE BLOWER
- RECIPROCATING COMPRESSOR
- SCREW COMPRESSOR
- FAN
- LIQUID RING COMPRESSOR
- ROTARY LOBE BLOWER

CHECK VALVES

- BACK FLOW PREVENTER
- BALL
- DIAPHRAGM CHECK
- DOUBLE FLAP
- FLAPPER
- SLANTING CHECK VALVE
- SPRING LOADED GENERAL
- SPRING LOADED SWING
- SWING

PRESSURE VALVES

- BACKPRESSURE REGULATING SELF CONTAINED
- BACKPRESSURE REGULATING EXTERNAL TAP
- PRESSURE REDUCING SELF CONTAINED
- PRESSURE REDUCING EXTERNAL PRESSURE TAP
- REGULATING
- PRESSURE RELIEF
- VACUUM RELIEF

VALVES

- 3-WAY
- 3-WAY PLUG
- 4-WAY
- AIR-RELIEF
- ANGLE
- BALL
- BALL V-NOTCH
- BUTTERFLY
- BUTTERFLY-BURIED VALVE BOX
- CONE
- DIAPHRAGM
- FLOAT
- GATE
- GATE-BURIED VALVE BOX
- GLOBE
- HOSE
- MISCELLANEOUS
- MUD
- NEEDLE
- PINCH
- PLUG ECCENTRIC
- PLUG ECCENTRIC w-VALVE BOX
- PLUG ECCENTRIC LUBRICATED
- PLUG ECCENTRIC LUBRICATED BURIED VALVE BOX
- PLUG CONCENTRIC
- PLUG CONCENTRIC -BURIED VALVE BOX
- PLUG CONCENTRIC LUBRICATED
- PLUG CONCENTRIC LUBRICATED BURIED VALVE BOX
- PUMP DISCHARGE
- TELESCOPING

VALVE DESIGNATIONS	
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
FO	FAIL OPEN
FC	FAIL CLOSE
FLP	FAIL LAST POSITION

MISC

- AIR / CHEMICAL DIFFUSER
- BASKET STRAINER
- BLOW-OFF SILENCER
- CALIBRATION COLUMN
- COALESCER
- DESICCANT DRYER
- EDUCTOR/EJECTOR
- EQUIPMENT/ INSTRUMENT LOCATOR
- EYEWASH
- FILTER
- FILTER SEPARATOR
- FINE FILTER
- FIRE ALARM/SENSOR
- FLAME ARRESTER
- FLAME ARRESTER w/THERMALLY OPERATED VALVE
- FLOW CONDITIONER
- GAS CANNON
- GRINDER
- HEAT EXCHANGER
- HOIST
- HORIZONTAL MIXER
- HOSE CONNECTION
- INLET STRAINER
- INLINE STATIC MIXER
- INLINE DUCT BALANCING DAMPER
- LOUVER OR BACKDRAFT DAMPER
- MATERIAL CHANGE
- MIXER
- NOZZLE
- ORIFICE RESTRICTION
- PERISTALTIC COMPOSITE SAMPLER
- OR PULSATION DAMPENER
- REFRIGERATED DRYER
- RUPTURE DISK
- SAMPLE PORT
- SIGHT TUBE
- SMOKE DETECTOR
- STRAINER - MECHANICALLY CLEANED
- STRAINER WITH BLOW OFF
- STRAINER WYE TYPE
- VAPOR HEATER
- VAPORIZER
- VENT
- VENT TO ATMOSPHERE

TAMPA BAY WATER
Supplying Water To The Region
2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY BRETT LEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

BRETT A LEE LICENSE No 68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: BAL Date: APRIL 2025
Drawn By: BAL Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
BAL Date: APRIL 2025
APPROVED BY:

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION

SYMBOLS AND ABBREVIATIONS 3

REV	DESCRIPTION	DATE

TBW Drawing No.:

File Name:

Scale: TBW Project No.: 07542

Sheet 00GN03

Sheet No.: 16 OF 37

LAST SAVED BY: LRivas

User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 SavedDate:8/9/2022 Time:10:21 Plot Date: Cari, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1

PROJECT NO. 203160-400000 FILE NAME: 203160_00GN03.dwg

FLOW

- CORIOLIS
- MAGNETIC
- ORIFICE
- PADDLE WHEEL
- PISTON
- ANNUBAR
- PITOT TUBE
- POSITIVE-DISPLACEMENT
- PROPELLER-TURBINE
- ROTAMETER
- SHUTTLE
- THERMAL
- ULTRASONIC
- ULTRASONIC BIOGAS
- V-CONE
- VENTURI TUBE OR FLOW NOZZLE
- VORTEX

FLUMES

- LEOPOLD-LAGCO
- PALMER-BOWLUS
- PARSHALL
- REGULAR CUTTHROAT
- TRAPEZOIDAL

GATES

SIDE VIEW	PLAN VIEW
SLIDE	FLAP
SLUICE	KNIFE
STOP	SLIDE
	SLUICE
	STOP
	WEIR
	BUTTERFLY

LEVELS

- BUBBLER
- CAPACITANCE
- DIFFERENTIAL PRESSURE (TANK)
- DISPLACEMENT
- ELECTRODE
- BALL FLOAT
- INVERTED COLUMN
- PROBE
- RADAR PTOF
- RADAR (FREQUENCY MODULATED CONTINUOUS WAVE)
- RADAR TDR
- SUSPENDED/ SUBMERSIBLE
- TUNING FORK
- ULTRASONIC

NETWORKS

CABLE CALLOUTS AND ABBREVIATIONS

24/FO-SM — FIBER LINE REPRESENTS ONE 24-STRAND FIBER OPTIC CABLE

(2) 24/FO-SM — FIBER LINE REPRESENTS TWO 24-STRAND FIBER OPTIC CABLES

(1) 24/FO-SM EA. — EACH FIBER LINE REPRESENTS ONE 24-STRAND FIBER OPTIC CABLE

(4) — COPPER LINE REPRESENTS FOUR COPPER ETHERNET CABLES

(2) EA. — EACH COPPER LINE REPRESENTS TWO COPPER ETHERNET CABLES

FIBER ABBREVIATIONS

##/FO-XX
- ## = STRAND COUNT
- FO = FIBER OPTIC

XX = MODE
- SM = SINGLE MODE
- MM = MULTIMODE

NETWORK ABBREVIATIONS

BMS	= BUILDING MANAGEMENT SYSTEM
BSN	= BUSINESS NETWORK
FCN	= FIELD CONTROL NETWORK
MIN	= MAINTENANCE INFORMATION NETWORK
PCN	= PROCESS CONTROL NETWORK
PLCN	= PLC NETWORK
SCN	= SECURITY CONTROL NETWORK
PCN-W	= WIRELESS PROCESS CONTROL NETWORK
NR	= NETWORK RACK
NP	= NETWORK PANEL
ES	= ETHERNET SWITCH
FPP	= FIBER PATCH PANEL

VLAN SYMBOLS

- = BUSINESS NETWORK
- = SECURITY CONTROL NETWORK
- = BUILDING MANAGEMENT SYSTEM
- = PROCESS CONTROL NETWORK
- = WIRELESS PROCESS CONTROL NETWORK
- = MAINTENANCE INFORMATION NETWORK
- = PLC NETWORK
- = FIELD CONTROL NETWORK

PRESSURE/VACUUM

PRESSURE	DIFFERENTIAL PRESSURE	PRESSURE SEALS
GAUGE	GAUGE DIFFERENTIAL INDICATOR	SEAL ANNULAR
PRESSURE SWITCH	DIFFERENTIAL PRESSURE SWITCH	SEAL DIAPHRAGM
PRESSURE TRANSMITTER	DIFFERENTIAL PRESSURE TRANSMITTER	SEAL SANITARY
MANOMETER		

EXAMPLE

PRESSURE SWITCH

TEMPERATURE

- TEMPERATURE w/THERMOWELL
- TEMPERATURE GAUGE
- THERMOMETER

WEIGHT

- PLATFORM SCALE

WEIRS

SIDE VIEW	PLAN VIEW
RECTANGULAR w/o END CONTRACTIONS	RECTANGULAR w/o END CONTRACTIONS
RECTANGULAR w/ END CONTRACTIONS	RECTANGULAR w/ END CONTRACTIONS
V-NOTCH (TRIANGULAR)	V-NOTCH (TRIANGULAR)
TRAPEZOIDAL (CIPOLLETTI)	TRAPEZOIDAL (CIPOLLETTI)

NETWORK LINE SYMBOLS

COPPER ETHERNET	C C C C C
DUPLEX FIBER PATCH	FP FP FP FP FP
FIBER OPTIC ETHERNET	F F F F F
WIRELESS	W W W W W
PROFIBUS DP	PBD PBD PBD PBD PBD
PROFIBUS PA	PBA PBA PBA PBA PBA
SERIAL DATA	o o o o o o o o o o

MISCELLANEOUS NETWORK SYMBOLS

NETWORK CABLE CONTINUATIONS

TOP OF PAGE STYLE CONTINUATION

DESC 3
DESC 2
DESC 1 — CONTINUATION SHEET
DWG NO. — UNIQUE IDENTIFIER
(#)

BOTTOM/LEFT OF PAGE STYLE CONTINUATION

(#) — UNIQUE IDENTIFIER, CONTINUATION SHEET
DWG NO.
DESC 1
DESC 2
DESC 3

FIELD NETWORK DEVICE

PLC TAG / PANEL TAG — PROTOCOL / SEGMENT #
DEVICE SPECIFIC SYMBOL
TAG
DESC 1
DESC 2
DESC 3
P&ID DRAWING REFERENCE

NETWORK EQUIPMENT CALLOUT

TAG
DESC 1

LAST SAVED BY: LRivas

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY BRETT LEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

BRETT A. LEE — LICENSE No 68169 — STATE OF FLORIDA — PROFESSIONAL ENGINEER

Design By: BAL Date: APRIL 2025
Drawn By: BAL Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
APPROVED BY: BAL Date: APRIL 2025

carollo®
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION

SYMBOLS AND ABBREVIATIONS 4

REV	DESCRIPTION	DATE

TBW Drawing No.:

File Name:

Scale:

TBW Project No.: 07542

Sheet 00GN04

Sheet No.: 17 OF 37

PROJECT NO. 203160-400000 FILE NAME: 203160_00GN04.dwg

User: CAR111842 Spec: NAT CADD STD File: C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale: 1:1 SavedDate: 8/9/2022 Time: 10:21 Plot Date: Carl, Garyn; 9/25/2017; 15:33 ; Layout: LAYOUT1

PROCESS SWITCHES

TAGGING IDENTIFICATION
1 = FUNCTION
2 = DESCRIPTION
3 = LOCATION

LEVEL SWITCH
CLOSE ON RISING LEVEL

LEVEL SWITCH
OPEN ON RISING LEVEL

PRESSURE SWITCH
CLOSE ON RISING PRESSURE

PRESSURE SWITCH
OPEN ON RISING PRESSURE

TEMPERATURE SWITCH
CLOSE ON RISING TEMPERATURE

TEMPERATURE SWITCH
OPEN ON RISING TEMPERATURE

FLOW SWITCH
CLOSE ON INCREASE IN FLOW

FLOW SWITCH
OPEN ON INCREASE IN FLOW

VIBRATION SWITCH
OPEN ON RISING VIBRATION

VIBRATION SWITCH
CLOSE ON RISING VIBRATION

TORQUE SWITCH
OPEN ON HIGH TORQUE

TORQUE SWITCH
CLOSE ON HIGH TORQUE

NORMALLY CLOSED
LIMIT SWITCH

NORMALLY CLOSED
HELD OPEN LIMIT SWITCH

NORMALLY OPEN
LIMIT SWITCH

NORMALLY OPEN
HELD CLOSED LIMIT SWITCH

HAND SWITCHES

TAGGING IDENTIFICATION
1 = FUNCTION
2 = DESCRIPTION
3 = LOCATION
a/b/c = POSITION
x = DENOTES POSITION CONTACTS CLOSED IN

NORMALLY OPEN
MOMENTARY PUSHBUTTON

NORMALLY CLOSED
MOMENTARY PUSHBUTTON

MUSHROOM HEAD PUSHBUTTON
NORMALLY OPEN

MUSHROOM HEAD PUSHBUTTON
NORMALLY CLOSED

PUSH-PULL PUSHBUTTON
MAINTAINED CONTACT

PUSH-PULL PUSHBUTTON
NORMALLY CLOSED

PADLOCK SWITCH

PULL CORD SWITCH

STOP-LOCKOUT PUSHBUTTON

THREE POSITION SELECTOR SWITCH

TWO POSITION SELECTOR SWITCH
NORMALLY OPEN

TWO POSITION SELECTOR SWITCH
NORMALLY CLOSED

SPRING-RETURN

RELAYS

TAGGING IDENTIFICATION
1 = FUNCTION
2 = DESCRIPTION
3 = LOCATION
a = TYPE
CR- CONTROL RELAY
TD- TIME DELAY RELAY
M - MOTOR STARTER COIL
L - MOTOR STARTER COIL - LOW SPEED
H - MOTOR STARTER COIL - HIGH SPEED
F - MOTOR STARTER COIL - FORWARD
R - MOTOR STARTER COIL - REVERSE

b = TIME DELAY STATE
TDON - TIME DELAY ON ENERGIZATION
TDOFF - TIME DELAY ON DEENERGIZATION

c = TIMING RANGE/SETTING

RELAY COIL

NORMALLY OPEN
CONTROL CONTACT

NORMALLY CLOSED
CONTROL CONTACT

TIME DELAY CONTACT
NORMALLY OPEN
TIMED CLOSING

TIME DELAY CONTACT
NORMALLY CLOSED
TIMED OPENING

TIME DELAY CONTACT
NORMALLY OPEN
TIMED OPENING

TIME DELAY CONTACT
NORMALLY CLOSED
TIMED CLOSING

I/O

TAGGING IDENTIFICATION
1 = FUNCTION
2 = DESCRIPTION
3 = LOCATION
a = INPUT/OUTPUT
b = I/O VOLTAGE

PLC DISCRETE

PLC ANALOG

DIGITAL BUS

MISC

TAGGING IDENTIFICATION
1 = FUNCTION
2 = DESCRIPTION
3 = LOCATION

SOLENOID

CIRCUIT BREAKER

DISCONNECT

FUSE

TRANSIENT SURGE PROTECTION

MOTOR WINDING HEATER

MOTORS

TAGGING IDENTIFICATION
1 = FUNCTION
2 = DESCRIPTION
3 = LOCATION
a = HORSEPOWER

MOTOR - 1 PHASE

MOTOR - 3 PHASE

INDICATORS

TAGGING IDENTIFICATION
1 = FUNCTION
2 = DESCRIPTION
3 = LOCATION
a = LENS COLOR
R - RED
G - GREEN
W - WHITE
A - AMBER
B - BLUE
Y - YELLOW
C - CLEAR

PILOT LIGHT

PUSH-TO-TEST LIGHT

BEACON

HORN

MISC

VARISTOR

CAPACITOR

RESISTOR

BATTERY

DIODE

MOTOR OVERLOAD HEATERS

OVERLOAD CONTACT

DRAWOUT CONNECTION

GROUND

LIGHTNING ARRESTOR

CONTROL POWER TRANSFORMER

ELAPSED TIME METER

RTD

MISC PORT

ETHERNET PORT

SURGE PROTECTION DEVICE

TRANSFORMER
LINE/LOAD REACTOR

SPEED SWITCH

SPEED POTENTIOMETER

SHIELDED WIRE

LOOP

MOTORS

SCHEMATIC NUMBER — SCHEMATIC DESCRIPTION

DESCRIPTION

 # CONTROL SCHEMATIC

TAG NUMBER: TAG ← LOOP, * = XXX ← XXX-
PRIMARY EQUIPMENT LOOP
REFERENCE DWG. DWG1 DWG2
P&ID REFERENCE
ADDITIONAL REFERENCES
LOCATION LEGEND: XXX ABBREVIATION — IN/AT XXX LOCATION DESCRIPTION

TAMPA BAY WATER
Supplying Water To The Region
2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

BRETT A. LEE LICENSE No 68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: BAL Date: APRIL 2025
Drawn By: BAL Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
BAL Date: APRIL 2025
APPROVED BY:

carollo®
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

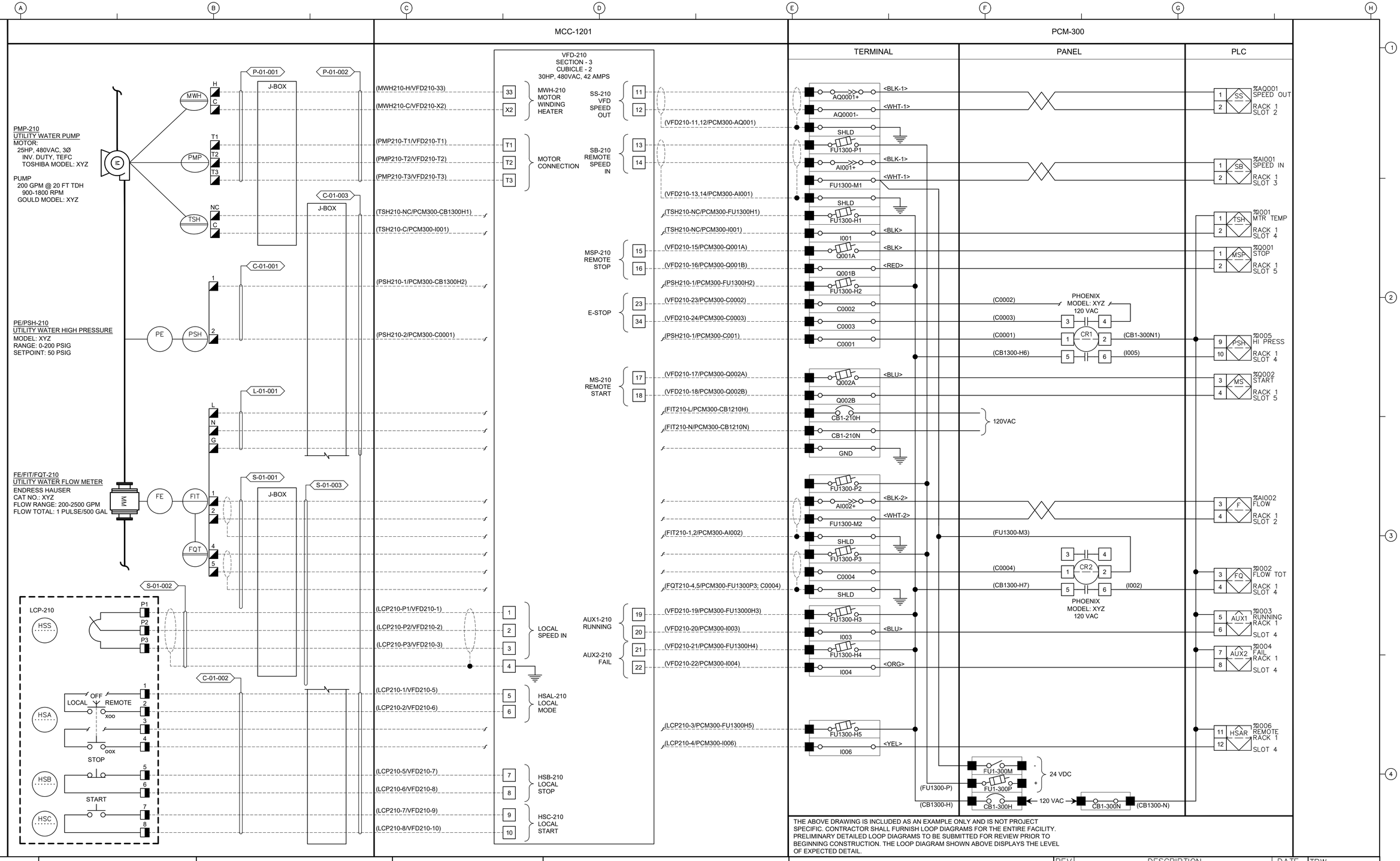
INSTRUMENTATION
SCHEMATIC SYMBOLS

REV	DESCRIPTION	DATE

TBW Drawing No.:
File Name:
Scale:
TBW Project No.: 07542
Sheet 00GN05
Sheet No.: 18 OF 37

LAST SAVED BY: LRivas

User: CAR111842 Spec: NAT CADD STD File: C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale: 1:1 SavedDate: 8/9/2022 Time: 10:21 Plot Date: Carl, Garyn; 9/25/2017; 15:33 ; Layout: LAYOUT1



THE ABOVE DRAWING IS INCLUDED AS AN EXAMPLE ONLY AND IS NOT PROJECT SPECIFIC. CONTRACTOR SHALL FURNISH LOOP DIAGRAMS FOR THE ENTIRE FACILITY. PRELIMINARY DETAILED LOOP DIAGRAMS TO BE SUBMITTED FOR REVIEW PRIOR TO BEGINNING CONSTRUCTION. THE LOOP DIAGRAM SHOWN ABOVE DISPLAYS THE LEVEL OF EXPECTED DETAIL.

User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 SavedDate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn; 9/25/2017; 15:33 ; Layout:LAYOUT1

LAST SAVED BY: LRivas

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY BRETT LEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

BRETT A. LEE LICENSE No 68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: BAL Date: APRIL 2025
Drawn By: BAL Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
APPROVED BY: BAL Date: APRIL 2025

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION

SAMPLE LOOP DRAWING

REV	DESCRIPTION	DATE

TBW Drawing No.:

File Name:

Scale:

TBW Project No.: 07542

Sheet 00GN06

Sheet No.: 19 OF 37

PROJECT NO. 203160-400000 FILE NAME: 203160_00GN06.dwg

EQUIPMENT DESCRIPTOR			
XXX		**XXX**	
AB	AERATION BASIN	GRI	GRINDER
AER	AERATOR	GRD	GRIT DEWATERING UNIT (CYCLONE)
AHU	AIR HANDLING UNIT	GRW	GRIT WASHER
ARC	AIR COMPRESSOR	GTW	GATEWAY
ARF	AIR FILTER	HPU	HYDRAULIC POWER UNIT
ARR	ARRESTOR	IC	ISOLATION CONTACTOR
ATS	AUTOMATIC TRANSFER SWITCH	INJ	INJECTOR
AUG	AUGER	LAG	LAGOON
AVR	AIR VACUUM RELIEF	INM	INDUCTION MIXER
BAR	BAR SCREEN	MAU	MAKE-UP AIR UNIT
BAS	BASIN	MIX	MIXER
BC	BYPASS CONTACTOR	MS	MOTOR STARTER
BFP	BELT FILTER PRESS	MPR	MOTOR PROTECTION RELAY
BIT	BIO TOWER	MTR	MOTOR
BLO	BLOWER	NP	NETWORK PANEL
BOI	BOILER	NR	NETWORK RACK
BUR	BURNER	OZG	OZONE GENERATOR
CAL	CALIBRATION COLUMN	PBU	POLYMER BLENDING UNIT
CB	CIRCUIT BREAKER	PCM	PROCESS CONTROL MODULE
CC	COMMUNICATIONS CABINET	PDC	POWER DISTRIBUTION CENTER
CEN	CENTRIFUGE	PLO	PLOW
CHI	CHILLER	PMP	PUMP
CHL	CHLORINATOR	PPR	PUMP PROTECTION RELAY
CLA	CLASSIFIER	PQM	POWER QUALITY METER
CLR	CLARIFIER	PRE	PRESS
CLU	CLUTCH	PUD	PULSATION DAMPENER
COA	COALESCER	REC	RECEIVER
COL	COLLECTOR	RVSS	REDUCED VOLTAGE STARTER
CON	CONVEYOR	RIO	REMOTE IO PANEL
COO	COOLER	RES	RESERVOIR
COS	COMPOSITE SAMPLER	RUD	ROLL UP DOOR
CPT	CONTROL POWER TRANSFORMER	SCB	SCRUBBER
CF	CARTRIDGE FILTER	SCR	SCREEN
CR	CONTROL RELAY	SCW	SCREW
CRN	BRIDGE CRANE/HOIST/MONORAIL	SEL	SEAL
CYC	CYCLONE CLASSIFIER	SF	SUPPLY FAN
DAM	DAMPER	SHA	SHAKER
DCD	DC DRIVE	SLA	SLAKER
DEC	DECARBONATOR	SLC	SLUDGE COLLECTOR
DGC	DIGESTER GAS CONDITIONING	SPD	SURGE PROTECTION DEVICE
DIF	DIFFUSER	SRR	STIRRER
DIG	ANAEROBIC DIGESTER	STR	STRAINER
DIS	DISTRIBUTOR	SV	SOLENOID VALVE
DISC	DISCONNECT	SWC	SCREENING WASHER COMPACTOR
DRY	DRYER	THI	THICKENER
DSC	DUST COLLECTOR	TIP	TIPPING TROUGH
EDU	EDUCTOR	TNK	TANK
EF	EXHAUST FAN	TRA	TRAP
ES_	ETHERNET SWITCH	UPS	UNINTERRUPTIBLE POWER SUPPLY
ERD	ENERGY RECOVERY DEVICE	UVB	UV BANK
EUH	ELECTRIC UNIT HEATER	UVR	ULTRAVIOLET REACTOR
EVP	EVAPORATOR	VAL	VALVE
EXC	EXCHANGER	LCP	LOCAL CONTROL PANEL
FACP	FIRE ALARM CONTROL PANEL	VCP	VENDOR CONTROL PANEL
FAN	FAN	VFD	VARIABLE FREQUENCY DRIVE
FDR	FEEDER	WEL	WELL
FLA	FLARE	*CV	* CONTROL VALVE
FLC	FLOCCULATOR	*V	* VALVE
FLT	FILTER	*CG	* CONTROL GATE
FU	FUSE	*G	* GATE
GAT	GATE		* = A (ANALYTICAL), F (FLOW), L (LEVEL)
GEN	ENGINE GENERATOR		P (PRESSURE), T (TEMPERATURE)
GRC	GRIT CHAMBER		

EQUIPMENT TAG: XXX – Y – Z
AA = UNIT PROCESS
XXX = FUNCTIONAL IDENTIFICATION
Y = LOOP NUMBER
Z – OPTIONAL SUFFIX

	LIQUID STREAM	RANGE		
XXX	AA	Y	Z	AREA DESCRIPTION
	00			SITE/GENERAL
	10			HIGH SERVICE PUMP BUILDING
PI		4A		PUMP 4 SUCTION PRESSURE GAUGE
PSL		4		PUMP 4 SUCTION PRESSURE SWITCH LOW
PI		4B		PUMP 4 DISCHARGE PRESSURE GAUGE
PSH		4		PUMP 4 DISCHARGE PRESSURE SWITCH HIGH
PMP		1		EXISTING HIGH SERVICE PUMP 1 AND VFD
PMP		2		EXISTING HIGH SERVICE PUMP 3 AND VFD
PMP		3		EXISTING HIGH SERVICE PUMP 3 AND VFD
PMP		4		NEW HIGH SERVICE PUMP 4 AND VFD
FIT		2		PUMP DISCHARGE HEADER VENTURI (RECALIBRATED)
FSL		1		PUMP 1 DISCHARGE FLOW SWITCH
FSL		2–2		PUMP 2 DISCHARGE FLOW SWITCH
FSL		3		PUMP 3 DISCHARGE FLOW SWITCH
FSL		4		PUMP 4 DISCHARGE FLOW SWITCH

User:CAR1111842 Spec:NAT CADD STD File:C:\USERS\CAR1111842\ONEDRIVE – BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 SavedDate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn; 9/25/2017; 15:33 ; Layout:LAYOUT1

LAST SAVED BY: LRivas

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY BRETT LEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

BRETT A. LEE LICENSE No 68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: BAL Date: APRIL 2025
Drawn By: BAL Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
APPROVED BY: BAL Date: APRIL 2025

carollo®
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888–9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION
EQUIPMENT TAGGING
(WATER TREATMENT)

REV	DESCRIPTION	DATE

TBW Drawing No.:

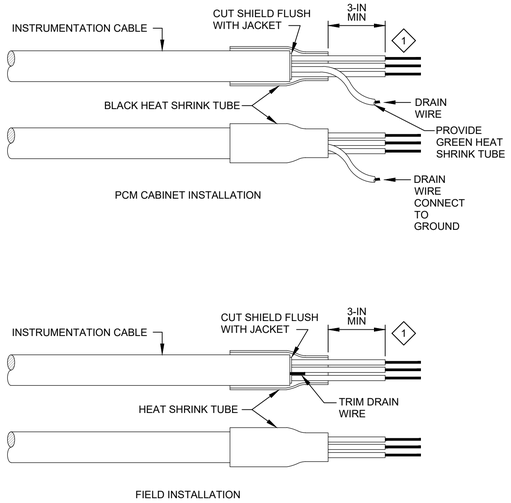
Sheet 00GN07

File Name:

Scale: TBW Project No.: 07542

Sheet No.: 20 OF 37

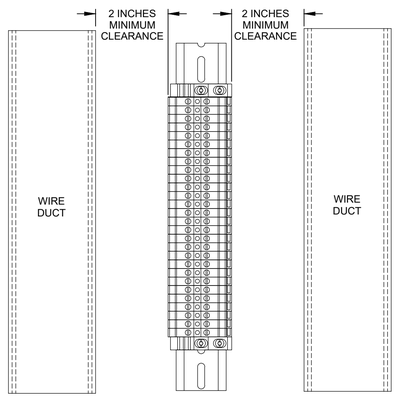
PROJECT NO. 203160-400000 FILE NAME: 203160_00GN07.dwg



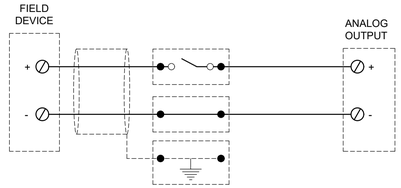
(#) KEY NOTES:

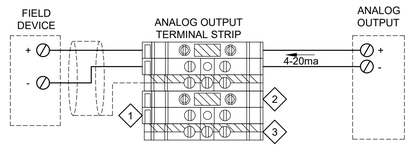
1. SIMILAR FOR 2-CONDUCTOR SHIELDED CABLE.

NE101 TYP S — TERMINATION DETAILS INSTRUMENTATION SHIELDED CABLE



NE102 TYP S — TERMINAL BLOCK CLEARANCE





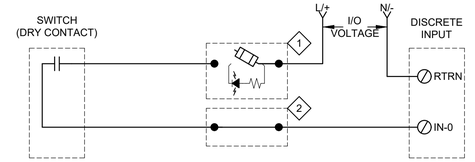
GENERAL NOTES:

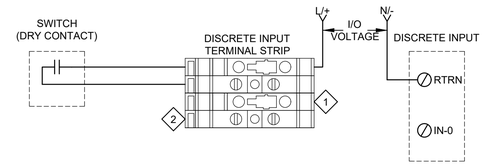
1. GROUND SHIELD AT ANALOG TERMINAL STRIP INSIDE PCM PANEL.

(#) KEY NOTES:

1. FEED THROUGH TERMINAL BLOCK.
2. TEST BLOCK WITH KNIFE DISCONNECT SWITCH.
3. GROUNDING TERMINAL BLOCK.

NE305 TYP S — ANALOG OUTPUT TERMINAL DETAILS 24VDC ANALOG OUTPUT SCHEMATIC





GENERAL NOTES:

1. REFER TO SPECIFICATIONS FOR PLC DISCRETE I/O VOLTAGE.

(#) KEY NOTES:

1. FUSED TERMINAL/DISCONNECT BLOCK.
2. FEED THROUGH TERMINAL BLOCK.

NE306 TYP S — DISCRETE INPUT TERMINAL DETAILS (DRY CONTACT) SCHEMATIC

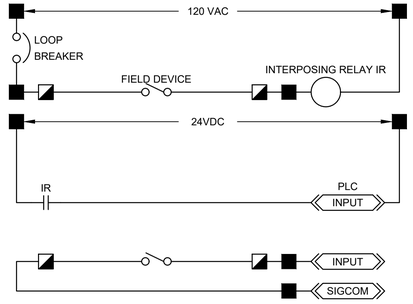
GENERAL NOTES:

1. REFER TO SPECIFICATIONS FOR PLC DISCRETE I/O VOLTAGE.

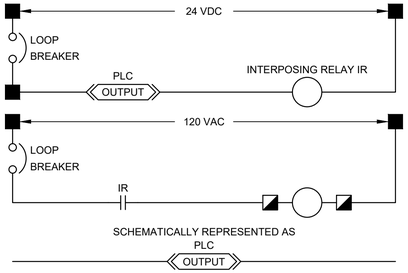
(#) KEY NOTES:

1. FUSED TERMINAL/DISCONNECT BLOCK.
2. FEED THROUGH TERMINAL BLOCK.
3. ISOLATION RELAY.

NE307 TYP S — DISCRETE OUTPUT TERMINAL DETAILS (PANEL SOURCED) SCHEMATIC



NE314 TYP S — TYPICAL PLC 24VDC INPUT SCHEMATIC



NE315 TYP S — TYPICAL PLC 24VDC OUTPUT SCHEMATIC

TAMPA BAY WATER
Supplying Water To The Region
2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY BRETT LEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

BRETT A. LEE LICENSE No.68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: CE Date: APRIL 2025
Drawn By: CE Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
BAL Date: APRIL 2025
APPROVED BY:

carollo®
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT PLANT – PUMP #4

INSTRUMENTATION

TYPICAL DETAILS 1

REV	DESCRIPTION	DATE

TBW Drawing No.:

Sheet 00TN01

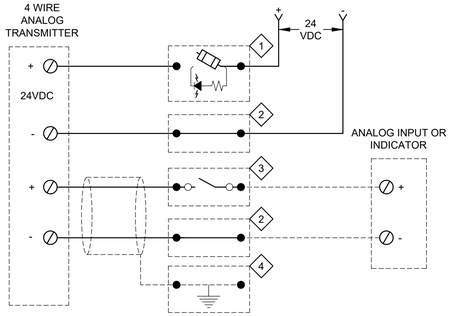
File Name:

Scale: TBW Project No.:07542

Sheet No.: 33 OF 37

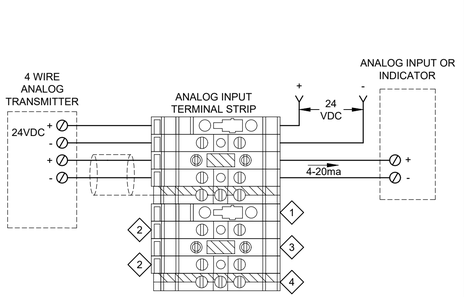
PROJECT NO. 203160-400000 FILE NAME: 203160_00TN01.dwg

LAST SAVED BY: epark
User:CAR111842 Spec:NAT CAD0 STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 SavedDate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1



KEY NOTES:

1. FUSED TERMINAL/DISCONNECT BLOCK.
2. FEED THROUGH TERMINAL BLOCK.
3. TEST BLOCK WITH KNIFE DISCONNECT SWITCH.
4. GROUNDING TERMINAL BLOCK.

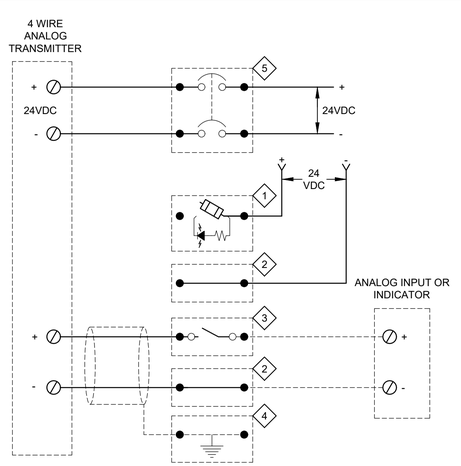


GENERAL NOTES:

1. GROUND SHIELD AT ANALOG TERMINAL STRIP INSIDE PCM PANEL.
2. (-)24VDC RETURNS OR COMMONS CAN'T BE PROTECTED OR HAVE A DISCONNECTING MEANS ON SYSTEMS WITH GROUNDED 24VDC POWER SUPPLIES.

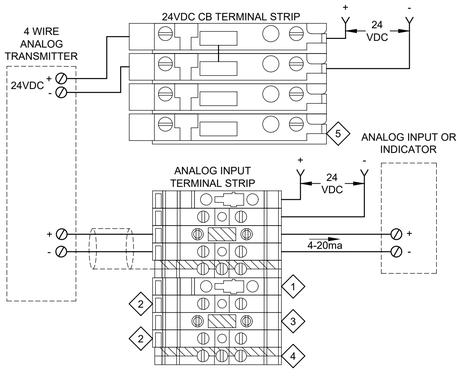
FOUR WIRE TRANSMITTER WITH (GROUNDED) 24VDC POWER SUPPLY SCHEMATIC

NE304 TYP — ANALOG INPUT TERMINAL DETAILS



KEY NOTES:

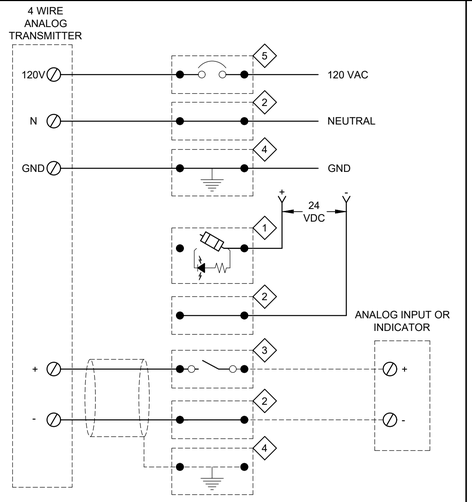
1. FUSED TERMINAL/DISCONNECT BLOCK.
2. FEED THROUGH TERMINAL BLOCK.
3. TEST BLOCK WITH KNIFE DISCONNECT SWITCH.
4. GROUNDING TERMINAL BLOCK.
5. 2-POLE 24VDC CIRCUIT BREAKER.



GENERAL NOTES:

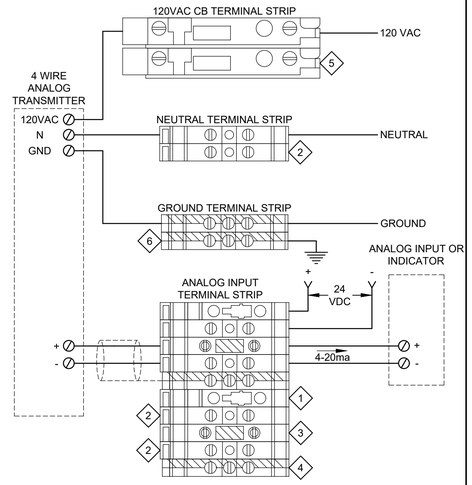
1. GROUND SHIELD AT ANALOG TERMINAL STRIP INSIDE PCM PANEL.
2. PROVIDE (-)24VDC RETURNS WITH PROTECTION ON ALL UN-GROUNDED 24VDC POWER SUPPLIES.

FOUR WIRE TRANSMITTER WITH (UN-GROUNDED) 24VDC POWER SUPPLY SCHEMATIC



KEY NOTES:

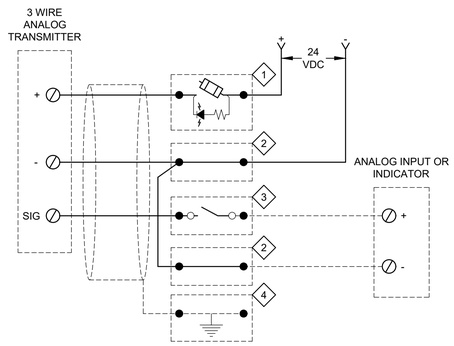
1. FUSED TERMINAL/DISCONNECT BLOCK.
2. FEED THROUGH TERMINAL BLOCK.
3. TEST BLOCK WITH KNIFE DISCONNECT SWITCH.
4. GROUNDING TERMINAL BLOCK.
5. 120VAC CIRCUIT BREAKER.



GENERAL NOTES:

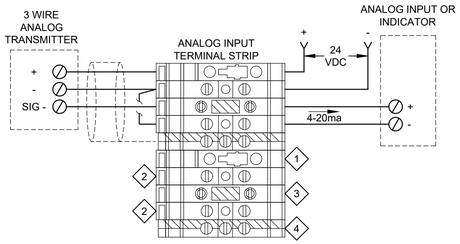
1. GROUND SHIELD AT ANALOG TERMINAL STRIP INSIDE PCM PANEL.
2. PROVIDE 120VAC CIRCUIT BREAKER FOR EACH INSTRUMENT.

FOUR WIRE (120VAC) TRANSMITTER SCHEMATIC



KEY NOTES:

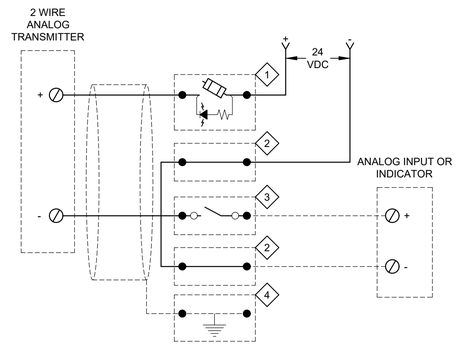
1. FUSED TERMINAL/DISCONNECT BLOCK.
2. FEED THROUGH TERMINAL BLOCK.
3. TEST BLOCK WITH KNIFE DISCONNECT SWITCH.
4. GROUNDING TERMINAL BLOCK.



GENERAL NOTES:

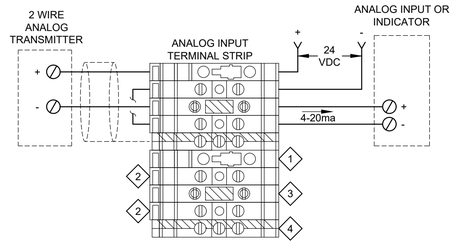
1. GROUND SHIELD AT ANALOG TERMINAL STRIP INSIDE PCM PANEL.

24VDC THREE WIRE ANALOG TRANSMITTER SCHEMATIC



KEY NOTES:

1. FUSED TERMINAL/DISCONNECT BLOCK.
2. FEED THROUGH TERMINAL BLOCK.
3. TEST BLOCK WITH KNIFE DISCONNECT SWITCH.
4. GROUNDING TERMINAL BLOCK.



GENERAL NOTES:

1. GROUND SHIELD AT ANALOG TERMINAL STRIP INSIDE PCM PANEL.

24VDC TWO WIRE TRANSMITTER SCHEMATIC

LAST SAVED BY: eparker

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY BRETT LEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

BRETT A. LEE LICENSE No 68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: CE Date: APRIL 2025
Drawn By: CE Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
BAL Date: APRIL 2025
APPROVED BY:

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

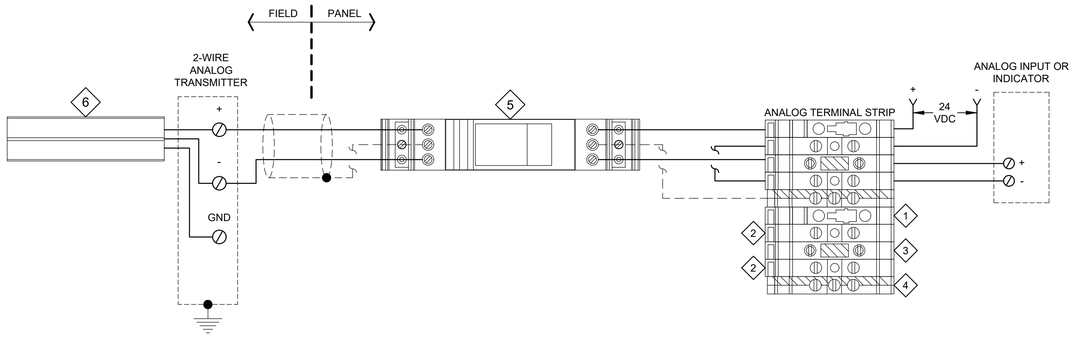
LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION
TYPICAL DETAILS 2

REV	DESCRIPTION	DATE

TBW Drawing No.:
Sheet 00TN02
File Name:
Scale: TBW Project No.: 07542
Sheet No.: 34 OF 37

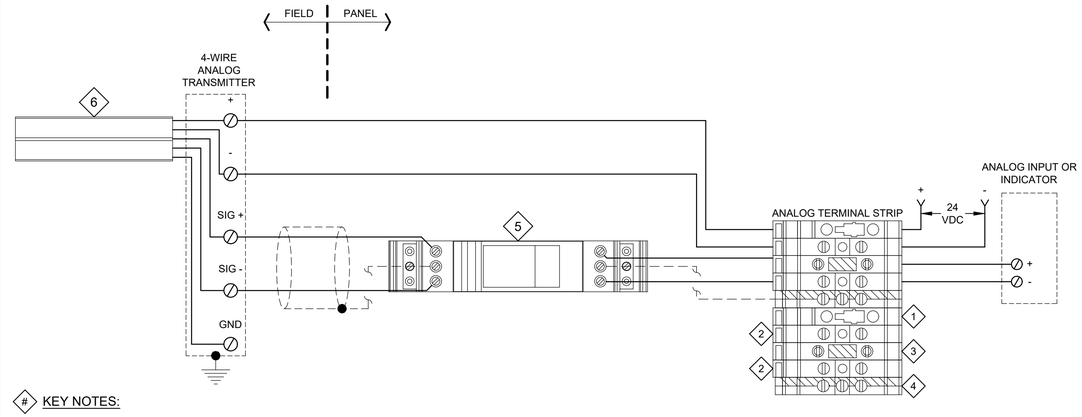
User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 Savedate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1



KEY NOTES:

1. FUSED TERMINAL/DISCONNECT BLOCK.
2. FEED THROUGH TERMINAL BLOCK.
3. TEST BLOCK WITH KNIFE DISCONNECT SWITCH.
4. GROUNDING TERMINAL BLOCK. BONDED TO EQUIPMENT GROUND VIA DIN RAIL MOUNTING FOOT.
5. PANEL MOUNTED SURGE PROTECTIVE DEVICE. BONDED TO EQUIPMENT GROUND VIA DIN RAIL MOUNTING FOOT.
6. FIELD DEVICE MOUNTED SURGE PROTECTIVE DEVICE. BONDED TO EQUIPMENT GROUND VIA FIELD DEVICE GROUND TERMINAL.

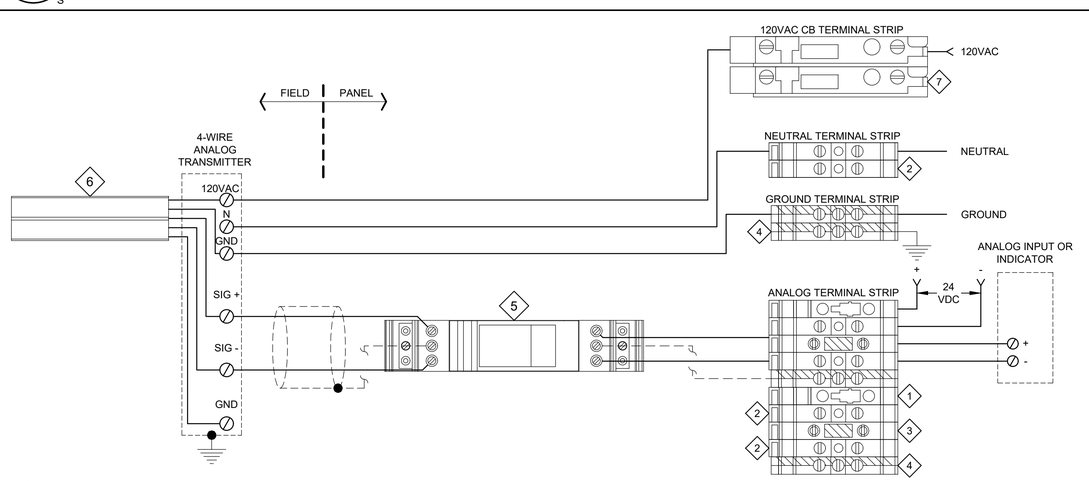
NE350 TYP S — TYPICAL SURGE PROTECTION WIRING
2-WIRE ANALOG TRANSMITTER



KEY NOTES:

1. FUSED TERMINAL/DISCONNECT BLOCK.
2. FEED THROUGH TERMINAL BLOCK.
3. TEST BLOCK WITH KNIFE DISCONNECT SWITCH.
4. GROUNDING TERMINAL BLOCK. BONDED TO EQUIPMENT GROUND VIA DIN RAIL MOUNTING FOOT.
5. PANEL MOUNTED SURGE PROTECTIVE DEVICE. BONDED TO EQUIPMENT GROUND VIA DIN RAIL MOUNTING FOOT.
6. FIELD DEVICE MOUNTED SURGE PROTECTIVE DEVICE. BONDED TO EQUIPMENT GROUND VIA FIELD DEVICE GROUND TERMINAL.

NE352 TYP S — TYPICAL SURGE PROTECTION WIRING
4-WIRE ANALOG TRANSMITTER
WITH GROUNDED 24VDC POWER SUPPLY

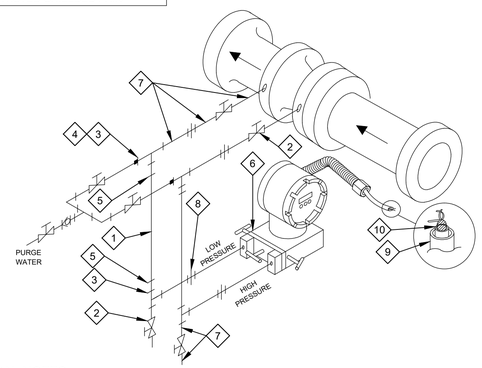


KEY NOTES:

1. FUSED TERMINAL/DISCONNECT BLOCK.
2. FEED THROUGH TERMINAL BLOCK.
3. TEST BLOCK WITH KNIFE DISCONNECT SWITCH.
4. GROUNDING TERMINAL BLOCK. BONDED TO EQUIPMENT GROUND VIA DIN RAIL MOUNTING FOOT.
5. PANEL MOUNTED SURGE PROTECTIVE DEVICE. BONDED TO EQUIPMENT GROUND VIA DIN RAIL MOUNTING FOOT.
6. FIELD DEVICE MOUNTED SURGE PROTECTIVE DEVICE. BONDED TO EQUIPMENT GROUND VIA FIELD DEVICE GROUND TERMINAL.
7. 120VAC CIRCUIT BREAKER.

NE354 TYP S — TYPICAL SURGE PROTECTION WIRING
4-WIRE ANALOG TRANSMITTER
120VAC POWER SUPPLY

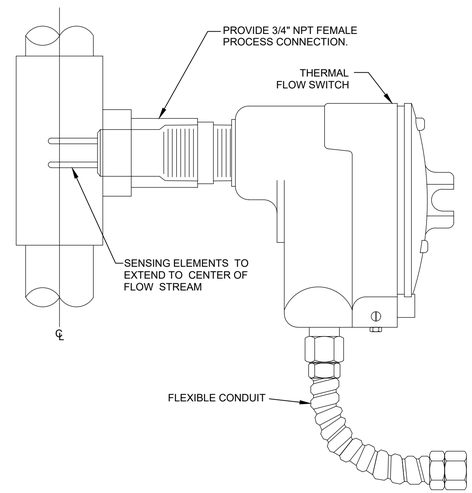
NO.	DESCRIPTION
1	TUBING 1/2"
2	VALVE 1/2"
3	TEE 1/2"
4	PLUG 1/2"
5	ADAPTER 1/2" PIPE X 1/2" TUBE
6	3 VALVE MANIFOLD 1/2" NPT
7	PIPE 1/2"
8	UNION 1/2"
9	1/2" FLEXIBLE CONDUIT
10	TWISTED-SHIELDED PAIR



GENERAL NOTES:

1. SLOPE ALL HORIZONTAL RUNS AT LEAST 1" PER 1'-0".

NF101 TYP — D/P TRANSMITTER - LIQUID SERVICE
INSTALLATION DETAIL



NF111 TYP S — THERMAL FLOW SWITCH MOUNTING DETAIL

TAMPA BAY WATER
Supplying Water To The Region
2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY BRETT LEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

BRETT A. LEE LICENSE No 68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: CE Date: APRIL 2025
Drawn By: CE Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
BAL Date: APRIL 2025
APPROVED BY:

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION
TYPICAL DETAILS 3

REV	DESCRIPTION	DATE

TBW Drawing No.:

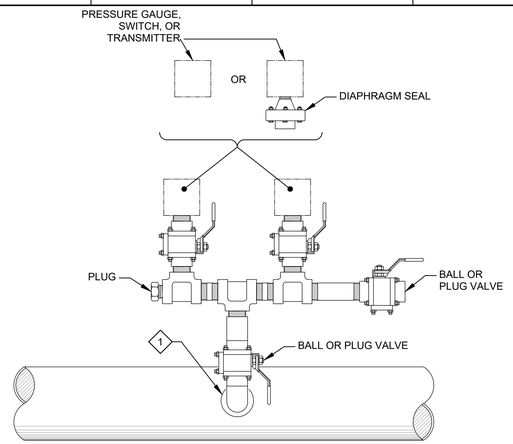
File Name:

Scale: TBW Project No.: 07542

Sheet 00TN03

Sheet No.: 35 OF 37

LAST SAVED BY: eparker
User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 SavedDate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1



GENERAL NOTES:

1. PROVIDE DIAPHRAGM SEALS IF REQUIRED BY INSTRUMENT DATA SHEETS OR SPECIFICATIONS.
2. PROVIDE INSTRUMENT ASSEMBLY WITH 1" VALVES AND PIPING, OR AS APPROVED BY ENGINEER. USE STAINLESS STEEL OR AS REQUIRED FOR COMPATIBILITY WITH PROCESS FLUID. PROVIDE FITTINGS FOR INSTRUMENT CONNECTIONS AS REQUIRED.
3. REFER TO MECHANICAL DRAWINGS FOR INSTRUMENT LOCATION AND PROCESS PIPE ORIENTATION.

KEY NOTES:

1. PROVIDE SIDE-TAP PROCESS CONNECTION. THREADED TAP OR SADDLE CONNECTION FOR DUCTILE IRON PIPE. WELD-O-LET OR THREAD-O-LET FOR WELDED PIPE. TEE OR REDUCING TEE FOR NON-METALLIC PIPE AND PIPES 1" OR SMALLER.

NP501 TYP

MULTIPLE PRESSURE INSTRUMENTS MOUNTING DETAIL

LAST SAVED BY: eparker
User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 SavedDate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1

TAMPA BAY WATER
Supplying Water To The Region
2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY BRETT LEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

BRETT A. LEE LICENSE No.68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: CE Date: APRIL 2025
Drawn By: CE Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
BAL Date: APRIL 2025
APPROVED BY:

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION
TYPICAL DETAILS 4

REV	DESCRIPTION	DATE

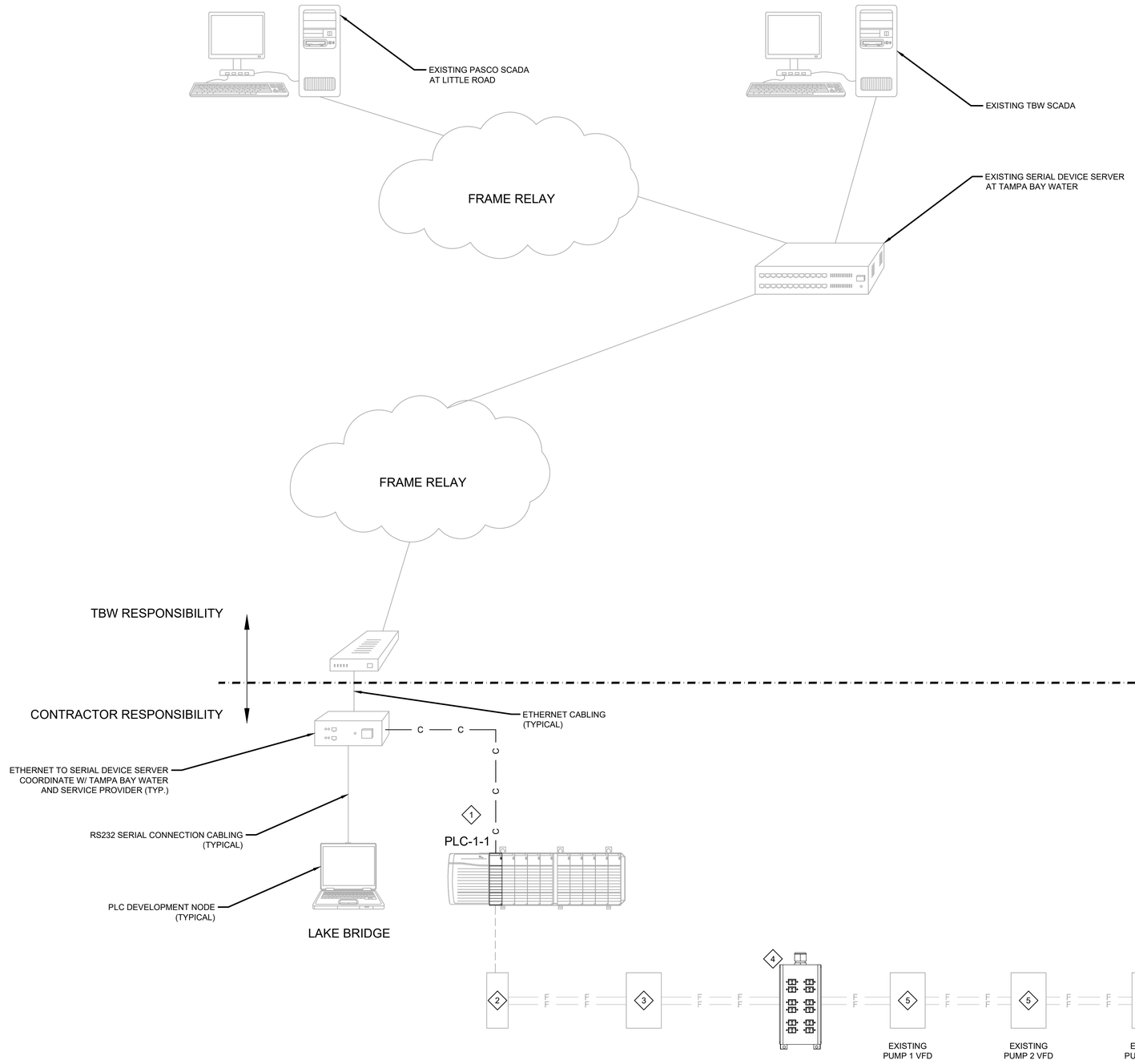
File Name:

Scale: TBW Project No.: 07542

TBW Drawing No.:

Sheet 00TN04

Sheet No.: 36 OF 37



TBW RESPONSIBILITY
CONTRACTOR RESPONSIBILITY

KEY NOTES:

1. REPLACE ORIGINAL AUTOMATION DIRECT D2-260 PLC CPU WITH NEW AUTOMATION DIRECT H2-DM1E CPU. COPY ORIGINAL PROGRAM AND MIGRATE TO NEW DO-MORE SOFTWARE ACCOMMODATE CONTROL OF THE NEW, FOURTH PUMP.
2. EXISTING AUTOMATION DIRECT RS-232/485 CONVERTER.
3. EXISTING PHOENIX CONTACT RS-232/FIBER OPTIC CONVERTER.
4. NEW FIBER OPTIC PATCH PANEL.
5. EXISTING PHOENIX CONTACT MODEL #2708423 RS-232-FIBER OPTIC CONVERTER.
6. NEW PHOENIX CONTACT MODEL #2708423 OR MODEL 2708588 RS-232-FIBER OPTIC CONVERTER FOR FOURTH PUMP.

User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 SavedDate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1
LAST SAVED BY: LRivas

TAMPA BAY WATER
Supplying Water To The Region
2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY BRETT LEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

BRETT A. LEE LICENSE No 68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: BAL Date: APRIL 2025
Drawn By: LR Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
BAL Date: APRIL 2025
APPROVED BY:

carollo®
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION

NETWORK BLOCK DIAGRAM

REV	DESCRIPTION	DATE

TBW Drawing No.:

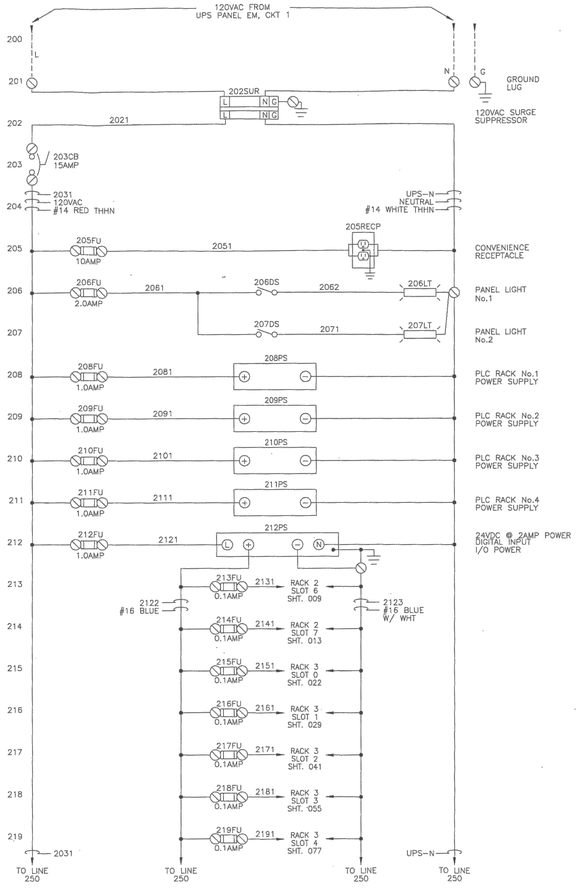
Sheet 04N01

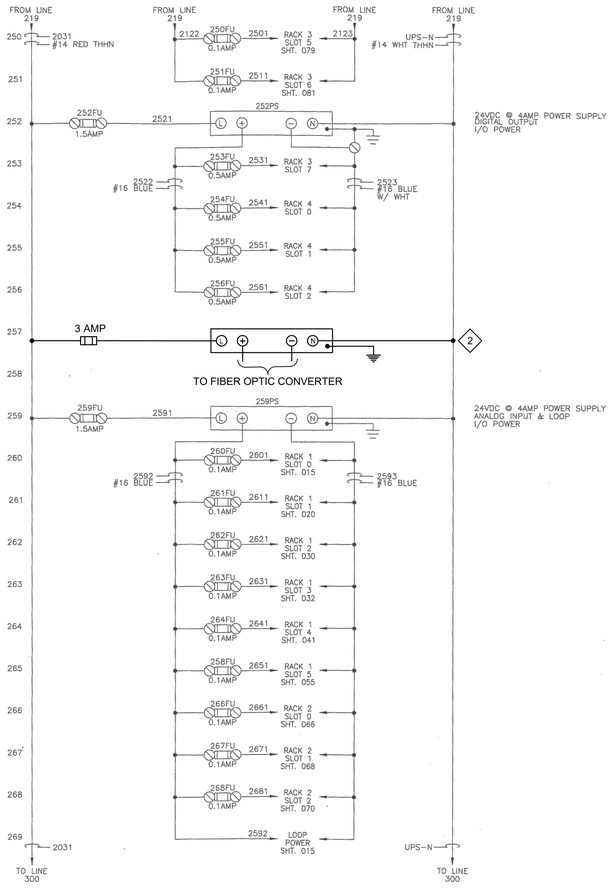
File Name:

Scale: TBW Project No.: 07542

Sheet No.: 21 OF 37

PROJECT NO. 203160-400000 FILE NAME: 203160_04N01.dwg





GENERAL NOTES:

1. RE-USE EXISTING PLC CABINET. COORDINATE DEMOLITION AND REPLACE WITH SPECIFICATION REQUIREMENTS. TURN OVER ANY REMOVED EQUIPMENT TO TAMPA BAY WATER AS SPARE COMPONENTS.
2. COORDINATE POWER AND CONTROL SHUT-DOWN WITH TAMPA BAY WATER.
3. REFER TO DETAILS NE101/TYP, NE102/TYP, NE304/TYP, NE305/TYP, NE306/TYP, NE307/TYP, NE314/TYP, NE315/TYP, NE350/TYP, NE352/TYP, NE354/TYP.

KEY NOTES:

1. REPLACE ORIGINAL AUTOMATION DIRECT D2-260 PLC CPU WITH NEW AUTOMATION DIRECT H2-DM1E CPU. COPY ORIGINAL PROGRAM AND EDIT TO ACCOMMODATE CONTROL OF THE NEW, FOURTH PUMP.
2. NEW PHOENIX CONTACT MODEL #2708423 OR MODEL 2708588 RS-232-FIBER OPTIC CONVERTER FOR FOURTH PUMP.

User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 SaveDate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1

TAMPA BAY WATER
Supplying Water To The Region
LAST SAVED BY: LRivas

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY BRETT LEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

BRETT A. LEE LICENSE No 68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: BAL Date: APRIL 2025
Drawn By: LM Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
BAL Date: APRIL 2025
APPROVED BY:

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION

PLC CABINET MODIFICATIONS

REV	DESCRIPTION	DATE

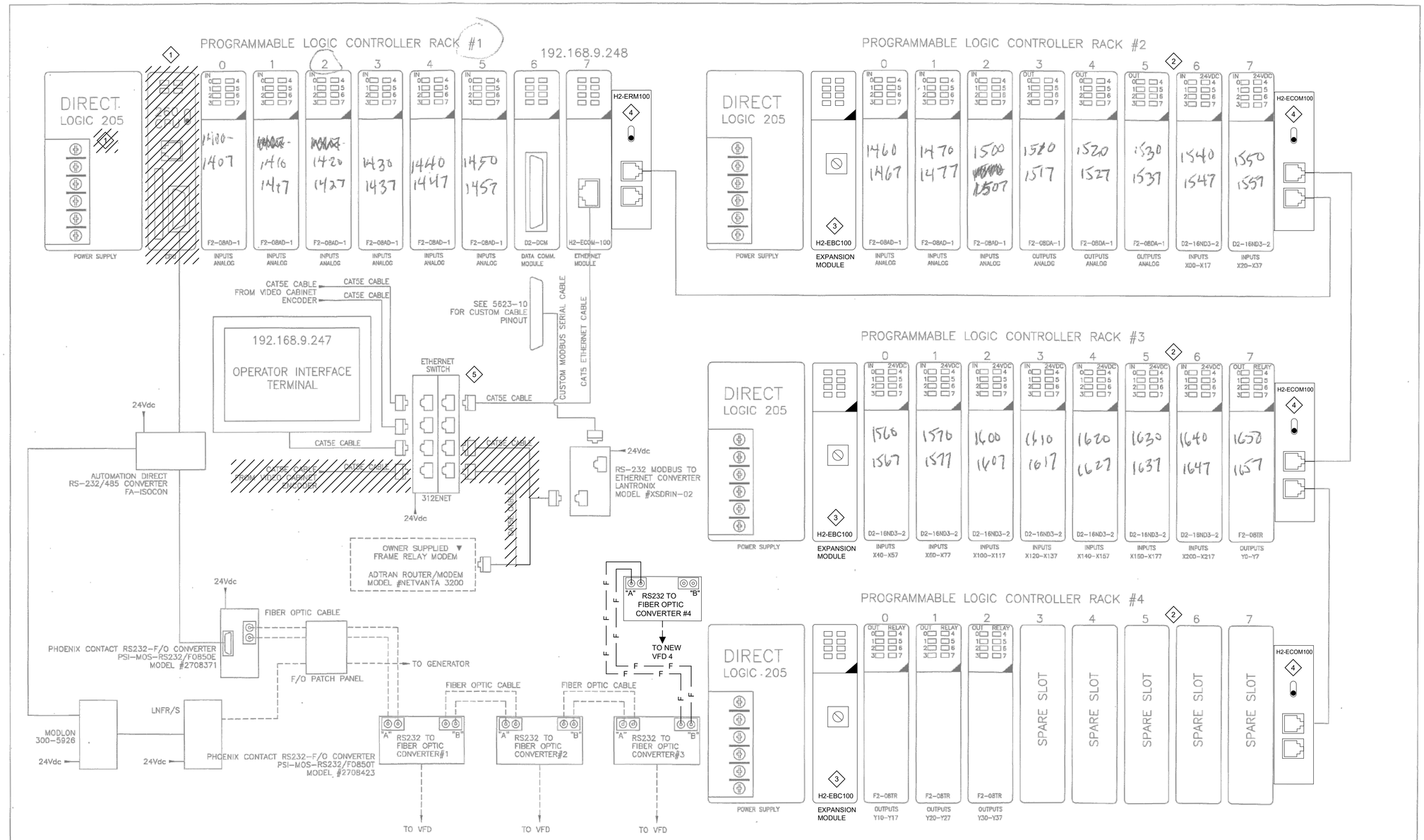
File Name:

Scale: TBW Project No.: 07542

TBW Drawing No.: 05N01

Sheet No.: 22 OF 37

PROJECT NO. 203160-400000 FILE NAME: 203160_05N01.dwg



GENERAL NOTES:

1. RE-USE EXISTING PLC CABINET. COORDINATE DEMOLITION AND REPLACE WITH SPECIFICATION REQUIREMENTS. TURN OVER ANY REMOVED EQUIPMENT TO TAMPA BAY WATER AS SPARE COMPONENTS.
2. COORDINATE POWER AND CONTROL SHUT-DOWN WITH TAMPA BAY WATER.

KEY NOTES:

1. REPLACE ORIGINAL AUTOMATION DIRECT D2-260 PLC CPU WITH NEW AUTOMATION DIRECT H2-DM1E CPU. COPY ORIGINAL PROGRAM AND EDIT TO ACCOMMODATE CONTROL OF THE NEW, FOURTH PUMP.
2. UTILIZE EXISTING SPARE I/O CARDS FOR SIGNALS FROM NEW HIGH SERVICE PUMP 4. ADD FOURTH PUMP INTO PROGRAMMING FOR EXISTING ALTERNATION SEQUENCE, LEAD/LAG SEQUENCE, PRESSURE CONTROL STRATEGY. INSTALLING CONTRACTOR TO COORDINATE WITH TBW PROGRAMMER TO UPDATE HMI GRAPHICS SCREENS, ALARMS, HISTORIAN, AND ETHERNET IP ADDRESS.
3. REPLACE EXISTING DC-CM MODULE WITH NEW H2-EBC100 EXPANSION MODULE.
4. REPLACE EXISTING D2-EM MODULES WITH H2-ERM100 OR H2-EBC100 AS REQUIRED TO COMMUNICATE FROM THE MASTER PLC TO THE RIO-RACKS.
5. EXISTING ETHERNET SWITCH TO REMAIN IN PLACE. CONTRACTOR SHALL ONLY REPLACE THOSE ITEMS IN THE EXISTING PLC CABINET REQUIRED TO MAKE THE NEW PLC WORK.

LEGEND

- ● – DEVICE LOCATED IN FIELD, SUPPLIED BY CCI
- ▼ – DEVICE LOCATED IN FIELD, SUPPLIED BY OTHERS
- ▽ – EXISTING DEVICE
- ———— – DENOTES FIELD WIRING OR CABLE
- ———— – DENOTES CAT-5 CABLE
- ———— – DENOTES FIBER OPTIC CABLE.
- ———— – DENOTES CHASSIS EXPANSION CABLE
- (XX) – TERMINAL NUMBER REQ'D BY VENDOR

No.	Revision:	Revision By:	Date:
A	ORIGINAL	A.J.V.	8/07
B	REVISED PER WHARTON SMITH	A.J.V.	11/07
	TRANSMITTAL #00220		
C	RE-SUBMITTAL #2	A.J.V.	3/08
1	AS FABRICATED	A.J.V.	7/08
2	AS BUILT	S.R.S.	2/09

Commerce Controls Incorporated
BUILDERS OF SPECIAL ELECTRICAL CONTROL SYSTEMS

TAMPA BAY WATER
CENTRAL PASCO IMPROVEMENTS PROJECT
LAKE BRIDGE WTP

Sub Title: BOOSTER PUMP STATION PANEL PLC INTERCONNECTION DIAGRAM

Designed by:	Drawn By:	Date:	Job No.	Sheet No.
J.V.	A.J.V.	8/07	5623-1	008

JOB No. – 5623

5623-01-008.dwg-05/08/09-22:54

User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 Savedate:8/9/2022 Time:10:21 Plot Date: Cari, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT

LAST SAVED BY: LRwas

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY BRETT LEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

BRETT A LEE LICENSE No 68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: BAL Date: APRIL 2025
Drawn By: ML Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
APPROVED BY: BAL Date: APRIL 2025

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT PLANT – PUMP #4

INSTRUMENTATION

PLC CABINET MODIFICATIONS 2

REV	DESCRIPTION	DATE

TBW Drawing No.:

Sheet 05N02

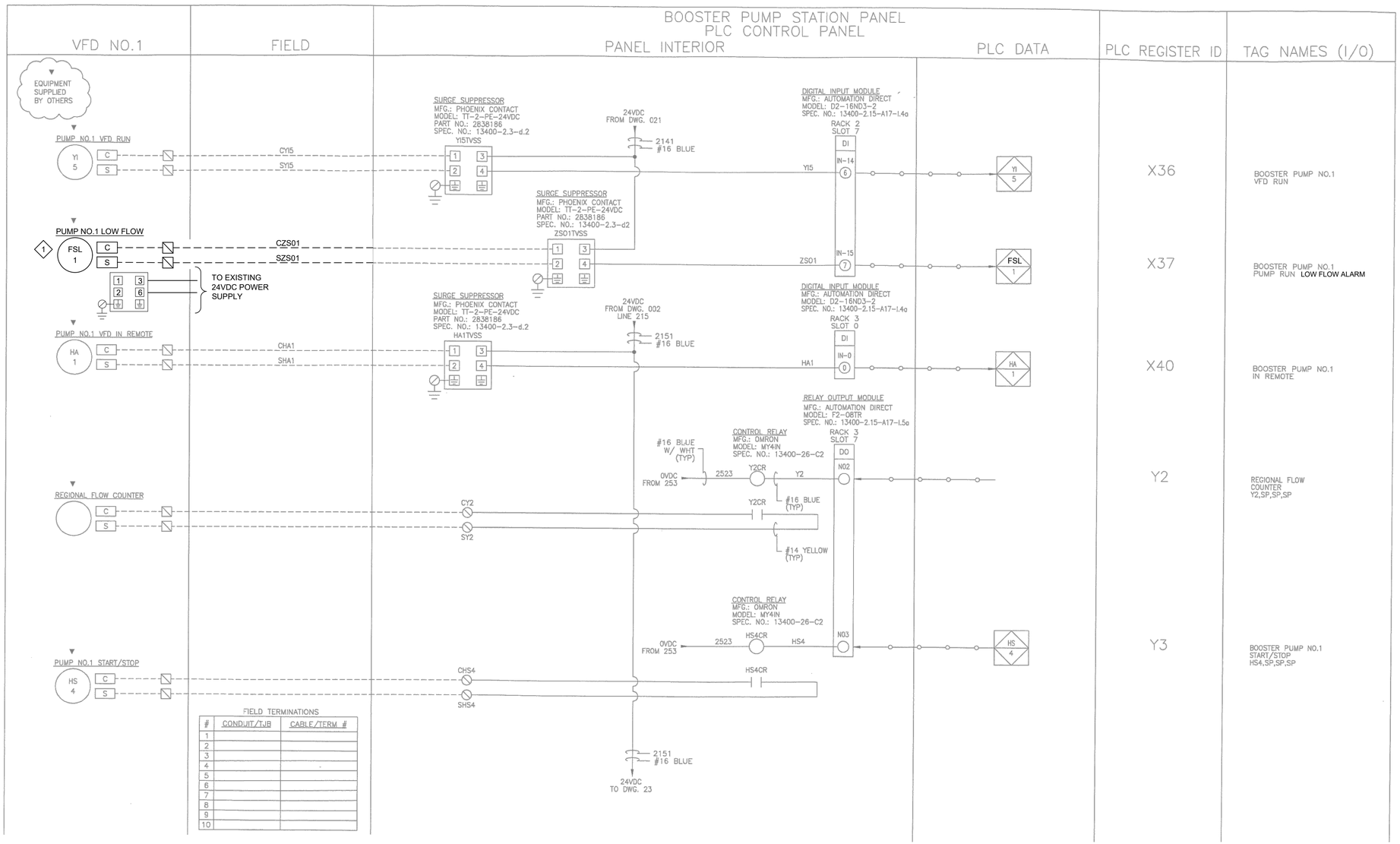
File Name:

Scale: TBW Project No.: 07542

Sheet No.: 23 OF 37

PROJECT NO. 203160-400000 FILE NAME: 203160_05N02.dwg

User: CAR1111842 Spec: NAT CADD STD File: C:\USERS\CAR1111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale: 1:1 Saved Date: 8/9/2022 Time: 10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout: LAYOUT1



KEY NOTES:

1. THIS FUNCTIONALITY HAS BEEN ABANDONED. UNTERMINATE THESE POSITION CONTACTS FROM THE EXISTING PUMP'S CHECK VALVE AND USE THIS I/O POINT TO CONNECT THE NEW PUMP'S DISCHARGE LOW FLOW SWITCH.

LAST SAVED BY: LRivas

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY BRETT LEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

BRETT A. LEE LICENSE No 68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: BAL Date: APRIL 2025
Drawn By: MLL Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
BAL Date: APRIL 2025
APPROVED BY:

carollo®
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION

PLC CABINET PUMP 1 SCHEMATIC MODIFICATION

REV	DESCRIPTION	DATE

TBW Drawing No.:

Sheet 06N01

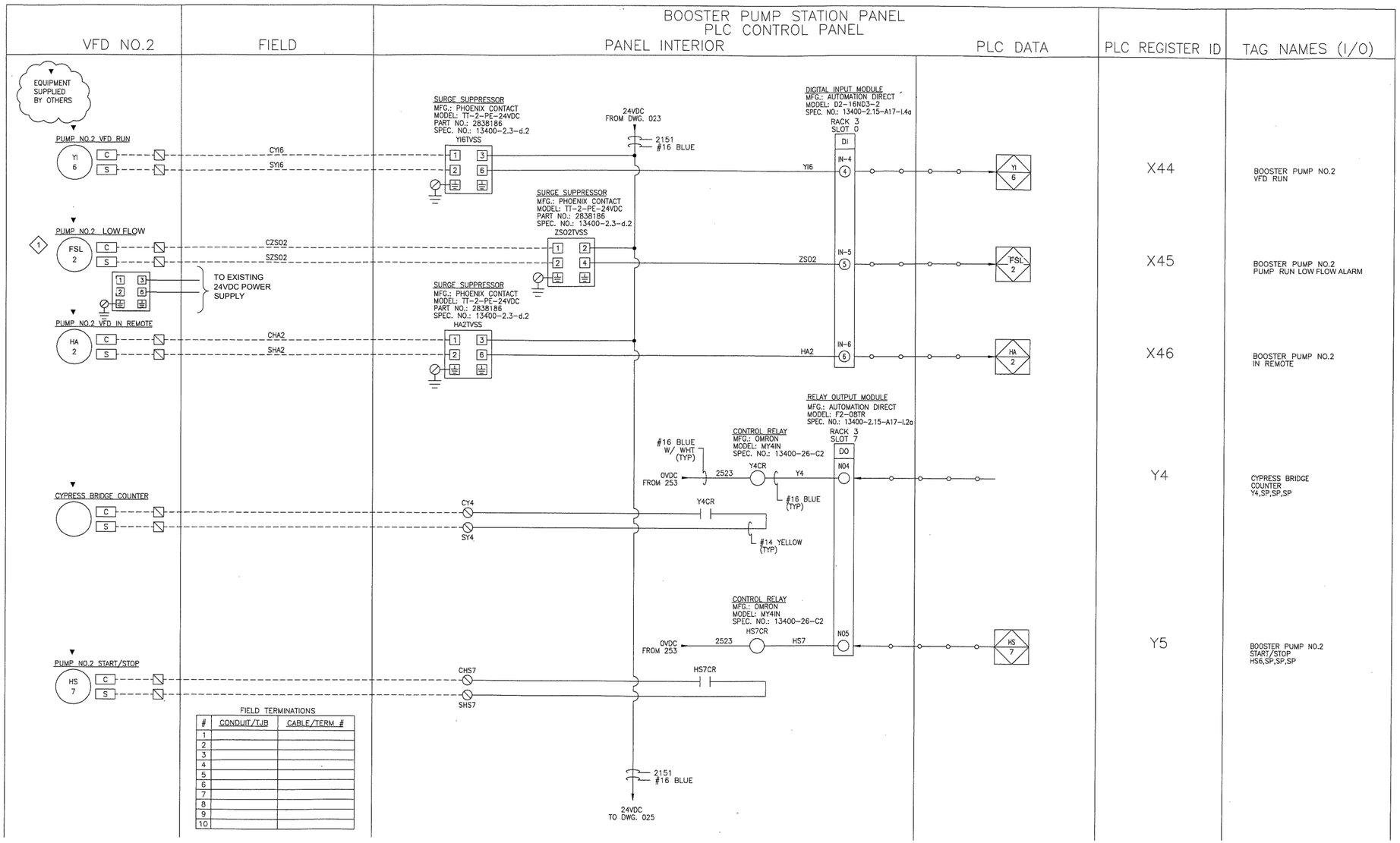
File Name:

Scale: TBW Project No.: 07542

Sheet No.: 24 OF 37

PROJECT NO. 203160-400000 FILE NAME: 203160_06N01.dwg

User: CAR1111842 Spec: NAT CADD STD File: C:\USERS\CAR1111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale: 1:1 Saved date: 8/9/2022 Time: 10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout: LAYOUT1



KEY NOTES:

1. THIS FUNCTIONALITY HAS BEEN ABANDONED. UNTERMINATE THESE POSITION CONTACTS FROM THE EXISTING PUMP'S CHECK VALVE AND USE THIS I/O POINT TO CONNECT THE NEW PUMP'S DISCHARGE LOW FLOW SWITCH.

TAMPA BAY WATER
Supplying Water To The Region
LAST SAVED BY: LRivas

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

BRETT A. LEE LICENSED No 68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: BAL Date: APRIL 2025
Drawn By: MLL Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
BAL Date: APRIL 2025
APPROVED BY:

carollo®
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION

PLC CABINET PUMP 2 SCHEMATIC MODIFICATION

REV	DESCRIPTION	DATE

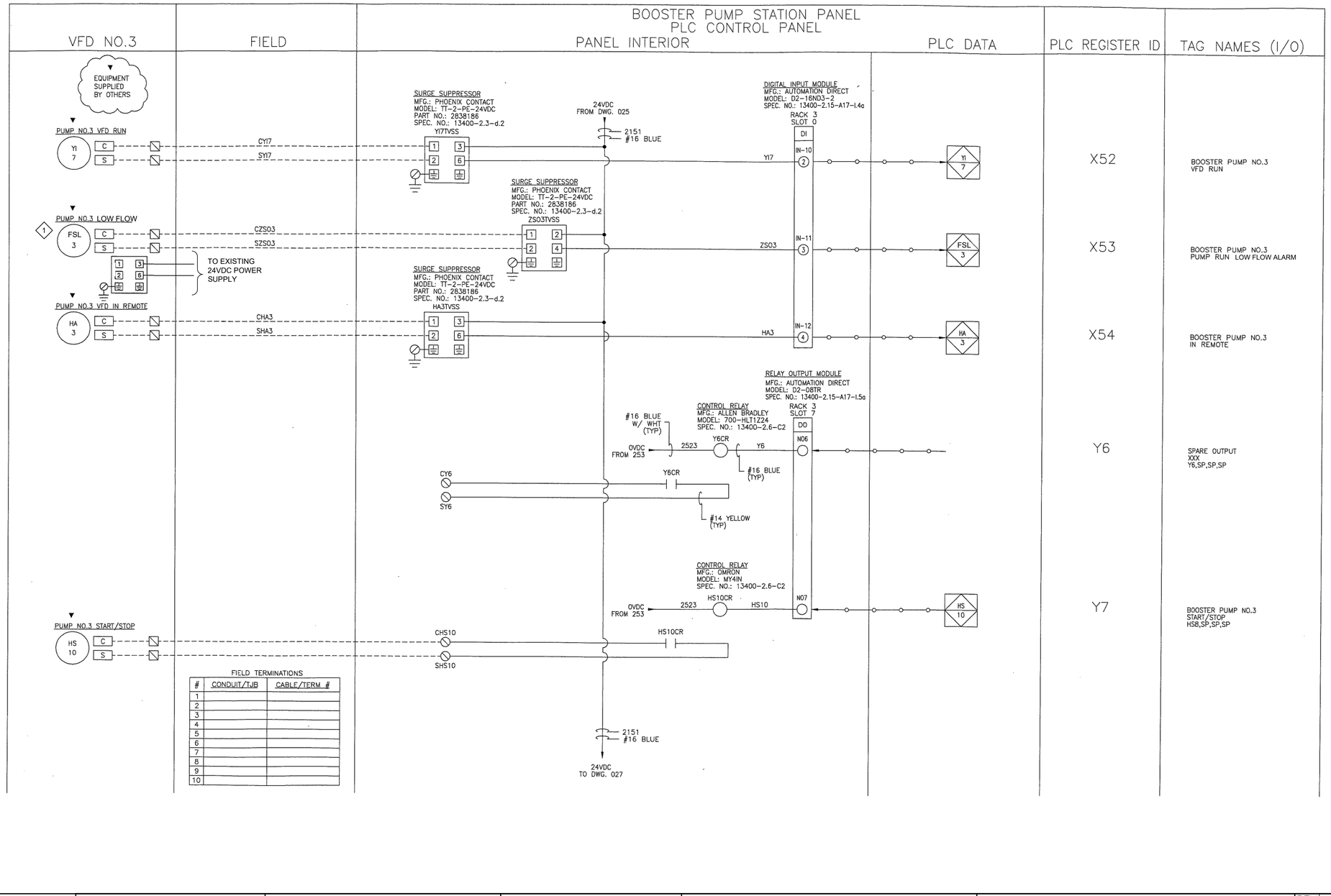
File Name:

Scale: TBW Project No.: 07542

TBW Drawing No.: 06N02

Sheet No.: 25 OF 37

PROJECT NO. 203160-400000 FILE NAME: 203160_06N02.dwg



KEY NOTES:

1. THIS FUNCTIONALITY HAS BEEN ABANDONED. UNTERMINATE THESE POSITION CONTACTS FROM THE EXISTING PUMP'S CHECK VALVE AND USE THIS I/O POINT TO CONNECT THE NEW PUMP'S DISCHARGE LOW FLOW SWITCH.

User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 Saved:date:8/9/2022 Time:10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1

TAMPA BAY WATER
Supplying Water To The Region
2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

BRETT A. LEE LICENSE No 68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: BAL Date: APRIL 2025
Drawn By: MLL Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
APPROVED BY: BAL Date: APRIL 2025

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION

PLC CABINET PUMP 3 SCHEMATIC MODIFICATION

REV	DESCRIPTION	DATE

TBW Drawing No.:

Sheet 06N03

File Name:

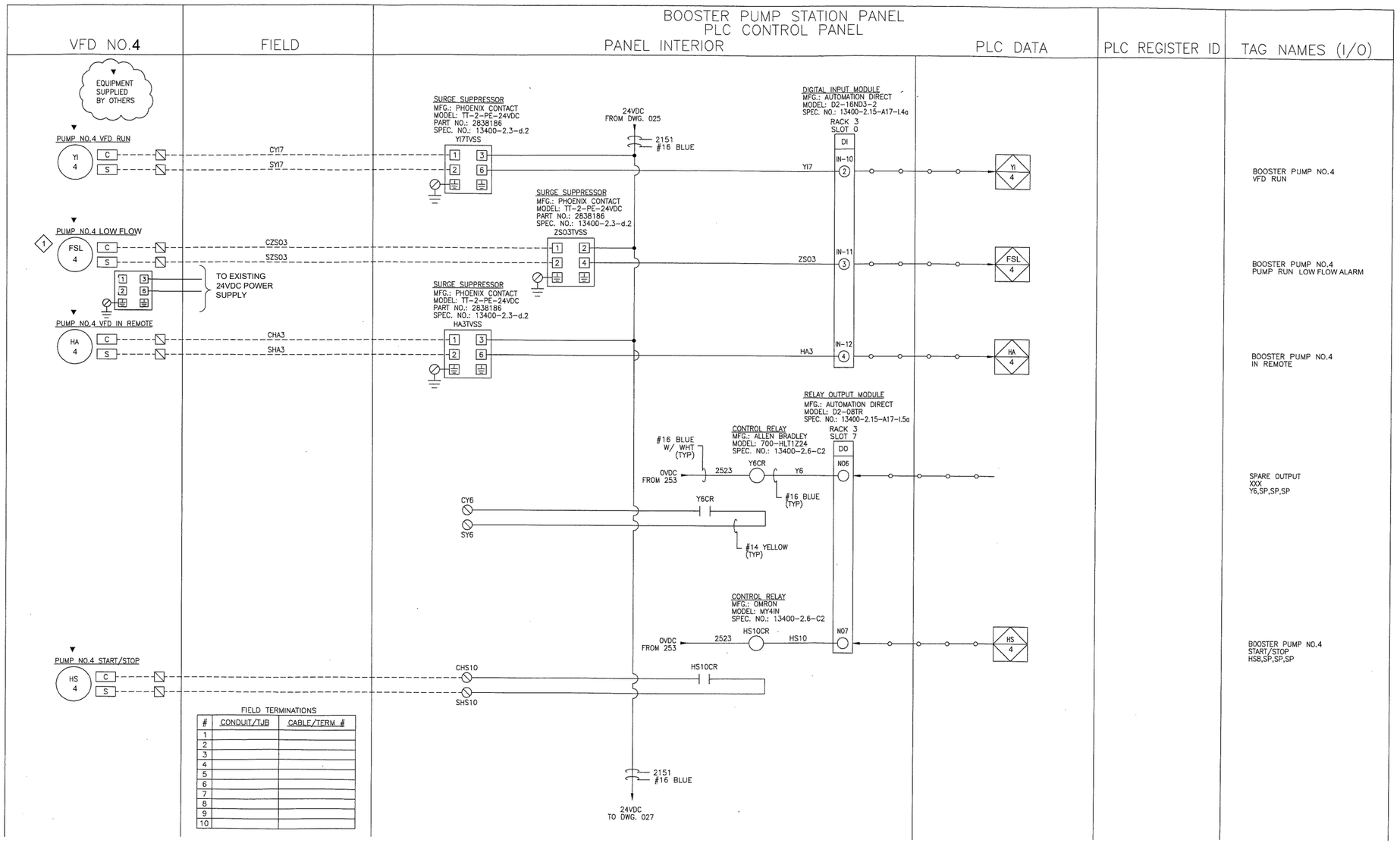
Scale: TBW Project No.: 07542

Sheet No.: 26 OF 37

LAST SAVED BY: LRvas

PROJECT NO. 203160-400000 FILE NAME: 203160_06N03.dwg

User: CAR111842 Spec: NAT CADD STD File: C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale: 1:1 SavedDate: 8/9/2022 Time: 10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout: LAYOUT1



FIELD TERMINATIONS

#	CONDUIT/TUB	CABLE/TERM #
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

KEY NOTES:

1. THIS FUNCTIONALITY HAS BEEN ABANDONED. UNTERMINATE THESE POSITION CONTACTS FROM THE EXISTING PUMP'S CHECK VALVE AND USE THIS I/O POINT TO CONNECT THE NEW PUMP'S DISCHARGE LOW FLOW SWITCH.

LAST SAVED BY: LRivas

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

BRETT A. LEE LICENSE No 68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: BAL Date: APRIL 2025
Drawn By: MLL Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
BAL Date: APRIL 2025
APPROVED BY:

carollo®
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION

PLC CABINET PUMP 4 SCHEMATIC MODIFICATION

REV	DESCRIPTION	DATE

TBW Drawing No.:

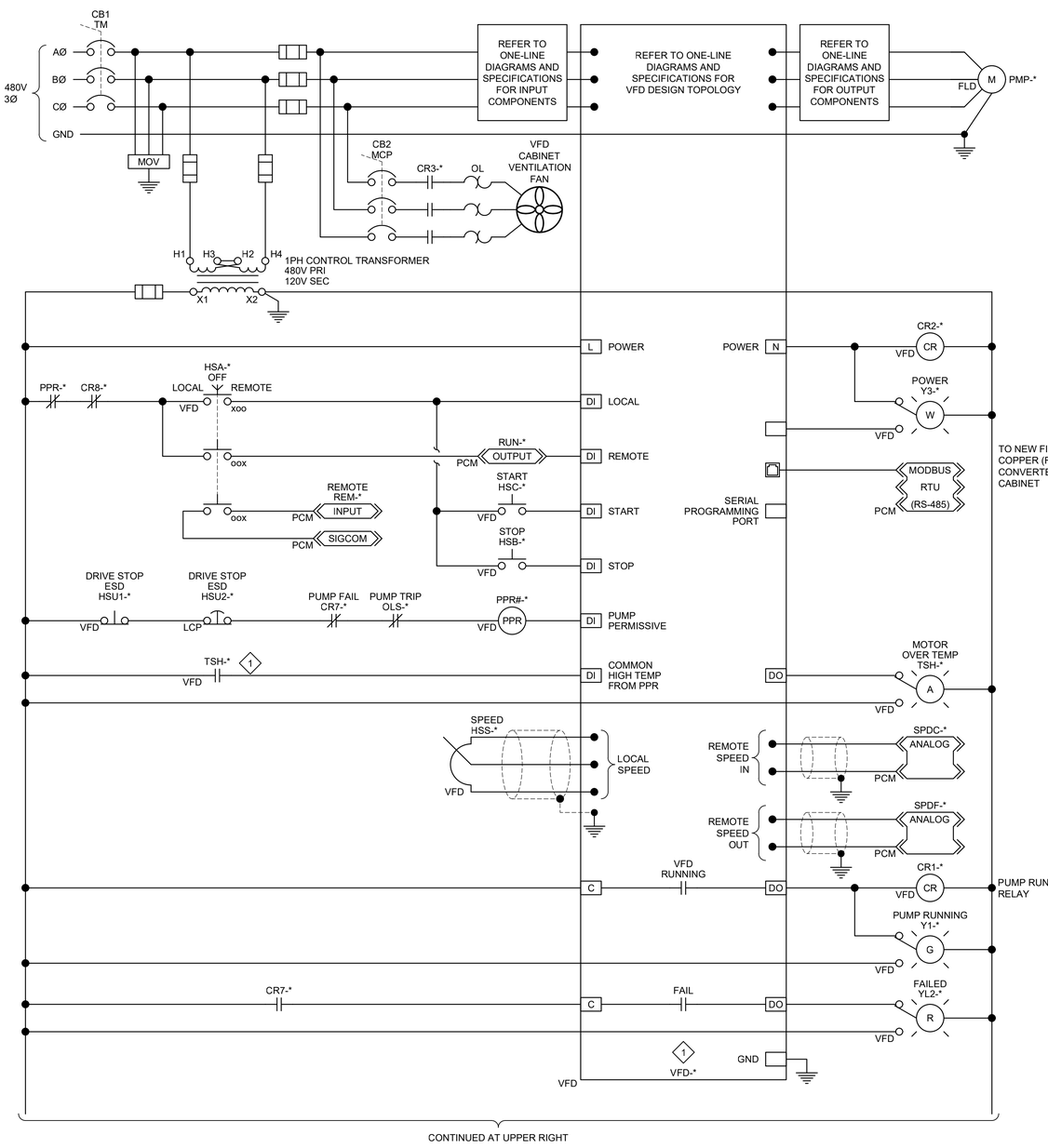
Sheet 06N04

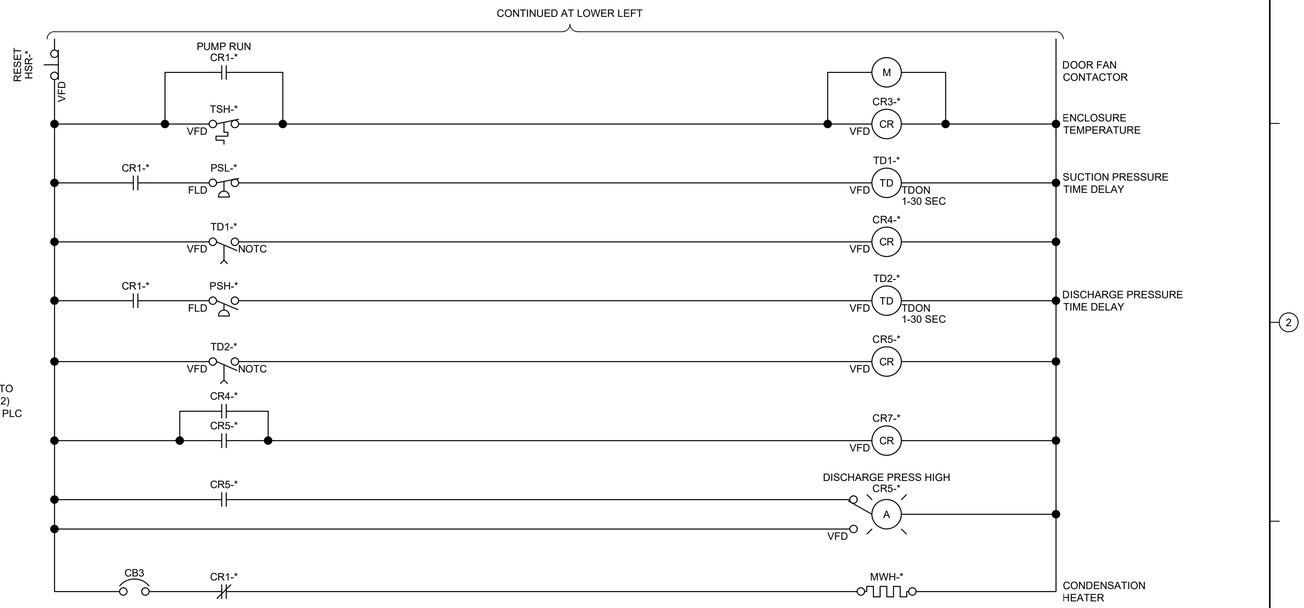
File Name:

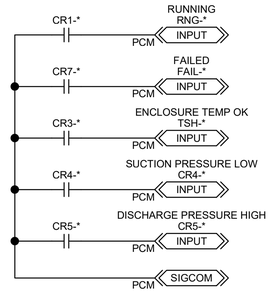
Scale: TBW Project No.: 07542

Sheet No.: 27 OF 37

PROJECT NO. 203160-400000 FILE NAME: 203160_06N04.dwg







KEY NOTES:

1. PROVIDE EXPANSION MODULES AND ANY OTHER APPLICABLE CONVERTER MODULES AS NEEDED FOR FUNCTIONALITY SHOWN.
2. VIBRATION MONITOR FROM EXISTING BENTLEY NEVADA LOCAL CONTROL PANEL. ADD NEW PUMP 4 X-AXIS AND Y-AXIS SENSOR MODULES TO EXISTING CABINET.
3. CONTACT FROM PPR MOTOR PROTECTION RELAY.

TAG ◄► LOOP
* = 4 ◄► PMP-4

REFERENCE DWG.
10N03

LOCATION LEGEND

PCM	PCM OR DCS
MCC	MOTOR CONTROL CENTER
FLD	FIELD DEVICE
LCP	LOCAL CONTROL PANEL
STR	FREE-STANDING STARTER
VFD	FREE-STANDING VFD

NETWORKED VFD HIGH SERVICE PUMP 4

5 CONTROL SCHEMATIC

TAMPA BAY WATER
Supplying Water To The Region
2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

BRETT A. LEE LICENSE No 68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: BAL Date: APRIL 2025
Drawn By: ESW Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
BAL Date: APRIL 2025
APPROVED BY:

carollo®
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION

SCHEMATICS 5 - HIGH SERVICE PUMP 4

REV	DESCRIPTION	DATE

File Name:

Scale: TBW Project No.: 07542

TBW Drawing No.:

Sheet 06N05

Sheet No.: 28 OF 37

LAST SAVED BY: LRivas

User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 Saved Date:8/9/2022 Time:10:21 Plot Date: Carl, Garyn; 9/25/2017; 15:33 ; Layout:LAYOUT1

PROJECT NO. 203160-400000 FILE NAME: 203160_06N05.dwg

VFD_1						
VFD FOR PUMPS 1, 2, 3						
PROTOCOL: MODBUS RTU						
DESCRIPTION	**CONTROL**	**HISTORIZE**	**INDICATE**	**ALARM**	**TREND**	**INTERLOCK**
LOCAL			✓			
OFF	✓		✓			
REMOTE			✓			
STOP	✓		✓			
START	✓		✓			
SPEED	✓		✓			
SPEED FEEDBACK		✓	✓		✓	
RESET ELAPSED TIME	✓		✓			
RUNNING		✓	✓		✓	
TOTAL STARTS		✓	✓			
DAILY STARTS		✓	✓			
ELAPSED TIME		✓	✓			
DAILY RUN TIME		✓	✓			
A PH V		✓	✓		✓	
B PH V		✓	✓		✓	
C PH V		✓	✓		✓	
A PH CURRENT		✓	✓		✓	
B PH CURRENT		✓	✓		✓	
C PH CURRENT		✓	✓		✓	
AVERAGE 3 PH CURRENT		✓	✓		✓	
POWER KVA		✓	✓		✓	
POWER KW		✓	✓		✓	
POWER FACTOR		✓	✓		✓	
CURRENT ALARM HIGH			✓	✓		✓
OVERLOAD			✓	✓		✓
FAULT		✓	✓	✓		✓
SMART OVERLOAD FAILED			✓	✓		✓
FAIL TO RESPOND			✓	✓		✓
EQUIPMENT SHUTDOWN			✓			✓

VFD_4						
VFD						
PROTOCOL: MODBUS RTU						
DESCRIPTION	**CONTROL**	**HISTORIZE**	**INDICATE**	**ALARM**	**TREND**	**INTERLOCK**
LOCAL			✓			
OFF	✓		✓			
REMOTE			✓			
STOP	✓		✓			
START	✓		✓			
SPEED	✓		✓			
SPEED FEEDBACK		✓	✓		✓	
RESET ELAPSED TIME	✓		✓			
RUNNING		✓	✓		✓	
TOTAL STARTS		✓	✓			
DAILY STARTS		✓	✓			
ELAPSED TIME		✓	✓			
DAILY RUN TIME		✓	✓			
A PH V		✓	✓		✓	
B PH V		✓	✓		✓	
C PH V		✓	✓		✓	
A PH CURRENT		✓	✓		✓	
B PH CURRENT		✓	✓		✓	
C PH CURRENT		✓	✓		✓	
AVERAGE 3 PH CURRENT		✓	✓		✓	
POWER KVA		✓	✓		✓	
POWER KW		✓	✓		✓	
POWER FACTOR		✓	✓		✓	
CURRENT ALARM HIGH			✓	✓		✓
OVERLOAD			✓	✓		✓
FAULT		✓	✓	✓		✓
SMART OVERLOAD FAILED			✓	✓		✓
FAIL TO RESPOND			✓	✓		✓
EQUIPMENT SHUTDOWN			✓			✓

User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 SavedDate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

BRETT A. LEE
LICENSE
No 68169
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Design By: BAL Date: APRIL 2025
Drawn By: ESW Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
BAL Date: APRIL 2025
APPROVED BY:

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION
I/O TABLES

REV	DESCRIPTION	DATE

File Name:

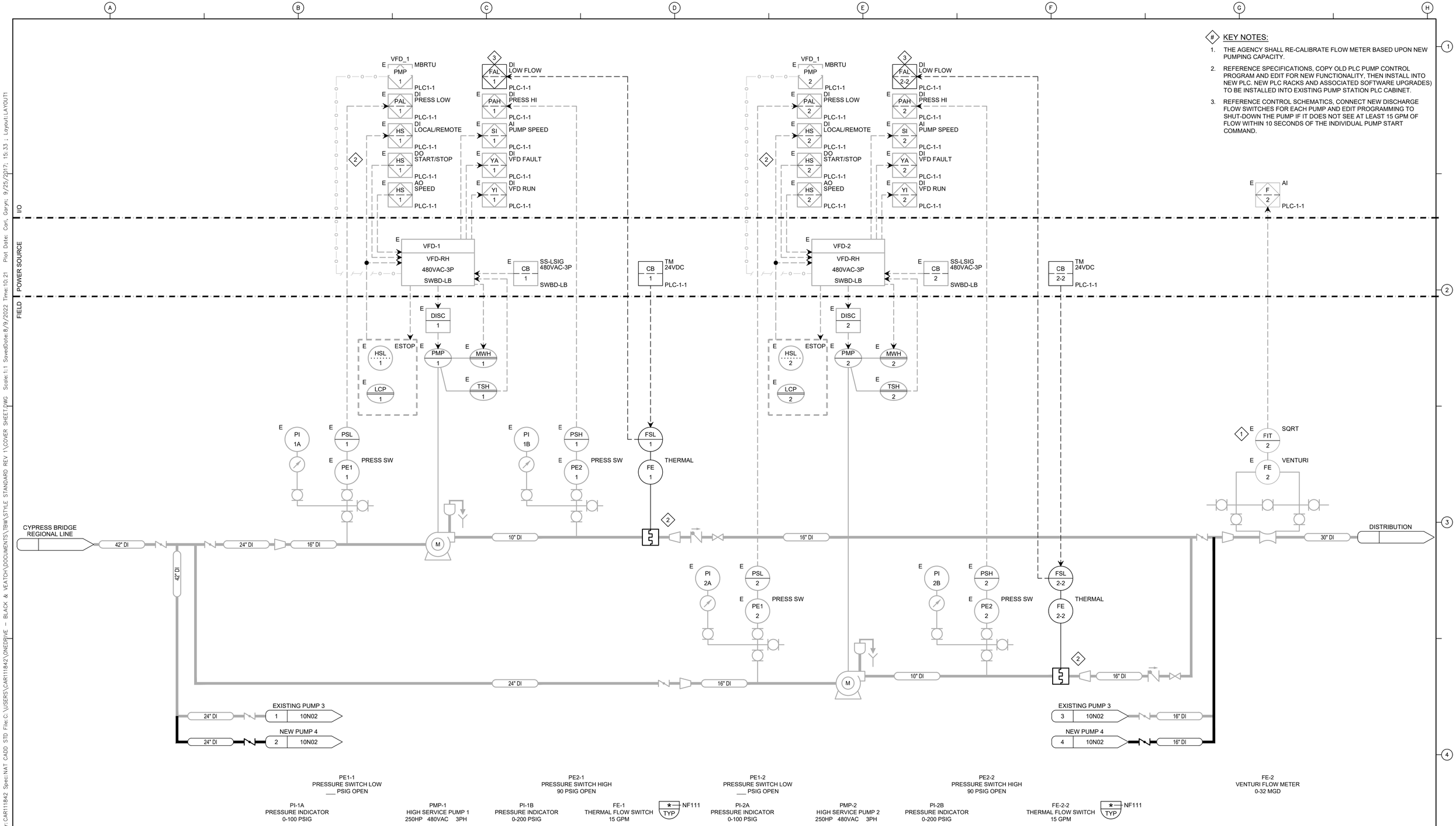
Scale: TBW Project No.: 07542

TBW Drawing No.: 07N01

Sheet No.: 29 OF 37

LAST SAVED BY: LRivas

PROJECT NO. 203160-400000 FILE NAME: 203160_07N01.dwg



TAMPA BAY WATER
Supplying Water To The Region
2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

BRETT A. LEE LICENSE No 68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: BAL Date: APRIL 2025
Drawn By: LR Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
BAL Date: APRIL 2025
APPROVED BY:

carollo®
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION

HIGH SERVICE PUMPS P&ID 1

REV	DESCRIPTION	DATE

TBW Drawing No.:

Sheet 10N01

File Name:

Scale: TBW Project No.: 07542

Sheet No.: 30 OF 37

LAST SAVED BY: LRivas

User: CAR111842 Spec: NAT CADD STD File: C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale: 1:1 Saved Date: 8/9/2022 Time: 10:21 Plot Date: Carl, Garyn; 9/25/2017; 15:33 ; Layout: LAYOUT1

PROJECT NO. 203160-400000 FILE NAME: 203160_10N01.dwg

User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 Savedate:8/9/2022 Time:10:21 Plot Date: Cari, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1

FIELD | POWER SOURCE | I/O

VFD_1 MBRTU
- PMP 3 — PLC-1-1
- E PAL 3 DI PRESS LOW — PLC-1-1
- E HS 3 DI LOCAL/REMOTE — PLC-1-1
- E HS 3 DO START/STOP — PLC-1-1
- E HS 3 AO SPEED — PLC-1-1

2
- FAL 3 DI LOW FLOW — PLC-1-1
- E PAH 3 DI PRESS HI — PLC-1-1
- E SI 3 AI PUMP SPEED — PLC-1-1
- E YA 3 DI VFD FAULT — PLC-1-1
- E YI 3 DI VFD RUN — PLC-1-1

VFD_4 MBRTU
3
- PMP 4 — PLC-1-1
- PAL 4 DI PRESS LOW — PLC-1-1
- HS 4 DI LOCAL/REMOTE — PLC-1-1
- HS 4 DO START/STOP — PLC-1-1
- HS 4 AO SPEED — PLC-1-1
- TSH 4 DI ENCL TEMP — PLC-1-1

2
- FAL 4 DI LOW FLOW — PLC-1-1
- PAH 4 DI PRESS HI — PLC-1-1
- SI 4 AI PUMP SPEED — PLC-1-1
- YA 4 DI VFD FAULT — PLC-1-1
- YI 4 DI VFD RUN — PLC-1-1

1

E VFD-3 — VFD-RH — 480VAC-3P — SWBD-LB
E CB 3 SS-LSIG 480VAC-3P — SWBD-LB
CB 3 TM 24VDC — PLC-1-1

VFD-4 — VFD-RH — 480VAC-3P — SWBD-LB
CB 4 TM 480VAC-3P — SWBD-LB
CB 4 TM 24VDC — PLC-1-1

E DISC 3
E ESTOP: HSL 3, LCP 3
E PMP 3 — E MWH 3 — E TSH 3

DISC 4
ESTOP: HSU 4, LCP 4
PMP 4 — MWH 4 — TSH 4

E PI 3A — E PSL 3 — E PE1 3 PRESS SW
E PI 3B — E PSH 3 — E PE2 3 PRESS SW
FSL 3 — FE 3 THERMAL

PI 4A — PSL 4 — PE1 4 PRESS SW
PI 4B — PSH 4 — PE2 4 PRESS SW
FSL 4 — FE 4 THERMAL

CYPRESS BRIDGE REGIONAL LINE 1 10N01 — 24" DI — 16" DI — M — 10" DI — 16" DI — DISTRIBUTION 3 10N01

CYPRESS BRIDGE REGIONAL LINE 2 10N01 — 24" DI — 16" DI — M — 10" DI — 16" DI — DISTRIBUTION 4 10N01

PE1-3 PRESSURE SWITCH LOW ___ PSIG OPEN
PMP-3 HIGH SERVICE PUMP 3 250HP 480VAC 3PH
PE2-3 PRESSURE SWITCH HIGH 90 PSIG OPEN
PE1-4 PRESSURE SWITCH LOW 30 PSIG OPEN — NP501 TYP
PMP-4 HIGH SERVICE PUMP 4 250HP 480VAC 3PH — 5 06N05
PE2-4 PRESSURE SWITCH HIGH 90 PSIG OPEN — NP501 TYP
PI-3A PRESSURE INDICATOR 0-100 PSIG
PI-3B PRESSURE INDICATOR 0-200 PSIG
FE-3 THERMAL FLOW SWITCH 15 GPM — NF111 TYP
PI-4A PRESSURE INDICATOR 0-100 PSI
PI-4B PRESSURE INDICATOR 0-100 PSI
FE-4 THERMAL FLOW SWITCH 5 GPM — NF111 TYP

KEY NOTES:
1. REFERENCE SPECIFICATIONS, COPY OLD PLC PUMP CONTROL PROGRAM AND EDIT FOR NEW FUNCTIONALITY, THEN INSTALL INTO NEW PLC. NEW PLC RACKS AND ASSOCIATED SOFTWARE UPGRADES) TO BE INSTALLED INTO EXISTING PUMP STATION PLC CABINET.
2. REFERENCE CONTROL SCHEMATICS, CONNECT NEW DISCHARGE FLOW SWITCHES FOR EACH PUMP AND EDIT PROGRAMMING TO SHUT-DOWN THE PUMP IF IT DOES NOT SEE AT LEAST 15 GPM OF FLOW WITHIN 10 SECONDS OF THE INDIVIDUAL PUMP START COMMAND.
3. VFD SUPPLIER AND INSTALLER SHAL COORDINATE TO PROVED MODBUS RTU I/O MAPS TBW PROGRAMMER.

TAMPA BAY WATER
Supplying Water To The Region
2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL — BRETT A. LEE LICENSE No 68169 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: BAL Date: APRIL 2025
Drawn By: ESW Date: APRIL 2025
Checked By: BAL Date: APRIL 2025
APPROVED BY: BAL Date: APRIL 2025

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION
HIGH SERVICE PUMPS P&ID 2

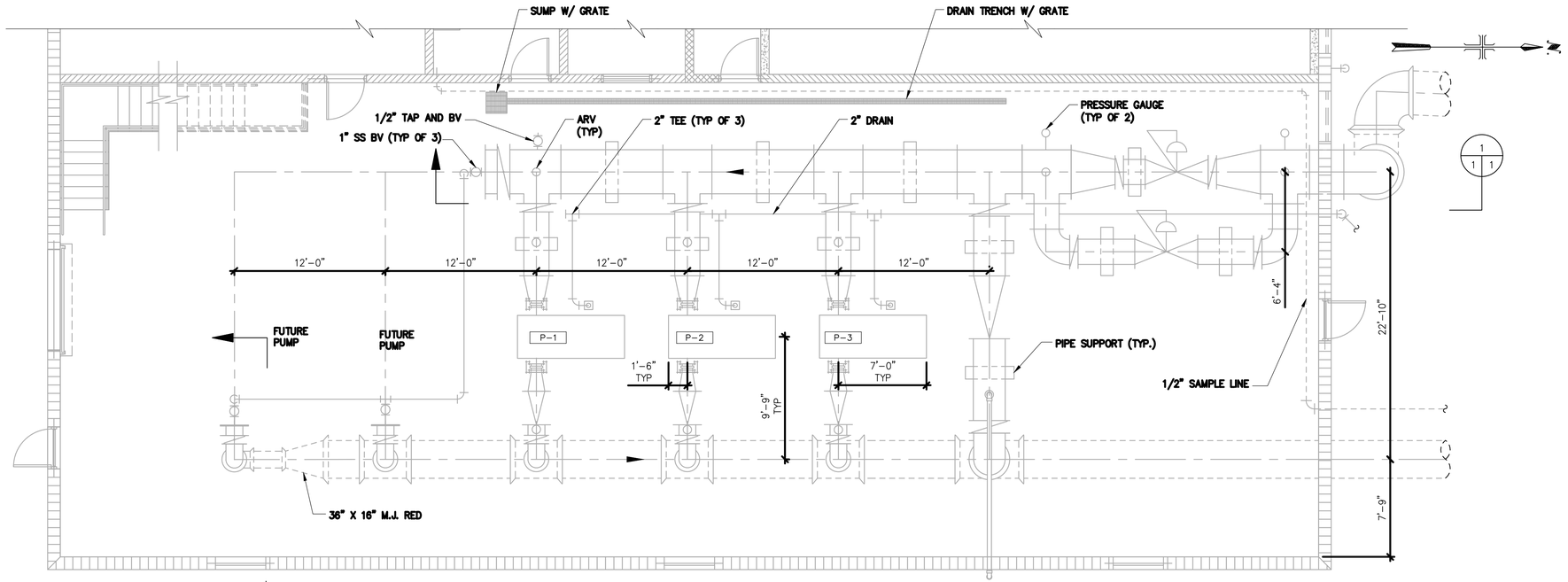
REV	DESCRIPTION	DATE

File Name:
Scale: TBW Project No.: 07542

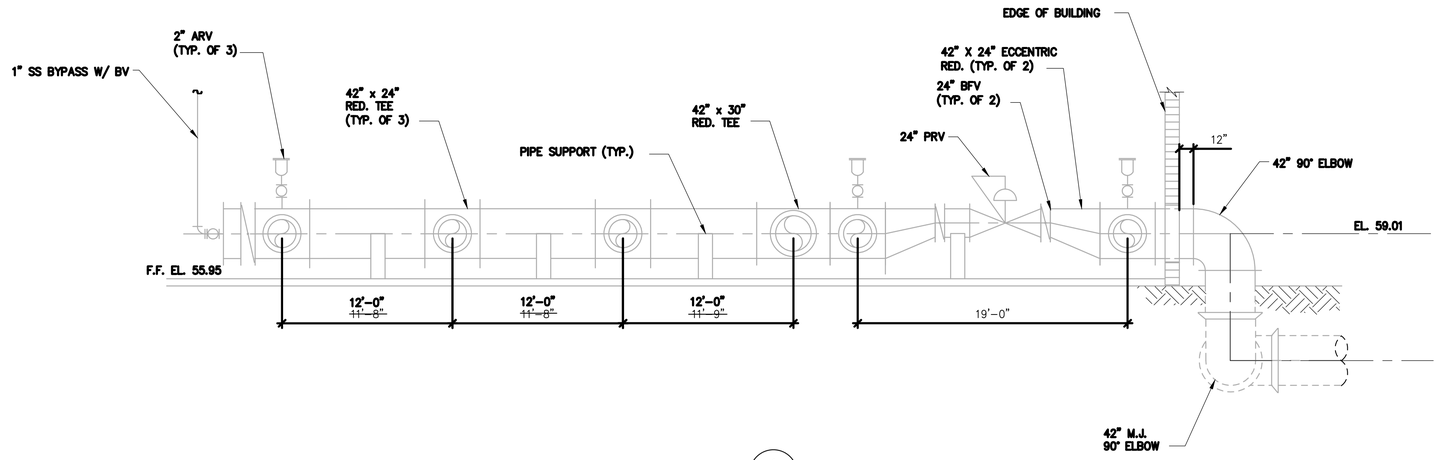
TBW Drawing No.:
Sheet 10N02
Sheet No.: 31 OF 37

LAST SAVED BY: LRivas

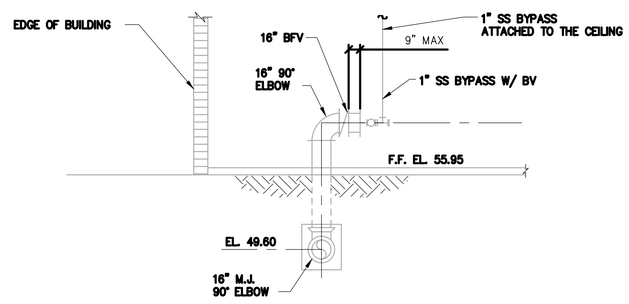
PROJECT NO. 203160-400000 FILE NAME: 203160_10N02.dwg



PLAN
SCALE: N.T.S.



SECTION 1/1
SCALE: 3/16" = 1'- 0"



SECTION 2/1
SCALE: 3/16" = 1'- 0"

0 4 12
SCALE: 3/16" = 1'-0"

GENERAL NOTES:

1. DRAWING BASED ON INFORMATION SHOWN ON RECORD DRAWINGS DATED 08/26/09 BY MALCOLM PIRNIE FOR TAMPA BAY WATER CENTRAL PASCO IMPROVEMENTS PROJECT.
2. CONTRACTOR SHALL FIELD VERIFY THE DIMENSIONS.

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY KUNAL NAYEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

KUNAL NAYEE LICENSE No 83294 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: KN Date: APRIL 2025
Drawn By: EP Date: APRIL 2025
Checked By: KN Date: APRIL 2025
KN Date: APRIL 2025
APPROVED BY:

carollo®
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

PROCESS MECHANICAL
EXISTING PLAN AND SECTIONS

REV	DESCRIPTION	DATE

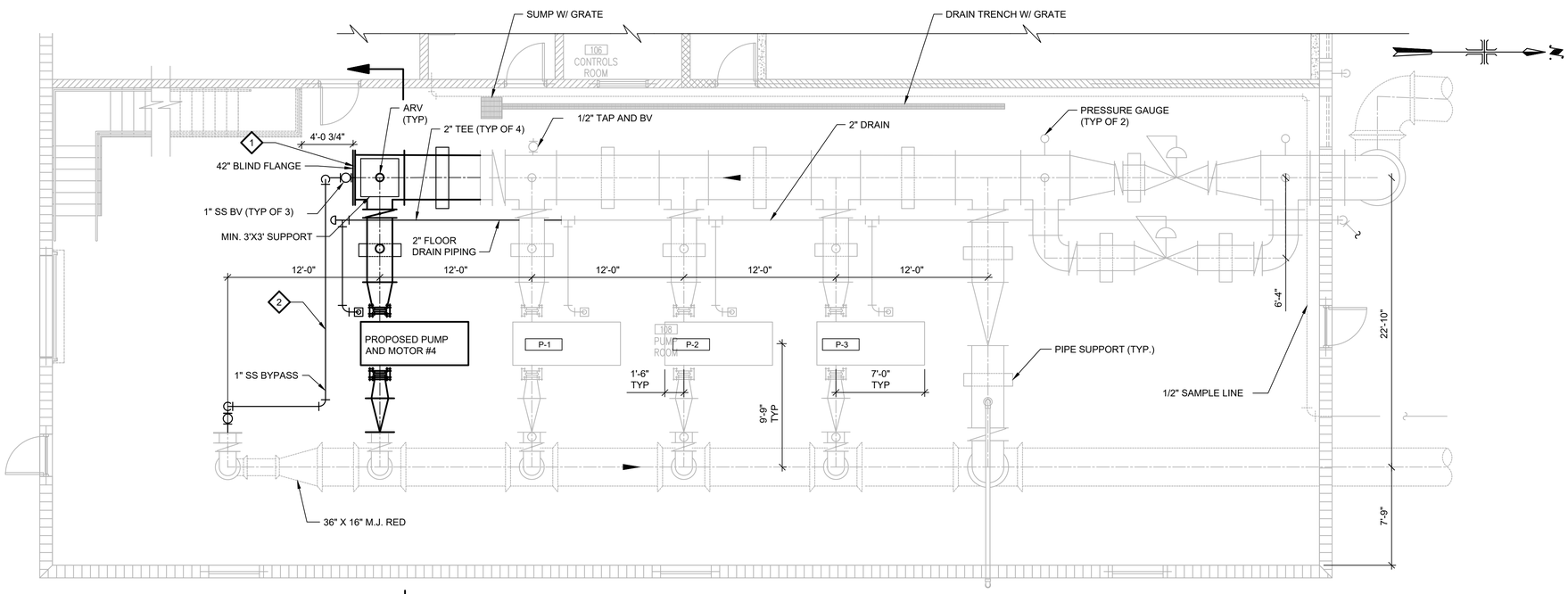
File Name:
Scale: TBW Project No.: 07542

TBW Drawing No.: 00M01
Sheet No.: 6 OF 37

699

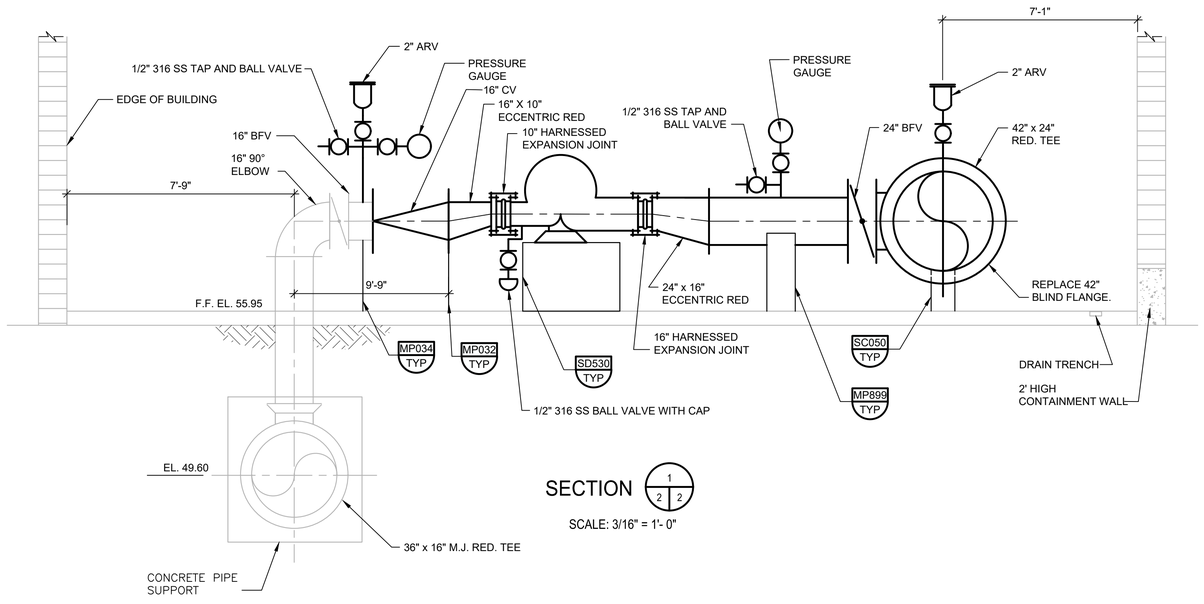
PROJECT NO. 203160-400000 FILE NAME: 203160_00M01.dwg

LAST SAVED BY: eparker
XREFs: ..\Xref\CLBPPR.dwg ..\Xref\ALBPPSTF1.dwg ..\Xref\SLBPPSTF1.dwg ..\Xref\WLBPPSTF1.dwg ..\Xref\39780-441TB.dwg IMAGES:None
User:CARTIS42 File:\\CAD\CARTIS42\Desktop\Std Files\C:\Users\CARTIS42\ONEDRIVE - TAMPA BAY WATER\DESKTOP\TBW STANDARD REVIT FILES\TBW STANDARD REVIT FILES\TBW STANDARD DOCUMENTS\TBW STYLE STANDARD_BLACK & WHITE.ctb Spec:NAT-12800 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1
Date:8/9/2022 Time:10:21 Scale:1:1 SavedDate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1
\\CAD\CARTIS42\Desktop\Std Files\C:\Users\CARTIS42\ONEDRIVE - TAMPA BAY WATER\DESKTOP\TBW STANDARD REVIT FILES\TBW STANDARD DOCUMENTS\TBW STYLE STANDARD_BLACK & WHITE.ctb Spec:NAT-12800 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1
\\CAD\CARTIS42\Desktop\Std Files\C:\Users\CARTIS42\ONEDRIVE - TAMPA BAY WATER\DESKTOP\TBW STANDARD REVIT FILES\TBW STANDARD DOCUMENTS\TBW STYLE STANDARD_BLACK & WHITE.ctb Spec:NAT-12800 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1
Using: \\CAD\CARTIS42\Desktop\Std Files\C:\Users\CARTIS42\ONEDRIVE - TAMPA BAY WATER\DESKTOP\TBW STANDARD REVIT FILES\TBW STANDARD DOCUMENTS\TBW STYLE STANDARD_BLACK & WHITE.ctb Spec:NAT-12800 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1
XREFs: ..\Xref\CLBPPR.dwg ..\Xref\ALBPPSTF1.dwg ..\Xref\SLBPPSTF1.dwg ..\Xref\WLBPPSTF1.dwg ..\Xref\39780-441TB.dwg IMAGES:None
LAST SAVED BY: eparker



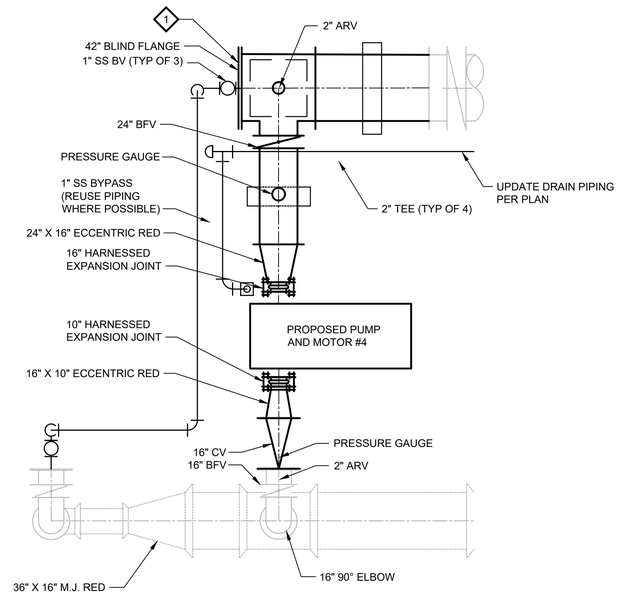
PLAN

SCALE: N.T.S.



SECTION 1/2

SCALE: 3/16" = 1'- 0"



ENLARGED PLAN

SCALE: 1/4" = 1'-0"

0 4 12

SCALE: 3/16" = 1'-0"

GENERAL NOTES:

1. DRAWING BASED ON INFORMATION SHOWN ON RECORD DRAWINGS DATED 08/26/09 BY MALCOLM PIRNIE FOR TAMPA BAY WATER CENTRAL PASCO IMPROVEMENTS PROJECT.
2. CONTRACTOR TO REPLACE ANY GASKETS TO EXISTING PIPE. GASKETS SHOULD BE RATED FOR CHLORAMINE SERVICE.
3. CONTRACTOR SHOULD FIELD VERIFY THE DIMENSIONS.
4. CONTRACTOR TO FIELD VERIFY PIPE ALIGNMENT PRIOR TO CONSTRUCTION.
5. CONTRACTOR TO FIELD VERIFY THAT THE 42" SUCTION HEADER BFV AND THE 16" PUMP #4 DISCHARGE BFV ARE OPERABLE.
6. CONTRACTOR TO SCHEDULE A STATION SHUT DOWN FOR CONSTRUCTION AS SPECIFIED.
7. ALL FITTINGS ARE FLANGED UNLESS OTHER WISE NOTED.
8. ALL PIPE SHOULD BE AWWA C153 PRESSURE CLASS 250.
9. ALL FITTINGS SHOULD BE AWWA C110 PRESSURE CLASS 250.
10. ALL PIPE AND FITTINGS IN CONTACT WITH POTABLE WATER MUST BE NSF/ANSI 61 CERTIFIED.
11. HARNESSED EXPANSION JOINTS SHALL USE MERCER SUPPLIED 250 PSI RATED CONTROL RODS. 3 CONTROL RODS FOR THE 16" EXPANSION JOINT AND 2 CONTROL RODS FOR THE 10" JOINT.
12. CONTRACTOR TO MATCH NEW DRAIN PIPING TERMINATIONS WITH THE TERMINATIONS ON EXISTING PUMPS.
13. ALL DRAIN PIPING SHALL BE SCHEDULE 80 PVC.

KEY NOTES:

1. REUSE EXISTING 42" BLIND FLANGE.
2. REUSE 1" SS BV AND PIPING WHERE POSSIBLE.

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY KUNAL NAYEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

KUNAL NAYEE LICENSE No 83294 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: KN Date: APRIL 2025
Drawn By: EP Date: APRIL 2025
Checked By: KN Date: APRIL 2025
KN Date: APRIL 2025
APPROVED BY:

carollo®
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT PLANT – PUMP #4

PROCESS MECHANICAL

PLAN AND SECTIONS

REV	DESCRIPTION	DATE

TBW Drawing No.:

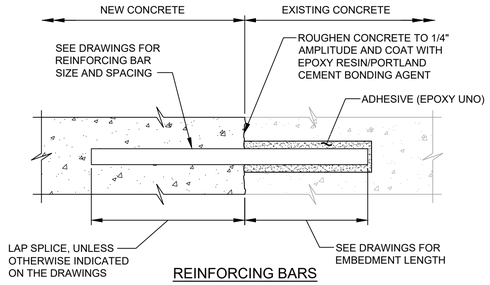
File Name:

Scale: TBW Project No.: 07542

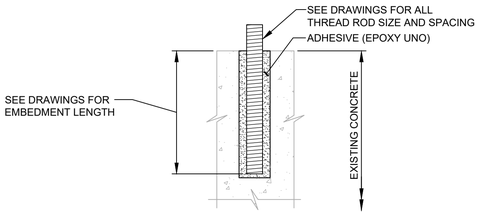
Sheet 00M02

Sheet No.: 7 OF 37

User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 Savedate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn: 9/25/2017: 15.33 : Layout:LAYOUT1
LAST SAVED BY: eparker



REINFORCING BARS



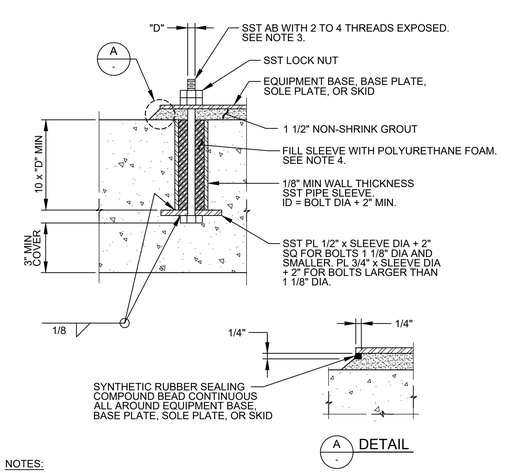
ALL-THREAD RODS

NOTE:

1. INSTALLATION OF REINFORCING BARS AND ALL THREAD RODS AS INDICATED IN THE SPECIFICATIONS.

SC040 TYP — CONCRETE REINFORCEMENT - ADHESIVE-BONDED BARS AND ALL-THREAD RODS

12/18/2023



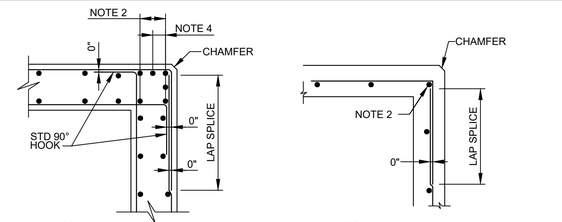
A DETAIL

NOTES:

1. "D" = DIAMETER OF ANCHOR BOLT.
2. ANCHOR BOLT DIAMETER AS INDICATED ON THE DRAWINGS. IF NOT INDICATED ON THE DRAWINGS, THE ANCHOR BOLT SIZE SHALL BE AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.
3. DO NOT USE ALL THREAD RODS AS A SUBSTITUTE FOR BOLTS WITH A BOLT HEAD.
4. COMPLETELY REMOVE ANY POLYURETHANE FOAM FROM CONCRETE, EQUIPMENT BASE, BASE PLATE, SOLE PLATE, OR SKID, AND ANCHOR BOLTS ABOVE TOP OF CONCRETE.
5. DO NOT USE LEVELING NUTS TO SUPPORT AND LEVEL EQUIPMENT BASE, BASE PLATE, SOLE PLATE, OR SKID.

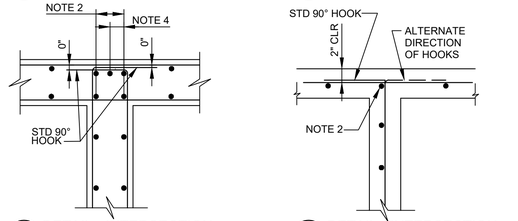
SC066 TYP — ANCHOR BOLT - SLEEVE FULL HEIGHT

N 12/18/2023



A DETAIL - CORNER: DOUBLE MAT

B DETAIL - CORNER: SINGLE MAT



C DETAIL - INTERSECTION: DOUBLE MAT

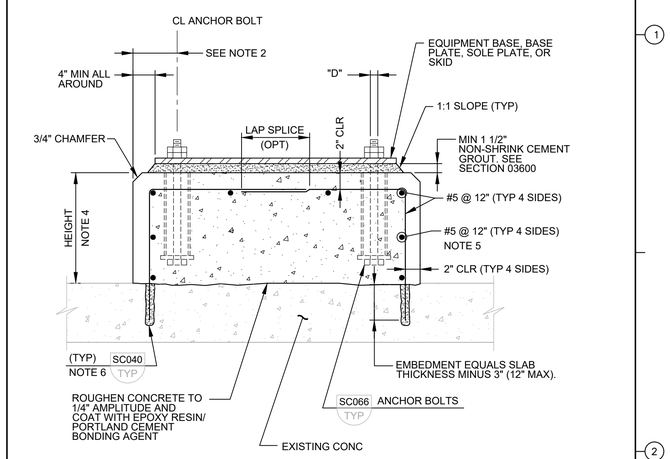
D DETAIL - INTERSECTION: SINGLE MAT

NOTES:

1. BAR SIZE, SPACING, AND ORIENTATION OF BAR LAYERS SHALL BE AS INDICATED ON THE DRAWINGS.
2. AT INTERSECTION, MAKE BAR SIZE THE LARGER OF BAR SIZES IN CONNECTING WALLS. PLACE BARS IN SAME LAYERS AS AT CONNECTING WALLS (TYP).
3. BAR TAILS: 12 BAR DIAMETERS PLUS 12".
4. EXTERIOR VERTICAL BARS SHALL BE PROVIDED AT A SPACING THAT DOES NOT EXCEED THE SPACING SPECIFIED ON THE DRAWINGS REGARDLESS OF THE WALL THICKNESS.

SC310 TYP — CONCRETE - REINFORCEMENT - WALL CORNERS AND INTERSECTIONS

SHEET 1 OF 2 12/18/2023

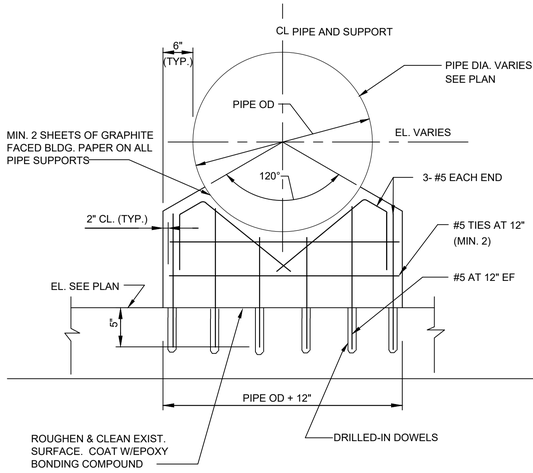


NOTES:

1. "D" = DIAMETER OF ANCHOR BOLT.
2. THE EDGE DISTANCE ON THE ANCHOR BOLTS SHALL NOT BE LESS THAN 6" OR 8 x "D".
3. PAD DIMENSIONS AND ANCHOR BOLT SIZE SHALL CONFORM TO EQUIPMENT MANUFACTURER'S REQUIREMENTS.
4. HEIGHT TO SUIT EQUIPMENT FURNISHED AND TO MATCH EXISTING PUMP AND MOTOR EQUIPMENT BASE.
5. PROVIDE HOOPS OR CORNERS PER DETAIL SC310/TYP.
6. FIELD LOCATE EXISTING REINFORCEMENT IN SLAB BEFORE DRILLING. ADJUST DOWEL LOCATIONS TO AVOID REINFORCEMENT.

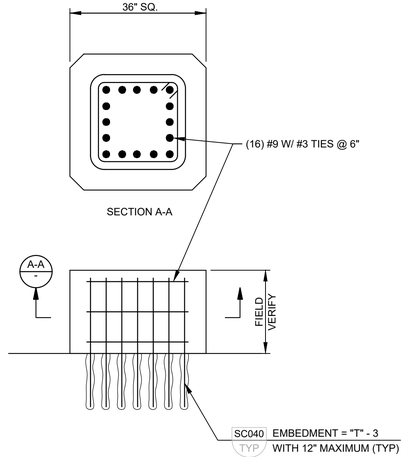
SD530 TYP — CONCRETE - EQUIPMENT BASE ON EXISTING CONCRETE

N 12/18/2023

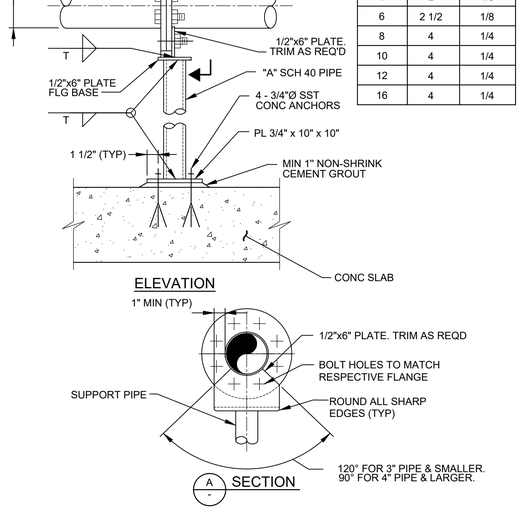


MP899 TYP — TYPICAL PIPE SUPPORT ON EXISTING FLOOR DETAIL

J



SC050 TYP — TEE SUPPORT ON EXISTING FLOOR DETAIL



ELEVATION

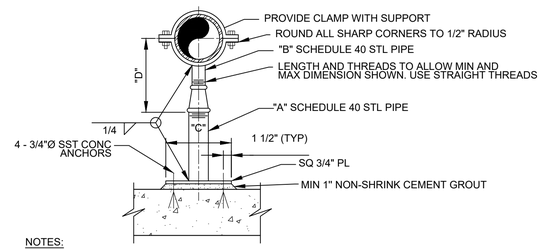
PIPE AND WELD SIZE		
"D"	"A"	"T"
4	2	1/8
6	2 1/2	1/8
8	4	1/4
10	4	1/4
12	4	1/4
16	4	1/4

A SECTION

MP032 TYP — PIPE SUPPORT - POST ON CONCRETE: FIXED HEIGHT STEEL W/ TOP CONNECTION TO PIPE FLANGE

N 12/17/24

ADJUSTABLE PIPE SADDLE SUPPORT SCHEDULE (INCHES)					
SIZE OF SUPPORTED PIPE **	PIPE SIZE "A"	PIPE SIZE "B"	"C"	"D"	
				MINIMUM	MAXIMUM
2 1/2 *	2 1/2	1 1/2	12	8	13
3	2 1/2	1 1/2	12	8 1/2	13 1/2
3 1/2	2 1/2	1 1/2	12	8 1/2	13 1/2
4	3	2 1/2	12	9 1/2	14
6	3	2 1/2	12	10 1/2	15 1/2
8	3	2 1/2	12	11 1/2	16 1/2
10	3	2 1/2	12	13 1/2	18 1/2
12	3	2 1/2	12	15	19 1/2
14	4	3	12	16 1/2	20 1/2
16	4	3	12	17 1/2	22 1/2
18	6	3 1/2	14	19 1/2	24
20	6	3 1/2	14	21	25 1/2
24	6	4	14	23 1/2	28 1/2
30	6	4	14	27	31 1/2
32	6	4	14	28 1/2	32 1/2
36	6	4	14	30 1/2	34 1/2



NOTES:

1. REFER TO THE SPECIFICATIONS FOR MATERIAL REQUIREMENTS.
2. * = USE 2 1/2" SUPPORTS FOR PIPES LESS THEN 2 1/2"Ø.
3. ** = NOMINAL PIPE SIZE.

MP034 TYP — PIPE SUPPORT - POST ON CONCRETE: ADJUSTABLE HEIGHT STEEL W/ TOP SADDLE

12/18/24

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY KUNAL NAYEE ON THE DATE ADJACENT TO THE SEAL ON THE COVER SHEET OF THE DRAWING SET

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

KUNAL NAYEE LICENSE No 83294 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By:	KN	Date: APRIL 2025
Drawn By:	EP	Date: APRIL 2025
Checked By:	KN	Date: APRIL 2025
KN APPROVED BY:		Date: APRIL 2025

carollo
101 EAST KENNEDY BLVD. SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT PLANT – PUMP #4

STRUCTURAL

TYPICAL DETAILS 1

REV	DESCRIPTION	DATE

TBW Drawing No.:

Sheet 00TS01

File Name:

Scale: TBW Project No.: 07542

Sheet No.: 37 OF 37

LAST SAVED BY: eparker

User:CAR111842 Spec:NAT CADD STD File:C:\USERS\CAR111842\ONEDRIVE - BLACK & VEATCH\DOCUMENTS\TBW\STYLE STANDARD REV 1\COVER SHEET.DWG Scale:1:1 Savedate:8/9/2022 Time:10:21 Plot Date: Carl, Garyn: 9/25/2017: 15:33 : Layout:LAYOUT1

PROJECT NO. 203160-400000 FILE NAME: 203160_00TS01.dwg

12.0 SITE PHOTOGRAPHS

(Consisting of 15 pages)

Lake Bridge Water Treatment Plant-Pump No. 4 (Project #07542)
Project Manager: Karim Molina-Oyola/Indigo Dunn
Purchasing Agent: Taylor Klinko

Lake Bridge Water Treatment Plant-Pump No. 4 (Project #07542)
Project Manager: Karim Molina-Oyola/Indigo Dunn
Purchasing Agent: Taylor Klinko

Lake Bridge Water Treatment Plant-Pump No. 4 (Project #07542)
Project Manager: Karim Molina-Oyola/Indigo Dunn
Purchasing Agent: Taylor Klinko

Lake Bridge Water Treatment Plant-Pump No. 4 (Project #07542)
Project Manager: Karim Molina-Oyola/Indigo Dunn
Purchasing Agent: Taylor Klinko

Lake Bridge Water Treatment Plant-Pump No. 4 (Project #07542)
Project Manager: Karim Molina-Oyola/Indigo Dunn
Purchasing Agent: Taylor Klinko

Lake Bridge Water Treatment Plant-Pump No. 4 (Project #07542)
Project Manager: Karim Molina-Oyola/Indigo Dunn
Purchasing Agent: Taylor Klinko

Lake Bridge Water Treatment Plant-Pump No. 4 (Project #07542)
Project Manager: Karim Molina-Oyola/Indigo Dunn
Purchasing Agent: Taylor Klinko

Lake Bridge Water Treatment Plant-Pump No. 4 (Project #07542)
Project Manager: Karim Molina-Oyola/Indigo Dunn
Purchasing Agent: Taylor Klinko

Lake Bridge Water Treatment Plant-Pump No. 4 (Project #07542)
Project Manager: Karim Molina-Oyola/Indigo Dunn
Purchasing Agent: Taylor Klinko

Lake Bridge Water Treatment Plant-Pump No. 4 (Project #07542)
Project Manager: Karim Molina-Oyola/Indigo Dunn
Purchasing Agent: Taylor Klinko

Lake Bridge Water Treatment Plant-Pump No. 4 (Project #07542)
Project Manager: Karim Molina-Oyola/Indigo Dunn
Purchasing Agent: Taylor Klinko

Lake Bridge Water Treatment Plant-Pump No. 4 (Project #07542)
Project Manager: Karim Molina-Oyola/Indigo Dunn
Purchasing Agent: Taylor Klinko

Lake Bridge Water Treatment Plant-Pump No. 4 (Project #07542)
Project Manager: Karim Molina-Oyola/Indigo Dunn
Purchasing Agent: Taylor Klinko

Lake Bridge Water Treatment Plant-Pump No. 4 (Project #07542)
Project Manager: Karim Molina-Oyola/Indigo Dunn
Purchasing Agent: Taylor Klinko

Lake Bridge Water Treatment Plant-Pump No. 4 (Project #07542)
Project Manager: Karim Molina-Oyola/Indigo Dunn
Purchasing Agent: Taylor Klinko

EXHIBIT A
TAMPA BAY WATER DOCUMENTS

TAMPA BAY WATER
Supplying Water To The Region

Board of Directors
Harry Cohen
Lisset Hanewicz
Chopper Davis
Dave Eggers
Jack Mariano
Charlie Miranda
Ron Oakley
Kathleen Peters
Joshua Wostal

General Manager
Charles H. Carden

General Counsel
Kelly M. Fernandez
Persson, Cohen, Mooney, Fernandez & Jackson, P.A.
.

ADDENDUM NUMBER ONE

TO

INVITATION TO BID

FOR

LAKE BRIDGE WATER TREATMENT PLANT-PUMP NO. 4 (PROJECT #07542)
CONTRACT NO. 2026012

RE: REMINDERS, CHANGES & QUESTIONS

This addendum consists of three (3) 8 ½ by 11 inch sheet(s).

The following changes, additions, deletions, reminders, and/or inquiry responses are hereby made a part of the Invitation To Bid for Tampa Bay Water's Lake Bridge Water Treatment Plant-Pump No. 4 (Project#07542), Contract No. 2026012, as fully and completely as if the same were fully set forth therein.

REMINDERS:
INQUIRY DUE DATE: July 29, 2025, 5:00 P.M. EDT
SUBMITTAL DUE DATE: August 20, 2025, 2:00 P.M. EDT.

CHANGES:
Change 1: Specification Section 17500, 1.3, D is hereby revised as detailed in the response to Q1 below.

QUESTIONS:
Q1: Would you be able to send us your current list of System Suppliers/Integrators? As per Specification Section 17500, 1.3, D – Tampa Bay Water will supply an approved System Supplier list upon request.

A1: The specification is to be updated to remove the requirement of pre-qualification.
Section 17500, Instrumentation and Controls Systems, 1.3.D:
DELETE "The Contractor shall utilize the services of a Tampa Bay Water pre-qualified System Supplier to coordinate all control system related items, to approve installation, calibrate and commission field instruments, and to perform all testing, training, and startup activities specified to be provided. Tampa Bay Water will supply an approved System Supplier list upon request."
and

REPLACE with "The Contractor shall utilize the services of a System Supplier to coordinate all control system related items, to approve installation, calibrate and commission field instruments, and to perform all testing, training, and startup activities specified to be provided. The System Supplier is required to have completed 2 projects of similar scope in the last 5 years and have previous experience with Automation Direct H2 Do-More PLCs.".

Q2: Can Barney's Pumps/Unitron Controls, a division of Barney's Pumps, Inc., be added as a System Supplier/Integrator?
A2: The specification has been revised in this Addendum One to remove the term "pre-qualified". See above Change 1 and Q1.

Q3: What is the process to be pre-qualified?
A3: The specification has been revised in this Addendum One to remove the term "pre-qualified". See above Change 1 and Q1.

Q4: Will the contractor be required to complete any work in the analyzer room?
A4: No work is directly inside the Analyzer room, however, conduits from the VFD to the PLC run through the ceiling in the Analyzer room.

Q5: Are there times when a pump may need to be shut down? Also, what is the expected shutdown duration?
A5: For this project, it is anticipated that a shutdown to tie-in piping for the new pump will be planned. If additional shutdowns are deemed necessary that shall be coordinated and limited. Time for shutdown duration is not to exceed four (4) hours and must be coordinated with Tampa Bay Water.

Q6: What work is being done and will need to be done in the main control room panel?
A6: Work to be completed in the main control room panel is provided on sheet 05N01, 05N02, 06N01, 06N02, 06N03, 06N04, 06N05, and 07N01, which includes new networking equipment, PLC hardware modifications and PLC programming.

Q7: With reference to Scada Systems, is that part of this project?
A7: Tampa Bay Water would be responsible for integration from PLC to SCADA. However, support will be required by the integrator to conduct input/output checks and troubleshoot system.

Q8: Can you inform on what Scada Systems Tampa Bay Water is using?
A8: Tampa Bay Water uses Survalent for the SCADA System at the Lake Bridge site.

Q9: Is the longer shutdown time allowance to be used in the event that the 42-inch valve does not hold?
A9: Yes.

Q10: Do the existing pumps have grease bearings?
A10 Yes. The existing pumps have grease bearings.

Q11: Is the new pump to have oil bath bearings?
A11: Yes. The new pump will have oil bath bearings.

END OF ADDENDUM ONE

TAMPA BAY WATER
Supplying Water To The Region

Board of Directors
Harry Cohen
Lisset Hanewicz
Chopper Davis
Dave Eggers
Jack Mariano
Charlie Miranda
Ron Oakley
Kathleen Peters
Joshua Wostal

General Manager
Charles H. Carden

General Counsel
Kelly M. Fernandez
Persson, Cohen, Mooney, Fernandez & Jackson, P.A.
.

ADDENDUM NUMBER TWO

TO

INVITATION TO BID

FOR

LAKE BRIDGE WATER TREATMENT PLANT-PUMP NO. 4 (PROJECT #07542)
CONTRACT NO. 2026012

RE: REMINDERS, CHANGES & QUESTIONS

This addendum consists of ten (10) 8 ½ by 11 inch sheet(s).

The following changes, additions, deletions, reminders, and/or inquiry responses are hereby made a part of the Invitation To Bid for Tampa Bay Water's Lake Bridge Water Treatment Plant-Pump No. 4 (Project#07542), Contract No. 2026012, as fully and completely as if the same were fully set forth therein.

REMINDERS:
SUBMITTAL DUE DATE: August 20, 2025, 2:00 P.M. EDT.

CHANGES:
Sheet 04N01
Sheet 05N01
Sheet 06N05
Sheet 10N02
Specification 16990 – Conduit Schedule
Specification 17500 3.3.D.2 & 3.7.A.1

QUESTIONS:

Q1: Is the Electrical Contractor going to provide the new Fiber Optic Patch Panel that is shown on drawing 04N01? The fiber optic cable and appurtenances are in specification section 16125.

A1: The General Contractor is responsible for the fiber patch panel. Please reference sheets 04N01, and 05N02. It is the intent to have a small fiber patch panel installed on the side of the PLC cabinet to organize the cables if the existing patch panel has inadequate space.

Q2: In Specification 16125 - 2.5, it states that the drawings show the number of fiber strands. Drawing 04N01, or any other drawing, does not show the number of strands for the existing fiber cable.

A2: A note for 4-strand OM3 multi-mode fiber optic cable was added to sheet 04N01. Please see Revision 1 of sheet 04N01 and revision 1 of Specification 16990 – Conduit Schedule.

Q3: In Specification 16150 - 2.6-C-2, and on Drawing 04N01, it appears that either the VFD is custom-fabricated with the FO/RS-232 Converter, or that the Electrical Contractor will provide & install this at the VFD. Contrarily, 05N01 and 05N02 suggest that this FO/RS-232 Converter is to be located in the existing PLC-1 panel, furnished and installed by the System Supplier. Please confirm whether or not both locations with Converters are correct; and if so, whose scope of work (furnish-and-install) at each location.

A3: The General Contractor must coordinate with the VFD fabricator to include the FO-RS-232 Converter within the VFD. Please see Revision 1 of sheets 04N01, 05N01, 06N05, and 10N02.

Q4: (related to the 3 questions above) For similar projects, the division between I&C System Supplier and Electrician, as it relates to the Fiber Optic communication system, would be: *I&C - supplies the FO Cable, Connectors, Terminations, Testing; as well as appurtenances like FO Patch Panels, jumper cables, etc.; and ** Electrician provides conduits external to panels/enclosures; and installs the Cable for these long external runs. Would this be a more pragmatic arrangement? Please clarify.

A4: The Engineer does not assign responsibilities; the General Contractor shall assign tasks to specialty sub-contractors.

Q5: Key Note 2, on drawing 05N02, states that the new VFD#4 I/O signals will be terminated on existing spare I/O points. Are all of the spare I/O points wired down to terminals and panel surge protectors as shown on drawings 06N01-06N04? Please confirm.

A5: These are new I/O points, it is the responsibility of the installing contractor to verify existing conditions and supply and install materials that satisfy the contract requirements. See Revision 1 of Specification 16990 – Conduit Schedule.

Q6: Drawings 06N01-06N02 show Surge Protectors, located in the field, for the new Thermal Flow Switches. However, the specification sheet states that surge protection is not required. Please clarify.

A6: Provide surge protection as indicated in sheets 06N01-06N02.

Q7: The specification states that a minimum of (30) custom graphic displays shall be provided by the System Supplier. Given that the scope-of-work for this Project is the addition of new VFD#4, this seems excessive. Please confirm whether or not (30) custom graphic displays will be required.

A7: Graphics will be required for the new pump. Some graphics will be new, some graphics will be modifications of the existing screens. The specification is to be updated to revise the number of displays.
Specification 17500, Instrumentation and Controls Systems, 3.3.D.2:
DELETE "A minimum of 30 custom graphic displays excluding control pop-ups shall be provided by the System Supplier."

and
REPLACE with "The integrator will modify existing screens as needed and create a maximum of 10 custom graphics displays excluding control pop-ups."

Q8: In Specification 17500 - 3.7-A.1, it states that the System Supplier is responsible for all costs associated with any off-site training. Please confirm that the listed training categories will all take place on-site.

A8: Training is to take place on-site. The specification will be updated to clarify training location.
Specification 17500, Instrumentation and Control Systems, 3.7.A.1:
DELETE "Training Costs. All costs associated with the training program, including travel, lodging, and per diem expenses for OWNER personnel to attend off-site training programs, shall be the responsibility of System Supplier and shall be included in the contract price."
and
REPLACE with "Training Costs. Training is to take place on-site. There will be no off-site training or costs associated with off-site training."

Q9: Please confirm that the PLC Spare Parts, as tabulated, are the only Spare Parts provisions that the System Supplier is required to furnish for this project.

A9: The PLC spare parts are only a small portion of this project. There are other disciplines involved in this project that do not affect the Systems Integrator. Those discipline-specific items/specifications may require spare parts as well. (For example, the VFDs or Pumps, or valves may require spare parts).

END OF ADDENDUM TWO

SECTION 16990

CONDUIT SCHEDULE
AREA 10

PART 1 GENERAL

1.01 SUMMARY

A. Conduit requirements:
   1. As defined in Section 16050 and Section 16130.

B. Cable requirements and definitions:
   1. As defined in Section 16050 and Section 16123.
   2. 2/CS#16: 2 conductor, 16 gauge, twisted shielded pair.
   3. */FO: Fiber optic (* indicates strand count).
   4. MFR: Manufacturer or vendor furnished cable.
   5. PULL: Pull Rope.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 CONDUIT SCHEDULE

A. Conduit Schedule is presented on the following pages.

8/4/25 REV 1: Addendum 2

CONDUIT SCHEDULE AREA

LAKE BRIDGE HSPS PUMP #4

HIGH SERVICE PUMP STATION

ENGINEER	SK
REVISION	1
DATE	8/4/25

CONDUIT			CONDUCTORS			GROUND				
NUMBER	DWG	SIZE	#	SIZE	TYPE	#	SIZE	TYPE	DESCRIPTION	CONNECTING SEGMENTS
C-10-010	10E02	0.75"	2	#14	XHHW-2	1	#14	XHHW-2	FR: PSH-1 (EXISTING) TO: CONDUIT TEE 2 #14 >> PSH-1 (EXISTING) CONTROL	C-10-012
C-10-011	10E02	0.75"	2 2	#12 #14	XHHW-2 XHHW-2	1	#12	XHHW-2	FR: FSL-1 TO: CONDUIT TEE 2 #12 >> FSL-1 POWER 2 #14 >> FSL-1 CONTROL	C-10-012
C-10-012 (EXISTING)	10E02 10E03	0.75"	2 4	#12 #14	XHHW-2 XHHW-2	1	#12	XHHW-2	FR: CONDUIT TEE TO: PLC-1-1 2 #14 >> PSH-1 (EXISTING) CONTROL 2 #12 >> FSL-1 POWER 2 #14 >> FSL-1 CONTROL	 C-10-010 C-10-011 C-10-011
C-10-020	10E02	0.75"	2	#14	XHHW-2	1	#14	XHHW-2	FR: PSH-2 (EXISTING) TO: CONDUIT TEE 2 #14 >> PSH-2 (EXISTING) CONTROL	C-10-022
C-10-021	10E02	0.75"	2 2	#12 #14	XHHW-2 XHHW-2	1	#12	XHHW-2	FR: FSL-2-2 TO: CONDUIT TEE 2 #12 >> FSL-2-2 POWER 2 #14 >> FSL-2-2 CONTROL	C-10-022
C-10-022 (EXISTING)	10E02 10E03	0.75"	2 4	#12 #14	XHHW-2 XHHW-2	1	#12	XHHW-2	FR: CONDUIT TEE TO: PLC-1-1 2 #14 >> PSH-2 (EXISTING) CONTROL 2 #12 >> FSL-2-2 POWER 2 #14 >> FSL-2-2 CONTROL	 C-10-020 C-10-021 C-10-021
C-10-030	10E02	0.75"	2	#14	XHHW-2	1	#14	XHHW-2	FR: PSH-3 (EXISTING) TO: CONDUIT TEE 2 #14 >> PSH-3 (EXISTING) CONTROL	C-10-032
C-10-031	10E02	0.75"	2 2	#12 #14	XHHW-2 XHHW-2	1	#12	XHHW-2	FR: FSL-3 TO: CONDUIT TEE 2 #12 >> FSL-3 POWER 2 #14 >> FSL-3 CONTROL	C-10-032
C-10-032 (EXISTING)	10E02 10E03	0.75"	2 4	#12 #14	XHHW-2 XHHW-2	1	#12	XHHW-2	FR: CONDUIT TEE TO: PLC-1-1 2 #14 >> PSH-3 (EXISTING) CONTROL 2 #12 >> FSL-3 POWER 2 #14 >> FSL-3 CONTROL	 C-10-030 C-10-031 C-10-031
C-10-040	10E02	1.5"	2 6	#12 MFR	XHHW-2 CABLE	1	#12	XHHW-2	FR: PMP-4 MOTOR TERMINAL BOX (STATOR RTD, AND MWH) TO: J-BOX 2 #12 >> PMP-4 MWH POWER 6 MFR >> PMP-4 MOTOR STATOR RTD	
C-10-041 (EX. SPARE	10E02 10E03	0.75"	2 2	#12 #14	XHHW-2 XHHW-2	1	#12	XHHW-2	FR: FSL-4 TO: PLC-1-1 2 #12 >> FSL-4 POWER 2 #14 >> FSL-4 CONTROL	
C-10-042	10E02	0.75"	2	#14	XHHW-2	1	#14	XHHW-2	FR: LCP-4 (E-STOP) TO: J-BOX 2 #14 >> LCP-4 (E-STOP) CONTROL	C-10-046
C-10-043	10E02	0.75"	2	#14	XHHW-2	1	#14	XHHW-2	FR: PSH-4 TO: J-BOX 2 #14 >> PSH-4 CONTROL	C-10-046
C-10-044	10E02	0.75"	2	#12	XHHW-2	1	#12	XHHW-2	FR: J-BOX TO: J-BOX 2 #12 >> PMP-4 MWH POWER	C-10-046
C-10-045	10E02	0.75"	2	#14	XHHW-2	1	#14	XHHW-2	FR: PSL-4 TO: J-BOX 2 #14 >> PSL-4 CONTROL	C-10-046
C-10-046 (EXISTING)	10E02 10E03	0.75"	2 6	#12 #14	XHHW-2 XHHW-2	1	#12	XHHW-2	FR: J-BOX TO: VFD-4 2 #14 >> LCP-4 (E-STOP) CONTROL 2 #14 >> PSH-4 CONTROL 2 #12 >> PMP-4 MWH POWER 2 #14 >> PSL-4 CONTROL	 C-10-042 C-10-043 C-10-044 C-10-045
C-10-047 (EX. SPARE	10E03 Addendum 2	0.75"	10	#14	XHHW-2	1	#14	XHHW-2	FR: VFD-4 TO: PLC-1-1 2 #14 >> VFD-4 CONTROL; PLC-OUTPUT 8 #14 >> VFD-4 FEEDBACK; PLC-INPUT	

CONDUIT SCHEDULE AREA

LAKE BRIDGE HSPS PUMP #4

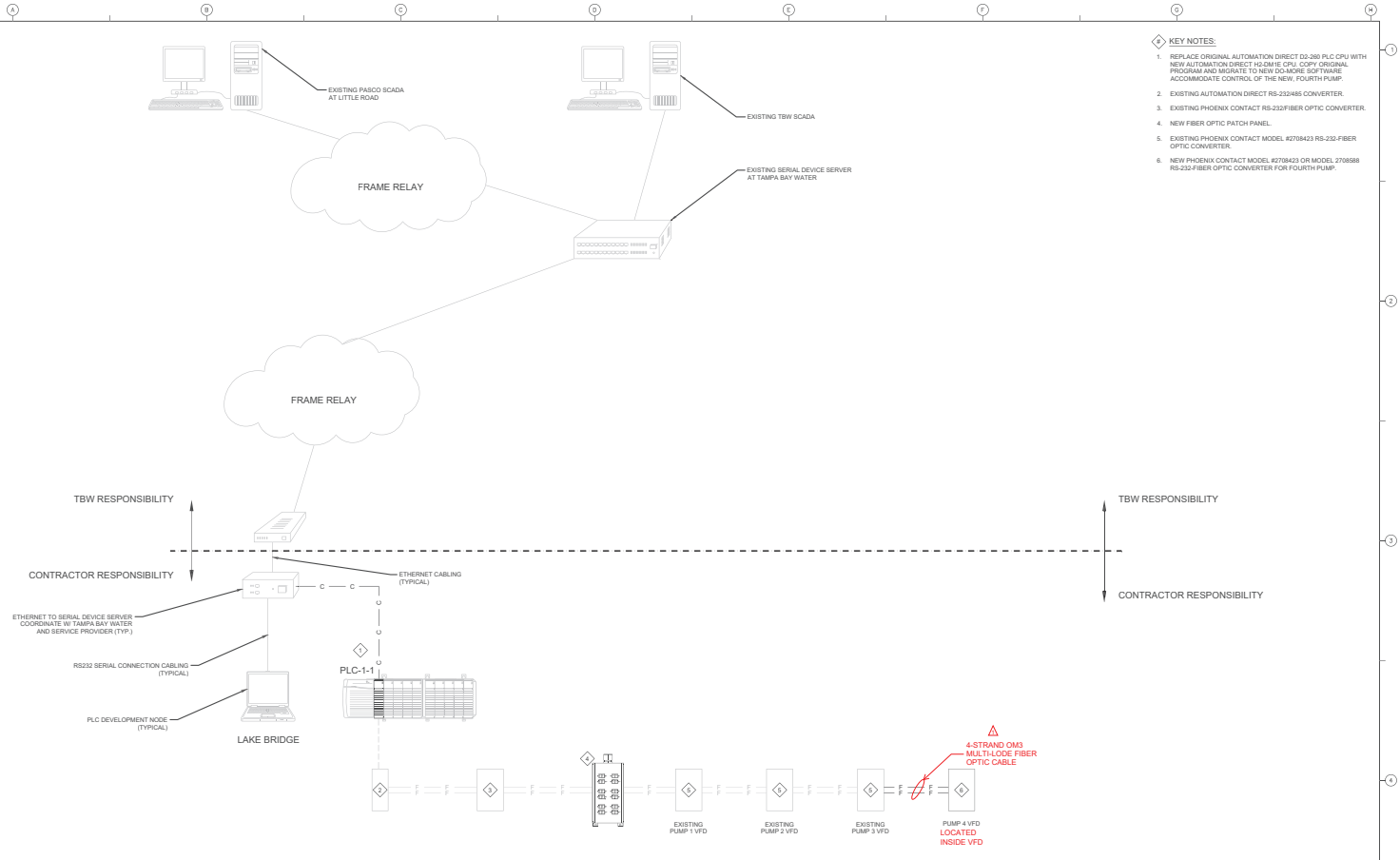
HIGH SERVICE PUMP STATION

ENGINEER	SK
REVISION	1
DATE	8/4/25

CONDUIT			CONDUCTORS			GROUND				
NUMBER	DWG	SIZE	#	SIZE	TYPE	#	SIZE	TYPE	DESCRIPTION	CONNECTING SEGMENTS
P-10-040 (EXISTING)	10E03	2.5"	3	#3/0	XHHW-2	1	#3	XHHW-2	FR: VFD-4 TO: SWBD-LB 3 #3/0 >> VFD-4 POWER I	
P-10-041 (EXISTING)	10E03	2.5"	3	#3/0	XHHW-2	1	#3	XHHW-2	FR: VFD-4 TO: SWBD-LB 3 #3/0 >> VFD-4 POWER II	
P-10-042 (EXISTING)	10E02 10E03	2.5"	3	#3/0	XHHW-2	1	#3	XHHW-2	FR: PMP-4 MOTOR TERMINAL BOX (POWER) TO: VFD-4 3 #3/0 >> PMP-4 MOTOR POWER I	
P-10-043 (EXISTING)	10E02 10E03	2.5"	3	#3/0	XHHW-2	1	#3	XHHW-2	FR: PMP-4 MOTOR TERMINAL BOX (POWER) TO: VFD-4 3 #3/0 >> PMP-4 MOTOR POWER II	
S-10-040	10E02	0.75"	1	MFR	CABLE	1	#14	XHHW-2	FR: PMP-4 BEARING RTD 1 TO: J-BOX 1 MFR >> PMP-4 BEARING RTD 1 SIGNAL	S-10-044
S-10-041	10E02	0.75"	1	MFR	CABLE	1	#14	XHHW-2	FR: PMP-4 BEARING RTD 2 TO: J-BOX 1 MFR >> PMP-4 BEARING RTD 2 SIGNAL	S-10-044
S-10-042	10E02	0.75"	1	MFR	CABLE	1	#14	XHHW-2	FR: PMP-4 MOTOR BEARING RTD 1 TO: J-BOX 1 MFR >> PMP-4 MOTOR BEARING RTD 1 SIGNAL	S-10-044
S-10-043	10E02	0.75"	1	MFR	CABLE	1	#14	XHHW-2	FR: PMP-4 MOTOR BEARING RTD 2 TO: J-BOX 1 MFR >> PMP-4 MOTOR BEARING RTD 2 SIGNAL	S-10-044
S-10-044 (EX. SPARE)	10E02 10E03	1.5"	10	MFR	CABLE	1	#14	XHHW-2	FR: J-BOX TO: VFD-4 6 MFR >> PMP-4 MOTOR STATOR RTD 1 MFR >> PMP-4 BEARING RTD 1 SIGNAL S-10-040 1 MFR >> PMP-4 BEARING RTD 2 SIGNAL S-10-041 1 MFR >> PMP-4 MOTOR BEARING RTD 1 SIGNAL S-10-042 1 MFR >> PMP-4 MOTOR BEARING RTD 2 SIGNAL S-10-043	
S-10-045 (EX. SPARE)	10E03 Addendum 2	0.75"	1 2	4/FO 2/CS-#16		1	#14	XHHW-2	FR: VFD-4 TO: PLC-1-1 1 2/CS-#16 >> VFD-4 SPEED CONTROL; PLC-OUTPUT 1 2/CS-#16 >> VFD-4 SPEED FEEDBACK: PLC-INPUT 1 4/FO >> VFD-4 TO PLC NETWORK FIBER	
X-10-040 (EX. SPARE)	10E02 10E03	0.75"	1	PULL	ROPE				FR: PMP-4 TO: PLC-1-1 1 PULL >> SPARE	

END OF CONDUIT SCHEDULE

END OF SECTION



KEY NOTES:

1. REPLACE ORIGINAL AUTOMATION DIRECT D2-260 PLC CPU WITH NEW AUTOMATION DIRECT H2-DM1E CPU. COPY ORIGINAL PROGRAM AND MIGRATE TO NEW DO-MORE SOFTWARE ACCOMMODATE CONTROL OF THE NEW, FOURTH PUMP.
2. EXISTING AUTOMATION DIRECT RS-232/485 CONVERTER.
3. EXISTING PHOENIX CONTACT RS-232/FIBER OPTIC CONVERTER.
4. NEW FIBER OPTIC PATCH PANEL.
5. EXISTING PHOENIX CONTACT MODEL #2708423 RS-232-FIBER OPTIC CONVERTER.
6. NEW PHOENIX CONTACT MODEL #2708423 OR MODEL 2708588 RS-232-FIBER OPTIC CONVERTER FOR FOURTH PUMP.

LAST SAVED BY: BWillner

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

Design By: BAL Date: JANUARY 2025
Drawn By: LR Date: JANUARY 2025
Checked By: Date: JANUARY 2025
APPROVED BY: Date:

carollo
101 EAST KENNEDY BLVD, SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT PLANT – PUMP #4

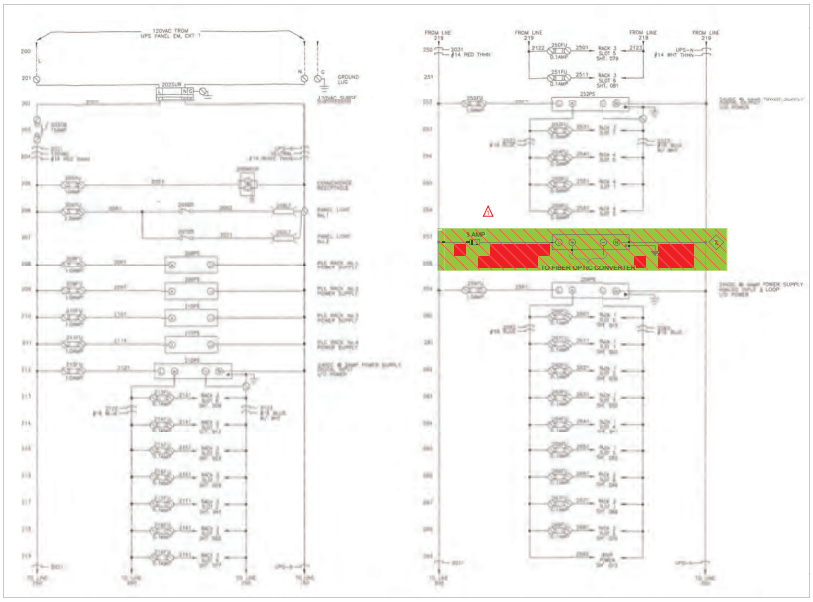
INSTRUMENTATION

NETWORK BLOCK DIAGRAM

REV	DESCRIPTION	DATE
1	Addendum 2	8/1/25

TBW Drawing No.: 04N01
Sheet
File Name:
Scale: TBW Project No.:07542
Sheet No.: ___OF___XX___

PROJECT NO. 203160-400000 FILE NAME: 203160_04N01.dwg



GENERAL NOTES:

1. RE-USE EXISTING PLC CABINET. COORDINATE DEMOLITION AND REPLACE WITH SPECIFICATION REQUIREMENTS. TURN OVER ANY REMOVED EQUIPMENT TO TAMPA BAY WATER AS SPARE COMPONENTS.
2. COORDINATE POWER AND CONTROL SHUT-DOWN WITH TAMPA BAY WATER.
3. REFER TO DETAILS NE101/TYP, NE102/TYP, NE304/TYP, NE305/TYP, NE306/TYP, NE307/TYP, NE314/TYP, NE315/TYP, NE350/TYP, NE352/TYP, NE354/TYP.

KEY NOTES:

1. REPLACE ORIGINAL AUTOMATION DIRECT D2-260 PLC CPU WITH NEW AUTOMATION DIRECT H2-DM1E CPU. COPY ORIGINAL PROGRAM AND EDIT TO ACCOMMODATE CONTROL OF THE NEW, FOURTH PUMP.
2. INSTALL NEW LEVITON VERTIG ZERO-U PATCH PANEL 49280-QP6, OR SIMILAR HERE TO RECEIVE FIBER OPTIC CABLE FROMTHE NEW VFD. PROVIDE ST-STYLE TERMINATIONS FOR THE FIBER OPTIC CABLE AS REQUIRED TO FIT THE RS-485 TO FIBER CONVERTER.

TAMPA BAY WATER
Supplying Water To The Region

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

Design By: BAL Date: JANUARY 2025
Drawn By: LM Date: JANUARY 2025
Checked By: _____ Date: JANUARY 2025
APPROVED BY: _____ Date: _____

carollo
101 EAST KENNEDY BLVD, SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT
PLANT – PUMP #4

INSTRUMENTATION

PLC CABINET MODIFICATIONS

REV	DESCRIPTION	DATE
1	Addendum 2	8/1/25

TBW Drawing No.:

Sheet 05N01

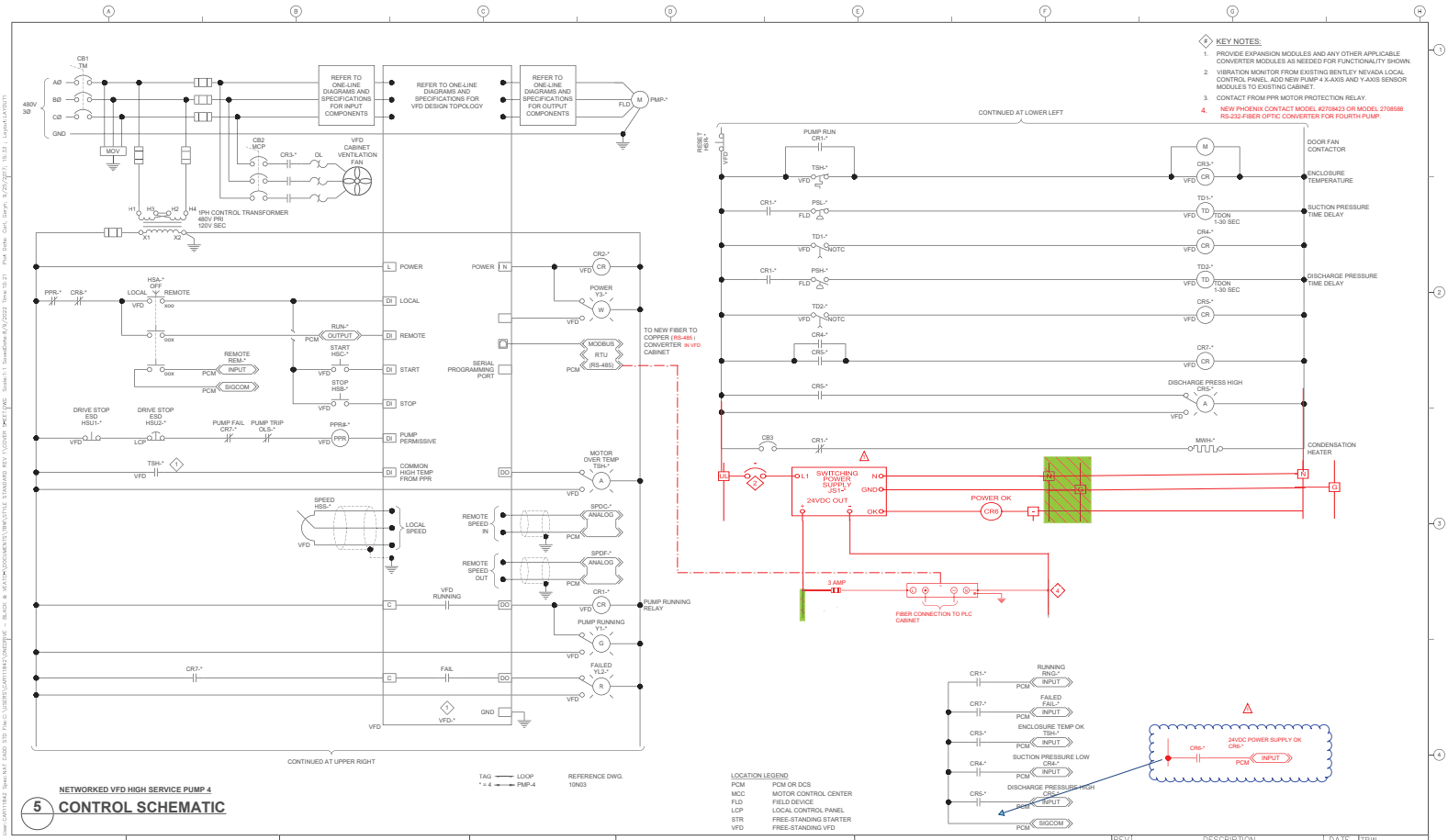
File Name:

Scale: TBW Project No.:07542

Sheet No.: ___OF___XX___

LAST SAVED BY: MLamb

PROJECT NO. 203160-400000 FILE NAME: 203160_05N01.dwg



NETWORKED VFD HIGH SERVICE PUMP 4

5 CONTROL SCHEMATIC

TAMPA BAY WATER
Supplying Water You'll Swallow

2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

Design By: BAL Date: MARCH 2025
Drawn By: ESW Date: MARCH 2025
Checked By: Date: MARCH 2025
APPROVED BY: Date:

carollo
101 EAST KENNEDY BLVD, SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT PLANT – PUMP #4

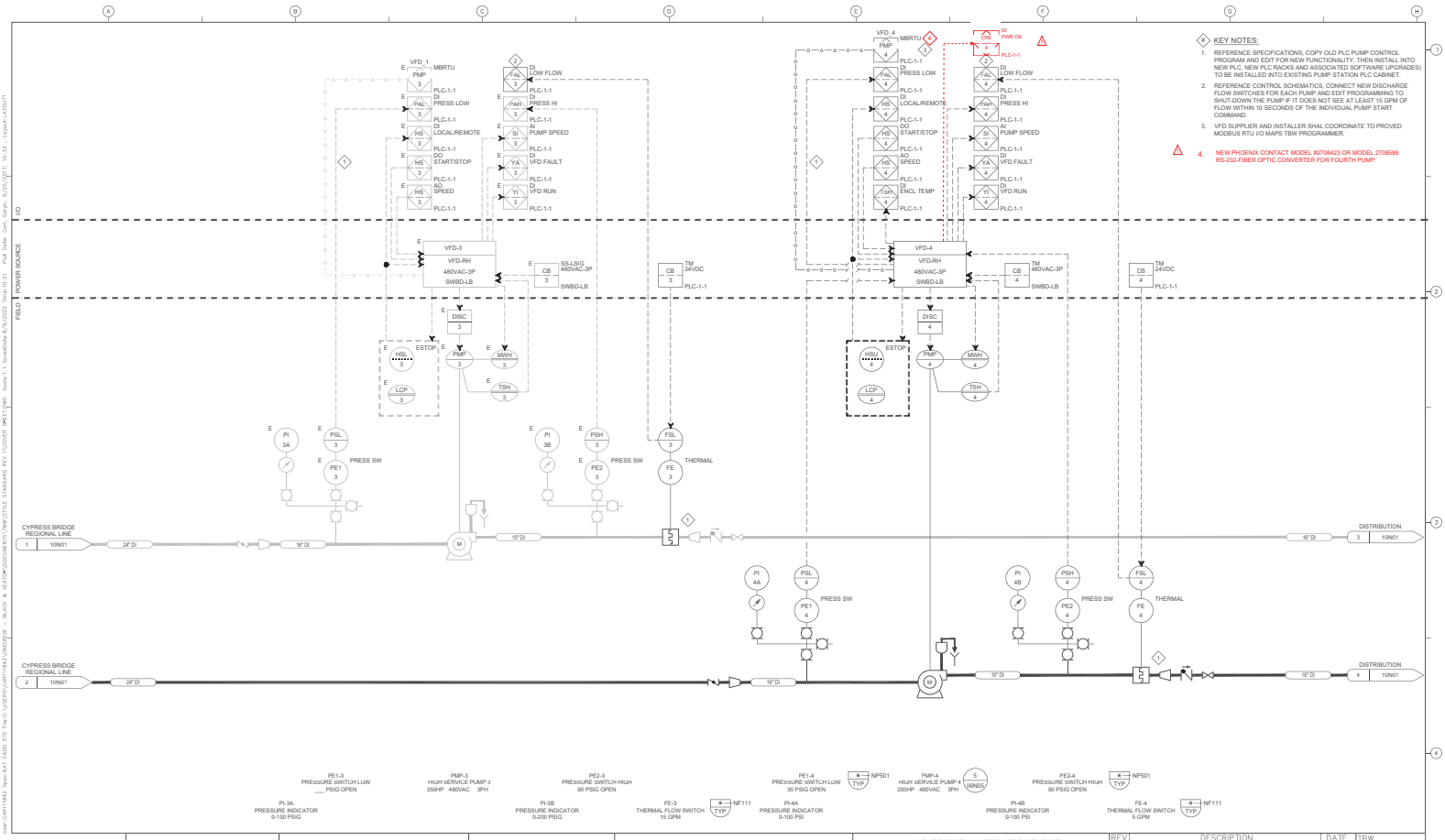
INSTRUMENTATION

SCHEMATICS 5 - HIGH SERVICE PUMP 4

REV	DESCRIPTION	DATE
1	Addendum 2	8/1/25
	NOT FOR CONSTRUCTION	

TBW Drawing No.:
Sheet 06N05
File Name:
Scale: TBW Project No.:07542
Sheet No.: 28 OF 37

PROJECT NO. 203160-400000 FILE NAME: 203160_06N05.dwg



TAMPA BAY WATER
Supplying Water To The Bay Area
2535 LANDMARK DRIVE
SUITE 211
CLEARWATER, FLORIDA 33761
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

Design By: BAL Date: MARCH 2025
Drawn By: ESW Date: MARCH 2025
Checked By: Date: MARCH 2025
APPROVED BY: Date:

carollo
101 EAST KENNEDY BLVD, SUITE 700
TAMPA, FLORIDA 33602
PHONE (813) 888-9572

LAKE BRIDGE WATER TREATMENT PLANT – PUMP #4

INSTRUMENTATION

HIGH SERVICE PUMPS P&ID 2

REV	DESCRIPTION	DATE
1	Addendum 2	8/1/25
	NOT FOR CONSTRUCTION	

TBW Drawing No.: 10N02

Sheet

File Name:

Scale: TBW Project No.: 07542

Sheet No.: 31 OF 37

PROJECT NO. 203160-400000 FILE NAME: 203160_10N02.dwg

LAST SAVED BY: LRiva

INVITATION TO BID (ITB)

FINANCE & ADMINISTRATION DIVISION
CHRISTINA SACKETT, CFO

PURCHASING REPRESENTATIVE: TAYLOR KLINKO, PURCHASING SPECIALIST I

E-MAIL: purchasing@tampabaywater.org
WEBSITE: http://www.tampabaywater.org
2575 ENTERPRISE ROAD, CLEARWATER, FLORIDA 33763-1102

Contract No.: 2026012 **Project No.:** 07542
Title: LAKE BRIDGE WATER TREATMENT PLANT-PUMP NO. 4

Issue Date:	**June 24, 2025**
Pre-Bid Conference & Site Visit:	**July 17, 2025 at 10:00 a.m. EDT** **Tampa Bay Water** **Lake Bridge Water Treatment Plant** **5901 E County Line Rd** **Wesley Chapel, FL 33544**
Inquiry Deadline:	**July 29, 2025 at 5:00 p.m. EDT**
Addendum Posting:	**August 8, 2025 at 5:00 p.m. EDT**
Submittal Due Date:	**August 20, 2025 at 2:00 p.m. EDT**
In-Person Public Bid Opening Date:	**August 20, 2025 at 2:30 p.m. EDT** **Tampa Bay Water** **Administrative Offices** **2575 Enterprise Road** **Clearwater, Florida 33763**

Description: Tampa Bay Water, a Regional Water Supply Authority, is soliciting formal bids for the install of an additional pump at the Lake Bridge Water Treatment Plant (WTP) to increase the capacity of the pump station and meet the demand needs at Pasco County's most Eastern Point of Connection (POC).

Important Notice: Tampa Bay Water issues its solicitations electronically through its contracted vendor, Bonfire. All Addenda to such solicitations will be issued exclusively through Bonfire. If you have obtained this solicitation from a source other than Bonfire, you will not be listed on the plan holders list and may not receive notification of any Addenda issued. Failure to receive any issued Addenda shall not relieve the Bidder from any obligation(s) contained in the Addenda. To access Tampa Bay Water solicitations, any resulting Addenda and Bid results, go to: https://tampabaywater.bonfirehub.com. If you need assistance in registering with Bonfire send an email to: Support@GoBonfire.com or visit Bonfire's help forum at https://vendorsupport.gobonfire.com/hc/en-us.

TABLE OF CONTENTS

TABLE OF CONTENTS....2
1.0 INTRODUCTION....3
2.0 BID PROCESS INFORMATION....5
3.0 BID PREPARATION....7
4.0 EVALUATION AND AWARD PROCESS INFORMATION....10
5.0 SPECIAL TERMS AND CONDITIONS....13
6.0 SUPPLEMENTAL INFORMATION FOR BIDDERS....15
7.0 PRE-BID CONFERENCE LOCATION MAP....17
8.0 BID SUBMITTAL FORMS....19
BID FORM....20
PRICE FORM....26
FLORIDA BID BOND....27
CONSULTANT AFFIDAVIT....30
NON-COLLUSION AFFIDAVIT....32
LITIGATION HISTORY....33
MAJOR EQUIPMENT LIST....34
MAJOR EQUIPMENT MANUFACTURERS....35
SUBCONTRACTORS LIST....36
QUESTIONNAIRE....37
9.0 SAMPLE CONTRACT....38
10.0 TECHNICAL SPECIFICATIONS....104
11.0 DRAWINGS....105
12.0 SITE PHOTOGRAPHS....106

1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this Invitation to Bid (ITB) is to solicit Bids from qualified firms or individuals to install an additional pump at the Lake Bridge Water Treatment Plant (WTP) to increase the capacity of the pump station and meet the demand needs at Pasco County's most Eastern Point of Connection (POC) for the Lake Bridge Water Treatment Plant-Pump No. 4, Project #07542, Contract #2026012 ("the Project"). The Project is located in Pasco County. The budget for this project is $1,565,868.00.

1.2 SCOPE

The work described herein consists of installation of a fourth pump, motor, Variable Frequency Drive (VFD), and all associated electrical and Instrumentation and Control (I&C) equipment to operate the new pump. The scope of the Work associated with this project includes:

1. Preparation of the Electrical room for the installation of VFD #4 and the installation of VFD #4.
2. Construction of all required equipment and pipe supports.
3. Installation of the pump, motor, and all associated piping and/or appurtenances in the High Service Pump room.
4. Verification and pulling of existing electrical and instrumentation conductors from the pump room and VFD room to the control panel.
5. Purchasing, storage, and transportation of all equipment to the site and installation in the appropriate locations.
6. Replacement of the existing Programmable Logic Controller (PLC) processor with the new PLC processor.
7. Program and configuration of the PLC and HMI software upgrades along with the upgrading existing PLC functionality.
8. Conduct performance testing for all control system programing, including the new pump and motor.
9. Furnish all materials, labor, tools, equipment, and incidentals necessary for the complete and proper construction of the work during construction.
10. Perform commissioning and startup of the Lake Bridge Pump Station once installation and PLC integration are completed.

The scope of the Work is more completely described in the Contract Documents.

1.3 GENERAL INFORMATION

1.3.1 Tampa Bay Water is Florida's largest provider of wholesale drinking water. Our mission is to reliably provide clean, safe water to the Tampa Bay region now and for future generations. We are a regional agency created by an inter-local agreement among our member governments through state enabling legislation. We have a nine-member Board of Directors made up of representatives from the three counties and three cities we serve: Hillsborough County, Pasco County, Pinellas County, New Port Richey, St. Petersburg, and Tampa.

1.3.2 Bidders can familiarize themselves with our agency at www.tampabaywater.org. Tampa Bay Water was recreated in 1998 as the outgrowth of a two-year negotiation process that changed the name, structure, and operations of the West Coast Regional

Water Supply Authority. Our predecessor, the West Coast Regional Water Supply Authority, was created in 1974. Tampa Bay Water is now a multi-source provider of drinking water including groundwater, surface water, and desalinated seawater. Tampa Bay Water is a non-profit governmental agency funded through wholesale water rates by its member governments. Our member governments serve more than 2.5 million residents in the Tampa Bay area.

1.3.3 Tampa Bay Water has retained Carollo Engineers Inc. ("Engineer") as its Agency Representative for this Project. Carollo Engineers Inc. has responsibility for coordinating all activities associated with the design, construction, and commissioning of the Project. Tampa Bay Water and Carollo Engineers Inc. are working cooperatively to manage the ITB process, evaluate Bids, and support the negotiations of the Contract. Carollo Engineers Inc. shall also provide Project oversight, including reviews for contract compliance, construction monitoring, start-up assistance, and environmental compliance oversight.

1.4 DEFINITIONS

All definitions are either listed below or are included in the General Conditions in the attached Contract.

1.4.1 **AGENCY** is used interchangeably with Tampa Bay Water.

1.4.2 **AGREEMENT** or **CONTRACT** are used interchangeably and refer to the document, along with any amendments, that constitutes authorization for, and commitment by the Contractor to provide construction services to Tampa Bay Water.

1.4.3 **BASE BID** is the sum stated in the Bid for which Bidders offer to perform the Work described in the Bidding Documents, to which work may be added or deleted by sums stated in Alternate Bids.

1.4.4 **BID** refers to a Bidder's response to the requirements of this ITB.

1.4.5 **BID OPTION** means a specified portion of the Work identified in the scope of work that may be added to or deducted from the Base Bid at Tampa Bay Water's discretion and identified in the Contract. If required, Bid Options shall be evaluated along with the Base Bid and may be used at the discretion of Tampa Bay Water to determine the lowest bid.

1.4.6 **BIDDER** means a business that responds to this solicitation. If Bidder is a consortium, partnership, joint venture, or other organization, this definition shall include all partners, members, or participants.

1.4.7 **CONTRACTOR** means the Bidder who enters into a contract to provide construction services for this Project.

1.4.8 **ENGINEER** is the licensed design professional of record responsible for designing the Project.

1.4.9 **PROJECT SITE** is Tampa Bay Water's Lake Bridge Water Treatment Plant located in Pasco County at 5901 E County Line Rd, Wesley Chapel, FL 33544, as shown in the Project Location Map provided in Article 7.0.

2.0 BID PROCESS INFORMATION

2.1 PRE-BID CONFERENCE AND SITE VISIT

A Pre-Bid Conference and Site Visit will be held for this ITB on July 17, 2025 at 10:00 a.m. EDT., at Tampa Bay Water's Lake Bridge Water Treatment Plant, 5901 E County Line Rd, Wesley Chapel, FL 33544. The Pre-Bid Conference and Site Visit are not mandatory; however, firms are highly encouraged to attend. This will be the only site visit tour offered. Bidders will need to drive to the location in their own vehicles and should dress in appropriate comfortable field tour attire (long pants and closed toe shoes). Tampa Bay Water reserves the right to cancel the site visit if inclement weather or wet/muddy road conditions warrant cancellation.

2.2 INQUIRIES AND ADDENDA

Tampa Bay Water is committed to a fair, open process for interested parties to receive information about the Project and the competitive procurement process that Tampa Bay Water is using for selection of a Contractor and award of the Contract. **Inquiries for additional information or clarifications must be submitted on Bonfire's project page for this ITB at https://tampabaywater.bonfirehub or via email to purchasing@tampabaywater.org no later than the Inquiry Deadline on the cover of this ITB**. Any general inquiries may be responded to directly. Any substantive inquiries resulting in information and changes deemed material to the ITB shall be provided in the form of a written addendum which will be published at least five (5) days prior to the Submittal Due Date on Bonfire and via link at Tampa Bay Water's web site at www.tampabaywater.org. Failure of any firm to receive any such addendum or interpretation shall not relieve said Bidders from any obligation contained therein.

2.3 BID SUBMISSION

2.3.1 Tampa Bay Water prefers and strongly encourages electronic submission of Bids through our e-procurement portal at http://tampabaywater.bonfire.com. Bidders should allow sufficient time and at least ONE (1) day before the Submittal Due Date to begin the uploading process and finalize submissions. To submit responses electronically, Bidders must register with Bonfire and follow the instructions in the portal. Minimum system requirements are Microsoft Edge, Google Chrome, Safari, or Mozilla Firefox. JavaScript and browser cookies must be enabled. Maximum upload file size is 1000 MB. Documents should not be embedded within uploaded files as the embedded files will not be accessible. Bidders will have the ability to modify their submissions up to the Submittal Due Date in Bonfire. Tampa Bay Water is not responsible for any technical problems with the electronic transmission and/or delay in receipt due to technical problems. Such electronic transmittal errors will not alter or affect the deadline date and time for receipt of Responses. If you require assistance, please contact Bonfire at Support@GoBonfire.com.

2.3.2 Bidders unable to submit electronically must deliver sealed Bids to the address provided on the cover of this document no later than the above-referenced Submittal Due Date. Include one clearly marked original and one digital copy on a flash drive enclosed in a sealed envelope or carton clearly marked with the name and contract number and delivered in person, by carrier or messenger, or by certified U.S. Mail.

2.3.3 Late Bids will not be considered. No Bid can be withdrawn after the Submittal Due Date without the written permission of Tampa Bay Water.

2.4 BID WITHDRAWAL OR RESUBMISSION

Bidders may withdraw their Bids by notifying Tampa Bay Water in writing at any time prior to the Submittal Due Date. Such notice shall be in writing over the signature of the Bidder, and it shall be so worded as not to reveal the amount of the original Bid. Bids not so withdrawn shall, upon opening, constitute an irrevocable offer for a period of One-Hundred Twenty (120) calendar days to provide the services set forth in this solicitation, unless extended by mutual agreement. Failure to agree to an extension shall not constitute grounds for forfeiting any bid bond or other security. Withdrawal of a Bid, as prescribed in this paragraph, shall not prejudice the right of a Bidder to resubmit a Bid prior to the Submittal Due Date indicated on the cover of this ITB.

2.5 RIGHT OF REJECTION

Tampa Bay Water reserves the right to reject any or all Bids.

2.6 IN-PUBLIC BID OPENING

Bids will be publicly opened at Tampa Bay Water's Administrative Offices located at 2575 Enterprise Road, Clearwater, Florida 33763, on the date of the Bid Submittal Deadline, on August 20, 2025 at 2:30 p.m. EDT.

3.0 BID PREPARATION

3.1 PROJECT UNDERSTANDING

3.1.1 Beginning on the Issue Date on the cover of this ITB, complete sets of the ITB documents may be obtained through our e-procurement portal at https://tampabaywater.bonfirehub.com. Any addenda shall be provided here as well. Prior to submission of its Bid, each Bidder must ascertain that it has received a complete and accurate set of ITB documents, including all addenda issued.

3.1.2 Bidders are expected to read and understand this ITB and associated documents in their entirety and inspect the project site to inform itself of the conditions related to the execution of the Work. Failure to do so will not relieve a successful Bidder of its obligations to furnish the services necessary to carry out all the requirements and provisions set forth in the contract. Bidders must be able to fully perform the tasks outlined herein, and in the timeline required.

3.1.3 Bidders shall, upon discovery of any conflict, ambiguity, error or omission in the ITB, the Project site or any other general, local or prevailing conditions, make a written request for interpretation or clarification in accordance with the inquiry process provided in the prior section.

3.1.4 If requested by a Bidder in writing within a reasonable time in advance of the date of the opening of the Bids, Tampa Bay Water will make a good faith attempt to provide or obtain access to the project site to allow the Bidder to conduct those reasonable explorations and tests the Bidder deems necessary for submission of a Bid (subject to a review by Tampa Bay Water and the Engineer). If access is granted, the Bidder shall clean up and restore any disturbed area to its former condition upon completion of such explorations and tests.

In consideration of Tampa Bay Water arranging and permitting access to the project site, Bidder acknowledges that by entering the project site, Bidder shall defend, indemnify and hold Tampa Bay Water, Engineer and their consultants harmless from any loss, expense, damage, injury, claim or suit arising out of or relating to Bidder's entry, exploration and testing upon the project site. As a condition to any Bidder being provided access to the project site, that Bidder shall execute and deliver to Tampa Bay Water a Release and Indemnification Agreement, which is available upon request.

3.1.5 Each Bidder shall have the responsibility to inform itself of, and if awarded the contract shall comply with, all laws and regulations. Examples of such laws and regulations include, but are not limited to, those relating to minimum wages, nondiscrimination in employment, protection of public and employee safety and health, environmental protection, building codes, fire protection, airport operation and safety, grading and drainage, use of explosives, vehicular traffic, access to streets and highways, restoration of lands and property under the control of the State or a Political Subdivision, nuisance control, taxes, permits, licensing, and fees.

3.1.6 Any oral statement, interpretation, clarification, correction, addition or deletion to the ITB documents will be binding only if issued as a written Addendum. Failure to read or reference the addenda in its Bid will not relieve a Contractor of its obligations to comply with the addenda.

3.2 BID CONTENTS: Include the following items:

- All forms in Section 8.0
- Bid Security
- Evidence that the Bidder is qualified and capable to complete the Work
- Any other information called for in this ITB.

3.3 QUALIFICATION OF BIDDER

3.3.1 Bidder and its key personnel to be assigned to the Work must meet the following minimum qualifications:

- Firm must hold an active license in the State of Florida as a General Contractor.
- Firm must have performed one previous project of similar scope within the past five (5) years.
- Project Superintendent must have served as a Project Superintendent on at least one previous project of similar scope within the past five (5) years.
- Project Manager must have served as a Project Manager on at least one previous project of similar scope within the past five (5) years.

3.3.2 The Bidder must have the authority to perform the type of work in this ITB in accordance with laws and regulations applicable to the Project and local, county and municipal licensing requirements, or the Bidder must provide a covenant describing specific licenses or permits to be obtained prior to award of the Contract.

3.4 RESPONSIVENESS AND RESPONSIBILITY

3.4.1 If any information required by these Bid Documents is missing or incomplete, the Tampa Bay Water Purchasing Department, in its sole discretion, may deem the Bidder non-responsive and reject the Bid, or may waive immaterial or minor deviations or request clarifications that do not alter the substance of the Bid and do not provide competitive advantage to a Bidder.

3.4.2 The Bidder shall provide all information, sufficient to Tampa Bay Water, to evidence its qualifications to perform the work for the price included on the Price Form, within the time stated within this ITB, and in accordance with the requirements of this ITB. The Tampa Bay Water Purchasing Department may request and consider any further information to make a responsibility determination that a Bidder can satisfactorily perform the work.

3.4.3 Failure to deliver information for responsiveness and responsibility required in this ITB or as requested by Tampa Bay Water, within the required period (or within a reasonable time thereafter if agreed to by Tampa Bay Water), may result in the rejection of that Bidder's Bid as either non-responsive or non-responsible and shall constitute proof that the Bidder has relinquished its rights and interests in the award.

3.5 BID COMPLETION

3.4.1 Any Bid may be deemed non-responsive which contains omissions, erasures, alterations, or additions of any kind, or prices not requested, or which may be obviously unbalanced, or which in any manner shall fail to conform to the requirements of this ITB.

3.4.2 Only one Bid from any individual, firm, partner, partnership, or corporation, under the same or different names, shall be considered. If any Bidder has an interest in more than one Bid for the work contemplated, as determined by Tampa Bay Water, all Bids in which such Bidder has an interest shall be rejected.

3.6 BID SECURITY

Bids must be accompanied by a certified check, or cashier's check drawn on a bank in good standing, or a Bid Bond issued by a Surety authorized to issue such bonds in the State of Florida, in the amount of five percent (5%) of the proposed total contract price of the Bid submitted. This bid security shall be given as a guarantee that the Bidder will not withdraw its Bid for the period of time specified in 2.4 Bid Withdrawal or Resubmission, and if awarded the Contract, shall execute the Contract and comply with all its requirements. If the Bidder elects to furnish a

Bid Bond, it shall use the Bid Bond form provided in this ITB. The Attorney-in-Fact who executes these bonds on behalf of the Surety must attach a notarized copy of its power-of-attorney as evidence of its authority to bind the Surety on the date of execution of the bonds. Where laws and regulations require certification by a resident agent, it shall also be provided.

3.7 BID PRICING

3.7.1 Bidders must submit either unit prices or fixed prices or a combination of such, as required by the Price Form herein. All items required to complete the Work, but not specifically included in the Price Form, shall be considered incidental and no additional costs for such items will be recognized or paid for by Tampa Bay Water.

3.7.2 Conflicts or Discrepancies found in bid prices stated both numerically and alphabetically shall have the alphabetical representation of the bid price take precedence over the numerical representation unless it is determined, at the sole discretion of Tampa Bay Water, that the conflict has led to a clearly erroneous or unreasonable result; in which case the amount stated numerically shall govern. However, in a case of a discrepancy between unit prices and extended totals, unit prices shall govern.

3.7.3 The estimate of quantities of items which are to be provided on a unit price basis are stated in the Price Form with as much accuracy as possible and is an approximation that shall be the basis for fair comparison of bids and upon which the award of the Contract shall be made. Payment to the Contractor for unit price work shall be made on the basis of units actually provided by the Contractor and accepted by Tampa Bay Water.

3.7.4 The Contractor shall pay all state and local sales and use taxes, as required by all laws and regulations. Tampa Bay Water reserves the right to implement an Owner's Direct Purchase sales tax savings program with respect to this Project

3.8 SUBCONTRACTORS AND SUPPLIERS

3.8.1 Each Bidder shall list, on the Subcontractor Form included in this ITB, the Subcontractors and Suppliers to whom that Bidder intends to award a subcontract in an amount of two percent (2%) or more of the total price on the Price Form. For each Subcontractor and Supplier identified, the Bidder shall provide all the information required by the forms.

3.8.2 If Tampa Bay Water has reasonable objection to any listed Subcontractor or Supplier, Tampa Bay Water may, after giving its intended Notice of Award, request the Bidder remove or replace that Subcontractor or Supplier, in which case that Bidder shall either perform the associated part of the work itself, if it holds a valid license for that classification and is so qualified, or nominate a substitute Subcontractor or Supplier, within the time period its Bid is to remain open, and without an increase in its price or time required to complete the work. If that Bidder declines, it shall not be awarded the Contract and its Bid shall be deemed withdrawn, but its declining to make the substitution will not constitute grounds for forfeiting its bid security. No Bidder shall be required to employ any Subcontractor or Supplier against whom it has reasonable objection.

3.9 TRADE SECRETS

Tampa Bay Water is subject to the Florida Public Records and Sunshine Laws. Each Bidder may clearly mark each page of the Bid that contains trade secrets or other confidential commercial or financial information which the Bidder believes should not be disclosed outside of the agency. Disclosure of requested information will be determined in accordance with Florida laws, rules and regulations.

4.0 EVALUATION AND AWARD PROCESS INFORMATION

4.1 EVALUATION

All Bids received will be reviewed and tabulated by Tampa Bay Water. The tabulation will be posted on Bonfire and on Tampa Bay Water's website. During the Bid review, Tampa Bay Water reserves the right to seek additional relevant information and clarification regarding any Bidder's qualifications to perform the work and to determine whether a Bidder is deemed responsive and responsible based on that information.

4.2 BID SUPPLEMENTS

After receipt of Bids, Tampa Bay Water shall notify the apparent low Bidder that it must, within two (2) days following notification, provide the following to Tampa Bay Water:

- A preliminary progress schedule, without specific dates, that will be used to track the Work;
- Bidder's three (3) most recent and current financial statements, certified by a Certified Public Accountant;
- Resumes for Bidder's project superintendent and other key personnel;
- Five references for recent and similar work performed by bidder; and
- Any additional information requested by Tampa Bay Water.

4.3 BASIS OF AWARD

4.3.1 The Notice of Award will be issued, if at all, by Tampa Bay Water on the basis of the Total Evaluated Bid Cost provided by the lowest responsive, responsible Bidder. The Total Evaluated Bid Cost is the adjusted amount of the Bidder's proposed total contract price, as determined by Tampa Bay Water, based upon such line items within the Bid which Tampa Bay Water elects to include in the Work.

4.3.2 In accordance with Section 287.05701, Florida Statutes, Tampa Bay Water may not consider a Bidder's social, political or ideological interest when determining if the Bidder is responsible.

4.3.3 Tampa Bay Water's Project Allowance and all other Allowances, as well as all Options as specified in the Bid, must be included in the total price on the Price Form.

4.4 AWARD OF CONTRACT

4.4.1 Tampa Bay Water shall have the right to investigate, among other things, the financial condition, experience record, and the equipment of each Bidder, and to determine to its satisfaction the competency of each to undertake the Project. Tampa Bay Water may request further and supplemental documentation from a Bidder. A Bidder's refusal to provide such documentation may result in the disqualification of its Bid. Tampa Bay Water shall have the sole discretion to determine which factors it deems significant.

4.4.2 The acceptance, if any, of a Bid will be by written Notice of Intent to Award which shall be posted in Bonfire project file. In the event of failure of the lowest responsive, responsible Bidder to sign the Contract and provide acceptable Performance Bonds and Payment Bonds, Tampa Bay Water may award the Contract to the next lowest responsive, responsible Bidder. Such an award, if made, will be made promptly after the failure of the first Bidder to comply with the award requirements.

4.4.3 Tampa Bay Water reserves the right to accept or reject all bids and to delay or cancel the Project prior to acceptance of any bid in the event Tampa Bay Water has failed to secure all the property or permits necessary for the Project. In addition, Tampa Bay Water reserves the right to include or exclude any Bid Options, and to waive any informalities or irregularities in Bids. Tampa Bay Water further reserves the right to seek clarification

from any Bidder after the opening of the Bids and to award the Contract based on updated information obtained.

4.5 NOTIFICATION OF AWARD

Tampa Bay Water will select the lowest, qualified, responsive, responsible Bidder meeting the criteria and Specifications established herein to provide the services under this ITB. The awarded Contractor must be registered to do business in the State of Florida. Information regarding registration can be found at the Florida Department of State, Division of Corporations website at http://dos.myflorida.com/sunbiz. Notification of Tampa Bay Water's decision regarding this solicitation will be posted on Bonfire and via the link on Tampa Bay Water's website.

4.6 EXECUTION OF CONTRACT

The Notice of Award to a Bidder will be accompanied by two (2) unexecuted sets of the Contract documents. The successful Bidder shall within ten (10) days after receiving Notice of Award, sign and return to Tampa Bay Water the two (2) sets of Contract documents together with the Certificate of Insurance, Performance Bonds and Payment Bonds as required by the Contract documents. Within thirty (30) days after receiving the signed Contract documents including acceptable Performance Bonds and Payment Bonds from the successful Bidder, Tampa Bay Water's authorized agent will sign the Contract, whereupon Tampa Bay Water shall send the successful Bidder one fully executed copy of the Contract documents. Signature by both parties binds both parties to the Contract documents.

4.7 RIGHT TO PROTEST

Any person who is adversely affected by a Tampa Bay Water decision or intended decision may file a notice of protest in writing within 72 hours after the posting of the notice of decision or intended decision. The formal written protest shall be filed with the Purchasing Manager within ten (10) days after the date of the notice of protest is filed. Failure to file a timely notice of protest or failure to file a timely formal written protest shall constitute a waiver of proceedings. The formal written protest shall state with particularity the facts and law upon which the protest is based. Failure to file a protest within the time prescribed in section 120.57(3), Florida Statutes, or failure to post a bond or other security required by law within the time allowed for filing a bond shall constitute a waiver of proceedings under Chapter 120, Florida Statutes. This includes, but is not limited to, any objection to or protest of this ITB, Notice of Award, and/or the actions of Tampa Bay Water.

4.8 NOTICE TO PROCEED

The Contract time shall begin on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty (30) days after the date the Contract is executed by Tampa Bay Water. The Contractor shall begin the Work no later than ten (10) days after the date specified for commencement of the Work in the Notice to Proceed.

4.9 PERFORMANCE BONDS AND PAYMENT BONDSPRICE FORM

The successful Bidder shall deliver to Tampa Bay Water a Performance Bond and a Payment Bond each on the forms set forth in this ITB. Each Bond shall be in the full amount of the total price on the Contract and in accordance with the requirements of Florida Statutes Section 255.05, as security for the faithful performance of the Contractor, and the payment of all persons supplying labor and/or materials for the construction of the Work, and to cover all guarantees against defective workmanship or materials, or both, during the warranty period following the date of final completion of the Work. The surety or sureties furnishing these bonds shall have a

sound financial standing and a record of service satisfactory to Tampa Bay Water, shall be authorized to do business in the State of Florida, and shall be listed on the current U.S. Department of Treasury Circular Number 570, or amendments thereto in the Federal Register, of acceptable Sureties for Federal Projects.

4.10 RETURN OF BID SECURITY

Within fifteen (15) days after the opening of the Bids, Tampa Bay Water will return the bid security to each Bidder whose Bid is not to be considered further in the award of the Contract. Retained bid securities shall be held until the Contract has been fully executed, after which time all bid securities other than those which have been forfeited, shall be returned to the respective Bidders.

5.0 SPECIAL TERMS AND CONDITIONS

5.1 SUBSTITUTES

The Contract shall be awarded, if at all, on the basis that the Bidder awarded the Contract shall furnish only items of material and equipment named or specified in the Contract documents. Each Bidder shall list the manufacturer and Supplier as required on the Major Equipment Manufacturers Form showing whom that Bidder intends to award a subcontract for furnishing each selected named or specified item. Substitutes shall not be considered until after the Notice of Award.

5.2 CHANGES IN QUANTITIES

Tampa Bay Water reserves the right to increase or decrease the quantity of any unit price work item shown in the bid that it may deem necessary, except that such increases or decreases in quantities of each item of unit price work awarded shall not affect the stated unit price rate if the quantity adjustment is not more than twenty-five percent (25%) of the total quantity shown on the bid for such item of unit price work. If the quantity is adjusted by more than twenty-five percent (25%), the unit price may be equitably adjusted by an appropriately issued change authorization or change order.

5.3 EMPLOYEE VERIFICATION

In accordance with Section 448.095, Florida Statutes, the Awardee/Contractor/Consultant agrees to register with and utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired during the term of the award/contract for the services specified in the award/contract. The Awardee/Contractor/Consultant must also include a requirement in subcontracts that the subcontractor must register with and utilize the E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the award/contract term. If the Awardee/Contractor/Consultant enters into a contract with a subcontractor, the subcontractor must provide the Awardee/Contractor/Consultant with an affidavit stating that the subcontractor does not employ, contract with, or subcontract with an unauthorized alien. The Awardee/Contractor/Consultant shall maintain a copy of such affidavit for the duration of the award/contract. If Tampa Bay Water has a good faith belief that the Awardee/Contractor/Consultant has knowingly violated Section 448.09(1), Florida Statutes, Tampa Bay Water shall terminate the Contract with the Awardee/Contractor/Consultant, and the Contractor may not be awarded a contract with Tampa Bay Water for at least 1 year after the date on which the award/contract was terminated. The Awardee/Contractor/Consultant is liable for any additional costs incurred by Tampa Bay Water as a result of the termination of the award/contract. If Tampa Bay Water has a good faith belief that a subcontractor knowingly violated the law, but the Awardee/Contractor/Consultant has otherwise complied with the law, Tampa Bay Water shall promptly notify the Awardee/Contractor/Consultant and order the Awardee/Contractor/Consultant to immediately terminate the award/contract with the subcontractor.

5.4 FOREGIN COUNTRIES OF CONCERN

Pursuant to Section 287.138, Florida Statutes, Tampa Bay Water may not enter into a contract with an entity that gives access to an individual's personal identifying information if the entity is owned, controlled or organized under the laws of a Foreign Country of Concern which includes the :People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of

Nicolas Maduro, the Syrian Arab Republic, or any other entity or agency under the significant control of such Foreign Country of Concern.

5.5 ANTI-HUMAN TRAFFICKING

In accordance with Section s.787.06, Florida Statutes, the Contractor must provide Tampa Bay Water with an affidavit regarding Human Trafficking. Affidavit included herein must be completed by Contractor to attest, under penalty of perjury, that Contractor does not use coercion for labor or services as defined in s. 787.06, Florida Statutes.

6.0 SUPPLEMENTAL INFORMATION FOR BIDDERS

6.1 The various reports, drawings and other documents listed in this section shall be collectively referred to as the "Existing Condition Documents". The Existing Condition Documents are made available solely to assist Bidders to make their own assessment of the Project. It is the responsibility of each Bidder, before submitting a Bid, to (a) examine the Existing Condition Documents thoroughly; (b) visit the Project site to become familiar with general, local and prevailing conditions; (c) familiarize itself with and consider all laws and regulations covering the Work; (d) study and carefully correlate the Bidder's observations with this package of ITB documents; and (e) request written interpretations or clarifications promptly after discovering any conflicts, ambiguities, errors or omissions in the ITB documents or Existing Condition Documents.

6.2 The Property Stipulation/Schedule Summary in this section contains information pertaining to scheduling of construction in easements acquired by Tampa Bay Water for this Project.

6.3 Tampa Bay Water and Engineer make no representation or warranty about the accuracy, correctness, or completeness of the Existing Condition Documents. Also, neither Tampa Bay Water nor the Engineer warrants or assumes any responsibility for the accuracy, correctness, reliability or completeness of information or data relating to surface or subsurface conditions, contained in any reports not prepared by Tampa Bay Water, the Engineer or their consultants, including information about underground utilities owned by others at or contiguous to the Project site furnished by the owners of those underground utilities or others.

6.4 Finally, neither Tampa Bay Water nor Engineer assumes any responsibility for any conclusions or interpretations made by any Bidder based on the data, non-technical data, interpretations or opinions contained in the Existing Condition Documents. Notwithstanding the foregoing, Bidders should refer to the Contract documents (especially Paragraph 6.8 of the General Conditions) for provisions concerning changes that may be permitted due to materially different site conditions.

EXISTING CONDITION DOCUMENTS

Surface and Subsurface Structures and Underground Utilities

Structure/Utility Owner Type/Description | Method of Identification

Not Applicable

Technical Data, Geophysical Reports and Tests

Not Applicable

Property Stipulation/Scheule Summary

Property Owner	Summary Performance Stipulations for Time Constraints
Not Applicable	

7.0 PRE-BID CONFERENCE LOCATION MAP

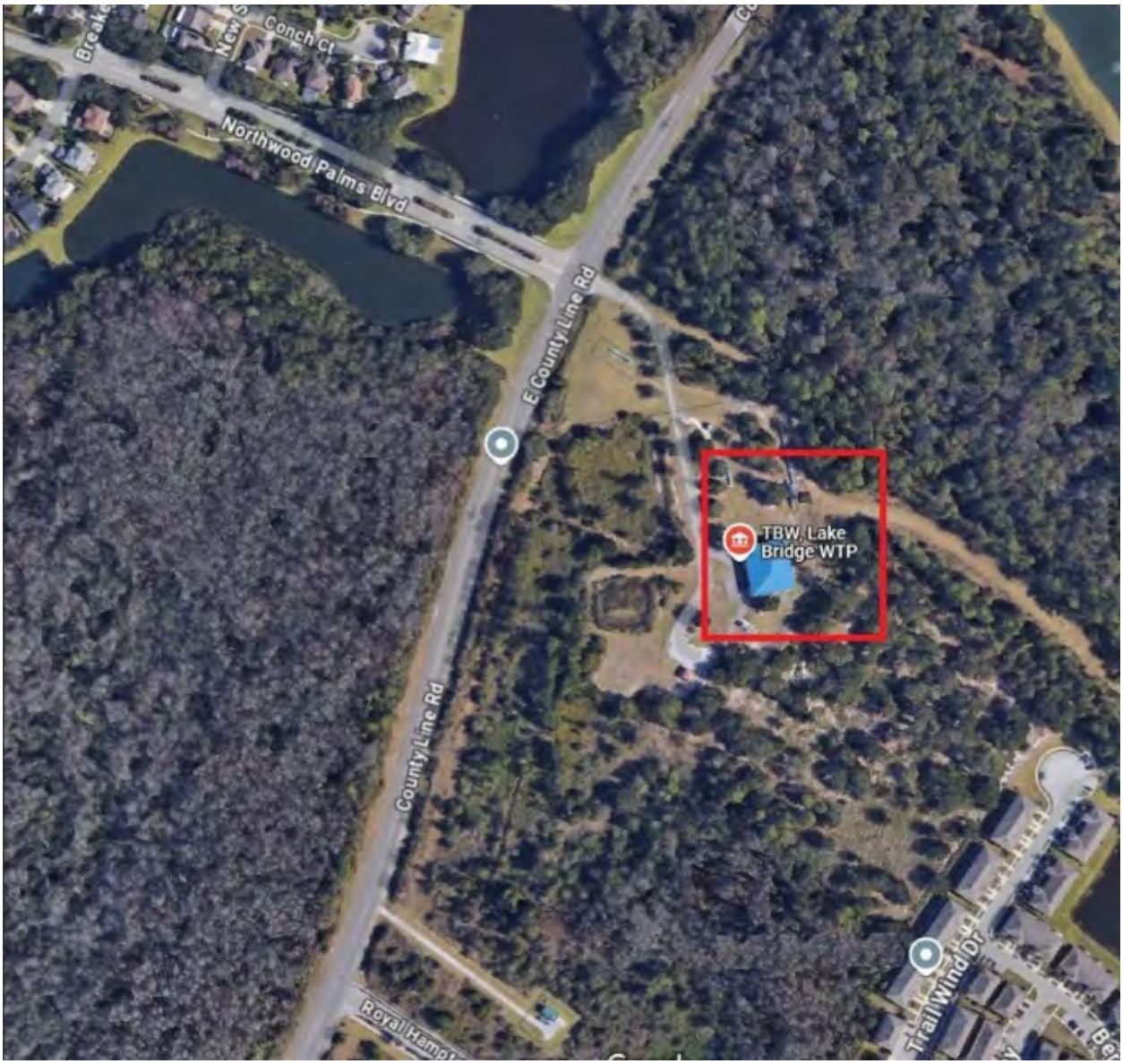
Lake Bridge Water Treatment Plant-Pump No. 4 (Project #07542)
Project Manager: Karim Molina-Oyola/Indigo Dunn
Purchasing Agent: Taylor Klinko & Regina Kavanagh

Lake Bridge Water Treatment Plant

Pasco County

5901 E County Line Rd,

Wesley Chapel, FL 33544



8.0 BID SUBMITTAL FORMS

BID FORM

Failure to fully complete this form SHALL result in the Bidder being deemed NONRESPONSIVE.

OFFER

TO: Tampa Bay Water

The undersigned hereby offers and agrees to furnish the goods and/or services in compliance with all terms, scope of work, conditions, specifications, and addenda in this Invitation for Bids.

INVESTIGATION:

The undersigned, by submission of this Bid Form, certifies it has thoroughly examined all ITB documents, including any Existing Condition Documents and Project site in order to familiarize itself with all existing conditions. This may include the physical condition on the ground including, but not limited to, the soil borings and has satisfied itself that the number of borings and their locations are adequate or has made any additional soil tests or borings if they feel the number, type, or location of those provided by Tampa Bay Water are inadequate or incomplete.

OBLIGATION:

The undersigned, by submission of this Bid Form, hereby agrees to be obligated, if selected as the Contractor, to provide the stated goods and/or services to Tampa Bay Water for the term as stated herein, and to enter into a Contract with Tampa Bay Water, in accordance with all documents herein, together with any written addenda.

BID PRICE:

The undersigned agrees to abide by the pricing contained on the Price Form.

ADDENDA:

The Bidder acknowledges receipt of the addenda noted below and has incorporated the content of Addenda into this Bid:

#_____ #_____ #_____ #_____

CONTRACTOR CONTRACT:

The Bidder agrees to the terms and conditions in the draft Contract included with this ITB **(initial one below)**:

____ "As is" with no modifications.

____ With the changes requested in the attached document (attach to this form) and understands that Tampa Bay Water reserves the right to reject the change requests.

LITIGATION:

The Bidder understands it must disclose any past, pending or threatened litigation or regulatory action involving construction services provided by the Bidder **(initial one below):**

____ None are known to exist.

____ Action exists, and a full explanation has been attached to this form.

CONFLICTS OF INTEREST:
The Bidder understands it must disclose any potential conflict of interest which would adversely affect the Bidder's ability to provide fair, loyal, and competitive services to Tampa Bay Water. Such disclosures shall include, but not be limited to, the Bidder's contractual obligations, property interests or clientele relationship or the property interests, contractual obligations or relationships of the Bidder's principals, officers, directors, employees or agents which are directly or indirectly related to Tampa Bay Water and its operations, its Agency Representative, the Southwest Florida Water Management District (SWFWMD), the Florida Department of Environmental Protection (FDEP), or any of our member governments **(initial one below):**

____ None are known to exist.

____ Potential or apparent conflict exists, and a full explanation has been attached to this form.

COMPLIANCE WITH LAWS/PERMITS:
The Bidder certifies it is not currently in violation of any regulatory rules and regulations that may have an impact on the firm's operations, and it agrees to comply with all local, State, and Federal statutes, regulations, directives and orders as applicable to the services provided and offered to Tampa Bay Water. The Bidder further agrees it has not been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or the Scrutinized Companies that Boycott Israel List; nor has it engaged in a boycott of Israel and has no business operations in Cuba or Syria. (Per Section 287.135(5), Florida Statutes). Additionally, the Bidder certifies (pursuant to Subsection 287.134(2)(a), Florida Statutes) it has not been placed on the discriminatory vendor list.

NONCOLLUSION:
The undersigned, hereinafter called Bidder, declares and certifies that (i) all principals with an interest in this Bid have been named herein; (ii) this Bid is, in all respects, fair and without fraud; (iii) this Bid is made without collusion with any official of Tampa Bay Water or Engineer; and (iv) the Bid is made without any connection or collusion with any person submitting another Bid for the Work.

CONTRACT EXECUTION:
The undersigned Bidder proposes and agrees that if this Bid is accepted, it shall enter into a contract with Tampa Bay Water in the form included with the Contract documents and perform and furnish all Work as specified or indicated in this ITB at the price bid and within the time specified, and in accordance with the other terms and conditions of the Contract documents.

CONTRACT MODIFICATION PRICING:
Bidder acknowledges and agrees that the separate prices on this Bid, where they are applicable and deemed acceptable by Tampa Bay Water, will be used by Tampa Bay Water and Bidder, if awarded the Contract documents, whenever similar work is added or deducted from the Contract documents.

PROJECT UNDERSTANDING:
Bidder represents that before making its Bid, Bidder has familiarized itself with the nature and extent of the Contract documents (as defined in the General Conditions), Work, Project site, locality, and all local conditions and laws and regulations that may in any manner affect cost, schedule, progress, performance, or furnishing of the Work.
Further, Bidder has read and studied carefully: reports of explorations and tests of surface and subsurface conditions; and those drawings of physical conditions in or relating to existing surface or

subsurface structures or underground utilities; and accepts the determinations established in 6.0 Supplemental Information for Bidders to the extent of the technical data contained in those reports and drawings upon which Bidder may rely, which in any manner affect cost, schedule, progress, performance, and furnishing of the Work.
Further, Bidder has read and studied all information and data shown or indicated in the Contract documents about other work under separate contracts at or near the Project site and assumes responsibility for all conditions and consequences which may result from other work and which in any manner affect cost, schedule, progress, performance, and furnishing of the Work.
Further, Bidder has correlated the results of the activities, examinations, and studies as noted above, with the terms and conditions of the Contract documents and has exercised its own independent judgement in the interpretation of this information.

NOTICE OF ERRORS:
Bidder has given Tampa Bay Water notice of all conflicts, ambiguities, errors, or omissions, if any that Bidder has discovered in the ITB.

FIRM OFFER:
Bidder has read the Contract documents and accepts all of the terms and conditions of the Contract documents, including without limitation those dealing with the disposition of Bid Security. Bidder acknowledges all Bids shall remain firm for 90 days or as otherwise required by this ITB.

REQUIREMENTS IN EFFECT:
Reference to standard Specifications, manuals, or codes of any technical society, organization, or association, or to the Laws and Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specifications, manual, code, or Laws and Regulations in effect on the date of the receipt of Bids, except as may be otherwise specifically stated.

PUBLIC RECORDS:
Each Bidder, by submitting a Bid, acknowledges the agency's legal obligation in accordance with Chapter 119 of the Florida Statutes, to respond to all public records requests in a timely manner and expressly waives any right to contest, impede, prevent or delay such disclosure, or to initiate any proceeding that may have the effect of impeding, preventing or delaying such disclosure, unless the Bidder establishes its right to a public records exception. It is the responsibility of the Bidder alone to establish its right to any such exception. Under no circumstances will Tampa Bay Water be responsible or liable to a Bidder or any other party as a result of disclosing any such information or materials.

TRENCH SAFETY ACT:
Bidder acknowledges and agrees that the trench safety standards in effect at the time of this Bid and at the time(s) of performing the Work shall be adhered to and compliance is the complete and sole responsibility of Bidder. The price on the Price Form includes Bidder's total cost for compliance with the Florida Trench Safety Act.

SUPPLIERS:
Bidder certifies that all suppliers, if acceptable to Tampa Bay Water, shall be supplying the material or equipment for the portions of the Work identified in the list in the event Bidder is awarded the Contract.

I certify, under penalty of perjury, that I have the legal authorization to bind the firm hereunder: The individual signing this form certifies, under penalty of perjury, that (s)he has the authority to sign on behalf of the firm. (If signature is by an agent, other than an officer of the corporation or a member of a partnership, a notarized power-of-attorney must accompany the Bid.) The following is certified by the signing of this form:

BID CONTACT INFORMATION AND PRIMARY SIGNATURE

Firm Name

Firm Address

Printed Name

Phone Number

Email Address

Firm Business License Number

License Classification Renewal Date

Is license active? _____

This Bid is submitted on this ____ day of _____ , 20____.

AUTHORIZED SIGNATURES

Failure to fully complete one of the following forms SHALL result in the Bidder being deemed NONRESPONSIVE.

This Bid Form must be signed in the legal name of the company and by an officer or partner having authority to bind the company or firm by his or her signature. Electronic signatures are acceptable. Complete the applicable section below based on firm type:

If Bidder is an individual:

Name of Individual: _____

Title: _____

By _____
(if other than individual, Attach Power of Attorney)

Doing Business As: _____

Business Address: _____

Telephone: _____

If Bidder is a Partnership:

By:_____
(True Name of Partnership)

_____
Name of General or Limited Partner(s) Authorized to Sign

By:_____
(Attach evidence of authority to sign)

_____
Name of General or Limited Partner(s) Authorized to Sign

By: _____
(Attach evidence of authority to sign)

Business Address: _____

Telephone: _____

If Bidder is a Corporation:

By: _____
(Legal Corporation Name)

Name: _____

Title: _____

By: _____
(attach evidence of authority to sign)

Name and Title and Signature of Official Attesting:

Name: _____

Title: _____

By: _____

Business Address: _____

Telephone: _____

State of Incorporation: _____

If Bidder is a Joint Venture:

Each joint venturer shall be identified below and shall sign the Bid. The manner of signing for each individual, partnership and corporation that is a party to the joint venture shall be in the same manner as is indicated above.

Joint Venture Partners:

_____

_____

_____

_____

PRICE FORM

Failure to fully complete this form SHALL result in the Bidder being deemed NONRESPONSIVE.

Review this ITB in its entirety and provide pricing below that is inclusive of all expenses.

Tampa Bay Water
Lake Bridge Water Treatment Plant - Pump No. 4
Project No. 07542
Bid Form

Item No. (A)	Description (B)	Unit (C)	Quantity (D)	Unit Price (E)	Total Price (F)
1	Mobilization/Demobilization	Lump Sum	1	$	$
2	Equipment Procurement	Lump Sum	1	$	$
3	Concrete Work	Lump Sum	1	$	$
4	Mechanical Work	Lump Sum	1	$	$
5	Electrical Work	Lump Sum	1	$	$
6	Instrumentation Work	Lump Sum	1	$	$
7	Commissioning	Lump Sum	1	$	$
				Total Bid Price	$

(Bid Price Amount Written in Words)

This project provides an Owner's Allowance in the amount of $285,000.00 which is not included in the Price Form above. Contractor's use of Owner's Allowance is not guaranteed. (Usage of Owner's Allowance must be pre-approved by Tampa Bay Water in writing.)

Bidder acknowledges and agrees that the Trench Safety Standards in effect at the time of this Bid and at the time(s) of performing the Work shall be adhered to and compliance is the complete and sole responsibility of the Bidder. The proposed Total Bid Price, as stated herein includes Bidder's total cost for compliance with the Florida Trench Safety Act.

Bidder shall have an Indemnification responsibility in the amount of $100.00 which is not included in the Price Form above.

FLORIDA BID BOND

Failure to fully complete this form SHALL result in the Bidder being deemed NONRESPONSIVE.

KNOW ALL MEN BY THESE PRESENTS:

That the "Bidder", _____, a corporation _____, individual _____, partnership _____, of the state of Florida, qualified to do business in this State, as Principal, and the "Surety", _____, a corporation of the state of _____, authorized to do business as a surety in this State, as Surety, are hereby held and firmly bound unto the Tampa Bay Water as Obligees, in the sum of _____ _____ Dollars ($_____), lawful money of the United States of America, which represents five percent (5%) of the sum of Bidder's proposed total contract price, for the payment of which Bidder and the Surety hereby bind ourselves, our respective heirs, successors, legal representatives and assigns, jointly, and severally, firmly by these presents.

WHEREAS, Bidder has submitted to Tampa Bay Water, its Bid to which this Bond is attached, to enter into the Contract with Tampa Bay Water for the Lake Bridge Water Treatment Plant-Pump No. 4, Project No.: 07542, Contract No. 2026012 covered by the Contract documents prepared by Tampa Bay Water and the Engineer, which Contract documents are incorporated herein by this reference:

NOW, THEREFORE: THE CONDITION OF THIS OBLIGATION IS THAT, Bidder and Surety are jointly and severally bound by all of the provisions of this Bid Bond, and if Bidder faithfully performs and fulfills all the understandings, covenants, terms, conditions and requirements of this ITB (including addenda issued before the date of the opening of the Bid) within the time specified or any extension thereof, with or without notice to the Surety, or if Bidder fails to comply with all requirements of this ITB within the time specified or any extension thereof, with or without notice to the Surety, but pays Tampa Bay Water the full amount of the sum set forth in this Bid Bond as liquidated damages, then this obligation shall be null and void, otherwise to remain in full force and effect.

A. If Tampa Bay Water makes demand on the Surety to perform in accordance with the Surety's obligations under this Bond, then the full amount of the Bid Bond shall be immediately due and payable to Tampa Bay Water, and the Surety shall pay that sum without delay. Additionally, the Surety shall reimburse Tampa Bay Water for all costs of collection (including but not limited to attorney's fees).

B. The Surety, for value received, stipulates and agrees that the obligations of the Surety and this Bid Bond shall be in no way impaired or affected by any extension of the time within which Tampa Bay Water may accept the Bid, and the Surety does, by this Bid Bond, waive notice of any such extension.

C. The term this "State" means the State of Florida. Other defined terms (i.e., capitalized terms) used in this Bid Bond have the intent and meanings assigned to them in the General Conditions of the Contract documents, Definitions.

IMPORTANT: Sureties executing this Bid Bond shall be currently authorized to do business in the State of Florida as surety and, except as otherwise provided by the Florida Statutes, be on the U.S. Department of the Treasury Financial Management Service list of approved bonding companies. Bonds cannot be in excess of the amount indicated as approved by that list.

_____
(Name of Surety)

_____
(Address)

_____
(Telephone Number)

_____
(Name of Duly Authorized Florida Agent)

_____
(Address)

_____
(Telephone Number)

Signed and sealed this _____ day of _____, 20_____.

Bidder/Principal

Witness

_____ By:_____

_____
Name and Title

Surety

Witness

_____ By:_____

_____
Name and Title

By Attorney-In-Fact: _____
(Attach Certified Copy of Power of Attorney

CERTIFICATE OF PRINCIPAL

I, _____, certify that I am the Secretary of the Corporation _____, or a General Partner _____ or Managing Partner _____ of the partnership, named as the Bidder in the attached Bid Bond; that _____ who signed the Bid Bond on behalf of the Bidder, was then _____ of that organization _____ or partnership _____; that I know his/her signature, and on the Bid Bond is genuine; and that the Bid Bond was duly signed, sealed, and attested for and on behalf of that organization _____ or partnership _____ by authority of its governing body _____ or partners _____.

_____

Signed by Secretary of the Corporation or
By General or Managing Partner Authorized to Sign

_____

Name of the Corporation or True Name of the Partnership

(Corporate Seal)

Verification

State of _____

County of _____

Before me, a Notary Public duly commissioned, qualified and acting, by means of ☐ physical presence or ☐ online notarization, personally appeared _____ who is personally known to me or who has produced _____ as identification, who being by me first duly sworn upon oath, says that he is the attorney-in-fact for _____ named Bidder in favor of the Tampa Bay Water.

Subscribed and sworn before me this _____ day of _____, 20 ____.

_____

Notary Public

My Commission Expires: _____

TAMPA BAY WATER
CONSULTANT AFFIDAVIT

STATE OF _____
COUNTY OF _____

BEFORE ME, the undersigned authority, appeared _____, who first being duly sworn hereby swears or affirms as follows:

1. I make this affidavit on personal knowledge.
2. I am over the age of 18 years and otherwise confident to make this Affidavit.
3. I am the _____ of _____ (the "Consultant").
4. I am authorized by _____ to make this Affidavit on behalf of Consultant.

E-Verify

1. Consultant acknowledges that Section 448.09, Florida Statutes, makes it unlawful for any person to knowingly employ, hire, recruit, or refer, for private or public employment, an alien who is not duly authorized to work in the United States.
2. Consultant acknowledges that Section 448.095, Florida Statutes, prohibits public employers, contractors, and subcontractors from entering into a contract unless each party to the contract registers and uses E-Verify.
3. Consultant is in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
4. Consultant understands it shall remain in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes, during the term of any contract with Tampa Bay Water.
5. Consultant's subcontractors are in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
6. Consultant shall ensure compliance with the requirements of Sections 448.09 and 449.095, Florida Statutes, by any and all of its subcontractors.
7. Neither the Consultant nor any subcontractor of Consultant has had a contract terminated by a public employer for violating Section 448.095, Florida Statutes, within the year preceding the date of this Affidavit.
8. If the Consultant or any subcontractor of Consultant has a contract terminated by a public employer for any such violation during the term of any contract with Tampa Bay Water, it shall provide immediate notice thereof to Tampa Bay Water.

Anti-Human Trafficking

In accordance with Section 787.06(13), Florida Statues, the undersigned, on behalf of the entity listed below ("Entity"), hereby attests under penalty of perjury that Entity does not use coercion for labor or services as defined in Section 787.06, Florida Statutes, entitled "Human Trafficking".

Scrutinized Companies

A. Pursuant to Subsections 287.133(2) and (3), Florida Statutes, Respondent acknowledges that a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a proposal on a Contract provide any goods or services to a public entity, may not submit a Proposal on a Contract with a public entity for the construction or repair of a public building or public work, may not submit Proposals on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a Contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017 Florida Statutes, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

B. Pursuant to Subsection 287.134(2)(a), Florida Statutes, Respondent acknowledges that an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as

a contractor, supplier, subcontractor, or consultant under a contract with any public entity; an may not transact business with any public entity.

C. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that a company that has been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or the Scrutinized Companies that Boycott Israel List or a company that engages in a boycott of Israel, is ineligible and may not submit a bid, proposal, or enter into or renew a contract with an agency for goods or services of $1 million or more. At the time of submission of a proposal for a contract or contract renewal for goods or services of $1 million or more, the company must certify that it is not on either such List and further that it does not have business operations in Cuba or Syria as required by Section 287.135(5), Florida Statutes.

D. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any contract for goods or services of $1 million or more if the awarded company is found to have submitted a false certification as provided under Section 287.135(5), been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or been engaged in Business operations in Cuba or Syria.

E. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any contract for good or services of any amount if the awarded company is found to have or been placed on the Scrutinized Companies that Boycott Israel List or is engaged in a boycott of Israel.

Foreign Countries of Concern

Pursuant to Section 287.138, Florida Statues, Tampa Bay Water may not enter into a contract with an entity that gives access to an individual's personal identifying information if the entity is owned, controlled or organized under the laws of a Foreign Country of Concern which includes the People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolas Maduro, the Syrian Arab Republic, or any other entity or agency under the significant control of such Foreign Country of Concern.

_____
Signature of Affiant
on behalf of Consultant

By: _____
As its: _____
Dated: _____

Sworn to (or affirmed) and subscribed before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20___, by _____, on behalf of _____, who is personally known to me or who has produced _____ as identification.

_____

Print Name: _____
Notary Public of the State of Florida

My Commission Expires:

NON-COLLUSION AFFIDAVIT

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Owner: Tampa Bay Water
Engineer: Carollo Engineers Inc.
Project Name: Lake Bridge Water Treatment Plant-Pump No. 4
Project No.: 07542

Affiant, _____, being first duly sworn, deposes and says that:

Affiant is (Title) _____ of _____, ("Bidder"). Affiant has personal knowledge of the matters set forth in this Affidavit and is competent to testify about them.

Bidder has submitted to Tampa Bay Water, a Bid ("Bid") to construct the above referenced Project, also referred to in this Affidavit as the "Work".

This Non-Collusion Affidavit is executed by Affiant for inclusion with the submission to Tampa Bay Water of the Bid and may be relied upon by Tampa Bay Water in considering the Bid.

Affiant is fully informed about the preparation and contents of the Bid and of all pertinent circumstances surrounding the Bid; has not entered into any illegal contract, combination, conspiracy or other unlawful act; and the Bid is genuine and is not a collusive or sham Bid.

Neither Bidder nor any of its officers, partners, agents, representatives, employees or parties in interest, including this Affiant, have in any way entered or proposed to enter into any combination to prevent the making of any Bid, or to fix a price or prices (including any overhead, profit or other cost elements) for the Bid; or have made any Contract, or given or promised any consideration to induce any other person not to submit a Bid for the Work, or to submit a Bid at a specified price; or have secured or intended to secure through any Contract an unlawful advantage against Tampa Bay Water, or any other person interested in the Work.

The Bid is not intended to secure an unfair advantage or benefit from Tampa Bay Water or in favor of any person interested in the proposed Work.

The prices proposed are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful Contract on the part of Bidder or any other of its agents, representatives, owners, employees, or parties in interest, including this Affiant; and neither Bidder nor any of its officers, partners, owners agents, representatives, employees, or parties in interest, including this Affiant, have divulged information regarding the Bid or any data about the Bid to any other person.

By: _____
Print Name: _____
Title: _____

LITIGATION HISTORY

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

List all litigation and arbitration from the past 5 years, regardless of results or current status.

Project Name	Parties to Dispute	Nature of Dispute	Resolution of Dispute

[Attach Additional Pages If Necessary]

MAJOR EQUIPMENT LIST

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

To enable Tampa Bay Water to evaluate Bidder's qualifications to perform the Work, Bidder shall list all of the equipment it proposes to use in performing the Work.

Make/Model	Year	Owned or Leased	Condition	Availability for this Project

[Attach Additional Pages if Necessary]

MAJOR EQUIPMENT MANUFACTURERS

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Line Item	Description	Equipment Type/Material	Manufacturer	Distributor or Supplier

[Attach Additional Pages If Necessary]

SUBCONTRACTORS LIST

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Bidder shall perform (with Bidder's own employees) not less than fifty percent (50%) of the labor (total contract price less the cost of materials for the Project). For all remaining work, list each Subcontractor to whom Bidder intends to award a sub-contract in excess of two percent (2%) of the Total Price on the Price Form. These Subcontractors, if acceptable to Tampa Bay Water, shall be awarded subcontracts for the portions of the Work identified in the list, in the event Bidder is awarded the Contract.

Work To Be Performed	Name/Address	Percent of Total Bid Price

QUESTIONNAIRE

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Owner: Tampa Bay Water
Engineer: Carollo Engineers Inc.
Project Name: Lake Bridge Water Treatment Plant-Pump No. 4
Project No.: 07542

The undersigned warrants that all statements and answers to questions hereinafter made are current, accurate, and complete as of the date indicated below.

Respond to the items below with sufficient information to show the Bidder has sufficient qualifications to perform the required Work. (See 3.3 Minimum Qualifications)

1. How many years has your organization been in business as a licensed general contractor under your present business name? _____.
2. Attach to this Form a list of all contracts comparable to this project that your organization has performed during the last five years. For each contract listed, include the owner's contract number, contract title, brief project description, original Contract Price, final Contract Price, substantial completion date or percent complete (if not completed), and the name, address and phone number of an individual from the owner to which your organization may refer.
3. Are there any current federal, state, or local tax liens filed on your organization? ___Yes ___No
   If yes, attach a list of all current tax liens and an explanation for each.
4. Has your organization failed to complete work awarded to it in the last five years? ____Yes ____No
   If yes, attach an explanation, including description of the project, identification of the owner, contract award date, and reason work was not completed.
5. Has your organization ever had a contract terminated for default in the last five years? ___Yes ____No
   If yes, attach an explanation, including description of the project, identification of the owner, contract termination date, and reason for each termination for default.
6. Has your organization ever had significant accidents or OSHA violations in the last five years? ___Yes ____No
   If yes, attach a list of each significant accident or OSHA violation, including a description and date of each event, and an explanation for each.
7. Has any officer or partner of your organization ever been an officer or partner of another organization that failed to complete a construction project? _____.
   If so, state name of individual, organization and reason therefore.
   _____
   _____
   _____
8. Does your organization or its key personnel now hold valid certificates of competency or licenses for which a specific license is required? _____.
   If so, attach copies of all licenses covering the Work under the Contract Documents together with the specific political jurisdiction issuing said licenses.
   Attachment _____, consisting of _____ pages.
9. Is your organization owned, controlled or organized under the law of a Foreign County of Concern as identified in Section 287.138, Florida Statutes? _____

By: _____
Print Name: _____
Title: _____

9.0 SAMPLE CONTRACT

CONTRACT
Construction
LAKE BRIDGE WATER TREATMENT PLANT-PUMP NO. 4
(PROJECT 07542)
Contract No. 2026012

CONTRACT

TABLE OF CONTENTS

1.0 WORK 40
2.0 CONTRACT TIME 42
3.0 LIQUIDATED DAMAGES 42
4.0 CONTRACT PRICE 43
5.0 PAYMENT 44
6.0 MISCELLANEOUS 44
7.0 PUBLIC RECORDS AND AUDIT RIGHTS 46
8.0 DEFINITIONS 47
9.0 ENGINEER 47
10.0 PUBLIC ENTITY CRIME STATEMENT 47
11.0 DISCRIMINATION 47
12.0 DRAWINGS AND SPECIFICATIONS 48
13.0 SCRUTINIZED COMPANIES AND FOREIGN COUNTRIES OF CONCERN 50
14.0 EMPLOYEE VERIFICATION 51
15.0 ANTI-HUMAN TRAFFICKING 51

CONTRACT

This Contract, made and entered into as of the _____day of _____, 20_____, by and between Tampa Bay Water, A Regional Water Supply Authority ("Tampa Bay Water") and _____, a corporation of the State of _____, or other business entity authorized to do business in the State of Florida ("Contractor"), with respect to that certain Project consisting of the Work to be performed in accordance with the Contract Documents, supplementary conditions, general conditions, invitation to bid documents, bid price form, technical specifications and all issued addenda for Tampa Bay Water's Lake Bridge Water Treatment Plant-Pump No. 4 (Project 07542).

W I T N E S S E T H:

Tampa Bay Water and the Contractor in consideration of the mutual covenants and obligations contained herein, and for other good and valuable consideration, the sufficiency and adequacy of which are hereby acknowledged, agree as follows:

1.0 Work

1.1 The Contractor shall perform all of the Work in accordance with the Contract Documents (as that term is defined in the General Conditions which are attached to and made a part of this Contract).

1.2 Contractor shall perform the Work in accordance with generally accepted construction practice under the same or similar circumstances at the same time and in the same locality. Contractor shall have exclusive responsibility for all construction means, methods, techniques, sequences, and procedures necessary or desirable for the correct, prompt, and orderly prosecution and completion of the Work as required by this Contract and the Contract Documents.

1.3 The responsibility to provide the construction means, methods, techniques, sequences and procedures shall include, but not be limited to, the obligation of the Contractor to provide the following construction requirements, as applicable: temporary power and light; temporary offices and construction trailers; required design certifications; required approvals; weather protection; site clean-up and housekeeping; construction trade management; temporary parking; a construction safety plan; safety and first aid facilities; correction of or compensation for defective work or equipment; Subcontractors' insurance certificates; storage areas; workshops and warehouses; temporary fire protection; site security; temporary Utilities; including without limitations; potable water and water for use in performing the Work (in all cases, including a backflow preventer meeting ANSI A40.6); phone; sanitary; gas or fuel; Subcontractor and Supplier qualification; equipment and materials procurement and expediting; receipt and unloading and proper storage of delivered materials and equipment; erection rigging; temporary supports; submittal and shop drawings review and orderly filing system; construction and procurement critical path scheduling; construction coordination; and cooperation with Tampa Bay Water in implementation of Tampa Bay Water's owner's direct purchase sales tax savings program.

1.4 During the progress of the Work, Contractor shall at all times during normal working hours afford Tampa Bay Water and Engineer every reasonable opportunity for observing all Work. During any such observation, all representatives of Tampa Bay Water and Engineer shall comply with all safety and other rules and regulations applicable to presence in or at the Work site.

1.5 Contractor shall have full responsibility, to the extent applicable, for locating all underground Utilities in advance of excavation; scheduling excavation and uncovering in advance, unless it conflicts with Work already uncovered; shoring, blocking, and protecting underground Utilities; repairing any damage done to the satisfaction of Tampa Bay Water and Engineer and the owners of those underground Utilities; promptly notifying Tampa Bay Water and Engineer of any newly discovered underground Utility; and the safety, protection and repairing of any damage done to any affected Work. Al1 costs involved and time required to perform these responsibilities shall be considered as having been included in the Contract Price.

1.6 Contractor shall use care and diligence, and shall take all appropriate precautions, to protect the Work and the Work site and the property of other persons (including any materials, equipment, or other items furnished by Tampa Bay Water) from damage due to the nature of the Work, the natural elements, carelessness of others, and from any cause, until final completion of the Work; and for such purpose, Contractor shall provide fencing, protective features (such as tarpaulins, boards, boxing, frames, canvas guards, and fireproofing), and other safeguards to the extent Contractor reasonably determines such are necessary and proper in the performance of the Work.

1.7 Contractor shall ensure that each employee, representative, Subcontractor, Supplier, and others acting for the Contractor use designated access roads and parking areas. Contractor shall employ watchmen on the Work site when necessary and shall also erect and maintain such strong and suitable barriers and such lights as shall effectively prevent the happening of any accident to health or to property or to any partially completed Work or to any materials stored on or adjacent to the Work site. Contractor shall employ any additional temporary fencing and gates to adequately protect the Work.

1.8 Stored materials shall be kept in a neat and orderly manner. Materials that are subject to deterioration by exposure to the sun, rain or other elements shall be kept adequately covered and protected. Contractor shall be responsible for protecting all stored materials and the Work site safe from theft and vandalism.

1.9 All costs involved and time required to perform these responsibilities shall be considered as having been included in the Contract Price.

1.10 Contractor shall notify owners of adjacent property (including underground Utility owners) not less than forty-eight (48) hours, or the time period required by Laws and Regulations, whichever period is longer, prior to commencing the Work, and shall coordinate and cooperate with them in the location, protection, removal, relocation, and/or replacement of their property. At least five (5) days prior to providing such notice to adjacent property owners, Contractor shall submit its proposed written notice to Tampa Bay Water for review and approval. All damage, injury or loss to property caused, directly or indirectly, in whole or part, by Contractor, any Subcontractor or Supplier or anyone for whose acts any of them may be liable, shall be remedied at Contractor's expense, which shall be considered to have been included in the Contract Price.

1.11 In case of damage or destruction to the Work, the Work site or adjacent properties resulting from any cause, and regardless of the extent thereof or the estimated cost of repair, replacement or restoration, and whether or not any insurance proceeds are sufficient or available for the purpose, Contractor shall immediately undertake and complete the repair, replacement and restoration of the damage or destruction to the character and condition existing immediately prior to the damage or destruction, all at Contractor's sole cost and expense, which shall be considered to have been included in the Contract Price, except in the event that such damage or destruction is caused by

Tampa Bay Water, its employees, agents, representatives, including Engineer, or is the result of an Uncontrollable Circumstance.

1.12 Contractor shall notify Tampa Bay Water immediately of any damage or destruction to the Work, the Work site or any adjacent properties including, but not limited to, hazardous substance spills, damage to sensitive areas, permit or approval violations, fires and injuries. Additionally, Contractor shall notify the required Insurance carriers and Sureties of any damage or destruction to the Work, the Work site, or adjacent properties, or any accidents on the Work site, as promptly as possible after Contractor learns of any such damage, destruction or accidents. As soon as practicable after learning of any such occurrence, Contractor shall submit a full and complete written report to Tampa Bay Water.

1.13 In case of an emergency which threatens loss or injury to persons or property, Contractor shall take appropriate remedial action, without previous instructions from Tampa Bay Water or Engineer, as the situation may warrant, and shall immediately provide Notice to Tampa Bay Water and Engineer of its action. Any claim for compensation by Contractor, together with substantiating documentation in regard to expense caused by emergency acts, shall be submitted to Tampa Bay Water and the amount of compensation if any, shall be determined by mutual contract, subject to cost substantiation.

2.0 Contract Time

2.1 Tampa Bay Water and the Contractor recognize that time is of the essence with respect to Contractor's performance of its obligation under the Contract Documents, and Tampa Bay Water shall suffer financial loss if Substantial Completion and Final Completion of the Work is not achieved within the Contract Time specified in paragraph 2.2 below. Accordingly, if the Contractor fails to achieve Substantial Completion and Final Completion of the Work within the Contract Time, it shall pay Tampa Bay Water Liquidated Damages in accordance with the terms stated below in *Article III, Liquidated Damages*.

2.2 The Contractor shall commence the Work within ten (10) days after the date specified for the commencement of the Work in the Notice to Proceed and shall complete all Work hereunder as follows:

a. All facilities shall be manually operational to provide Tampa Bay Water at its option the full time use of the Project as intended by the Contract Documents and the Contractor shall perform the Work to achieve Substantial Completion within 415 days of issuance of Notice to Proceed as the commencement date of the Contract Time.

b. The Contractor shall perform the Work to achieve Final Completion within 492 days of issuance of Notice to Proceed as the date of commencement of the Contract Time.

2.3 The completion deadlines in this Section 2 are subject to adjustment in accordance with the General Conditions.

3.0 Liquidated Damages

3.1 If the Contractor fails to achieve Substantial Completion of the Work within the Contract Time, as said time period may be adjusted pursuant to the terms of the Contract Documents, Contractor shall pay Tampa Bay Water Liquidated Damages in accordance with the following:

a. The Contractor shall pay Tampa Bay Water as Liquidated Damages, and not as a penalty, the amount of Fifteen Hundred Dollars and Zero cents ($1,500.00) for each

day that expires after the Contract Time specified above in paragraph 2.2a for Substantial Completion. These Liquidated Damages are Tampa Bay Water's sole and exclusive Substantial Completion delay related damages and represent a reasonable estimate of Tampa Bay Water's damages in the event Substantial Completion of the Work is delayed. The Contractor agrees that these Substantial Completion Liquidated Damages do not constitute a penalty or forfeiture.

b. The Contractor shall pay Tampa Bay Water as Liquidated Damages and not as a penalty, the amount of Five Hundred Dollars and Zero Cents ($500.00) for each day that expires after the time specified in Paragraph 2.2.b for Final Completion. These Liquidated Damages are Tampa Bay Water's sole and exclusive Final Completion delay related damages and represent a reasonable estimate of Tampa Bay Water's damages in the event Final Completion of the Work is delayed. The Contractor agrees that these Final Completion Liquidated Damages do not constitute a penalty or forfeiture. Also, Contractor agrees these Final Completion Liquidated Damages are in addition to, and not duplicative of, the Substantial Completion Liquidated Damages noted in Paragraph 3.1.a above.

4.0 Contract Price

4.1 Tampa Bay Water hereby agrees to pay to the Contractor in lawful money of the United States for the faithful performance of all of the Contractor's obligations under the Contract Documents, and the Contractor agrees to accept in full payment the Contract Price of: _____ Dollars and _____Cents ($_____), subject to the conditions governing payments to the Contractor in the Contract Documents. If the Contract Price includes any Unit Price amounts and the actual quantity of Unit Price items installed is different than the estimated quantity, then the Contract Price shall be adjusted in accordance with the Contract Documents. The Contract Price includes, if applicable, only those Alternates accepted by Tampa Bay Water, as identified in paragraph 4.3 below. The Contract Price includes, if applicable, only those Allowances established by Tampa Bay Water, as identified in paragraph 4.4 below.

4.2 The Unit Prices and associated estimated quantities included within the Contract Price are attached hereto and made a part hereof as Schedule A.

4.3 The following Bid Options have been accepted by Tampa Bay Water and are included within the Contract Price:

ALTERNATE	Price
_____	_____
_____	_____
_____	_____
_____	_____

4.4 The following Allowances have been established by Tampa Bay Water and are included within the Contract Price:

ALLOWANCE	Price
Owner's Allowance	$285,000.00

Indemnification	$100.00

Payment of Allowances shall only be authorized by issuance of Change Authorization signed by Tampa Bay Water in accordance with Section 7.2.1 of the General Conditions.

5.0 Payment

Payment procedures are outlined in the General Conditions, Article VII Payment. All monies not paid when due shall bear interest at a rate not to exceed the interest rate allowed by law to be paid by governmental entities in Florida, provided that this does not exceed six percent per year simple interest.

Tampa Bay Water's payment to Contractor of any progress or final payment shall not release the Contractor of any liability and shall not be deemed evidence of performance or be construed as an acceptance of defective or improper Work, or Work that does not comply with the requirements of the Contract Documents.

6.0 Miscellaneous

6.1 All Contract Documents are hereby incorporated into and made a part of this Contract by this reference. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract Documents.

The Contract Documents represent the final and entire integrated Contract between the parties with respect to the Work. The Contract Documents supersede all prior oral or written Contracts, if any, between the parties, and any statement, representation, promise or inducement not set forth in the Contract Documents is null and void and not binding on Tampa Bay Water or the Contractor. Except for the warranty and third party beneficiary rights of Tampa Bay Water set forth herein, the Contract Documents shall not in any way create a relationship of any kind between the Engineer and the Contractor or between Tampa Bay Water and a Subcontractor or Supplier, or between Tampa Bay Water and any other person.

If any provision(s) of the Contract Document is/are invalid, illegal, or unenforceable such provision(s) shall be considered divisible, and all other provisions of the Contract Documents shall nevertheless remain in full force and effect.

6.2 The Contractor shall not sell, assign, transfer or otherwise convey any of its rights and shall not delegate any of its duties under the Contract Documents without the prior and expressed written consent of Tampa Bay Water and the Surety. Any attempted sale, assignment, transfer, conveyance or delegation of the Contractor's rights under this Contract or the other Contract Documents in violation of the terms of this paragraph shall be void and shall relieve Tampa Bay Water of any further liability under the Contract Documents but shall not relieve the Contractor or the Contractor's Surety(ies) of any liability. If Tampa Bay Water consents in writing to an assignment, unless specifically stated to the contrary in the consent, the assignment shall not release or discharge the Contractor from any duty, responsibility or obligation set forth in the

Contract Documents, and shall not release or discharge the Surety(ies) under the bonds required by the Contract Documents.

6.3 This Contract shall be binding on Tampa Bay Water, the Contractor, and all of their respective successors, heirs, legal representatives and, if Tampa Bay Water has consented to an assignment or delegation as provided in the previous paragraph, assigns and delegates.

6.4 Any waiver by Tampa Bay Water of any provision of the Contract Documents must be specific and in writing and shall apply only to the particular matter concerned and not to other similar or dissimilar matters. Any waiver of any breach of the Contract Documents shall not be held to be a waiver of any other or subsequent breach. Neither the failure of Tampa Bay Water to exercise any power given to Tampa Bay Water under the Contract Documents or to insist upon compliance by the Contractor with Contractor's obligations under the Contract Documents, nor any custom or practice of Tampa Bay Water and Contractor at variance with the terms of the Contract Documents, shall constitute a waiver of Tampa Bay Water's right to demand full and complete compliance by the Contractor with the terms and provisions of the Contract Documents.

6.5 Nothing contained in the Contract Documents shall in any manner authorize, empower or constitute the Contractor, its Subcontractors or Suppliers as agent(s) of Tampa Bay Water; authorize or empower the Contractor, its Subcontractors or Suppliers to assume or create any obligation or responsibility whatsoever, express or implied, on behalf of or in the name of Tampa Bay Water; or authorize or empower the Contractor, its Subcontractors or Suppliers to bind Tampa Bay Water in any manner or make any representation, warranty, covenant, contract or commitment on behalf of Tampa Bay Water. The Contractor shall perform all Work under the Contract Documents as an independent contractor. This Contract does not create, and shall not be construed as creating, any rights enforceable by any person not a party to the Contract.

6.6 This Contract and the Contract Documents shall be governed by and construed in accordance with the Laws and Regulations of the State of Florida without giving effect to any rules governing conflict of laws.

6.7 The parties agree that for any litigation arising under the Contract Documents, venue shall be only in the state courts in and for Pinellas County, Florida.

6.8 All documents prepared or produced by Contractor or any of its Subcontractors pursuant to this Contract are the property of and belong to Tampa Bay Water, provided that Contractor is allowed to reuse such documents with the approval of Tampa Bay Water. If Contractor claims that any such document is proprietary or protected by trade secret or otherwise, Contractor has the burden to establish the basis of any such protection but until judicially declared otherwise, Tampa Bay Water shall have all rights of ownership and use of such documents.

6.9 In no event shall Tampa Bay Water be liable to Contractor, nor shall Contractor be liable to Tampa Bay Water, for any incidental, consequential, or punitive damages based upon claims arising out of or in connection with the performance or non-performance of a party's obligations under this Contract, or the material inaccuracy of any representation made by a party in this Contract, whether such claims are based upon contract, tort, negligence, warranty or other legal theory. Contractor acknowledges and agrees, however, that claims, which are brought by third parties against Tampa Bay Water and for which, but for the application of this paragraph, Contractor would otherwise have an indemnification obligation under this Contract, shall not be considered consequential damages under this paragraph.

6.10 All express representations, indemnifications, or limitations of liability made in or given in this Contract will survive its completion or termination for any reason.

6.11 To the extent permitted by applicable law, contractor and Tampa Bay Water hereby acknowledge and agree that any and all claims arising out of, connected with, or relating to this Contract or the relationship created hereby are matters which, if adjudicated, should be adjudicated by a court without a jury. Therefore, the parties hereby waive a trial by a jury. Neither Tampa Bay Water nor contractor or any successor thereof shall seek a trial by jury in any action or proceeding (whether at law or in equity, whether direct or collateral, whether in contract or in tort) arising out of or related to this Contract or the relationship created hereby. Neither Tampa Bay Water nor Contractor shall seek to consolidate any action or proceeding in which trial by jury has been waived with any other action or proceeding in which a jury trial cannot be or has not been waived. The provisions of this paragraph cannot be and have not been waived. The provisions of this paragraph have been fully discussed by the parties and their respective attorneys and the provisions hereof shall be subject to no exceptions. Tampa Bay Water and contractor acknowledge and agree that no one, including, without limitation, Tampa Bay Water's agents or contractors, has represented that the provisions of this paragraph or of any other paragraph of this Contract will not be fully enforced.

6.12 Contractor warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for the Contractor to solicit or secure this Contract and that Contractor has not paid or agreed to pay any person, company, corporation, individual, or firm, other than a bona fide employee working solely for Contractor any fee, commission, percentage, gift or other consideration contingent upon or resulting from the award or making of this Contract.

7.0 Public Records and Audit Rights

7.1 Contractor shall keep all books, records, files, drawings, plans and other documentation, including all electronically stored items, which concern or relate to the services required hereunder (collectively referred to as "Records"), for a minimum of three (3) years from the date of expiration or termination of this Contract, or as otherwise required by any applicable law, whichever date is later. Tampa Bay Water, or any duly authorized agents or representatives of Tampa Bay Water, shall have the right to order, inspect and copy all such Records as often as they deem necessary during any such period of time. This right to audit, inspect and copy the Records shall include all of the Records of the Subconsultants.

7.2 If the Contractor has questions regarding the application of Chapter 119, Florida statutes, to the Contractor's duty to provide public records relating to this contract, contact the Agency's custodian of public records via phone (727) 796-2355 x 2401; email records@tampabaywater.org; or mail at 2575 Enterprise Road, Clearwater, Florida 33763-1102.

7.3 Contractor must keep and maintain all public records required by the Agency in order to perform services under this Contract.

7.4 Upon request from the Agency's custodian of public records, Contractor shall provide the Agency with a copy of the requested public records or allow the records to be

inspected or copied within a reasonable time at a cost that does not exceed the cost provide in Chapter 119, Florida Statutes, or as otherwise provided by law.

7.5 Contractor shall ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the Contractor does not transfer the records to the Agency.

7.6 Upon completion of the contract, Contractor shall transfer, at no cost, to the Agency all public records in the possession of the Contractor or keep and maintain public records required by the Agency to perform the service under this contract. If the Contractor transfers all public records to the Agency upon completion of the contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the Contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the Agency, upon request from the Agency's custodian of public records, in a format that is compatible with the information technology systems of the Agency.

8.0 Definitions

Defined terms used in this Contract have the intent and meanings assigned to them in the General Conditions, *Article I, Definitions.*

9.0 Engineer

Tampa Bay Water has retained the firm of Carollo Engineers Inc. to act as the Engineer, assume all of the duties and responsibilities and have the rights and authority assigned to the Engineer in the Contract Documents with respect to completion of the Work in accordance with the Contract Documents.

10.0 Public Entity Crime Statement

10.1 Pursuant to subsections 287.133(2) and (3), Florida Statutes, a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid, proposal or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, Florida Statutes, for CATEGORY TWO, for a period of thirty-six (36) months following the date of being placed on the convicted vendor list.

10.2 Contractor hereby certifies and warrants that it has not been placed on any convicted vendor list for the past thirty-six (36) months and is in full compliance with the requirements of subsections 287.133(2) and (3), Florida Statutes.

11.0 Discrimination

Pursuant to Subsection 287.134(2)(a), Florida Statutes, an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity;

may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity. Contractor hereby certifies and warrants that it has not been placed on any discriminatory vendor list and is in full compliance with the requirements of subsections 287.134(2)(a), Florida Statutes.

12.0 Drawings and Specifications

12.1 The Drawings consist of the following:

Sheet No.	Sheet Description
00D01	Plan and Sections
00GE01	Electrical Legend
00GE02	Electrical Abbreviations
00TE01	Typical Details 1
03E01	Overall Plant One-Line Diagram
10E01	Lake Bridge WTP Control, and Grounding Plan
10E02	Pump Room Power, Control, and Grounding Plan
10E03	Electrical Room Power, Control, and Grounding Plan
00G01	General
00G02	Drawing Index
00G03	Notes, Legend, and Symbols
00G04	Abbreviations
00GN01	Symbols and Abbreviations 1
00GN02	Symbols and Abbreviations 2
00GN03	Symbols and Abbreviations 3
00GN04	Symbols and Abbreviations 4
00GN05	Schematic Symbols
00GN06	Sample Loop Drawing
00GN07	Equipment Tagging (Water Treatment)
00TN01	Typical Details 1
00TN02	Typical Details 2
00TN03	Typical Details 3
00TN04	Typical Details 4
04N01	Network Block Diagram
05N01	PLC Cabinet Modifications
05N02	PLC Cabinet Modifications 2
06N01	PLC Cabinet Pump 1 Schematic Modification
06N02	PLC Cabinet Pump 2 Schematic Modification
06N03	PLC Cabinet Pump 3 Schematic Modification
06N04	PLC Cabinet Pump 4 Schematic Modification
06N05	Schematics 5- High Service Pump 4
07N01	I/O Tables
10N01	High Service Pumps P&ID 1
10N02	High Service Pumps P&ID 2
00M01	Existing Plan and Sections
00M02	Plan and Sections
00TS01	Typical Details 1

12.2 The Specifications consist of the following:

Section No.	Title
01010	Summary of Work
01025	Measurement and Payment
01027	Payment Applications
01040	Project Coordination
01065	Permits and Easements
01070	Abbreviation and Symbols
01200	Project Meetings
01300	Contractor Submittal
01310	Project Schedule
01313	Construction and Schedule Constraints
01340	Shop Drawings, Product Data, and Samples
01370	Schedule of Valves
01380	Construction Photographs
01410	Regulatory Requirements
01411	Testing and Quality Control
01505	Mobilization
01540	Security
01600	Product Requirements
01631	Product Substitutions
01650	Start-Up
01710	Cleaning
01720	Contract Record and Close Out Documentations
01730	Operating and Maintenance
01740	Warranties and Bonds
01756	Commissioning
01821	Instruction of Operations and Maintenance Personnel
02100	Demolitions
03000	Concrete
03600	Grouting
05051	Anchor Bolts, Toggle Bolts and Concrete Inserts
07900	Joint Sealants
09940	Protective Coatings
09941	Shop Applied Coatings for Pumps, Motors, and Pump Motor Bases
11312H	Axially-Split Centrifugal Pumps
15010	Valve Installation
15050	Common Work Results for Mechanical Equipment
15052	Common Work Results for General Piping
15059	Miscellaneous Piping and Pipe Accessories
15060	Ductile Iron Pipe and Fittings
15093	Check Valves
15094	Pipe Supports
15101	AWWA Butterfly Valves
15108	Air Release and Combination Air Valves
15110	Common Work Results for Valves

15121	**Pipe Couplings**
15958	**Mechanical Equipment Testing**
16050	**Common Work Results for Electrical**
16062	**Grounding**
16070	**Hangars and Supports**
16075	**Electrical Identification**
16100	**Electrical Equipment Installation**
16120	**Low Voltage Wire Connections**
16122	**Motors**
16123	**600-Volt or Less Wires and Cables**
16125	**Fiber Optic Cable and Appurtenances**
16130	**Conduits**
16134	**Boxes**
16150	**Low Voltage AFD**
16305	**Electrical Arc Flash Study**
16416	**Surge Protective Devices**
16950	**Field Electrical Acceptance Tests**
16951	**Electrical Functional Testing**
16990	**Conduit Testing**
17101	**Specific Control Strategies – (Process Area)**
17500	**Instrumentation and Control Systems**
17530	**Programmable Logic Controllers**
17560	**Instrumentation General Requirements**
17562	**Flow Instruments**
17563	**Pressure and Level Instruments**
17565	**Miscellaneous Instruments**

13.0 Scrutinized Companies and Foreign Countries of Concern

13.1 Contractor certifies that it is in compliance with Section 287.135, Florida Statutes, which provides that a company that has been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; the Scrutinized Companies that Boycott Israel List or is engaged in a Boycott of Israel is ineligible and may not submit a bid, proposal, or enter into or renew a contract with an agency for goods or services of $1 million or more. At the time of submission of a bid or proposal for a contract or contract renewal for goods or services of $1 million or more, the company must certify that it is not on either such List and further that it does not have business operations in Cuba or Syria as required by Section 287.135(5), Florida Statutes.

13.2 Pursuant to Section 287.135, Florida Statutes, Tampa Bay Water reserves the right to terminate any contract for goods or services of $1 million or more if the awarded Contractor:

a. Has been found to have submitted a false Scrutinized Vendor List certification as provided under Section 287.135 subsection (5); or
b. Has been placed on the Scrutinized Companies Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or
c. Has been engaged in business operations in Cuba or Syria.

13.2 Pursuant to Section 287.135, Florida Statutes, Tampa Bay Water reserves the right to terminate any contract for goods or services of any amount if the awarded Contractor

has been placed on the Scrutinized Companies that Boycott Israel List or is engaged in a boycott of Israel.

13.3 Foreign Countries of Concern. Pursuant to Section 287.138, Florida Statutes, Tampa Bay Water may not enter into a contract with an entity that gives access to an individual's personal identifying information if the entity is owned, controlled or organized under the laws of a Foreign County of Concern which includes the People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolas Maduro, the Syrian Arab Republic, or any other entity or agency under the significant control of such Foreign County of Concern. Tampa Bay Water reserves the right to terminate any contract for goods or services of any amount if the awarded Contractor is in violation of Section 287.138, Florida Statutes

14.0 Employee Verification

In accordance with Section 448.095 Florida Statutes, the Awardee/Contractor/Consultant agrees to register with and utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired during the term of the award/contract for the services specified in the award/contract. The Awardee/Contractor/Consultant must also include a requirement in subcontracts that the subcontractor must register with and utilize the E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the award/contract term. If the Awardee/Contractor/Consultant enters into a contract with a subcontractor, the subcontractor must provide the Awardee/Contractor/Consultant with an affidavit stating that the subcontractor does not employ, contract with, or subcontract with an unauthorized alien. The Awardee/Contractor/Consultant shall maintain a copy of such affidavit for the duration of the award/Contract. If Tampa Bay Water has a good faith belief that the Awardee/Contractor/Consultant has knowingly violated Section 448.09(1), Florida Statutes, Tampa Bay Water shall terminate the Contract with the Awardee/Contractor/Consultant, and the Contractor may not be awarded a Contract with Tampa Bay Water for at least 1 year after the date on which the award/Contract was terminated. The Awardee/Contractor/Consultant is liable for any additional costs incurred by Tampa Bay Water as a result of the termination of the award/contract. If Tampa Bay Water has a good faith belief that a subcontractor knowingly violated the law, but the Awardee/Contractor/Consultant has otherwise complied with the law, Tampa Bay Water shall promptly notify the Awardee/Contractor/Consultant and order the Awardee/Contractor/Consultant to immediately terminate the award/contract with the subcontractor.

15.0 Anti-Human Trafficking

In accordance with Section s.787.06, Florida Statutes, the Contractor must provide Tampa Bay Water with an affidavit regarding Human Trafficking. Affidavit included herein must be completed by Contractor to attest, under penalty of perjury, that Contractor does not use coercion for labor or services as defined in s. 787.06, Florida Statutes.

IN WITNESS WHEREOF, Tampa Bay Water and Contractor have signed two (2) copies of this Contract, and all parts of the Contract Documents have been identified by Owner and Contractor. This Contract will be effective on _____ (which is the Effective Date of the Contract).

This Contract may be signed in several counterparts, each of which is an original and all of which constitute one and the same instrument.

ATTEST

_____
Charles H. Carden, General Manager

TAMPA BAY WATER
A Regional Water Supply Authority

By: _____

Name: _____

Its: Chair _____

Date: _____

Approved as to form:

(SEAL)

_____
General Counsel

(CONTRACTOR)

By: _____

Name: _____

Title: _____

(CORPORATE SEAL)

[Version May 2016]

Address for giving notice to:

TAMPA BAY WATER
2575 Enterprise Road
Clearwater, Florida 33763-1102
Attn: Stacy Gundry, Purchasing and Warehouse Manager

The ENGINEER:
Carollo Engineers Inc.
401 N. Cattleman Road, Suite 306
Sarasota, FL 34232

The CONTRACTOR:
_____
_____
_____
_____

End of Contract

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That _____ as Principal, located at _____ (Business Address) and _____as Surety, located at _____ (Business Address) are held and firmly bound to the Tampa Bay Water, A Regional Water Supply Authority as Obligee in the sum of _____ ($_____) for the payment whereof we bind ourselves, our heirs, executors, personal representatives, successors and assigns, jointly and severally.

Whereas, Principal has entered into a contract dated as of the _____ day of _____, 20__, with Obligee for **Lake Bridge Water Treatment Plant-Pump No. 4, Project No.: 07542, Contract No. 2026012** in accordance with DRAWINGs and Specifications, which contract is incorporated by reference and made a part hereof, and is referred to as the Contract.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs the Contract at the times and in the manner prescribed in the Contract; and

2. Pays Obligee any and all losses, damages, costs and attorneys' fees, including appellate proceedings, that Obligee sustains because of any default by Principal under the Contract including, but not limited to, all delay damages, whether liquidated or actual, suffered by Obligee; and

3. Performs the guarantee of all work and materials furnished under the Contract for the time specified in the Contract, then this bond is void; otherwise, it remains in full force.

BE IT FURTHER KNOWN:

1. Any changes, regardless of scope or amount, in or under the Contract and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect Surety's obligation under this Bond.

2. The Surety, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or other work to be performed hereunder, or the Specifications referred to therein shall in anyway affect its obligations under this bond, and it does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to work or to the Specifications.

3. This Performance Bond is issued in compliance with the terms and conditions set forth in Florida Statute 255.05; however, it is intended to exceed the minimal coverage requirements established by that statute. The Notice and time limitations of Florida Statute 255.05 (2) are also, to the extent applicable, if any, incorporated herein by reference and made a part hereof.

4. In no event will the Surety be liable in the aggregate to Obligee for more than the penal sum of this Performance Bond regardless of the number of suits that may be filed by Obligee.

5. Whenever the Contractor shall be, and is declared by Tampa Bay Water to be in default under the Contract, Tampa Bay Water having performed Tampa Bay Water's obligations thereunder, the SURETY shall promptly remedy the default, as set forth below and at the sole option of Tampa Bay Water, by promptly:

(a) Completing the Contract in accordance with its terms and conditions and paying Tampa Bay Water all of its losses, damages, costs and attorneys' and legal assistants' fees, whether at trial, on appeal or in bankruptcy, that Tampa Bay Water sustains because of any default by Principal under

the Contract including, but not limited to, all delay damages, whether liquidated or actual. In the event Surety takes over and completes the Contract, then in such event it shall be entitled to receive the balance of the Contract Price, as defined in sub-paragraph 2 below; or

(b) Indemnifying Tampa Bay Water for all of its damages, expenses, costs, delay damages, attorneys' and legal assistant's fees, including appellate and bankruptcy proceedings, that Tampa Bay Water has incurred, suffered or sustained as a result of Tampa Bay Water's completion of the Contract or the Principal's default under the Contract, less the remaining unpaid balance of the Contract Price, if any. The term "balance of the Contract Price," as used in this Performance Bond, shall mean the total amount payable by Tampa Bay Water to the Contractor under the Contract and any amendments thereto, less the amount previously paid by Tampa Bay Water to the Contractor.

IN WITNESS WHEREOF, the above parties have executed this instrument this _____ day of _____, 20__, the name of each party being affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered in the presence of:

PRINCIPAL:

_____ _____

_____ By: _____

Witnesses as to Principal

Name: _____

Its: _____

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20____, by _____, as _____ of _____, a _____ corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____
Notary Public Signature

(AFFIX NOTARY SEAL)

_____
Print Name

My Commission Expires:

ATTEST:

SURETY:

_____
(Printed Name)

_____
Witness as to Surety

_____
_____
_____
(Business Address)

_____
(Authorized Signature)

_____
(Printed Name)

OR

_____

_____
Witness

_____
Florida Resident Agent and As Attorney in Fact
(Attach Power of Attorney)

_____
_____
_____
(Business Address)

_____
(Printed Name)

_____
(Telephone Number)

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20____, by _____, as _____ of _____, a _____ _____corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____
Notary Public Signature

(AFFIX NOTARY SEAL)

_____
Print Name

My Commission Expires:

PUBLIC PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That _____ as Principal, located at _____ (Business Address) and _____ as Surety, located at _____ (Business Address) are held and firmly bound to the Tampa Bay Water, A Regional Water Supply Authority as Obligee in the sum of _____ ($_____) for the payment whereof we bind ourselves, our heirs, executors, personal representatives, successors and assigns, jointly and severally.

Whereas, Principal has entered into a contract dated as of the _____ day of _____, 20__, with Obligee for **Lake Bridge Water Treatment Plant-Pump No. 4, Project No.: 07542, Contract No. 2026012** in accordance with DRAWINGs and Specifications, which contract is incorporated by reference and made a part hereof, and is referred to as the Contract.

THE CONDITION OF THIS BOND is that if Principal:

1. Promptly makes payment to all claimants as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor, materials or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in the Contract; and
2. Pays Obligee all losses, damages, expenses, costs, and attorneys' fees, including appellate proceedings that Obligee sustains because of default by the Principal under paragraph 1 of this bond; then this bond is void; otherwise, it remains in full force.

BE IT FURTHER KNOWN:

1. Any changes, regardless of scope or amount, in or under the Contract and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect Surety's obligation under this Bond.
2. The Surety, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or other work to be performed hereunder, or the Specifications referred to therein shall in anyway affect its obligations under this bond, and it does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to work or to the Specifications.
3. This Payment Bond is a statutory payment bond and is not intended to be a common law Payment Bond. This Payment Bond is issued in compliance with the terms and conditions set forth in Florida Statute 255.05. The Notice and time limitations of Florida Statute 255.05 (2) are also expressly incorporated herein by reference and made a part hereof. Any action instituted by a claimant under this bond must be in accordance with the Notice and Time limitations contained in Florida Statute 255.05 (2).

In no event shall the Surety be liable in the aggregate to claimants for more than the penal sum of this Payment Bond, regardless of the number of suits that may be filed by such claimants.

IN WITNESS WHEREOF, the above parties have executed this instrument this _____ day of _____, 20__, the name of each party being affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered in the presence of:

PRINCIPAL:

_____ _____

Witnesses as to Principal

By:_____

Name: _____

Its:_____

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _ _____ day of _____, 20____, by _____, as ____ _____ of _____, a _____ _____corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____

Notary Public Signature

(AFFIX NOTARY SEAL)

_____

Print Name

My Commission Expires:

ATTEST:

SURETY:

_____ _____

(Printed Name)

_____ _____

Witness as to Surety

_____

_____

(Business Address)

_____

(Authorized Signature)

_____

(Printed Name)

OR

_____ _____
Florida Resident Agent and As Attorney in Fact

_____ (Attach Power of Attorney)
Witness _____
_____
_____
(Business Address)

_____
(Printed Name)

_____
(Telephone Number)

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _ _____ day of _____, 20____, by _____, as ____ _____ of _____, a _____ _____corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____
Notary Public Signature

_____
Print Name

My Commission Expires: (AFFIX NOTARY SEAL)

TAMPA BAY WATER, A REGIONAL WATER SUPPLY AUTHORITY CERTIFICATE OF INSURANCE FORM or APPROVED ACORD FORM

Issue Date:

Producer:

CANCELLATION: Should any of the below described policies be cancelled, non-renewed or adversely changed before the expiration date thereof, the issuing company will provide 30 days written notice to Tampa Bay Water by certified mail.

Re: Project/Contract Number: _____

Insured:

COMPANIES AFFORDING COVERAGE	BEST RATING/CLASS
A.	
B.	
C.	
D.	
E.	

COVERAGES: This is to certify that the policies of insurance listed below have been issued to the insured named above for the policy period indicated.

Company Letter	1. TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE	POLICY EXPIRATION DATE	LIMITS ALL LIMITS IN THOUSANDS		
	2. GENERAL LIABILITY ❑ Commercial Form ❑ Occurrence ❑ Claims Made ❑ Comprehensive Form ❑ Premises-Operations ❑ Explosion, Collapse, Underground Hazard ❑ Products/Completed Operations Hazard ❑ Contractual Insurance ❑ Broad Form Property Damage ❑ Independent Contractor ❑ Personal Injury					EACH OCCURRENCE	AGGREGATE
					BI & PD Combined	$	$
					Bodily Injury	$	$
					Property Damage	$	$
					Products Comp/OP	$	$
					Personal & Adv. Injury	$	$
					* Separate Project Agg. For Tampa Bay Water	X	$
	AUTOMOBILE LIABILITY ❑ Any Auto ❑ All Owned Autos ❑ Scheduled Autos ❑ Hired Autos ❑ Non-Owned Autos				Combined Single Limit		
					Bodily Injury (Per Person)		
					Bodily Injury (Per Accident)		
					Property Damage		
	UMBRELLA/EXCESS LIABILITY ❑ Umbrella Form ❑ Excess Form ❑ Following Form Coverage				Each Occurrence		
					Aggregate		
	WORKERS' COMPENSATION AND EMPLYERS' LIABILITY				☒ Statutory Coverage Limit		$
					EL Each Accident		$
					EL Disease – Policy Limit		$
					EL Disease – Each Employee		$
	PROFESSIONAL LIABILITY ❑ Claims Made ❑ Occurrences Retro Date _____					$	$
	BUILDER'S RISK ❑ All Risk ❑ Permission to Occupy ❑ All Owners', Contractors', Subcontractors' Interests Covered ❑ Installation Floater				$		X
	FIDELITY ❑ Employee Dishonesty ❑ Covers Loss to Tampa Bay Water				$		X
	OTHER						

Description of Operations/Locations/Vehicle/Special Items:

***** Specific Project or Location:

CERTIFICATE HOLDER and ADDITIONAL INSURED

Tampa Bay Water, Its Engineers, Architects, Consultants, Subsidiaries or Affiliates and each of the Tampa Bay Water Directors, Officers, Employees, Representatives, Agents or Volunteers.

Authorized Representative: _____

(Signature Required)

Address _____

_____

Telephone # _____ Facsimile # _____

THIS IS TO FURTHER CERTIFY THAT:

1. The company issuing the General Liability Coverage hereby agrees to waive any right of subrogation it may acquire against Tampa Bay Water, its engineers, its consultants, and all other parties named as insured by reason of any payment made on account of personal injury, bodily injury, including death resulting therefrom, sustained by any employee of the insured or property damage arising out of the performance or furnishing of work under the above referenced Contract.

2. Each of the above-described policies contains a provision or endorsement that the coverage afforded will not be canceled, adversely changed or non-renewed until at least thirty (30) days prior written notice has been given to Tampa Bay Water by certified mail.

3. Each of the above listed companies hereby agrees to deliver to Tampa Bay Water new Certificate of Insurance at least fifteen (15) days prior to coverage renewals or binder within such period and a certificate within fifteen (15) days thereafter.

4. If requested, each of the above-listed companies hereby agrees to deliver two (2) copies of the policies purchased by the Agent to Tampa Bay Water.

5. Each of the above listed companies is authorized to do business and has an agent for service of process in Florida and has an "A" policy holders rating and a financial rating of at least Class VIII in accordance with the most current Best's rating. For self-insurance funds, financial statements are to be provided, if requested by Tampa Bay Water. (At Tampa Bay Water's option, a Best's rating or financial information regarding any self-insurance funds may be waived.)

ACORD™ CERTIFICATE OF LIABILITY INSURANC

Clear | Save | DATE (MM/DD/YYYY)

PRODUCER

Your Insurance Agent

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A: Company Name	
INSURER B:	
INSURER C:	
INSURER D:	
INSURER E:	

INSURED

Company Name
Street
City, State, Zip Code

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	X	GENERAL LIABILITY	Policy Number	effective	expires	EACH OCCURRENCE	$ 1,000,000
		[X] COMMERCIAL GENERAL LIABILITY				DAMAGE TO RENTED PREMISES (Ea occurence)	$ 300,000
		[ ] CLAIMS MADE [X] OCCUR				MED EXP (Any one person)	$ 5,000
						PERSONAL & ADV INJURY	$ 1,000,000
						GENERAL AGGREGATE	$ 2,000,000
		GEN'L AGGREGATE LIMIT APPLIES PER:				PRODUCTS - COMP/OP AGG	$ 2,000,000
		[ ] POLICY [X] PRO-JECT [ ] LOC					
	X	AUTOMOBILE LIABILITY	Policy Number	effective	expires	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
		[X] ANY AUTO					
		[ ] ALL OWNED AUTOS				BODILY INJURY (Per person)	$
		[ ] SCHEDULED AUTOS					
		[ ] HIRED AUTOS				BODILY INJURY (Per accident)	$
		[ ] NON-OWNED AUTOS					
						PROPERTY DAMAGE (Per accident)	$
		GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
		[ ] ANY AUTO				OTHER THAN AUTO ONLY: EA ACC	$
						AGG	$
	X	EXCESS/UMBRELLA LIABILITY	Policy Number	effective	expires	EACH OCCURRENCE	$ 2,000,000
		[X] OCCUR [ ] CLAIMS MADE				AGGREGATE	$ 2,000,000
							$
		[ ] DEDUCTIBLE					$
		RETENTION $					$
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	Policy Number	effective	expires	X WC STATU-TORY LIMITS / OTH-ER	
		ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED?				E.L. EACH ACCIDENT	$ 100,000
		If yes, describe under SPECIAL PROVISIONS below NO				E.L. DISEASE - EA EMPLOYEE	$ 100,000
						E.L. DISEASE - POLICY LIMIT	$ 500,000
		OTHER					

Sample
Sample

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

Re: Job Name/Number
Tampa Bay Water, Its Engineers, Architects, Consultants, Subsidiaries or Affiliates and each of the Tampa Bay Water Directors, Officers, Employees, Representatives, Agents or Volunteers shall be named as additional insured under the GL Policy per CG 20 10 (07/04) AND CG 20 37 (07/04) or equivalent, and the Automobile Liability policy. Waiver of Subrogation is provided in favor of Tampa Bay Water on all policies. The insurance evidenced by this Certificate is primary and non-contributory to any insurance maintained by Tampa Bay Water.

CERTIFICATE HOLDER

Tampa Bay Water
2575 Enterprise Road
Clearwater, FL 33763-1102

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ~~ENDEAVOR TO~~ MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, ~~BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.~~

AUTHORIZED REPRESENTATIVE

ACORD 25 (2001/08)

© ACORD CORPORATION 1988

IMPORTANT

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

DISCLAIMER

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.

ACORD 25 (2001/08)

SUPPLEMENTARY CONDITIONS

Supplementary Conditions to the General Conditions, *Article IV, The Contractor and Its Employees.*

The limits of liability for the following insurance required by the General Conditions, *Article IV, The Contractor and Its Employees*, as amended in the Supplementary Conditions, shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Commercial General Liability. The coverage(s) shall be no less than:
   (a) Minimum limits of $1,000,000 per occurrence combined single limit for all liability must be provided, with umbrella insurance making up the difference between the policy limits of underlying policies and the total amount of coverage required. The referenced limit shall be provided as a separate aggregate for the Work (Project Aggregate).

   (b) Minimum limits of $2,000,000 Aggregate single limit for all liability must be provided, with umbrella insurance making up the difference between the policy limits of underlying policies and the total amount of coverage required. The referenced limit shall be provided as a separate aggregate for the Work (Project Aggregate).

2. Business Automobile Liability. The coverage shall be no less than:
   (a) Minimum limits of $1,000,000 combined single limit for all liability must be provided.

3. Umbrella/Excess Liability. The coverage shall be no less than:
   (a) Minimum limits of $2,000,000 per occurrence must be provided.

   (b) Aggregate limits of $5,000,000 must be provided.

4. Worker's Compensation and Employer's Liability. The coverage shall include:
   (a) Coverage A:
   State: Statutory limits under the Laws of the State of Florida.
   Federal: Statutory limits under the Laws of the United State of America (e.g., Longshoremen's, etc.)

   (b) Coverage B:
   Employer's Liability, bodily injury, occupational sickness or disease, or death of Contractor's employees shall be no less than:
   1) $500,000 Each Accident
   2) $1,000,000 Each Disease
   3) $500,000 Each Employee

   Tampa Bay Water requires Contractor employers to purchase workers compensation insurance for all their employees regardless of the number of employees they have and regardless of any other exemptions. Florida law permits employers who may be exempt from purchase of coverage to waive their exemptions and purchase the coverage. Tampa Bay Water requires the Contractor to purchase said coverage.

5. Builder's Risk "All Risk" or Installation Floater Insurance. Coverage shall be no less than the full insurable replacement value of the Work, including completed Work, Work in progress and all insurable building materials, structures, fences, lights, equipment, pumps, electrical components, and similar insurable property. Exceptions to insurable property include underground property (after installation), site work and road work.

6. Additional Requirements:
   (a). Tampa Bay Water must be listed as an Additional Insured on General Liability, Auto Liability and Excess policies;

   (b). Excess/Umbrella policies shall be written as "follow form";

   (c.) The insurance provided for Tampa Bay Water as Additional Insured shall apply as primary and non-contributory insurance;

   (d). The Additional Insured Endorsement utilized for General Liability must be form CG 20 10 (07/04) and CG 20 37 (07/04) or broader wording in Tampa Bay Water's favor as approved by Tampa Bay Water;

   (e). Contractor shall maintain General Liability coverage for itself and all Additional Insureds for the duration of the Work and maintain completed operations coverage for itself and Additional Insureds for five (5) years after completion of the Work;

   (f). All Contractor insurance policies will include a Waiver of Subrogation in favor of Tampa Bay Water;

   (g). Each of Contractor's insurance policies shall be endorsed to provide Tampa Bay Water with at least thirty (30) days written notice prior to any material change or cancellation of the policy, to the fullest extent commercially available;

   (h). Deductible amounts on Contractor policies shall not exceed $25,000 and shall require approval from Tampa Bay Water; and

   (i). In the event Contractor breaches any provision of the Insurance Requirements of the Contract, Tampa Bay Water may deduct the cost of any insurance from any funds Payable to Contractor under the Contract Documents.

GENERAL CONDITIONS

TABLE OF CONTENTS

1.0 DEFINITIONS 67
2.0 CONTRACT DOCUMENTS 72
3.0 THE ENGINEER 73
4.0 THE CONTRACTOR AND ITS EMPLOYEES 75
5.0 TAMPA BAY WATER/OWNER 89
6.0 PROGRESS OF THE WORK 89
7.0 PAMENT 96

GENERAL CONDITIONS

1. Definitions

Wherever in the Contract Documents the following terms are used, the intent and meaning shall be as follows:

1.1. Addenda: Instruments issued by Engineer for Tampa Bay Water prior to the advertised time for receipt of Bids that modify the Contract Documents by additions, deletions, clarifications, corrections, or other revisions.

1.2. Contract: The written Contract between Tampa Bay Water and the Contractor covering the Work to be performed.

1.3. Allowances: A specified sum included in the Contract Price to be utilized only at the discretion of Tampa Bay Water.

1.4. Alternates: A specified portion of the Work listed on the Bid which has been added to or deducted from the Base Bid, at Tampa Bay Water's discretion, as identified in the Contract.

1.5. As Approved: The words "As Approved," unless otherwise qualified, shall be understood to be for conformance with the Contract Documents.

1.6. As-Built Contract Documents: A set of the Contract Documents marked up by the Contractor to show the Work as constructed with all modifications from the original Contract Document.

1.7. Base Bid: The sum total of the combined Unit Prices, Lump Sum Prices and Allowances in the Bid, excluding all Alternates.

1.8. Bidder: The person(s), partnership, firm or corporation submitting a Bid for the Work.

1.9. Bid Documents: The "Bid Documents" consist of the Instruction of Bidders, Information to Bidders, Request for Bids, Bid and the Contract Documents.

1.10. Bid Security: The Bid Bond, certified check or cashier's check provided pursuant to this ITB to protect Tampa Bay Water from the unauthorized withdrawal of Bid or refusal to execute the Contract Documents. Electronic Bids received through Bonfire must be accompanied by a copy of a certified check, or cashier's check drawn on a bank in good standing, or the Florida Bid Bond included herein. The Bid Bond must be issued by a surety authorized to issue such bonds in the State of Florida, in the amount of Five percent (5%) of the proposed total Contract Price of the Bid submitted. The Florida Bid Bond included herein shall be given as a guarantee that the Bidder will not withdraw its Bid for a period of One Hundred Twenty (120) days after the opening of Bids.

When submitting the electronic bid, a copy of the Bid Bond should be submitted in the electronic package. The original Bid Bond must be delivered to Tampa Bay Water physically via mail, delivery service or in-person. If submitting electronically, banking information may be redacted on copies of checks. Original checks must be delivered physically and unaltered.

1.11. Business Day: The term Business Day means each day occurring Monday through Friday.

1.12. Change Authorization: A written instrument which, when recommended by the Engineer and signed by Tampa Bay Water, authorizes and directs the Contractor to perform changes in the Work as described in the Change Authorization, and/or gives the basis, if any, for a subsequent adjustment in Contract Price or Contract Time. Upon receipt of a Change Authorization, the Contractor is authorized and required to perform the subject changes in the Work.

1.13. Change Order: A written instrument which, when recommended by the Engineer and signed by Tampa Bay Water and the Contractor, amends the Contract Documents to provide for changes in the Work, and/or Contract Price, and/or Contract Time.

1.14. Construction Directive: A written instrument issued by the Engineer pursuant to Paragraph 7.2.9.

1.15. Contract Documents: The "Contract Documents" consist of the Contract, Addenda, Supplementary Conditions, General Conditions, Specifications, Drawings, Change Order, Change Authorizations, and all other documents expressly incorporated by specific reference thereto. The Contract Documents are sometimes collectively referred to as the "Contract".

1.16. Contractor: The person(s), partnership, firm, or corporation that entered into and is (are) identified in the Contract.

1.17. Contractor's Representative: The Contractor's superintendent, project manager or other person at the location of Work authorized to direct the Work and receive communications from Tampa Bay Water or Engineer.

1.18. Contract Price: The total compensation payable by Tampa Bay Water to the Contractor for the performance of the Work by the Contractor in accordance with the requirements of the Contract Documents, as stated in the Contract and adjusted by all Change Order and Change Authorizations.

1.19. Contract Time: Unless otherwise specified, the Contract Time for all or a designated part of the Work is the period of time allowed, subject to Change Order and Change Authorizations, for completion of a specified part of the Work. The first Day of Contract Time shall be that date as specified on the Notice to Proceed as the date the Contract Time shall commence.

1.20. Correction Period: The period of time established in paragraph 4.20.2 hereafter for the correction of Defective Work.

1.21. Day: Unless otherwise specifically stated, the term Day shall be understood to mean calendar day.

1.22. Defective: A term used to refer to Work that is faulty, unsatisfactory, deficient, damaged or does not conform to the requirements of the Contract Documents and all applicable Laws and Regulations.

1.23. Drawings: The term Drawings refers to the various drawings, profiles, cross sections, elevations, details, plans and other working drawings and supplementary drawings, or reproductions thereof, sealed by the Engineer, which show the location, character, dimensions, details of the Work to be performed, all as identified in the Contract. Drawings may either be bound in the same book as the balance of the Contract Documents or bound in separate sets, and are a part of the Contract Documents, regardless of the method of binding.

1.24. Engineer: The person or organization identified as such in the Contract that provided the technical design. The term "Engineer" means the Engineer or its authorized representatives.

1.25. Final Completion: The completion of all the Work in accordance with the Contract Documents.

1.26. Laws And Regulations: Federal, State, and Local Statutes, Judicial and Administrative Decisions, Laws, By-Laws, Codes, Rules, Regulations, Resolutions, Ordinances, and/or Orders applicable to the Project.

1.27. Lump Sum Price: The price paid for a specified quantity of Work, which when performed, is paid for on the basis of an agreed price for the completed Work.

1.28. Notice: The term "Notice" or the requirement to notify, as used in the Contract Documents or applicable Laws and Regulations, shall signify a written communication

delivered in person; or by certified or registered mail, return receipt requested, to the individual, to a member of the firm, or to an officer of the corporation for whom it is intended.

1.29. Notice Of Award: The written notice of acceptance of the Bid by Tampa Bay Water to the successful Bidder stating that upon compliance by the Bidder, within the time specified, with the requisite conditions stated in this ITB, Tampa Bay Water will deliver the Contract to the successful Bidder for its execution.

1.30. Notice to Proceed: The written Notice issued by Tampa Bay Water to the Contractor, authorizing it to proceed with the Work in accordance with the Contract Documents, and fixing the date for which the Contract Time shall commence.

1.31. Or Equal: The term "or equal" shall be understood to indicate that the "equal" product is the same or better than the named product in function, performance, reliability, quality, and general configuration. Determination of equality in reference to the Project design requirements will be made by the Engineer.

1.32. Partial Utilization: Use by Tampa Bay Water of a portion of the Work (as designated by Tampa Bay Water) before reaching Substantial Completion for all the Work.

1.33. Payment Application: The forms provided by Tampa Bay Water which shall be used by the Contractor in requesting partial or final payment.

1.34. Permit Allowance: The Permit Allowance is for Tampa Bay Water's use in reimbursing the Contractor for the actual cost of permit fees required by Laws and Regulations necessary to perform the Work. This is a pass-through cost and no mark-ups are allowed on the Permit Allowance.

1.35. Progress Report: A written report(s) indicating progress of the Work, estimated date for delivery of materials, and proposed plan for recovery of any delays to the timing and sequence of Work set forth in the Progress Schedule and proposed plan for recovery of any delays to the timing and sequence of Work set forth in the Progress Schedule.

1.36. Progress Schedule: Schedule which shows the timing and sequence of Contractor's proposed execution of the Work and all subsequently issued updates thereto, after said updates have been reviewed and accepted by Tampa Bay Water.

1.37. Project : The name of the Project is as identified in the Contract.

1.38. Project Allowance: The Project Allowance is solely for Tampa Bay Water's use in the payment for changes in the Work, where such changes have been approved pursuant to the Contract Documents.

1.39. Project Representative: The authorized representative(s) of the Engineer who is (are) assigned to the Project or any part thereof.

1.40. Record Drawings: Drawings that are prepared by the Engineer reflecting as-built information provided by the Contractor on Contractor's As-Built Contract Documents.

1.41. Shop Drawings: All drawings, diagrams, illustrations, schedules, and other data prepared by or for the Contractor to illustrate some part of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams, and other data prepared by a Supplier and submitted by the Contractor to illustrate items of material or equipment.

1.42. Specifications: The term "Specifications" refers to those written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work, and certain administrative details applicable thereto, all as identified in the Contract. Where standard Specifications, common to the construction industry and to standard engineering practice, are referenced to or are otherwise applicable, the applicable portions of the most current versions of such standard Specifications shall

become a part of these Contract Documents. If referenced standard Specifications conflict with Specifications contained herein, the requirements contained herein shall control unless contrary to Laws and Regulations.

1.43. Subcontractor: An entity having a Contract with the Contractor for performing labor on the Work on the Project, or for performing both labor on the Project and furnishing materials or equipment.

1.44. Submittal: The term Submittal includes shop drawings, tests, samples, Progress Schedules and other schedules, Progress Reports and other reports, and any other documents required for submission by the Contract Documents.

1.45. Substantial Completion: Substantial Completion shall be that degree of completion of the Work or specified portion of the Work in accordance with the Contract Documents, as specified in the General Conditions, *Article II, Contract Time* of the Contract, certified by the Engineer and approved by Tampa Bay Water as evidenced by the Engineer's issuance of a Certificate of Substantial Completion, sufficient to provide Tampa Bay Water, at its discretion, the full-time use of the Work or Partial Utilization of a specified portion of the Work for the purposes for which it was intended.

1.46. Supplier: A manufacturer, fabricator, distributor, material man, or vendor having an Contract with the Contractor for furnishing materials or equipment for the Project.
Tampa Bay Water, A Regional Water Supply Authority/Owner: Tampa Bay Water, A Regional Water Supply Authority, is the Owner of the Work described in the Contract Documents. The term "Owner" and "Tampa Bay Water" are interchangeable

1.47. Uncontrollable Circumstance: Any act, event or condition affecting the Project, Contractor or Tampa Bay Water to the extent that it materially and adversely affects: (i) the ability of either party to perform any obligation hereunder (except for payment obligations); or (ii) the cost of such party's performance, if such act, event or condition is beyond the reasonable control and is not also the result of the willful or negligent act, error or omission or failure to exercise reasonable diligence on the party relying thereon as justification for not performing an obligation or complying with any condition required of such party under this Contract;

(1) *Inclusions*. Subject to the foregoing, such acts or events include the following:

(a) an act of God, hurricane, landslide, lightning, earthquake, fire, flood, plague, tornadoes, (but not including reasonably anticipated weather conditions for the geographic area of the Work site), explosion, sabotage or similar occurrence, acts of a public enemy, extortion, war, blockade or insurrection, riot or civil disturbance;

(b) a Change in Law;

(c) the failure of any appropriate governmental body or private utility having operational jurisdiction in the area in which the Project is located to provide and maintain Utilities to the Work site;

(d) any failure of title to the Work site or any enforcement of any encumbrance on the site or on any improvements thereon not consented to in writing by, or arising out of any action or Contract entered into by, the party adversely affected thereby;

(e) the preemption of materials or services by a governmental body in connection with a public emergency or any condemnation or other taking by eminent domain of any portion of the Project or Work site;

(f) the presence at the Work site of (i) subsurface structures, materials or conditions having archaeological significance; (ii) any habitat of endangered or similarly protected species; (iii) functioning subsurface structures at the site (to the extent not identified by Tampa Bay Water to Contractor); and (iv) subsurface conditions of which Contractor, through the exercise of reasonable diligence, could not reasonably be expected to have notice;

(g) strikes by an organized union of the Contractor's Subcontractors;

(h) the failure of Tampa Bay Water to obtain any permit or approval which is Tampa Bay Water's responsibility to obtain, on or prior to the dates set forth in the Project Schedule.

(2) *Exclusions*. It is specifically understood that none of the following acts or conditions shall constitute Uncontrollable Circumstances:

(a) general economic conditions, interest or inflation rates, or currency fluctuations or exchange rates;

(b) changes in the financial condition of Tampa Bay Water, Contractor or any Subcontractor affecting the ability to perform their respective obligations;

(c) the consequences of error, neglect or omissions by the parties and any Subcontractor in the performance of any Work or responsibilities under this Contract;

(d) any increase for any reason in premiums charged by the Contractor's insurers or the insurance markets generally for the required Insurance;

(e) the failure of Contractor to secure any patents or licenses in connection with the technology necessary to perform its obligations hereunder;

(f) the failure of any Subcontractor or Supplier to furnish labor, materials, services or equipment for any reason other than for acts or events specifically included herein as Uncontrollable Circumstances;

(g) equipment failure except when due to acts or events specifically enumerated herein as Uncontrollable Circumstances; or

(h) any Change in Law with respect to the issuance of any permit or approval, the enactment of any statute, or the promulgation of any regulation affecting the standards or requirements of performance, the terms and conditions of which do not impose more stringent or burdensome requirements on the Project or Contractor than in effect on the Effective Date of the Contract.

Unit Price: The price paid for units of Work which, when performed, is measured and paid for on the basis of units.

1.48 Work: The word "Work" within these Contract Documents shall include all material, labor, services, documentation, tools, equipment, fuel, utilities, temporary facilities and all appliances, machinery, transportation, and appurtenances necessary to perform and complete the Project in accordance with the Contract Documents, and such additional items not specifically indicated or described which can be reasonably inferred as belonging to the item described in the Contract Documents or indicated and as required by good practice to provide a complete and satisfactory system(s) or structure(s).

1.49 Working Hours: Working Hours shall mean the hours between 7:00 a.m. and 6:00 p.m., Monday through Friday, excluding legal holidays. Maintenance of equipment will be allowed outside of Working Hours.

1.50 Other terms not defined herein shall have the meanings assigned to them elsewhere in the Contract Documents, and if not assigned and where the context will permit, as used or defined in the Florida Statutes.

2. Contract Documents

2.1 Intent of Contract Documents

2.1.1. The Contract Documents comprise the entire Contract between Tampa Bay Water and the Contractor concerning the Work. The Contract Documents are complementary, and what is called for by one shall be as binding as if called for by all. The intent of the Contract Documents is to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any work, materials, or equipment that may reasonably be inferred from the Contract Documents as being required to produce the indicated result shall be supplied whether or not specifically called for, with no increase in the Contract Price or extension of the Contract Time. When words which have a customary technical or trade meaning are used to describe work, materials, or equipment, such words shall be interpreted in accordance with that meaning, unless a contrary definition appears in the Contract Documents, in which case the Contract Documents shall control.

2.1.2. Whenever the terms "as ordered", "as directed", "as required", "as allowed", "As Approved", or terms of like effect, or the adjectives "reasonable", "suitable", "acceptable", "proper", or "satisfactory", or adjectives of similar effect, are used to describe a requirement, direction, review, or judgment of the Engineer or Tampa Bay Water as to the Work, it is intended that the requirement, direction, review, or judgment will be to evaluate the Work for compliance with the Contract Documents.

2.1.3. No use of any provision of any standard Specifications, manual, or code (whether or not expressly incorporated by reference in the Contract Documents), or Suppliers' instructions, shall be effective to (a) change the duties and responsibilities of the Contractor, Tampa Bay Water, or Engineer, or any of their consultants, agents, or employees from those assigned in the Contract Documents; or (b) to assign to the Contractor, Tampa Bay Water, or Engineer, or any of their consultants, agents, or Tampa Bay Water employees, any duty or authority to supervise or direct the execution of the Work or to assume responsibility contrary to the provisions of the Contract Documents.

2.2 Priority of the Contract Documents

2.2.1. In resolving inconsistencies or apparent conflicts among the Contract Documents, the first listed below shall take precedence and control over those following:

a. Contract
b. Supplementary Conditions
c. General Conditions
d. Specifications / Drawings
e. Front-Ends

2.2.2. In resolving inconsistencies between Drawings and Specifications, Contractor shall be obligated to comply with the more costly or stringent requirement, as determined by Tampa Bay Water. Figure dimensions on Drawings shall take

precedence over scale dimensions. Detailed Drawings shall take precedence over general Drawings.

2.3 Examination and Verification of Contract Documents

2.3.1. Before undertaking each part of the Work, the Contractor shall carefully study and compare the Contract Documents with each other, check and verify pertinent figures and all applicable field measurements, and compare and coordinate related requirements for Work (i.e. location, dimensions, fit, completeness, consistency, etc.).

2.3.2. The Contractor shall, immediately upon discovery, report in writing to the Engineer any conflict, error, omission, or ambiguity in the Contract Documents which the Contractor discovers, whether prior to or while performing the Work, and shall obtain a written interpretation or clarification from the Engineer before proceeding with any affected Work. The Engineer shall promptly investigate the matter and until such interpretation or clarification is obtained from the Engineer, any Work done by the Contractor which is directly or indirectly affected by same, will be at the Contractor's risk and the Contractor shall bear all resultant costs and delays.

2.4 Documents to be kept on the Project Site

The Contractor shall keep at least one copy of the Contract Documents on the Project site in good order, available to Tampa Bay Water and its representatives. The Contractor shall maintain on a daily basis at the Project site, and make available to the Engineer on request, one current set of As-Built Contract Documents which have been accurately marked by Contractor to indicate all modifications in the completed Work that differ from the original Contract Documents. As a condition precedent to Final Completion of the Work, the Contractor shall give the Engineer one complete set of these As-Built Contract Documents.

2.5 Additional Contract Documents

The Engineer shall furnish to the Contractor thirty-seven (37) sets of sealed Drawings (24 X 36) hard copies, one PDF copy and one AutoCAD electronic copy; sets of sealed Drawings and one (1) reproducible set of the Contract Documents.

2.6 Ownership of Contract Documents

All portions of the Contract Documents, and copies thereof furnished by the Engineer are the property of Tampa Bay Water. They are not to be used on other work and are to be returned to the Engineer at the completion of the Work with the exception of the Contractor's record set. Any reuse or adaptation of these materials by Contractor without specific written permission by Tampa Bay Water is expressly prohibited and shall be at the risk of the Contractor and without liability or legal expense to Tampa Bay Water or Engineer. The Contractor shall hold Tampa Bay Water and Engineer harmless from any and all damages and claims, including reasonable attorneys' fees and legal assistants' fees, for such unauthorized use.

3. The Engineer

3.1 Authority of the Engineer

The Engineer shall be a representative of Tampa Bay Water during the Contract Time for performance of the Work. The Engineer shall have authority to reject Work which does not conform to the Contract Documents. However, the Engineer's authority shall not affect the Contractor's responsibility to perform the Work in accordance with the Contract Documents.

3.2 Duties and Responsibility of the Engineer

3.2.1. The Engineer shall make visits to the Project site at intervals appropriate to

the various stages of construction to observe the progress and quality of the Work and to determine if the Work is proceeding in accordance with the Contract Documents. Visits and observations made by the Engineer are solely for the benefit of Tampa Bay Water and shall not relieve the Contractor of its obligations including, but not limited to, the Contractor's obligations to conduct comprehensive inspections of the Work and to furnish materials and perform acceptable work, and to provide adequate safety precautions, all in accordance with the Contract Documents.

3.2.2. The Engineer shall respond, in writing, within 21 days of receipt (unless more time is reasonably required for response), to all claims by Tampa Bay Water or the Contractor required for performance of the Work and requests for clarification or interpretation of the Contract Documents. The Engineer's response shall be of factual and/or technical nature, and shall not include the legal interpretation of the Contract Documents.

3.2.3. The Engineer may assign one or more Project Representatives to observe the Work. It is understood that such Project Representatives shall have authority to issue Notices of non-conformance and make decisions within the limitations of authority of the Engineer. The Contractor shall furnish all reasonable assistance required by the Engineer or Project Representative for proper observation of the Work. Observations by the Project Representative shall not relieve the Contractor of its obligations including, but not limited to, the Contractor's obligation to conduct comprehensive inspections of the Work and to furnish materials and perform work, and to provide adequate safety precautions, all in accordance with the Contract Documents.

3.2.4. On-site observations by the Engineer, Project Representatives and other assistants shall not relieve the Contractor from its obligation to perform the Work in accordance with the Contract Documents, nor constitute acceptance of Defective Work, nor give rise to any duty on their part to make the observations for the benefit of the Contractor.

3.2.5. The Engineer shall review Submittals within the times specified in the General Requirements, or if not specified, within 21 days of receipt (unless more time is reasonably required for review) for conformance with the design of the Project and for compliance with the Contract Documents. The Engineer's review shall not extend to means, methods, techniques, sequences, nor to procedures of construction (except where a specific means, method, technique, sequence, or procedure of construction is indicated in or required by the Contract Documents), nor to safety precautions or programs incident thereto.

3.3 Rejected Work

3.3.1. The Engineer shall have authority to disapprove or reject Work at any time during the performance of the Work, which the Engineer believes to be Defective; or to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed. The Engineer's authority does not relieve the Contractor from its responsibility to perform in accordance with the Contract Documents. When the Contractor is notified by the Engineer of rejection of Defective Work, the Contractor shall take immediate action to correct same.

3.3.2. All Defective Work, whether discovered before or after Final Completion, shall be removed and replaced by the Contractor, without cost to Tampa Bay Water, with Work which shall conform to the Contract Documents. Failure

on the part of the Engineer to condemn or reject Defective Work shall not be construed to imply acceptance of such Work. Tampa Bay Water shall reserve and retain all of its rights and remedies at law or equity against the Contractor and its Surety for correction of or damages arising from any and all Defective Work.

3.4 Lines and Grades

Lines and grades shall be established as provided in the Drawings or the Supplementary Conditions. All information, stakes or marks shall be carefully preserved by the Contractor, and if the information, stakes or marks are destroyed or removed, all such information, stakes or marks shall be replaced at the Contractor's expense.

3.5 Detail Drawings and Instructions

If required, the Engineer shall furnish within 21 days (unless more time is reasonably required), in writing, additional instructions by means of Drawings or otherwise, as required for the proper execution of the Work. All such Drawings and instructions shall be in writing and consistent with the Contract Documents.

4. The Contractor and Its Employees

4.1 Contractor

4.1.1. The Contractor shall independently perform all Work included in the Contract Documents and shall not be considered an agent of Tampa Bay Water or of the Engineer, nor shall the Contractor's Subcontractors, Suppliers, or employees be agents of Tampa Bay Water or of the Engineer.

4.1.2. The Contractor shall provide competent, suitably qualified and reliable personnel, Subcontractors, and Suppliers to survey and lay-out the Work and furnish and perform the Work in accordance with the Contract Documents.

4.2 Subcontractors and Suppliers

4.2.1. The Contractor shall be responsible and liable to Tampa Bay Water for the acts and omissions of Contractor's employees, agents, and Subcontractors and Suppliers and their respective employees.

4.2.2. The Contractor shall list each Subcontractor or Supplier whom the Contractor intends to award a subcontract, other than those Subcontractors or Suppliers previously listed in the Bid, by submitting to Tampa Bay Water in writing, for each additional Subcontractor and Supplier, the same information required to be set forth in the Bid.

4.2.3. Work performed by a Subcontractor or Supplier shall be through an appropriate written subcontract which expressly binds the Subcontractor or Supplier to the terms and conditions of the Contract Documents for the express benefit of Tampa Bay Water, and requires each of them to assume toward the Contractor all of the obligations which the Contractor assumes toward Tampa Bay Water.

4.2.4. The Contractor shall deliver to Tampa Bay Water a copy of each subcontract with a Subcontractor or Supplier within fifteen (15) Days after receiving the Notice to Proceed or the execution of the subcontract, as applicable.

4.2.5. The Contractor shall perform (with the Contractor's own employees) not less than fifty percent (50%) of the difference between the Contract Price minus the cost of materials for the Project.

4.2.6. Nothing contained in the Contract Documents or any subcontract shall create any contractual relationship between any Subcontractor or Supplier and

Tampa Bay Water or Engineer. Provided, however, Tampa Bay Water shall be named an intended third party beneficiary under all such subcontracts.

4.3 Equal Opportunity

4.3.1. At all times during the performance of the Work, Contractor shall comply with Title VII of the Civil Rights Act of 1964 and the Florida Civil Rights Act of 1992. The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, age, handicap, or marital status. The Contractor shall take affirmative action to ensure that employment applications are used and that employees are treated without regard to their race, color, religion, sex, national origin, age, handicap or marital status for employment, upgrading, demotion, or transfer; recruitment advertising; layoff or termination; rates of pay, or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this non-discrimination clause.

4.3.2. The Contractor shall state in all solicitations or advertisements for employment placed by or on behalf of the Contractor that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, age, handicap, or marital status.

4.4 Indemnity

4.4.1. In consideration of One Hundred Dollars ($100.00) separately allocated from the first consideration paid hereunder, and other good and valuable consideration, including Tampa Bay Water's execution of the Contract, the sufficiency of which is hereby acknowledged by Contractor, Contractor shall indemnify and hold harmless Tampa Bay Water, its officers, employees, agents, representatives and consultants from and against all liabilities, costs, losses, and damages (including, but not limited to, all reasonable attorney's fees to the extent caused by the negligence, recklessness or intentional wrongful conduct of Contractor, any Subcontractor, or any individual or entity directly or indirectly employed or utilized by Contractor in the performance of the Work under this Contract. This indemnification shall also include all liabilities, damages, losses and costs including, but not be limited to, reasonable attorneys' fees arising out of any infringement of patents or copyrights incident to performing the Work by the Contractor, any Subcontractor or any person or organization employed by Contractor to perform or furnish any of the Work, or anyone for whose acts any of them may be liable.

4.4.2. With respect to all claims against Tampa Bay Water or the Engineer by any employee of the Contractor, the indemnification obligation under this Article shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor (or any Subcontractor or Supplier) under workers' compensation, disability benefit or other employee benefit acts.

4.4.3. The separate consideration recited in paragraph 4.4.1 above is in consideration of the indemnification obligation set forth in this Article 4.4, as well as any other indemnification provided by Contractor under the Contract Documents.

4.4.4 Contractor acknowledges and agrees its indemnification obligations under paragraph 4.4.1 shall be effective and fully enforceable even if any party indemnified hereunder is partially at fault or responsible for the claim; provided, however, Contractor shall not be liable or responsible for

indemnifying any claim which is the result of the sole negligence of Tampa Bay Water, Engineer or any other party indemnified under paragraph 4.4.1.

4.5 Bonds and Insurance

A. Performance Bonds, Payment Bonds and Other Bonds

4.5.1. The Contractor shall furnish Performance Bonds and Payment Bonds, each in an amount at least equal to the Contract Price, in accordance with the requirements of Sections 255.05, Florida Statutes, as security for the faithful performance and payment of all Contractor's obligations under the Contract Documents. These Bonds shall be in the forms specified in the Contract Documents. The Contractor shall also furnish any other bonds required in the Supplementary Conditions. All bonds shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Reinsuring companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. Attorneys-in-Fact who sign Bonds shall attach a certified copy of their Power of Attorney.

B. The Contractor's Insurance – General

4.5.2. The Contractor shall purchase and maintain the coverage specified in this Article and the Supplementary Conditions, and shall be written for not less than the limits of coverage specified in the Supplementary Conditions. The Contractor shall submit certificates to Tampa Bay Water itemizing the policies issued, limits of coverage, expiration dates and endorsements provided, using the form provided in the Contract Documents.

4.5.3. The Contractor shall not start or continue to perform any Work unless it has in full force and effect all required insurance as per the Contract Documents. The Contractor shall submit the insurance certificates provided with these Contract Documents for review by Tampa Bay Water prior to performing any Work. All Subcontractors and Suppliers performing Work on the Project shall provide the same types and limits of insurance as is required of the Contractor hereunder, unless otherwise expressly waived in writing by Tampa Bay Water.

4.5.4. Insurance shall be provided by insurance companies authorized to transact business and which have an agent for service of process in the State of Florida, having at least an "A-" Best's Rating and a Class VIII or better financial size category in accordance with the most current A.M. Best Company rating.

4.5.5. All the policies of insurance shall be endorsed to provide that any failure of the Contractor to comply with any provisions will not prejudice coverage for Tampa Bay Water. Deductible amounts shall be reduced or eliminated upon Tampa Bay Water's written request in which case Contractor shall be entitled to payment of any additional costs for such reduction or elimination of deductibles in accordance with paragraph 7.2 of these General Conditions. The insurer's costs of providing the insured(s) a defense at trial in bankruptcy proceedings, and/or appeal, including attorneys' fees, and legal assistants' fees, shall not be included within the limits of the policy coverage, but shall remain the insurer's separate responsibility.

4.5.6. To the fullest extent commercially available, all the policies of insurance shall be endorsed to provide that the coverage afforded will not be cancelled, adversely changed or renewal refused until at least thirty (30) Days' prior written Notice has been given to Tampa Bay Water and the Engineer by certified mail, return receipt requested. Should any coverage approach expiration during the period in which it is to remain in full force and effect, it shall be renewed prior to its expiration, and certificate filed with Tampa Bay

Water at least thirty (30) Days prior to expiration. Tampa Bay Water and Engineer, their officers, agents, and employees shall be named as Additional Insured(s) on the Contractor's and any Subcontractor's commercial general liability, comprehensive automobile liability insurance, umbrella/excess liability and builder's risk policies for any claims arising out of work performed under the Contract Documents.

4.5.7. In case of the breach of any provision of this Article, Tampa Bay Water, at its option, may take out and maintain, at the expense of the Contractor, such insurance as Tampa Bay Water may deem proper and may deduct the cost of such insurance from any monies which may be due or become due the Contractor under the Contract Documents.

4.5.8. In carrying out any of the provisions of the Contract Documents or in exercising any authority granted by the Contract Documents, there will be no personal liability upon any board member, officer, employee or agent of Tampa Bay Water.

C. The Contractor's Liability Insurance

4.5.9. The Contractor shall purchase and maintain commercial general liability and other insurance appropriate for the Work, in the limits of at least those specified in the Supplementary Conditions, and which shall provide protection from claims itemized below which may arise out of or result from the Contractor's performance and furnishing of the Work and the Contractor's other obligations under the Contract Documents, whether the Work and the obligations be performed or furnished by the Contractor, Subcontractor or any Supplier, to wit:

a. Claims under workers' compensation, disability benefits, and other applicable similar employee benefits acts;

b. Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees; claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees; claims for damages insured by personal injury liability coverage sustained by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or by any other person for any other reason; claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use; claims arising by operation of Laws and Regulations for damages because of bodily injury or death of any person or for damage to property; and

c. Claims for damages because of bodily injury or death of any person, or property damage arising out of ownership, maintenance, operation, use of loading and unloading of any owned, hired or non-owned motor vehicle used in the Work, including employee non-ownership use.

4.5.10. The Contractor's liability insurance shall include contractual liability coverage sufficient to cover the Contractor's indemnification obligations under the Contract Documents. The Contractor agrees to pay on behalf of Tampa Bay Water, and to provide and pay for a defense for all claims covered by the Contractor's obligations under the indemnification provisions.

4.5.11. The Contractor's liability insurance shall be endorsed to include as additional insured: Tampa Bay Water, the Engineer, their consultants, any subsidiaries or affiliates, and each of their directors, officers, shareholders, agents, or employees. The insurance afforded to these additional insured shall be primary

insurance, and neither the coverage nor the amount of insurance provided under the Contractor's policies shall be reduced or prorated by the existence of any other insurance applicable to any loss they may have sustained. If the Subcontractors and Suppliers do not purchase and maintain the coverage specified in this Article or the Supplementary Conditions, they shall be included in the Contractor's policies as additional insured.

4.5.12. The Contractor's liability insurance shall remain in effect until three (3) years after Final Completion and at all times after that when the Contractor may be correcting or removing and replacing Defective Work. Evidence of insurance shall be furnished to Tampa Bay Water yearly.

4.5.13. These requirements shall not be construed to limit the liability of the Contractor or its insurers. Tampa Bay Water does not represent that the specified coverage or limits of insurance are sufficient to protect the Contractor's interests or liabilities.

D. Property Insurance

4.5.14. The Contractor shall purchase and maintain builder's risk "all risk" completed value insurance coverage for physical loss or damage upon the Work at the Project site to its full insurable value, including completed Work and Work in progress. This insurance shall list Tampa Bay Water as an additional insured and shall include the interests of the Contractor, Subcontractors and Suppliers, the Engineer, and Tampa Bay Water's and the Engineer's consultants in the Work, all of whom shall be listed as additional insured. At a minimum, and not by way of limitation, it shall insure against extended coverage, perils of fire, lightning, windstorm, flood, rain, hail, explosions, riot, tornado, hurricane, sink holes, theft, vandalism and malicious mischief, collapse and water damage and shall include damages, losses and expenses arising out of or resulting from any insured loss incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys and other professionals). If not covered under the "all risk" insurance, the Contractor shall purchase and maintain similar property insurance on parts of the Work stored on and off the Project site or in transit whether or not such Work is included in a Payment Application. The policy shall be endorsed to permit use or occupancy by Tampa Bay Water prior to Final Completion. The property insurance may have a deductible amount, which shall be borne by the Contractor, not exceeding $25,000.00. The property insurance shall comply with the requirements of this Article.

E. Waiver of Subrogation Rights

4.5.15. Tampa Bay Water and the Contractor intend that all policies of insurance shall protect Tampa Bay Water, the Contractor, and the Engineer, provide primary coverage for all losses and damages caused by the perils covered. Accordingly, all such policies shall be endorsed to provide that in the event of payment of any loss or damage the insurer shall have no rights of subrogation or other recovery against any of the parties named as insured or additional insured, and if the insurers require separate waiver forms to be signed by the Engineer or Tampa Bay Water's and the Engineer's consultants, Tampa Bay Water will obtain separate waiver forms, and if such forms are required of any Subcontractor or Supplier, the Contractor will so obtain them.

4.6 Taxes and Charges

The Contractor shall pay any and all sales and use taxes and all withholding taxes, whether State or Federal, and pay all Social Security charges and also all State

Unemployment Compensation charges, and pay or cause to be withheld, as the case may be, any and all taxes, charges, fees, or sums whatsoever, which are now required to be paid or withheld under any laws, unless otherwise modified in the Supplementary Conditions.

4.6.2. Tampa Bay Water reserves the right to implement an Owner's Direct Purchase sales tax savings program with respect to the Project. In such event, Contractor shall cooperate and assist Tampa Bay Water, at no additional cost, with respect to the implementation of that sales tax savings program. Tampa Bay Water and Contractor shall work together to identify particular pieces of equipment and material that are suitable for direct purchase by Tampa Bay Water. As such items are identified, Tampa Bay Water shall issue purchase orders, in accordance with a schedule mutually acceptable to Tampa Bay Water and Contractor, to the appropriate Suppliers of such items for the direct purchase of those items by Tampa Bay Water. Tampa Bay Water shall pay the Supplier of such items directly and the title for such items shall pass directly from the Supplier to Tampa Bay Water. Notwithstanding the foregoing, Contractor shall remain responsible for the ordering, scheduling, coordinating, insuring, delivery, unloading, storage, installation, operation, and warranties of all such direct purchase items, as if Contractor had purchased the items itself for incorporation into the Work. In that regard, Tampa Bay Water shall assign to Contractor all contract and warranty rights Tampa Bay Water may have against any such Supplier, so as to permit Contractor to assert warranty or other contract claims for defective or nonconforming materials or equipment directly against the Supplier. As Tampa Bay Water issues purchase orders to the Suppliers of such items, Tampa Bay Water and Contractor shall execute a Change Order which deducts from the Contract Price the amount being paid by Tampa Bay Water, plus the amount of sales tax that otherwise would have been paid on such items. As an inducement to Contractor to more fully cooperate and facilitate this sales tax savings program, Contractor shall receive as a bonus, at the time final payment is to be made hereunder, a sum equal to ten percent (10%) of the total amount of sales tax saved by Tampa Bay Water as a result of these direct purchases.

4.7 Codes, Ordinances, Permits, and Licenses

4.7.1. The Contractor shall keep itself fully informed of all applicable Laws and Regulations, which in any manner affect the Work. All permits, licenses, inspection fees, impact fees, and other costs necessary for performance of, compliance with, and/or completion of the Work shall be obtained and paid for by the Contractor, unless otherwise modified in the Supplementary Conditions.

4.7.2. If Tampa Bay Water has obtained and paid for any permits or licenses applicable to the Work, the Contractor shall meet all requirements of those permits and licenses. The Contractor shall bear all costs arising from the Contractor's responsibilities under this Article.

4.7.3 All Work is to be performed by Contractor in accordance with the most current applicable Laws and Regulations. Provided, however, in the event of any changes to any applicable Laws and Regulations that take effect after the date Contractor submitted its Bid to Tampa Bay Water, and under the circumstances it is not reasonable to assume that Contractor was or should have been aware of such changes, and Contractor provides Notice to Engineer of the changes and Engineer thereupon directs Contractor in writing to

perform the Work in accordance with such changes, and such changes impact the time and/or cost of Contractor's performance of the Work, a Change Order or Change Authorization shall be issued with respect to such changes.

4.8 Superintendence

4.8.1. The Contractor shall keep at the Project site supervisory personnel who shall direct the Work in a competent manner, applying the skills, expertise and attention necessary to perform the Work in accordance with the Contract Documents. The Contractor shall designate, in writing before starting Work, a competent Project superintendent who shall be an employee of the Contractor and shall have complete authority to represent and to act for the Contractor. The Contractor shall notify Tampa Bay Water and Engineer in writing prior to any change in superintendent assignment. If Tampa Bay Water objects to the Contractor's superintendent, the Contractor shall submit a replacement superintendent at no increase in Contract Price nor extension in Contract Time. The Contractor shall be responsible for all construction means, methods, techniques, sequences, and procedures, and for providing adequate safety precautions and coordinating all portions of the Work.

4.8.2. If Tampa Bay Water or the Engineer object to any of the Contractor's personnel, by reason of being unfit, incompetent, unskilled, disorderly, intemperate, or otherwise hindering the Work, the Contractor shall promptly correct the problem and, if required by Tampa Bay Water or the Engineer, remove such personnel from the Work. Failure to comply with this provision shall constitute a material breach of the Contract and be grounds for withholding payment.

4.9 Reception of Engineer's Communications

4.9.1. The Contractor's Representative at the Project site shall have authority to act on behalf of and contractually bind the Contractor. All communications given to the Contractor's Representative shall be deemed given to the Contractor. Communications of major importance will be confirmed in writing upon request from the Contractor.

4.9.2. The Engineer may schedule Project meetings for the purposes of discussing and resolving matters concerning the various elements of the Work. The time and place for these meetings and the names of persons required to be present shall be determined by Tampa Bay Water and the Engineer. The Contractor shall comply with these attendance requirements and shall also require its Subcontractors and Suppliers to comply.

4.10 Safety

4.10.1. The Contractor shall be solely responsible for the condition of the Project site, including the safety of all persons and property during performance of the Work. This requirement shall apply continuously and not be limited to normal Working Hours. Safety provisions shall conform to U.S. Department of Labor (OSHA), and all other applicable Laws and Regulations, as well as all applicable safety rules and regulations promulgated by Tampa Bay Water from time to time. Where any of these are in conflict, the more stringent requirement shall be followed. The Contractor's failure to thoroughly familiarize itself with the aforementioned safety provisions shall not relieve it from compliance with the obligations and penalties set forth therein

4.10.2. The Contractor shall develop and maintain for the duration of this Project a safety program, and a written safety plan specific to the Project that will effectively incorporate and implement all safety provisions required by any

Laws and Regulations. The Contractor shall appoint an employee assigned to the Work who shall be responsible to supervise and enforce compliance with the safety program.

4.10.3. The Contractor, as a part of its safety program, shall maintain at its office or other prominent place at the Project site, the written safety plan and safety equipment applicable to the Work as prescribed by the aforementioned authorities and all articles necessary for giving first aid to the injured. The written safety plan shall establish the procedures for the immediate removal to a hospital or a doctor's care of persons (including employees) who may be injured on the Project site.

4.10.4. The Contractor must give Tampa Bay Water and the Engineer prompt Notice of all accidents or injuries whatsoever arising out of, or in connection with, the performance of the Work, whether on or adjacent to the Project site, giving full details in writing, including statements of witnesses. The prompt Notice required hereunder shall be given within 24 hours with respect to any injuries, and within two (2) working days as to all other accidents.

4.10.5. If a claim is made by anyone against the Contractor or any Subcontractor for any reason including, but not limited to, any accident, the Contractor shall give Tampa Bay Water and the Engineer prompt Notice, giving full details of the claim.

4.11 Protection of Work and Property

4.11.1. The Contractor shall have full responsibility for locating all underground utilities in advance of excavation (whether they are indicated on the Contract Documents or indicated by visible markers); scheduling excavation and uncovering in advance, unless it conflicts with Work already uncovered; shoring, blocking, and protecting the underground utilities; repairing any damage done to the satisfaction of Tampa Bay Water or the owners of those underground utilities; giving prompt Notice to Tampa Bay Water and the Engineer of any newly discovered underground utility; and the safety, protection and repairing of any damage done to any affected Work. All costs involved and time required to perform these responsibilities shall be considered as having been included in the Contract Price and in the Progress Schedule for performing the Work within the Contract Time; except that in the case of newly-discovered underground utilities, those costs and times shall, upon proper documentation, be considered pursuant to the General Conditions, *Article 6.8. Differing Site Conditions*, for adjustment of the Contract Price and/or the Contract Time.

4.11.2. The Contractor shall at all times safely guard and protect from damage Tampa Bay Water's property, property on which the Project is located if not owned by Tampa Bay Water, adjacent property, and its own Work from injury or loss. The Contractor shall provide all facilities required for protection of the Work according to all Laws and Regulations and local conditions.

4.11.3. The Contractor shall protect its Work and materials from damage due to the nature of the Work, the natural elements, carelessness of others, or from any cause, until Final Completion of the Work.

4.11.4. The Contractor shall notify owners of adjacent property (including underground utility owners) not less than 48 hours, or the time period required by Laws and Regulations, whichever period is longer, prior to the Work affecting the property, and shall coordinate and cooperate with them in the location, protection, removal, relocation, and/or replacement of their

property. All damage, injury or loss to property caused, directly or indirectly, in whole or part, by the Contractor, any Subcontractor or Supplier or anyone for whose acts any of them may be liable, shall be remedied at the Contractor's expense. The Contractor shall shore up, brace, underpin, and protect as may be necessary, all foundations and other parts of all existing structures adjacent to the Project site.

4.12 Responsibility of Contractor to Act in Emergency

In case of an emergency which threatens loss or injury to persons or property, the Contractor shall take appropriate remedial action, without previous instructions from Tampa Bay Water or Engineer, as the situation may warrant, and immediately provide Notice to Tampa Bay Water and the Engineer of its action. Any claim for compensation by the Contractor, together with substantiating documentation in regard to expense caused by emergency acts, shall be submitted to Tampa Bay Water and the Engineer and the amount of compensation if any, shall be determined by mutual Contract.

4.13 Materials and Appliances

4.13.1. Unless otherwise modified in the Supplementary Conditions, all materials to be incorporated into the Work shall be new. The Contractor shall furnish satisfactory evidence to the Engineer as to the kind and quality of materials.

4.13.2. In selecting and/or approving equipment and materials for installation in the Project, neither Tampa Bay Water nor the Engineer shall be responsible for injuries or claims resulting from failure of the equipment or material to comply with Laws and Regulations and applicable federal, state, and local safety codes or requirements, or other applicable safety requirements, or failure due to the Work being Defective.

4.14 Contractors' and Manufacturers' Compliance with State Safety Laws and Regulations, OSHA, and Other Code Requirements

The completed Work shall include all necessary permanent safety devices, such as machinery guards and similar safety items required by the state and federal (OSHA) industrial authorities and other Laws and Regulations. Further, any features of the Work subject to such safety regulations shall be fabricated, furnished, and installed (including installation of Tampa Bay Water-furnished equipment) in compliance with these requirements. Subcontractors and Suppliers shall be held responsible for compliance with the requirements included herein. The Contractor shall notify all Suppliers and Subcontractors of the provisions of this Article.

4.15 Submittals

4.15.1. After checking and verifying all field measurements and after complying with all applicable procedures, Contractor shall submit to the Engineer for its review all Submittals, which shall bear a stamp or specific written indication that the Contractor has satisfied Contractor's responsibilities under the Contract Documents with respect to Submittals. All Submittals shall be promptly submitted by Contractor so as to cause no delay to the completion of the Work. All Submittals shall be identified as Engineer may require. The data shown shall be complete with respect to quantities, dimensions, specified performance, and design criteria, materials, and similar data sufficient to enable Engineer to review the information.

4.15.2. All Submittals shall be identified clearly as to material, Supplier, pertinent data such as catalog numbers, and the use for which it is intended. The Contractor shall review all Submittals prior to submission, for compliance with the

Contract Documents and shall provide specific written certification of compliance.

4.15.3. Before each submission, the Contractor shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar data with respect thereto and reviewed and coordinated each Submittal with other Submittals and with the requirements of the Work and for compliance with the Contract Documents. At the time of each submission, Contractor shall provide specific written Notice of each variation from the requirements of the Contract Documents, and in addition, shall cause a specific notation of each such variation to be made on each Submittal submitted for review and approval. In the absence of such notification, the approval of a Submittal shall not waive or alter the original requirements of the Contract Documents.

4.15.4. The Contractor shall make all corrections required by Engineer, and shall resubmit the required number of corrected copies of Submittals and new samples for review. The Contractor shall direct specific attention in writing to revisions other than the corrections called for by the Engineer on previous Submittals.

4.15.5. Where a Submittal or sample is required by the Contract Documents, any related Work performed prior to the Engineer's review and approval of the pertinent Submittal shall be at the Contractor's sole expense and responsibility.

4.15.6. Submittals are to demonstrate how the Contractor intends to conform with the design of the Project and the information given in the Contract Documents.

4.15.7. All costs incurred by Tampa Bay Water and the Engineer for the review of a particular Submittal after the Engineer's second review shall be borne by the Contractor, and shall be reimbursed by the Contractor to Tampa Bay Water. Tampa Bay Water may withhold such costs from payments to the Contractor.

4.15.8. The Contractor shall not be entitled to any claim for additional time or compensation caused by the review of any resubmittals.

4.16 Substitution of Materials

4.16.1. Whenever materials, equipment, type of construction, or process are described in the Contract Documents by using a brand name, make, manufacturer, supplier, patent, catalog number, or technique, the naming or Specifications of the item is intended to denote the standard of quality and essential characteristics of the item or process required by Tampa Bay Water. Unless words indicating that no substitution is permitted are used, items from prospective suppliers may be accepted by the Engineer if sufficient information is submitted by the Contractor in its written application for the substitution to allow the Engineer to determine whether the material or equipment proposed (1) will perform at least equally well, function, and achieve the results called for by the design, (2) is at least of equal materials of construction, quality and necessary essential design features, (3) is suited to the same use as that named or specified, (4) conforms to the desired detailed requirements for that item including, but not limited to, durability, strength, appearance, dimensions, aesthetics (where aesthetics are essential), safety, service, comparable usefulness, reliability, economy of operation, and ease of maintenance, (5) evidences a proven record of performance, and (6) will not extend the Contract Time or increase the Contract Price. Contractor shall be responsible for and shall pay all costs in connection with any inspection or

testing required in connection with Tampa Bay Water's or Engineer's acceptance of a Supplier of materials or equipment proposed to be incorporated in the Work.

4.16.2. Each application for a substitution shall certify that the proposed substitute will meet each of the six criteria itemized in paragraph 4.16.1., and that the evaluation and acceptance by the Engineer of the proposed substitute will not prejudice completion of the Work within the Contract Time. All variations of the substitute from the item named or specified shall be identified (operation, materials or construction finish, thickness or gauge of material dimensions, loads, tolerances, deleted/added features, etc.), and information regarding available maintenance, repair, and replacement service shall be indicated. The Contractor is solely responsible for verifying that substitutes are in accordance with the Contract Documents, and that dimensions, arrangement, design, and construction details, and all other features of substitutes are suited to the specified purpose.

4.16.3. A proposed substitute will be accepted as equivalent or "Or-Equal" to that named or specified if, in the Engineer's judgement, it meets the criteria in paragraph 4.16.1. No substitute shall be utilized, ordered, or installed without the Engineer's prior written acceptance.

4.17 Tests, Samples, and Observations

4.17.1. The Contractor shall furnish, with no increase in Contract Price, the necessary test pieces and samples, including facilities and labor for obtaining the same, as required by the Contract Documents or requested by the Engineer. When required by the Contract Documents or requested by the Engineer, the Contractor shall furnish certificates of any designated tests of materials and equipment.

4.17.2. The Contractor shall establish a quality control system to ensure sufficient supervision, inspection and testing of all items of Work, including those of the Subcontractors and Suppliers, and to ensure conformance to the applicable Contract Documents with respect to products, workmanship, construction, maintenance, finish, functional performance, and identification. The Contractor's quality control system shall include checking, approval, and coordination of Submittals and the surveillance of all specified tests.

4.17.3. Tampa Bay Water, the Engineer, authorized government agents and their representatives shall at all times be provided safe access to the Work whenever it is in preparation or progress, and the Contractor shall provide facilities for such access and for observations, including maintenance of temporary and permanent access.

4.17.4. If the Contract Documents, Laws and Regulations or any public authority requires any Work to be specially tested or approved, the Contractor shall give timely Notice to the Engineer of its readiness for testing or approval.

4.17.5. If any testing, inspection, or approval reveals failure of any part of the Work to conform to the Contract Documents, the Contractor shall not recover any costs made necessary by that failure, and shall reimburse Tampa Bay Water for all direct, indirect, and consequential costs made necessary by that failure including those of repeated procedures, and compensation for the Engineer's services. Such reimbursement may be withheld from payment to the Contractor.

4.17.6. If a portion of the Work is covered contrary to the Engineer's request or to requirements specifically expressed in the Contract Documents, it must, if

required by the Engineer, be uncovered for the Engineer's examination and be recovered at the Contractor's expense without change to the Contract Time or Contract Price. If any Work should be covered up without approval or consent of the Engineer, re-examination of questioned Work may be ordered by the Engineer, and if so ordered, the Work shall be uncovered by the Contractor. If it is found that such Work is Defective, Contractor shall bear all direct, indirect, and consequential costs of such uncovering, exposure, observation, inspection, correction of the Defective Work, and testing and of satisfactory reconstruction, (including but not limited to fees and charges of engineers, architects, attorneys, and other professionals) and Tampa Bay Water shall be entitled to reimbursement or to deduct the costs from payment to the Contractor. If it is found that such Work is not Defective, Tampa Bay Water shall reimburse Contractor for the cost of uncovering, inspecting, and recovering such Work.

4.18 Royalties and Patents

The Contractor shall pay all royalty and patent fees unless otherwise specified. Pursuant to the indemnity provisions of the General Conditions, *Article 4.4, Indemnity,* the Contractor shall defend all suits or claims for infringement of any patent rights and shall save Tampa Bay Water and the Engineer harmless from any and all loss, including reasonable attorneys' fees and legal assistants' fees on account thereof.

4.19 Contractor's Right to Terminate Contract

If the Work is stopped under an order of any court or other public authority for a period of more than 3 months, through no act or fault of the Contractor, its Subcontractors, or their respective employees, or if Tampa Bay Water should fail to pay the Contractor within forty-five (45) Days after the time specified in the General Conditions, *Article 7.1. Partial Payments,* any sum recommended by the Engineer and approved by Tampa Bay Water, then the Contractor may, upon fifteen (15) Days written Notice to Tampa Bay Water and the Engineer, suspend Work. If Tampa Bay Water fails to correct the conditions, which under this Article justify the Contractor's suspension of the Work, the Contractor may, after fifteen (15) Days additional written Notice to Tampa Bay Water and the Engineer, terminate the Contract. Upon termination, the Contractor's sole and exclusive remedy shall be the same as and limited to those rights set forth in paragraph 6.6.6 hereafter. Contractor shall not be entitled to any additional rights or remedies against Tampa Bay Water, including loss profits and other damages, all such other remedies being expressly waived by Contractor.

4.20 Warranty and Guarantee; Correction of Defective Work During Correction Period

4.20.1. The Contractor warrants and guarantees to Tampa Bay Water that all Work will be in accordance with the Contract Documents and will not be Defective, including all Work performed or furnished by any Subcontractor or Supplier. This warranty and guarantee is in addition to and shall survive the Contractor's obligations under the Correction Period set forth in this Article.

4.20.2. The Contractor shall make, at its own expense, all repairs or replacements necessitated by Defective Work, and pay for any damage (whether to the Work itself or other property), including routine repairs resulting from such Defective Work, which becomes evident within the one (1) year after the date of Substantial Completion established by the Engineer for the entire Work or for specified items of Work, or within one (1) year after the date of Final Completion of the Work if Tampa Bay Water did not operate or use the entire facility between the Substantial Completion date and Final Completion, or

within such longer period of time as may be prescribed by Laws and Regulations or by the terms of any applicable special guarantee required by the Contract Documents ("Correction Period"). After the Correction Period, Contractor shall remain liable to Tampa Bay Water, and its successors, for Defective Work and damage resulting from such Defective Work, but such liability shall not include an obligation to make routine repairs, unless otherwise agreed to in writing.

4.20.3. Contractor's subcontracts with its manufacturer(s) and the Supplier(s) of all other materials and equipment used in the Project which have a cost of more than $1,000.00 shall require an express warranty from the manufacturer(s) and the Supplier(s) to Tampa Bay Water that the materials (1) are new, (2) have been manufactured and supplied in accordance with the requirements of the Contract Documents, and (3) are not Defective. Such express warranty shall be for a period of not less than the Correction Period.

4.20.4. Defective Work identified for correction during the Correction Period but remaining Defective after its expiration shall be considered as part of the obligations of the warranty or guarantee.

4.20.5. The Contractor agrees to defend, indemnify and hold Tampa Bay Water and the Engineer harmless from liability of any kind arising from damage due to Defective Work. The Contractor shall make all repairs and replacements promptly upon receipt of written order for same from Tampa Bay Water or the Engineer. If the Contractor fails to make the repairs and replacements promptly, or in an emergency, where delay would cause serious risk, loss, or damage, Tampa Bay Water may have the Defective Work corrected or the rejected Work removed and replaced, and the Contractor and its Surety shall be liable for the cost thereof.

4.20.6. Contractor's subcontracts with its manufacturer(s) and the Supplier(s) of all materials shall permit the Contractor to assign to Tampa Bay Water all express and implied warranties from the manufacturer(s) and the Supplier(S). Contractor hereby assigns to Tampa Bay Water all express and implied warranties from the manufacturer(s) and the Supplier(S) of all materials used in the Work.

4.20.7. The specified warranties and guarantees and the Contractor's obligations for correction of Work specified in this Article are in addition to and not in limitation of any other specific remedies provided in the Contract Documents or by Laws and Regulations.

4.20.8. Tests, inspections or approvals shall not in any way relieve the Contractor from its obligations to perform the Work in accordance with the Contract Documents, or to warrant and guarantee the Work as provided in the Contract Documents.

4.20.9. These provisions shall not be construed to prohibit Tampa Bay Water from seeking damages or any remedy at law or equity against Contractor for breach of the Contract, Defective Work or the warranties provided herein.

4.21 Allowances

Contractor shall not proceed with any Allowance item unless and until it has received express written authorization from Tampa Bay Water. The Contract Price shall be adjusted by Change Order or Change Authorization based upon the actual cost of the Allowance items authorized in writing by Tampa Bay Water.

4.22Contractor's Representations:

4.22.1. Contractor has examined and carefully studied the Contract and Contract Documents.

4.22.2. Contractor has visited the Work Site and become familiar with and is satisfied as to the general, local, and site conditions that may affect cost, progress, and performance of the Work.

4.22.3. Contractor is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, and performance of the Work.

4.22.4. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions (if any) at or contiguous to the Work site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Work site which have been identified or made available by Tampa Bay Water; and (2) reports and drawings of Hazardous Environmental Conditions (if any) at the Work site which have been identified or made available by Tampa Bay Water.

4.22.5. Contractor is aware of the general nature of Work to be performed by Tampa Bay Water and others at the Work site that relates to the Work to the extent indicated in the Contract Documents.

4.22.6. Contractor has correlated the information known to Contractor, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.

4.22.7. Contractor has given Tampa Bay Water written notice of all conflicts, errors, ambiguities or discrepancies that Contractor has discovered in the Contract Documents and the written resolution thereof by Tampa Bay Water is acceptable to Contractor.

4.22.8. The Contract Documents are sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

4.22.9. Contractor's execution of this Contract is not based upon their reliance upon any representation, understanding or Contract not expressly set forth herein. Tampa Bay Water has not made any representation to Contractor except as expressly set forth herein.

4.22.10. Contractor is organized and exists under the laws of the State of _____ and is in good standing in the State of _____ and is authorized to do business in the State of Florida.

4.22.11. Contractor has the full power and authority to execute and deliver this Contract and to incur and perform the obligations provided for herein and therein, all of which have been duly authorized by all proper and necessary action of the governing body of the Contractor. Contractor is in compliance with all laws and regulatory requirements to which they are subject.

4.22.12 Contractor executes this Contract as a free and voluntary act, without any duress, coercion, or undue influence exerted by or on behalf of Tampa Bay Water or any other party.

4.22.13 This Contract is a valid, binding and enforceable obligation of Contractor, and does not violate any law, rule, regulation, contract or Contract otherwise enforceable by or against Contractor, except as the same may be limited by bankruptcy, insolvency, reorganization or other similar laws affecting the rights of creditors generally.

5. Tampa Bay Water/Owner

5.1 General Provision

5.1.1. Written communications from Tampa Bay Water to the Contractor shall in general be issued through the Engineer, but if issued directly by Tampa Bay Water, a copy shall be provided to the Engineer.

5.1.2. Tampa Bay Water may issue without negotiation, and at its discretion, Change Authorizations, as provided in the Contract Documents. Only Tampa Bay Water is empowered under the Contract Documents to order changes in the Work that affect Contract Time or Contract Price or quality.

5.1.3. If the Work is Defective, or the Contractor fails to supply sufficiently skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in a way that the completed Work will conform to the Contract Documents, Tampa Bay Water may order the Contractor to stop the Work, or any portion of the Work in question, until the cause for the stop order has been eliminated; however, this right of Tampa Bay Water to stop the Work shall not give rise to any duty on the part of Tampa Bay Water to exercise this right for the benefit of the Contractor or any other party. The Contractor shall not be allowed to recover any costs resulting from an order to stop the Work, and the Contractor shall reimburse Tampa Bay Water for all direct, indirect, or consequential costs attributable to an order to stop the Work; those costs to be documented as to reasonableness, and Tampa Bay Water shall be entitled to an appropriate decrease in Contract Price, or to withhold such decrease against any amounts recommended for payment. The Contractor shall remain responsible for maintaining and performing in accordance with the Progress Schedule and shall not be entitled to any extension in Contract Time or any increase in Contract Price.

5.1.4. Neither Tampa Bay Water, the Engineer, nor Tampa Bay Water's consultants will be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions, and programs related to safety, and neither Tampa Bay Water nor Engineer or any of their consultants shall be responsible for the Contractor's failure to perform or furnish the Work in accordance with Contract Documents.

6. Progress of the Work

6.1 Beginning of the Work

6.1.1. Prior to starting the Work, the Contractor shall prepare and submit to the Engineer, a Progress Schedule and a schedule for Submittals in a format acceptable to Tampa Bay Water and the Engineer and as specified in the General Requirements showing the dates on which each part or division of the Work is expected to be started and completed, and a schedule for Submittals.

6.1.2. No sooner than ten (10) Days before the Notice to Proceed is issued, a pre-construction conference shall be held to review the steps undertaken by the Contractor to comply with the schedule requirements; review the qualifications of the Contractor's on-site personnel; review the Contractor's plans for lay-down and staging areas, construction traffic, and access to the Project site, parking, communications, procedures, and other similar matters.

6.2 Schedules and Progress Reports

6.2.1. The Progress Schedule or schedule recovery actions, once reviewed and accepted by Tampa Bay Water and Engineer, shall be utilized to report progress or schedule recovery actions, and to evaluate the Contractor's

Payment Applications. The Contractor shall be required to keep Tampa Bay Water informed of the progress of the Work by delivering updated Progress Schedules prior to the seventh (7th) day of each month for Tampa Bay Water and Engineer' review and acceptance. Contractor's Submittal of acceptable monthly updates to the Progress Schedules is a condition precedent to Tampa Bay Water's obligation to make payments to Contractor hereunder. Notwithstanding anything in the Contract Documents to the contrary, it is expressly acknowledged and agreed that no review or acceptance of any Progress Schedule by Tampa Bay Water or Engineer shall be construed as an admission or acknowledgement by Tampa Bay Water or Engineer that any such Progress Schedule was either reasonable or achievable.

6.2.2. Prior to the seventh (7th) day of each month, the Contractor shall submit to the Engineer, an itemized Progress Report of the delivery status of purchased equipment and material, Shop Drawings and the status of shop and field fabricated Work. These Progress Reports shall indicate, but shall not be limited to, the dates of the purchase orders, the estimated delivery dates of any material and/or equipment, and cause(s) of delays, if any.

6.2.3. In addition to retainage, Tampa Bay Water shall have the right to withhold all or any portion of Progress Payments for the Work if the Contractor fails to update and submit the Progress Schedule(S) and Progress Reports as specified.

6.2.4. Neither Tampa Bay Water's nor the Engineer's review of the Contractor's Progress Schedule, or Tampa Bay Water's decision to raise or not to raise any objections about the Contractor's Progress Schedule, shall impose on Tampa Bay Water or the Engineer any responsibility for the timing, planning, scheduling, or execution of the Work, nor relieve Contractor of its obligation to complete the Work in a timely manner.

6.3 Prosecution of the Work

6.3.1. Tampa Bay Water and the Contractor agree that time is the essence with respect to Contractor's performance under the Contract Documents. The Contractor shall perform the Work at such time, and in or on such part(s) of the Project site as may be required to complete the Work as required by the Contract Documents.

6.3.2. If the Contractor desires to carry on Work at night or otherwise outside of the Working Hours, it shall give timely Notice to Tampa Bay Water and Engineer to allow satisfactory arrangements to be made for observing the Work in progress. The Contractor shall reimburse Tampa Bay Water for all of Tampa Bay Water's expenses associated with the Work performed outside of normal Working Hours.

6.3.3. The Contractor shall carry on the Work and adhere to the most recent approved Progress Schedule during all disputes or disagreements with Tampa Bay Water. No Work shall be delayed or postponed pending resolution of any disputes or disagreements. Upon receipt of a written order from the Engineer or Tampa Bay Water, the Contractor will immediately proceed with the Work regardless of whether a Change Order or Change Authorization has or has not been issued.

6.4 Tampa Bay Water's Right to Retain Imperfect Work

If any part or portion of the Work completed under the Contract Documents shall prove Defective, Tampa Bay Water shall have the right in its sole discretion, to retain such Work and may make such deductions in the payment due the Contractor as may be just and reasonable.

6.5 Tampa Bay Water's Right to do Work

Should the Contractor neglect to prosecute the Work in conformance with the Contract Documents or neglect or refuse at its own cost to remove and replace Work as shall have been rejected by the Engineer, then Tampa Bay Water may notify the Contractor and its Surety of the condition, and after seven (7) Days written Notice to the Contractor and its Surety, or without Notice if an emergency or danger to the Work or public exists, and without prejudice to any other right which Tampa Bay Water may have under the Contract Documents, take over that portion of the Work which has been improperly executed, and correct the deficiencies and deduct the cost thereof from the payments then or thereafter due the Contractor.

6.6 Tampa Bay Water's Right to Terminate

6.6.1. At any time, Tampa Bay Water may request the Contractor to provide adequate assurances of its ability to complete the Work in the manner and times designated in the Contract Documents. The types of adequate assurances shall be designated by Tampa Bay Water and shall consist of reasonable means for the Contractor to prove its ability to perform.

A. Termination for Cause

6.6.2. Tampa Bay Water, shall have full power and authority to terminate the services of the Contractor seven (7) Days after providing Notice to the Contractor and its Surety, or sooner if safety to persons or property is in question, because:

a. the Contractor refuses or fails to prosecute the Work, or separable part of the Work, with the diligence that will cause its completion within the corresponding Contract Time, including any authorized adjustments; supply sufficient skilled workers, materials or equipment in adherence with the Progress Schedule; or comply with the Progress Schedule requirements; or

b. the Contractor fails to complete the Work, or any separable part, within the corresponding Contract Time, including any authorized adjustments; or

c. the Contractor refuses or fails to make prompt payment to Subcontractors, disregards Laws and Regulations; refuses or fails to perform the Work in conformance with the Contract Documents; or violates any provision of the Contract Documents; or

d. the Contractor fails to provide Tampa Bay Water with adequate assurances in accordance with this Article, that the Contractor can complete the Work in accordance with the Contract Documents.

6.6.3. If, after the furnishing of said Notice, the Contractor and the Surety fail to cure or correct the default, Tampa Bay Water may terminate Contractor's right to perform the Work and take possession of the Project site and of all materials, tools, and appliances thereon, and require Contractor to assign to Tampa Bay Water any or all of Contractor's subcontracts with Subcontractors or Suppliers, as directed by Tampa Bay Water, and finish the Work by whatever method it may deem expedient and charge the cost thereof to the Contractor and Surety. In such case, the Contractor shall not be entitled to receive any further payment until the Work is finally completed. If the expense of completing the Work exceeds such unpaid balance of the Contract Price, the Contractor and its Surety shall pay the difference to Tampa Bay Water.

6.6.4. Where the Contractor's rights to perform the Work have been so terminated by Tampa Bay Water, the termination shall not affect any rights or remedies of Tampa Bay Water against the Contractor then existing or which may accrue

after termination. Any retention or payment of monies due the Contractor by Tampa Bay Water shall not release the Contractor from its contractual liability or any other liability.

B. Termination for Convenience

6.6.5. Upon seven (7) Days written Notice to the Contractor and its Surety, Tampa Bay Water may, without cause and without prejudice to any other right or remedy, elect to terminate the Contractor's services under the Contract Documents in whole or in part. Upon receipt of such Notice, the Contractor shall immediately proceed in accordance with any specific provisions or instructions, to protect and maintain the Work, and make reasonable and diligent efforts to mitigate costs associated with the termination.

6.6.6. In any such termination for the convenience of Tampa Bay Water, the Contractor, as its sole and exclusive remedy, shall be entitled to payment for that portion of the Contract Price attributable to the Work completed, prior to receipt of the Notice of termination, in accordance with the Contract Documents, together with Contractor's reasonable and direct out-of-pocket termination expenses; provided, however, Contractor shall not be entitled to any further or additional recovery against Tampa Bay Water including, but not limited to, any lost profit on Work not performed or any other damages however categorized.

6.6.7. If, after Notice of termination for cause as provided in paragraph 6.6.A above, it is determined the Contractor was not in default or that Tampa Bay Water was not entitled to the remedies set forth therein, the termination shall be deemed to have been for the convenience of Tampa Bay Water and Contractor's rights and remedies shall be the same as and limited to those set forth in paragraph 6.6.6 above.

6.6.8. No waiver, express or implied, of any covenant, provision, right or remedy herein shall at any time thereafter be held to be a waiver of the terms and conditions of this Article.

6.7 Delays and Extensions of Time

6.7.1. If the Contractor is delayed in the progress of the Work by any act or neglect of Tampa Bay Water or the Engineer, or by any other contractor retained by Tampa Bay Water, or by strikes, lockouts, fire, adverse weather conditions not reasonably anticipated, or acts of nature, or any other cause beyond the fault and neglect of the Contractor, within 48 hours of the start of the occurrence, the Contractor shall provide Notice to Tampa Bay Water. Within seven (7) Days after the event which caused the delay has ended, the Contractor must provide full documentation of the impact of the delay. The Contract Time may be extended by Change Order or Change Authorization for such reasonable time as the Engineer and Tampa Bay Water determine. No extension of time will be granted to the Contractor for delays occurring to parts of the Work that have no measurable impact on the completion of the total Work. No extension of Contract Time will be considered for weather conditions reasonably anticipated for the area in which the Work is being performed. Reasonably anticipated weather conditions will be based on official records of monthly precipitation and other historical data. Adverse weather conditions, if determined by the Engineer to be of a severity that would impact progress of the Work, may be considered as cause for an extension of Contract Time. No request by the Contractor for an equitable

adjustment to the Contract Time under this Article will be allowed, unless the Contractor has given the Notice and documentation within the times required.

6.7.2. Delays in delivery of equipment or material purchased by the Contractor or its Subcontractors or Suppliers shall not be considered as a cause for delay. The Contractor shall be fully responsible for the timely ordering, scheduling, expediting, delivery, and installation of all equipment and materials.

6.7.3. Within 21 days (unless a longer period of time is reasonably required) after the Contractor submits to Tampa Bay Water and the Engineer a written request for an extension of time, the Engineer will present its written opinion to Tampa Bay Water as to whether an extension of time is justified and, if so, its recommendation as to the number of Days for time extension. Tampa Bay Water shall make the final decision on all requests for extensions to Contract Time.

6.7.4. The Contractor waives its right to file claims unless the claims are filed within the times specified in the Contract Documents. Tampa Bay Water's determination shall be final and binding on the Contractor unless the Contractor files suit within thirty (30) days after receipt of Tampa Bay Water's decision.

6.7.5. Notwithstanding anything in the Contract Documents to the contrary, no interruption, interference, inefficiency, suspension or delay in the commencement or the progress of the Work for any cause whatever, including those for which Tampa Bay Water or Engineer may be responsible, in whole or in part, shall relieve Contractor of its duty to perform or give rise to any right to damages or additional compensation from Tampa Bay Water. Contractor expressly acknowledges and agrees that it shall receive no damages for delay. Contractor's sole remedy, if any, against Tampa Bay Water will be the right to seek an extension to the Contract Time, in accordance with the procedures set forth in this Article 6.7; provided, however, the granting of any such time extension shall not be a condition precedent to the aforementioned "No Damage for Delay" provision. This paragraph shall expressly apply to claims for early completion, as well as to claims based on late completion. Notwithstanding the foregoing, if the Work is delayed due to the fault or neglect of Tampa Bay Water or Engineer, and such delays have a cumulative total of more than 30 calendar days, Contractor may make a claim, in accordance with the procedures set forth in Article 7.3, for its actual and direct delay damages accruing after said 30 calendar days.

6.8 Differing Site Conditions

6.8.1. The Contractor shall promptly, and before the conditions are disturbed, provide Notice to Tampa Bay Water and the Engineer of:

a. any subsurface or latent physical conditions at the Project site which differ materially from those (i) observed by Contractor prior to the Submittal of its Bid or (ii) indicated in the Contract Documents or the Existing Condition Documents referenced in the Information to Bidders,

or

b. any unknown physical conditions at the Project site, of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.

6.8.2. The Engineer shall investigate the reported conditions promptly after receiving the Notice from the Contractor. If the conditions do materially differ and

cause an increase or decrease in the Contractor's cost or time for performance of the work, an equitable adjustment shall be made in accordance with the procedures set forth in Articles 6.7 and 7.3 herein. Notwithstanding the provisions of this paragraph, if the reported condition in question would have been revealed by a thorough on-site inspection, Tampa Bay Water in its sole discretion shall have the right to deny any such claim for an adjustment in the Contract Price or Contract Time.

6.8.3. No request by the Contractor for an equitable adjustment to the Contract Price or Contract Time for differing site conditions will be allowed if made after the time periods set forth in Articles 6.7 or 7.3, or Final Completion, whichever first occurs.

6.9 Liquidated Damages

Should the Contractor fail to achieve Substantial Completion of the Work within the Contract Time, as that time may be adjusted pursuant to the terms of the Contract Documents, the Contractor shall pay to Tampa Bay Water the liquidated damages as set forth in the Contract. Tampa Bay Water shall have the right to deduct the liquidated damages from any amount due, or that may become due to the Contractor. If an insufficient amount of the Contract Price remains, the amount of liquidated damages shall be due and collectible from the Contractor and its Surety, jointly and severally.

6.10 Other Contracts

6.10.1. Tampa Bay Water reserves the right to let other contracts in connection with the Project. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their equipment and materials for the execution of their work and shall properly interface and coordinate its Work with theirs.

6.10.2. If the execution of any part of the Work depends on the performance of any other contractor, utility service company or Tampa Bay Water, the Contractor shall promptly provide Notice to the Engineer of any defects or deficiencies that render it incompatible with the intended results of these Contract Documents. The Contractor's failure to provide the required Notice shall constitute an acceptance of the work by others as being fit and proper for integration with the Work.

6.11 Use of Premises

6.11.1. The Contractor shall confine its equipment, the storage of materials, and the operation of its workers to the areas shown on the Contract Documents or indicated by Laws and Regulations, permits, easements, licenses or directions of Tampa Bay Water or the Engineer. The Contractor shall provide, at its own expense, any right-of-ways or access to the Work which it may require outside the limits of Tampa Bay Water's property interests or easements and shall furnish Tampa Bay Water and the Engineer copies of permits and Contracts for use of property outside that provided by Tampa Bay Water prior to entering said properties.

6.11.2. The Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall the Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.11.3. The Contractor shall take all precautions to minimize inconvenience to residents living adjacent to the Project site by maintaining access to driveways and providing dust control for the Project site and noise control devices for

dewatering equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any land or areas contiguous thereto, resulting from the performance of the Work.

6.12 Substantial and Final Completion Dates

6.12.1. When the Contractor considers that the entire Work or designated portion thereof has progressed to the point where it is sufficiently complete in accordance with the Contract Documents, and it has been proven to be ready for its intended use, the Contractor shall provide Notice to Tampa Bay Water and the Engineer that the Contractor considers the Work or designated portion thereof, Substantially Complete (except for listed items to be completed or corrected prior to Final Completion). The Contractor shall prepare an initial list of items of Work to be corrected or completed for Final Completion and attach that list to the above referenced Notice. Within a reasonable time after that, Tampa Bay Water, the Contractor, and the Engineer shall make an inspection to determine the status of completion.

6.12.2. If Tampa Bay Water and Engineer agree that Substantial Completion of the Work has been achieved, the Engineer shall issue a Certificate of Substantial Completion for the purpose of establishing the starting date for specific equipment warranties, and to establish the date that Tampa Bay Water shall assume the cost of operating such equipment. Said Certificate shall not be considered as Final Completion of any portion of the Work or relieve the Contractor from completing the remaining Work within the specified time and in compliance with the Contract Documents. The Engineer shall review and supplement the Contractor's initial list of items of Work to be corrected or completed for Final Completion and such revised and supplemental list shall be attached to the Certificate of Substantial Completion. Provided, however, the failure to include any incomplete or Defective Work on said list shall not relieve or excuse the Contractor from completing all of the Work in accordance with the requirements of the Contract Documents.

6.12.3. When the Contractor considers the entire Work has progressed to the point where it is complete in accordance with the Contract Documents, the Contractor shall provide Notice to Tampa Bay Water and the Engineer that the Contractor considers the Work to have reached Final Completion.

6.13 Performance Testing

Operating equipment and systems shall be performance tested in accordance with the General Requirements and in the presence of the Engineer to demonstrate compliance with the Contract Documents. The Contractor shall schedule such testing with the Engineer at least one (1) week in advance of the planned date for testing.

6.14 Tampa Bay Water's Use of Portions of the Work

Following issuance of the Notice of Substantial Completion, Tampa Bay Water may occupy and operate the Work. Such occupancy and operation shall not be considered as Final Completion of any portion of the Work, nor shall such occupancy or use be considered as cause for an extension of the Contract Time.

6.15 Cutting, Patching, or Fitting

The Contractor shall do all cutting, patching, or fitting of its Work that may be required to make its several parts come together properly and fit the Work to receive or be received by work of other contractors shown in or reasonably implied by the Contract Documents.

6.16 Cleaning Up

The Contractor shall, at all times, keep property on which Work is in progress and the adjacent property free from accumulations of waste material or rubbish caused by employees or by the Work. Upon completion of the construction, the Contractor shall remove all temporary structures, rubbish caused by employees, Suppliers, Subcontractors, or the Work, and waste materials resulting from its operations.

6.17 Intoxicants

The Contractor and persons under its employ shall not bring onto, possess, sell, or use alcohol, narcotics, drugs (other than prescription drugs, provided the person in possession of the drug has a valid prescription in his or her name, or over-the-counter drugs which may be purchased legally by the person), or controlled substances while on the Project site, including parking lots, at any time, including all breaks and lunch periods. The Contractor and persons under its employ shall not report to, or commence, or continue to work while under the influence of alcohol or any drugs, regardless of whether those drugs were legally or illegally taken. The Contractor and persons under its employ shall not undertake any activities at the Project site which create a nuisance or improperly disturbs or interferes with Tampa Bay Water's operations at the Project site or the use and enjoyment of any adjacent properties by their respective owners. Gambling on the Project site is prohibited.

7. Payment

7.1 Partial Payments

A. General

7.1.1. Within ten (10) days after commencing the Work, but in any event prior to the Submittal of its first Payment Application, Contractor shall submit to Engineer, for Engineer's and Tampa Bay Water's review and approval, a proposed schedule of values which distributes the Contract Price among the various items and categories of Work to be performed. Said schedule of values shall be in such form and contain such detail as may be required by Engineer and Tampa Bay Water. The final approved schedule of values shall serve as the basis for partial payments and shall be incorporated into the Payment Application form provided by Tampa Bay Water. Nothing contained in this Article shall be construed to affect the right of Tampa Bay Water or Engineer to reject, the whole or any part of the Work, should such Work be found to be Defective. All estimated quantities of Work for which partial payments have been made are subject to review and correction on the final Payment Application. Payment by Tampa Bay Water and acceptance by the Contractor of partial payments based on Unit Price Work, shall not in any way constitute acceptance of the estimated Unit Price Work by Tampa Bay Water.

7.1.2. The Contractor shall provide Tampa Bay Water with copies of its written daily reports at weekly intervals. Refusal of the Contractor to provide its daily reports shall be cause for Tampa Bay Water to withhold payments until the Contractor's daily reports have been provided.

B. Estimate

7.1.3. The Contractor shall not submit more than one Payment Application per month with respect to the Work. Within twenty-five (25) Business Days following submission of a complete and accurate Payment Application to the Engineer, approved by the Engineer, and acceptable to Tampa Bay Water, Tampa Bay Water shall make partial payments to the Contractor on the basis of Work performed during the preceding calendar month by the Contractor.

The final working day of each month shall be used as the day for measurement of Work performed.

7.1.4. The Engineer shall, within twenty-five (25) Business Days after receipt of each Payment Application for payment, provide Notice to Tampa Bay Water recommending payment to the Contractor, or return the request to the Contractor providing Notice of the Engineer's reasons for refusing to recommend payment. In the latter case, the Contractor may make the necessary corrections and resubmit the request. Payment shall be made by Tampa Bay Water within ten (10) Business Days after a corrected payment request is received.

7.1.5. The Engineer may refuse to recommend and Tampa Bay Water may refuse to pay the whole or any part of any payment, if in the Engineer's or Tampa Bay Water's opinion, the Contractor is not entitled to any such payment. The Engineer may also refuse to recommend and Tampa Bay Water may refuse to pay any payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests of any Work, retract any previous recommendation or payment to such extent necessary in the Engineer's or Tampa Bay Water's opinion to protect Tampa Bay Water from loss for reasons not limited to:

a. The Work is Defective, or completed Work has been damaged requiring correction or replacement;
b. The Contract Price has been reduced because of Change Order;
c. Tampa Bay Water has been required to correct Defective Work or complete all or portions of the Work;
d. The Contractor's unsatisfactory prosecution of the Work in accordance with the Contract Documents;
e. Written claims have been made against Tampa Bay Water or liens have been filed in connection with the Work;
f. The Contractor's failure to make payment to Subcontractors OR Suppliers for labor, materials, or equipment;
g. Amounts owed by Contractor to Tampa Bay Water as Liquidated Damages; or
h. Any other amounts which may be owed to Tampa Bay Water by Contractor pursuant to the terms of the Contract Documents.

C. Deduction from Estimate

7.1.6. Unless modified in the Supplementary Conditions, Tampa Bay Water shall withhold from each partial payment, five percent (5%) of the amount earned for Work completed. A deduction and retainage of five percent (5%) shall be made on the estimated amount earned for approved items of material delivered to and properly stored at the Project site but not incorporated into the Work. The retainage is to be withheld by Tampa Bay Water until all Work has been performed in accordance with the Contract Documents and until such Work has been accepted by Tampa Bay Water.

7.1.7. Tampa Bay Water may deduct from each Payment Application an amount equal to Tampa Bay Water's estimate of the amount of Liquidated Damages then due, or which may become due.

D. Reimbursement

7.1.8. For Tampa Bay Water's expenses as defined in the General Conditions, *Article 4.15. Submittals*, and for testing that is performed by Tampa Bay Water or the Engineer which indicates Work is Defective, or for any other cost for which

Tampa Bay Water is entitled to reimbursement from Contractor under the Contract Documents, at Tampa Bay Water's election, such reimbursement shall be deducted from the Contractor's monthly partial payments or shall be paid by Contractor within 30 days after Tampa Bay Water makes demand for same upon Contractor.

E. Qualification for Partial Payment for Materials Delivered

7.1.9. Partial payments for materials delivered but not yet incorporated into the Work shall be as described below:

a. Materials, as used herein, shall be considered to be those items which are fabricated and manufactured material and equipment. No consideration shall be given to individual purchases of less than $200.00 for any one item.

b. To receive partial payment for materials delivered to the Project site, but not incorporated in the Work, it shall be necessary for the Contractor to include a list of such materials with the Payment Application, the utilization of Tampa Bay Water provided forms is required. At its sole discretion, Tampa Bay Water, with the Engineer's advice, may approve items for which partial payment is to be made. Partial payments shall be based on the Contractor's actual cost for the materials as evidenced by invoices from the Supplier. Proper storage and protection shall be provided by the Contractor, As Approved by the Engineer. Final payment shall be made only for materials actually incorporated in the Work and upon acceptance of the Work, all materials remaining for which partial payments had been made shall revert to the Contractor, unless otherwise agreed, and partial payments made for these items shall be deducted from the final payment for the Work.

c. Contractor warrants and guarantees that title to all items of Work requested in any Payment Application, whether incorporated in the Project or not, shall pass to Tampa Bay Water at the time of payment for such items, free and clear of all liens, claims, security interests, and encumbrances.

d. If requested by the Engineer, the Contractor shall provide, with subsequent Payment Applications, invoices receipted by the Subcontractor or Supplier showing payment in full has been made.

F. Payment

7.1.10. The amount of partial payment due the Contractor shall be equal to the current value of the Contract Price earned, less, any retainage, less any amounts previously paid, and any deductions for reimbursement as required by the Contract Documents.

7.2 Payment for Change Orders

7.2.1. Tampa Bay Water, without Notice to the Sureties, shall have the right to order changes to the Work. If the parties agree upon the terms for the change, including any appropriate adjustments to the Contract Price or Contract Time, a Change Order shall be issued. If the parties cannot agree upon the terms for the change, a Change Authorization may be issued by Tampa Bay Water. The terms of the Change Authorization shall be final and binding upon Contractor, unless Contractor makes a claim, within twenty-one (21) days of its receipt of the Change Authorization, challenging those terms it takes objection to, giving full details and supporting documentation for its specific objections. Any terms not specifically objected to within that twenty-one (21) day period shall be deemed final and accepted by Contractor. Regardless of whether or not

Contractor files a timely claim with respect to any of the terms of the Change Authorization, Contractor shall proceed with the change to the Work, as set forth in the Change Authorization, as directed by Tampa Bay Water or Engineer.

7.2.2. At Tampa Bay Water's option, payment or credit for any changes covered by a Change Order or a Change Authorization, whether additive or deductive, shall be determined by one or a combination of the methods set forth in a, b, or c, below, as applicable:

a. Unit Prices

Those Unit Prices stipulated in the Contract shall be utilized where they are applicable. In the event the Change Order or Change Authorization results in a change in excess of twenty-five percent (25%) of the original Contract quantity, and the total dollar change in value of that item exceeds twenty-five percent (25%), Tampa Bay Water will review the Unit Price to determine if a new Unit Price shall be negotiated. Unit Prices for new unit items not listed in the Contract shall be negotiated and mutually agreed upon.

b. Lump Sum

A total lump sum amount for the Work negotiated and mutually acceptable to the Contractor and Tampa Bay Water. Lump Sum Price quotations for modifications to the Work shall include substantiating documentation with an itemized breakdown of Contractor and Subcontractor costs, including labor, material, rentals, approved services, overhead, and profit, all calculated as specified under "C" below.

c. Cost Reimbursement Work

The term "cost reimbursement work" shall be for changes to be compensated for on a time and expense basis, that is, on an accounting of the Contractor's forces, materials, equipment, and other items of direct cost as required for the change.

Tampa Bay Water, at its sole discretion, may direct the change to be accomplished on a cost reimbursement work basis, in which event the change will be priced based upon the labor, materials, equipment and other costs hereafter noted associated with such change. The cost items for cost reimbursement work shall be limited to the following items:

1. Labor, including superintendent and foremen, for those hours associated with the cost reimbursement work (actual payroll cost, including wages, fringe benefits as established by negotiated labor agreements, contracts, labor insurance and labor taxes as established by law). Expressly excluded from this item are all labor costs associated with negotiating the subject change. No other fixed labor burdens will be considered, unless approved in writing by Tampa Bay Water.
2. Material associated with the change, including sales tax, if paid for by the Contractor or its Subcontractor.
3. Rental, or equivalent rental cost of equipment, including necessary transportation for items having a rental value in excess of $100.00.

   Rental or equivalent rental cost shall be allowed for only those Days or hours during which the equipment is (or would have been for deductive changes) in actual use. Rental and transportation allowances shall not exceed the current rental rates prevailing in the locality. The

rentals allowed for equipment shall, in all cases, be understood to cover all fuel, supplies, repairs, and renewals, and no further allowances shall be made for those items, unless specific Contract to that effect is made.

4. Additional bond as required and approved by Tampa Bay Water.
5. Additional insurance (other than labor insurance) as required and approved by Tampa Bay Water.
6. To the costs noted above, for net additive changes, there shall be added the following fixed fees for the Contractor or Subcontractor actually performing the change:
   A. A fixed fee of twenty-five percent (25%) of the cost of item 1 above. For costs incurred for Work performed by Subcontractors, the Contractor's fee shall not exceed ten percent (10%) and the Subcontractor's fee shall be the same as for the Contractor; and
   B. A fixed fee of ten percent (10%) added to the cost of items 2 and 3.

7.2.3. The fixed fees noted above in the previous paragraph shall be considered to be the full compensation for all cost of general supervision, overhead, profit, and any other general expense.

7.2.4. The Contractor's records shall make clear distinction between the direct costs of Work paid for on a cost reimbursement work basis and the costs of other Work. The Contractor shall furnish the Engineer report sheets in duplicate of each day's cost reimbursement work no later than the working day following the performance of said Work. The report sheets shall itemize the materials used, and shall cover the direct cost of labor and the charges for equipment rental, whether furnished by the Contractor, Subcontractor, or other forces. The report sheets shall provide names or identifications and classifications of workers, the hourly rate of pay and hours worked, and also the size, type, and identification number of equipment and hours operated.

7.2.5. Material charges shall be substantiated by valid copies of vendors' invoices. Such invoices shall be submitted with the daily reports or, if not available, they shall be submitted with subsequent daily report. Said daily report shall be signed by the Contractor or Contractor's Representative.

7.2.6. Tampa Bay Water reserves the right to furnish such materials and equipment as it deems expedient, and the Contractor shall have no claim for profit or added fees on the cost of such materials and equipment.

7.2.7. To receive partial payments and final payment for cost reimbursement work, the Contractor shall submit to the Engineer, in a manner approved by the Engineer and Tampa Bay Water, detailed and complete documented verification of the Contractor's and any of its Subcontractors' actual costs involved in the cost reimbursement work. Such costs shall be submitted within seven (7) Days after said Work has been performed.

7.2.8. Except for Change Authorizations and Change Order, no other written or oral order from Tampa Bay Water or the Engineer shall be treated as a change in the Work or entitle the Contractor to an adjustment to the Contract Price or Contract Time.

7.2.9. The Engineer, by issuing a Construction Directive, may order minor changes in the Work not involving extra cost, or additional times and not inconsistent with the purpose of the Project, but otherwise, except in an emergency endangering life or property, additions or deductions from the Work shall be

performed only in pursuance of an approved Change Authorization or Change Order.

7.2.10. Any compensation paid in conjunction with the terms of a Change Order shall comprise the total compensation due the Contractor for the change defined in the Change Order. By signing the Change Order, the Contractor acknowledges that the stipulated compensation adjustment includes payment for alteration of the Work, payment for the interruption of schedules, extended overhead, delay, or any other impact claim or ripple effect, and by such signing specifically waives any reservation or claim for additional adjustment to compensation or time in respect to the subject Change Order.

7.2.11. Tampa Bay Water hereby delegates authority to its General Manager (and his/her designee) to approve any and all Change Order and Change Authorizations in its name, so long as each such Change Order or Change Authorization does not exceed $285,000.00, and further as long as the cumulative total of all Change Order or Change Authorizations does not exceed $285,000.00, unless otherwise approved by the Tampa Bay Water's Board. Each Change Order or Change Authorization over $285,000.00 or which cumulatively exceeds $285,000.00 must be expressly approved by Tampa Bay Water's Board before it shall be binding upon Tampa Bay Water.

7.3 Claims for Additional Compensation

7.3.1. In any case where the Contractor may seek additional compensation, except for an emergency threatening imminent property damage or personal injury, the Contractor shall provide Notice to Tampa Bay Water and the Engineer of its intent to make a claim for such compensation before it begins the Work on which it bases the claim, in order that such matter may be settled or other appropriate action promptly taken. If such notification is not given or the Engineer is not afforded proper facilities by the Contractor for keeping an accurate account of actual costs, the Contractor shall be deemed to have waived its claim for additional compensation.

7.3.2. The Contractor's written Notice, and the fact that the Engineer has kept account of the cost as aforesaid, shall not in any way be construed as proving the validity of the claim.

7.3.3. Claims for additional compensation shall be made in itemized detail and submitted in writing to Tampa Bay Water and Engineer within seven (7) Days following completion of that portion of the Work for which the Contractor bases its claim. If the claim is found to be acceptable by Tampa Bay Water and the Engineer, the Contractor shall be paid as provided in the General Conditions, *Article 7.2. Payment for Change Orders.* No request by the Contractor for an equitable adjustment to the Contract Price under this Article shall be allowed, unless the Contractor has given Notice within the times required.

7.3.4. The Contractor waives its right to file claims unless the claims are filed within the times specified in the Contract Documents. Tampa Bay Water's final determination shall be final and binding on the Contractor unless the Contractor files suit within thirty (30) days after receipt of Tampa Bay Water's decision.

7.4 Release of Liens or Claims

The Contractor shall indemnify and hold harmless Tampa Bay Water and the Engineer from all claims for labor and materials furnished under the Contract Documents. Prior to the final payment, the Contractor shall furnish to Tampa Bay Water, as part of its final Payment Application, a certification that all of the Contractor's obligations on

the Project have been satisfied and that all monetary claims and indebtedness have been paid. The Contractor shall furnish releases or waivers, satisfactory to Tampa Bay Water, from all Subcontractors and Suppliers and of all liens and notices arising out of or filed in connection with the Work. Tampa Bay Water may reduce the amount of retainage withheld upon receipt of an affidavit from Contractor identifying any amounts in dispute with Subcontractor or Suppliers, and provided the amount of retainage withheld continues to exceed the amount in dispute.

7.5 Final Payment

7.5.1. Upon completion of all of the Work, the Contractor shall provide Notice to the Engineer that it has completed its Work and shall request final payment. Upon receipt of such Notice, the Engineer, together with Tampa Bay Water, will inspect and, if acceptable, the Engineer will submit to Tampa Bay Water its recommendation as to acceptance of the Work and as to the final Payment Application of the Contractor. Within sixty (60) Days after the Contractor has submitted its final Payment Application, together with the Sureties' consent to final payment, and upon approval of this Payment Application request by Tampa Bay Water and compliance by the Contractor with provisions in the General Conditions, *Article 7.4. Release of Liens or Claims*, and all other provisions of the Contract Documents as may be applicable, Tampa Bay Water shall pay to the Contractor all monies due it under the provisions of these Contract Documents. Final payment is further subject to Tampa Bay Water's receipt from Contractor of all as-built DRAWINGs, certifications, maintenance manuals, operating instructions, written guarantees and warranties, and bonds relating to the Work, and assignment of all guarantees and warranties from Subcontractors, vendors, Suppliers or manufacturers, all as required by the Contract Documents.

7.5.2. Contractor and Tampa Bay Water agree that project closeout and release of retainage shall be in accordance with Chapters 218 and 255, Florida Statutes, as amended by Chapter 2023-134, Laws of Florida. Specifically, Contractor shall cooperate with Tampa Bay Water to prepare a punch-list with estimated costs of items to complete the Work. Within 20 business days of completion of said punch-list, Tampa Bay Water shall pay Contractor the remaining contract balance, including retainage previously withheld, less an amount equal to 150% of the estimated cost to complete the items on the punch-list, and also less any amounts that are subject to a good faith dispute made in writing to the Contractor by Tampa Bay Water.

7.6 No Waiver of Rights

Neither the inspection by Tampa Bay Water or the Engineer, nor any payment for or acceptance of the whole or any part of the Work by Tampa Bay Water or Engineer, nor any extension of time, nor any possession taken by Tampa Bay Water, shall operate as a waiver of any provision of the Contract Documents, or any right to damages, nor shall such waive any subsequent breach. Acceptance of final payment shall not release Contractor of any liability under the Contract Documents or otherwise, and shall not be deemed evidence of performance or be construed as acceptance of Defective or improper Work.

7.7 Acceptance of Final Payment Constitutes Release

The acceptance by the Contractor of the final payment shall release Tampa Bay Water and the Engineer from all claims and all liability to the Contractor for all things done or furnished in connection with the Work, and every act of Tampa Bay Water and others relating to or arising out of the Work except claims previously made in writing

and identified by Contractor in its final Payment Application as still unsettled. No payment, however, final or otherwise, shall operate to release the Contractor or its Sureties from obligations under the Contract Documents and the Performance Bonds, Payment Bonds, and other bonds and warranties, as herein provided.

7.8 Record Maintenance and Auditing Rights

Contractor shall keep all books, records, files and other documentation, including all electronically stored items, which concern or relate to the Work hereunder (collectively referred to herein as the "Records"), for a minimum of three (3) years from the date of expiration or termination of this Contract or the date of Final Completion or as otherwise required by law, whichever date is later. Tampa Bay Water, or any duly authorized agents or representatives of Tampa Bay Water, shall have the right to audit, inspect and copy all such Records as often as they deem necessary during any such period of time. This right to audit, inspect and copy Contractor's Records shall include all of the Records of the Subcontractors and Suppliers.

7.9 Hazardous Materials

If Contractor encounters on the Project site any materials reasonably believed by Contractor to be petroleum or petroleum-related products, or other hazardous or toxic substances which have not been rendered harmless, Contractor immediately shall (i) stop Work in the area affected and (ii) report such condition to Tampa Bay Water in writing. If the Work is so stopped and hazardous material is found, the Work in the affected area shall not thereafter be resumed except by Change Order. Any such Change Order shall include, but not be limited to, an adjustment to the Contract Time as appropriate. If no hazardous material is found after the Work has stopped, no Change Order is required to resume the Work in the affected area. Further, if the hazardous material was generated or caused by the Contractor, or any of its employees, agents, Subcontractors or Suppliers, no Change Order will be required for an adjustment in the Contract Time, and Contractor shall indemnify Tampa Bay Water for any costs incurred by Tampa Bay Water with respect to such hazardous material.

* * * * * *

End of General Conditions

EXHIBIT B
BIDDER'S RESPONSE FORMS

BID FORM

Failure to fully complete this form SHALL result in the Bidder being deemed NONRESPONSIVE.

OFFER

TO: Tampa Bay Water

The undersigned hereby offers and agrees to furnish the goods and/or services in compliance with all terms, scope of work, conditions, specifications, and addenda in this Invitation for Bids.

INVESTIGATION:

The undersigned, by submission of this Bid Form, certifies it has thoroughly examined all ITB documents, including any Existing Condition Documents and Project site in order to familiarize itself with all existing conditions. This may include the physical condition on the ground including, but not limited to, the soil borings and has satisfied itself that the number of borings and their locations are adequate or has made any additional soil tests or borings if they feel the number, type, or location of those provided by Tampa Bay Water are inadequate or incomplete.

OBLIGATION:

The undersigned, by submission of this Bid Form, hereby agrees to be obligated, if selected as the Contractor, to provide the stated goods and/or services to Tampa Bay Water for the term as stated herein, and to enter into a Contract with Tampa Bay Water, in accordance with all documents herein, together with any written addenda.

BID PRICE:

The undersigned agrees to abide by the pricing contained on the Price Form.

ADDENDA:

The Bidder acknowledges receipt of the addenda noted below and has incorporated the content of Addenda into this Bid:

#1 #2 #_____ #_____

CONTRACTOR CONTRACT:

The Bidder agrees to the terms and conditions in the draft Contract included with this ITB **(initial one below)**:

X "As is" with no modifications.

____ With the changes requested in the attached document (attach to this form) and understands that Tampa Bay Water reserves the right to reject the change requests.

LITIGATION:

The Bidder understands it must disclose any past, pending or threatened litigation or regulatory action involving construction services provided by the Bidder **(initial one below):**

X None are known to exist.

____ Action exists, and a full explanation has been attached to this form.

CONFLICTS OF INTEREST:
The Bidder understands it must disclose any potential conflict of interest which would adversely affect the Bidder's ability to provide fair, loyal, and competitive services to Tampa Bay Water. Such disclosures shall include, but not be limited to, the Bidder's contractual obligations, property interests or clientele relationship or the property interests, contractual obligations or relationships of the Bidder's principals, officers, directors, employees or agents which are directly or indirectly related to Tampa Bay Water and its operations, its Agency Representative, the Southwest Florida Water Management District (SWFWMD), the Florida Department of Environmental Protection (FDEP), or any of our member governments **(initial one below):**

_X_ None are known to exist.

____ Potential or apparent conflict exists, and a full explanation has been attached to this form.

COMPLIANCE WITH LAWS/PERMITS:
The Bidder certifies it is not currently in violation of any regulatory rules and regulations that may have an impact on the firm's operations, and it agrees to comply with all local, State, and Federal statutes, regulations, directives and orders as applicable to the services provided and offered to Tampa Bay Water. The Bidder further agrees it has not been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or the Scrutinized Companies that Boycott Israel List; nor has it engaged in a boycott of Israel and has no business operations in Cuba or Syria. (Per Section 287.135(5), Florida Statutes). Additionally, the Bidder certifies (pursuant to Subsection 287.134(2)(a), Florida Statutes) it has not been placed on the discriminatory vendor list.

NONCOLLUSION:
The undersigned, hereinafter called Bidder, declares and certifies that (i) all principals with an interest in this Bid have been named herein; (ii) this Bid is, in all respects, fair and without fraud; (iii) this Bid is made without collusion with any official of Tampa Bay Water or Engineer; and (iv) the Bid is made without any connection or collusion with any person submitting another Bid for the Work.

CONTRACT EXECUTION:
The undersigned Bidder proposes and agrees that if this Bid is accepted, it shall enter into a contract with Tampa Bay Water in the form included with the Contract documents and perform and furnish all Work as specified or indicated in this ITB at the price bid and within the time specified, and in accordance with the other terms and conditions of the Contract documents.

CONTRACT MODIFICATION PRICING:
Bidder acknowledges and agrees that the separate prices on this Bid, where they are applicable and deemed acceptable by Tampa Bay Water, will be used by Tampa Bay Water and Bidder, if awarded the Contract documents, whenever similar work is added or deducted from the Contract documents.

PROJECT UNDERSTANDING:
Bidder represents that before making its Bid, Bidder has familiarized itself with the nature and extent of the Contract documents (as defined in the General Conditions), Work, Project site, locality, and all local conditions and laws and regulations that may in any manner affect cost, schedule, progress, performance, or furnishing of the Work.
Further, Bidder has read and studied carefully: reports of explorations and tests of surface and subsurface conditions; and those drawings of physical conditions in or relating to existing surface or

subsurface structures or underground utilities; and accepts the determinations established in 6.0 Supplemental Information for Bidders to the extent of the technical data contained in those reports and drawings upon which Bidder may rely, which in any manner affect cost, schedule, progress, performance, and furnishing of the Work.
Further, Bidder has read and studied all information and data shown or indicated in the Contract documents about other work under separate contracts at or near the Project site and assumes responsibility for all conditions and consequences which may result from other work and which in any manner affect cost, schedule, progress, performance, and furnishing of the Work.
Further, Bidder has correlated the results of the activities, examinations, and studies as noted above, with the terms and conditions of the Contract documents and has exercised its own independent judgement in the interpretation of this information.

NOTICE OF ERRORS:
Bidder has given Tampa Bay Water notice of all conflicts, ambiguities, errors, or omissions, if any that Bidder has discovered in the ITB.

FIRM OFFER:
Bidder has read the Contract documents and accepts all of the terms and conditions of the Contract documents, including without limitation those dealing with the disposition of Bid Security. Bidder acknowledges all Bids shall remain firm for 90 days or as otherwise required by this ITB.

REQUIREMENTS IN EFFECT:
Reference to standard Specifications, manuals, or codes of any technical society, organization, or association, or to the Laws and Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specifications, manual, code, or Laws and Regulations in effect on the date of the receipt of Bids, except as may be otherwise specifically stated.

PUBLIC RECORDS:
Each Bidder, by submitting a Bid, acknowledges the agency's legal obligation in accordance with Chapter 119 of the Florida Statutes, to respond to all public records requests in a timely manner and expressly waives any right to contest, impede, prevent or delay such disclosure, or to initiate any proceeding that may have the effect of impeding, preventing or delaying such disclosure, unless the Bidder establishes its right to a public records exception. It is the responsibility of the Bidder alone to establish its right to any such exception. Under no circumstances will Tampa Bay Water be responsible or liable to a Bidder or any other party as a result of disclosing any such information or materials.

TRENCH SAFETY ACT:
Bidder acknowledges and agrees that the trench safety standards in effect at the time of this Bid and at the time(s) of performing the Work shall be adhered to and compliance is the complete and sole responsibility of Bidder. The price on the Price Form includes Bidder's total cost for compliance with the Florida Trench Safety Act.

SUPPLIERS:
Bidder certifies that all suppliers, if acceptable to Tampa Bay Water, shall be supplying the material or equipment for the portions of the Work identified in the list in the event Bidder is awarded the Contract.

I certify, under penalty of perjury, that I have the legal authorization to bind the firm hereunder: The individual signing this form certifies, under penalty of perjury, that (s)he has the authority to sign on behalf of the firm. (If signature is by an agent, other than an officer of the corporation or a member of a partnership, a notarized power-of-attorney must accompany the Bid.) The following is certified by the signing of this form:

BID CONTACT INFORMATION AND PRIMARY SIGNATURE

C&T CONTRACTING SERVICES

Firm Name

11023 COUNTRYWAY BLVD. TAMPA FL. 33626

Firm Address

CHRIS TELSON

Printed Name

727-483-1594

Phone Number

CHRIS@CTCONTRACTINGSERVICES.COM

Email Address

CGC1526843

Firm Business License Number

GENERAL CONTRACTOR AUG 2026

License Classification Renewal Date

Is license active? YES

This Bid is submitted on this 20 day of AUGUST, 20 25.

AUTHORIZED SIGNATURES

Failure to fully complete one of the following forms SHALL result in the Bidder being deemed NONRESPONSIVE.

This Bid Form must be signed in the legal name of the company and by an officer or partner having authority to bind the company or firm by his or her signature. Electronic signatures are acceptable. Complete the applicable section below based on firm type:

If Bidder is an individual:

Name of Individual: _____

Title: _____

By _____
(if other than individual, Attach Power of Attorney)

Doing Business As: _____

Business Address: _____

Telephone: _____

If Bidder is a Partnership:

By:_____
(True Name of Partnership)

_____
Name of General or Limited Partner(s) Authorized to Sign

By:_____
(Attach evidence of authority to sign)

_____
Name of General or Limited Partner(s) Authorized to Sign

By: _____
(Attach evidence of authority to sign)

Business Address: _____

Telephone: _____

If Bidder is a Corporation:

By: C&T CONTRACTING SERVICES
(Legal Corporation Name)

Name: CHRIS TELSON

Title: OPERATIONS MANAGER

By: _____
(attach evidence of authority to sign)

Name and Title and Signature of Official Attesting:

Name: IAN CARTER

Title: PROJECT MANAGER

By: _____

Business Address: 11023 COUNTRYWAY BLVD. TAMPA, FL. 33626

Telephone: 813-616-8410

State of Incorporation: FLORIDA

If Bidder is a Joint Venture:

Each joint venturer shall be identified below and shall sign the Bid. The manner of signing for each individual, partnership and corporation that is a party to the joint venture shall be in the same manner as is indicated above.

Joint Venture Partners:

X

_____

_____

_____

_____

MAJOR EQUIPMENT LIST

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

To enable Tampa Bay Water to evaluate Bidder's qualifications to perform the Work, Bidder shall list all of the equipment it proposes to use in performing the Work.

Make/Model	Year	Owned or Leased	Condition	Availability for this Project
JCB Backhoe Loader	2022	Owned	Operational	Available
JCB Compact Wheel Loader	2022	Owned	Operational	Available
24-48 Pipe Plug	NA	Owned	Operational	Available
4x8 Road Plate	NA	Owned	Operational	Available
Compactor	NA	Owned	Operational	Available
Concrete Steel Forms	NA	Owned	Operational	Available
Concrete Vibrator	NA	Owned	Operational	Available
Drum Roller	2023	Owned	Operational	Available
Kubota Chip Hammer AP-BR560	NA	Owned	Operational	Available

842

[Attach Additional Pages if Necessary]

MAJOR EQUIPMENT LIST

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

To enable Tampa Bay Water to evaluate Bidder's qualifications to perform the Work, Bidder shall list all of the equipment it proposes to use in performing the Work.

Make/Model	Year	Owned or Leased	Condition	Availability for this Project
Kubota Mini Excavator 112618	NA	Owned	Operational	Available
Kubota Skid Steer - 112618	NA	Owned	Operational	Available
LS Gantry Crane	NA	Owned	Operational	Available
MAYCO C30HDGA Concrete Pump	NA	Owned	Operational	Available
Rammer Large 2900-3600 LBS& Diaphragm	NA	Owned	Operational	Available
Rotary Saw & Hammer	NA	Owned	Operational	Available
Safety Equipment	NA	Owned	Operational	Available
Symons Forms	NA	Owned	Operational	Available
Toyota Forklift	NA	Owned	Operational	Available

[Attach Additional Pages if Necessary]

843

MAJOR EQUIPMENT MANUFACTURERS

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Line Item	Description	Equipment Type/Material	Manufacturer	Distributor or Supplier
1	Pumps	Centrifugal Pumps	Fairbanks Nijhuis	Barney's Pumps Inc.

[Attach Additional Pages If Necessary]

SUBCONTRACTORS LIST

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Bidder shall perform (with Bidder's own employees) not less than fifty percent (50%) of the labor (total contract price less the cost of materials for the Project). For all remaining work, list each Subcontractor to whom Bidder intends to award a sub-contract in excess of two percent (2%) of the Total Price on the Price Form. These Subcontractors, if acceptable to Tampa Bay Water, shall be awarded subcontracts for the portions of the Work identified in the list, in the event Bidder is awarded the Contract.

Work To Be Performed	Name/Address	Percent of Total Bid Price
Electrical	Shine & Company Inc.	19%
I&C	Barney's Pumps Inc.	8%

QUESTIONNAIRE

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Owner: Tampa Bay Water
Engineer: Carollo Engineers Inc.
Project Name: Lake Bridge Water Treatment Plant-Pump No. 4
Project No.: 07542

The undersigned warrants that all statements and answers to questions hereinafter made are current, accurate, and complete as of the date indicated below.

Respond to the items below with sufficient information to show the Bidder has sufficient qualifications to perform the required Work. (See 3.3 Minimum Qualifications)

1. How many years has your organization been in business as a licensed general contractor under your present business name? 7 YEARS.
2. Attach to this Form a list of all contracts comparable to this project that your organization has performed during the last five years. For each contract listed, include the owner's contract number, contract title, brief project description, original Contract Price, final Contract Price, substantial completion date or percent complete (if not completed), and the name, address and phone number of an individual from the owner to which your organization may refer.
3. Are there any current federal, state, or local tax liens filed on your organization? ___Yes X___No
   If yes, attach a list of all current tax liens and an explanation for each.
4. Has your organization failed to complete work awarded to it in the last five years? ____Yes __X__No
   If yes, attach an explanation, including description of the project, identification of the owner, contract award date, and reason work was not completed.
5. Has your organization ever had a contract terminated for default in the last five years? ___Yes X No
   If yes, attach an explanation, including description of the project, identification of the owner, contract termination date, and reason for each termination for default.
6. Has your organization ever had significant accidents or OSHA violations in the last five years? ___Yes X No
   If yes, attach a list of each significant accident or OSHA violation, including a description and date of each event, and an explanation for each.
7. Has any officer or partner of your organization ever been an officer or partner of another organization that failed to complete a construction project? NO.
   If so, state name of individual, organization and reason therefore.
   _____
   _____
   _____
8. Does your organization or its key personnel now hold valid certificates of competency or licenses for which a specific license is required? YES.
   If so, attach copies of all licenses covering the Work under the Contract Documents together with the specific political jurisdiction issuing said licenses.
   Attachment X, consisting of _____ pages.
9. Is your organization owned, controlled or organized under the law of a Foreign County of Concern as identified in Section 287.138, Florida Statutes? NO

By: C&T CONTRACTINGM SERVICES
Print Name: CHRIS TELSON
Title: OPERATIONS MANAGER

RELATIVE PROJECTS PRESENTLY UNDER CONTRACT

Last Updated: August, 2025

Project	Owner / General Contractor	Owner's Contact	Scope of Work	Project Value	General Contractor or Subcontractor	Design Engineer/Architect
Wastewater Pumping Stzion Rehabilitations - Parke East & Idlewild Tampa, FL	**City of Tampa** 306 East Jackson Street, 4th Floor North Tampa, FL 33602	Davey Henderson (813) 460-8764 davey.henderson@tampagov.net	Rehabilitation of two pump stations including replacement of pumps, valve manifolds, & force main tie-in. Includes installation of sewer manholes, bypass pumping, & electrical upgrades.	$1,801,300.00	General Contractor	**AECOM** 7650 West Courtney Campbell Causeway Tampa, FL 33607
Lift Station 39A Improvements Bradenton, FL	**Manatee County** 1112 Manatee Ave W Ste 803 Bradenton, FL 34205	Brett Gocka brett.gocka@mymanatee.org	Cast in place concrete work to add sidewalks and drives. Mechanical Pipe work including removal of existing pipes and installing new pipes, valves, and fittings.	$5,128,447.50	General Contractor	**Black and Veatch Corp** 3405 W Dr. MLK Jr Blvd Ste 125 Tampa, FL 33607
Dunn WRF Electrical Improvements, **Palm Harbor, FL**	**Chinchor Electric, Inc** 1460 S Leavitt Ave Orange City, FL 32763	Andre Poulin apoulin@chinchorelectric.com	Clear area and build new main switch gear buildings. Remove and replace damaged parts of east and west buildings.	$2,055,125.00	Subcontractor	**Wekiva Engineering** 711 N Orange Ave Ste A Winter Park, FL 32789
Pasco SE & SW WTP	**Pasco County Board of Comissioners** 7536 State Street, Ste 221 New Port Richey, FL 34654	Wayne Baker wbaker@mypasco.net 727-247-2701	Install new water quality analyzer building and make various improvements to existing equipment including replacing critical valves and sensors.	$2,609,422.70	General Contractor	**McKim & Creed** 1365 Hamlet Avenue Clearwater, FL 33756

RELATIVE PROJECTS PRESENTLY UNDER CONTRACT

Last Updated: August, 2025

Project	Owner / General Contractor	Owner's Contact	Scope of Work	Project Value	General Contractor or Subcontractor	Design Engineer/Architect
Wastewater Pumping Station Rehabilitations - Parke East & Idlewild Tampa, FL	**City of Tampa** 306 East Jackson Street, 4th Floor North Tampa, FL 33602	Davey Henderson (813) 460-8764 davey.henderson@tampagov.net	Rehabilitation of two pump stations including replacement of pumps, valve manifolds, & force main tie-in. Includes installation of sewer manholes, bypass pumping, & electrical upgrades.	$1,801,300.00	General Contractor	**AECOM** 7650 West Courtney Campbell Causeway Tampa, FL 33607
Lift Station 39A Improvements Bradenton, FL	**Manatee County** 1112 Manatee Ave W Ste 803 Bradenton, FL 34205	Brett Gocka brett.gocka@mymanatee.org	Cast in place concrete work to add sidewalks and drives. Mechanical Pipe work including removal of existing pipes and installing new pipes, valves, and fittings.	$5,128,447.50	General Contractor	**Black and Veatch Corp** 3405 W Dr. MLK Jr Blvd Ste 125 Tampa, FL 33607
Dunn WRF Electrical Improvements, **Palm Harbor, FL**	**Chinchor Electric, Inc** 1460 S Leavitt Ave Orange City, FL 32763	Andre Poulin apoulin@chinchorelectric.com	Clear area and build new main switch gear buildings. Remove and replace damaged parts of east and west buildings.	$2,055,125.00	Subcontractor	**Wekiva Engineering** 711 N Orange Ave Ste A Winter Park, FL 32789
Pasco SE & SW WTP	**Pasco County Board of Comissioners** 7536 State Street, Ste 221 New Port Richey, FL 34654	Wayne Baker wbaker@mypasco.net 727-247-2701	Install new water quality analyzer building and make various improvements to existing equipment including replacing critical valves and sensors.	$2,609,422.70	General Contractor	**McKim & Creed** 1365 Hamlet Avenue Clearwater, FL 33756

PREVIOUSLY COMPLETED PROJECTS

Last Updated: August, 2025

Project	Owner / General Contractor	Owner's Contact	Scope of Work	Project Value	General Contractor or Subcontractor	Design Engineer/Architect
Van Dyke WWTP Pump Station Tampa, FL	**RC Beach & Associates, Inc.** 625 Grand Central Street Clearwater, FL 33756	Rick Reiber (727) 243-4897 r.reiber@rcbeach.com	Removal and replacement of (5) existing pumps and pump pads; Reconstruction of exisitng pipe layout for consistency. **ODP INLCUDED IN PROJECT VALUE.**	$525,000	Subcontractor	Design-Build
Sprayfield Pump Station Improvements Eustis, FL	**City of Eustis** 10 North Groove St. Eustis, FL 32726	Daniel Millan (352) 483-5480 Ext. 3105	Furnish and installation new pump station piping, pump panels, and slide gates; Electrical improvements and new I&C.	$471,000	General Contractor	**Kimley-Horn and Associates, Inc** 189 South Orange Avenue Suite 1000 Orlando, FL 32801
Dunn Filters Palm Harbor, FL	PLC Construction Inc 1 N Dale Mabry Hwy #1050 Tampa, FL 33609	Andrew Hogan arhogan@pcl.com	Installation of cast in place concrete and removal of previous concrete pads.	$1,063,628.84	Subcontractor	**Carollo** 10117 Princess Palm Avenue, Suite 340 Tampa Florida, 33610
Cypress Manor WWTF Plant Improvements Dade City, FL	**Pasco County Utilities Department** 19420 Central Blvd. Land O' Lakes, FL 34637	Nestor Sotelo nsotelo@hazenandsawyer.com	Demoliton of exisitng batch plant, blowers, and sodium hypochlorite system; Relocation of existing generator; Furnish and install packaged wastewater plant, associated piping and site work.	$2,605,855	General Contractor	**Hazen and Sawyer** 1000 North Ashley Drive Suite 1000 Tampa, FL 33602
Virginia Pump Station Rehabilitation Tampa, FL	**City of Tampa** 306 East Jackson Street, 4th Floor North Tampa, FL 33602	Davey Henderson (813) 460-8764 davey.henderson@tampagov.net	Construction of new force main; Installation of precast storm structures and RCP; Rehab. of existing pump station including new submersible pumps, piping, valves, top slab, and wet well lining.	$1,136,160.00	General Contractor	**Dewberry-Hydro** 202 Lake Miriam Drive Suite E1 Lakeland, FL 33813
Ballast Point Pump Station Tampa, FL	**City of Tampa** 306 East Jackson Street, 4th Floor North Tampa, FL 33602	Davey Henderson (813) 460-8764 davey.henderson@tampagov.net	Cast in place concrete work to extend existing top slab for pumps. Installation of a new submersible pump station and mechanical pipes to connect these to existing lines.	$1,591,566.88	General Contractor	**Billerreinhart** 3434 Colwell Ave Suite 100 Tampa, FL 33614
Adalee Pump C13:113Station **Tampa, FL**	**City of Tampa** 306 East Jackson Street, 4th Floor North Tampa, FL 33602	Davey Henderson (813) 460-8764 davey.henderson@tampagov.net	Cast in place concrete work to replace concrete pedestals and driveway. Installation of a new submersible pump station and mechanical pipes to connect these to existing lines.	$1,046,500.00	General Contractor	**City of Tampa - Wastewater Department** 2545 Guy N. Verger Blvd. Tampa, FL 33605

PREVIOUSLY COMPLETED PROJECTS

Last Updated: August, 2025

Project	Owner / General Contractor	Owner's Contact	Scope of Work	Project Value	General Contractor or Subcontractor	Design Engineer/Architect
Van Dyke WWTP Pump Station Tampa, FL	**RC Beach & Associates, Inc.** 625 Grand Central Street Clearwater, FL 33756	Rick Reiber (727) 243-4897 r.reiber@rcbeach.com	Removal and replacement of (5) existing pumps and pump pads; Reconstruction of exisitng pipe layout for consistency. **ODP INLCUDED IN PROJECT VALUE.**	$525,000	Subcontractor	Design-Build
Sprayfield Pump Station Improvements Eustis, FL	**City of Eustis** 10 North Groove St. Eustis, FL 32726	Daniel Millan (352) 483-5480 Ext. 3105	Furnish and installation new pump station piping, pump panels, and slide gates; Electrical improvements and new I&C.	$471,000	General Contractor	**Kimley-Horn and Associates, Inc** 189 South Orange Avenue Suite 1000 Orlando, FL 32801
Dunn Filters Palm Harbor, FL	**PLC Construction Inc** 1 N Dale Mabry Hwy #1050 Tampa, FL 33609	Andrew Hogan arhogan@pcl.com	Installation of cast in place concrete and removal of previous concrete pads.	$1,063,628.84	Subcontractor	**Carollo** 10117 Princess Palm Avenue, Suite 340 Tampa Florida, 33610
Cypress Manor WWTF Plant Improvements Dade City, FL	**Pasco County Utilities Department** 19420 Central Blvd. Land O' Lakes, FL 34637	Nestor Sotelo nsotelo@hazenandsawyer.com	Demolition of exisitng batch plant, blowers, and sodium hypochlorite system; Relocation of existing generator; Furnish and install packaged wastewater plant, associated piping and site work.	$2,605,855	General Contractor	**Hazen and Sawyer** 1000 North Ashley Drive Suite 1000 Tampa, FL 33602
Virginia Pump Station Rehabilitation Tampa, FL	**City of Tampa** 306 East Jackson Street, 4th Floor North Tampa, FL 33602	Davey Henderson (813) 460-8764 davey.henderson@tampagov.net	Construction of new force main; Installation of precast storm structures and RCP; Rehab. of existing pump station including new submersible pumps, piping, valves, top slab, and wet well lining.	$1,136,160.00	General Contractor	**Dewberry-Hydro** 202 Lake Miriam Drive Suite E1 Lakeland, FL 33813
Ballast Point Pump Station Tampa, FL	**City of Tampa** 306 East Jackson Street, 4th Floor North Tampa, FL 33602	Davey Henderson (813) 460-8764 davey.henderson@tampagov.net	Cast in place concrete work to extend existing top slab for pumps. Installation of a new submersible pump station and mechanical pipes to connect these to existing lines.	$1,591,566.88	General Contractor	**Billerreinhart** 3434 Colwell Ave Suite 100 Tampa, FL 33614
Adalee Pump C13:H13Station **Tampa, FL**	**City of Tampa** 306 East Jackson Street, 4th Floor North Tampa, FL 33602	Davey Henderson (813) 460-8764 davey.henderson@tampagov.net	Cast in place concrete work to replace concrete pedestals and driveway. Installation of a new submersible pump station and mechanical pipes to connect these to existing lines.	$1,046,500.00	General Contractor	**City of Tampa - Wastewater Department** 2545 Guy N. Verger Blvd. Tampa, FL 33605

PRICE FORM

Failure to fully complete this form SHALL result in the Bidder being deemed NONRESPONSIVE.

Review this ITB in its entirety and provide pricing below that is inclusive of all expenses.

Tampa Bay Water
Lake Bridge Water Treatment Plant - Pump No. 4
Project No. 07542
Bid Form

Item No. (A)	Description (B)	Unit (C)	Quantity (D)	Unit Price (E)	Total Price (F)
1	Mobilization/Demobilization	Lump Sum	1	$	$ 87,420
2	Equipment Procurement	Lump Sum	1	$	$ 495,427
3	Concrete Work	Lump Sum	1	$	$ 18,199
4	Mechanical Work	Lump Sum	1	$	$ 310,998
5	Electrical Work	Lump Sum	1	$	$ 241,304
6	Instrumentation Work	Lump Sum	1	$	$ 99,206
7	Commissioning	Lump Sum	1	$	$ 7,601
				Total Bid Price	$ 1,260,155

One million, two hundred and sixty thousand, one hundred and fifty five dollars.
(Bid Price Amount Written in Words)

This project provides an Owner's Allowance in the amount of $285,000.00 which is not included in the Price Form above. Contractor's use of Owner's Allowance is not guaranteed. (Usage of Owner's Allowance must be pre-approved by Tampa Bay Water in writing.)

Bidder acknowledges and agrees that the Trench Safety Standards in effect at the time of this Bid and at the time(s) of performing the Work shall be adhered to and compliance is the complete and sole responsibility of the Bidder. The proposed Total Bid Price, as stated herein includes Bidder's total cost for compliance with the Florida Trench Safety Act.

Bidder shall have an Indemnification responsibility in the amount of $100.00 which is not included in the Price Form above.

TAMPA BAY WATER
CONSULTANT AFFIDAVIT

STATE OF FLORIDA
COUNTY OF HILLSBOROUGH

BEFORE ME, the undersigned authority, appeared CHRIS TELSON, who first being duly sworn hereby swears or affirms as follows:

1. I make this affidavit on personal knowledge.
2. I am over the age of 18 years and otherwise confident to make this Affidavit.
3. I am the OPERATIONS MANAGER of C&T CONTRACINTG SERVICES (the "Consultant").
4. I am authorized by C&T CONTRACTING SERVICES to make this Affidavit on behalf of Consultant.

E-Verify

1. Consultant acknowledges that Section 448.09, Florida Statutes, makes it unlawful for any person to knowingly employ, hire, recruit, or refer, for private or public employment, an alien who is not duly authorized to work in the United States.
2. Consultant acknowledges that Section 448.095, Florida Statutes, prohibits public employers, contractors, and subcontractors from entering into a contract unless each party to the contract registers and uses E-Verify.
3. Consultant is in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
4. Consultant understands it shall remain in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes, during the term of any contract with Tampa Bay Water.
5. Consultant's subcontractors are in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
6. Consultant shall ensure compliance with the requirements of Sections 448.09 and 449.095, Florida Statutes, by any and all of its subcontractors.
7. Neither the Consultant nor any subcontractor of Consultant has had a contract terminated by a public employer for violating Section 448.095, Florida Statutes, within the year preceding the date of this Affidavit.
8. If the Consultant or any subcontractor of Consultant has a contract terminated by a public employer for any such violation during the term of any contract with Tampa Bay Water, it shall provide immediate notice thereof to Tampa Bay Water.

Anti-Human Trafficking

In accordance with Section 787.06(13), Florida Statues, the undersigned, on behalf of the entity listed below ("Entity"), hereby attests under penalty of perjury that Entity does not use coercion for labor or services as defined in Section 787.06, Florida Statutes, entitled "Human Trafficking".

Scrutinized Companies

A. Pursuant to Subsections 287.133(2) and (3), Florida Statutes, Respondent acknowledges that a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a proposal on a Contract provide any goods or services to a public entity, may not submit a Proposal on a Contract with a public entity for the construction or repair of a public building or public work, may not submit Proposals on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a Contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017 Florida Statutes, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

B. Pursuant to Subsection 287.134(2)(a), Florida Statutes, Respondent acknowledges that an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as

a contractor, supplier, subcontractor, or consultant under a contract with any public entity; an may not transact business with any public entity.

C. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that a company that has been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or the Scrutinized Companies that Boycott Israel List or a company that engages in a boycott of Israel, is ineligible and may not submit a bid, proposal, or enter into or renew a contract with an agency for goods or services of $1 million or more. At the time of submission of a proposal for a contract or contract renewal for goods or services of $1 million or more, the company must certify that it is not on either such List and further that it does not have business operations in Cuba or Syria as required by Section 287.135(5), Florida Statutes.

D. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any contract for goods or services of $1 million or more if the awarded company is found to have submitted a false certification as provided under Section 287.135(5), been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or been engaged in Business operations in Cuba or Syria.

E. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any contract for good or services of any amount if the awarded company is found to have or been placed on the Scrutinized Companies that Boycott Israel List or is engaged in a boycott of Israel.

Foreign Countries of Concern

Pursuant to Section 287.138, Florida Statues, Tampa Bay Water may not enter into a contract with an entity that gives access to an individual's personal identifying information if the entity is owned, controlled or organized under the laws of a Foreign Country of Concern which includes the People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolas Maduro, the Syrian Arab Republic, or any other entity or agency under the significant control of such Foreign Country of Concern.

Signature of Affiant
on behalf of Consultant

By: CHRIS TELSON
As its: _____
Dated: 8/20/25

Sworn to (or affirmed) and subscribed before me by means of ☐ physical presence or ☐ online notarization, this 20TH day of AUGUST, 2025, by CHRIS TELSON, on behalf of C & T CONTRACTING, who is personally known to me or who has produced _____ as identification.

Print Name: FERRELL E CALHOUN JR
Notary Public of the State of Florida

My Commission Expires: 1/24/26

FERRELL EUGENE CALHOUN, JR.
MY COMMISSION # HH 181035
EXPIRES: January 24, 2026
Bonded Thru Notary Public Underwriters

NON-COLLUSION AFFIDAVIT

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Owner: Tampa Bay Water
Engineer: Carollo Engineers Inc.
Project Name: Lake Bridge Water Treatment Plant-Pump No. 4
Project No.: 07542

Affiant, CHRIS TELSON, being first duly sworn, deposes and says that:

Affiant is (Title) OPERATIONS MANAGER of C&T CONTRACTING SERVICES, ("Bidder"). Affiant has personal knowledge of the matters set forth in this Affidavit and is competent to testify about them.

Bidder has submitted to Tampa Bay Water, a Bid ("Bid") to construct the above referenced Project, also referred to in this Affidavit as the "Work".

This Non-Collusion Affidavit is executed by Affiant for inclusion with the submission to Tampa Bay Water of the Bid and may be relied upon by Tampa Bay Water in considering the Bid.

Affiant is fully informed about the preparation and contents of the Bid and of all pertinent circumstances surrounding the Bid; has not entered into any illegal contract, combination, conspiracy or other unlawful act; and the Bid is genuine and is not a collusive or sham Bid.

Neither Bidder nor any of its officers, partners, agents, representatives, employees or parties in interest, including this Affiant, have in any way entered or proposed to enter into any combination to prevent the making of any Bid, or to fix a price or prices (including any overhead, profit or other cost elements) for the Bid; or have made any Contract, or given or promised any consideration to induce any other person not to submit a Bid for the Work, or to submit a Bid at a specified price; or have secured or intended to secure through any Contract an unlawful advantage against Tampa Bay Water, or any other person interested in the Work.

The Bid is not intended to secure an unfair advantage or benefit from Tampa Bay Water or in favor of any person interested in the proposed Work.

The prices proposed are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful Contract on the part of Bidder or any other of its agents, representatives, owners, employees, or parties in interest, including this Affiant; and neither Bidder nor any of its officers, partners, owners agents, representatives, employees, or parties in interest, including this Affiant, have divulged information regarding the Bid or any data about the Bid to any other person.

By: C&T CONTRACTING SERVICES
Print Name: CHRIS TELSON
Title: OPERATIONS MANAGER

LITIGATION HISTORY

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

List all litigation and arbitration from the past 5 years, regardless of results or current status.

Project Name	Parties to Dispute	Nature of Dispute	Resolution of Dispute
NO LITIGATION HISTORY			

[Attach Additional Pages If Necessary]

FLORIDA BID BOND

Failure to fully complete this form SHALL result in the Bidder being deemed NONRESPONSIVE.

KNOW ALL MEN BY THESE PRESENTS:

That the "Bidder", C & T Contracting Services, LLC., a corporation x, individual ____, partnership ____, of the state of Florida, qualified to do business in this State, as Principal, and the "Surety", FCCI Insurance Company, a corporation of the state of Florida, authorized to do business as a surety in this State, as Surety, are hereby held and firmly bound unto the Tampa Bay Water as Obligees, in the sum of Sixty three thousand and seven dollars and 75/100 Dollars ($63,007.75) lawful money of the United States of America, which represents five percent (5%) of the sum of Bidder's proposed total contract price, for the payment of which Bidder and the Surety hereby bind ourselves, our respective heirs, successors, legal representatives and assigns, jointly, and severally, firmly by these presents.

WHEREAS, Bidder has submitted to Tampa Bay Water, its Bid to which this Bond is attached, to enter into the Contract with Tampa Bay Water for the Lake Bridge Water Treatment Plant-Pump No. 4, Project No.: 07542, Contract No. 2026012 covered by the Contract documents prepared by Tampa Bay Water and the Engineer, which Contract documents are incorporated herein by this reference:

NOW, THEREFORE: THE CONDITION OF THIS OBLIGATION IS THAT, Bidder and Surety are jointly and severally bound by all of the provisions of this Bid Bond, and if Bidder faithfully performs and fulfills all the understandings, covenants, terms, conditions and requirements of this ITB (including addenda issued before the date of the opening of the Bid) within the time specified or any extension thereof, with or without notice to the Surety, or if Bidder fails to comply with all requirements of this ITB within the time specified or any extension thereof, with or without notice to the Surety, but pays Tampa Bay Water the full amount of the sum set forth in this Bid Bond as liquidated damages, then this obligation shall be null and void, otherwise to remain in full force and effect.

A. If Tampa Bay Water makes demand on the Surety to perform in accordance with the Surety's obligations under this Bond, then the full amount of the Bid Bond shall be immediately due and payable to Tampa Bay Water, and the Surety shall pay that sum without delay. Additionally, the Surety shall reimburse Tampa Bay Water for all costs of collection (including but not limited to attorney's fees).

B. The Surety, for value received, stipulates and agrees that the obligations of the Surety and this Bid Bond shall be in no way impaired or affected by any extension of the time within which Tampa Bay Water may accept the Bid, and the Surety does, by this Bid Bond, waive notice of any such extension.

C. The term this "State" means the State of Florida. Other defined terms (i.e., capitalized terms) used in this Bid Bond have the intent and meanings assigned to them in the General Conditions of the Contract documents, Definitions.

IMPORTANT: Sureties executing this Bid Bond shall be currently authorized to do business in the State of Florida as surety and, except as otherwise provided by the Florida Statutes, be on the U.S. Department of the Treasury Financial Management Service list of approved bonding companies. Bonds cannot be in excess of the amount indicated as approved by that list.

FCCI Insurance Company
(Name of Surety)

6300 University Parkway Sarasota, FL 34240-8424
(Address)

(800) 266-3224
(Telephone Number)

Jessie Sloan
(Name of Duly Authorized Florida Agent)

123 Zelma Street, Suite A Orlando, FL 32803
(Address)

(321) 800-6594
(Telephone Number)

Signed and sealed this 20th day of August, 2025.

Bidder/Principal C & T Contracting Services, LLC.
11023 Countryway Blvd.
Tampa, FL 33626

Witness

By:

Christopher Telson, President
Name and Title

Surety FCCI Insurance Company

Witness
Kasandra Titus

By:
Jessie Sloan, Attorney-In-Fact &
Florida Licensed Resident Agent

By Attorney-In-Fact:
(Attach Certified Copy of Power of Attorney

Inquiries: (321)800-6594

FCCI INSURANCE GROUP

GENERAL POWER OF ATTORNEY

Know all men by these presents: That the FCCI Insurance Company, a Corporation organized and existing under the laws of the State of Florida (the "Corporation") does make, constitute and appoint:

Jorge Bracamonte; Jessie Sloan; Hallie Martin

Each, its true and lawful Attorney-In-Fact, to make, execute, seal and deliver, for and on its behalf as surety, and as its act and deed in all bonds and undertakings provided that no bond or undertaking or contract of suretyship executed under this authority shall exceed the sum of (not to exceed $30,000,000.00): $30,000,000.00

This Power of Attorney is made and executed by authority of a Resolution adopted by the Board of Directors. That resolution also authorized any further action by the officers of the Company necessary to effect such transaction.

The signatures below and the seal of the Corporation may be affixed by facsimile, and any such facsimile signatures or facsimile seal shall be binding upon the Corporation when so affixed and in the future with regard to any bond, undertaking or contract of surety to which it is attached.

In witness whereof, the FCCI Insurance Company has caused these presents to be signed by its duly authorized officers and its corporate Seal to be hereunto affixed, this 20th day of December, 2024.

Attest: _____
Christina D. Welch, President
FCCI Insurance Company

FCCI INSURANCE COMPANY CORPORATE SEAL 1994 FLORIDA

_____
Christopher Shoucair,
EVP, CFO, Treasurer, Secretary
FCCI Insurance Company

State of Florida
County of Sarasota

Before me this day personally appeared Christina D. Welch, who is personally known to me and who executed the foregoing document for the purposes expressed therein.

My commission expires: 2/27/2027

NOTARY PUBLIC STATE OF FLORIDA

PEGGY SNOW
Commission # HH 326535
Expires February 27, 2027

_____
Notary Public

State of Florida
County of Sarasota

Before me this day personally appeared Christopher Shoucair, who is personally known to me and who executed the foregoing document for the purposes expressed therein.

My commission expires: 2/27/2027

NOTARY PUBLIC STATE OF FLORIDA

PEGGY SNOW
Commission # HH 326535
Expires February 27, 2027

_____
Notary Public

CERTIFICATE

I, the undersigned Secretary of FCCI Insurance Company, a Florida Corporation, DO HEREBY CERTIFY that the foregoing Power of Attorney remains in full force and has not been revoked; and furthermore that the February 27, 2020 Resolution of the Board of Directors, referenced in said Power of Attorney, is now in force.

Dated this 20th day of August, 2025

_____
Christopher Shoucair, EVP, CFO, Treasurer, Secretary
FCCI Insurance Company

1-IONA-3592-NA-04, 1/2025

EXHIBIT C
PAYMENT & PERFORMANCE BONDS

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That _____ as Principal, located at _____ (Business Address) and _____as Surety, located at _____ (Business Address) are held and firmly bound to the Tampa Bay Water, A Regional Water Supply Authority as Obligee in the sum of _____ ($_____) for the payment whereof we bind ourselves, our heirs, executors, personal representatives, successors and assigns, jointly and severally.

Whereas, Principal has entered into a contract dated as of the _____ day of _____, 20__, with Obligee for **Lake Bridge Water Treatment Plant-Pump No. 4, Project No.: 07542, Contract No. 2026012** in accordance with DRAWINGs and Specifications, which contract is incorporated by reference and made a part hereof, and is referred to as the Contract.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs the Contract at the times and in the manner prescribed in the Contract; and

2. Pays Obligee any and all losses, damages, costs and attorneys' fees, including appellate proceedings, that Obligee sustains because of any default by Principal under the Contract including, but not limited to, all delay damages, whether liquidated or actual, suffered by Obligee; and

3. Performs the guarantee of all work and materials furnished under the Contract for the time specified in the Contract, then this bond is void; otherwise, it remains in full force.

BE IT FURTHER KNOWN:

1. Any changes, regardless of scope or amount, in or under the Contract and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect Surety's obligation under this Bond.

2. The Surety, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or other work to be performed hereunder, or the Specifications referred to therein shall in anyway affect its obligations under this bond, and it does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to work or to the Specifications.

3. This Performance Bond is issued in compliance with the terms and conditions set forth in Florida Statute 255.05; however, it is intended to exceed the minimal coverage requirements established by that statute. The Notice and time limitations of Florida Statute 255.05 (2) are also, to the extent applicable, if any, incorporated herein by reference and made a part hereof.

4. In no event will the Surety be liable in the aggregate to Obligee for more than the penal sum of this Performance Bond regardless of the number of suits that may be filed by Obligee.

5. Whenever the Contractor shall be, and is declared by Tampa Bay Water to be in default under the Contract, Tampa Bay Water having performed Tampa Bay Water's obligations thereunder, the SURETY shall promptly remedy the default, as set forth below and at the sole option of Tampa Bay Water, by promptly:

(a) Completing the Contract in accordance with its terms and conditions and paying Tampa Bay Water all of its losses, damages, costs and attorneys' and legal assistants' fees, whether at trial, on appeal or in bankruptcy, that Tampa Bay Water sustains because of any default by Principal under

the Contract including, but not limited to, all delay damages, whether liquidated or actual. In the event Surety takes over and completes the Contract, then in such event it shall be entitled to receive the balance of the Contract Price, as defined in sub-paragraph 2 below; or

(b) Indemnifying Tampa Bay Water for all of its damages, expenses, costs, delay damages, attorneys' and legal assistant's fees, including appellate and bankruptcy proceedings, that Tampa Bay Water has incurred, suffered or sustained as a result of Tampa Bay Water's completion of the Contract or the Principal's default under the Contract, less the remaining unpaid balance of the Contract Price, if any. The term "balance of the Contract Price," as used in this Performance Bond, shall mean the total amount payable by Tampa Bay Water to the Contractor under the Contract and any amendments thereto, less the amount previously paid by Tampa Bay Water to the Contractor.

IN WITNESS WHEREOF, the above parties have executed this instrument this _____ day of _____, 20__, the name of each party being affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered in the presence of:

PRINCIPAL:

_____ _____

_____ By: _____

Witnesses as to Principal

Name: _____

Its: _____

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20____, by _____, as _____ of _____, a _____ _____corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____
Notary Public Signature

(AFFIX NOTARY SEAL)

_____
Print Name

My Commission Expires:

ATTEST:

SURETY:

_____
(Printed Name)

_____
Witness as to Surety

_____
_____
_____
(Business Address)

_____
(Authorized Signature)

_____
(Printed Name)

OR

_____

_____
Witness

_____
Florida Resident Agent and As Attorney in Fact
(Attach Power of Attorney)

_____
_____
_____
(Business Address)

_____
(Printed Name)

_____
(Telephone Number)

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20____, by _____, as _____ of _____, a _____ _____corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____
Notary Public Signature

(AFFIX NOTARY SEAL)

_____
Print Name

My Commission Expires:

PUBLIC PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That _____ as Principal, located at _____ (Business Address) and _____ as Surety, located at _____ (Business Address) are held and firmly bound to the Tampa Bay Water, A Regional Water Supply Authority as Obligee in the sum of _____ ($_____) for the payment whereof we bind ourselves, our heirs, executors, personal representatives, successors and assigns, jointly and severally.

Whereas, Principal has entered into a contract dated as of the _____ day of _____, 20__, with Obligee for **Lake Bridge Water Treatment Plant-Pump No. 4, Project No.: 07542, Contract No. 2026012** in accordance with DRAWINGs and Specifications, which contract is incorporated by reference and made a part hereof, and is referred to as the Contract.

THE CONDITION OF THIS BOND is that if Principal:

1. Promptly makes payment to all claimants as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor, materials or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in the Contract; and
2. Pays Obligee all losses, damages, expenses, costs, and attorneys' fees, including appellate proceedings that Obligee sustains because of default by the Principal under paragraph 1 of this bond; then this bond is void; otherwise, it remains in full force.

BE IT FURTHER KNOWN:

1. Any changes, regardless of scope or amount, in or under the Contract and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect Surety's obligation under this Bond.
2. The Surety, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or other work to be performed hereunder, or the Specifications referred to therein shall in anyway affect its obligations under this bond, and it does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to work or to the Specifications.
3. This Payment Bond is a statutory payment bond and is not intended to be a common law Payment Bond. This Payment Bond is issued in compliance with the terms and conditions set forth in Florida Statute 255.05. The Notice and time limitations of Florida Statute 255.05 (2) are also expressly incorporated herein by reference and made a part hereof. Any action instituted by a claimant under this bond must be in accordance with the Notice and Time limitations contained in Florida Statute 255.05 (2).

In no event shall the Surety be liable in the aggregate to claimants for more than the penal sum of this Payment Bond, regardless of the number of suits that may be filed by such claimants.

IN WITNESS WHEREOF, the above parties have executed this instrument this _____ day of _____, 20__, the name of each party being affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered in the presence of:

PRINCIPAL:

_____ _____

Witnesses as to Principal

By:_____

Name: _____

Its:_____

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _ _____ day of _____, 20____, by _____, as ____ _____ of _____, a _____ _____corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____

Notary Public Signature

(AFFIX NOTARY SEAL)

_____

Print Name

My Commission Expires:

ATTEST:

SURETY:

_____ _____

(Printed Name)

_____ _____

Witness as to Surety

_____

_____

(Business Address)

_____

(Authorized Signature)

_____

(Printed Name)

OR

_____ _____

Florida Resident Agent and As Attorney in Fact

_____ (Attach Power of Attorney)

Witness _____

_____

_____

(Business Address)

_____

(Printed Name)

_____

(Telephone Number)

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this __ _____ day of _____, 20____, by _____, as ____ _____ of _____, a _____ _____corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____

Notary Public Signature

_____

Print Name

My Commission Expires: (AFFIX NOTARY SEAL)

EXHIBIT D
CERTIFICATE OF INSURANCE

Tampa Bay Water
General Insurance Requirements Matrix

Contract Type	Up to $100,000	$100,001 to $1,000,000	$1,000,001 & Over
Professional Services	Tier 1	Tier 2	Tier 3
As-Needed Professional Services	Tier 1	Tier 2	Tier 3
Goods & Services	Tier 1	Tier 2	Tier 3
Construction	N/A	N/A	Tier 3

Insurance Type	Tier 1	Tier 2	Tier 3
General Liability	$1,000,000	$2,000,000	$5,000,000
Automobile	$300,000	$500,000	$1,000,000
Workers Compensation	Statutory	Statutory	Statutory
Umbrella/Excess	Up to GL	Up to GL	Up to GL
Professional Liability	$1,000,000	$1,000,000	$1,000,000

TAMPA BAY WATER
Supplying Water To The Region

2575 Enterprise Road,
Clearwater, Florida 33763-1102
Phone: 727.796.2355
Fax: 727.791.2388
Suncom: 513.7010
www.tampabaywater.org

Issue Date: Contract Number:

CANCELLATION: Should any of the below described policies be cancelled, non-renewed or adversely changed before the expiration date thereof, the issuing company will provide 30 days written notice to **TAMPA BAY WATER** by certified mail.

Producer: Insured:

Companies Affording Coverage:	Best Rating/Class:
A	
B	
C	
D	
E	

COVERAGES: This is to certify that the policies of insurance listed below have been issued to the insured named above for the policy period indicated.

Letter	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFF. DATE	POLICY EXPIR. DATE	LIMITS ALL LIMITS IN THOUSANDS		
	General Liability □ Commercial Form □ Occurrence □ Claims Made □ Comprehensive Form □ Premises Operations □ Explosion, Collapse, Underground Hazard □ Products/Completed Operations Hazard □ Contractual Insurance □ Broad Form Property Damage □ Independent Contractor □ Personal Injury					EACH OCCURRENCE	AGGREGATE
					BI & PD Combined	$	$
					Bodily Injury	$	$
					Property Damage	$	$
					Products Comp/OP	$	$
					Personal & Adv. Injury	$	$
					* Separate Project Agg. For Tampa Bay Water		$
	Automobile Liability □ Any Auto □ All Owned Autos □ Scheduled Autos □ Hired Autos □ Non-Owned Autos				Combined Single Limit		
					Bodily Injury (Per Person)		
					Property Damage		
	Umbrella/Excess Liability □ Umbrella Form □ Excess Form □ Following Form Coverage				Each Occurrence		$
					Aggregate		$
	Workers' Compensation and Employers' Liability				□ Statutory Coverage Limit		$
					EL Each Accident		$
					EL Disease Policy Limit		$
					EL Disease Each Employee		$
	Professional Liability □ Claims Made □ Occurrence Retro Date:					$	$
	Builder's Risk □ All Risk Permission to Occupy □ All Owner's Contractors, Subcontractors' Interests Covered □ Installation Floater					$	$
	Fidelity □ Employee Dishonesty □ Covers Loss to Tampa Bay Water					$	
	Other						

Description of Operations/Locations/Vehicle/Special Items:
* Specific Project or Location:

CERTIFICATE HOLDER and ADDITIONAL INSURED
Tampa Bay Water, its Consultants, Subsidiaries or Affiliates and each of Tampa Bay Water's Directors, Officers, Employees, Representatives, Agents or Volunteers.

Authorized Representative: _____
(Signature required)
Address:_____
_____
Telephone:_____ Fax:_____

SEE REVERSE SIDE OF FORM

THIS IS TO FURTHER CERTIFY THAT:

1. The company issuing the General Liability Coverage hereby agrees to waive any right of subrogation it may acquire against Tampa Bay Water, its engineers, its consultants, and all other parties named as insured by reason of any payment made on account of personal injury, bodily injury, including death resulting therefrom, sustained by any employee of the insured or property damage arising out of the performance or furnishing of work under the above referenced Contract.

2. Each of the above-described policies contains a provision or endorsement that the coverage afforded will not be canceled, adversely changed or non-renewed until at least thirty (30) days prior written notice has been given to Tampa Bay Water by certified mail.

3. Each of the above listed companies hereby agrees to deliver to Tampa Bay Water new Certificate(s) of Insurance at least fifteen (15) days prior to coverage renewals or binder within such period and a certificate within fifteen (15) days thereafter.

4. If requested, each of the above-listed companies hereby agrees to deliver two (2) copies of the policies purchased by the Agent to Tampa Bay Water.

5. Each of the above listed companies is authorized to do business and has an agent for service of process in Florida and has an "A" policy holders rating and a financial rating of at least Class VIII in accordance with the most current Best's rating. For self-insurance funds, financial statements are to be provided if requested by Tampa Bay Water. (At Tampa Bay Water's option, a Best's rating or financial information regarding any self-insurance funds may be waived.)

ACORD™ CERTIFICATE OF LIABILITY INSURANC Clear Save

DATE (MM/DD/YYYY)

PRODUCER

Your Insurance Agent

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED

Company Name
Street
City, State, Zip Code

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A: Company Name	
INSURER B:	
INSURER C:	
INSURER D:	
INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	X	GENERAL LIABILITY [X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [X] PROJECT [ ] LOC	Policy Number	effective	expires	EACH OCCURRENCE	$ 1,000,000
						DAMAGE TO RENTED PREMISES (Ea occurence)	$ 300,000
						MED EXP (Any one person)	$ 5,000
						PERSONAL & ADV INJURY	$ 1,000,000
						GENERAL AGGREGATE	$ 2,000,000
						PRODUCTS - COMP/OP AGG	$ 2,000,000
	X	AUTOMOBILE LIABILITY [X] ANY AUTO [ ] ALL OWNED AUTOS [ ] SCHEDULED AUTOS [ ] HIRED AUTOS [ ] NON-OWNED AUTOS	Policy Number	effective	expires	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
						BODILY INJURY (Per person)	$
						BODILY INJURY (Per accident)	$
						PROPERTY DAMAGE (Per accident)	$
		GARAGE LIABILITY [ ] ANY AUTO				AUTO ONLY - EA ACCIDENT	$
						OTHER THAN AUTO ONLY: EA ACC	$
						AGG	$
	X	EXCESS/UMBRELLA LIABILITY [X] OCCUR [ ] CLAIMS MADE [ ] DEDUCTIBLE [ ] RETENTION $	Policy Number	effective	expires	EACH OCCURRENCE	$ 2,000,000
						AGGREGATE	$ 2,000,000
							$
							$
							$
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below NO	Policy Number	effective	expires	[X] WC STATUTORY LIMITS [ ] OTHER	
						E.L. EACH ACCIDENT	$ 100,000
						E.L. DISEASE - EA EMPLOYEE	$ 100,000
						E.L. DISEASE - POLICY LIMIT	$ 500,000
		OTHER					

Sample

Sample

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

Re: Job Name/Number
Tampa Bay Water, Its Engineers, Architects, Consultants, Subsidiaries or Affiliates and each of the Tampa Bay Water Directors, Officers, Employees, Representatives, Agents or Volunteers shall be named as additional insured under the GL Policy per CG 20 10 (07/04) AND CG 20 37 (07/04) or equivalent, and the Automobile Liability policy. Waiver of Subrogation is provided in favor of Tampa Bay Water on all policies. The insurance evidenced by this Certificate is primary and non-contributory to any insurance maintained by Tampa Bay Water.

CERTIFICATE HOLDER

Tampa Bay Water
2575 Enterprise Road
Clearwater, FL 33763-1102

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ~~ENDEAVOR TO~~ XXXXXXXX MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, ~~BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.~~ XXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXX

AUTHORIZED REPRESENTATIVE

ACORD 25 (2001/08)

© ACORD CORPORATION 1988

IMPORTANT

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

DISCLAIMER

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.

ACORD 25 (2001/08)

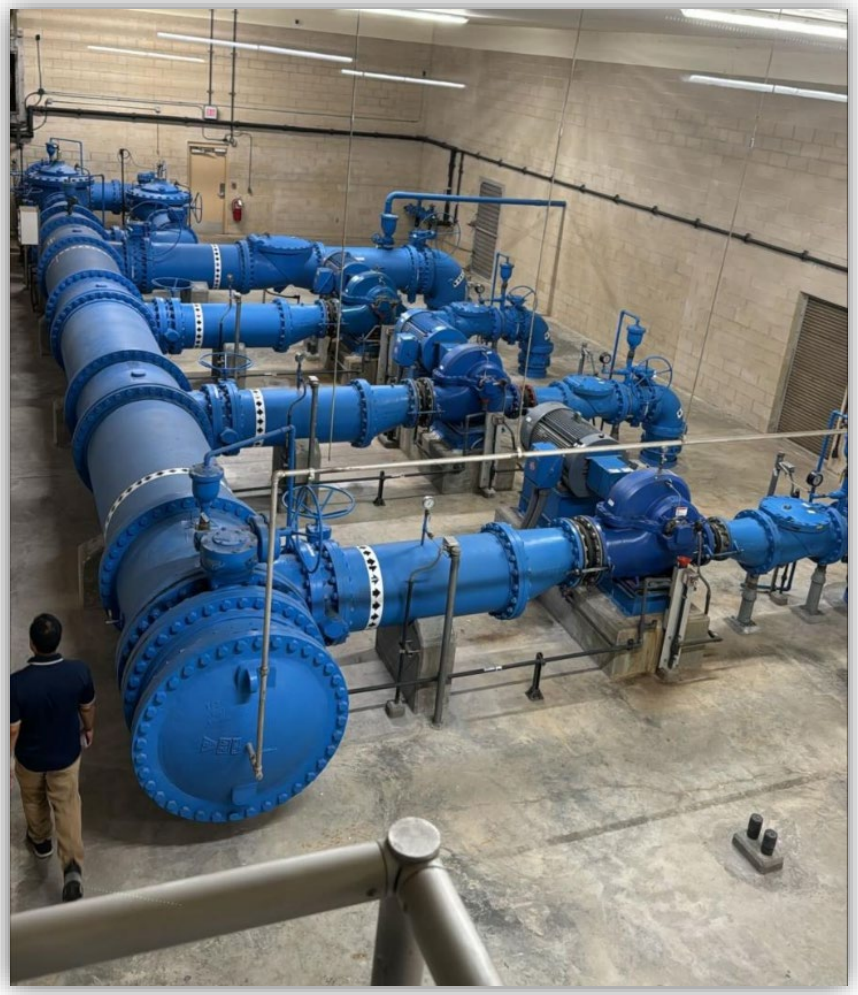
Lake Bridge Water Treatment Plant-Pump No. 4, Project No. 07542. Contract 2026012

Agenda Item C.2
October 20, 2025

Charles H. Carden
General Manager
Tampa Bay Water

Project's Purpose

- Installation of an additional pump
- Increase the capacity of the pump station
- Meet the demand needs at Pasco County’s most eastern point of connection



Recommendation

Staff recommends that Contract 2026012 be awarded to C&T Contracting Services, LLC, in the amount of $1,545,255, inclusive of $285,000 Owner's Allowance and $100.00 Indemnification.

TAMPA BAY WATER

Q&A

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM C.3

DATE: October 1, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: South Hillsborough Pipeline, Project Nos. 01610 and 01616, Contract No. 2023-027 Third Amendment with Garney Companies, Inc. - *Approve*

SUMMARY

The Third Amendment to Contract No. 2023-027, increasing the contract amount by $216,718,601, has been negotiated with Garney Companies, Inc. for open-cut pipeline installations and restoration packages under Guaranteed Maximum Price Proposal No. 3.

SUGGESTED ACTION

Approve Third Amendment and the negotiated Guaranteed Maximum Price Proposal No. 3 under Contract No. 2023-027 with Garney Companies, Inc. in the amount of $216,718,601 inclusive of $14,672,284 of Owner's Allowance and Contingencies.

COST/FUNDING SOURCE

$170,516,311 /Revenue Bonds and $46,202,290//Hillsborough County

DISCUSSION

In October 2023, Tampa Bay Water's Board approved Contract No. 2023-027 with Garney Companies,

Inc. (Garney) to serve as the Construction Manager at Risk (CMAR) for the South Hillsborough Pipeline (Project Nos. 01610 and 01616). The initial contract amount included pre-construction services which generally included property acquisition services, public engagement, constructability review of the design; value engineering; cost estimates at 30%, 60% and 90% design; and Guaranteed Maximum Price (GMP) proposals for construction and/or early work and long-lead equipment and/or materials among other tasks.

In October 2024 and in April 2025, the Board approved the First and Second Amendments for GMP Proposal No. 1 and GMP Proposal No. 2, respectively.

GMP Proposal No. 3 includes three work packages including:

1. Open Cut Installation and restoration – Segment A (North of the Alafia River)
2. Open Cut Installation and restoration – Segment A (South of the Alafia River)
3. Open Cut Installation and restoration – Segment B

These packages were advertised by Garney to qualified bidders on July 2, 2025. Garney received sealed bids, and GMP Proposal No. 3 is based on the best-value responsive bidder for each package. The table below provides a breakdown of total GMP Proposal No. 3 amounts for the South Hillsborough Pipeline Segments.

Package Description	Total[1]	Funding
Project No. 01610 – Segment A	$170,516,311	Tampa Bay Water Revenue Bonds[2]
Project No. 01616 – Segment B	$44,644,655	Hillsborough County[2]
Project No. 08304 – Hillsborough County Infrastructure[3]	$1,557,635	Hillsborough County

Notes:

1-Total amounts include owner's allowances, contingencies, negotiated general conditions and contractor's fees.
2-A portion of each segment's total will be reimbursed by the Southwest Florida Water Management District.
3-Includes infrastructure and work requested by Hillsborough County, as defined in the Amended and Restated Joint Project Agreement.

Staff recommends Board approval of the negotiated Third Amendment of Contract No. 2023-027 with Garney Companies, Inc. for GMP Proposal No. 3 in the amount of $216,718,601 inclusive of $14,672,284 for Owner's Allowance/Contingencies.

Future amendments to this contract will be brought to future Board meetings for approval of additional GMP Proposals. The contract amendment with proposal are attached and have been reviewed and approved as to form by Tampa Bay Water's General Counsel.

BACKGROUND

Tampa Bay Water and Hillsborough County staff continue to develop additional pumping and transmission (pipeline) capacity to increase supply to rapidly growing South Hillsborough County. A new pipeline system is needed to provide the increased capacity required by Hillsborough County. The new system will expand delivery of water supplies to both the County's existing Lithia Point of Connection and a new Point of Connection farther south. The South Hillsborough Pipeline will be constructed in two segments A and B. Segment A will convey alternative water supplies from the existing High Service Pump Station to Hillsborough County's Lithia Water Treatment facility. Pipeline Segment B will connect to Pipeline Segment A and provide alternate water supplies to the new Hillsborough County Point of Connection south of Hillsborough County's Lithia Water Treatment facility as approved by the Hillsborough County Board of County Commissioners in June 2021 and by the Tampa Bay Water Board of Directors in July 2021. Both segments will be planned, designed, and constructed by Tampa Bay Water and partially funded by the Southwest Florida Water Management District for eligible capital costs. The parties agreed through a Joint Project Agreement that Tampa Bay Water is responsible for the remaining share of capital costs for Segment A and Hillsborough County is responsible for the remaining share of capital costs for Segment B.

Attachment (1)

GUARANTEED MAXIMUM PRICE
AMENDMENT NO. 3
South Hillsborough Pipeline Construction Manager at Risk (CMAR)
(Project Nos. 01610 & 01616)
Contract No. 2023-027

This Guaranteed Maximum Price Amendment No. 3 ("GMP Amendment No. 3") to the Agreement for the South Hillsborough Pipeline Construction Manager at Risk, (Project Nos. 01610 & 01616), Contract No. 2023-027 is made and entered on this _____ day of _____, 2025 by and between **Tampa Bay Water, A Regional Water Supply Authority** ("Tampa Bay Water") and **Garney Companies, Inc.**, a corporation of the State of Missouri, authorized to do business in the State of Florida ("Construction Manager"), hereinafter referred to collectively as the "Parties".

WITNESSETH:

WHEREAS, on November 13, 2023, Tampa Bay Water entered into Contract No. 2023-027 with Garney Companies, Inc., ("Construction Manager") for Construction Manager At-Risk (CMAR) services to include pre-construction and construction phase services for the South Hillsborough Pipeline Construction Manager at Risk (CMAR), (the "Project") which will be part of Tampa Bay Water's public water supply system; and

WHEREAS, Tampa Bay Water selected the Construction Manager to perform CMAR services through the selection and negotiation process set forth in Florida's Consultants' Competitive Negotiation Act, Section 287.055, Florida Statutes; and

WHEREAS, Contract No.2023-027 requires Construction Manager to prepare a Guaranteed Maximum Price Proposal ("GMP Proposal"), developed through an Open Book Process at approximately sixty percent (60%) design completion, as part of the pre-construction phase services; and

WHEREAS, Contract No. 2023-027 further requires the GMP Proposal to be incorporated into Contract No. 2023-027 though a Guaranteed Maximum Price Amendment that outlines the scope of the work, the technical documents, assumptions, clarifications, technical exclusions, the project schedule, general and supplementary conditions, key supervisory personnel for the Project, the contract duration for the Project, liquidated damages dollar amount per calendar day, and all required bond and insurance documents; and

WHEREAS, on October 21, 2024, Tampa Bay Water entered into GMP Amendment No. 1 to Contract No. 2023-027 with the Construction Manager for the early materials procurement for pipeline and valve materials; and

WHEREAS, on April 21, 2025, Tampa Bay Water entered into GMP Amendment No. 2 to Contract No. 2023-027 with the Construction Manager for the early construction works packages; and

WHEREAS, Tampa Bay Water has reviewed and approved Construction Manager's GMP Proposal No. 3 Open Cut and Restoration Packages ("GMP Proposal No. 3") and now wishes to amend Contract No. 2023-027 with this GMP Amendment No. 3, incorporating GMP Proposal No. 3; and

WHEREAS, GMP Proposal No. 3 specifies that the substantial completion date is to be Monday, November 20, 2028, located in Exhibit "A", Construction Schedule; and

WHEREAS, GMP Proposal No. 3 includes the Construction Manager's General Conditions Fee, cost of the construction work, payment and performance bond costs, insurance costs, project

construction contingency, project owner allowance and Contractor's Fee for GMP Amendment No. 3, and materials for GMP Amendment No. 3.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties covenant and agree as follows:

1. **RECITALS**. The above stated "Whereas" clauses are adopted and incorporated herein in support of this GMP Amendment No. 3.

2. **CONTRACT NO. 2023-027**. The Parties hereby ratify, acknowledge and reaffirm Contract No. 2023-027, which remains in full force and effect and shall govern the interpretation and application of this GMP Amendment No. 3, as well as the Construction Manager's performance thereof, except as specifically modified, supplemented or amended hereby.

3. **GMP Proposal No. 3.** GMP Proposal No. 3 prepared by Construction Manager attached hereto as Composite Exhibit "A" consists of the following:
    1. Cover Letter
    2. Clarifications
    3. Recommendation Summary Tables
    4. Updated GMP Summary Table
    5. Bid Package 1.8-NA Bid Tab
    6. Bid Package 1.8-SA Bid Tab
    7. Bid Package 1.8-B Bid Tab
    8. Garney Proposal Approach
    9. JDS Proposal Approach
    10. Amici Proposal Approach
    11. CMAR General Conditions, Owner Allowances, & Contingencies
    12. CMAR GMPs Resource Schedule
    13. Bond and Insurance Quote
    14. Bid Specifications and Plans Link
    15. Construction Schedule
    16. Risk Register

    GMP Proposal No. 3 is hereby adopted and attached as Exhibit "A". It is the duty and responsibility of Construction Manager to perform, implement, and carry out GMP Amendment No. 3 in accordance with the terms thereof.

4. **GUARANTEED MAXIMUM PRICE ("GMP")**. GMP Proposal No. 3 sets forth the Guaranteed Maximum Price for Open Cut and Restoration Packages, which shall be the maximum total cost that the Construction Manager guarantees not to exceed for Open Cut and Restoration Packages. Except as otherwise provided for in GMP Proposal No. 3 to the extent the cost of the Open Cut and Restoration Packages exceeds the GMP, the Construction Manager shall bear such costs in excess of the GMP without reimbursement or additional compensation from Tampa Bay Water. Changes to the GMP, if any, shall be made in accordance with Section 6.4 of Contract No. 2023-027.

5. **TERM.** The term of this GMP Amendment No. 3 shall commence on the date first written above and shall continue through the completion of Open Cut and Restoration Packages, unless earlier terminated pursuant to the terms of Contract No. 2023-027.

6. **LIQUIDATED DAMAGES FOR DELAY**. To the extent they are applicable to this GMP Amendment No. 3, liquidated damages shall be payable in accordance with Article 8.0 of Contract No. 2023-027.

7. **BONDS.** Construction Manager shall supply materials, performance, and payment bonds for the work applicable to GMP Amendment No. 3 in accordance with Article 35.0 of Contract No. 2023-027, in an amount specified by Tampa Bay Water, which shall not be less than the GMP to perform the Project, in a form approved by Tampa Bay Water set forth in Exhibit "B" hereto and in accordance with Florida law. The bonds shall cover the faithful performance of these portions of the work and the payment of all obligations arising thereunder, and shall be provided by such sureties as Tampa Bay Water may approve. The premium for such bonds shall be paid by the Construction Manager.

8. **INSURANCE**. Construction Manager shall maintain insurance coverages for the work applicable to GMP Amendment No. 3 in accordance with the requirements of Article 10.0 of Contract No. 2023-027. In addition, Hillsborough County, FL shall be an additional named insured on stipulated insurance policies included in sections 10.1.b, 10.1.c, and 10.1.e of Contract No. 2023-027.

9. **NOTICE**. Any notices required to be given by the terms of this Agreement shall be delivered by hand or mailed, postage prepaid to:

For Construction Manager at Risk
Garney Companies, Inc.
Attention: Will Poczekaj
370 E. Crown Point Road
Winter Gardens, FL 34787
Email: wpoczekaj@garney.com

For Tampa Bay Water:
Tampa Bay Water
Attention: Christina Sackett, Chief Financial Officer
2575 Enterprise Road
Clearwater, FL 33763
Email: csackett@tampabaywater.org

10. **SEVERABILITY**. In the event any portion or part of this GMP Amendment No. 3 is deemed invalid, against public policy, void, or otherwise unenforceable by a court of law, the Parties shall negotiate an equitable adjustment in the affected provision. The validity and enforceability of the remaining parts of this GMP Amendment No. 3 shall otherwise remain fully intact.

11. **COUNTERPARTS.** This GMP Amendment No. 3 may be executed in any number of counterparts, each of which when so executed and delivered shall be considered an original amendment; but such counterparts shall together constitute but one and the same instrument.

IN WITNESS WHEREOF, the Parties hereto, have caused these presents to be executed by their duly qualified representatives on the day and year first written above.

WITNESS:

_____
Signature

_____
Print Name

GARNEY COMPANIES, INC.

By: _____

Name: _____

Title: _____

Date: _____

(CORPORATE SEAL)

ATTEST:

_____
General Manager

TAMPA BAY WATER, A Regional Water Supply Authority

By: _____

Its: Chairman

Date: _____

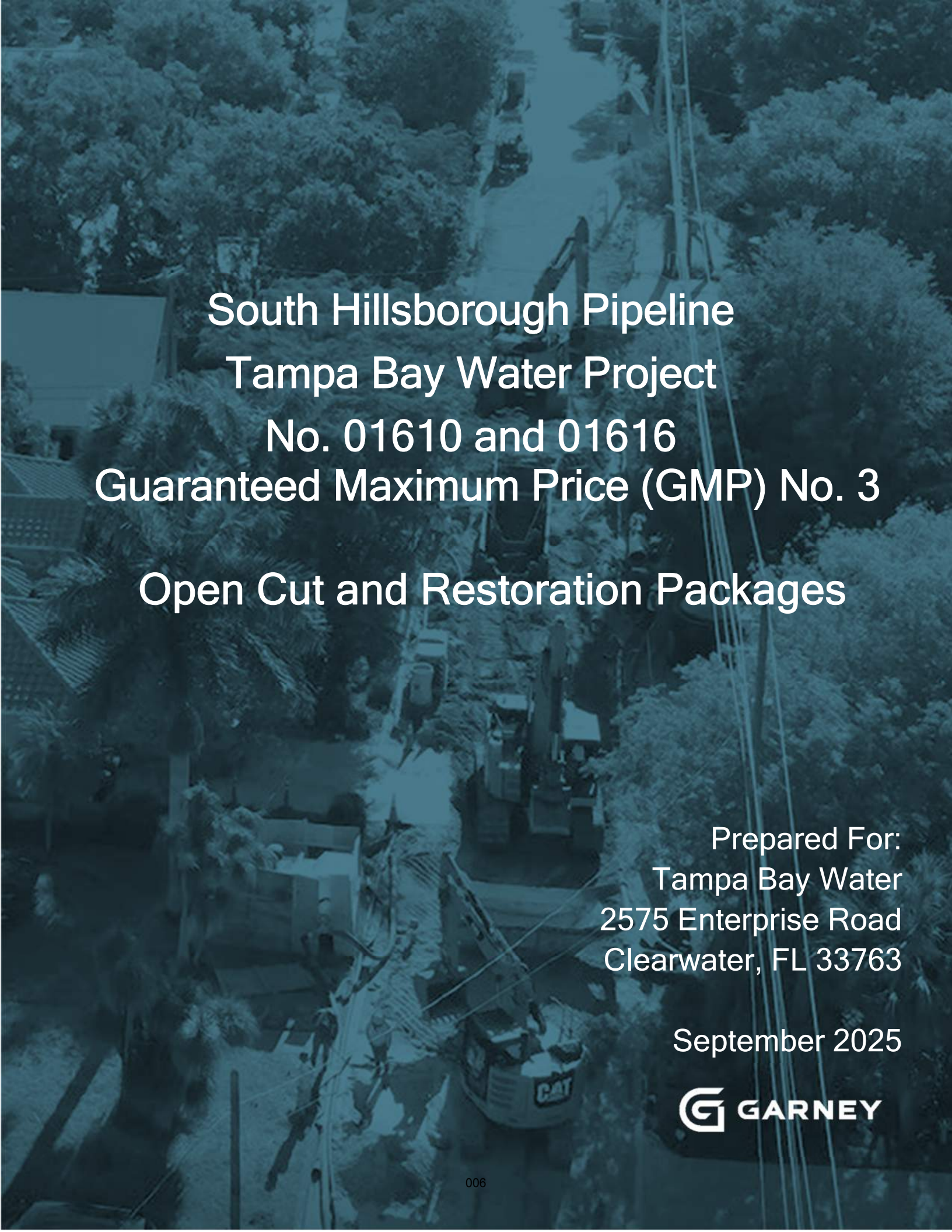
(SEAL)

APPROVED AS TO FORM:

_____
General Counsel

EXHIBITS

"A" – COMPOSITE GMP No. 3
Open Cut and Restoration Packages



South Hillsborough Pipeline
Tampa Bay Water Project
No. 01610 and 01616
Guaranteed Maximum Price (GMP) No. 3

Open Cut and Restoration Packages

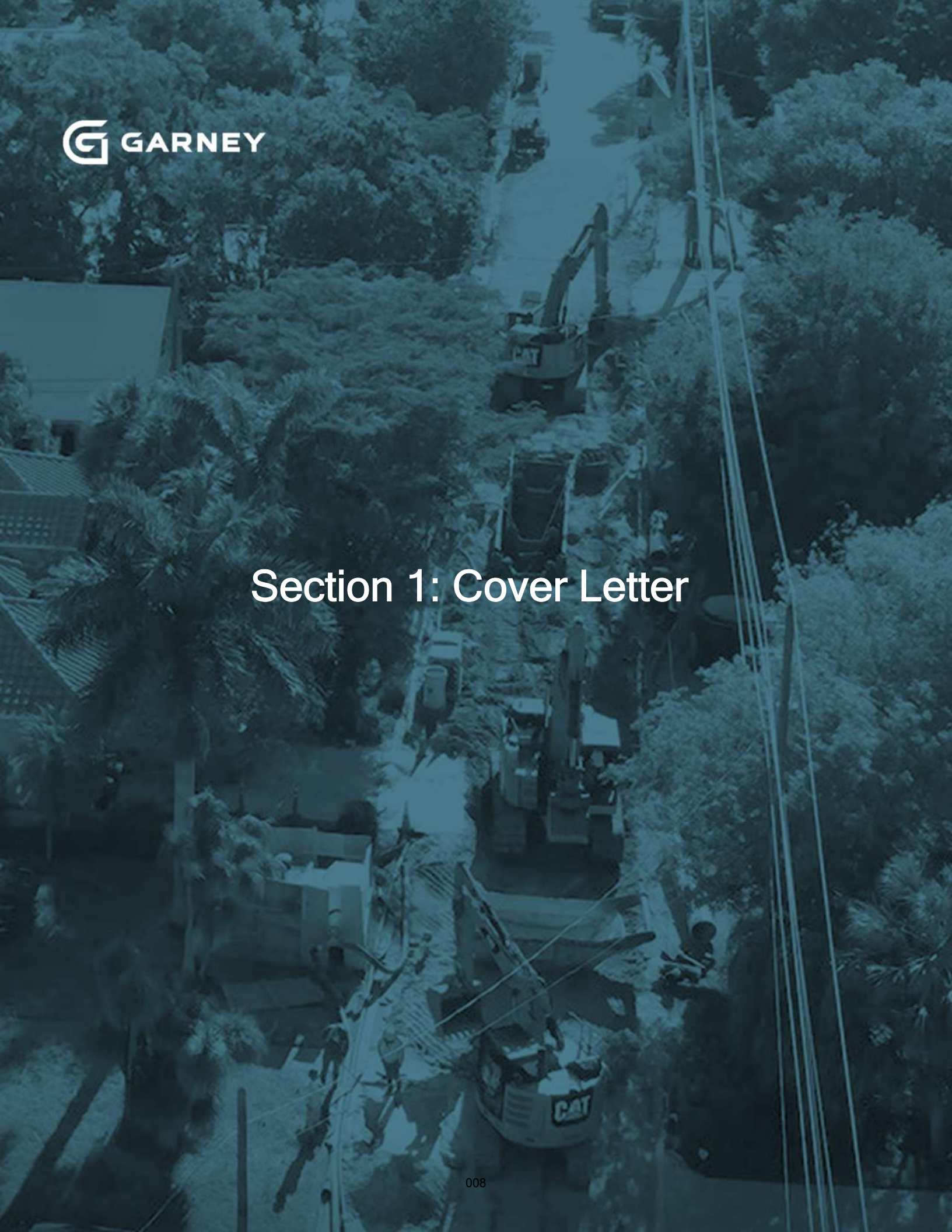
Prepared For:
Tampa Bay Water
2575 Enterprise Road
Clearwater, FL 33763

September 2025

GARNEY

Table of Contents

Section 1	Cover Letter
Section 2	Clarifications
Section 3	Recommendation Summary Tables Updated GMP Summary Table
Section 4	Bid Package 1.8-NA Bid Tab Bid Package 1.8-SA Bid Tab Bid Package 1.8-B Bid Tab
Section 5	Garney Proposal Approach
Section 6	JDS Proposal Approach
Section 7	Amici Proposal Approach
Section 8	CMAR General Conditions, Owner Allowances, & Contingencies CMAR GMPs Resource Schedule Bond and Insurance Quote
Section 9	Bid Specifications and Plans Link
Section 10	Construction Schedule dated 2025.08.29
Section 11	August 2025 Risk Register



Section 1: Cover Letter

370 E. Crown Point Road, Winter Garden, FL 34787
Phone: 407.877.5903
Fax: 407.877.5912
www.garney.com

September 19, 2025

Soli Rojas
Tampa Bay Water
2575 Enterprise Road
Clearwater, FL 33763

RE: Tampa Bay Water Project Nos 01610 & 01616
South Hillsborough Pipeline Segments A & B
Deliverable: GMP No. 3 Packages Recommendation & Proposal

Dear Mr. Rojas,
Please find enclosed with this submittal our recommendation and proposal for Guaranteed Maximum Price (GMP) No. 3 packages. Please reference Section 3 – Summary Tables.

Reference the following Sections for bid tab analysis:

SECTION 4: Package 1.8-NA_Open Cut North of Alafia River
Includes open cut and restoration services per the bid packages.

Total Segment A, 1.8-NA Cost: $75,219,842.00 See Section 3, Summary Table 1.

SECTION 4: Package 1.8-SA_Open Cut South of Alafia River
Includes open cut and restoration services per the bid packages.

Total Segment A, 1.8-SA Cost: $47,017,715.00 See Section 3, Summary Table 1.

SECTION 4: Hillsborough County Project 8304_36" Tee
Includes Installation of line items SA-HC.1 and SA-HC.2 from the bid form to install the 54"x36" Tee, valve, and IJTS Test Station for future use.

Total Project 8304 Cost: $117,662.00 See Section 3, Summary Table 1.

SECTION 4: Package 1.8-B_Open Cut Segment B
Includes open cut and restoration services per the bid packages.

Total Segment B, 1.8-B Cost: $28,691,411.00 See Section 3, Summary Table 1.

SECTION 4: Package 1.8-B_54" X 60" Tee & Valve Connection to Segment A
Includes Installation of line items SA.10 and SA.31 from the bid form to install the 54"x60" Tee & valve.

Total Cost: $78,367.00 See Section 3, Summary Table 1.

Total of Bid Packages recommended by the CMAR is **$151,124,997.00** per Section 3, Summary Table 1.

SECTION 5: Garney Proposal Approach
In this section please find the approach portion of the proposal document provided by Garney with the bid submittal.

SECTION 6: JDS Proposal Approach
In this section please find the approach portion of the proposal document provided by JDS with the bid submittal.

SECTION 7: Amici Proposal Approach
In this section please find the approach portion of the proposal document provided by Amici with the bid submittal.

SECTION 8: CMAR General Conditions

CMAR Management
Includes CMAR management team to start with open-cut construction; adding to the existing management team from GMP #2 to cover the period from March 2026 through September 2026 (7 Months). Please refer to the GC Resources schedule in Section 8.

Includes entire CMAR management team to cover the period from October 2026 through September 2028 (24 Months). Please refer to the GC Resources schedule in Section 8.

Includes a yard crew to support the multiple project crews working out of the staging yard including offloading, handling, storing, and loading for transport to site pipe and valve materials; As well as asphalt zipper work for pavement removal ahead of pipe crews. Included to cover period from October 2026 through September 2028 (24 Months). Please refer to the GC Resources schedule in Section 8.

Includes four community coordinator crews for the Segment A pipe crews from March 2026 through February 2028 (24 Months). Please refer to the GC Resources schedule in Section 8. We do not anticipate the need for four community coordinator crews beyond February 2028, however we will re-evaluate the need for an extension with GMP #4.

Includes consumables, safety, PPE, Worker's Compensation Deductible, Estimating & Accounting Support, Regional & Local Training, Fuel & Equipment Long Duration Escalation Costs for the above management teams.

Office Complex Monthly Expenses
Includes monthly office expenses of two 4-plex modular office complex through September 2028; 22 months total.

Total General Conditions recommended by the CMAR is **$32,621,430.00** per Section 8, Summary Table 2.

Segment A Total GC Cost: $22,835,001.00
Segment B Total GC Cost: $ 9,786,429.00

Owner Allowances and Contractor Contingencies
Includes allowances and contingencies identified in August 2025 risk register included in this package in Section 11; as well as to cover significant design changes or unforeseen changes in conditions.

Total Segment A Owner's Allowance:	$10,215,317.00
Total Segment B Owner's Allowance:	$ 1,954,877.00
Total Segment A Contractor's Contingency:	$ 927,419.00
Total Segment B Contractor's Contingency:	$ 134,698.00
Total Project 8304 Owner's Allowance:	$ 1,439,973.00

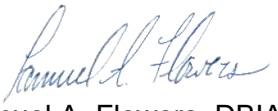
Total Owner Allowances and Contractor Contingencies: **$14,672,284.00** (6.8% of GMP #3)

The Total General Conditions, Owner's Allowance, Contractor's Contingency, CMAR Fee, and Bond and Insurance is $65,593,604.00 per Section 3, Summary Table 2. The total value of GMP #3 per Section 3, Summary Tables 1 and 2 is **$216,718,601.00.** Due to compliance with the project schedule, pricing is contingent upon receiving GMP No. 3 approval at the October 20th, 2025 Tampa Bay Water board meeting.

Estimated DM/DWBE Participation in Segment B is expected to be 7.4% of the work packages per Section 3, Summary Table 3.

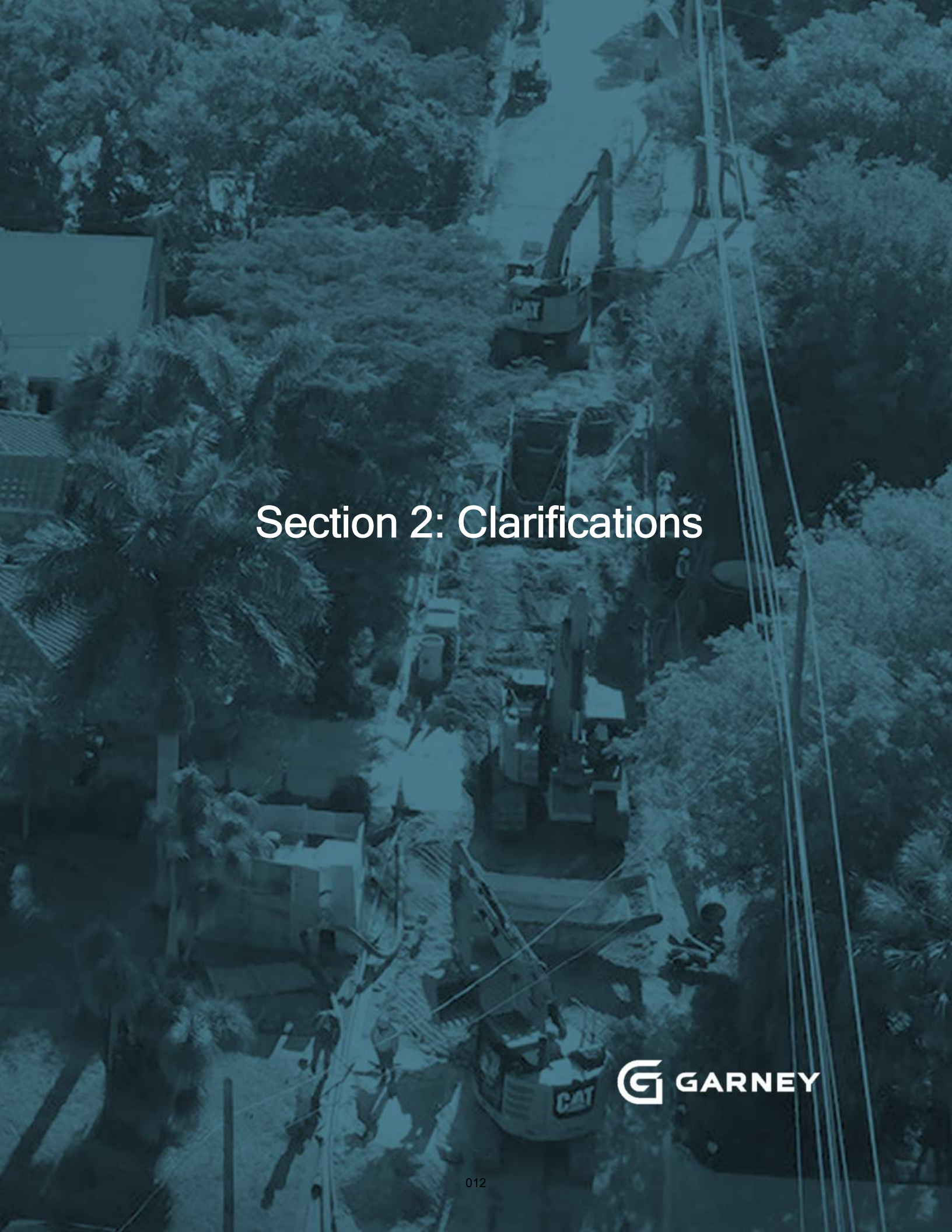
Should you have any questions or concerns please contact us at 941-725-2208.

Sincerely,
GARNEY COMPANIES, INC.



Samuel A. Flowers, DBIA
Area Manager

CC: GCI File



Section 2: Clarifications

GARNEY

SOUTH HILLSBOROUGH PIPELINE
TAMPA BAY WATER PROJECT NOS. 01610 AND 01616
GUARANTEED MAXIMUM PRICE (GMP) NO. 3
OPEN CUT PIPE INSALLATION AND RESTORATION

CLARIFICATIONS

- CMAR: Construction Manager At Risk
- COW: Cost Of Work
- E&S: Erosion and Sediment
- GMP: Guaranteed Maximum Price
- HDD: Horizontal Directional Drilling
- J&B: Jack and Bore
- OPCC: Opinion of Probable Construction Cost
- T&C: Terms and Conditions
- ROW: Right Of Way
- TTC: Temporary Traffic Control
- Estimated Schedule Milestone Dates:
    - See attached Construction Schedule
    - 2025.10.20: Tampa Bay Water Board Meeting GMP #3 Approval
    - 2025.10.27: Latest notice of Award to Vendors
    - 2025.11.30: Final vendor subcontracts executed
    - ***2025.12.01: Tampa Bay Water Issue Notice to Proceed***
    - 2026.01.31: Submittal Approvals Complete
    - 2026.02.28: Procurement Complete
    - 2026.03.01: Start Mobilizing Pipe Crews
- Public relations services are specifically excluded from this proposal.
- Garney Construction completed the OPCC based on value engineering advanced since the 60% design cost estimate (Class Level 3) in combination with this GMP #3 proposal (Class Level 1) with hard bids received from vendors with backup included herein, in order to arrive at the updated total project cost per Section 3, Updated GMP Summary Table.
- Garney Construction procured bids received on August 29, 2025. Sealed bids were opened at 1715 S. Kings Ave, Brandon, FL 33511 with Tampa Bay Water representative Soli Rojas present.
- Subcontracts for scopes included herein will be executed utilizing Garney's standard subcontract agreements.
- HB779 for US produced Steel compliance.
- 5% Retention to be held for this GMP.
- Design Progression Owner's Allowance and Contractor's Contingency funds utilized for additional scope will be negotiated and approved in writing by Tampa Bay Water. CMAR contract fees will be applied to any of these funds. Allowances and Contingencies are based on information currently available, however the total values for each of these funds may be utilized as needed for various unforeseen changes in conditions.
- Handling and/or disposal of contaminated groundwater, soils, and/or asbestos materials is specifically excluded.
- Delays attributed to encountering historical or archeological finds on the project are specifically excluded.
- Each package is a lump sum. Only major design changes or changes in conditions will warrant use of Owner's Allowance or Contractor's Contingency funds included in each work package to be negotiated on a case-by-case basis.
- Allowable working periods included in this proposal are Monday through Saturday 7 a.m. to 6 p.m.
- The 90% GMP #3 plan set included herein and 60% RFT AAF plans by Hazen were utilized for pricing this GMP and projecting cost for GMP #4.

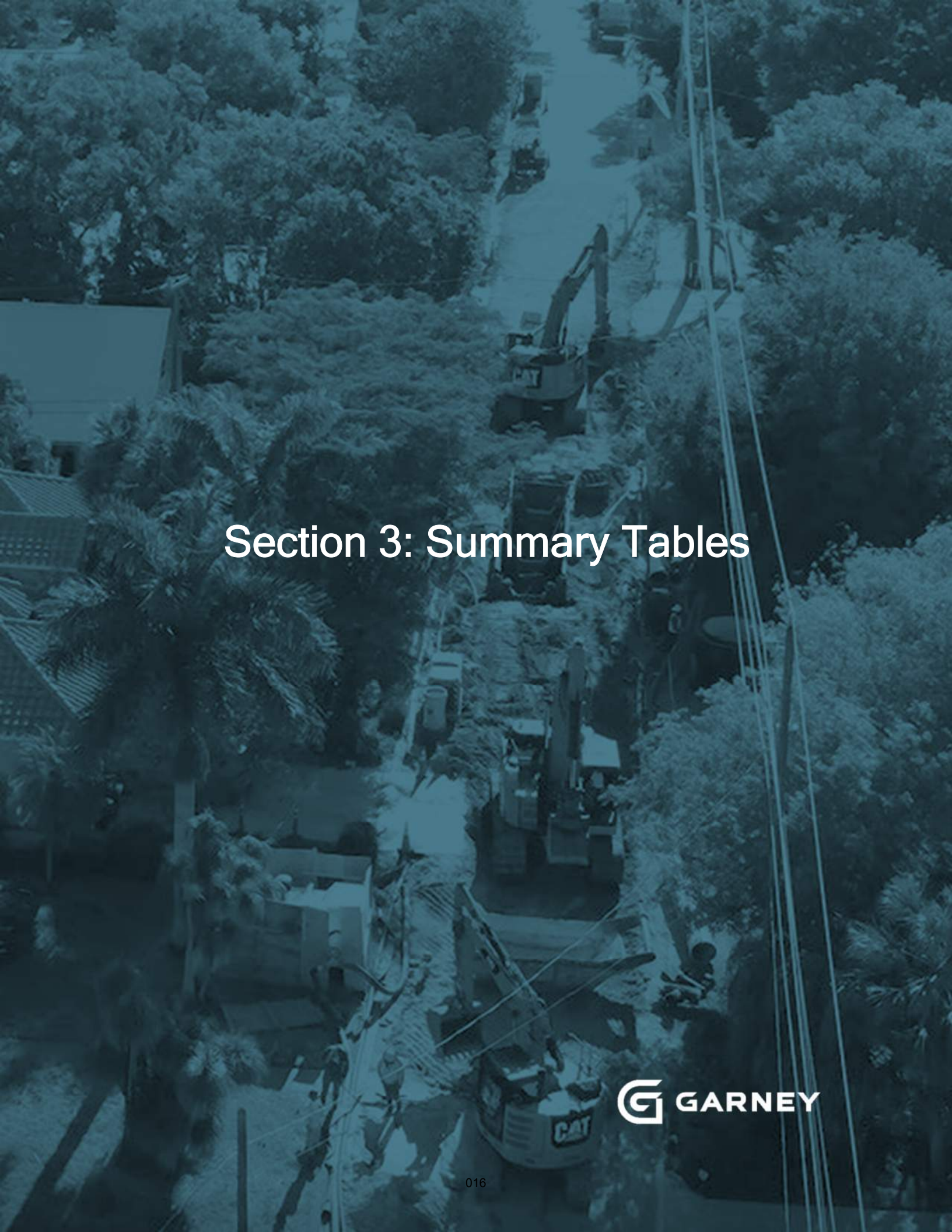
- If after August 29, 2025, any law, ordinance, or regulation is enacted, or any existing law, ordinance, or regulation is modified, or any judicial decision is enacted, issued, or becomes effective, which specifically includes tariffs, taxes, duties, or the like, and which impacts the time, cost, scope of work, or the Contractor's ability perform its obligations under the Contract, the Contractor shall be entitled to adjust the Contract terms including, without limitation, an adjustment to the Contract price and the time and schedule to reflect the impact of such event.
- Condition assessment of roadways outside the project limits which will be used for construction traffic has not been performed. Any approved claims by Tampa Bay Water for damages to existing roadway travel lanes due to construction traffic outside the project limits will be paid for by Owner's Allowance.
- The expectation is that property & permit acquisition timelines will support the construction schedule included herein.
- The on-going County review of the MOT plans may warrant funds from the Owner's Allowance to pay for changes from the plan set included herein.
- The project schedule included herein is based on production predicated on three-block rolling closures for most of the project alignment under existing roadways. Temporary drivable surfaces will be provided with road base material until asphalt paving catches up to the pipe crew production rates.
- The project schedule included here is predicated on the County Traffic Department providing timely TTC permits approvals.
- CMAR Recommendations & Analysis:
    - Package 1.8-NA – Open Cut Pipe Installation & Restoration – North of Alafia River
        - Garney was low bidder by $4.1 million (5.5%). The 3rd low bidder was JDS by $7.1 million (9.4%). These bid results are indicative of a competent and competitive contest. Given Garney's involvement in preconstruction and the written project approach included herein, we are confident Garney will provide the best value to the project.
    - Package 1.8-SA – Open Cut Pipe Installation & Restoration – South of Alafia River
        - Garney was low bidder by $3.6 million (7.6%). The 3rd low bidder was JDS by $7.3 million (15.5%). These bid results are indicative of a competent and competitive contest. Given Garney's involvement in preconstruction and the written project approach included herein, we are confident Garney will provide the best value to the project.
    - Package 1.8-B – Open Cut Pipe Installation & Restoration – Segment B
        - JDS was low bidder by $1.2 million (4.3%). The 3rd low bidder was AMCI by $1.9 million (6.8%). These bid results are indicative of a competent and competitive contest. Given the JDS written project approach included herein, we are confident JDS will provide the best value to the project.
    - Current competitive market pricing is a primary driver for over-all cost included herein. The following increased costs are scope driven. When these costs are removed from the over-all projected project cost in the GMP summary sheet, this equates to a $4,816,281 increase from the previous project cost estimate or 1.2%.

Points of Connections:	$ 13,836,478
HC Project 8304	$ 13,290,804
CMAR Fee on above	$ 2,441,455
Risk Register ID #5 – MOT	$ 2,712,114
Risk Register ID #37 – Signalization	$ 233,260
Risk Register ID $35 – Business Impacts	$ 874,725
Total	$ 33,388,837
Revised Total COW & CMAR Svcs	$417,930,701
Previous Estimate	$412,770,611
Difference	$ 5,160,090 (1.3% increase)

Furthermore, this equates to a $5.9 million or 1.4% decrease from the 60% Estimate

- This GMP #3 proposal includes a COW increase of $11.5 million from the previous estimate. Market costs have continued to increase since the previous estimate which was based on estimated quotes and project history. This proposal is based on hard bid quotes for the full project duration with a well-defined scope. We namely have seen increases and significant escalation in the following scopes:
  - Asphalt Paving
  - Concrete Paving
  - Aggregate Supplies
  - Trucking Services
- This GMP #3 proposal includes a General Conditions decrease of $2.9 million from the previous estimate. The decrease in General Conditions is attributable to Garney self-performing all of Segment A and the efficiencies gained by that management structure.
- Design quantity changes had a near net zero result on this GMP #3 proposal. Although pipeline component quantities and sizes changed, the cost delta was insignificant. That said, several work items such as Class B Bedding, CLSM Bedding, and a 12” Surge Relief Valve Assembly were added to the scope which did contribute to the increased cost.

END OF SECTION 2



Section 3: Summary Tables

South Hillsborough Pipeline

Bid Package: GMP #3 Recommendation Summary

9/17/25 4:52 PM

TABLE 1 - VENDOR PACKAGES AWARD RECOMMENDATIONS

GMP PACKAGE	BID PACKAGE	SEGMENT	DESCRIPTION	VENDOR	QUANTITY	UNIT	UNIT PRICE	EXTENSION
GMP 003	1.8-NA	SEGMENT A	PIPE INSTALLATION & RESTORATION PACKAGE - NORTH OF RIVER	Garney	1.0	Lump Sum	$ 75,219,842.00	$ 75,219,842.00
GMP 003	1.8-SA	SEGMENT A	PIPE INSTALLATION & RESTORATION PACKAGE - SOUTH OF RIVER	Garney	1.0	Lump Sum	$ 47,017,715.00	$ 47,017,715.00
GMP 003	8304	SEGMENT A	36" TEE	Garney	1.0	Lump Sum	$ 117,662.00	$ 117,662.00
		SEGMENT A					**SUBTOTAL:**	**$ 122,355,219.00**
GMP 003	1.8-B	SEGMENT B	PIPE INSTALLATION & RESTORATION PACKAGE	JDS	1.0	Lump Sum	$ 28,691,411.00	$ 28,691,411.00
GMP 003	1.8-B	SEGMENT B	60" TEE & BFV CONNECTION TO SEGMENT B	Garney	1.0	Lump Sum	$ 78,367.00	$ 78,367.00
		SEGMENT B					**SUBTOTAL:**	**$ 28,769,778.00**
							TOTAL:	**$ 151,124,997.00**

TABLE 2 - CMAR FEES AND GENERAL CONDITIONS

GMP PACKAGE	BID PACKAGE	SEGMENT	DESCRIPTION	REFERENCE	QUANTITY	UNIT	UNIT PRICE	EXTENSION
GMP 003	CMAR - GC	SEGMENT A	GENERAL CONDITIONS	See GCs Table	70%	Lump Sum	$ 32,621,430.00	$ 22,835,001.00
GMP 003	CMAR - OA	SEGMENT A	OWNER'S ALLOWANCE	See GCs Table	1.0	Lump Sum	$ 10,215,317.00	$ 10,215,317.00
GMP 003	8304	SEGMENT A	OWNER'S ALLOWANCE - HC UTILITIES	See GCs Table	1.0	Lump Sum	$ 1,439,973.00	$ 1,439,973.00
GMP 003	CMAR - CONT	SEGMENT A	CONTRACTOR'S CONTINGENCY	See GCs Table	1.0	Lump Sum	$ 927,419.00	$ 927,419.00
GMP 003	CMAR - FEE	SEGMENT A	CONSTRUCTION SERVICES FEE	COW + GCs	9%	Percent	$ 145,190,220.00	$ 13,067,120.00
GMP 003	CMAR B&I	SEGMENT A	BONDS AND INSURANCE	See Quote	70%	Lump Sum	$ 1,762,711.00	$ 1,233,897.00
		SEGMENT A					**SUBTOTAL:**	**$ 49,718,727.00**
GMP 003	CMAR - GC	SEGMENT B	GENERAL CONDITIONS	See GCs Table	30%	Lump Sum	$ 32,621,430.00	$ 9,786,429.00
GMP 003	CMAR - OA	SEGMENT B	OWNER'S ALLOWANCE	See GCs Table	1.0	Lump Sum	$ 1,954,877.00	$ 1,954,877.00
GMP 003	CMAR - CONT	SEGMENT B	CONTRACTOR'S CONTINGENCY	See GCs Table	1.0	Lump Sum	$ 134,698.00	$ 134,698.00
GMP 003	CMAR - FEE	SEGMENT B	CONSTRUCTION SERVICES FEE	COW + GCs	9%	Percent	$ 38,556,207.00	$ 3,470,059.00
GMP 003	CMAR B&I	SEGMENT B	BONDS AND INSURANCE	See Quote	30%	Lump Sum	$ 1,762,711.00	$ 528,814.00
		SEGMENT B					**SUBTOTAL:**	**$ 15,874,877.00**
							TOTAL:	**$ 65,593,604.00**

TOTAL GMP #3 SEGMENT A:	**$ 170,516,311.00**
TOTAL GMP #3 SEGMENT B:	**$ 44,644,655.00**
TOTAL PROJECT 8304:	**$ 1,557,635.00**
TOTAL GMP #3:	**$ 216,718,601.00**

TABLE 3 - DM/DWBE PARTICIPATION (7% GOAL FOR SEGMENT B)

GMP PACKAGE	BID PACKAGE	SEGMENT	DESCRIPTION	VENDOR	QUANTITY	UNIT	UNIT PRICE	EXTENSION
GMP 003	1.8-B	B	Paving	JDS - Blackrock	1.0	LS	$ 300,000.00	$ 300,000.00
GMP 003	1.8-B	B	Seed & Sod	JDS - Sunbelt Sod	1.0	LS	$ 625,000.00	$ 625,000.00
GMP 003	1.8-B	B	Hauling	JDS - Sabrina's Trucking	1.0	LS	$ 600,000.00	$ 600,000.00
GMP 003	1.8-B	B	Hauling	JDS - Vastrum	1.0	LS	$ 600,000.00	$ 600,000.00
								$ -
		SEGMENT B					**TOTAL:**	**$ 2,125,000.00**
							% PARTICIPATION FOR SEGMENT B COW:	**7.4%**

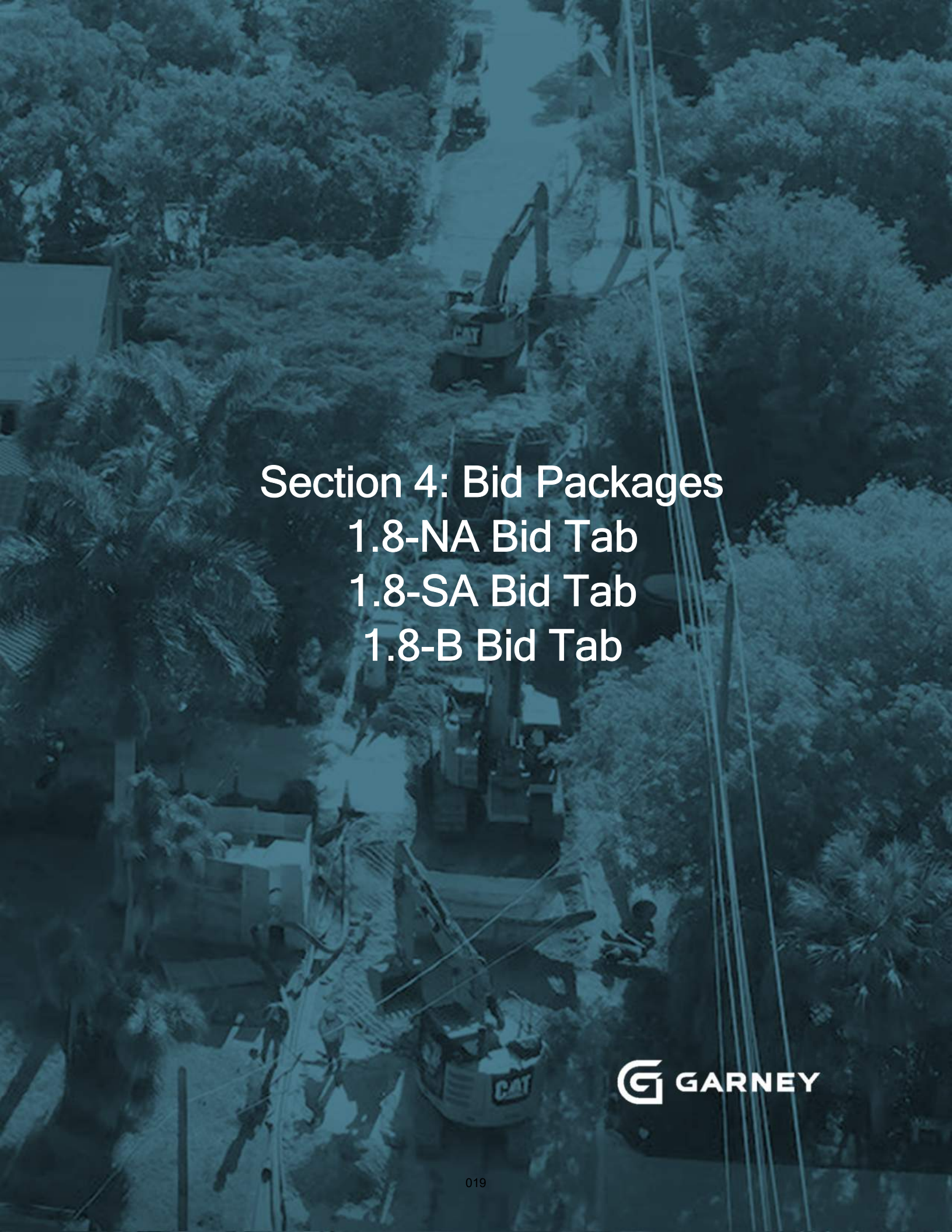
GARNEY

ESTIMATE SUMMARY

South Hillsborough Pipelines CMAR - GMP #3 ESTIMATE (90%) — 9/17/25 4:52 PM

GMP PACKAGE	BID PACKAGE	SEGMENT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION	EXTENSION SEGMENT A	EXTENSION SEGMENT B	HC 8304	GMP #2 ESTIMATE	DIFFERENCE FROM GMP #2 to GMP #3 (90%)	Notes
							$ -				$ -	$ -	
GMP 001	1.1A	SEGMENT A	STEEL PIPE PROCUREMENT	1.0	Lump Sum	$ 30,806,427	$ 30,806,427	$ 30,806,427			$ 30,806,427	$ -	FINAL
GMP 001	1.1B	SEGMENT B	STEEL PIPE PROCUREMENT	1.0	Lump Sum	$ 15,278,627	$ 15,278,627		$ 15,278,627		$ 15,278,627	$ -	FINAL
GMP 001	1.2A	SEGMENT A	LARGE DIAMETER BFV & CARV EARLY PROCUREMENT PACKAGE	1.0	Lump Sum	$ 1,808,200	$ 1,808,200	$ 1,808,200			$ 1,808,200	$ -	FINAL
GMP 001	1.2B	SEGMENT B	LARGE DIAMETER BFV & CARV EARLY PROCUREMENT PACKAGE	1.0	Lump Sum	$ 767,987	$ 767,987		$ 767,987		$ 767,987	$ -	FINAL
							$ -				$ -	$ -	
GMP 002	1.3A	SEGMENT A	CONSTRUCTION STAKING/SURVEY PACKAGE	1.0	Lump Sum	$ 1,760,716	$ 1,760,716	$ 1,760,716			$ 1,760,716	$ -	FINAL
GMP 002	1.3B	SEGMENT B	CONSTRUCTION STAKING/SURVEY PACKAGE	1.0	Lump Sum	$ 895,466	$ 895,466		$ 895,466		$ 895,466	$ -	FINAL
GMP 002	1.4A	SEGMENT A	SWPPP / E&S INSTALLATION PACKAGE	1.0	Lump Sum	$ 1,376,198	$ 1,376,198	$ 1,376,198			$ 1,376,198	$ -	FINAL
GMP 002	1.4B	SEGMENT B	SWPPP / E&S INSTALLATION PACKAGE	1.0	Lump Sum	$ 631,602	$ 631,602		$ 631,602		$ 631,602	$ -	FINAL
GMP 002	1.5A	SEGMENT A	CLEARING & ARBORIST PACKAGE	1.0	Lump Sum	$ 2,246,848	$ 2,246,848	$ 2,246,848			$ 2,246,848	$ -	FINAL
GMP 002	1.5B	SEGMENT B	CLEARING & ARBORIST PACKAGE	1.0	Lump Sum	$ 1,663,230	$ 1,663,230		$ 1,663,230		$ 1,663,230	$ -	FINAL
GMP 002	1.6A	SEGMENT A	J&B INSTALLATIONS PACKAGE	1.0	Lump Sum	$ 6,553,411	$ 6,553,411	$ 6,553,411			$ 6,553,411	$ -	FINAL
GMP 002	1.6B	SEGMENT B	J&B INSTALLATIONS PACKAGE	1.0	Lump Sum	$ -	$ -		$ -		$ -	$ -	FINAL
GMP 002	1.7A	SEGMENT A	MICROTUNNEL INSTALLATIONS PACKAGE	1.0	Lump Sum	$ 45,683,139	$ 45,683,139	$ 45,683,139			$ 45,683,139	$ -	FINAL
GMP 002	1.71A	SEGMENT A	HORIZONTAL DIRECTIONAL DRILLING PACKAGE	1.0	Lump Sum	$ 6,451,173	$ 6,451,173	$ 6,451,173			$ 6,451,173	$ -	FINAL
GMP 002	1.7B	SEGMENT B	MICROTUNNEL INSTALLATIONS PACKAGE	1.0	Lump Sum	$ 14,271,095	$ 14,271,095		$ 14,271,095		$ 14,271,095	$ -	FINAL
GMP 002	1.72A	SEGMENT A	MAINTENANCE OF TRAFFIC SERVICES PACKAGE	1.0	Lump Sum	$ 4,328,713	$ 4,328,713	$ 4,328,713			$ 4,328,713	$ -	FINAL
GMP 002	1.72B	SEGMENT B	MAINTENANCE OF TRAFFIC SERVICES PACKAGE	1.0	Lump Sum	$ 2,424,449	$ 2,424,449		$ 2,424,449		$ 2,424,449	$ -	FINAL
GMP 002	1.73A	SEGMENT A	PROPERTY INSPECTIONS & VIBRATION MONITORING PACKAGE	1.0	Lump Sum	$ 1,365,382	$ 1,365,382	$ 1,365,382			$ 1,365,382	$ -	FINAL
GMP 002	1.73B	SEGMENT B	PROPERTY INSPECTIONS & VIBRATION MONITORING PACKAGE	1.0	Lump Sum	$ 246,026	$ 246,026		$ 246,026		$ 246,026	$ -	FINAL
GMP 002	1.74A	SEGMENT A	MATERIALS TESTING SERVICES PACKAGE	1.0	Lump Sum	$ 882,485	$ 882,485	$ 882,485			$ 882,485	$ -	FINAL
GMP 002	1.74B	SEGMENT B	MATERIALS TESTING SERVICES PACKAGE	1.0	Lump Sum	$ 463,410	$ 463,410		$ 463,410		$ 463,410	$ -	FINAL
						$ -	$ -				$ -	$ -	
GMP 003	1.8-NA	SEGMENT A	OPEN CUT PIPE INSTALLATION & RESTORATION_NORTH OF RIVER	1.0	Lump Sum	$ 75,219,842	$ 75,219,842	$ 75,219,842			$ 110,482,656	$ (35,262,814)	Split North and South Segments - updated hard quoted pricing for three year duration
GMP 003	1.8-SA	SEGMENT A	OPEN CUT PIPE INSTALLATION & RESTORATION_SOUTH OF RIVER + HC 36" TEE & SEG B CONNECTING TEE & VALVE	1.0	Lump Sum	$ 47,213,744	$ 47,213,744	$ 47,017,715	$ 78,367	$ 117,662	$ -	$ 47,213,744	Split North and South Segments - updated hard quoted pricing for three year duration
GMP 003	1.8-B	SEGMENT B	OPEN CUT PIPE INSTALLATION & RESTORATION	1.0	Lump Sum	$ 28,691,411	$ 28,691,411		$ 28,691,411		$ 29,185,548	$ (494,137)	
							$ -				$ -	$ -	
GMP 004	1.9A	SEGMENT A	POINTS OF CONNECTION - TBW REGIONAL FACILITY & LITHIA WTP	1.0	Lump Sum	$ 22,817,053	$ 22,817,053	$ 22,817,053			$ 10,346,791	$ 12,470,262	ZERO DESIGN TO 60% ROM / LITHIA WTP PIPE SCHEMATIC
GMP 004	1.9B	SEGMENT B	POINTS OF CONNECTION - TBW HC FUTURE DRINKING WATER FACILITY	1.0	Lump Sum	$ 3,000,000	$ 3,000,000		$ 3,000,000		$ 1,633,784	$ 1,366,216	ROUGHLY ESTIMATED SCOPE
GMP 004	HC	PROJECT 8304	POINTS OF CONNECTION - HC LITHIA YARD PIPING	1.0	Lump Sum	$ 6,000,000	$ 6,000,000			$ 6,000,000	$ -	$ 6,000,000	Need a progressed design to estimate
							$ -				$ -	$ -	
						SUBTOTAL COST OF WORK:	$ 322,846,634	$ 248,317,302	$ 68,411,670	$ 6,117,662	$ 291,553,363	$ 31,293,271.00	Costs from COW moved to GCs to manage with GMP #2 scope
	CMAR PRECON	CMAR Contract	PRECONSTRUCTION SERVICE FEE		Lump Sum	$ 4,671,071	$ -				$ -	$ -	FINAL
	CMAR PRECON	CMAR Contract	PRECONSTRUCTION SERVICE OWNER'S ALLOWANCES		Lump Sum	$ 538,722	$ -				$ -	$ -	FINAL
	CMAR - WFD	CMAR Contract	WORKFORCE DEVELOPMENT ADMINISTRATION	1.0	Lump Sum	$ -	$ -				$ -	$ -	FINAL
							$ -				$ -	$ -	
GMP 001	CMAR - GC.GMP1	SEGMENTS A & B	CMAR GENERAL CONDITIONS	1.0	Lump Sum	$ 227,706	$ 227,706	$ 152,617	$ 75,089		$ 227,706	$ -	FINAL
GMP 001	CMAR - PR.GMP1	SEGMENTS A & B	PUBLIC OUTREACH SERVICES	1.0	Lump Sump	$ -	$ -				$ -	$ -	FINAL
GMP 001	CMAR - CONT.GMP1	SEGMENTS A & B	PROJECT CONTINGENCIES & ALLOWANCES	1.0	Lump Sump	$ 2,688,894	$ 2,688,894	$ 1,802,200	$ 886,694		$ 2,688,894	$ -	FINAL
GMP 001	CMAR - FEE.GMP1	SEGMENTS A & B	CONSTRUCTION SERVICES (CMAR) FEE	1.0	Lump Sump	$ 3,911,116	$ 3,911,116	$ 2,621,379	$ 1,289,736		$ 3,911,116	$ -	FINAL
GMP 001	CMAR - B&I.GMP1	SEGMENTS A & B	BONDS AND INSURANCE	1.0	Lump Sump	$ 1,040,221	$ 1,040,221	$ 696,948	$ 343,273		$ 1,040,221	$ -	FINAL
							$ -				$ -	$ -	
GMP 002	CMAR - GC.GMP2	SEGMENTS A & B	CMAR GENERAL CONDITIONS	1.0	Lump Sum	$ 16,002,878	$ 16,002,878	$ 12,593,302	$ 3,409,576		$ 16,002,878	$ -	FINAL
GMP 002	CMAR - PR.GMP2	SEGMENTS A & B	PUBLIC OUTREACH SERVICES	1.0	Lump Sum	$ -	$ -	$ -	$ -		$ -	$ -	FINAL
GMP 002	CMAR - CONT.GMP2	SEGMENTS A & B	PROJECT CONTINGENCIES & ALLOWANCES	1.0	Lump Sum	$ 10,685,195	$ 10,685,195	$ 8,748,399	$ 1,936,796		$ 10,685,195	$ -	FINAL
GMP 002	CMAR - FEE.GMP2	SEGMENTS A & B	CONSTRUCTION SERVICES (CMAR) FEE	1.0	Lump Sum	$ 9,652,161	$ 9,652,161	$ 7,491,724	$ 2,160,437		$ 9,652,161	$ -	FINAL
GMP 002	CMAR - B&I.GMP2	SEGMENTS A & B	BONDS AND INSURANCE	1.0	Lump Sum	$ 1,624,324	$ 1,624,324	$ 1,137,026	$ 487,298		$ 1,624,324	$ -	FINAL
						$ -	$ -				$ -	$ -	
GMP 003	CMAR - GC.GMP3	SEGMENTS A & B	CMAR GENERAL CONDITIONS	1.0	Lump Sum	$ 32,621,430	$ 32,621,430	$ 22,835,001	$ 9,786,429		$ 35,531,348.00	$ (2,909,918)	CMAR efficiency in self performance
GMP 003	CMAR - PR.GMP3	SEGMENTS A & B	PUBLIC OUTREACH SERVICES	1.0	Lump Sump	$ -	$ -				$ -	$ -	Excluded
GMP 003	CMAR - CONT.GMP3	SEGMENTS A & B	PROJECT CONTINGENCIES & ALLOWANCES	1.0	Lump Sump	$ 13,232,311	$ 13,232,311	$ 11,142,736	$ 2,089,575		$ 11,190,664	$ 2,041,647	HILLSBOROUGH COUNTY MOT COMMENTS PENDING
GMP 003	HC	PROJECT 8304	HILLSBOROUGH COUNTY EXISTING UTILITIES ALLOWANCE	1.0	Lump Sump	$ 1,439,973	$ 1,439,973			$ 1,439,973	$ -	$ 1,439,973	Not previously accounted for
GMP 003	CMAR - FEE.GMP3	SEGMENTS A & B	CONSTRUCTION SERVICES (CMAR) FEE	1.0	Lump Sum	$ 16,537,179	$ 16,537,179	$ 13,056,530	$ 3,470,059	$ 10,590	$ 15,752,750	$ 784,429	
GMP 003	CMAR - B&I.GMP3	SEGMENTS A & B	BONDS AND INSURANCE	1.0	Lump Sum	$ 1,762,711	$ 1,762,711	$ 1,233,897	$ 528,814		$ 2,529,339	$ (766,628)	
							$ -				$ -	$ -	
GMP 004	CMAR - GC.GMP4	SEGMENTS A & B	CMAR GENERAL CONDITIONS	1.0	Lump Sum	$ 4,426,165	$ 4,426,165	$ 3,098,316	$ 1,327,850		$ 4,268,079	$ 158,086	
GMP 004	CMAR - PR.GMP4	SEGMENTS A & B	PUBLIC OUTREACH SERVICES	1.0	Lump Sump	$ -	$ -				$ -	$ -	Excluded
GMP 004	CMAR - CONT.GMP4	SEGMENTS A & B	PROJECT CONTINGENCIES & ALLOWANCES	1.0	Lump Sum	$ 4,373,625	$ 4,373,625	$ 3,061,538	$ 1,312,088		$ 4,373,625	$ -	
GMP 004	CMAR - FEE.GMP4	SEGMENTS A & B	CONSTRUCTION SERVICES (CMAR) FEE	1.0	Lump Sum	$ 2,721,838	$ 2,721,838	$ 1,365,287	$ 816,551	$ 540,000	$ 1,462,379	$ 1,259,459	
GMP 004	CMAR - B&I.GMP4	SEGMENTS A & B	BONDS AND INSURANCE	1.0	Lump Sum	$ 342,597	$ 342,597	$ 239,818	$ 102,779		$ 276,569	$ 66,028	
GMP 004	HC	PROJECT 8304	CMAR GENERAL CONDITIONS	1.0	Lump Sum	$ 1,297,252	$ 1,297,252			$ 1,297,252	$ -	$ 1,297,252	Not previously accounted for
GMP 004	HC	PROJECT 8304	PROJECT CONTINGENCIES & ALLOWANCES	1.0	Lump Sum	$ 3,000,000	$ 3,000,000			$ 3,000,000	$ -	$ 3,000,000	Not previously accounted for
GMP 004	HC	PROJECT 8304	CONSTRUCTION SERVICES (CMAR) FEE	1.0	Lump Sum	$ 786,350	$ 786,350			$ 786,350	$ -	$ 786,350	Not previously accounted for
GMP 004	HC	PROJECT 8304	BONDS AND INSURANCE	1.0	Lump Sum	$ 98,978	$ 98,978			$ 98,978	$ -	$ 98,978	Not previously accounted for
							$ -	$ -	$ -		$ -	$ -	
						SUBTOTAL CMAR:	$ 128,472,904	$ 91,276,718	$ 30,023,044	$ 7,173,143	$ 121,217,248	$ 7,255,656.00	Cost pulled from COW to GCs to manage with GMP 2 scope
						TOTAL COW AND CMAR SERVICES:	$ 451,319,538	$ 339,594,019	$ 98,434,714	$ 13,290,805	$ 412,770,611	$ 38,548,927	
								75.2%	21.8%	2.9%		9.3%	> Total % change

Indicative pricing based on the plans & Specifications provided generally described as "South Hillsborough Pipeline Segments A & B" from Wade Trim and Stantec per 90% GMP #3 BID documents dated June 23, 2025; & 60% RFS AAF plans by Hazen



Section 4: Bid Packages
1.8-NA Bid Tab
1.8-SA Bid Tab
1.8-B Bid Tab

GARNEY

GARNEY

TAB (ANALYSIS) SHEET

Bid Date: 08/29/25

South Hillsborough Pipeline

Bid Package 1.8-NA: GMP #3 Pipe Installation & Restoration North of River_Segment A

PROJECT: **Tampa Bay Water SHP**

BID NO	SIZE	DESCRIPTION	QTY	UM	Garney		JDS INC		AMICI	
					Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)
NA.1		Mobilization to Project	1	LS	$ 840,885.82	$ 840,885.82	$ 2,400,000.00	$ 2,400,000.00	$ 1,493,000.00	$ 1,493,000.00
NA.2		Mobilization (Additional) - Pipe Crew on-site - as directed	2	EA	$ 76,577.17	$ 153,154.34	$ 50,000.00	$ 100,000.00	$ 158,000.00	$ 316,000.00
NA.3		General Conditions (Management and coordination with CMAR covered scopes), Bond and Insurance	1	LS	$ 482,014.90	$ 482,014.90	$ 1,021,000.00	$ 1,021,000.00	$ 5,832,000.00	$ 5,832,000.00
NA.4		Pipe Cleaning, hydrostatic testing, disinfection, & bacteriological sampling (including Alafia River Crossing Segment)	1	LS	$ 135,576.00	$ 135,576.00	$ 149,000.00	$ 149,000.00	$ 2,804,000.00	$ 2,804,000.00
						$ -		$ -		$ -
		Maintenance of Traffic Support (Not covered by CMAR)				$ -		$ -		$ -
NA.5		Temporary access earthworks and driveable/walkable pathways (Vehicular and Pedestrian) to individual properties	1	LS	$ 997,720.02	$ 997,720.02	$ 104,900.00	$ 104,900.00	$ 300,000.00	$ 300,000.00
NA.6		R&R with new existing lane separators & bollard markers where noted on drawings - QWICK KURB	275	LF	$ 427.93	$ 117,680.75	$ 200.00	$ 55,000.00	$ 200.00	$ 55,000.00
NA.7		Install temp pavement on Bellwood Dr (MOT-38B) & restore to existing condition	1	LS	$ 27,525.50	$ 27,525.50	$ 8,920.00	$ 8,920.00	$ 55,000.00	$ 55,000.00
NA.8		Install temp pavement between Knight Island Dr & Brooker Rd (MOT-38C) & restore to existing condition	1	LS	$ 32,800.50	$ 32,800.50	$ 8,920.00	$ 8,920.00	$ 25,000.00	$ 25,000.00
NA.9		All temporary asphalt pavement and concrete work associated with MOT plan sheets	1	LS	$ 57,165.70	$ 57,165.70	$ 1,585,000.00	$ 1,585,000.00	$ 275,000.00	$ 275,000.00
NA.10		Removal of temporary roadways/matting installed during GMP #2 work @ TECO/Solid Waste Facility & Falkenburg Pond. Haul mats to laydown yard.	1	LS	$ 38,917.04	$ 38,917.04	$ 100,000.00	$ 100,000.00	$ 150,000.00	$ 150,000.00
						$ -		$ -		$ -
		Open Cut Pipeline (PP Sheets)				$ -		$ -		$ -
NA.11	60"	Steel Pipe & Fittings Installation with Bedding per 1, D-19 (Measured horizontally station to station)	48000	LF	$ 863.65	$ 41,455,200.00	$ 971.48	$ 46,631,040.00	$ 630.23	$ 30,251,040.00
NA.12	60"	Butterfly Valve Installation	9	EA	$ 38,709.20	$ 348,382.80	$ 30,000.00	$ 270,000.00	$ 66,000.00	$ 594,000.00
NA.13	60"	Butterfly Valve Leakage Detection Assembly Installation	2	EA	$ 5,761.73	$ 11,523.46	$ 18,000.00	$ 36,000.00	$ 20,000.00	$ 40,000.00
NA.14	60"	Class B Bedding (3, D-19) Adder	1021	LF	$ 260.39	$ 265,858.19	$ 210.00	$ 214,410.00	$ 180.00	$ 183,780.00
NA.15	60"	CLSM Bedding (2, D-19) Adder	40	LF	$ 482.68	$ 19,307.20	$ 590.00	$ 23,600.00	$ 810.00	$ 32,400.00
NA.16	60"	Extra Butt-Straps Install (not included in lay schedules)	8	EA	$ 11,793.18	$ 94,345.44	$ 5,410.00	$ 43,280.00	$ 37,000.00	$ 296,000.00
NA.17	60"	Buckhorn Creek Crossing - Open Cut Creek with coffer dams, concrete protective pad, barrier wall, & slope restoration (PP-97)	1	LS	$ 499,378.84	$ 499,378.84	$ 1,354,000.00	$ 1,354,000.00	$ 1,100,000.00	$ 1,100,000.00
						$ -		$ -		$ -
		Connections (PP Sheets)				$ -		$ -		$ -
NA.18	60"	Regional Facilities Site Bulkhead (Buttstrap connection by Others - GMP #4)	1	LS	$ 27,288.59	$ 27,288.59	$ 30,400.00	$ 30,400.00	$ 62,000.00	$ 62,000.00
NA.19	60"	Connect to micro-tunnel pipe (Each Side)	15	EA	$ 29,683.59	$ 445,253.85	$ 45,000.00	$ 675,000.00	$ 62,000.00	$ 930,000.00
						$ -		$ -		$ -
		Cathodic Protection (CP Sheets)				$ -		$ -		$ -
NA.20		Rectifier 1 Station 153+86	1	EA	$ 171,401.16	$ 171,401.16	$ 15,400.00	$ 15,400.00	$ 188,000.00	$ 188,000.00
NA.21		Test Station Type FPTS	7	EA	$ 11,382.97	$ 79,680.79	$ 6,300.00	$ 44,100.00	$ 1,900.00	$ 13,300.00
NA.22		Test Station Type CTS (wires provided at grade)	15	EA	$ 3,532.63	$ 52,989.45	$ 5,200.00	$ 78,000.00	$ 340.00	$ 5,100.00
NA.23		Test Station Type PTS	26	EA	$ 3,763.76	$ 97,857.76	$ 5,200.00	$ 135,200.00	$ 300.00	$ 7,800.00
NA.24	60"	Test Station Type IJTS including FLG Isolation Kit (Coordinate with GMP #4 Scope)	1	EA	$ 16,013.17	$ 16,013.17	$ 7,500.00	$ 7,500.00	$ 7,600.00	$ 7,600.00
NA.25	6"	Test Station Type IJTS including FLG Isolation Kit	7	EA	$ 2,819.93	$ 19,739.51	$ 3,220.00	$ 22,540.00	$ 430.00	$ 3,010.00
NA.26	8"	Test Station Type IJTS including FLG Isolation Kit	26	EA	$ 2,831.47	$ 73,618.22	$ 2,700.00	$ 70,200.00	$ 440.00	$ 11,440.00

GARNEY

TAB (ANALYSIS) SHEET

Bid Date: 08/29/25

South Hillsborough Pipeline

Bid Package 1.8-NA: GMP #3 Pipe Installation & Restoration North of River_Segment A

PROJECT: **Tampa Bay Water SHP**

					Garney		JDS INC		AMICI	
					Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)
BID NO	SIZE	DESCRIPTION	QTY	UM						
NA.27	12"	Test Station Type IJTS including FLG Isolation Kit	19	EA	$ 2,895.36	$ 55,011.84	$ 2,790.00	$ 53,010.00	$ 510.00	$ 9,690.00
NA.28		Testing, Tags, & Closeout Submittals; Including Coordination with other packages/scopes (Min 10% of Total CP Bid Items)	1	LS	$ 41,000.00	$ 41,000.00	$ 32,500.00	$ 32,500.00	$ 52,000.00	$ 52,000.00
						$ -		$ -		$ -
		Pipeline Appurtenances (AR & D Sheets)				$ -		$ -		$ -
NA.29	12"	Air Valve Assembly, Detail 1, D-1 (ARV size pipe outlet)	1	EA	$ 31,065.53	$ 31,065.53	$ 20,000.00	$ 20,000.00	$ 81,000.00	$ 81,000.00
NA.30	8"	Combo Air Valve Assembly & Manway Details 1, D-1 & D-4 @ tunnel shaft riser (existing precast)	2	EA	$ 23,594.02	$ 47,188.04	$ 20,000.00	$ 40,000.00	$ 89,000.00	$ 178,000.00
NA.31	6"	Combo Air Valve Assembly & Manway Details 1, D-1 & D-3	6	EA	$ 47,433.57	$ 284,601.42	$ 22,000.00	$ 132,000.00	$ 81,000.00	$ 486,000.00
NA.32	8"	Combo Air Valve Assembly & Manway Details 1, D-1 & D-3	23	EA	$ 49,943.39	$ 1,148,697.97	$ 22,000.00	$ 506,000.00	$ 81,000.00	$ 1,863,000.00
NA.33	12"	Combo Air Valve Assembly & Manway Details 1, D-1 & D-3	1	EA	$ 57,914.91	$ 57,914.91	$ 22,000.00	$ 22,000.00	$ 47,000.00	$ 47,000.00
NA.34	4"	ARV Flushing Assembly Supplied to Owner	1	EA	$ 2,108.08	$ 2,108.08	$ 15,000.00	$ 15,000.00	$ 5,000.00	$ 5,000.00
NA.35	36"	Access Manway Stand Alone with precast MH	9	EA	$ 30,388.97	$ 273,500.73	$ 18,100.00	$ 162,900.00	$ 45,000.00	$ 405,000.00
NA.36	12"	Blow-off Assembly	16	EA	$ 27,408.66	$ 438,538.56	$ 25,400.00	$ 406,400.00	$ 20,000.00	$ 320,000.00
NA.37	3"	Weld Outlet (shipped loose, install in field)	48	EA	$ 5,642.68	$ 270,848.64	$ 13,900.00	$ 667,200.00	$ 2,300.00	$ 110,400.00
NA.38		Sample Point @ manway	5	EA	$ 424.46	$ 2,122.30	$ 10,400.00	$ 52,000.00	$ 2,300.00	$ 11,500.00
NA.39		Sample Point @ ARV	21	EA	$ 270.90	$ 5,688.90	$ 10,400.00	$ 218,400.00	$ 2,300.00	$ 48,300.00
NA.40		Sample Point @ Bulkheads	1	EA	$ 424.46	$ 424.46	$ 10,400.00	$ 10,400.00	$ 2,300.00	$ 2,300.00
NA.41		Sample Point @ Blow-off Assembly	1	EA	$ 424.46	$ 424.46	$ 10,400.00	$ 10,400.00	$ 2,300.00	$ 2,300.00
						$ -		$ -		$ -
		Existing Utilities (PP & UR Sheets)				$ -		$ -		$ -
NA.42		Station 28+40 8" PVC GS with MH Relocation (Sheet UR-2)	1	LS	$ 28,796.12	$ 28,796.12	$ 46,900.00	$ 46,900.00	$ 175,000.00	$ 175,000.00
NA.43		Station 64+64 4" PVC Sewer FM Relocation (Sheet UR-2)	1	LS	$ 67,018.63	$ 67,018.63	$ 26,000.00	$ 26,000.00	$ 75,000.00	$ 75,000.00
NA.44		Station 222+12 4" PVC Sewer FM Relocation (Sheet UR-3)	1	LS	$ 67,018.63	$ 67,018.63	$ 28,600.00	$ 28,600.00	$ 75,000.00	$ 75,000.00
NA.45		Station 242+95 12" PVC Storm FM Relocation (Sheet UR-3)	1	LS	$ 83,685.98	$ 83,685.98	$ 31,400.00	$ 31,400.00	$ 45,000.00	$ 45,000.00
NA.46		Station 310+84 6" PVC WM Relocation (Sheet UR-4)	1	LS	$ 67,201.90	$ 67,201.90	$ 27,700.00	$ 27,700.00	$ 45,000.00	$ 45,000.00
NA.47		Station 427+42 12" DIP WM Relocation (Sheet UR-4)	1	LS	$ 41,153.18	$ 41,153.18	$ 31,300.00	$ 31,300.00	$ 47,000.00	$ 47,000.00
NA.48		Existing conflict utilities coordination noted TO BE RELOCATED BY OTHERS / Support and/or restrain existing utilities as necessary	1	LS	$ 248,628.20	$ 248,628.20	$ 100,000.00	$ 100,000.00	$ 30,000.00	$ 30,000.00
NA.49		Storm sewer crossing R&R or shore in place	50	EA	$ 11,225.72	$ 561,286.00	$ 7,000.00	$ 350,000.00	$ 20,000.00	$ 1,000,000.00
NA.50		SS Gravity Lateral Xing R&R	24	EA	$ 8,579.30	$ 205,903.20	$ 11,000.00	$ 264,000.00	$ 5,000.00	$ 120,000.00
NA.51	3/4" - 2"	Water Service Xing R&R	50	EA	$ 3,559.29	$ 177,964.50	$ 11,000.00	$ 550,000.00	$ 5,000.00	$ 250,000.00
						$ -		$ -		$ -
HC		Existing County Utilities not in conflict - ALLOWANCE								
NA-HC.1	6"	PP-22 6" CI Watermain in 12" CI Casing Replacement	55	LF	$ 594.57		$ 280.00		$ 500.00	
NA-HC.2	6"	PP-34 6" CI Watermain Replacement	55	LF	$ 594.57		$ 260.00		$ 500.00	
NA-HC.3	6"	PP-34 6" Sch 40 PVC Forcemain Replacement	40	LF	$ 695.25		$ 260.00		$ 500.00	
NA-HC.4	8"	PP-50 8" Sch 40 PVC Watermain Replacement	80	LF	$ 589.08		$ 260.00		$ 550.00	
NA-HC.5	6"	PP-51 6" Sch 40 PVC Watermain Replacement	45	LF	$ 613.33		$ 260.00		$ 500.00	
NA-HC.6	6"	PP-52 6" CI Watermain Replacement	50	LF	$ 603.01		$ 260.00		$ 500.00	
NA-HC.7	6"	PP-57 6" Sch 40 Watermain Replacement	40	LF	$ 626.24		$ 260.00		$ 500.00	
NA-HC.8	4"	PP-57 4" UNK material Watermain Replacement	45	LF	$ 589.62		$ 260.00		$ 475.00	
NA-HC.9	2"	PP-57 2" PE Water Service Replacement	40	LF	$ 570.25		$ 210.00		$ 200.00	
NA-HC.10	2"	PP-57 2" UNK material Water Service Replacement	40	LF	$ 524.21		$ 210.00		$ 200.00	
NA-HC.11	6"	PP-59 6" Sch 40 PVC Watermain Replacement	55	LF	$ 594.57		$ 250.00		$ 500.00	

GARNEY

TAB (ANALYSIS) SHEET

Bid Date: 08/29/25

South Hillsborough Pipeline

Bid Package 1.8-NA: GMP #3 Pipe Installation & Restoration North of River_Segment A

PROJECT: **Tampa Bay Water SHP**

					Garney		JDS INC		AMICI	
					Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)
BID NO	SIZE	DESCRIPTION	QTY	UM						
NA-HC.12	6"	PP-60 6" DIP or Sch 40 PVC Watermain Replacement	50	LF	$ 603.01		$ 260.00		$ 600.00	
NA-HC.13	6"	PP-72 6" Sch 40 PVC Watermain Replacement	50	LF	$ 603.01		$ 260.00		$ 500.00	
NA-HC.14	6"	PP-77 6" Sch 40 PVC Watermain in 14" DIP Casing Replacement	65	LF	$ 581.57		$ 250.00		$ 500.00	
NA-HC.15	6"	PP-85 6" Sch 40 PVC Watermain Replacement	55	LF	$ 594.57		$ 250.00		$ 500.00	
NA-HC.16	6"	PP-86 6" Sch 40 PVC or Steel Watermain Replacement	50	LF	$ 603.01		$ 260.00		$ 500.00	
NA-HC.17	6"	PP-89 6" sch 40 PVC or CI Watermain Replacement	50	LF	$ 603.01		$ 260.00		$ 500.00	
NA-HC.18	6"	PP-103 6" DIP Watermain Replacement	45	LF	$ 613.33		$ 260.00		$ 600.00	
NA-HC.19	6"	PP-104 6" PVC Watermain Replacement	45	LF	$ 613.33		$ 260.00		$ 500.00	
NA-HC.20	6"	PP-108 6" PVC or CI Watermain Replacement	40	LF	$ 626.24		$ 260.00		$ 500.00	
NA-HC.21	6"	PP-112 6" DIP or 4" ACP Watermain Replacement	65	LF	$ 581.57		$ 250.00		$ 600.00	
NA-HC-22	6"	6" Insertavalve	16	EA	$ 14,712.49		$ 11,100.00		$ 5,000.00	
NA-HC-23	6"	6" double linestop	16	EA	$ 14,733.49		$ 17,900.00		$ 11,000.00	
NA-HC-24	8"	8" Insertavalve	2	EA	$ 17,600.07		$ 14,890.00		$ 7,500.00	
NA-HC-25	8"	8" double linestop	2	EA	$ 18,453.07		$ 37,200.00		$ 9,000.00	
NA-HC-26		Additional Restoration	1	LS	$ 210,000.00		$ 210,000.00		$ 210,000.00	
						$ -		$ -		$ -
		Restoration				$ -		$ -		$ -
NA.52		Asphalt Roadway Trench Patch	47323	LF	$ 177.57	$ 8,403,145.11	$ 187.00	$ 8,849,401.00	$ 280.00	$ 13,250,440.00
NA.53		Existing Speed Bumps temporary replacement	10	EA	$ 3,500.00	$ 35,000.00	$ 5,500.00	$ 55,000.00	$ 4,500.00	$ 45,000.00
NA.54		Asphalt Mill and Overlay (including existing structure rim adjustment rings & permanent speed bumps)	1307631	SF	$ 3.37	$ 4,406,716.47	$ 4.00	$ 5,230,524.00	$ 4.40	$ 5,753,576.40
NA.55		Temporary (paint) Striping	1	LS	$ 141,969.00	$ 141,969.00	$ 360,000.00	$ 360,000.00	$ 125,000.00	$ 125,000.00
NA.56		Permanent Thermoplastic Striping including any RPMs	1	LS	$ 1,935,293.88	$ 1,935,293.88	$ 260,280.00	$ 260,280.00	$ 200,000.00	$ 200,000.00
NA.57		R&R 6" thick reinforced Concrete or Paver Driveway	67237	SF	$ 17.90	$ 1,203,542.30	$ 17.00	$ 1,143,029.00	$ 20.00	$ 1,344,740.00
NA.58		R&R Asphalt Driveway	159494	SF	$ 5.59	$ 891,571.46	$ 6.00	$ 956,964.00	$ 10.00	$ 1,594,940.00
NA.59		R&R Crushed Stone Driveway/Roadway	36872	SF	$ 1.99	$ 73,375.28	$ 10.00	$ 368,720.00	$ 2.00	$ 73,744.00
NA.60		R&R 4" thick Concrete or Paver Sidewalk along local roads	178564	SF	$ 11.16	$ 1,992,774.24	$ 11.00	$ 1,964,204.00	$ 15.00	$ 2,678,460.00
NA.61		R&R 6" thick Concrete Sidewalk along arterial roads	6951	SF	$ 15.29	$ 106,280.79	$ 15.00	$ 104,265.00	$ 16.00	$ 111,216.00
NA.62		Sidewalk ADA Detectible Warning Surface including upcharge to sidewalk for ramp	3557	SF	$ 41.95	$ 149,216.15	$ 12.00	$ 42,684.00	$ 40.00	$ 142,280.00
NA.63		R&R Concrete Curb - Type D or F	22335	LF	$ 51.11	$ 1,141,541.85	$ 52.00	$ 1,161,420.00	$ 44.00	$ 982,740.00
NA.64		R&R Concrete Curb - Miami (D-14, Dwg TD-5)	6441	LF	$ 45.78	$ 294,868.98	$ 72.00	$ 463,752.00	$ 44.00	$ 283,404.00
NA.65		R&R Concrete Curb - Intersection Valley Gutter (D-14, Dwg TD-6)	10	LF	$ 433.97	$ 4,339.70	$ 152.00	$ 1,520.00	$ 94.00	$ 940.00
NA.66		R&R Concrete Curb/Median	1372	SF	$ 38.04	$ 52,190.88	$ 20.00	$ 27,440.00	$ 69.00	$ 94,668.00
NA.67		R&R Concrete ditch swale	10	SF	$ 414.76	$ 4,147.60	$ 130.00	$ 1,300.00	$ 640.00	$ 6,400.00
NA.68		R&R Storm ditch RCP with mitered end slab (per FDOT standard)	33	EA	$ 2,988.04	$ 98,605.32	$ 4,620.00	$ 152,460.00	$ 6,500.00	$ 214,500.00
NA.69		R&R Storm ditch RCP with mitered end slab with bars (per FDOT standard)	1	EA	$ 8,373.94	$ 8,373.94	$ 11,270.00	$ 11,270.00	$ 11,000.00	$ 11,000.00
NA.70		R&R 12" thick reinforced Concrete Roadway Segment/Commercial Approach/Slab on Grade	14289	SF	$ 33.28	$ 475,537.92	$ 21.00	$ 300,069.00	$ 30.00	$ 428,670.00
NA.71		Relocate park fence for CARV appurtenance (PP-99)	1	LS	$ 5,000.00	$ 5,000.00	$ 28,000.00	$ 28,000.00	$ 35,000.00	$ 35,000.00
NA.72		Property restoration: temp fencing, permanent fencing, monuments, mailboxes, landscaping, irrigation, etc. (shown or not shown on drawings / refer to TCE and PUE agreement conditions)	1	LS	$ 2,764,676.30	$ 2,764,676.30	$ 934,380.00	$ 934,380.00	$ 80,000.00	$ 80,000.00
NA.73		Grassing (Seed, Sod, or Hydroseeding as required)	200256	SY	$ 2.25	$ 450,576.00	$ 3.00	$ 600,768.00	$ 3.40	$ 680,870.40

GARNEY

TAB (ANALYSIS) SHEET

Bid Date: 08/29/25

South Hillsborough Pipeline

Bid Package 1.8-NA: GMP #3 Pipe Installation & Restoration North of River_Segment A

PROJECT: **Tampa Bay Water SHP**					Garney		JDS INC		AMICI	
					Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)
BID NO	SIZE	DESCRIPTION	QTY	UM						
						$ -		$ -		$ -
		Solid Waste Facility Restoration (Sheet RRF-1)				$ -		$ -		$ -
NA.74		Restore Solid Waste Facility Site to preconstruction condition	1	LS	$ 128,279.08	$ 128,279.08	$ 110,900.00	$ 110,900.00	$ 65,000.00	$ 65,000.00
NA.75		R&R Solid Waste Facility 12" Thick Reinforced Concrete Roadway	17532	SF	$ 39.00	$ 683,748.00	$ 12.00	$ 210,384.00	$ 36.00	$ 631,152.00
						$ -		$ -		$ -
						$ -		$ -		$ -
		SUBTOTAL BASE BID:				**$ 76,219,841.43**		**$ 82,326,254.00**		**$ 79,347,700.80**
						$ -		$ -		$ -
ALT DEDUCT #1		Deduct if awarded with Package 1.8-SA (only enter deduct on one bid form)	1	LS	$ (1,000,000.00)	$ (1,000,000.00)	$ -	$ -	$ -	$ -
ALT DEDUCT #2		Deduct if awarded both Packages 1.8-SA & 1.8-B (only enter deduct on one bid form)	1	LS	$ -	$ -	$ -	$ -	$ -	$ -
		TOTAL BASE BID + ALTERNATES:				**$ 75,219,841.43**		**$ 82,326,254.00**		**$ 79,347,700.80**

GARNEY

TAB (ANALYSIS) SHEET

Bid Date: 08/29/25

South Hillsborough Pipeline

Bid Package 1.8-SA: GMP #3 Pipe Installation & Restoration South of River_Segment A

PROJECT: **Tampa Bay Water SHP**

					Garney		JDS INC		AMICI	
					Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)
BID NO	SIZE	DESCRIPTION	QTY	UM						
SA.1		Mobilization to Project	1	LS	$ 839,687.24	$ 839,687.24	$ 1,400,000.00	$ 1,400,000.00	$ 417,800.00	$ 417,800.00
SA.2		Mobilization (Additional) - Pipe Crew on-site - as directed	2	EA	$ 76,337.45	$ 152,674.90	$ 50,000.00	$ 100,000.00	$ 155,000.00	$ 310,000.00
SA.3		General Conditions (Management and coordination with CMAR covered scopes), Bond and Insurance	1	LS	$ 482,014.90	$ 482,014.90	$ 686,000.00	$ 686,000.00	$ 5,450,000.00	$ 5,450,000.00
SA.4		Pipe Cleaning, hydrostatic testing, disinfection, & bacteriological sampling (excluding Alafia River Crossing Segment)	1	LS	$ 93,983.43	$ 93,983.43	$ 113,000.00	$ 113,000.00	$ 2,119,715.00	$ 2,119,715.00
						$ -		$ -		$ -
		Maintenance of Traffic Support (Not covered by CMAR)				$ -		$ -		$ -
SA.5		Temporary access earthworks and driveable/walkable pathways (Vehicular and Pedestrian) to individual properties	1	LS	$ 269,206.21	$ 269,206.21	$ 78,000.00	$ 78,000.00	$ 250,000.00	$ 250,000.00
SA.6		All temporary asphalt pavement and concrete work associated with MOT plan sheets	1	LS	$ 370,644.05	$ 370,644.05	$ 143,400.00	$ 143,400.00	$ 300,000.00	$ 300,000.00
SA.7		Alafia Ridge Road earthworks, grading, temp roadways, temp & permanent drainage, & storm by-pass pumping as necessary	1	LS	$ 1,071,198.56	$ 1,071,198.56	$ 575,800.00	$ 575,800.00	$ 125,000.00	$ 125,000.00
SA.8		Removal of temporary roadway/matting installed during GMP #2 work @ TECO easement off Fishhawk Blvd. Haul mats to laydown yard.	1	LS	$ 38,917.04	$ 38,917.04	$ 50,000.00	$ 50,000.00	$ 275,000.00	$ 275,000.00
						$ -		$ -		$ -
		Open Cut Pipeline (PP Sheets)				$ -		$ -		$ -
SA.9	60"	Steel Pipe & Fittings Installation with Bedding per 1, D-19 (Measured horizontally station to station)	8700	LF	$ 957.69	$ 8,331,903.00	$ 937.00	$ 8,151,900.00	$ 593.72	$ 5,165,364.00
SA.10	60"	Butterfly Valve Installation	2	EA	$ 38,866.40	$ 77,732.80	$ 49,400.00	$ 98,800.00	$ 62,000.00	$ 124,000.00
SA.11	60"	Butterfly Valve Leakage Detection Assembly Installation	1	EA	$ 10,511.88	$ 10,511.88	$ 18,620.00	$ 18,620.00	$ 21,000.00	$ 21,000.00
SA.12	60"	Class B Bedding (3, D-19) Adder	100	LF	$ 307.38	$ 30,738.00	$ 60.00	$ 6,000.00	$ 290.00	$ 29,000.00
SA.13	60"	CLSM Bedding (2, D-19) Adder	40	LF	$ 510.17	$ 20,406.80	$ 50.00	$ 2,000.00	$ 790.00	$ 31,600.00
SA.14	60"	Extra Butt-Straps Install (not included in lay schedules)	2	EA	$ 11,793.18	$ 23,586.36	$ 1,000.00	$ 2,000.00	$ 37,000.00	$ 74,000.00
						$ -		$ -		$ -
SA.15	54"	Steel Pipe Installation with Bedding per 1, D-19 (Measured horizontally station to station)	14400	LF	$ 691.09	$ 9,951,696.00	$ 937.00	$ 13,492,800.00	$ 592.78	$ 8,536,032.00
SA.16	54"	Butterfly Valve Installation	4	EA	$ 35,934.16	$ 143,736.64	$ 45,000.00	$ 180,000.00	$ 58,000.00	$ 232,000.00
SA.17	54"	Butterfly Valve Leakage Detection Assembly Installation	1	EA	$ 10,272.17	$ 10,272.17	$ 19,000.00	$ 19,000.00	$ 18,000.00	$ 18,000.00
SA.18	54"	Class B Bedding (3, D-19) Adder	680	LF	$ 298.02	$ 202,653.60	$ 60.00	$ 40,800.00	$ 290.00	$ 197,200.00
SA.19	54"	CLSM Bedding (2, D-19) Adder	40	LF	$ 488.25	$ 19,530.00	$ 50.00	$ 2,000.00	$ 790.00	$ 31,600.00
SA.20	54"	Extra Butt-Straps Install (not included in lay schedules)	2	EA	$ 11,418.47	$ 22,836.94	$ 1,000.00	$ 2,000.00	$ 37,000.00	$ 74,000.00
SA-HC.1	54"x36"	Hillsborough County Tee, Valve, & Sub-out (PP-138)	1	LS	$ 106,714.88		$ 47,700.00		$ 75,000.00	
						$ -		$ -		$ -
SA.21	42"	Steel Pipe Installation with Bedding per 1, D-19 (Measured horizontally station to station)	12895	LF	$ 493.20	$ 6,359,814.00	$ 937.00	$ 12,082,615.00	$ 462.67	$ 5,966,129.65
SA.22	42"	Butterfly Valve Installation	5	EA	$ 28,227.23	$ 141,136.15	$ 36,900.00	$ 184,500.00	$ 90,000.00	$ 450,000.00
SA.23	42"	Butterfly Valve Leakage Detection Assembly Installation	2	EA	$ 10,221.11	$ 20,442.22	$ 18,600.00	$ 37,200.00	$ 15,000.00	$ 30,000.00
SA.24	42"	Class B Bedding (3, D-19) Adder	540	LF	$ 274.15	$ 148,041.00	$ 60.00	$ 32,400.00	$ 310.00	$ 167,400.00
SA.25	42"	CLSM Bedding (2, D-19) Adder	40	LF	$ 432.32	$ 17,292.80	$ 50.00	$ 2,000.00	$ 790.00	$ 31,600.00
SA.26	42"	Extra Butt-Straps Install (not included in lay schedules)	3	EA	$ 11,418.47	$ 34,255.41	$ 1,000.00	$ 3,000.00	$ 43,000.00	$ 129,000.00
						$ -		$ -		$ -
		Connections (PP Sheets)				$ -		$ -		$ -
SA.27	60"	Connect to micro-tunnel pipe (Each Side)	2	EA	$ 29,683.59	$ 59,367.18	$ 40,000.00	$ 80,000.00	$ 62,000.00	$ 124,000.00
SA.28	54"	Connect to micro-tunnel pipe (Each Side)	3	EA	$ 29,308.87	$ 87,926.61	$ 40,000.00	$ 120,000.00	$ 62,000.00	$ 186,000.00
SA.29	42"	Connect to micro-tunnel pipe (Each Side)	2	EA	$ 28,759.87	$ 57,519.74	$ 40,000.00	$ 80,000.00	$ 62,000.00	$ 124,000.00

GARNEY

TAB (ANALYSIS) SHEET

Bid Date: 08/29/25

South Hillsborough Pipeline

Bid Package 1.8-SA: GMP #3 Pipe Installation & Restoration South of River_Segment A

PROJECT: **Tampa Bay Water SHP**

					Garney		JDS INC		AMICI	
					Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)
BID NO	SIZE	DESCRIPTION	QTY	UM						
SA.30	42"	Connect to HDD HDPE pipe (Each Side)	4	EA	$ 33,472.30	$ 133,889.20	$ 40,000.00	$ 160,000.00	$ 20,000.00	$ 80,000.00
SA.31	54"x60"x42"	Tee & Butt-Strap Connection to Segement B	1	LS	$ 39,500.12	$ 39,500.12	$ 20,000.00	$ 20,000.00	$ 25,000.00	$ 25,000.00
SA.32	42"	Lithia WTP Site Bulkhead (Buttstrap connection by Others - GMP #4)	1	LS	$ 27,048.87	$ 27,048.87	$ 20,000.00	$ 20,000.00	$ 25,000.00	$ 25,000.00
						$ -		$ -		$ -
		Cathodic Protection (CP Sheets)				$ -		$ -		$ -
SA.33		Rectifier 2 Station 512+00	1	EA	$ 171,558.36	$ 171,558.36	$ 96,000.00	$ 96,000.00	$ 190,000.00	$ 190,000.00
SA.34		Rectifier 3 Station 845+11	1	EA	$ 147,698.64	$ 147,698.64	$ 96,000.00	$ 96,000.00	$ 190,000.00	$ 190,000.00
SA.35		Rectifier 4 Station 946+00	1	EA	$ 147,698.64	$ 147,698.64	$ 96,000.00	$ 96,000.00	$ 190,000.00	$ 190,000.00
SA.36		Test Station Type FPTS	8	EA	$ 11,143.25	$ 89,146.00	$ 6,600.00	$ 52,800.00	$ 1,900.00	$ 15,200.00
SA.37		Test Station Type CTS (wires provided at grade)	7	EA	$ 3,452.73	$ 24,169.11	$ 7,200.00	$ 50,400.00	$ 340.00	$ 2,380.00
SA.38		Test Station Type PTS	21	EA	$ 3,683.85	$ 77,360.85	$ 4,100.00	$ 86,100.00	$ 300.00	$ 6,300.00
SA.39	42"	Test Station Type IJTS including FLG Isolation Kit (Coordinate with GMP #4 Scope)	1	EA	$ 12,153.02	$ 12,153.02	$ 34,800.00	$ 34,800.00	$ 7,600.00	$ 7,600.00
SA-HC.2	36"	Test Station Type IJTS including FLG Isolation Kit	1	EA	$ 10,946.22		$ 34,800.00		$ 430.00	
SA.40	6"	Test Station Type IJTS including FLG Isolation Kit	17	EA	$ 2,760.00	$ 46,920.00	$ 4,400.00	$ 74,800.00	$ 440.00	$ 7,480.00
SA.41	8"	Test Station Type IJTS including FLG Isolation Kit	18	EA	$ 2,771.54	$ 49,887.72	$ 4,300.00	$ 77,400.00	$ 510.00	$ 9,180.00
SA.42	12"	Test Station Type IJTS including FLG Isolation Kit (Surge Releif Valve Assembly)	14	EA	$ 2,835.40	$ 39,695.60	$ 4,900.00	$ 68,600.00	$ 7,600.00	$ 106,400.00
SA.43		Testing, Tags, & Closeout Submittals; Including Coordination with other packages/scopes (Min 10% of Total CP Bid Items)	1	LS	$ 41,500.00	$ 41,500.00	$ 13,300.00	$ 13,300.00	$ 60,000.00	$ 60,000.00
						$ -		$ -		$ -
		Pipeline Appurtenances (AR & D Sheets)				$ -		$ -		$ -
SA.44	8"	Combo Air Valve Assembly & Manway Details 1, D-1 & D-4 @ tunnel shaft riser (existing precast)	3	EA	$ 23,432.90	$ 70,298.70	$ 37,700.00	$ 113,100.00	$ 81,000.00	$ 243,000.00
SA.45	6"	Combo Air Valve Assembly & Manway Details 1, D-1 & D-3	9	EA	$ 47,111.34	$ 424,002.06	$ 35,000.00	$ 315,000.00	$ 81,000.00	$ 729,000.00
SA.46	8"	Combo Air Valve Assembly & Manway Details 1, D-1 & D-3	11	EA	$ 49,621.16	$ 545,832.76	$ 37,700.00	$ 414,700.00	$ 81,000.00	$ 891,000.00
SA.47	6"	Combo Redundant Air Valve Assembly & Manway, Detail 2, D-1 & D-3	7	EA	$ 51,447.10	$ 360,129.70	$ 36,600.00	$ 256,200.00	$ 81,000.00	$ 567,000.00
SA.48	8"	Combo Redundant Air Valve Assembly & Manway, Detail 2, D-1 & D-3	2	EA	$ 55,445.03	$ 110,890.06	$ 44,600.00	$ 89,200.00	$ 81,000.00	$ 162,000.00
SA.49	8"	Redundant Air Valve Assembly, Detail 2, D-1 (ARV size pipe outlet)	1	EA	$ 38,310.48	$ 38,310.48	$ 83,000.00	$ 83,000.00	$ 60,000.00	$ 60,000.00
SA.50	4"	ARV Flushing Assembly Supplied to Owner	1	EA	$ 1,142.73	$ 1,142.73	$ 70,000.00	$ 70,000.00	$ 5,000.00	$ 5,000.00
SA.51	12"	Surge Relief Valve Assembly (Sheet D-20)	1	LS	$ 285,343.25	$ 285,343.25	$ 172,300.00	$ 172,300.00	$ 25,000.00	$ 25,000.00
SA.52	36"	Access Manway Stand Alone with precast MH	8	EA	$ 30,306.46	$ 242,451.68	$ 25,300.00	$ 202,400.00	$ 55,000.00	$ 440,000.00
SA.53	12"	Blow-off Assembly	12	EA	$ 27,303.53	$ 327,642.36	$ 33,800.00	$ 405,600.00	$ 23,000.00	$ 276,000.00
SA.54	3"	Weld Outlet (shipped loose, install in field)	35	EA	$ 5,522.83	$ 193,299.05	$ 1,300.00	$ 45,500.00	$ 2,100.00	$ 73,500.00
SA.55		Sample Point @ manway	5	EA	$ 424.46	$ 2,122.30	$ 10,000.00	$ 50,000.00	$ 3,000.00	$ 15,000.00
SA.56		Sample Point @ ARV	17	EA	$ 270.90	$ 4,605.30	$ 10,000.00	$ 170,000.00	$ 3,000.00	$ 51,000.00
SA.57		Sample Point @ Bulkheads	1	EA	$ 424.46	$ 424.46	$ 10,000.00	$ 10,000.00	$ 3,000.00	$ 3,000.00
SA.58		Sample Point @ Blow-off Assembly	1	EA	$ 424.46	$ 424.46	$ 10,000.00	$ 10,000.00	$ 3,000.00	$ 3,000.00
						$ -		$ -		$ -
		Existing Utilities (PP & UR Sheets)				$ -		$ -		$ -
SA.59	8"	Station 619+68 8" DIP WM Relcation (Sheet UR-5)	1	LS	$ 74,615.88	$ 74,615.88	$ 27,500.00	$ 27,500.00	$ 35,000.00	$ 35,000.00
SA.60	12"	Station 639+99 12" PVC Sewer FM Relocation (Sheet UR-5)	1	LS	$ 104,723.85	$ 104,723.85	$ 25,000.00	$ 25,000.00	$ 35,000.00	$ 35,000.00
SA.61	8"	Station 642+64 8" DIP WM Relocation (Sheet UR-6)	1	LS	$ 74,615.88	$ 74,615.88	$ 27,500.00	$ 27,500.00	$ 40,000.00	$ 40,000.00
SA.62	4"	Station 658+65 4" DIP WM Relocation (Sheet UR-6)	1	LS	$ 63,575.93	$ 63,575.93	$ 22,300.00	$ 22,300.00	$ 25,000.00	$ 25,000.00
SA.63	4"	Station 684+65 4" PVC Sewer FM Relocation (Sheet UR-7)	1	LS	$ 65,358.98	$ 65,358.98	$ 21,200.00	$ 21,200.00	$ 25,000.00	$ 25,000.00

GARNEY

TAB (ANALYSIS) SHEET

Bid Date: 08/29/25

South Hillsborough Pipeline

Bid Package 1.8-SA: GMP #3 Pipe Installation & Restoration South of River_Segment A

PROJECT: **Tampa Bay Water SHP**

BID NO	SIZE	DESCRIPTION	QTY	UM	Garney		JDS INC		AMICI	
					Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)
SA.64		Existing conflict utilities coordination noted TO BE RELOCATED BY OTHERS / Support and/or restrain existing utilities as necessary	1	LS	$ 322,900.37	$ 322,900.37	$ 100,000.00	$ 100,000.00	$ 65,000.00	$ 65,000.00
SA.65		Storm sewer crossing R&R or shore in place	60	EA	$ 10,791.47	$ 647,488.20	$ 6,200.00	$ 372,000.00	$ 10,000.00	$ 600,000.00
SA.66		SS Gravity Lateral Xing R&R	3	EA	$ 8,490.89	$ 25,472.67	$ 7,200.00	$ 21,600.00	$ 15,000.00	$ 45,000.00
SA.67	3/4" - 2"	Water Service Xing R&R	40	EA	$ 3,510.83	$ 140,433.20	$ 5,620.00	$ 224,800.00	$ 15,000.00	$ 600,000.00
SA.68	2"	Remove and Dispose Existing Abandoned TECO Gas Main (Boyette Rd)	5600	LF	$ 9.16	$ 51,296.00	$ 31.00	$ 173,600.00	$ 50.00	$ 280,000.00
						$ -		$ -		$ -
HC		Existing County Utilities not in conflict - ALLOWANCE								
SA-HC.3	6"	PP-127 6" PVC Watermain Replacement with DIP	50	LF	$ 595.74		$ 408.00		$ 500.00	
SA-HC.4	6"	6" Insertavalve	2	EA	$ 15,398.23		$ 7,700.00		$ 6,500.00	
SA-HC.5	6"	6" double linestop	2	EA	$ 15,419.23		$ 15,200.00		$ 11,000.00	
SA-HC.6		Additional Restoration	1	LS	$ 10,000.00		$ 10,000.00		$ 10,000.00	
						$ -		$ -		$ -
		Restoration				$ -		$ -		$ -
SA.69		Asphalt Roadway Trench Patch	20040	LF	$ 121.75	$ 2,439,870.00	$ 171.00	$ 3,426,840.00	$ 280.00	$ 5,611,200.00
SA.70		Existing Speed Bumps temporary replacement	1	EA	$ 850.00	$ 850.00	$ 5,500.00	$ 5,500.00	$ 3,500.00	$ 3,500.00
SA.71		Asphalt Mill and Overlay (including existing structure rim adjustment rings & permanent speed bumps)	657753	SF	$ 3.16	$ 2,078,499.48	$ 4.00	$ 2,631,012.00	$ 4.40	$ 2,894,113.20
SA.72		Temporary (paint) Striping	1	LS	$ 83,400.00	$ 83,400.00	$ 359,300.00	$ 359,300.00	$ 75,000.00	$ 75,000.00
SA.73		Permanent Thermoplastic Striping including any RPMs	1	LS	$ 973,474.44	$ 973,474.44	$ 275,700.00	$ 275,700.00	$ 125,000.00	$ 125,000.00
SA.74		R&R 6" thick reinforced Concrete or Paver Driveway	14883	SF	$ 24.27	$ 361,210.41	$ 12.00	$ 178,596.00	$ 13.00	$ 193,479.00
SA.75		R&R Asphalt Driveway	30261	SF	$ 12.18	$ 368,578.98	$ 6.00	$ 181,566.00	$ 10.00	$ 302,610.00
SA.76		R&R Crushed Stone Driveway/Roadway	13063	SF	$ 5.66	$ 73,936.58	$ 24.00	$ 313,512.00	$ 2.00	$ 26,126.00
SA.77		R&R 4" thick Concrete or Paver Sidewalk along local roads & CDD Berm	128075	SF	$ 11.30	$ 1,447,247.50	$ 11.00	$ 1,408,825.00	$ 13.00	$ 1,664,975.00
SA.78		R&R 6" thick Concrete Sidewalk along arterial roads	41	SF	$ 113.71	$ 4,662.11	$ 17.00	$ 697.00	$ 150.00	$ 6,150.00
SA.79		Sidewalk ADA Detectible Warning Surface including upcharge to sidewalk for ramp	1459	SF	$ 56.82	$ 82,900.38	$ 87.00	$ 126,933.00	$ 38.00	$ 55,442.00
SA.80		R&R Concrete Curb - Type D or F	26115	LF	$ 51.20	$ 1,337,088.00	$ 51.00	$ 1,331,865.00	$ 47.00	$ 1,227,405.00
SA.81		R&R Concrete Curb - Miami (D-14, Dwg TD-5)	77	LF	$ 121.18	$ 9,330.86	$ 72.00	$ 5,544.00	$ 47.00	$ 3,619.00
SA.82		R&R Concrete Curb - Intersection Valley Gutter (D-14, Dwg TD-6)	10	LF	$ 434.08	$ 4,340.80	$ 152.00	$ 1,520.00	$ 150.00	$ 1,500.00
SA.83		R&R Concrete Curb/Median	9626	SF	$ 35.81	$ 344,707.06	$ 87.00	$ 837,462.00	$ 13.00	$ 125,138.00
SA.84		R&R Concrete ditch swale	26405	SF	$ 23.76	$ 627,382.80	$ 16.00	$ 422,480.00	$ 13.00	$ 343,265.00
SA.85		R&R Storm ditch RCP with mitered end slab (per FDOT standard)	15	EA	$ 3,084.20	$ 46,263.00	$ 5,000.00	$ 75,000.00	$ 750.00	$ 11,250.00
SA.86		R&R Storm ditch RCP with mitered end slab with bars (per FDOT standard)	1	EA	$ 8,333.99	$ 8,333.99	$ 7,500.00	$ 7,500.00	$ 1,100.00	$ 1,100.00
SA.87		R&R 12" thick reinforced Concrete Roadway Segment/Commercial Approach/Slab on Grade	3025	SF	$ 39.37	$ 119,094.25	$ 81.00	$ 245,025.00	$ 18.00	$ 54,450.00
SA.88		Property restoration: temp fencing, permanent fencing, monuments, mailboxes, landscaping, irrigation, etc. (shown or not shown on drawings / refer to TCE and PUE agreement conditions)	1	LS	$ 1,887,517.82	$ 1,887,517.82	$ 200,000.00	$ 200,000.00	$ 65,000.00	$ 65,000.00
SA.89		Grassing (Seed, Sod, or Hydroseeding as required)	207776	SY	$ 2.32	$ 482,040.32	$ 1.00	$ 207,776.00	$ 3.40	$ 706,438.40
						$ -		$ -		$ -
		SUBTOTAL BASE BID:				**$ 47,096,080.85**		**$ 54,395,188.00**		**$ 50,694,241.25**
						$ -		$ -		$ -

GARNEY

TAB (ANALYSIS) SHEET

Bid Date: 08/29/25

South Hillsborough Pipeline

Bid Package 1.8-SA: GMP #3 Pipe Installation & Restoration South of River_Segment A

PROJECT: **Tampa Bay Water SHP**					Garney		JDS INC		AMICI	
					Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)
BID NO	SIZE	DESCRIPTION	QTY	UM						
ALT DEDUCT #1		Deduct if awarded with Package 1.8-NA (only enter deduct on one bid form)	1	LS	$ -	$ -	$ -	$ -	$ -	$ -
ALT DEDUCT #2		Deduct if awarded both Packages 1.8-NA & 1.8-B (only enter deduct on one bid form)	1	LS	$ -	$ -	$ -	$ -	$ -	$ -
		TOTAL BASE BID + ALTERNATES:				**$ 47,096,080.85**		**$ 54,395,188.00**		**$ 50,694,241.25**

GARNEY

TAB (ANALYSIS) SHEET

Bid Date: 08/29/25

South Hillsborough Pipeline

Bid Package 1.8-B: GMP #3 Pipe Installation & Restoration_Segment B

PROJECT: **Tampa Bay Water SHP**

BID NO	SIZE	DESCRIPTION	QTY	UM	Garney		JDS INC		AMICI	
					Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)
B.1		Mobilization to Project	1	LS	$ 3,669,244.34	$ 3,669,244.34	$ 800,000.00	$ 800,000.00	$ 474,600.00	$ 474,600.00
B.2		Mobilization (Additional) - Pipe Crew on-site - as directed	2	EA	$ 76,097.74	$ 152,195.48	$ 50,000.00	$ 100,000.00	$ 137,200.00	$ 274,400.00
B.3		General Conditions (Management and coordination with CMAR covered scopes), Bond and Insurance	1	LS	$ 49,086.03	$ 49,086.03	$ 650,000.00	$ 650,000.00	$ 6,061,000.00	$ 6,061,000.00
B.4		Pipe Cleaning, hydrostatic testing, disinfection, & bacteriological sampling	1	LS	$ 107,870.81	$ 107,870.81	$ 122,000.00	$ 122,000.00	$ 2,159,700.00	$ 2,159,700.00
						$ -		$ -		$ -
		Maintenance of Traffic Support (Not covered by CMAR)				$ -		$ -		$ -
B.5		Temporary access earthworks and driveable/walkable pathways (Vehicular and Pedestrian) to individual properties	1	LS	$ 79,041.33	$ 79,041.33	$ 286,000.00	$ 286,000.00	$ 189,753.00	$ 189,753.00
						$ -		$ -		$ -
		Open Cut Pipeline				$ -		$ -		$ -
B.6	60"	Steel Pipe & Fittings Installation with Bedding per 1, C-210 (Measured horizontally station to station)	38140	LF	$ 492.46	$ 18,782,424.40	$ 543.00	$ 20,710,020.00	$ 305.00	$ 11,632,700.00
B.7	60"	Butterfly Valve Installation	7	EA	$ 38,895.86	$ 272,271.02	$ 39,100.00	$ 273,700.00	$ 80,000.00	$ 560,000.00
B.8	60"	Butterfly Valve Leakage Detection Assembly Installation	0	EA	$ -	$ -	$ -	$ -		$ -
B.9	60"	Trench Plug (5, C-210)	6	EA	$ 1,371.24	$ 8,227.44	$ 10,000.00	$ 60,000.00	$ 9,900.00	$ 59,400.00
B.10	60"	CLSM Bedding (2, C-210) Adder	500	LF	$ 516.72	$ 258,360.00	$ 200.00	$ 100,000.00	$ 730.00	$ 365,000.00
B.11	60"	Class B Bedding (3, C-210) Adder	300	LF	$ 319.86	$ 95,958.00	$ 140.00	$ 42,000.00	$ 280.00	$ 84,000.00
B.12	60"	Extra Butt-Straps Install (not included in lay schedules)	4	EA	$ 11,553.47	$ 46,213.88	$ 4,400.00	$ 17,600.00	$ 38,000.00	$ 152,000.00
						$ -		$ -		$ -
B.13		Wetland C Crossing - Bell Creek Crossing with coffer dams and protective slab (Sheets C-061, C233,W-004)	1	LS	$ 263,474.29	$ 263,474.29	$ 88,000.00	$ 88,000.00	$ 926,450.00	$ 926,450.00
B.14		Wetland D Crossing (Sheets C-072-73, W-004)	1	LS	$ 254,452.85	$ 254,452.85	$ 60,000.00	$ 60,000.00	$ 231,500.00	$ 231,500.00
B.15		Wetland E Crossing (Sheets C-077 & 80, W-005)	1	LS	$ 254,452.85	$ 254,452.85	$ 60,000.00	$ 60,000.00	$ 170,500.00	$ 170,500.00
B.16		Wetland F Crossing (Sheets C-085-86, W-006)	1	LS	$ 254,452.85	$ 254,452.85	$ 60,000.00	$ 60,000.00	$ 231,500.00	$ 231,500.00
B.17		Wetland G Crossing (Sheets C-014, W-002) - Fishhawk Creek	1	LS	$ 254,452.85	$ 254,452.85	$ 60,000.00	$ 60,000.00	$ 115,500.00	$ 115,500.00
						$ -		$ -		$ -
		Connections				$ -		$ -		$ -
B.18	60"	Connect to micro-tunnel pipe (Each Side)	8	EA	$ 29,443.87	$ 235,550.96	$ 13,300.00	$ 106,400.00	$ 54,000.00	$ 432,000.00
B.19	60"	Segment A Connection Bulkhead (Buttstrap Connection by Others)	1	LS	$ 27,048.87	$ 27,048.87	$ 11,100.00	$ 11,100.00	$ 57,000.00	$ 57,000.00
B.20	60"	Future Drinking Water Facility Site Bulkhead (Buttstrap Connection by Others - GMP #4)	1	LS	$ 27,048.87	$ 27,048.87	$ 12,500.00	$ 12,500.00	$ 57,000.00	$ 57,000.00
						$ -		$ -		$ -
		Cathodic Protection (CP Sheets)				$ -		$ -		$ -
B.21		Rectifier 1 Station 183+35	1	EA	$ 166,203.10	$ 166,203.10	$ 68,300.00	$ 68,300.00	$ 168,000.00	$ 168,000.00
B.22		Test Station Type FPTS	4	EA	$ 11,143.25	$ 44,573.00	$ 13,300.00	$ 53,200.00	$ 1,800.00	$ 7,200.00
B.23		Test Station Type CTS (wires provided at grade)	8	EA	$ 3,452.73	$ 27,621.84	$ 12,500.00	$ 100,000.00	$ 320.00	$ 2,560.00
B.24		Test Station Type PTS	23	EA	$ 3,683.85	$ 84,728.55	$ 13,300.00	$ 305,900.00	$ 280.00	$ 6,440.00
B.25	60"	Test Station Type IJTS including FLG Isolation Kit (Coordinate with GMP #4 Scope)	1	EA	$ 15,773.46	$ 15,773.46	$ 12,500.00	$ 12,500.00	$ 7,000.00	$ 7,000.00
B.26	8"	Test Station Type IJTS including FLG Isolation Kit	24	EA	$ 2,771.54	$ 66,516.96	$ 13,300.00	$ 319,200.00	$ 410.00	$ 9,840.00
B.27	12"	Test Station Type IJTS including FLG Isolation Kit	8	EA	$ 2,835.43	$ 22,683.44	$ 35,500.00	$ 284,000.00	$ 470.00	$ 3,760.00
B.28		Testing, Tags, & Closeout Submittals; Including Coordination with other packages/scopes (Min 10% of Total CP Bid Items)	1	LS	$ 41,500.00	$ 41,500.00	$ 30,000.00	$ 30,000.00	$ 48,000.00	$ 48,000.00
						$ -		$ -		$ -

GARNEY

TAB (ANALYSIS) SHEET

Bid Date: 08/29/25

South Hillsborough Pipeline

Bid Package 1.8-B: GMP #3 Pipe Installation & Restoration_Segment B

PROJECT: **Tampa Bay Water SHP**

					Garney		JDS INC		AMICI	
					Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)
BID NO	SIZE	DESCRIPTION	QTY	UM						
		Pipeline Appurtenances				$ -		$ -		$ -
B.29	8"	Combo Air Valve Assembly & Manway Details 1, C-214 & 2, C-212 @ tunnel shaft riser (existing precast)	3	EA	$ 23,355.13	$ 70,065.39	$ 19,300.00	$ 57,900.00	$ 72,000.00	$ 216,000.00
B.30	8"	Combo Redundant Air Valve Assembly & Manway, Detail 2, C-214 & 2, C-212	2	EA	$ 55,389.49	$ 110,778.98	$ 34,400.00	$ 68,800.00	$ 80,000.00	$ 160,000.00
B.31	8"	Combo Air Valve Assembly & Manway Details 1, C-214 & 2/3, C-213	17	EA	$ 49,565.62	$ 842,615.54	$ 31,000.00	$ 527,000.00	$ 72,000.00	$ 1,224,000.00
B.32	4"	ARV Flushing Assembly Supplied to Owner	1	EA	$ 1,142.73	$ 1,142.73	$ 3,500.00	$ 3,500.00	$ 980.00	$ 980.00
B.33	36"	Access Manway Stand Alone with precast MH	16	EA	$ 30,350.92	$ 485,614.72	$ 34,000.00	$ 544,000.00	$ 41,000.00	$ 656,000.00
B.34	8"	Blow-off Assembly	2	EA	$ 26,540.21	$ 53,080.42	$ 24,100.00	$ 48,200.00	$ 18,000.00	$ 36,000.00
B.35	12"	Blow-off Assembly	8	EA	$ 30,604.84	$ 244,838.72	$ 30,300.00	$ 242,400.00	$ 25,000.00	$ 200,000.00
B.36	3"	Weld Outlet (shipped loose, install in field)	38	EA	$ 5,522.83	$ 209,867.54	$ 1,500.00	$ 57,000.00	$ 1,700.00	$ 64,600.00
B.37		Sample Point @ ARV	12	EA	$ 270.90	$ 3,250.80	$ 7,800.00	$ 93,600.00	$ 2,300.00	$ 27,600.00
B.38		Sample Point @ Manway	3	EA	$ 424.46	$ 1,273.38	$ 7,500.00	$ 22,500.00	$ 2,300.00	$ 6,900.00
B.39		Sample Point @ Bulkheads	1	EA	$ 424.46	$ 424.46	$ 7,500.00	$ 7,500.00	$ 2,300.00	$ 2,300.00
B.40		Sample Point @ Blow-off Assembly	2	EA	$ 424.46	$ 848.92	$ 7,500.00	$ 15,000.00	$ 2,300.00	$ 4,600.00
						$ -		$ -		$ -
		Existing Utilities				$ -		$ -		$ -
B.41		Station 169+70 Relocate Drainage Structure (Sheet C-034)	1	LS	$ 11,313.15	$ 11,313.15	$ 12,700.00	$ 12,700.00	$ 20,000.00	$ 20,000.00
B.42		Station 171+60 Relocate Sewer Manhole, Coordinate with AMH Development LLC (Sheet C-034)	1	LS	$ 19,063.62	$ 19,063.62	$ 10,408.00	$ 10,408.00	$ 99,000.00	$ 99,000.00
B.43		Station 207+00 30" RCP Storm crossing with headwall and Structure (Sheets C-043, C-220, W-002) - Wetland A	1	LS	$ 39,601.32	$ 39,601.32	$ 19,700.00	$ 19,700.00	$ 323,400.00	$ 323,400.00
B.44		Station 243+50 36" RCP Storm crossing with headwall and access road (Sheets C-052, C-221, W-002) - OSW 3	1	LS	$ 58,946.50	$ 58,946.50	$ 17,300.00	$ 17,300.00	$ 291,400.00	$ 291,400.00
B.45		Station 284+25 6" PVC Sewer FM Relocation (Sheets C-063, C-301)	1	LS	$ 72,544.91	$ 72,544.91	$ 43,600.00	$ 43,600.00	$ 128,800.00	$ 128,800.00
B.46		Seal and Abandon Well (Sheet C-056)	1	LS	$ 5,000.00	$ 5,000.00	$ 10,400.00	$ 10,400.00	$ 31,000.00	$ 31,000.00
B.47		TBW Existing Raw Water TM Crossing Shock Pad (Sheet C-217)	5	EA	$ 7,612.37	$ 38,061.85	$ 7,903.00	$ 39,515.00	$ 36,000.00	$ 180,000.00
B.48		Existing conflict utilities coordination noted TO BE RELOCATED BY OTHERS / Support and/or restrain existing utilities as necessary	1	LS	$ 51,167.33	$ 51,167.33	$ 70,000.00	$ 70,000.00	$ 109,440.00	$ 109,440.00
B.49		Storm sewer crossing R&R or shore in place	6	EA	$ 17,674.93	$ 106,049.58	$ 6,100.00	$ 36,600.00	$ 19,400.00	$ 116,400.00
						$ -		$ -		$ -
		Restoration				$ -		$ -		$ -
B.50		Asphalt Roadway Trench Patch	80	LF	$ 158.29	$ 12,663.20	$ 200.00	$ 16,000.00	$ 470.00	$ 37,600.00
B.51		Asphalt Mill and Overlay (including existing structure rim adjustment rings)	8000	SF	$ 7.09	$ 56,720.00	$ 5.00	$ 40,000.00	$ 5.60	$ 44,800.00
B.52		Temporary (paint) Striping	1	LS	$ 864.00	$ 864.00	$ 5,000.00	$ 5,000.00	$ 1,000.00	$ 1,000.00
B.53		Permanent Thermoplastic Striping including any RPMs	1	LS	$ 12,000.00	$ 12,000.00	$ 10,000.00	$ 10,000.00	$ 14,000.00	$ 14,000.00
B.54		R&R 6" thick reinforced Concrete or Paver Driveway	6405	SF	$ 34.96	$ 223,918.80	$ 17.00	$ 108,885.00	$ 12.00	$ 76,860.00
B.55		R&R Asphalt Driveway	14079	SF	$ 17.41	$ 245,115.39	$ 8.00	$ 112,632.00	$ 9.50	$ 133,750.50
B.56		R&R Crushed Stone Driveway/Roadway	33465	SF	$ 2.25	$ 75,296.25	$ 4.00	$ 133,860.00	$ 1.50	$ 50,197.50
B.57		R&R 4" thick Concrete or Paver Sidewalk along local roads	38660	SF	$ 11.40	$ 440,724.00	$ 11.00	$ 425,260.00	$ 11.00	$ 425,260.00
B.58		R&R 6" thick Concrete Sidewalk along arterial roads	50	SF	$ 99.79	$ 4,989.50	$ 16.00	$ 800.00	$ 12.00	$ 600.00
B.59		Sidewalk ADA Detectible Warning Surface including upcharge to sidewalk for ramp	50	SF	$ 103.50	$ 5,175.00	$ 250.00	$ 12,500.00	$ 52.00	$ 2,600.00
B.60		R&R Concrete Curb - Type D or F	260	LF	$ 70.90	$ 18,434.00	$ 57.00	$ 14,820.00	$ 41.00	$ 10,660.00
B.61		R&R Concrete Curb - Miami	10	LF	$ 466.03	$ 4,660.30	$ 82.00	$ 820.00	$ 41.00	$ 410.00

GARNEY

TAB (ANALYSIS) SHEET

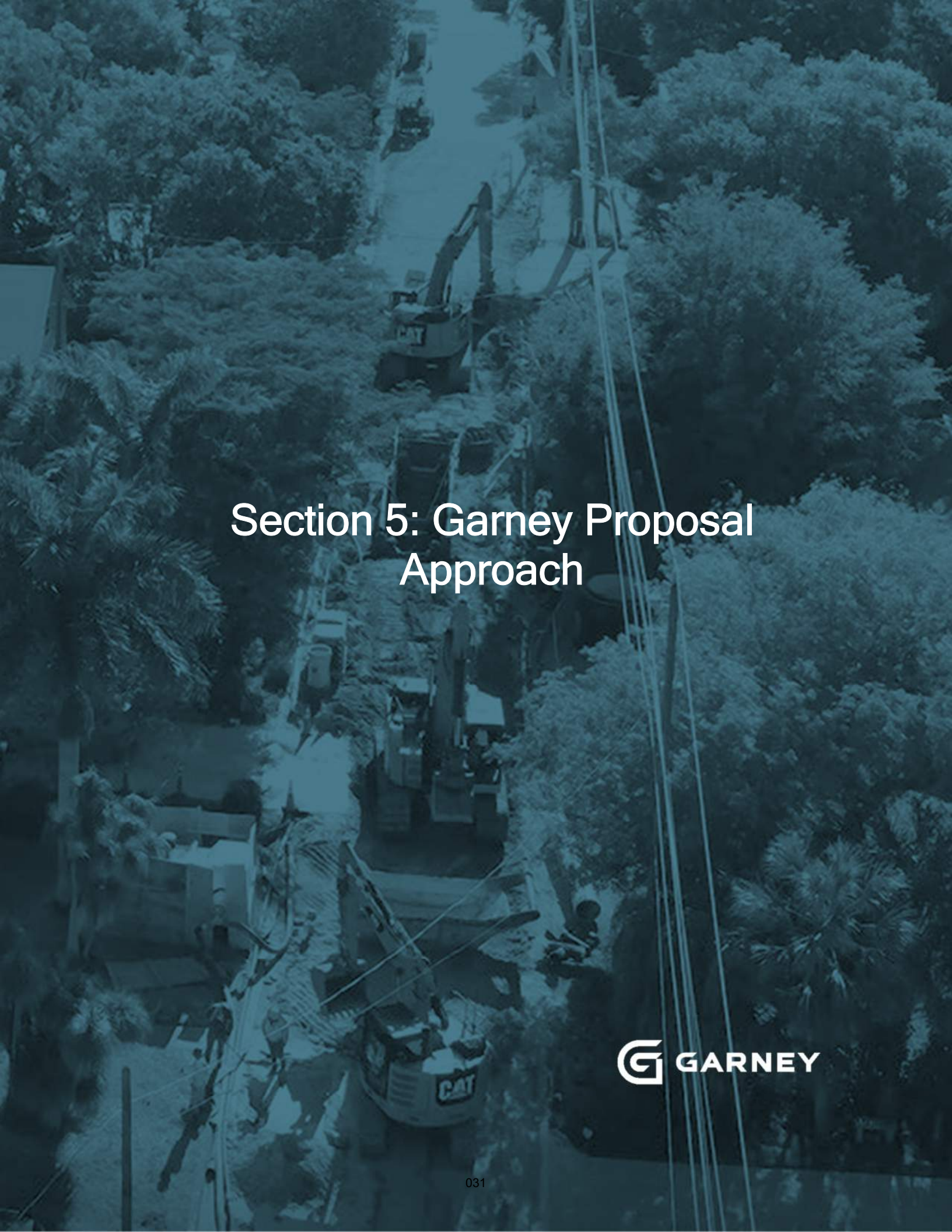
Bid Date: 08/29/25

South Hillsborough Pipeline

Bid Package 1.8-B: GMP #3 Pipe Installation & Restoration_Segment B

PROJECT: **Tampa Bay Water SHP**

BID NO	SIZE	DESCRIPTION	QTY	UM	Garney		JDS INC		AMICI	
					Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)	Unit Cost ($)	Extended Cost ($)
B.62		R&R Storm ditch RCP with mitered end slab (Detail C, C-223)	3	EA	$ 4,039.78	$ 12,119.34	$ 5,000.00	$ 15,000.00	$ 30,000.00	$ 90,000.00
B.63		R&R 12" thick reinforced Concrete Roadway Segment/Commercial Approach/Slab on Grade	144	SF	$ 166.90	$ 24,033.60	$ 400.00	$ 57,600.00	$ 45.00	$ 6,480.00
B.64		Temp Access Road & Re-construct BMX/RC Airfield Access Road (Sheet R-008, Detail 2)	21306	SF	$ 13.18	$ 280,813.08	$ 5.00	$ 106,530.00	$ 18.00	$ 383,508.00
B.65		PVC Pond Liner Replacement (Sheet R-009, Detail A)	731	LF	$ 98.06	$ 71,681.86	$ 120.00	$ 87,720.00	$ 160.00	$ 116,960.00
B.66		Property restoration: temp fencing, permanent fencing, monuments, mailboxes, landscaping, irrigation, etc. (shown or not shown on drawings / refer to TCE and PUE agreement conditions)	1	LS	$ 1,246,586.07	$ 1,246,586.07	$ 632,000.00	$ 632,000.00	$ 80,000.00	$ 80,000.00
B.67		Grassing (Seed, Sod, or Hydroseeding as required)	271941	SY	$ 2.75	$ 747,837.75	$ 1.00	$ 271,941.00	$ 3.25	$ 883,808.25
						$ -		$ -		$ -
		SUBTOTAL BASE BID:				**$ 31,470,609.47**		**$ 28,791,411.00**		**$ 30,743,717.25**
						$ -		$ -		$ -
ALT DEDUCT #1		Deduct if awarded with Package 1.8-NA (only enter deduct on one bid form)	1	LS	$ -	$ -	$ -	$ -	$ -	$ -
ALT DEDUCT #2		Deduct if awarded both Packages 1.8-NA & 1.8-SA (only enter deduct on one bid form)	1	LS	$ (1,500,000.00)	$ (1,500,000.00)	$ -	$ -	$ -	$ -
ALT DEDUCT #3		Credit to exclude restoration of landscaping, irrigation, signage, irrigation well, and other improvements not covered by other bid items on Okerland Ranch Property / Hawkstone CDD (Sheets C-062-063)	1	LS	$ -	$ -	$ (50,000.00)	$ (50,000.00)	$ (65,000.00)	$ (65,000.00)
ALT DEDUCT #4		Credit to exclude restoration of landscaping, irrigation, signage, black iron fence, irrigation well, and other improvements not covered by other bid items on Hammock Crest Property (Sheets C-023-025)	1	LS	$ (50,000.00)	$ (50,000.00)	$ (50,000.00)	$ (50,000.00)	$ (40,000.00)	$ (40,000.00)
		TOTAL BASE BID + ALTERNATES:				**$ 29,920,609.47**		**$ 28,691,411.00**		**$ 30,638,717.25**



Section 5: Garney Proposal Approach

SOUTH HILLSBOROUGH PIPELINE

GMP #3 BID PACKAGES – OPEN CUT INSTALLATION & RESTORATION

QUALIFICATIONS PROPOSAL

Due Date: August 29, 2025

TABLE OF CONTENTS

TAB 1 ABILITY TO MEET PROJECT SCHEDULE MILESTONE DATES

1. Preliminary Project Schedule
2. Table of Schedule Dates

TAB 2 WRITTEN UNDERSTANDING OF SCOPE

1. Project Approach

TAB 3 SAFETY RATINGS

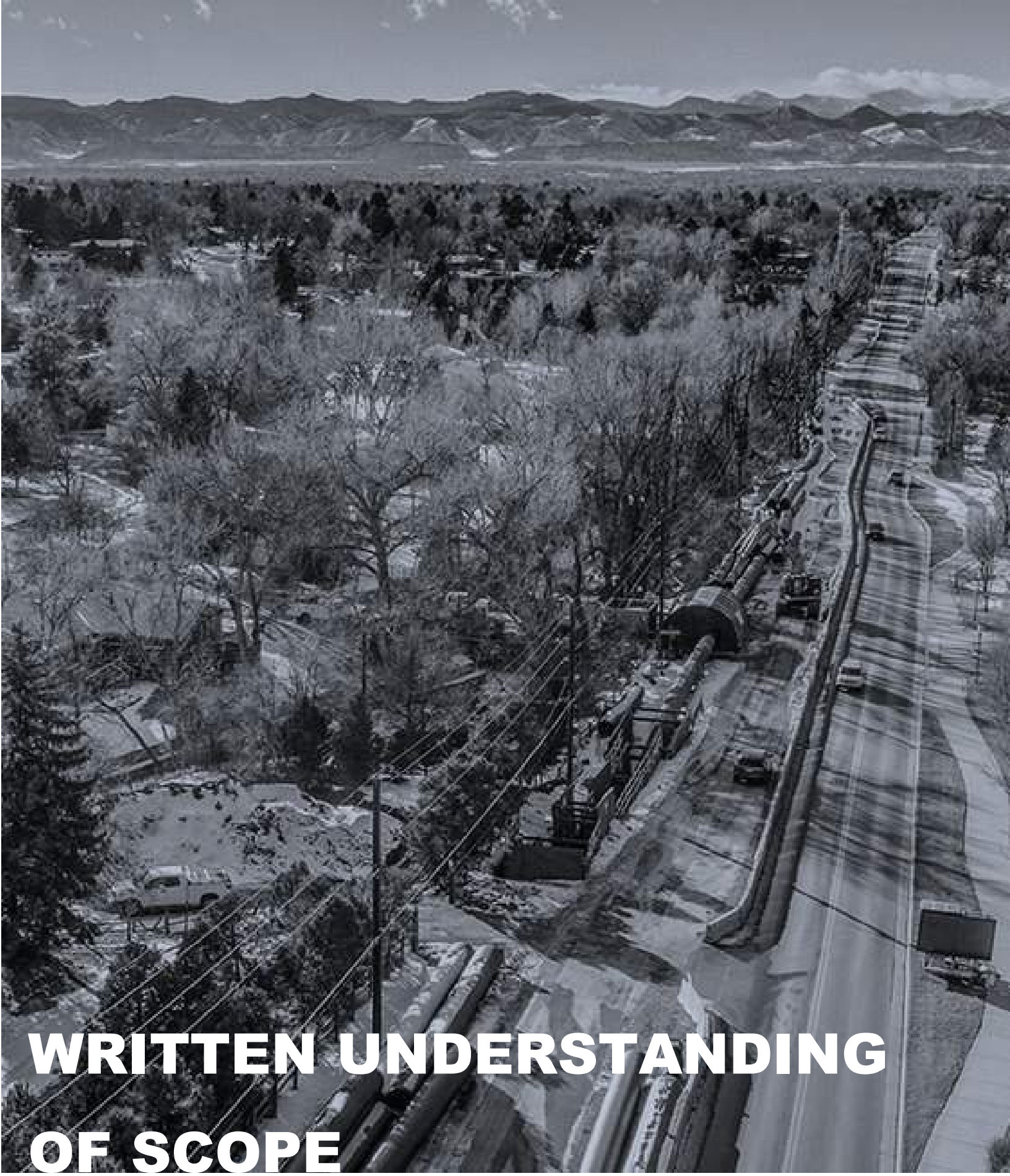
1. EMR and TRIR Safety Statistics
2. Safety and Other Factors

TAB 4 QUALIFICATIONS / KEY PERSONNEL

1. Qualifications & Experience
2. ENR Ranking

TAB 5 BONDING CAPACITY

TAB 6 DM/DWBE PARTICIPATION



WRITTEN UNDERSTANDING OF SCOPE

SOUTH HILLSBOROUGH PIPELINE PROJECT APPROACH

1. Coordination:

Garney has the resources and capabilities to manage and coordinate pipeline construction of multiple Segments of the South Hillsborough Project. Our team is comprised of key personnel that are responsible for roles in both the pre-construction and construction phases of the project. This facilitates accountability and a seamless transition throughout the project. We have organized our leadership team and put qualified people in control of their area of expertise, reflecting the staffing necessary for managing both segments A and B. As a CMAR capable of self-performing the critical path components of this project, we have the ability to backstop the schedule regardless of who is ultimately selected to build each phase of the project, securing the project's outcome.

The base of operations for Garney will be located at the project construction yard at the south terminus of Segment B. From this location Garney would coordinate efforts between multiple crews, subcontractors, and vendors throughout Segment A and Segment B. The construction schedule for the project has been developed to reduce community impacts and to expedite the pipeline installation work. As described in the bid documents the project has been divided into the following three (3) – sections.

Garney has considered multiple Pipe Crews for both sections of Segment A and one (1) - Pipe Crew for Segment B along with the necessary front-end and back-end support crews for each. These crews have been scheduled in coordination with the trenchless work to streamline production while reducing community impacts. The front-end support crews would be tasked with preparing the work area ahead of the pipe crew. This would include saw cutting the pavement, installation of well points, fence removal, utility relocation, and tree protection. The pipe crews would be responsible for excavation of the trench, shoring, dewatering, installation of the new pipeline, and backfilling. The back-end crew would be tasked with well point removal and temporary road restoration, concrete flatwork, grassing, and fence restoration.

Garney Clearing and Erosion Control sub-contractors will lead the pipeline work. The Clearing Subcontractor will perform the clearing and grubbing, tree removal, as well as the canopy clearing required for the project. The Erosion Control Sub-contractor will maintain a close working relationship with the clearing sub-contractor to install erosion control measures and maintain environmental compliance. CMAR will coordinate these front end efforts for Segment A and B.

For Segment A north of the Alafia River, Garney has considered two Pipe Crews. These crew start dates would coincide with the completion of several trenchless crossings. The start dates would also be timed to facilitate open-cut construction during school summer recess in front of Brandon High School and Kingswood Elementary. In addition, the crews have been scheduled with adequate separation to avoid overlapping MOT plans to reduce traffic impacts. There will be several crew moves that will end and stop at trenchless crossings. These moves will help to avoid community events and promote effective construction throughout the northern section of Segment A.

For Segment A south of the Alafia River, Garney has considered two Pipe Crews. These crew start dates would coincide with the several trenchless crossing locations. The start dates would be coordinated to take advantage of the trenchless crossing shafts when they are open and eliminating additional excavation and disruption to the community. In addition, the crews have been scheduled with adequate separation to avoid overlapping MOT plans to reduce traffic impacts. There will be several crew moves that will end and stop at trenchless crossings. These moves will help to avoid community events and promote effective construction throughout the southern section of Segment A.

In addition to the pipe and support crews for Segment A, Garney would employ a Yard Support and Zipper Crew. This crew would work in coordination with the front-end crews north and south of the Alafia River to grind the existing asphalt in preparation for the pipeline installation. This crew would have the ability to float between the pipe crews to ensure pavement grinding is directly in front of excavation work. This crew would also maintain the ability to deliver pipe to the working crews as needed.

For Segment B, Garney has considered one (1) Pipe Crew. This crew start date would coincide with permit and land approval as well as trenchless operations production. The start dates would be coordinated to ensure trenchless crossings in Segment B have been completed prior to the crew's arrival. This allows the pipe crew to tie into the trenchless locations as they progress the work. The only crew moves that are anticipated are the move arounds of the completed trenchless crossings.

2. Crew & Equipment Composition:

Segment A North of the Alafia River will require two (2) – pipe crews and supporting crews, Segment A South of the Alafia River will require two (2) – pipe crews and supporting crews, and Segment B will require one (1) – pipe crew and support crews. The crews for Segment A

& B will maintain similar capabilities and be complied of the following:

Pipe Crew Personnel would consist of One (1) - Assistant Superintendent, One (1) - Lead Excavator Equipment Operator, One (1) - Loader Equipment Operator, One (1) - Backfill Excavator Equipment Operator, One (1) - Roller Equipment Operator, One (1) - Pipe Layer Laborer, One (1) - Tailman Laborer, Two (2) - In-Pipe Laborer, One (1) - Top Man Laborer, and One (1) - Spotter Laborer. The Pipe Crew Equipment would consist of One (1) - CAT Excavator 352, One (1) – CAT Excavator 335, One (1) - John Deere 624P Loader, One (1) – Single Drum Pad Roller, Appropriate Trench Boxes and Dewater Pumps.

The Support Crew Personnel would consist of One (1) - Assistant Superintendent, One (1) – Mini Excavator Equipment Operator, One (1) - Loader Operator, One (1) – Skid Steer/Roller Equipment Operator, Two (2) - Backfill Laborers, and One (1) - Cleanup Laborer. The Support Crew Equipment would consist of One (1) - CAT Excavator 315, One (1) - John Deere 624P, One (1) – CAT Skid Steer 299, One Double Drum Smooth Roller, and The Yard Support / Zipper Crew would consist of One (1) - Assistant Superintendent, One (1) - Lead Excavator Equipment Operator, One (1) - Loader Equipment Operator, One (1) – CDL Driver Equipment Operator, One (1) – Zipper/Driver Equipment Operator and Three (3) - General Laborer. The Pipe Crew Equipment would consist of One (1) - CAT Excavator 336, One (1) - John Deere 624P Loader, One (1) – Water Truck, One (1) – Yard Truck, One (1) – 1-Ton Flatbed, and One (1) – Asphalt Zipper.

3. Subcontracts:

Generally, Garney will self-perform roughly 80-90% of the open cut pipeline installation of the South Hillsborough Pipeline. Garney proposes using specialty subcontractors to help with executing the South Hillsborough Pipeline. These subcontractors consist of concrete flatwork, paving, striping, grassing, fencing, and Badger daylighting. These subcontractors will be coordinated in advance of their designated scope, and will work seamlessly with our production crews. Subcontractor will be held to the same safety standards that Garney follows.

4. Materials:

Materials such as stone, soil, and bedding will be locally sourced to ensure quick delivery when needed. In addition, some materials will be staged at the construction yard for quick deployment as necessary. Materials required for the construction work will be determined

in advance and deliveries will be coordinated to be received at the construction yard. As the work allows, materials may be delivered directly to the working crew to minimize double handling. Garney would plan to receive any Owner Furnished materials at the construction yard and store accordingly.

5. Project Access:

Garney intends to work diligently to provide homeowner and business access throughout the construction of the South Hillsborough Pipeline. Temporary construction easements will be utilized when appropriate to provide drive lanes for homeowners and businesses. When construction operations are directly in front of a homeowner or business driveway, access may be limited for the duration of that installation. However, Garney is committed to restore access as quickly as possible and generally by the end of the work day. In the event that a homeowner or business owner is unable to access their property directly, the CMAR community Coordinators will be engaged to assist with the resident and provide transportation and assistance until access is restored. Garney intends to have a close working relationship with the Community Coordinators to ensure accommodations are met and disruptions are minimized. Likewise, Garney intends to have a close working relationship with the Tampa Bay Water Public Engagement Teams to insure homeowners and business have as much advance warning of the construction operations as possible.

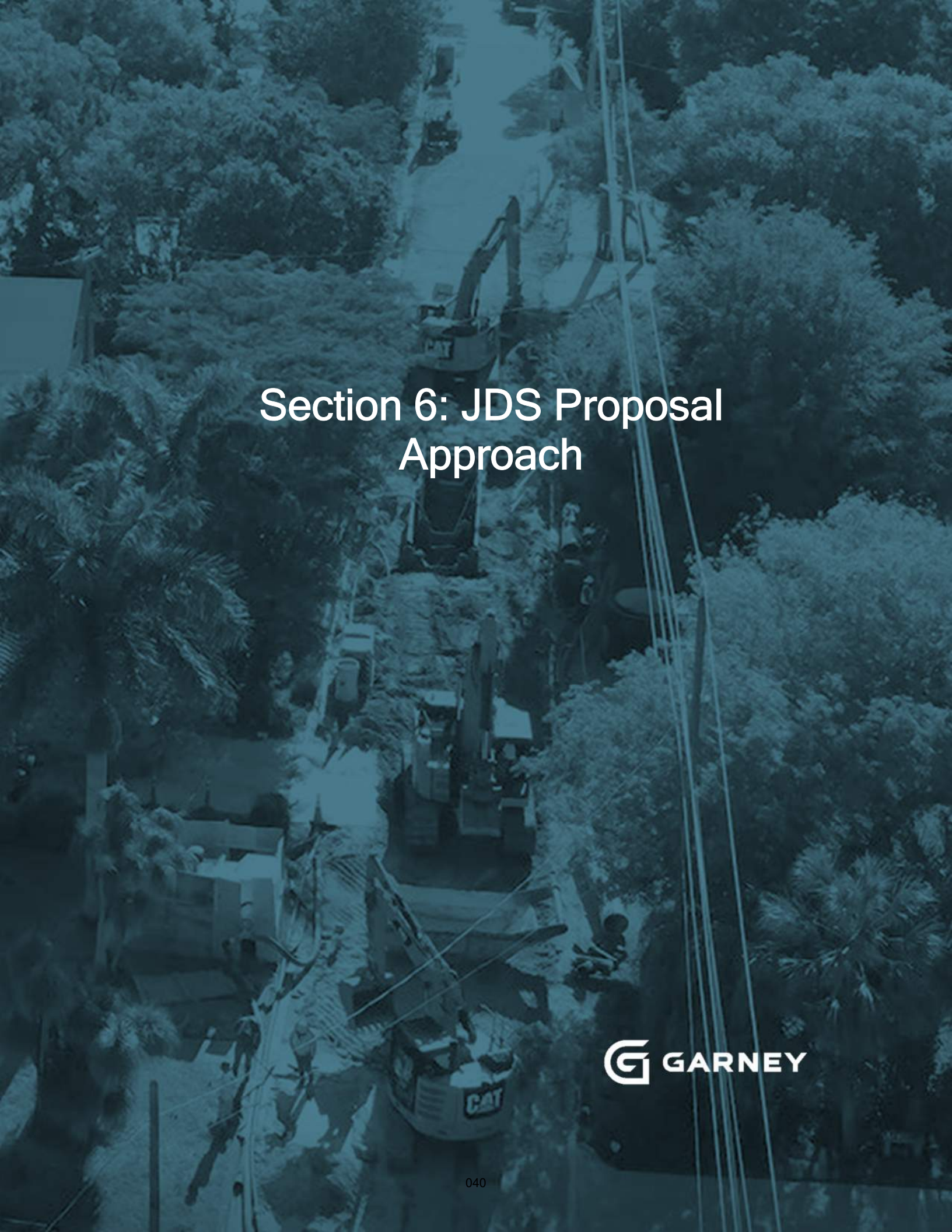
6. CMAR Coordination:

Garney would provide the distinct the benefit of acting as the CMAR on the project as well as executing the construction if awarded. This would provide a seamless integration of the CMAR provided scopes for the project and the construction efforts. Coordination will be a key component to ensure that requirements are met according to the contracts currently in place. Advance notifications will be provided to the managing CMAR to ensure the traffic control, clearing, arborist work, survey, material testing, erosion control, and vibration monitoring are implemented when necessary. This coordination will be necessary to ensure there is no delays to the pipeline installation work.

7. Testing:

Ganey has developed the construction schedule to complete hydrotesting sections of the pipeline once certain sections are completed. The intent is to hydrotest from Butterfly Valve to Butterfly Valve once they have been installed. The water would then be pushed from one section to the next

until the entire pipeline has been tested. Once the pipeline has been completed, all sections have been tested, and tied in, Garney will proceed with flushing the pipeline to include cleaning, disinfection, and bacteriologic samples. Segment A and Segment B will be flushed concurrently and the water would be discharged at the south terminus out the project.



Section 6: JDS Proposal Approach

GARNEY

SCHEDULING AND TIME MANAGEMENT APPROACH

The JDS approach to scheduling and time management is centered on delivering this project safely, on time, and within budget. We recognize that a project of this magnitude requires precise planning, proactive coordination, and continuous monitoring to ensure successful execution. Below is a summary of our scheduling and time management strategy:

Baseline Schedule Development

An accurate, comprehensive Critical Path Method (CPM) schedule is the foundation for successful schedule development. Upon award, we will develop a detailed CPM schedule using industry-standard P6 software. The schedule will reflect all major activities including submittals, procurement, permitting, mobilization, trenching, pipe installation, backfilling, testing, and final restoration.

Milestone-Driven Planning

Establishing project milestones ensures alignment on expectations and critical deliverables. JDS will work closely with the owner and relevant stakeholders to define essential milestones, including Notice to Proceed (NTP), material delivery deadlines, major tie-ins, pressure testing phases, and final completion. These milestones will be integrated into the master schedule and used as benchmarks for performance measurement and reporting

Resource and Crew Optimization

We allocate labor, equipment, and materials based on the schedule's needs, minimizing downtime and ensuring crews are fully utilized. Tasks are sequenced to avoid bottlenecks and maintain productivity in parallel work zones when applicable.

Look-Ahead Scheduling

Short-term planning is key to identifying and addressing issues before they impact the critical path. We will maintain a rolling three-week look-ahead schedule, updated and reviewed weekly by the project team. This tool helps us stay focused on immediate tasks, resolve potential conflicts, and communicate clearly with field personnel, subcontractors, and the owner's representatives.

Progress Tracking and Reporting

Daily logs and weekly updates will feed into our master schedule to track actual progress versus planned. Earned value metrics and schedule variance analyses will help us identify slippage early and take corrective actions.

Risk Mitigation and Contingency Planning

We identify schedule risks during pre-construction and develop contingency plans, such as alternate work sequences, weekend work, or extended shifts, to recover from weather delays, material lead times, or unforeseen site conditions.

Subcontractor Coordination and Management

Although subcontractors are responsible for the means and methods of their work, JDS will collaborate closely with them to ensure their methods are appropriate and their work is sequenced properly. Additionally, project management and field supervision will work to ensure each subcontractor's work is coordinated well with hat of other trade packages.

Stakeholder Communication

Regular coordination meetings with the owner, inspectors, and third-party stakeholders will ensure alignment on schedule expectations, progress updates, and resolution of issues in real time.

Quality

Providing quality projects and high-value products/services is integral to JDS. Consquently, quality control is a critcla componet of the services we provide on our projects. A sucessful quality program does not occur just through periodic inspections during construction: it begins with effective planning and ends with the execution of a detailed quality control plan and system of control measures from the initiation to the completion of TBW's water system.

The JDS team brings extensive experience managing complex linear infrastructure projects under tight schedules and regulatory requirements. Through disciplined planning, real-time coordination, and schedule transparency, we are fully prepared to deliver this water line on time and with the highest standards of quality.

PROJECT APPROACH SEGMENT B

The JDS team will be led by a management staff comprised of the Project Manager, Assistant Project Manager, General Superintendent, Site Superintendent and Foreman. The Project Manager will be responsible for the overall performance of the project and will manage and track budget, costs and schedule. The Assistant Project Manager will support the Project Manager and perform tasks such as issuing purchase orders, subcontracts, verifying installed quantities, scheduling deliveries with the on-site Superintendent, and working with the Project Manager on schedule updates. Our General Superintendent will work with the Project Manager and on-site Superintendent to ensure that the overall project is following the work plan for the project. The on-site Superintendent will be responsible for managing the material deliveries, subcontractors, and in-house pipe crews. JDS intends to complete the pipe installation with one large crew. If the schedule needs determine the need for a second pipe crew, we will add one as needed.

2.00 WRITTEN UNDERSTANDING OF SCOPE – SEGMENT B

A. Coordination Between Different Segments

If awarded more than one segment on the project, JDS would only be interested in multiple segments if they were Segment A-South and Segment B. We would only want to build Segment A-North as a standalone project. Segment B is JDS's preferred segment of work.

The JDS team will be led by a management staff comprised of the Project Manager, Assistant Project Manager, General Superintendent, Site Superintendent and Foreman. The Project Manager will be responsible for the overall performance of the project and will manage and track budget, costs and schedule. The Assistant Project Manager will support the Project Manager and perform tasks such as issuing purchase orders, subcontracts, verifying installed quantities, scheduling deliveries with the on-site Superintendent, and working with the Project Manager on schedule updates. Our General Superintendent will work with the Project Manager and on-site Superintendent to ensure that the overall project is following the work plan for the project. The on-site Superintendent will be responsible for managing the material deliveries, subcontractors, pipe crews, CMAR, and Community Coordinators. JDS intends to complete the pipe installation with three large crews. The demands of the schedule require in depth coordination with the CMAR and community coordinators to manage maintenance of traffic in each work area.

For Segment B we have divided our schedule into 6 work areas. Segment B is a cross-county pipeline, as such, maintenance of traffic was not as large a driver. That being the case, JDS proposes to complete Segment B with one pipe crew. We have discussed starting points, as of now our schedule has us starting work Area 1 at the tie-in point off Fishhawk Blvd. April 1st, 2026, with scheduled completion in April of 2028.

Each area of work will begin with maintenance of traffic (as required), following with clearing, survey, erosion control, and access road building. Following that, dewatering operations will start, JDS is using a mix of Well Point, and Sock dewatering methods. JDS will string pipe for each Area of work, if time allows, we will string ahead into multiple work areas as they are prepped.

JDS will communicate with CMAR and Community Coordinators on an area basis prior to beginning activities in each area. One primary focus area will be the trail removal and temporary access and detour needed. We plan to coordinate that as far in advance as possible, and plan to utilize message boards ahead of time to notify the public.

As pipes are installed and backfilled or support crews, will work closely behind the pipe crew to install appurtenances, de-stull pipe, and clean up the right of way as we progress. Welding crews will progress as pipe is installed and de-stulled. Multiple welding crews will be utilized as production should be performed at a brisk pace. The 25' pipe joints also facilitate the need for multiple welding crews. As the welding crews progress, our support crews will also be grouting the joints and cleaning the pipe.

B.Crew Breakdown

JDS plans to use 1 crew for construction of Segment B The JDS Foreman will manage the daily production of the self-performing pipe installation for the project. A typical crew for this size pipe installation consists of the Foreman and fourteen personnel for executing the work. The support crew will consist of the Foreman and six personnel for support work. Equipment assigned to the crew is as follows:

Pipe Crew

- 1 EA Komatsu 650 Excavator
- 1 EA Komatsu 490 Excavator
- 1 EA Komatsu 390 Excavator
- 1 EA Komatsu 210 Excavator
- 1 EA Komatsu 580 Wheel Loader
- 1 EA Komatsu D51 Dozer
- 1 EA Smooth Drum Compactor
- 2 to 3 EA Off-Road Trucks
- Misc. support equipment such as trench-boxes, aggregate boxes, trench rollers, dewatering pumps, crew trucks, air compressors, and hand tools.

Support Crew

- 1 EA Komatsu 210 Excavator
- 2 EA Komatsu 580 Wheel Loader
- 1 EA Komatsu D51 Dozer
- 1 EA Smooth Drum Compactor
- 1 EA Off-Road Trucks
- 1 EA Flatbed Tractor Trailer Truck for pipe delivery
- Misc. support equipment such as trench-boxes, aggregate boxes, trench rollers, dewatering pumps, crew trucks, air compressors, and hand tools.

Personnel assigned to the pipe crew is generally; one foreman, seven to eight equipment operators, one pipe layer and six laborers. Laborers are supporting the pipeline installation from rigging the pipe, fine grading trench bottom, placing flowable fill and removing stulls from pipe interior. Personnel assigned to the support crew is generally: one foreman, three to four operators, and three laborers. Laborers are supporting the preparation of the work ahead of the pipe install crew, dewatering set up, stringing pipe, stockpiling of materials, removing asphalt, and setting up maintenance of traffic. Also supporting clean up efforts behind the pipe crew installing appurtenances of ARV's, manways, grouting pipe joints and pavement preparation.

C. Work to be subcontracted out:

- Asphalt Paving/Milling – 12%
- Concrete Flat Work (curb/sidewalk) 5%
- Pipe Welding 1.3%
- Dewatering – 6%
- Seeding/Sodding Restoration 0.75%
- Hauling Materials 8.5%

D. Equipment

Pipe Crew

- 1 EA Komatsu 650 Excavator
- 1 EA Komatsu 490 Excavator
- 1 EA Komatsu 390 Excavator
- 1 EA Komatsu 210 Excavator
- 1 EA Komatsu 580 Wheel Loader
- 1 EA Komatsu D51 Dozer
- 1 EA Smooth Drum Compactor
- 4 to 5 EA On-Road Dump Trucks
- Misc. support equipment such as trench-boxes, aggregate boxes, trench rollers, dewatering pumps, crew trucks, air compressors, and hand tools.

Support Crew

- 1 EA Komatsu 210 Excavator
- 2 EA Komatsu 580 Wheel Loader
- 1 EA Komatsu D51 Dozer
- 1 to 2 EA On-Road Dump Trucks
- 1 – Flat bed Truck for pipe delivery
- Misc. support equipment such as trench-boxes, aggregate boxes, trench rollers, dewatering pumps, crew trucks, air compressors, and hand tools.

E. Material Management

Pipe will be delivered to each area of work, if room allows pipe will be strung out carefully to not impede local traffic, or block driveways. If room dictates, we have plans to haul pipe daily to each area bringing only enough for what is anticipated to be installed that day. JDS support staff will have a loader at the staging area as well as tractor trailer for delivery as needed.

F. Contractors approach to maintaining access and egress to properties along the route and coordinating with the CMAR provided Community Coordinators.

The JDS Superintendent will communicate daily with Community Coordinators in each area of work. They will discuss as the work progress concerns with property owners to mitigate hardships, such as garbage day, mail service, and emergency vehicle access. JDS staff will assist with such tasks daily to assure the public is not in harms way of construction activities. As driveway pavement, sidewalks are affected JDS personnel will notify property owners at least 48 hours prior to removal. Once removed a drivable surface of graded aggregate base or lime rock will be installed to maintain access prior to pipe installation. It will be replaced with the drivable surface after construction activities have been completed, and it will be maintained until final restoration of hard surface is completed. Temporary pavement will be installed as needed to maintain traffic flow. Extra communication as construction activities progress will be made by the JDS Superintendent to ensure property owners know when access may be prohibited.

G. Contractors approach to coordinating with CMAR provided scopes such as traffic control, clearing, arborist work, survey, materials testing, erosion control, and vibration monitoring.

The JDS Superintendent will communicate daily with all subcontractors as needed. Project Managers will also coordinate scheduling of activities with each subcontractor. A pre-construction meeting for each work area will be required by JDS to discuss scheduling and needs for each area. These meetings will be held two weeks prior to beginning a new area of work. Coordination will also be made with the Trenchless Subcontractors GMP #2 as necessary to coordinate schedule and tie-in points.

H. Contractors approach to pipe cleaning, disinfection, bacteriologic sample, and hydrostatic testing.

Disinfecting Water Mains

JDS has installed, tested and disinfected millions of feet of water main during its history of operation. For this project, JDS will follow requirements from the specifications and AWWA Standards for pressure testing and disinfecting water mains.

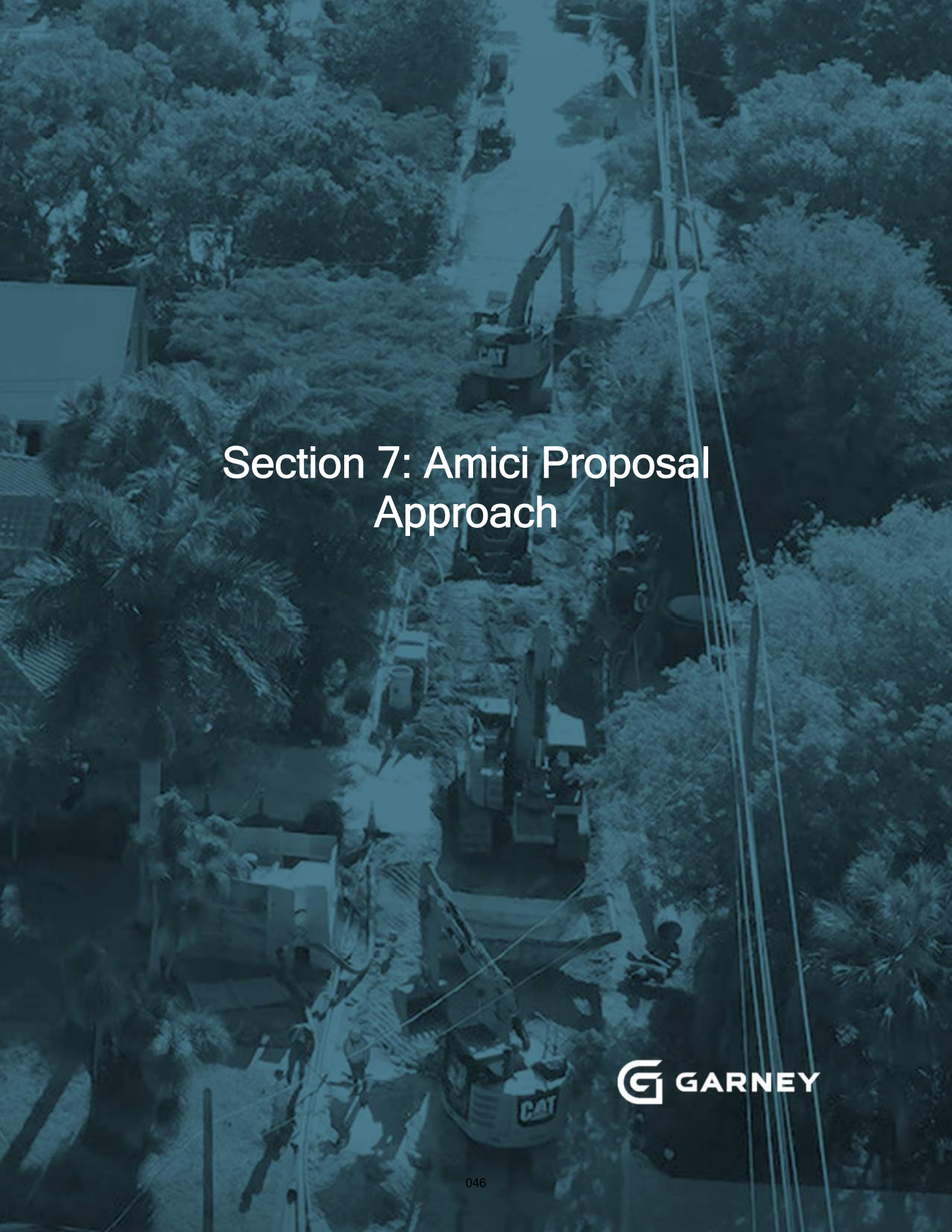
When installing new water mains, the effectiveness of disinfection begins with the installation crew. A pipe that is maintained clean and free of major contamination during installation provides a more efficient base for disinfection. JDS crews will continuously clean the pipe sections as the installation progresses and protect the ends of the pipe during non-working with the appropriate caps/plugs to prevent introduction of foreign materials, water, insects, animals etc.

After the pipe is installed the main will be filled with water from the distribution system for hydrostatic pressure testing, disinfection and flushing. Where applicable, the hydrostatic pressure testing will occur in sections from connection points, caps, valves etc. to other valves, caps or terminations. The water main will be slowly filled to allow air expulsion from the main through the air release valves. Once the main is filled, all air pockets are removed, and the absorption has ceased, the main will be pressurized to the required test pressure as specified. The test will be administered as stated in the specifications with pressure gauges located at locations required for reading test pressures. Durations of holding the test pressure will be per the specifications until the main passes the required test. Failing tests will be re-administered as necessary until a satisfactory test is completed.

Once the pressure test is completed the main will be chlorinated using the slug method. Pre-chlorination flushing will occur to remove any air pockets and particles. Again, the key here with large mains is to ensure the pipe is clean prior to filling. Historically, we have found the slug method most effective for mains of this diameter. The slug method allows for a higher concentration of disinfectant to be introduced into the main flowing slowly through the pipe ensuring that all parts of the main and appurtenances are exposed to the highly chlorinated water dose. The Drawings show bacterial sampling stations at set intervals along the main for reading residual chlorine levels as the slug flow through the main. At any time the levels drop below the AWWA recommendations, the flow will be stopped, and chlorine will be added at the flow source to produce the required levels.

Upon reaching the applicable retention period, the chlorinated water will be flushed from the main, fittings, valves etc. It may be necessary to add a neutralizing agent to the flushed water to neutralize the residual chlorine. All discharges will follow the specifications and regulatory requirements for discharges.

Bacteriological test samples will be taken from the disinfected main that meet the requirements of the specifications and/or AWWA at the time durations specified prior the main being put into service for end users. Sample procedures will follow the specifications and/or AWWA regarding sample intervals, number of samples and recording of samples. If the test results do not produce satisfactory results, the main will be re-disinfected following the specifications and/or AWWA procedures.



Section 7: Amici Proposal Approach

AMICI Engineering Contractors

Written Understanding of Scope

2.00 WRITTEN UNDERSTANDING OF SCOPE

1. Project Approach – Response should be no more than 5-pages and include the following information and should describe how the Bidder proposes to staff, manage, and execute construction of each segment for which bidder submits a bid form.

a. *How Bidder plans to coordinate Work between different Segments of the Project, if awarded more than one Segment.*

b. *Number and type of "crews" proposed for the project with breakdown of crew members and equipment.*

c. *Type and percentage of work that may be subcontracted out by the Bidder (if applicable). To be entered in Bid Form table.*

d. *Type and size of equipment and/or number of machines proposed.*

e. *Procure and manage material deliveries and staging including for Owner Furnished materials.*

f. *Contractor's approach to maintaining access and egress to properties along the route; and coordinating with the CMAR provided Community Coordinators*

g. *Contractor's approach to coordinating with CMAR provided scopes such as traffic control, clearing, arborist work, survey, materials testing, erosion control, and vibration monitoring.*

h. *Contractor's approach to pipe cleaning, disinfection, bacteriologic sample, & hydrostatic testing.*

Responses:

A. AMICI will be bonded as such to only be capable to be awarded a single project. Therefore, no coordination between the different segments internally at AMICI will occur.

B. AMICI will have one crew on this project at all times, consisting of no less than 8 to 10 personnel. Crew to consist of one 110,000 lb. + excavator, one 55,000 lb. + excavator, one loader, one skid steer, one roller, one plate tamper, one crew truck and trailer, one water truck, one Mini wheeler dump truck, and all other ancillary equipment in a stocked CONEX box that AMICI typically always retains for our pipe crews and their tools.

C. AMICI has secured no less than 7% Minority or other qualifying disadvantaged business enterprise through Hillsborough County's directory to participate in this bid/project.

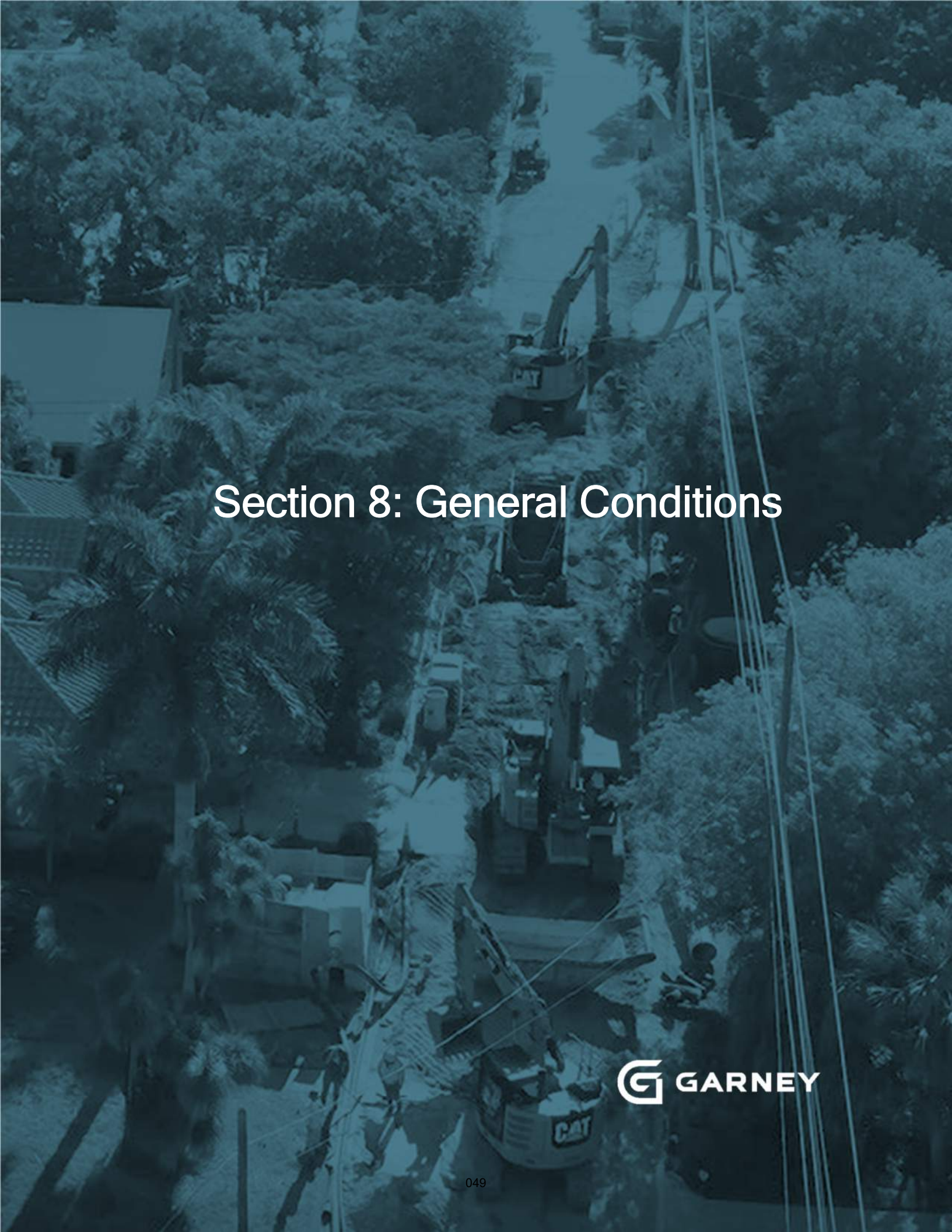
D. Please reference Response "B" and the provided attached "AMICI Equipment List".

E. AMICI has planned to have no less than 4 full time office personnel on this project, two of which will be involved full time with the procurement, delivery, and logistical organization of all material deliveries and related concerns.

F. AMICI has planned to coordinate as often as possible and necessary, and no less frequently than once a week with the community coordinators regarding always maintaining continuous access to impacted businesses, residences, etc. along the route of the project.

G. AMICI has planned to have no less than 4 full time office personnel on this project, two of which will be involved full time with the traffic control, clearing, arborist work, survey, materials testing, erosion control, and vibration monitoring related concerns.

H. AMICI has fully reviewed and familiarized itself with any and all relevant testing requirements for this project, and has prepared its bid in such a manner to appropriately provide the time and resources to facilitate all testing is performed correctly by ourselves and our subcontractors.



Section 8: General Conditions

GARNEY

South Hillsborough Pipeline

GMP #3 - Pipe Installation & Restoration Packages

General Conditions

GCI ITEM	SEGMENT	CATEGORY	VENDOR	TYPE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	LINE ITEM TOTAL
					CMAR Mgmt CREW GMP 3 GAP (7 months / March 2026 through September 2026 / 5 shifts per week)	153.00	Shifts		$ -
	ALL	TBD	Garney	Crew	Construction Manager	1,130.67	Hours	$ 230.00	$ 260,054.10
	A-NORTH	TBD	Garney	Crew	Project Engineer	1,130.67	Hours	$ 159.00	$ 179,776.53
	A-SOUTH	TBD	Garney	Crew	Project Engineer	1,130.67	Hours	$ 159.00	$ 179,776.53
	B	TBD	Garney	Crew	Project Engineer	1,130.67	Hours	$ 159.00	$ 179,776.53
	A-NORTH	TBD	Garney	Crew	Superintendent	1,130.67	Hours	$ 230.00	$ 260,054.10
	A-SOUTH	TBD	Garney	Crew	Superintendent	1,130.67	Hours	$ 230.00	$ 260,054.10
	B	TBD	Garney	Crew	Superintendent	1,130.67	Hours	$ 230.00	$ 260,054.10
	ALL	TBD	Garney	Crew	Survey Manager	1,130.67	Hours	$ 230.00	$ 260,054.10
									$ -
					CMAR Management CREW GMP 3 (24 months / October 2026 through September 2028 / 5 shifts per week)	522.00	Shifts		$ -
	ALL	Sam Flowers	Garney	Crew	Sr. Project Manager	3,857.58	Hours	$ 271.00	$ 1,045,404.18
	ALL	Kyle Kelly	Garney	Crew	Project Manager	3,857.58	Hours	$ 230.00	$ 887,243.40
	ALL	Myles Smith	Garney	Crew	Sr. Superintendent	3,857.58	Hours	$ 280.00	$ 1,080,122.40
	ALL	Noah McCalop	Garney	Crew	Safety Manager	3,857.58	Hours	$ 176.00	$ 678,934.08
	ALL	Jayda Ramos	Garney	Crew	Field Clerk - RT	4,176.00	Hours	$ 90.00	$ 375,840.00
	ALL	Jayda Ramos	Garney	Crew	Field Clerk - OT	1,044.00	Hours	$ 135.00	$ 140,940.00
	ALL	TBD	Garney	Crew	Construction Manager	3,857.58	Hours	$ 230.00	$ 887,243.40
	A-NORTH	TBD	Garney	Crew	Project Engineer	3,857.58	Hours	$ 159.00	$ 613,355.22
	A-SOUTH	TBD	Garney	Crew	Project Engineer	3,857.58	Hours	$ 159.00	$ 613,355.22
	B	TBD	Garney	Crew	Project Engineer	3,857.58	Hours	$ 159.00	$ 613,355.22
	A-NORTH	TBD	Garney	Crew	Superintendent	3,857.58	Hours	$ 230.00	$ 887,243.40
	A-SOUTH	TBD	Garney	Crew	Superintendent	3,857.58	Hours	$ 230.00	$ 887,243.40
	B	TBD	Garney	Crew	Superintendent (50% allocation)	1,928.79	Hours	$ 230.00	$ 443,621.70
	ALL	TBD	Garney	Crew	Survey Manager	3,857.58	Hours	$ 230.00	$ 887,243.40
									$ -
					Yard CREW (24 months / October 2026 through September 2028 / 6 shifts per week)	626.00	Shifts		$ -
	ALL	TBD	Garney	Crew	Asst Project Manager	4,626.14	Hours	$ 193.00	$ 892,845.02
	ALL	TBD	Garney	Crew	Field Engineer	4,626.14	Hours	$ 159.00	$ 735,556.26
	ALL	TBD	Garney	Crew	Equipment Operator (X4) - RT	16,694.00	Hours	$ 103.00	$ 1,719,482.00
	ALL	TBD	Garney	Crew	Equipment Operator (X4) - OT	10,436.00	Hours	$ 154.50	$ 1,612,362.00
	ALL	TBD	Garney	Crew	Laborer (X3) - RT	12,520.00	Hours	$ 83.00	$ 1,039,160.00
	ALL	TBD	Garney	Crew	Laborer (X3) - OT	7,827.00	Hours	$ 124.50	$ 974,461.50
	ALL	Equipment	Garney	Crew	Caterpillar 335	6,260.00	Hours	$ 133.26	$ 834,207.60
	ALL	Equipment	Garney	Crew	Deere 624P	6,260.00	Hours	$ 68.91	$ 431,376.60
	ALL	Equipment	Garney	Crew	25K GVWR Flatbed Truck	6,260.00	Hours	$ 32.30	$ 202,198.00
	ALL	Equipment	Garney	Crew	Water Truck - On Road	6,260.00	Hours	$ 53.32	$ 333,783.20
	ALL	Equipment	Garney	Crew	1-Ton Flatbed Work Truck	6,260.00	Hours	$ 11.98	$ 75,000.00
	ALL	Equipment	Garney	Crew	Asphalt Zipper (X2)	12,520.00	Hours	$ 64.40	$ 806,280.00
	ALL	Equipment	Garney	Crew	WACHS Valve/Vacuum Trailer	6,260.00	Hours	$ 21.60	$ 135,210.00
									$ -
					Community Coordinators CREW (24 months / October 2026 through February 2028 / 4 crews 6 shifts per week) - Segment A Only	2,504.00	Shifts		$ -
	A	TBD	Garney	Crew	Laborer (X3) - RT	50,080.00	Hours	$ 83.00	$ 4,156,640.00
	A	TBD	Garney	Crew	Laborer (X3) - OT	20,034.00	Hours	$ 124.50	$ 2,494,233.00
	A	Equipment	Garney	Crew	Polaris Ranger (X4)	25,040.00	Hours	$ 9.70	$ 242,888.00
									$ -
					Field Office Complex (24 months: October 2026 through September 2028 / less 2 of 15 months from GMP #2 not utilized = 22 Months Total)	22.00	Months		$ -
	ALL	Monthly Office Costs	Willscott		Monthly Office Costs - OFFICE COMPLEX - TBW	22.00	Months	$ 9,331.00	$ 205,282.00
	ALL	Monthly Office Costs	Willscott		Monthly Office Costs - OFFICE COMPLEX - GCI	22.00	Months	$ 7,130.48	$ 156,870.45
	ALL	Monthly Office Costs	Willscott		20-foot Container Office - Yard Boss	22.00	Months	$ 812.70	$ 17,879.40
	ALL	Monthly Office Costs	Copiers Plus		Printer Copier Machine (x2)	44.00	Months	$ 537.50	$ 23,650.00
	ALL	Monthly Office Costs	Office Supply		Monthly Office Costs - SUPPLIES	22.00	Months	$ 3,225.00	$ 70,950.00
	ALL	Monthly Office Costs	Starlink		Satellite Internet Service - PRIORITY 2 TB (x4)	88.00	Months	$ 537.50	$ 47,300.00
	ALL	Monthly Office Costs	TBD - Portajohns		Port-a-Jons	22.00	Months	$ 322.50	$ 7,095.00
	ALL	Monthly Office Costs	TBD - Dumpsters		Dumpsters	22.00	Months	$ 1,182.50	$ 26,015.00
	ALL	Monthly Office Costs	Hillsborough County		Water	22.00	Months	$ 537.50	$ 11,825.00
	ALL	Monthly Office Costs	TECO		Electric Service	22.00	Months	$ 1,075.00	$ 23,650.00
	ALL	Monthly Office Costs	United Rentals		Water tank with pump & Sewer Holding Tank (x2)	44.00	Months	$ 2,230.46	$ 98,140.41
	ALL	Monthly Office Costs	Garney		Travel Expenses	22.00	Months	$ 1,075.00	$ 23,650.00
	ALL	Monthly Office Costs	United Rentals		500 LF Security Fence on stands	22.00	Months	$ 382.70	$ 8,419.40
									$ -
	ALL	Consumables	Garney		Consumables	5.0%	LS	$ 25,505,484.89	$ 1,275,274.24
	ALL	Safety	Garney		Safety PPE	1.25%	LS	$ 25,505,484.89	$ 318,818.56
	ALL	Regional	Garney		Workers Comp Deductible	0.75%	LS	$ 25,505,484.89	$ 191,291.14
	ALL	Regional	Garney		Estimating & Accoutning Support	1.0%	LS	$ 25,505,484.89	$ 255,054.85
	ALL	Regional	Garney		Regional & Local Training	0.75%	LS	$ 25,505,484.89	$ 191,291.14
	ALL	Long Duration	Garney		Fuel & Equipment Long Duration Escalation Costs	1.00	LS	$ 1,102,545.00	$ 1,102,545.00
									$ -
									$ -
								TOTAL GENERAL CONDITIONS:	**$ 32,621,429.87**
					Owner's Project Risk Allowance - Segment A	**1**	**LS**		**$ 10,215,316.50**
	A	TBW			RISK REGISTER ID #1 - Permitting Conditions & Delays	0.35		$ 912,418.00	$ 319,346.30
	A	TBW			RISK REGISTER ID #2 - Property Acquisition	0.35		$ 4,945,775.00	$ 1,731,021.25

GCI ITEM	SEGMENT	CATEGORY	VENDOR	TYPE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	LINE ITEM TOTAL
	A	TBW			RISK REGISTER ID #3 - Utility Conflicts	1.00		$ 699,780.00	$ 699,780.00
	A	TBW			RISK REGISTER ID #5 - MOT Plan Development to Support Productions	1.00		$ 2,712,114.00	$ 2,712,114.00
	A	TBW			RISK REGISTER ID #13 - Existing Asbestos or Contaminated Soils	0.35		$ 1,027,985.00	$ 359,794.75
	A	TBW			RISK REGISTER ID #20 - Abnormal Weather Days	0.70		$ 448,991.00	$ 314,293.70
	A	TBW			RISK REGISTER ID #22 - Hillsborough County Restoration Requirements / match existing and drainage issues / Adjacent to Project Roadway Damages	1.00		$ 1,367,319.00	$ 1,367,319.00
	A	TBW			RISK REGISTER ID #23 - Gopher Tortoise & Other Wildlife Relocations	0.50		$ 349,890.00	$ 174,945.00
	A	TBW			RISK REGISTER ID #31 - Escalation & Tarrifs	0.70		$ 2,041,025.00	$ 1,428,717.50
	A	TBW			RISK REGISTER ID #35 - Business Owner Impacts	1.00		$ 874,725.00	$ 874,725.00
	A	TBW			RISK REGISTER ID #37 - County Traffic Signal Maintenance Fees	1.00		$ 233,260.00	$ 233,260.00
					Owner's Project Risk Allowance - Segment A - HC Project 8304	**1**	**LS**		**$ 1,439,972.32**
	A	Hillsborough County		Project 8304	BID ITEMS NA-HC.1 THRU NA-HC.26 - HC Existing Utilities Not in Conflict	1.00		$ 1,338,550.40	$ 1,338,550.40
	A	Hillsborough County		Project 8304	BID ITEMS SA-HC.3 THRU SA-HC.6 - HC Existing Utilities Not in Conflict	1.00		$ 101,421.92	$ 101,421.92
									$ -
					Owner's Project Risk Allowance - Segment B	**1**	**LS**		**$ 1,954,876.50**
	B	TBW			RISK REGISTER ID #1 - Permitting Conditions & Delays	0.15		$ 912,418.00	$ 136,862.70
	B	TBW			RISK REGISTER ID #2 - Property Acquisition	0.15		$ 4,945,775.00	$ 741,866.25
	B	TBW			RISK REGISTER ID #13 - Existing Asbestos or Contaminated Soils	0.15		$ 1,027,985.00	$ 154,197.75
	B	TBW			RISK REGISTER ID #20 - Abnormal Weather Days	0.30		$ 448,991.00	$ 134,697.30
	B	TBW			RISK REGISTER ID #23 - Gopher Tortoise & Other Wildlife Relocations	0.50		$ 349,890.00	$ 174,945.00
	B	TBW			RISK REGISTER ID #31 - Escalation & Tarrifs	0.30		$ 2,041,025.00	$ 612,307.50
					Contractor's Project Contingency - Segment A	**1**	**LS**		**$ 927,418.70**
	A	Garney			RISK REGISTER ID #19 - Property Owner Damage Claims	1.00	LS	$ 613,125.00	$ 613,125.00
	A	Garney			RISK REGISTER ID #20 - Abnormal Weather Days	70%	LS	$ 448,991.00	$ 314,293.70
									$ -
					Contractor's Project Contingency - Segment B	**1**	**LS**		**$ 134,697.30**
	B	Garney			RISK REGISTER ID #20 - Abnormal Weather Days	30%	LS	$ 448,991.00	$ 134,697.30
									$ -

GARNEY

SOUTH HILLSBOROUGH PIPELINE

CMAR GENERAL CONDITIONS RESOURCE SCHEDULE

JOB TITLE / POSITION	PERSONNEL	2023			2024												2025												2026												2027												2028												2029						COMMENTS
		O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	
PRECONSTRUCTION SERVICES																																																																							
Project Principal	Will Poczekaj		3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%																																														
Project Manager	Sam Flowers		76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%																																														
Pre-Con Support Manager	Kyle Kelly		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%																																															
CMAR Advisor	Sam Marston		13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%																																														
VE/Estimators	Multiple Personnel		93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%																																														
Lead Estimator/Scheduler	Multiple Personnel		79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%																																														
Superintendent	Multiple Personnel		27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%																																														
Trenchless Advisor	Rob Fults		18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%																																														
Safety Manager	Ryan Smith		16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%																																														
QA/QC Risk Manager	Dan Smolik		5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%																																														
Admin Support	Kristin Bello		13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%																																														
GMP-1																																																																							
Sr. Project Manager	Sam Flowers												24%	24%	24%	24%	24%	24%	24%	24%																																																				
Project Manager	Dustan Pate																100%	100%																																																						
Sr. Superintendent	Myles Smith																73%	73%	73%																																																				
GMP-2																																																																							
Sr. Project Manager	Sam Flowers																				24%	24%	24%	24%	24%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%																																			
Project Manager	Kyle Kelly																									100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%																																			
Sr. Superintendent	Myles Smith																				73%	73%	73%	73%	73%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%																																			
Clerk/Secretary Jobsite	Lesley Walker																				87%	87%	87%	87%	87%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%																																			
Safety Manager	TBD																				84%	84%	84%	84%	84%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%																																			
Field Engineer / Yard Supervisor	TBD																						100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%																																			
Community Coordinator Crews	Hourly																									100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%																																			
Crew 9 - Support Crew	Hourly																								75%	75%																																																		
GMP-3 & 4																																																																							
Sr. Project Manager / CMAR Director	Sam Flowers																																					100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
Project Manager / Segments A & B	Kyle Kelly																																					100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
Sr. Superintendent / Segments A & B	Myles Smith																																					100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
Clerk/Secretary Jobsite / Segments A & B	Jayda Ramos																																					100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
Safety Manager / Segments A & B	Noah McCalop																																					100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
Yard Crew	TBD																																					100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
Community Coordinator Crews	Hourly																														100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%																	
Construction Manager	TBD																														100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
Project Manager / CADD & Survey Manager	TBD																														100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
Superintendent / Segment A - North of River	TBD																														100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
Superintendent / Segment A - South of River	TBD																														100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
Superintendent / Segment B	TBD																														100%	100%	100%	100%	100%	100%	100%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%										
Project Engineer / Segment A - North of River	TBD																														100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
Project Engineer / Segment A - South of River	TBD																														100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
Project Engineer / Segment B	TBD																														100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%										
GMP-4 / Close-out																																																																							
Sr. Project Manager / CMAR Director	Sam Flowers																																																													100%	100%	100%	100%	100%	100%	100%	100%		
Project Manager / Segments A & B	Kyle Kelly																																																													100%	100%	100%	100%	100%	100%	100%	100%		
Sr. Superintendent / Segments A & B	Myles Smith																																																													50%	50%	50%	50%	50%	50%	50%	50%		
Clerk/Secretary Jobsite / Segments A & B	Jayda Ramos																																																													100%	100%	100%	100%	100%	100%	100%	100%		
Safety Manager / Segments A & B	Noah McCalop																																																													50%	50%	50%	50%	50%	50%	50%	50%		
Yard Crew	TBD																																																													100%	100%	100%	100%	100%	100%	100%	100%		

GARNEY HOLDING COMPANY
1700 SWIFT STREET, SUITE 200
NORTH KANSAS CITY, MO
64116
816.741.4600

Invoice
2422-03

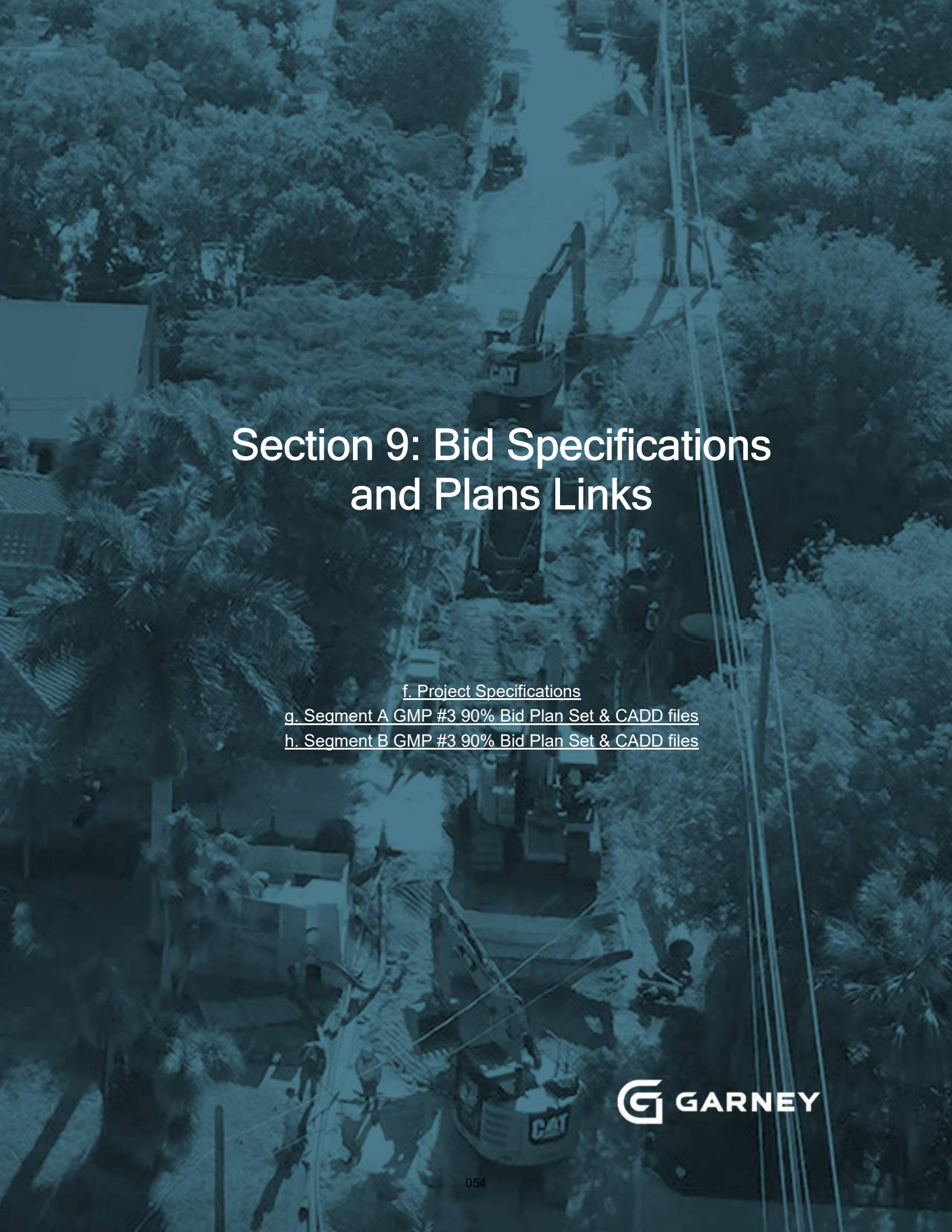
Bill to:	Job: 2422
GARNEY COMPANIES INC 1700 SWIFT STREET, SUITE 200 NORTH KANSAS CITY, MO 64116	TAMPA BAY WATER, A Regional Water Supply Authority 2575 ENTERPRISE ROAD CLEARWATER, FL 33763

Invoice #: 2422-03		Date:	9/02/2025	Customer P.O. #: 2242FL-SOUTH HILLSBOROUGH GMP2
Payment Terms:	NET 30			Officer / Director: WILL G. POCZEKAJ
Customer Code:	DAYS			

Remarks: Insurance

Quantity	Description	U/M	Unit Price	Extension
	Builders Risk Billing			$418,750
	Builders Risk Florida Hurricane Surcharge			$4,188
	General Liability			$265,513
	Bond Billing			$1,074,260

Subtotal:	**$1,762,711**
Total:	**$1,762,711**



Section 9: Bid Specifications and Plans Links

f. Project Specifications
g. Segment A GMP #3 90% Bid Plan Set & CADD files
h. Segment B GMP #3 90% Bid Plan Set & CADD files

GARNEY

Plans and Specifications Table of Contents

Folder f – Project Specifications

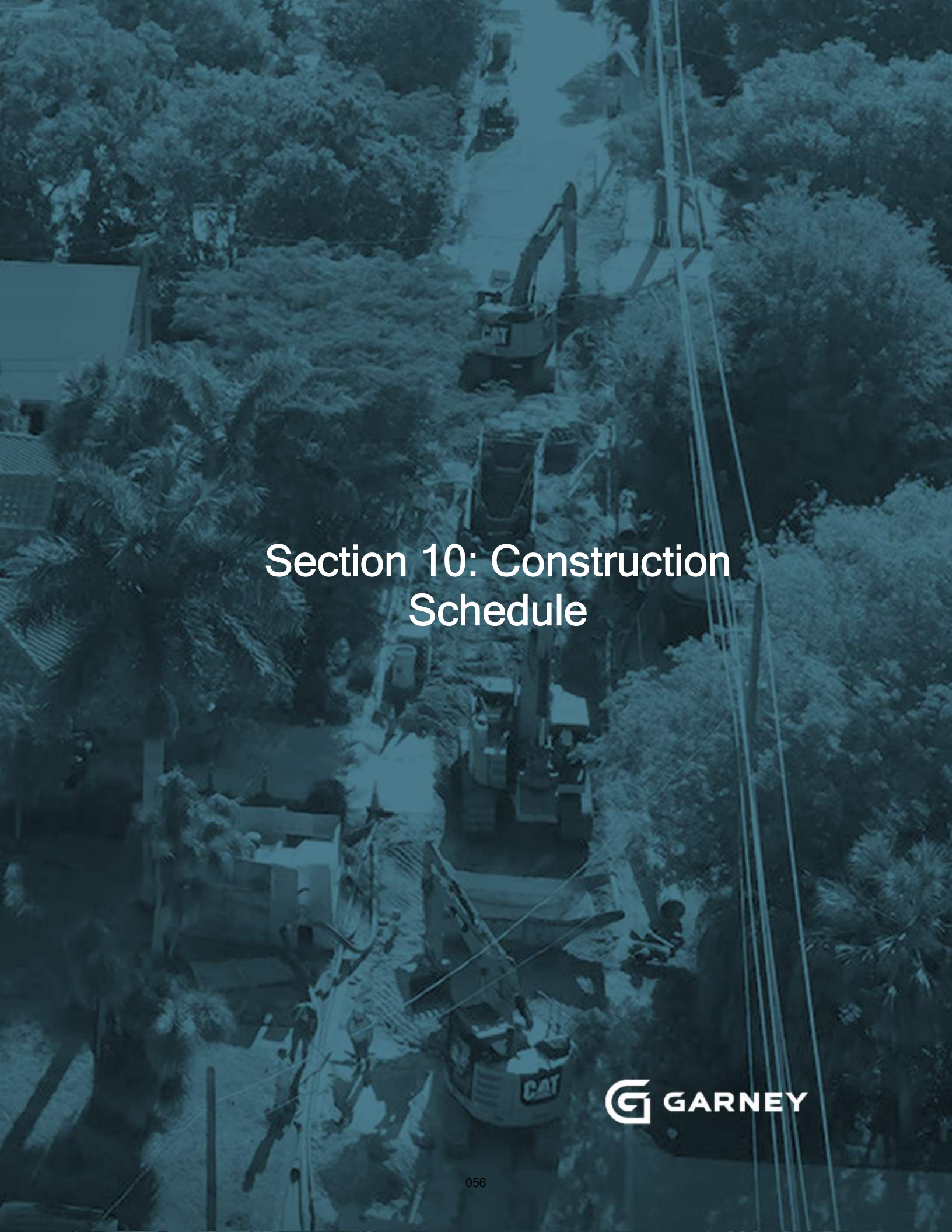
00 Specs Cover Page
13 47 13 Tampa Bay Water Specifications 061725
02100 Demolitions
02110 Site Clearing
02220 Excavation
02240 Dewatering
02270 Erosion and Sedimentation Control
02314 Vibration and Noise Control_addendum 1
02453 Geotechnical Instrumentation and Monitoring
02574 Pavement Removal and Replacement
02704 Pressure Pipe Testing and Disinfection)addendum 2
02922 Sodding, Seeding, and Mulching
03000 Concrete
03600 Grout
09940 Protective Coatings
15005 Pipe Identification
15065 Steel Pipe_Rev
15091 Misc. Ball Valves
15104 Resilient Set Gate Valves
c.15101 AWWA Butterfly Valves
c.15108 Air Release and Combination Air Valves

Folder g – Segment A GMP #3 90% Bid Plan Set

20250701_01610 SHP Segment A_GMP3
01610 SHP Segment A_GMP 3_addendum 2
Segment A Sheet D-1_addendum 1

Folder h – Segment B GMP #3 90% Bid Plan Set

20250701_Seg-B_GMP3-Set
01616 SHP Segment B Sheet C-213_GMP3_Addendum 2
Segment B Sheet C-214_addendum 1
Segment B Sheet R-007_addendum 1



Section 10: Construction Schedule

GARNEY

SOUTH HILLSBOROUGH PIPLINE CONSTRUCTION SCHEDULE

SEGMENT A

SEGMENT B

Project Segments

Mile Post

Blow Off Valves

Air Release Valves

Access Manways

Butterfly Isolation Valves

Foreign Line Crossings

Engineer Station

Pipeline Diameter

Pipeline Crews

In-Street Construction

Community Events

Trenchless Crossings

School Zones

Parsons Rd. Parades

Falkenburg Xing

Lakewood Xing

CSX Railroad Xing

SR60 Xing

Lumsden Xing

Bloomingdale Xing

Alafia River Xing

McMullen to Boyette Xing

Bell Creek / Bell Shoals Xing

HDD #1

Fishhawk Blvd / TECO Xing

Boyette #1

Boyette #3

Boyette #4

60"

54"

42"

60"

2029

2028

2027

2026

2025

2024

Aug Jul Jun May Apr Mar Feb Jan Dec Nov Oct Sep Aug Jul Jun May Apr Mar Feb Jan Dec Nov Oct Sep Aug Jul Jun May Apr Mar Feb Jan Dec Nov Oct

SUBSTANTIAL COMPLETION: 11.20.2028

School Summer Break End

School Summer Break Start

4th of July Parade

Christmas Parade

Regional Facility MT

Falkenburg MT

Lakewood MT

CSX MT

SR 60 MT

Lumsden MT

Bloomingdale MT

Alafia River MT

McMullen to Boyette MT

Bell Creek / Bell Shoals MT

Fishhawk Creek HDD

Fishhawk Blvd / TECO MT

Little Fishhawk Creek HDD

Boyette Rd. MT #4B

Boyette Rd. MT #3B

Boyette Rd. MT #1B

TBW GMP #4 Board Approval

TBW GMP #3 Board Approval

TBW GMP #2 Board Approval

TBW GMP #1 Board Approval

Canopy Trimming

Permits Acquired: HC EPC, FDEP ERP, USACE (Alt Waterway Crossings), TECO, CSX, Port Authority, FC Natural Resources (trees), HC Licenses Agreement (yard)

HC BOCC 30+ Day Closure Approval

Gopher Tortoise Survey & Relocation

Segment A & B Open Cut Property Acquisition

Segment A & B Trenchless Property Acquisition

Land Construction

Wimauma Loop Facility Point of Connection

Little Manatee Facility Point of Connection

Regional Facility Point of Connection

Lee Pipe and Fittings Manufacturing - Open Cut

Lee Pipe and Fittings Manufacturing - Trenchless

Lee Trench Technologies - Open Cut

Lee Trench Technologies - Trenchless

Trenchless Subcontractor Laydown

Lee Concrete Manufacturing - Open Cut Water

Lee Concrete Manufacturing - Trenchless

CB Smith Development - Trenchless

Final Restoration / Cleanup

Final Restoration / Cleanup

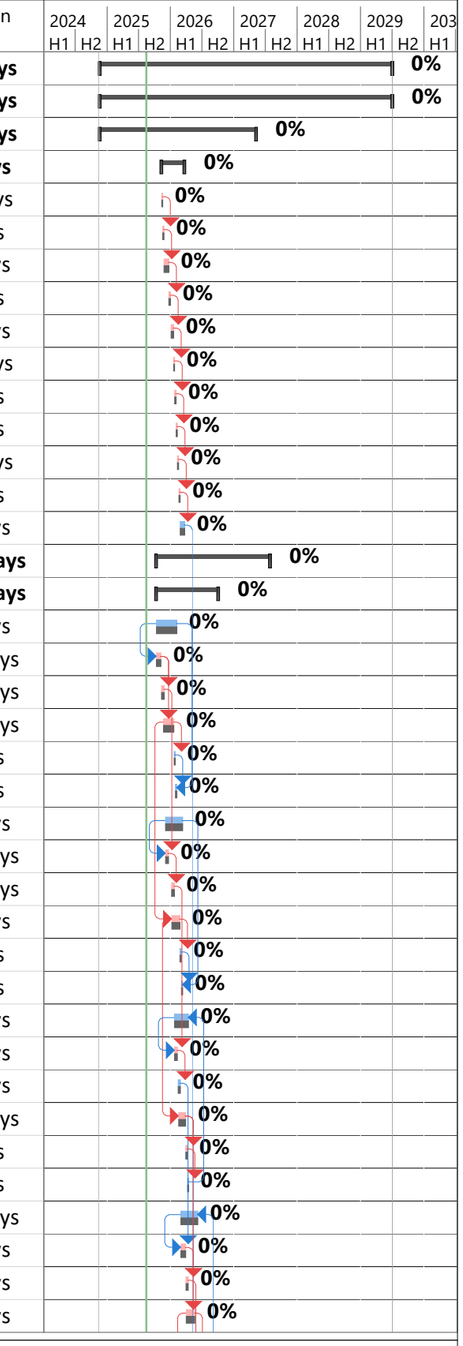
MOT	Pipe Crew #1A
Clear & Grub A	Pipe Crew #2A
Clear & Grub B	Pipe Crew #3A
Shaft Install Crew	Pipe Crew #4A
Tunnel Crew 1	Pipe Crew #1B
Tunnel Crew 2	Hydro tests
Tunnel Crew 3	In-Street Construction
HDD's	Flushing / Disinfection

GARNEY

Construction Bid Schedule
08/29/2025

TBW - SOUTH HILLSBOROUGH PIPELINE BASELINE SCHEDULE

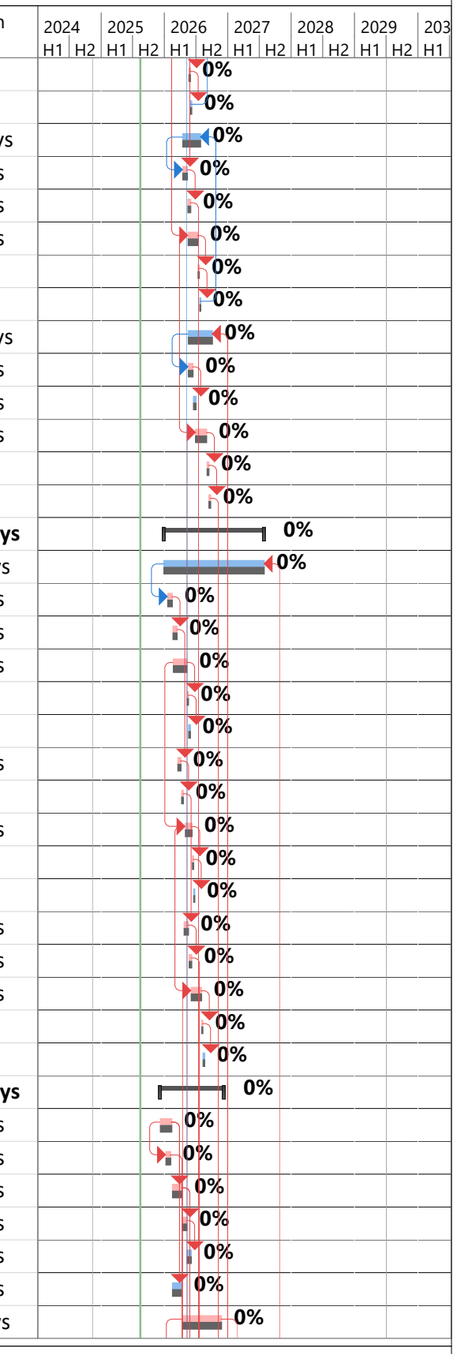
ID	Task Name	Baseline Start	Baseline Finish	Baseline Duration	Start	Finish	Duration
1	**TBW - SOUTH HILLSBOROUGH PIPELINE PROJECT**	**Mon 11/18/24**	**Sat 6/30/29**	**964 days**	**Mon 11/18/24**	**Sat 6/30/29**	**964 days**
2	**SEGMENT A**	**Mon 11/18/24**	**Sat 6/30/29**	**964 days**	**Mon 11/18/24**	**Sat 6/30/29**	**964 days**
3	**Administration Activities & Project Milestones**	**Mon 11/18/24**	**Sat 5/8/27**	**516 days**	**Mon 11/18/24**	**Sat 5/8/27**	**516 days**
23	**Clear & Grub**	**Sat 11/8/25**	**Fri 3/20/26**	**76 days**	**Sat 11/8/25**	**Fri 3/20/26**	**76 days**
24	Clear & Grub Alafia River Micro Tunnel Entry: STA 507+33 to STA 510+12 (279 LF)	Sat 11/8/25	Fri 11/14/25	4.3 days	Sat 11/8/25	Fri 11/14/25	4.3 days
25	Clear & Grub Alafia River Micro Tunnel Exit: STA 511+29 to STA 514+18 (289 LF)	Sat 11/15/25	Fri 11/21/25	5 days	Sat 11/15/25	Fri 11/21/25	5 days
26	Clear & Grub STA 514+48 to STA 564+00 (4,952 LF)	Sat 11/22/25	Fri 12/19/25	18 days	Sat 11/22/25	Fri 12/19/25	18 days
27	Clear & Grub STA 577+70 to STA 584+00 (630 LF)	Sat 12/20/25	Mon 12/29/25	6 days	Sat 12/20/25	Mon 12/29/25	6 days
28	Clear & Grub Regional Facility Micro Tunnel Entry: STA 9+88 to STA 17+02 (714 LF)	Fri 1/2/26	Thu 1/15/26	10 days	Fri 1/2/26	Thu 1/15/26	10 days
29	Clear & Grub Falkenburg Jack & Bore Entry: STA 34+92 to STA 44+45 (953 LF)	Fri 1/16/26	Thu 1/22/26	4.7 days	Fri 1/16/26	Thu 1/22/26	4.7 days
30	Clear & Grub STA 146+85 to STA 154+70 (785 LF)	Thu 1/22/26	Fri 1/30/26	6 days	Thu 1/22/26	Fri 1/30/26	6 days
31	Clear & Grub Bell Creek & Bell Shoals Micro Tunnel Entry: STA 687+06 to STA 689+24 (218 LF)	Fri 1/30/26	Sat 2/7/26	6 days	Fri 1/30/26	Sat 2/7/26	6 days
32	Clear & Grub Little Fishhawk Creek HDD Exit: STA 879+25 to STA 888+00 (875 LF)	Sat 2/7/26	Sat 2/14/26	5.3 days	Sat 2/7/26	Sat 2/14/26	5.3 days
33	Clear & Grub Fishhawk Blvd. / TECO Micro Tunnel Exit: STA 891+05 to STA 896+23 (518 LF)	Mon 2/16/26	Mon 2/23/26	6 days	Mon 2/16/26	Mon 2/23/26	6 days
34	Clear & Grub STA 896+23 to STA 948+00 (5,177 LF)	Tue 2/24/26	Fri 3/20/26	18 days	Tue 2/24/26	Fri 3/20/26	18 days
35	**Trenchless Operations**	**Thu 10/9/25**	**Tue 7/27/27**	**374.4 days**	**Thu 10/9/25**	**Tue 7/27/27**	**374.4 days**
36	**Micro Tunnel Crew #1A**	**Thu 10/9/25**	**Thu 10/1/26**	**204.8 days**	**Thu 10/9/25**	**Thu 10/1/26**	**204.8 days**
37	MOT-46: Kings / Bloomingdale Micro Tunnel	Thu 10/9/25	Tue 2/3/26	81 days	Thu 10/9/25	Tue 2/3/26	81 days
38	Shaft Install Crew 1	Thu 10/9/25	Tue 11/4/25	19.5 days	Thu 10/9/25	Tue 11/4/25	19.5 days
39	Shaft Install Crew 1	Fri 11/7/25	Sat 11/22/25	11.1 days	Fri 11/7/25	Sat 11/22/25	11.1 days
40	Bloomingdale MT	Tue 11/18/25	Sat 1/17/26	39.1 days	Tue 11/18/25	Sat 1/17/26	39.1 days
41	Shaft Removal	Mon 1/19/26	Sat 1/24/26	5 days	Mon 1/19/26	Sat 1/24/26	5 days
42	Shaft Removal	Tue 1/27/26	Tue 2/3/26	6 days	Tue 1/27/26	Tue 2/3/26	6 days
43	MOT-8: Woodberry / Lakewood Jack & Bore	Mon 12/1/25	Mon 3/9/26	69 days	Mon 12/1/25	Mon 3/9/26	69 days
44	Shaft Install Crew 1	Mon 12/1/25	Thu 12/18/25	12.1 days	Mon 12/1/25	Thu 12/18/25	12.1 days
45	Shaft Install Crew 1	Mon 1/5/26	Tue 1/20/26	11.9 days	Mon 1/5/26	Tue 1/20/26	11.9 days
46	Lakewood MT	Tue 1/6/26	Sat 2/21/26	33 days	Tue 1/6/26	Sat 2/21/26	33 days
47	Shaft Removal	Sat 2/21/26	Mon 3/2/26	6 days	Sat 2/21/26	Mon 3/2/26	6 days
48	Shaft Removal	Tue 3/3/26	Mon 3/9/26	5 days	Tue 3/3/26	Mon 3/9/26	5 days
49	MOT-12: Limona / CSX Jack & Bore	Fri 1/23/26	Sat 4/11/26	57 days	Fri 1/23/26	Sat 4/11/26	57 days
50	Shaft Install Crew 1	Fri 1/23/26	Sat 2/7/26	12 days	Fri 1/23/26	Sat 2/7/26	12 days
51	Shaft Install Crew 1	Thu 2/12/26	Tue 2/24/26	10 days	Thu 2/12/26	Tue 2/24/26	10 days
52	CSX MT	Sat 2/14/26	Fri 3/27/26	29.1 days	Sat 2/14/26	Fri 3/27/26	29.1 days
53	Shaft Removal	Sat 3/28/26	Sat 4/4/26	6 days	Sat 3/28/26	Sat 4/4/26	6 days
54	Shaft Removal	Mon 4/6/26	Sat 4/11/26	5 days	Mon 4/6/26	Sat 4/11/26	5 days
55	MOT-16, 17: Moon / SR 60 Micro Tunnel	Fri 2/27/26	Thu 6/4/26	68.9 days	Fri 2/27/26	Thu 6/4/26	68.9 days
56	Shaft Install Crew 1	Fri 2/27/26	Fri 3/27/26	20 days	Fri 2/27/26	Fri 3/27/26	20 days
57	Shaft Install Crew 1	Sat 3/28/26	Sat 4/11/26	10 days	Sat 3/28/26	Sat 4/11/26	10 days
58	SR 60 MT	Tue 3/31/26	Mon 5/18/26	35 days	Tue 3/31/26	Mon 5/18/26	35 days



Critical
Critical Progress
Task
Task Progress
Baseline
Summary Progress
Summary
Project Summary

TBW - SOUTH HILLSBOROUGH PIPELINE BASELINE SCHEDULE

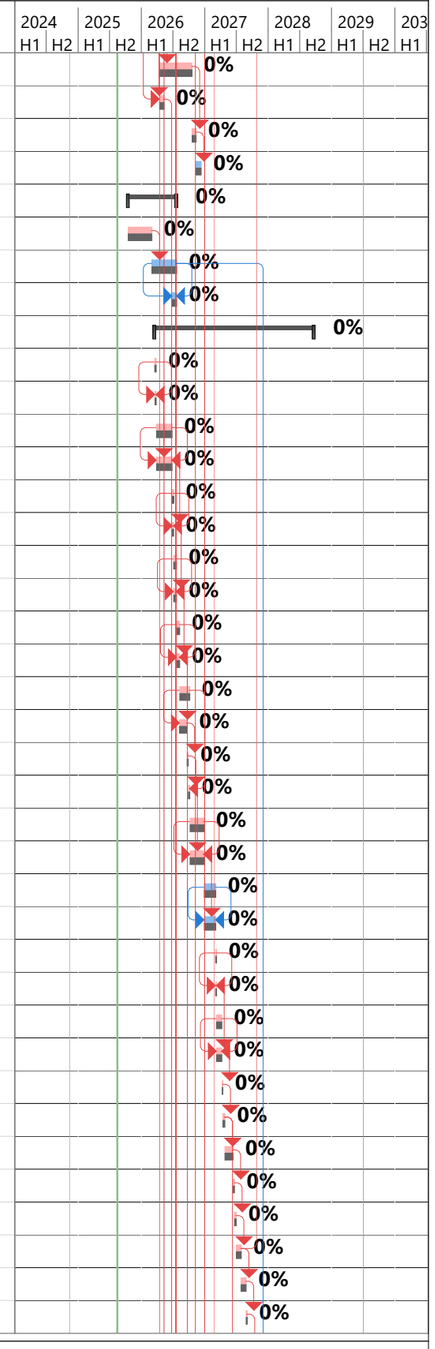
ID	Task Name	Baseline Start	Baseline Finish	Baseline Duration	Start	Finish	Duration
59	Shaft Removal	Tue 5/19/26	Thu 5/28/26	6 days	Tue 5/19/26	Thu 5/28/26	6 days
60	Shaft Removal	Fri 5/29/26	Thu 6/4/26	5 days	Fri 5/29/26	Thu 6/4/26	5 days
61	MOT-36, 37: Parsons Lumsden Miro Tunnel	Tue 4/14/26	Sat 7/25/26	71.9 days	Tue 4/14/26	Sat 7/25/26	71.9 days
62	Shaft Install Crew 1	Tue 4/14/26	Mon 5/11/26	19 days	Tue 4/14/26	Mon 5/11/26	19 days
63	Shaft Install Crew 1	Tue 5/12/26	Sat 5/30/26	12 days	Tue 5/12/26	Sat 5/30/26	12 days
64	Lumsden MT	Fri 5/15/26	Thu 7/9/26	38 days	Fri 5/15/26	Thu 7/9/26	38 days
65	Shaft Removal	Fri 7/10/26	Sat 7/18/26	7 days	Fri 7/10/26	Sat 7/18/26	7 days
66	Shaft Removal	Mon 7/20/26	Sat 7/25/26	5 days	Mon 7/20/26	Sat 7/25/26	5 days
67	MOT-59A, 59B, 60A: McMullen to Boyette Micro Tunnel	Fri 5/15/26	Thu 10/1/26	96.9 days	Fri 5/15/26	Thu 10/1/26	96.9 days
68	Shaft Install Crew 4	Fri 5/15/26	Fri 6/12/26	19 days	Fri 5/15/26	Fri 6/12/26	19 days
69	Shaft Install Crew 4	Sat 6/13/26	Tue 6/30/26	12 days	Sat 6/13/26	Tue 6/30/26	12 days
70	McMullen to Boyette MT	Sat 6/27/26	Sat 8/29/26	45 days	Sat 6/27/26	Sat 8/29/26	45 days
71	Shaft Removal	Mon 8/31/26	Fri 9/11/26	8 days	Mon 8/31/26	Fri 9/11/26	8 days
72	Shaft Removal	Sat 9/12/26	Tue 9/22/26	8 days	Sat 9/12/26	Tue 9/22/26	8 days
73	**Micro Tunnel Crew #2A**	**Sat 12/27/25**	**Tue 7/27/27**	**328.8 days**	**Sat 12/27/25**	**Tue 7/27/27**	**328.8 days**
74	MOT-4: Resource Recovery Facility	Sat 12/27/25	Tue 7/27/27	402 days	Sat 12/27/25	Tue 7/27/27	402 days
75	Shaft Crew 2	Sat 1/17/26	Thu 2/12/26	19 days	Sat 1/17/26	Thu 2/12/26	19 days
76	Shaft Crew 2	Mon 2/16/26	Thu 3/12/26	18 days	Mon 2/16/26	Thu 3/12/26	18 days
77	Regional Facility MT	Thu 2/19/26	Fri 5/8/26	57 days	Thu 2/19/26	Fri 5/8/26	57 days
78	Shaft Removal	Sat 5/9/26	Sat 5/16/26	6 days	Sat 5/9/26	Sat 5/16/26	6 days
79	Shaft Removal	Mon 5/18/26	Tue 5/26/26	6 days	Mon 5/18/26	Tue 5/26/26	6 days
80	Shaft Install Crew 2	Mon 3/16/26	Thu 4/2/26	13 days	Mon 3/16/26	Thu 4/2/26	13 days
81	Shaft Install Crew 2	Mon 4/6/26	Fri 4/17/26	9 days	Mon 4/6/26	Fri 4/17/26	9 days
82	Falkenburg MT	Tue 4/28/26	Sat 6/6/26	28 days	Tue 4/28/26	Sat 6/6/26	28 days
83	Shaft Removal	Mon 6/8/26	Mon 6/15/26	6 days	Mon 6/8/26	Mon 6/15/26	6 days
84	Shaft Removal	Tue 6/16/26	Mon 6/22/26	5 days	Tue 6/16/26	Mon 6/22/26	5 days
85	Shaft Install Crew 2	Tue 4/21/26	Sat 5/16/26	19 days	Tue 4/21/26	Sat 5/16/26	19 days
86	Shaft Install Crew 2	Thu 5/21/26	Thu 6/4/26	10 days	Thu 5/21/26	Thu 6/4/26	10 days
87	Fishhawk Blvd / TECO MT	Mon 6/1/26	Fri 7/31/26	43 days	Mon 6/1/26	Fri 7/31/26	43 days
88	Shaft Removal	Sat 8/1/26	Fri 8/7/26	5 days	Sat 8/1/26	Fri 8/7/26	5 days
89	Shaft Removal	Sat 8/8/26	Tue 8/18/26	8 days	Sat 8/8/26	Tue 8/18/26	8 days
90	**Micro Tunnel Crew #3A**	**Sat 12/6/25**	**Mon 12/7/26**	**208.8 days**	**Sat 12/6/25**	**Mon 12/7/26**	**208.8 days**
91	Shaft Install Crew 3	Sat 12/6/25	Mon 2/9/26	45 days	Sat 12/6/25	Mon 2/9/26	45 days
92	Shaft Install Crew 4	Tue 1/6/26	Mon 2/2/26	20 days	Tue 1/6/26	Mon 2/2/26	20 days
93	Alafia River MT	Fri 2/13/26	Fri 4/10/26	41 days	Fri 2/13/26	Fri 4/10/26	41 days
94	Shaft Removal	Sat 4/11/26	Thu 5/7/26	19 days	Sat 4/11/26	Thu 5/7/26	19 days
95	Shaft Removal	Fri 5/8/26	Tue 6/2/26	18 days	Fri 5/8/26	Tue 6/2/26	18 days
96	Shaft Install Crew 3	Fri 2/13/26	Tue 4/7/26	39 days	Fri 2/13/26	Tue 4/7/26	39 days
97	MOT-65, 66: Bell Creek & Bell Shoales Micro Tunnel	Sat 4/11/26	Mon 11/23/26	159 days	Sat 4/11/26	Mon 11/23/26	159 days



Critical
Critical Progress
Task
Task Progress
Baseline
Summary Progress
Summary
Project Summary

TBW - SOUTH HILLSBOROUGH PIPELINE BASELINE SCHEDULE

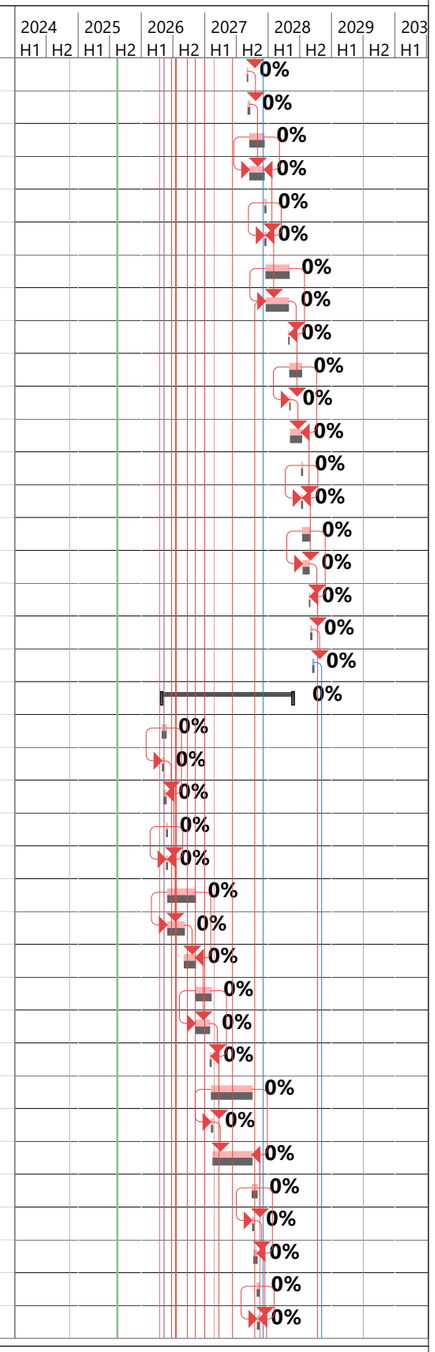
ID	Task Name	Baseline Start	Baseline Finish	Baseline Duration	Start	Finish	Duration
98	Bell Creek / Bell Shoals MT	Mon 4/13/26	Fri 10/16/26	131 days	Mon 4/13/26	Fri 10/16/26	131 days
99	Shaft Install Crew 3	Mon 4/13/26	Fri 5/8/26	19 days	Mon 4/13/26	Fri 5/8/26	19 days
100	Shaft Removal	Sat 10/17/26	Mon 11/9/26	17 days	Sat 10/17/26	Mon 11/9/26	17 days
101	Shaft Removal	Tue 11/10/26	Mon 12/7/26	18 days	Tue 11/10/26	Mon 12/7/26	18 days
102	**HDD Crew #1A**	**Tue 10/14/25**	**Mon 7/20/26**	**159.5 days**	**Tue 10/14/25**	**Mon 7/20/26**	**159.5 days**
103	Fishhawk Creek HDD	Tue 10/14/25	Fri 2/27/26	93 days	Tue 10/14/25	Fri 2/27/26	93 days
104	Little Fishhawk Creek HDD	Fri 2/27/26	Mon 7/20/26	100 days	Fri 2/27/26	Mon 7/20/26	100 days
105	MOT-75: Little Fishhawk Creek HDD Pipe Staging	Tue 6/23/26	Mon 7/20/26	18.3 days	Tue 6/23/26	Mon 7/20/26	18.3 days
106	**Open Cut Pipe Crew #1A**	**Mon 3/16/26**	**Mon 9/18/28**	**524.8 days**	**Mon 3/16/26**	**Mon 9/18/28**	**524.8 days**
107	MOT-39: Intersection Closure - John Moore Rd, & Ronele Dr.	Mon 3/16/26	Tue 3/24/26	7 days	Mon 3/16/26	Tue 3/24/26	7 days
108	John Moore Rd. & Ronele Dr. Intersection: STA 394+00 to STA 396+00 (200ft)	Tue 3/17/26	Tue 3/24/26	5.3 days	Tue 3/17/26	Tue 3/24/26	5.3 days
109	MOT-40: Detour - Ronele Dr.	Thu 3/26/26	Tue 6/23/26	64 days	Thu 3/26/26	Tue 6/23/26	64 days
110	STA 396+00 to STA 423+00 (2,700 LF)	Thu 3/26/26	Tue 6/23/26	64 days	Thu 3/26/26	Tue 6/23/26	64 days
111	MOT-41: Intersection Closure - Ronele Dr. & S. Kings Ave	Tue 6/23/26	Thu 7/2/26	7 days	Tue 6/23/26	Thu 7/2/26	7 days
112	Ronele Dr. & S. Kings Ave. Intersection: STA 423+00 to STA 425+00 (200ft)	Thu 6/25/26	Thu 7/2/26	6 days	Thu 6/25/26	Thu 7/2/26	6 days
113	MOT-42,43: Diversion & Lane Shift of S. Kings Ave.	Fri 7/3/26	Sat 7/18/26	11 days	Fri 7/3/26	Sat 7/18/26	11 days
114	KINGSWOOD ELEMENTARY SCHOOL STA 425+00 to STA 428+00 (300 LF)	Fri 7/3/26	Sat 7/18/26	11 days	Fri 7/3/26	Sat 7/18/26	11 days
115	MOT-44,45: Diversion & Lane Shift of S. Kings Ave.	Mon 7/20/26	Thu 8/6/26	13 days	Mon 7/20/26	Thu 8/6/26	13 days
116	STA 428+00 to STA 432+00 (400 LF)	Mon 7/20/26	Thu 8/6/26	13 days	Mon 7/20/26	Thu 8/6/26	13 days
117	MOT-42,43: Diversion & Lane Shift of S. Kings Ave.	Fri 8/7/26	Sat 10/3/26	41 days	Fri 8/7/26	Sat 10/3/26	41 days
118	STA 432+00 to STA 441+27 (927 LF)	Fri 8/7/26	Thu 9/17/26	29 days	Fri 8/7/26	Thu 9/17/26	29 days
119	Kings / Bloomingdale Micro Tunnel Connections: STA 441+27	Fri 9/18/26	Fri 9/25/26	6 days	Fri 9/18/26	Fri 9/25/26	6 days
120	Kings / Bloomingdale Micro Tunnel Connections: STA 443+87	Sat 9/26/26	Sat 10/3/26	6 days	Sat 9/26/26	Sat 10/3/26	6 days
121	MOT-47: Detour - S. Kings Ave (1)	Mon 10/5/26	Thu 12/24/26	56 days	Mon 10/5/26	Thu 12/24/26	56 days
122	STA 443+87 to STA 472+00 (2,813 LF)	Mon 10/5/26	Thu 12/24/26	56 days	Mon 10/5/26	Thu 12/24/26	56 days
123	MOT-48: Detour - S. Kings Ave (2)	Sat 12/26/26	Tue 3/2/27	47 days	Sat 12/26/26	Tue 3/2/27	47 days
124	STA 472+00 to STA 495+50 (2,350 LF)	Sat 12/26/26	Tue 3/2/27	47 days	Sat 12/26/26	Tue 3/2/27	47 days
125	MOT-49: Intersection Closure - S. Kings Ave. & Alafia Blvd.	Tue 3/2/27	Sat 3/6/27	4 days	Tue 3/2/27	Sat 3/6/27	4 days
126	S. Kings Ave & Alafia Blvd. Intersection: STA 495+50 to STA 496+50 (100ft)	Tue 3/2/27	Sat 3/6/27	4 days	Tue 3/2/27	Sat 3/6/27	4 days
127	MOT-50: Detour Alafia Blvd.	Mon 3/8/27	Tue 4/6/27	22 days	Mon 3/8/27	Tue 4/6/27	22 days
128	STA 496+50 to STA 507+00 (1,050 LF)	Mon 3/8/27	Tue 4/6/27	22 days	Mon 3/8/27	Tue 4/6/27	22 days
129	STA 507+00 to STA 508+35 (135 LF)	Thu 4/8/27	Mon 4/12/27	4 days	Thu 4/8/27	Mon 4/12/27	4 days
130	Alafia River Micro Tunnel Connections: STA 508+35	Tue 4/13/27	Fri 4/23/27	8 days	Tue 4/13/27	Fri 4/23/27	8 days
131	STA 10+00 to STA 16+55 (655 LF)	Sat 4/24/27	Thu 6/10/27	32.1 days	Sat 4/24/27	Thu 6/10/27	32.1 days
132	Regional Facilities Micro Tunnel Connections: STA 16+55	Thu 6/10/27	Sat 6/19/27	7 days	Thu 6/10/27	Sat 6/19/27	7 days
133	Regional Facilities Micro Tunnel Connections: STA 23+17	Sat 6/19/27	Mon 6/28/27	6 days	Sat 6/19/27	Mon 6/28/27	6 days
134	STA 23+05 to STA 34+92 (1,187 LF)	Mon 6/28/27	Tue 7/27/27	20 days	Mon 6/28/27	Tue 7/27/27	20 days
135	STA 34+92 to STA 45+43 (1,051 LF)	Tue 7/27/27	Tue 8/24/27	20 days	Tue 7/27/27	Tue 8/24/27	20 days
136	Falkenburg Jack & Bore Connections: STA 45+43	Tue 8/24/27	Mon 8/30/27	4 days	Tue 8/24/27	Mon 8/30/27	4 days



Critical — Task — Baseline — Summary
Critical Progress — Task Progress — Summary Progress — Project Summary

TBW - SOUTH HILLSBOROUGH PIPELINE BASELINE SCHEDULE

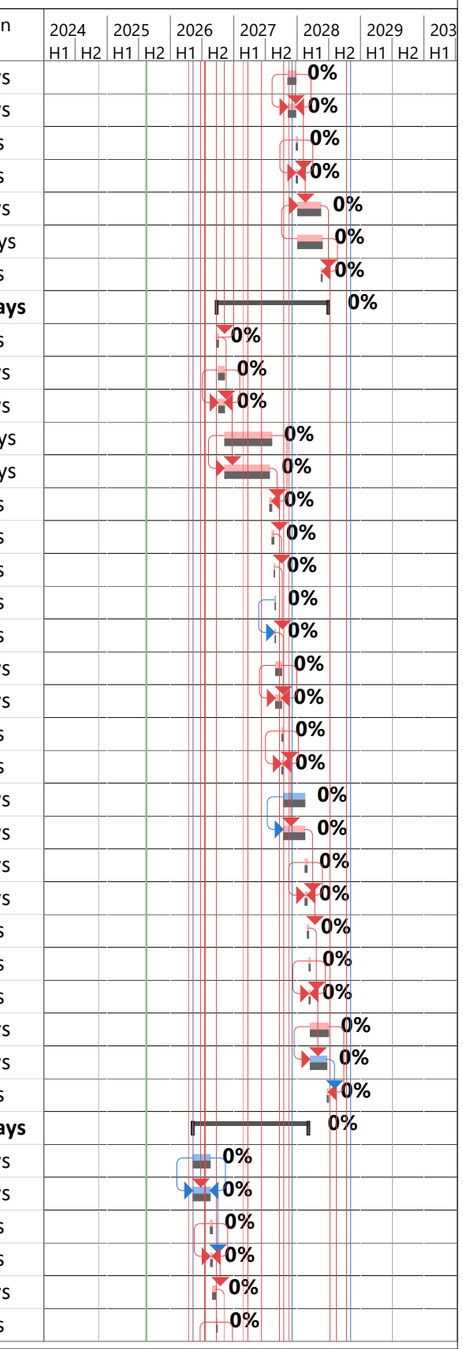
ID	Task Name	Baseline Start	Baseline Finish	Baseline Duration	Start	Finish	Duration
137	Falkenburg Jack & Bore Connections: STA 47+24	Mon 8/30/27	Sat 9/4/27	4 days	Mon 8/30/27	Sat 9/4/27	4 days
138	STA 47+24 to STA 50+50 (326 LF)	Sat 9/4/27	Tue 9/14/27	6.9 days	Sat 9/4/27	Tue 9/14/27	6.9 days
139	MOT-5: Detour - Woodberry Rd (1)	Thu 9/16/27	Tue 12/7/27	58 days	Thu 9/16/27	Tue 12/7/27	58 days
140	STA 50+50 to STA 78+00 (2,750 LF)	Thu 9/16/27	Tue 12/7/27	58 days	Thu 9/16/27	Tue 12/7/27	58 days
141	MOT-6: Intersection Closure - Woodberry Rd. & Grand Regency Blvd.	Thu 12/9/27	Thu 12/16/27	6 days	Thu 12/9/27	Thu 12/16/27	6 days
142	Woodberry Rd. & Grand Regency Blvd. Intersection: STA 78+00 to STA 80+00 (200ft)	Thu 12/9/27	Thu 12/16/27	6 days	Thu 12/9/27	Thu 12/16/27	6 days
143	MOT-7: Detour - Woodberry (2)	Thu 12/16/27	Sat 4/29/28	96 days	Thu 12/16/27	Sat 4/29/28	96 days
144	STA 80+00 to STA 126+87 (4,687 LF)	Fri 12/17/27	Mon 4/24/28	91 days	Fri 12/17/27	Mon 4/24/28	91 days
145	Woodberry / Lakewood Jack & Bore Connection: STA 126+87	Tue 4/25/28	Sat 4/29/28	4 days	Tue 4/25/28	Sat 4/29/28	4 days
146	MOT-9: Detour - Limona Rd.	Mon 5/1/28	Fri 7/7/28	48 days	Mon 5/1/28	Fri 7/7/28	48 days
147	Woodberry / Lakewood Jack & Bore Connection: STA 128+52	Mon 5/1/28	Thu 5/4/28	4 days	Mon 5/1/28	Thu 5/4/28	4 days
148	STA 128+52 to STA 153+00 (2,448 LF)	Fri 5/5/28	Fri 7/7/28	44 days	Fri 5/5/28	Fri 7/7/28	44 days
149	MOT-10: Intersection Closure - Limona Rd. Bates Rd.	Sat 7/8/28	Sat 7/15/28	6 days	Sat 7/8/28	Sat 7/15/28	6 days
150	Limona Rd. & Bates St. Intersection: STA 153+00 to STA 154+50 (150ft)	Sat 7/8/28	Sat 7/15/28	6 days	Sat 7/8/28	Sat 7/15/28	6 days
151	MOT-11: Detour - Limona Rd.	Sat 7/15/28	Sat 8/26/28	31 days	Sat 7/15/28	Sat 8/26/28	31 days
152	STA 154+50 to STA 166+34 (1,184 LF)	Mon 7/17/28	Mon 8/21/28	26 days	Mon 7/17/28	Mon 8/21/28	26 days
153	Limona / CSX Jack & Bore Connections: STA 166+34	Tue 8/22/28	Sat 8/26/28	4 days	Tue 8/22/28	Sat 8/26/28	4 days
154	Lithia Water Treatment Plant POC Tie-In: STA 950+32	Wed 8/30/28	Thu 9/7/28	6 days	Wed 8/30/28	Thu 9/7/28	6 days
155	Regional Facility POC Tie-In: STA 6+15	Mon 9/11/28	Mon 9/18/28	6 days	Mon 9/11/28	Mon 9/18/28	6 days
156	**Open Cut Pipe Crew #2A**	**Mon 4/27/26**	**Mon 5/22/28**	**432.8 days**	**Mon 4/27/26**	**Mon 5/22/28**	**432.8 days**
157	MOT-11: Detour Limona Rd.	Mon 4/27/26	Thu 5/21/26	18 days	Mon 4/27/26	Thu 5/21/26	18 days
158	Limona / CSX Jack & Bore Connections: STA 167+82	Tue 4/28/26	Tue 5/5/26	6 days	Tue 4/28/26	Tue 5/5/26	6 days
159	STA 167+82 to STA 173+00 (518 LF)	Thu 5/7/26	Thu 5/21/26	11 days	Thu 5/7/26	Thu 5/21/26	11 days
160	MOT-13: Intersection Closure - Limona Rd. & Victoria St.	Thu 5/21/26	Thu 5/28/26	5 days	Thu 5/21/26	Thu 5/28/26	5 days
161	Limona Rd. & Victoria St. Intersection: STA 173+00 to STA 174+00 (100ft)	Fri 5/22/26	Thu 5/28/26	4 days	Fri 5/22/26	Thu 5/28/26	4 days
162	MOT-14: Detour - Victoria St.	Fri 5/29/26	Thu 11/5/26	113 days	Fri 5/29/26	Thu 11/5/26	113 days
163	BRANDON HIGH SCHOOL STA 174+00 to STA 208+50 (3,450 LF)	Fri 5/29/26	Thu 9/3/26	69 days	Fri 5/29/26	Thu 9/3/26	69 days
164	STA 208+50 to STA 227+50 (1,900 LF)	Fri 9/4/26	Thu 11/5/26	44 days	Fri 9/4/26	Thu 11/5/26	44 days
165	MOT-15: Detour N. Moon Ave.	Fri 11/6/26	Thu 2/4/27	61 days	Fri 11/6/26	Thu 2/4/27	61 days
166	STA 227+50 to STA 250+43 (2,293 LF)	Fri 11/6/26	Tue 1/26/27	55 days	Fri 11/6/26	Tue 1/26/27	55 days
167	N. Moon / SR 60 Connections: STA 250+43	Thu 1/28/27	Thu 2/4/27	6 days	Thu 1/28/27	Thu 2/4/27	6 days
168	MOT-38A, 38B, 38C: Detour - John Moore Rd.	Thu 2/4/27	Tue 9/28/27	167 days	Thu 2/4/27	Tue 9/28/27	167 days
169	Parsons / Lumsden Micro Tunnel Connections: STA 313+95	Fri 2/5/27	Fri 2/12/27	6 days	Fri 2/5/27	Fri 2/12/27	6 days
170	STA 313+95 to STA 394+00 (8,005 LF)	Sat 2/13/27	Tue 9/28/27	160 days	Sat 2/13/27	Tue 9/28/27	160 days
171	MOT- 17, 18, 19, 20, 21, 22, 23: Detour & Closure of S. Moon Ave.	Tue 9/28/27	Tue 10/26/27	21 days	Tue 9/28/27	Tue 10/26/27	21 days
172	S. Moon / SR 60 Trenchless Connections: STA 253+32	Thu 9/30/27	Thu 10/7/27	6 days	Thu 9/30/27	Thu 10/7/27	6 days
173	S. MOON Ave. STA 253+32 to STA 257+00 (368 LF)	Fri 10/8/27	Tue 10/26/27	14 days	Fri 10/8/27	Tue 10/26/27	14 days
174	MOT-25, 26: S. Moon Ave and W. Robertson Intersection	Tue 10/26/27	Sat 11/6/27	9 days	Tue 10/26/27	Sat 11/6/27	9 days
175	S. Moon Ave and W. Robertson Intersection: STA 257+00 to STA 259+25 (225ft)	Thu 10/28/27	Sat 11/6/27	8 days	Thu 10/28/27	Sat 11/6/27	8 days



Critical
Critical Progress
Task
Task Progress
Baseline
Summary Progress
Summary
Project Summary

TBW - SOUTH HILLSBOROUGH PIPELINE BASELINE SCHEDULE

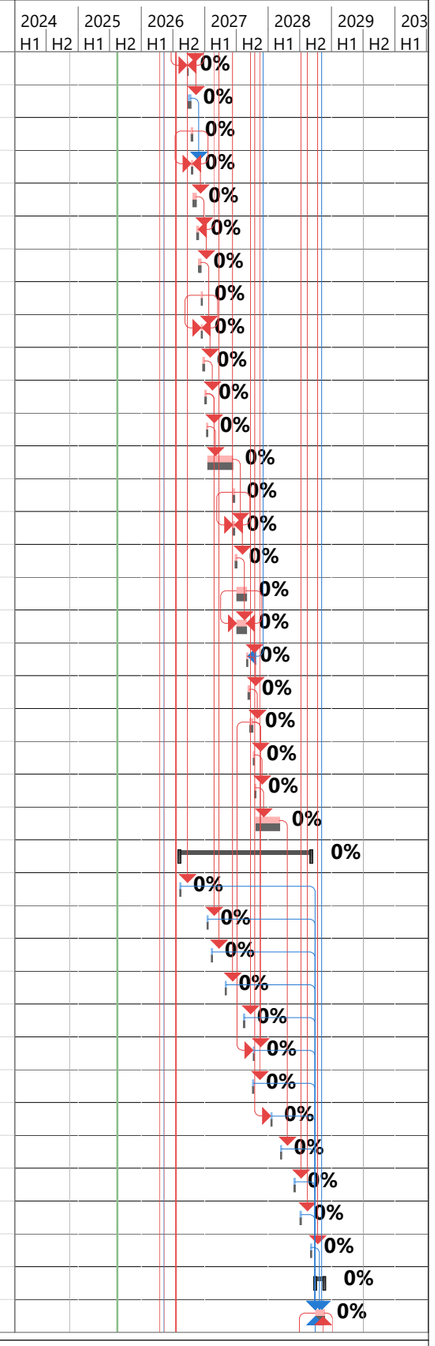
ID	Task Name	Baseline Start	Baseline Finish	Baseline Duration	Start	Finish	Duration
176	MOT-24, 27, 28, 29, 30, 31, 32 : Detour W. Robertson St.	Sat 11/6/27	Tue 12/21/27	31 days	Sat 11/6/27	Tue 12/21/27	31 days
177	STA 259+25 to STA 266+50 (725 LF)	Mon 11/8/27	Tue 12/21/27	30 days	Mon 11/8/27	Tue 12/21/27	30 days
178	MOT-33, 34: Intersection Closure - W. Robertson St. & S. Parsons Ave.	Thu 12/23/27	Fri 12/31/27	6 days	Thu 12/23/27	Fri 12/31/27	6 days
179	W. Robertson St. and S. Parsons Ave. Intersection: STA 266+50 to STA 267+75 (125ft)	Thu 12/23/27	Fri 12/31/27	6 days	Thu 12/23/27	Fri 12/31/27	6 days
180	STA 267+75 to STA 311+04 (4,329 LF)	Mon 1/3/28	Sat 5/13/28	96 days	Mon 1/3/28	Sat 5/13/28	96 days
181	MOT-35: Detour S. Parsons Ave.	Mon 1/3/28	Mon 5/22/28	102 days	Mon 1/3/28	Mon 5/22/28	102 days
182	Parsons / Lumsden Micro Tunnel Connections: STA 311+04	Mon 5/15/28	Mon 5/22/28	6 days	Mon 5/15/28	Mon 5/22/28	6 days
183	**Open Cut Pipe Crew #3A**	**Thu 9/24/26**	**Tue 6/27/28**	**367.2 days**	**Thu 9/24/26**	**Tue 6/27/28**	**367.2 days**
184	McMullen to Boyette Micro Tunnel Connections: STA 603+20	Thu 9/24/26	Thu 10/1/26	6 days	Thu 9/24/26	Thu 10/1/26	6 days
185	MOT-60B Intersection Diversion McMullen / Boyette	Thu 10/1/26	Thu 11/5/26	26 days	Thu 10/1/26	Thu 11/5/26	26 days
186	STA 603+20 to STA 613+40 (1,020 LF)	Fri 10/2/26	Thu 11/5/26	25 days	Fri 10/2/26	Thu 11/5/26	25 days
187	MOT-61A, 61B, 62, 63A, 63B, 64 Boyette Rd. Detours	Fri 11/6/26	Thu 8/5/27	189 days	Fri 11/6/26	Thu 8/5/27	189 days
188	STA 613+40 to STA 688+45 (7,505 LF)	Fri 11/6/26	Fri 7/23/27	180 days	Fri 11/6/26	Fri 7/23/27	180 days
189	Bell Creek & Bell Shoals Micro Tunnel Connections: STA 688+45	Sat 7/24/27	Thu 8/5/27	9 days	Sat 7/24/27	Thu 8/5/27	9 days
190	Alafia River Micro Tunnel Connections: STA 511+46	Fri 8/6/27	Tue 8/17/27	9 days	Fri 8/6/27	Tue 8/17/27	9 days
191	STA 511+46 to STA 512+50 (104 LF)	Thu 8/19/27	Sat 8/21/27	3 days	Thu 8/19/27	Sat 8/21/27	3 days
192	MOT-51: Intersection Closure - Alafia Ridge Rd. & Alafia Ridge Loop (1)	Mon 8/23/27	Fri 8/27/27	4 days	Mon 8/23/27	Fri 8/27/27	4 days
193	Alafia Ridge Rd. & Alafia Ridge Loop Intersection: STA 512+50 to STA 514+00 (150ft)	Mon 8/23/27	Fri 8/27/27	4 days	Mon 8/23/27	Fri 8/27/27	4 days
194	MOT-52: Detour - Alafia Ridge Rd.	Sat 8/28/27	Fri 10/1/27	24 days	Sat 8/28/27	Fri 10/1/27	24 days
195	STA 514+00 to STA 526+75 (1,275 LF)	Sat 8/28/27	Fri 10/1/27	24 days	Sat 8/28/27	Fri 10/1/27	24 days
196	MOT-53: Intersection Closure - Alafia Ridge Rd & Alafia Ridge Loop (2)	Sat 10/2/27	Sat 10/9/27	6 days	Sat 10/2/27	Sat 10/9/27	6 days
197	Alafia Ridge Rd & Alafia Ridge Loop Intersection: STA 526+75 to STA 529+00 (	Sat 10/2/27	Sat 10/9/27	6 days	Sat 10/2/27	Sat 10/9/27	6 days
198	MOT-54, 55: Diversion - Alafia Ridge Rd.	Mon 10/11/27	Fri 2/11/28	85 days	Mon 10/11/27	Fri 2/11/28	85 days
199	STA 529+00 to STA 562+50 (3,350 LF)	Mon 10/11/27	Fri 2/11/28	85 days	Mon 10/11/27	Fri 2/11/28	85 days
200	MOT-56: Diversion - McMullen Loop	Sat 2/12/28	Fri 2/25/28	10 days	Sat 2/12/28	Fri 2/25/28	10 days
201	STA 562+50 to STA 564+00 (150 LF)	Sat 2/12/28	Fri 2/25/28	10 days	Sat 2/12/28	Fri 2/25/28	10 days
202	STA 564+42 to STA 569+50 (508 LF)	Sat 2/26/28	Sat 3/4/28	6 days	Sat 2/26/28	Sat 3/4/28	6 days
203	MOT-57: Intersection Closure - McMullen Rd. & Donneymoor Dr.	Mon 3/6/28	Mon 3/13/28	6 days	Mon 3/6/28	Mon 3/13/28	6 days
204	McMullen Rd. & Donneymoor Dr. Intersection: STA 569+50 to STA 571+50 (200 LF)	Mon 3/6/28	Mon 3/13/28	6 days	Mon 3/6/28	Mon 3/13/28	6 days
205	MOT-58: Detour McMullen Rd.	Tue 3/14/28	Tue 6/27/28	76 days	Tue 3/14/28	Tue 6/27/28	76 days
206	STA 571+50 to STA 597+15 (2,565 LF)	Tue 3/14/28	Sat 6/17/28	69 days	Tue 3/14/28	Sat 6/17/28	69 days
207	McMullen to Boyette Micro Tunnel Connections: STA 597+15	Tue 6/20/28	Tue 6/27/28	6 days	Tue 6/20/28	Tue 6/27/28	6 days
208	**Open Cut Pipe Crew #4A**	**Fri 5/8/26**	**Sat 3/4/28**	**380.8 days**	**Fri 5/8/26**	**Sat 3/4/28**	**380.8 days**
209	MOT-67, 68, 69: Diversion Fishhawk Blvd.	Fri 5/8/26	Fri 8/14/26	69 days	Fri 5/8/26	Fri 8/14/26	69 days
210	STA 712+05 to STA 739+00 (2,695 LF)	Sat 5/9/26	Fri 8/14/26	68 days	Sat 5/9/26	Fri 8/14/26	68 days
211	MOT-70A: Intersection Closure - Fishhawk Blvd & Mosaic Dr.	Sat 8/15/26	Thu 8/27/26	9 days	Sat 8/15/26	Thu 8/27/26	9 days
212	Mosaic Dr. Intersection: STA 739+00 to STA 741+50 (250 LF)	Mon 8/17/26	Thu 8/27/26	8 days	Mon 8/17/26	Thu 8/27/26	8 days
213	STA 741+50 to STA 747+00 (550 LF)	Fri 8/28/26	Fri 9/18/26	15 days	Fri 8/28/26	Fri 9/18/26	15 days
214	MOT-70B: Skytop Dr. Closure	Sat 9/19/26	Thu 9/24/26	4 days	Sat 9/19/26	Thu 9/24/26	4 days



Critical
Critical Progress
Task
Task Progress
Baseline
Summary Progress
Summary
Project Summary

TBW - SOUTH HILLSBOROUGH PIPELINE BASELINE SCHEDULE

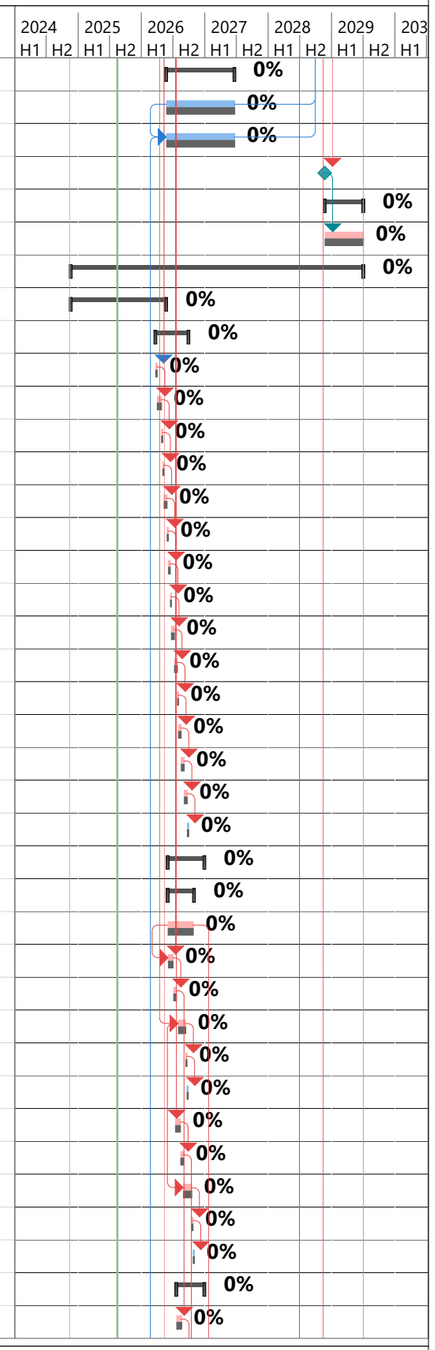
ID	Task Name	Baseline Start	Baseline Finish	Baseline Duration	Start	Finish	Duration
215	Skytop Dr. Intersection: STA 747+00 to STA 748+00 (100ft)	Sat 9/19/26	Thu 9/24/26	4 days	Sat 9/19/26	Thu 9/24/26	4 days
216	STA 748+00 to STA 752+50 (450 LF)	Fri 9/25/26	Sat 10/10/26	12 days	Fri 9/25/26	Sat 10/10/26	12 days
217	MOT 71A: Intersection Closure - Fishhawk Blvd & Circa Fishhawk Blvd.	Mon 10/12/26	Tue 10/20/26	7 days	Mon 10/12/26	Tue 10/20/26	7 days
218	Circa Fishhawk Blvd. Intersection: STA 752+50 to STA 754+50 (200ft)	Tue 10/13/26	Tue 10/20/26	6 days	Tue 10/13/26	Tue 10/20/26	6 days
219	STA 754+50 to STA 763+22 (872 LF)	Thu 10/22/26	Tue 11/10/26	15 days	Thu 10/22/26	Tue 11/10/26	15 days
220	Bell Creek & Bell Shoals Micro Tunnel Connections: STA 712+05	Thu 11/12/26	Mon 11/23/26	9 days	Thu 11/12/26	Mon 11/23/26	9 days
221	STA 763+22 to STA 766+00 (278 LF)	Tue 11/24/26	Mon 12/7/26	8 days	Tue 11/24/26	Mon 12/7/26	8 days
222	MOT-71B: Hometown Ln. Closure	Tue 12/8/26	Tue 12/15/26	6 days	Tue 12/8/26	Tue 12/15/26	6 days
223	Hometown Ln. Intersection: STA 766+00 to STA 767+50 (150 LF)	Tue 12/8/26	Tue 12/15/26	6 days	Tue 12/8/26	Tue 12/15/26	6 days
224	STA 767+50 to STA 771+91 (441 LF)	Thu 12/17/26	Mon 12/28/26	8 days	Thu 12/17/26	Mon 12/28/26	8 days
225	Fishhawk Creek HDD Connections: STA 771+91	Tue 12/29/26	Thu 1/7/27	6 days	Tue 12/29/26	Thu 1/7/27	6 days
226	Fishhawk Creek HDD Connections: STA 792+80	Fri 1/8/27	Fri 1/15/27	6 days	Fri 1/8/27	Fri 1/15/27	6 days
227	STA 792+80 to STA 833+50 (4,070 LF)	Sat 1/16/27	Tue 6/8/27	102 days	Sat 1/16/27	Tue 6/8/27	102 days
228	MOT-72: Osprey Ridge Dr. Closure / Detour	Thu 6/10/27	Sat 6/19/27	8 days	Thu 6/10/27	Sat 6/19/27	8 days
229	Osprey Ridge Dr. Intersection: STA 833+50 to STA 835+50 (200 LF)	Thu 6/10/27	Sat 6/19/27	8 days	Thu 6/10/27	Sat 6/19/27	8 days
230	STA 835+50 to STA 838+50 (300 LF)	Mon 6/21/27	Thu 7/1/27	8 days	Mon 6/21/27	Thu 7/1/27	8 days
231	MOT-73, 74: Diversion - Fishhawk BLVD	Fri 7/2/27	Thu 8/26/27	39 days	Fri 7/2/27	Thu 8/26/27	39 days
232	STA 838+50 to STA 856+05 (1,755 LF)	Fri 7/2/27	Thu 8/26/27	39 days	Fri 7/2/27	Thu 8/26/27	39 days
233	Little Fishhawk Creek HDD Connections: STA 856+05	Fri 8/27/27	Fri 9/3/27	6 days	Fri 8/27/27	Fri 9/3/27	6 days
234	Little Fishhawk Creek HDD Connections: STA 881+14	Sat 9/4/27	Mon 9/13/27	6 days	Sat 9/4/27	Mon 9/13/27	6 days
235	STA 881+14 to STA 886+99 (585 LF)	Tue 9/14/27	Sat 10/2/27	14 days	Tue 9/14/27	Sat 10/2/27	14 days
236	Fishhawk Blvd. / TECO Micro Tunnel Connections: STA 886+99	Mon 10/4/27	Mon 10/11/27	6 days	Mon 10/4/27	Mon 10/11/27	6 days
237	Fishhawk Blvd. / TECO Micro Tunnel Connections: STA 891+11	Tue 10/12/27	Tue 10/19/27	6 days	Tue 10/12/27	Tue 10/19/27	6 days
238	STA 891+11 to STA 950+32 (5,921 LF)	Thu 10/21/27	Sat 3/4/28	94 days	Thu 10/21/27	Sat 3/4/28	94 days
239	**Pipeline Testing**	**Fri 8/7/26**	**Tue 9/5/28**	**434.4 days**	**Fri 8/7/26**	**Tue 9/5/28**	**434.4 days**
240	HydroTest STA 392+30 to STA 430+72	Fri 8/7/26	Fri 8/14/26	5.9 days	Fri 8/7/26	Fri 8/14/26	5.9 days
241	HydroTest STA 688+22 to STA 771+89	Mon 1/11/27	Mon 1/18/27	5.9 days	Mon 1/11/27	Mon 1/18/27	5.9 days
242	HydroTest STA 169+29 to STA 246+55	Fri 2/5/27	Fri 2/12/27	5.9 days	Fri 2/5/27	Fri 2/12/27	5.9 days
243	HydroTest STA 430+72 to STA 511+60	Mon 4/26/27	Mon 5/3/27	5.9 days	Mon 4/26/27	Mon 5/3/27	5.9 days
244	HydroTest STA 604+44 to STA 688+22	Mon 8/9/27	Tue 8/17/27	7 days	Mon 8/9/27	Tue 8/17/27	7 days
245	HydroTest STA 771+89 to STA 882+03	Mon 10/4/27	Mon 10/11/27	5.9 days	Mon 10/4/27	Mon 10/11/27	5.9 days
246	HydroTest STA 320+51 to STA 392+30	Thu 9/30/27	Thu 10/7/27	6 days	Thu 9/30/27	Thu 10/7/27	6 days
247	HydroTest STA 6+15 to STA 86+87	Fri 1/14/28	Fri 1/21/28	5.9 days	Fri 1/14/28	Fri 1/21/28	5.9 days
248	HydroTest STA 882+03 to STA 950+32	Thu 3/9/28	Thu 3/16/28	5.9 days	Thu 3/9/28	Thu 3/16/28	5.9 days
249	HydroTest STA 246+55 to STA 320+51	Thu 5/25/28	Fri 6/2/28	5.9 days	Thu 5/25/28	Fri 6/2/28	5.9 days
250	HydroTest STA 511+60 to STA 604+44	Fri 6/30/28	Sat 7/8/28	6 days	Fri 6/30/28	Sat 7/8/28	6 days
251	HydroTest STA 86+87 to STA 169+29	Tue 8/29/28	Tue 9/5/28	6 days	Tue 8/29/28	Tue 9/5/28	6 days
252	**Flush / Disinfect**	**Thu 9/28/28**	**Sat 11/18/28**	**29.6 days**	**Thu 9/28/28**	**Sat 11/18/28**	**29.6 days**
253	Flushing / Disinfection	Thu 9/28/28	Sat 11/18/28	39 days	Thu 9/28/28	Sat 11/18/28	39 days



Critical
Critical Progress
Task
Task Progress
Baseline
Summary Progress
Summary
Project Summary

TBW - SOUTH HILLSBOROUGH PIPELINE BASELINE SCHEDULE

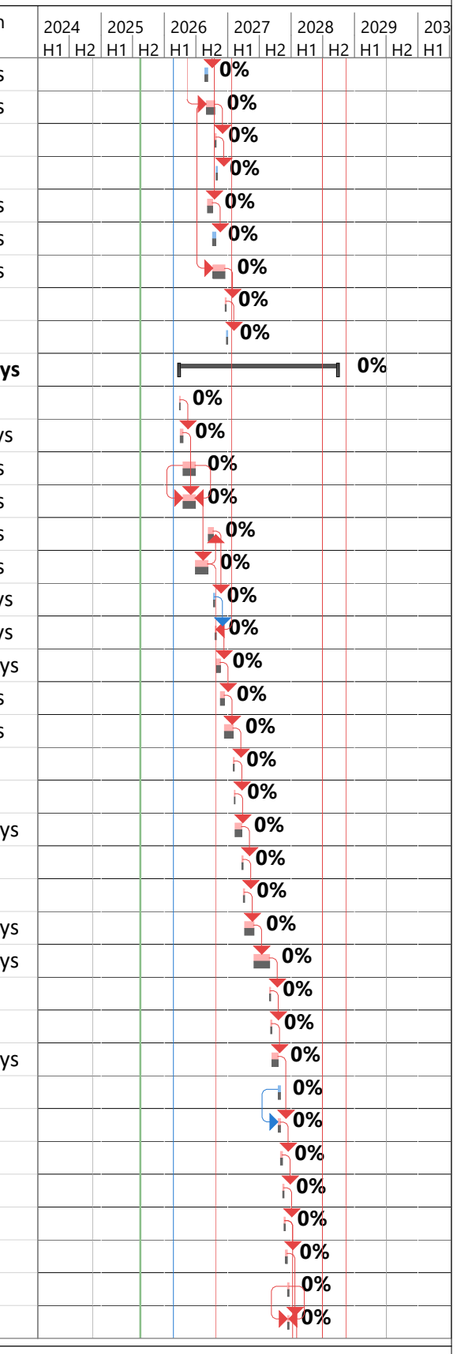
ID	Task Name	Baseline Start	Baseline Finish	Baseline Duration	Start	Finish	Duration
254	**Segment A POC Construction**	**Fri 5/22/26**	**Sat 6/19/27**	**224.3 days**	**Fri 5/22/26**	**Sat 6/19/27**	**224.3 days**
255	Regional Facility Point of Connection	Fri 5/22/26	Sat 6/19/27	273 days	Fri 5/22/26	Sat 6/19/27	273 days
256	Lithia Water Treatment Plant Point of Connection	Fri 5/22/26	Sat 6/19/27	273 days	Fri 5/22/26	Sat 6/19/27	273 days
257	**SUBSTANTIAL COMPLETION**	Mon 11/20/28	Mon 11/20/28	0 days	Mon 11/20/28	Mon 11/20/28	0 days
258	**Restoration**	**Mon 11/20/28**	**Sat 6/30/29**	**128 days**	**Mon 11/20/28**	**Sat 6/30/29**	**128 days**
259	Final Restoration / Closeout	Mon 11/20/28	Sat 6/30/29	156 days	Mon 11/20/28	Sat 6/30/29	156 days
260	**SEGMENT B**	**Mon 11/18/24**	**Sat 6/30/29**	**964 days**	**Mon 11/18/24**	**Sat 6/30/29**	**964 days**
261	**Administration Activities & Project Milestones**	**Mon 11/18/24**	**Fri 5/22/26**	**315.7 days**	**Mon 11/18/24**	**Fri 5/22/26**	**315.7 days**
273	**Clear & Grub**	**Sat 3/21/26**	**Mon 9/28/26**	**108.3 days**	**Sat 3/21/26**	**Mon 9/28/26**	**108.3 days**
274	Clear & Grub STA 10+00 to STA 19+63 (963 LF)	Sat 3/21/26	Mon 3/30/26	6 days	Sat 3/21/26	Mon 3/30/26	6 days
275	Clear & Grub STA 73+00 to STA 89+00 (1,600 LF)	Mon 3/30/26	Fri 4/24/26	18 days	Mon 3/30/26	Fri 4/24/26	18 days
276	Clear & Grub Boyett Rd. Tunnel Bore #1B: STA 123+78 to STA 125+70	Fri 4/24/26	Thu 4/30/26	4 days	Fri 4/24/26	Thu 4/30/26	4 days
277	Clear & Grub STA 125+70 to STA 133+00 (730 LF)	Thu 4/30/26	Fri 5/8/26	6 days	Thu 4/30/26	Fri 5/8/26	6 days
278	Clear & Grub STA 137+00 to STA 163+82 (2,682 LF)	Fri 5/8/26	Tue 5/26/26	12 days	Fri 5/8/26	Tue 5/26/26	12 days
279	Clear & Grub Boyett Rd. Tunnel Bore #2B: STA 163+82 to STA 168+09	Tue 5/26/26	Mon 6/1/26	4 days	Tue 5/26/26	Mon 6/1/26	4 days
280	Clear & Grub STA 168+09 to STA 179+88 (1,179 LF)	Mon 6/1/26	Sat 6/13/26	9 days	Mon 6/1/26	Sat 6/13/26	9 days
281	Clear & Grub Boyett Rd. Tunnel Bore #3B: STA 179+88 to STA 185+00	Sat 6/13/26	Fri 6/19/26	4 days	Sat 6/13/26	Fri 6/19/26	4 days
282	Clear & Grub STA 185+00 to STA 215+89 (3,089ft)	Fri 6/19/26	Tue 7/7/26	12 days	Fri 6/19/26	Tue 7/7/26	12 days
283	Clear & Grub STA 217+12 to STA 252+00 (3,488 LF)	Tue 7/7/26	Fri 7/24/26	11.7 days	Tue 7/7/26	Fri 7/24/26	11.7 days
284	Clear & Grub Boyett Rd. Jack & Bore #1B: STA 252+00 to STA 253+83	Fri 7/24/26	Thu 7/30/26	4 days	Fri 7/24/26	Thu 7/30/26	4 days
285	Clear & Grub STA 253+83 to STA 284+74 (3,091 LF)	Thu 7/30/26	Sat 8/15/26	12 days	Thu 7/30/26	Sat 8/15/26	12 days
286	Clear & Grub STA 295+06 to STA 338+00 (4,294 LF)	Sat 8/15/26	Tue 9/1/26	12 days	Sat 8/15/26	Tue 9/1/26	12 days
287	Clear & Grub STA 341+50 to STA 382+87 (4,137 LF)	Tue 9/1/26	Sat 9/19/26	12 days	Tue 9/1/26	Sat 9/19/26	12 days
288	Clear & Grub STA 385+08 to STA 401+84 (1,676 LF)	Sat 9/19/26	Mon 9/28/26	6 days	Sat 9/19/26	Mon 9/28/26	6 days
289	**Trenchless Operations**	**Mon 6/1/26**	**Mon 12/28/26**	**120.8 days**	**Mon 6/1/26**	**Mon 12/28/26**	**120.8 days**
290	**Micro Tunnel Crew #2B**	**Mon 6/1/26**	**Thu 10/29/26**	**87.2 days**	**Mon 6/1/26**	**Thu 10/29/26**	**87.2 days**
291	Boyette Road Sidewalk Detour	Mon 6/1/26	Fri 10/23/26	102 days	Mon 6/1/26	Fri 10/23/26	102 days
292	Shaft Install Crew 1	Tue 6/2/26	Mon 6/29/26	19 days	Tue 6/2/26	Mon 6/29/26	19 days
293	Shaft Install Crew 1	Thu 7/2/26	Sat 7/18/26	11 days	Thu 7/2/26	Sat 7/18/26	11 days
294	Boyette Rd. MT #1B	Fri 7/31/26	Thu 9/10/26	29 days	Fri 7/31/26	Thu 9/10/26	29 days
295	Shaft Removal	Fri 9/11/26	Thu 9/17/26	5 days	Fri 9/11/26	Thu 9/17/26	5 days
296	Shaft Removal	Fri 9/18/26	Thu 9/24/26	5 days	Fri 9/18/26	Thu 9/24/26	5 days
297	Shaft Install Crew 2	Tue 7/14/26	Mon 8/10/26	20 days	Tue 7/14/26	Mon 8/10/26	20 days
298	Shaft Install Crew 2	Thu 8/13/26	Sat 8/29/26	13 days	Thu 8/13/26	Sat 8/29/26	13 days
299	Boyette Rd. MT #2B	Sat 8/29/26	Thu 10/15/26	33 days	Sat 8/29/26	Thu 10/15/26	33 days
300	Shaft Removal	Fri 10/16/26	Thu 10/22/26	5 days	Fri 10/16/26	Thu 10/22/26	5 days
301	Shaft Removal	Fri 10/23/26	Thu 10/29/26	5 days	Fri 10/23/26	Thu 10/29/26	5 days
302	**Micro Tunnel Crew #1B**	**Mon 7/20/26**	**Mon 12/28/26**	**92.8 days**	**Mon 7/20/26**	**Mon 12/28/26**	**92.8 days**
303	Shaft Install Crew 1	Mon 7/20/26	Mon 8/17/26	20 days	Mon 7/20/26	Mon 8/17/26	20 days



Critical
Critical Progress
Task
Task Progress
Baseline
Summary Progress
Summary
Project Summary

TBW - SOUTH HILLSBOROUGH PIPELINE BASELINE SCHEDULE

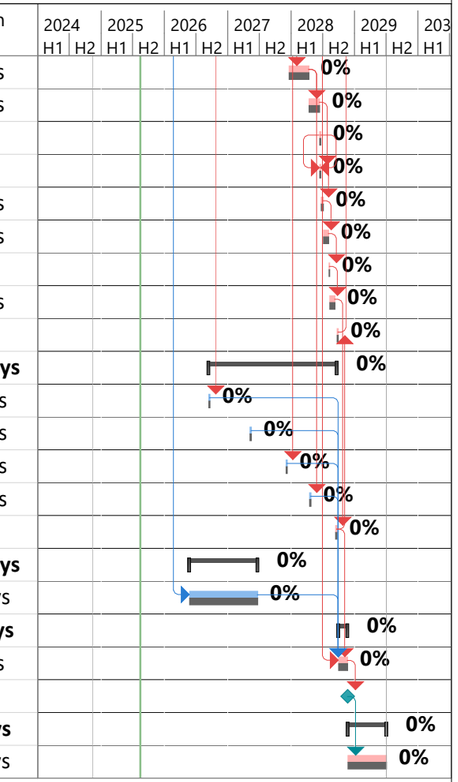
ID	Task Name	Baseline Start	Baseline Finish	Baseline Duration	Start	Finish	Duration
304	Shaft Install Crew 1	Thu 8/20/26	Sat 9/5/26	12 days	Thu 8/20/26	Sat 9/5/26	12 days
305	Boyette Rd. MT #3B	Sat 8/29/26	Thu 10/15/26	33 days	Sat 8/29/26	Thu 10/15/26	33 days
306	Shaft Removal	Fri 10/16/26	Thu 10/22/26	5 days	Fri 10/16/26	Thu 10/22/26	5 days
307	Shaft Removal	Fri 10/23/26	Thu 10/29/26	5 days	Fri 10/23/26	Thu 10/29/26	5 days
308	Shaft Install Crew 2	Thu 9/3/26	Thu 10/1/26	20 days	Thu 9/3/26	Thu 10/1/26	20 days
309	Shaft Install Crew 2	Sat 10/3/26	Tue 10/20/26	13 days	Sat 10/3/26	Tue 10/20/26	13 days
310	Boyette Rd. MT #4B	Tue 10/6/26	Sat 12/12/26	47 days	Tue 10/6/26	Sat 12/12/26	47 days
311	Shaft Removal	Mon 12/14/26	Sat 12/19/26	5 days	Mon 12/14/26	Sat 12/19/26	5 days
312	Shaft Removal	Mon 12/21/26	Mon 12/28/26	5 days	Mon 12/21/26	Mon 12/28/26	5 days
313	**Open Cut Pipe Crew #1B**	**Thu 3/26/26**	**Tue 9/26/28**	**522.7 days**	**Thu 3/26/26**	**Tue 9/26/28**	**522.7 days**
314	Segment A POC: STA 9+95	Thu 3/26/26	Mon 3/30/26	3 days	Thu 3/26/26	Mon 3/30/26	3 days
315	STA 9+95 to STA 19+00 (905 LF)	Mon 3/30/26	Tue 4/14/26	11.3 days	Mon 3/30/26	Tue 4/14/26	11.3 days
316	Fishhawk Ranch Community Sidewalk Detour	Thu 4/16/26	Thu 6/25/26	50 days	Thu 4/16/26	Thu 6/25/26	50 days
317	STA 19+00 to STA 55+00 (3,600 LF)	Thu 4/16/26	Thu 6/25/26	50 days	Thu 4/16/26	Thu 6/25/26	50 days
318	STA 91+60 to STA 110+23 (1,863 LF)	Tue 9/8/26	Tue 10/6/26	21 days	Tue 9/8/26	Tue 10/6/26	21 days
319	STA 55+00 to STA 91+60 (3,660 LF)	Fri 6/26/26	Sat 9/5/26	51 days	Fri 6/26/26	Sat 9/5/26	51 days
320	Boyette Rd. #1 Tunnel Bore Connection: STA 124+40	Thu 10/8/26	Thu 10/15/26	5.78 days	Thu 10/8/26	Thu 10/15/26	5.78 days
321	Boyette Rd. #1 Tunnel Bore Connection: STA 125+60	Fri 10/16/26	Fri 10/23/26	5.78 days	Fri 10/16/26	Fri 10/23/26	5.78 days
322	STA 112+28 to STA 125+60 (1,332 LF)	Sat 10/24/26	Mon 11/16/26	16.45 days	Sat 10/24/26	Mon 11/16/26	16.45 days
323	STA 125+60 to STA 137+00 (1,140 LF)	Mon 11/16/26	Thu 12/10/26	15 days	Mon 11/16/26	Thu 12/10/26	15 days
324	STA 137+00 to STA 164+69 (2,769 LF)	Thu 12/10/26	Fri 1/29/27	34 days	Thu 12/10/26	Fri 1/29/27	34 days
325	Boyette Rd. #2 Tunnel Bore Connection: STA 164+69	Fri 1/29/27	Thu 2/4/27	4 days	Fri 1/29/27	Thu 2/4/27	4 days
326	Boyette Rd. #2 Tunnel Bore Connection: STA 166+93	Thu 2/4/27	Tue 2/9/27	4 days	Thu 2/4/27	Tue 2/9/27	4 days
327	STA 166+93 to STA 181+00 (1,407 LF)	Tue 2/9/27	Fri 3/19/27	27.55 days	Tue 2/9/27	Fri 3/19/27	27.55 days
328	Boyette Rd. #3 Tunnel Bore Connection: STA 181+00	Sat 3/20/27	Sat 3/27/27	6 days	Sat 3/20/27	Sat 3/27/27	6 days
329	Boyette Rd. #3 Tunnel Bore Connection: STA 183+36	Mon 3/29/27	Mon 4/5/27	6 days	Mon 3/29/27	Mon 4/5/27	6 days
330	STA 183+36 to STA 215+00 (3,164 LF)	Tue 4/6/27	Sat 5/29/27	38.23 days	Tue 4/6/27	Sat 5/29/27	38.23 days
331	STA 215+00 to STA 252+36 (3,736 LF)	Sat 5/29/27	Fri 8/27/27	62.23 days	Sat 5/29/27	Fri 8/27/27	62.23 days
332	Boyette Rd. #4 Jack & Bore Connection: STA 252+36	Fri 8/27/27	Thu 9/2/27	4 days	Fri 8/27/27	Thu 9/2/27	4 days
333	Boyette Rd. #4 Jack & Bore Connection: STA 253+69	Thu 9/2/27	Thu 9/9/27	4 days	Thu 9/2/27	Thu 9/9/27	4 days
334	STA 253+69 to STA 267+50 (1,381 LF)	Thu 9/9/27	Fri 10/15/27	26.55 days	Thu 9/9/27	Fri 10/15/27	26.55 days
335	Canterfield Dr. - Diversion Phase 1 & Phase 2	Sat 10/16/27	Thu 10/28/27	9 days	Sat 10/16/27	Thu 10/28/27	9 days
336	Canterfield Dr. Intersection: STA 267+50 to STA 269+50 (200 LF)	Sat 10/16/27	Thu 10/28/27	9 days	Sat 10/16/27	Thu 10/28/27	9 days
337	STA 269+50 to STA 277+05 (755 LF)	Fri 10/29/27	Tue 11/9/27	9 days	Fri 10/29/27	Tue 11/9/27	9 days
338	STA 277+05 to STA 277+60 (55 LF): Bell Creek Crossing	Thu 11/11/27	Thu 11/18/27	6 days	Thu 11/11/27	Thu 11/18/27	6 days
339	STA 277+60 to STA 279+78 (218 LF)	Fri 11/19/27	Tue 11/23/27	4 days	Fri 11/19/27	Tue 11/23/27	4 days
340	STA 279+78 to STA 283+00 (322 LF)	Sat 11/27/27	Tue 12/7/27	8 days	Sat 11/27/27	Tue 12/7/27	8 days
341	Swiss Bridge Road Closure Sidewalk Detour	Thu 12/9/27	Thu 12/16/27	6 days	Thu 12/9/27	Thu 12/16/27	6 days
342	STA 283+00 to STA 285+00 (200 LF): Swiss Bridge Dr. Crossing	Thu 12/9/27	Thu 12/16/27	6 days	Thu 12/9/27	Thu 12/16/27	6 days



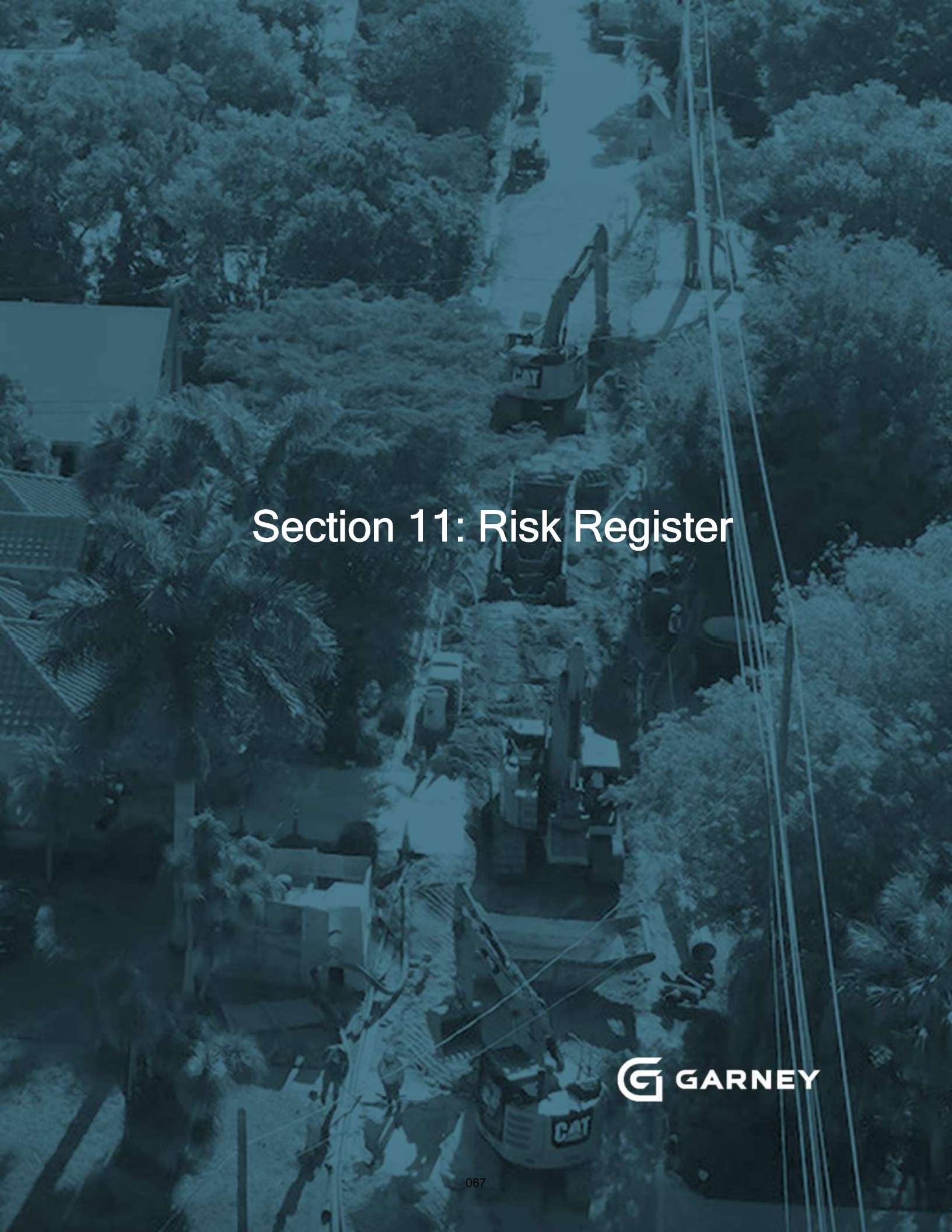
Critical — Task — Baseline — Summary
Critical Progress — Task Progress — Summary Progress — Project Summary

TBW - SOUTH HILLSBOROUGH PIPELINE BASELINE SCHEDULE

ID	Task Name	Baseline Start	Baseline Finish	Baseline Duration	Start	Finish	Duration
343	STA 285+00 to STA 347+02 (6,202 LF)	Fri 12/17/27	Mon 4/10/28	81 days	Fri 12/17/27	Mon 4/10/28	81 days
344	STA 347+02 to STA 380+00 (218 LF)	Tue 4/11/28	Fri 6/9/28	43 days	Tue 4/11/28	Fri 6/9/28	43 days
345	Detour V - Balm Boyette Rd. (Pg. 5 of 5)	Sat 6/10/28	Sat 6/17/28	6 days	Sat 6/10/28	Sat 6/17/28	6 days
346	STA 380+53 to STA 382+00 (147 LF); Balm-Boyette Rd. Crossing	Sat 6/10/28	Sat 6/17/28	6 days	Sat 6/10/28	Sat 6/17/28	6 days
347	STA 382+00 to STA 388+00 (600 LF)	Mon 6/19/28	Sat 7/1/28	10 days	Mon 6/19/28	Sat 7/1/28	10 days
348	STA 388+00 to STA 400+00 (1,200 LF)	Mon 7/3/28	Tue 8/1/28	21 days	Mon 7/3/28	Tue 8/1/28	21 days
349	STA 400+00 to STA 402+00 (200 LF)	Thu 8/3/28	Mon 8/7/28	4 days	Thu 8/3/28	Mon 8/7/28	4 days
350	STA 402+00 to STA 428+30 (2,630 LF)	Tue 8/8/28	Thu 9/7/28	22 days	Tue 8/8/28	Thu 9/7/28	22 days
351	Hillsborough County Facility POC Tie-In: STA 428+30	Tue 9/19/28	Tue 9/26/28	6 days	Tue 9/19/28	Tue 9/26/28	6 days
352	**Pipeline Testing**	**Fri 9/11/26**	**Mon 9/18/28**	**421.6 days**	**Fri 9/11/26**	**Mon 9/18/28**	**421.6 days**
353	HydroTest STA 9+85 to STA91+60	Fri 9/11/26	Thu 9/17/26	4.8 days	Fri 9/11/26	Thu 9/17/26	4.8 days
354	HydroTest STA 91+60 to STA 194+10	Thu 5/6/27	Thu 5/13/27	5.9 days	Thu 5/6/27	Thu 5/13/27	5.9 days
355	HydroTest STA 194+10 to STA 279+78	Tue 11/30/27	Tue 12/7/27	5.9 days	Tue 11/30/27	Tue 12/7/27	5.9 days
356	HydroTest STA 279+78 to STA 347+02	Fri 4/14/28	Fri 4/21/28	5.9 days	Fri 4/14/28	Fri 4/21/28	5.9 days
357	HydroTest STA 347+02 to STA 428+94	Mon 9/11/28	Mon 9/18/28	6 days	Mon 9/11/28	Mon 9/18/28	6 days
358	**Segment B POC Construction**	**Fri 5/22/26**	**Sat 6/19/27**	**224.3 days**	**Fri 5/22/26**	**Sat 6/19/27**	**224.3 days**
359	Hillsborough County Facility Point of Connection	Fri 5/22/26	Sat 6/19/27	273 days	Fri 5/22/26	Sat 6/19/27	273 days
360	**Flush / Disinfect**	**Thu 9/28/28**	**Sat 11/18/28**	**29.6 days**	**Thu 9/28/28**	**Sat 11/18/28**	**29.6 days**
361	Flushing / Disinfection	Thu 9/28/28	Sat 11/18/28	39 days	Thu 9/28/28	Sat 11/18/28	39 days
362	**SUBSTANTIAL COMPLETION**	Mon 11/20/28	Mon 11/20/28	0 days	Mon 11/20/28	Mon 11/20/28	0 days
363	**Restoration**	**Mon 11/20/28**	**Sat 6/30/29**	**128 days**	**Mon 11/20/28**	**Sat 6/30/29**	**128 days**
364	Final Restoration / Closeout	Mon 11/20/28	Sat 6/30/29	156 days	Mon 11/20/28	Sat 6/30/29	156 days



Critical
Critical Progress
Task
Task Progress
Baseline
Summary Progress
Summary
Project Summary



Section 11: Risk Register

RISK REGISTER

GMP #3

Cost for the purpose of this spreadsheet pertain to the current cost estimate for construction

Update Date: August 2025

Project: South Hillsborough Pipeline CMAR

Risk Identification				Remaining Risk Assessment beyond what is included in Current Cost Estimate						Risk Control Measures Included in Current Estimate		Risk Allocation					GMP Allocation						Risk Impact & Control Measure Calculations
ID No.	Segment/ Project No.	Risk Issue	Risk Type	Status	Potential Cost Impact	Potential Schedule Impact (Calendar Days)	Probability (0-100%)	Severity (1-10) 10=High	Rank (PxS) 10=Max	Risk Mitigation Strategy	Control Measures in Estimate Scope	Risk Owner	Weighted Cost Exposure (Prob x PCI)	Owner's Cost Offset By Allowance	Garney Cost Offset By Contingency	Unmitigated Cost Exposure	GMP 2A (1610)	GMP 2B (1616)	GMP 3A (1610)	GMP 3B (1616)	GMP 4A (1610)	GMP 4B (1616)	
1	1610/1616	Permitting Conditions & Delays	Permitting	No Change	$1,824,834	60	50%	10	5.00	Stay on schedule with permitting agencies	$0	TBW	$912,418.00	$912,418.00	$0.00	$0.00	$319,346.30	$136,862.70	$319,346.30	$136,862.70			Potential cost impact =. Added 60 CMAR shifts + estimated $250k permitting conditions
2	1610/1616	Property Acquisition	Other Project Stakeholders	No Change	$19,783,097	136	25%	10	2.50	Complete Property Acquisition Process	$0	TBW	$4,945,775.00	$4,945,775.00	$0.00	$0.00	$1,731,021.25	$741,866.25	$1,731,021.25	$741,866.25			Potential cost impact = Reduce avg pipe production by 10 LF / shift over course of project
3	1610	Utility Conflicts	Constructability	No Change	$1,399,560	TBD	50%	5	2.50	Work with County to exclude from SHP scope	$ 3,216,331.62	TBW	$699,780.00	$699,780.00	$0.00	$0.00			$699,780.00				$100k per relocation for 12 locations
4	1610/1616	Geotechnical Investigation Results / Import Export Backfill Requirements	Constructability	Mitigated	$0	TBD	0%		-		$4,587,560	CMAR Team	$0.00	$0.00	$0.00	$0.00							Import/Export backfill included in cost estimate per geotechnical recommendations
5	1610	MOT Plan Development to support productions	Constructability	Increasing	$4,718,297	TBD	75%	10	7.50	CMAR to work with DE's in finalizing MOT plans to accommodate construction sequence and accessibility	$ 4,328,713.00	TBW	$3,538,723.00	$3,538,723.00	$0.00	$0.00	$826,609.00		$2,712,114.00				Boyette Rd/Fishhawk Blvd County Requirements impact
6	1610/1616	Dewatering Effort to support productions	Constructability	Mitigated	$0	TBD	0%		-		$ 4,993,424.00	CMAR Team	$0.00	$0.00	$0.00	$0.00							Dewatering effort included in 60% estimate matches recommendations from Geotechnical Report
7	1610/1616	Testing & Flushing Water & Assembly	Constructability	Mitigated	$0	TBD	0%		-		$ 490,810.00	TBW	$0.00	$0.00	$0.00	$0.00							Testing water and flushing assembly included in 60% Estimate. TBW to provide flushing water
8	1610/1616	Hillsborough County DM/DWBE Particiapation - meet 20% goal	Regulatory Requirements	Mitigated	$0	TBD	0%		-		$ -	Shared	$0.00	$0.00	$0.00	$0.00							7% DMWBE participation included in 60% Estimate for Segment B only
9	1610/1616	Workforce Development Participation	Regulatory Requirements	Mitigated	$0	TBD	0%		-		$ -	Shared	$0.00	$0.00	$0.00	$0.00							Workforce Development Compliance is removed from 60% Estimate. Not a requirement
10		NOT USED / RESERVED			$0				-		$ -	Shared	$0.00	$0.00	$0.00	$0.00							
11	1610/1616	Pricing Volatility	Procurement	Mitigated	$3,150,318	TBD	0%		-	Early Material Procurement of material as well as ODP - MITIGATED WITH GMP #1	$ 10,452,170.67	TBW	$0.00	$0.00	$0.00	$0.00							MITIGATED WITH GMP #1. See added Tarrifs risk item below.
12	1610/1616	Steel Coil Storage Fees (ODP)	Procurement	Mitigated	$1,226,250	TBD	0%	2	-	OA design progression contingency included in GMP #1	$2,688,894	TBW	$0.00	$0.00	$0.00	$0.00							MITIGATED WITH GMP #1
13	1610/1616	Existing asbestos or contaminated soils	Unknown Site Conditions	No Change	$2,055,970	TBD	50%	5	2.50	Confirm County Requirements	$0	TBW	$1,027,985.00	$1,027,985.00	$0.00	$0.00	$359,794.75	$154,197.75	$359,794.75	$154,197.75			Potential cost = to 1000' asbestos pipe abatement + 1000 CYDs contaminated soils. ADDED IDENTIFIED PETROLEUM CONTAMINATED SITES
14		NOT USED / RESERVED			$0				-		$0	Shared	$0.00	$0.00	$0.00	$0.00							
15	1610/1616	Identify laydown yard for field office and material Staging	Resource Constraints	Mitigated	$1,962,000	TBD	0%		-	Secure a minimum 10 acre plot of property for use as material staging yard and office complex	$0	TBW	$0.00	$0.00	$0.00	$0.00							Confirmed utilizing Hillsborough County Future Drinking Water Facility Property.
16	1610/1616	Import vs Domestic material requirements	Contract Requirements	Mitigated	$0	TBD	0%		-	FL HB779 compliance	$0	TBW	$0.00	$0.00	$0.00	$0.00							FL HB779 compliance for US produced iron and steel included in 60% estimate
17	1610/1616	Working shifts allowed: six 10-hour days. Risk is if 6x10's are not allowed	Contract Requirements	Decreasing	$1,540,981	0	100%	10	10.00	Approval to work 6 days per week installing pipe. Confirmed this is included in plans and specifications.	$0	TBW	$1,540,981.00	$1,540,981.00	$0.00	$0.00	$1,078,686.35	$462,294.15					Potential cost = adding 16 weeks to the project schedule by dropping to 5 shifts per week.
18		NOT USED / RESERVED			$0				-		$ -	TBW	$0.00	$0.00	$0.00	$0.00							
19	1610	Property Owner Damage Claims	Public Impacts	No Change	$681,250	0	90%	8	7.20	Employ Vibration Monitoring & Inspections	$ 3,118,443.61	CMAR Team	$613,125.00	$0.00	$613,125.00	$0.00			$613,125.00				Potenial cost may increase dependent on final alignment. Control measure accounted for in 60% is to utilize vibration monitoring and inspections
20	1610/1616	Abnormal Weather Days	Adverse Weather	No Change	$1,340,271	21	67%	8	5.36	Account for downtime for weather events and build into project schedule	$ -	Shared	$897,982.00	$448,991.00	$448,991.00	$0.00			$628,587.40	$269,394.60			Potential cost = 1 hurricane per year for three years / lost time only
21	1610/1616	Hillsborough County Tree Mitigation	Permitting	Mitigated	$500,000	TBD	100%	9	9.00	Confirm County Requirements	$0	TBW	$500,000.00	$500,000.00	$0.00	$0.00	$350,000.00	$150,000.00					$500k budget provied by Nita with Wade Trim
22	1610	Hillsborough County Restoration Requirments / match existing and drainage issues / Adjacent to Project Roadway Damages	Regulatory Requirements	No Change	$2,734,638	TBD	50%	8	4.00	Confirm County Requirements	$0	TBW	$1,367,319.00	$1,367,319.00	$0.00	$0.00			$1,367,319.00				Potential cost = 50% of mill and overlay cost included in estimate
23	1610/1616	Gopher Tortoise & other wildlife relocations	Permitting	No Change	$349,890	TBD	100%	5	5.00	Confirm County Requirements	$ 11,663.00	TBW	$349,890.00	$349,890.00	$0.00	$0.00			$174,945.00	$174,945.00			Potential cost for consultant fees.
24	1610	VE Item #1: Change Fishhawk Creek & Little Fishhawk Creek from Microtunnels to HDDs	Constructability	Mitigated	$2,915,750	TBD	25%	5	1.25	Change two microtunnels to HDD's under Fishhawk and Little Fishhawk Creeks	$(16,071,436.00)	CMAR Team	$728,938.00	$0.00	$728,938.00	$0.00	$728,938.00						Potential for fracout leads to risk of cost for mitigation and fines. Unkown subsurface ground conditions
25	1610	VE Item #2: Combine Bell Creek & Bell Shoals into one curved Microtunnel	Constructability	Mitigated	$2,440,578	TBD	25%	5	1.25	Combine two tunnels into one and eliminate one deep shaft	$ (2,440,578.00)	TBW	$610,145.00	$610,145.00	$0.00	$0.00	$610,145.00						Potential cost for recovery shaft. Unkown subsurface ground conditions
26	1610	VE Item #3.1: Combine McMullen TECO microtunnel with crossing at intersection of McMullen & Boyette / Verify gas main existing utilitiy	Constructability	Mitigated	$2,915,750	TBD	25%	5	1.25	Combine two tunnels into one and eliminate two deep shafts	$ (8,434,877.80)	TBW	$728,938.00	$728,938.00	$0.00	$0.00	$728,938.00						Need to find existing gas and amonia lines on CL of tunnel / potential for redesign. Unkown subsurface ground conditions
27	1610	VE Item #9: Re-design in street blow-off assemblies	Constructability	Mitigated	$0	0	0%	0	-	Redesign in-street blow-offs to increase production	$ (415,628.07)	Shared	$0.00	$0.00	$0.00	$0.00							No added risk
28	1610	VE Item #10: Omit TCEs in business district along S Moon and Robertson	Constructability	Mitigated	$0	0	0%	0	-	Slowed production for omitted TCEs	$ 1,000,000.00	Shared	$0.00	$0.00	$0.00	$0.00							No added risk
29	1616	VE Item #11: Redesign alignment through Lake Hutto/Fishhawk CDD property	Constructability	Mitigated	$1,749,450	TBD	0%	0	-	Re-alignment through Lake Hutto / Fishhawk CDD property	$ (5,260,542.00)	TBW	$0.00	$0.00	$0.00	$0.00							Potential risk for unforseen conditions / environmental or geotechnical
30	1616	VE Items #12-16: Change 84" & street crossings to trenchless	Constructability	Mitigated	$1,166,300	TBD	25%	5	1.25	Replace 84" & Roadway Crossings with Trenchless	$ 6,140,932.00	CMAR Team	$291,575.00	$0.00	$291,575.00	$0.00		$291,575.00					Potential for roadway settlement
31	1610/1616	Escalation & Tarrifs	Procurement	No Change	$4,082,050	TBD	50%	5	2.50	Pre-purchasing bulk materials in GMP #1 mitigated this to a great extent	$0	TBW	$2,041,025.00	$2,041,025.00	$0.00	$0.00			$1,428,717.50	$612,307.50			1% of estimated cost for GMP's 2-4

RISK REGISTER

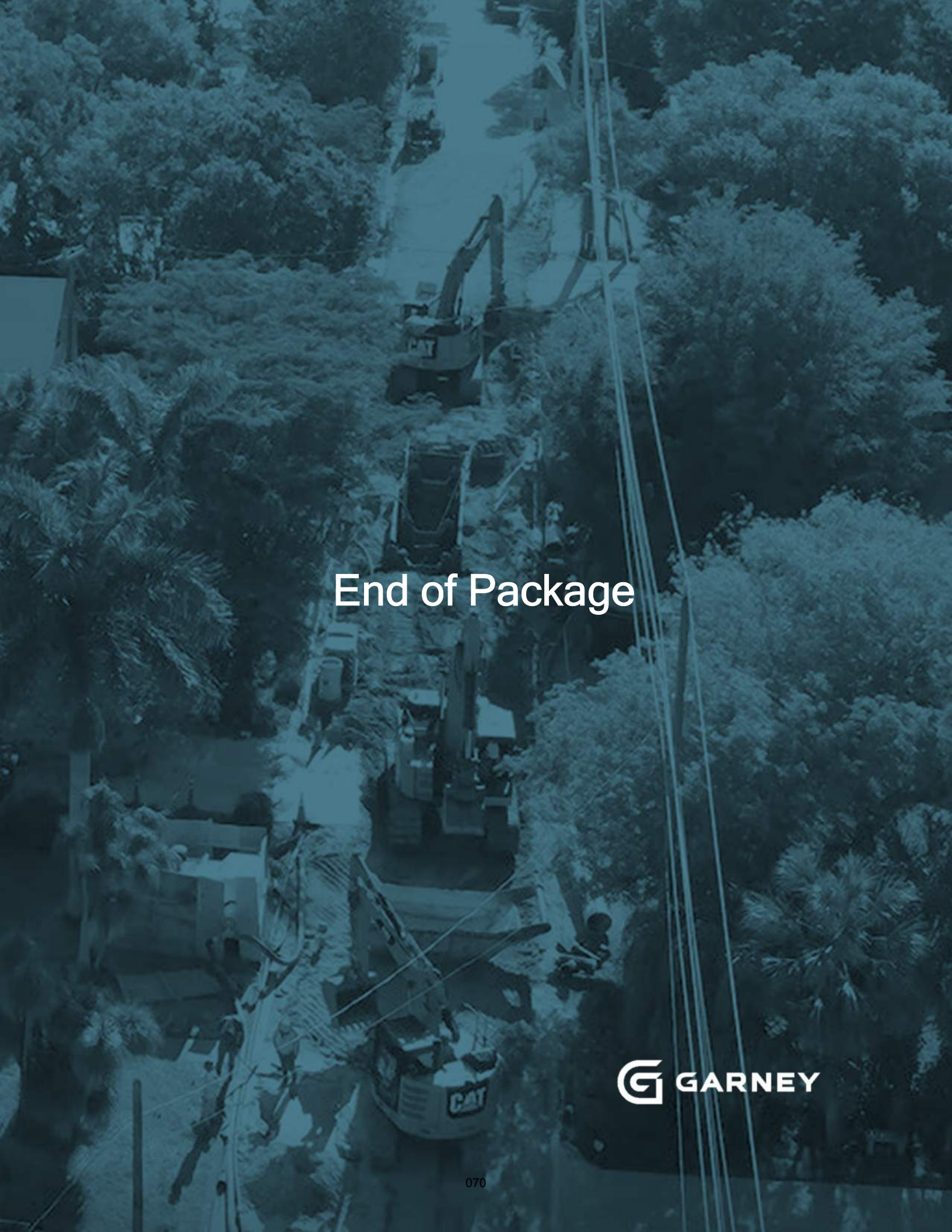
GMP #3

Cost for the purpose of this spreadsheet pertain to the current cost estimate for construction

Update Date: August 2025

Project: South Hillsborough Pipeline CMAR

Risk Identification				Remaining Risk Assessment beyond what is included in Current Cost Estimate						Risk Control Measures Included in Current Estimate		Risk Allocation					GMP Allocation						Risk Impact & Control Measure Calculations
ID No.	Segment/ Project No.	Risk Issue	Risk Type	Status	Potential Cost Impact	Potential Schedule Impact (Calendar Days)	Probability (0-100%)	Severity (1-10) 10=High	Rank (PxS) 10=Max	Risk Mitigation Strategy	Control Measures in Estimate Scope	Risk Owner	Weighted Cost Exposure (Prob x PCI)	Owner's Cost Offset By Allowance	Garney Cost Offset By Contingency	Unmitigated Cost Exposure	GMP 2A (1610)	GMP 2B (1616)	GMP 3A (1610)	GMP 3B (1616)	GMP 4A (1610)	GMP 4B (1616)	
32	1610/1616	Point of Connections Design	Design	No Change	$5,831,500	TBD	75%	5	3.75	Review BODR and design progression to update construction pricing	$0	TBW	$4,373,625.00	$4,373,625.00	$0.00	$0.00					$3,061,537.50	$1,312,087.50	$5 million guestimate for additional cost on pending design
33	1610	Traffic Signals Requirements	Regulatory Requirements	Mitigated	$1,960,420	TBD	100%	1	1.00		$0	TBW	$1,960,420.00	$1,960,420.00	$0.00	$0.00	$1,960,420.00						
34	1610	CSX Flaggers	Regulatory Requirements	Mitigated	$54,500	TBD	100%	1	1.00		$0	TBW	$54,500.00	$54,500.00	$0.00	$0.00	$54,500.00						
35	1610	Business Owner Impacts	Public Impacts	New	$1,166,300	TBD	75%	5	3.75	Plan for access to properties	$0	TBW	$874,725.00	$874,725.00	$0.00	$0.00			$874,725.00				~$1 million for business impact claims
36	1610	County Roadway Damages from traffic detours and construction traffic outside project footprint		New	$ -				-			TBW	$0.00	$0.00	$0.00	$0.00							Covered by Risk ID #22
37	1610	County Traffic Signal Maintenance Fees		New	$ 233,260.00	TBD	100%		0.00			TBW	$233,260.00	$233,260.00	$0.00	$0.00			$233,260.00				Cover with Existing OA item?
									-			Shared	$0.00	$0.00	$0.00	$0.00							
				PROJECT TOTALS	**$67,783,213**	**217**					**$8,405,880**		**$28,291,129.00**	**$26,208,500.00**	**$2,082,629.00**	**$0.00**	**$8,748,398.65**	**$1,936,795.85**	**$11,142,735.20**	**$2,089,573.80**	**$3,061,537.50**	**$1,312,087.50**	
																GMP #2 RR LOG:	**$ 8,748,398.65**	**$ 1,936,795.85**	**$ 8,301,377.55**	**$ 2,889,285.95**	**$ 3,061,537.50**	**$ 1,312,087.50**	
															Unmitigated Cost Exposure		$ -	$ -	$ 2,841,357.65	$ (799,712.15)	$ -	$ -	
															TBW	**$0**							
															Garney	**$0**							
															Shared	**$0**							


End of Package
GARNEY

EXHIBITS

"B" – BOND FORMS

1) PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That _____ as Principal, located at _____ (Business Address) and _____as Surety, located at _____ (Business Address) are held and firmly bound to the TAMPA BAY WATER, A Regional Water Supply Authority as Obligee in the sum of _____ ($_____) for the payment whereof we bind ourselves, our heirs, executors, personal representatives, successors and assigns, jointly and severally.

Whereas, Principal has entered into a contract dated as of the _____ day of _____, 20__, with Obligee for _____**, Project No.:** _____ in accordance with drawings and specifications, which contract is incorporated by reference and made a part hereof, and is referred to as the Contract.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs the Contract at the times and in the manner prescribed in the Contract; and
2. Pays Obligee any and all losses, damages, costs and attorneys' fees, including appellate proceedings, that Obligee sustains because of any default by Principal under the Contract, including, but not limited to, all delay damages, whether liquidated or actual, suffered by Obligee; and
3. Performs the guarantee of all work and materials furnished under the Contract for the time specified in the Contract,

then this bond is void; otherwise it remains in full force.

BE IT FURTHER KNOWN:

1. Any changes, regardless of scope or amount, in or under the Contract and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect Surety's obligation under this Bond.
2. The Surety, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or other work to be performed hereunder, or the specifications referred to therein shall in anyway affect its obligations under this bond, and it does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to work or to the specifications.
3. This Performance Bond is issued in compliance with the terms and conditions set forth in Florida Statute 255.05, however, it is intended to exceed the minimal coverage requirements established by that statute. The Notice and time limitations of Florida Statute 255.05 (2) are also, to the extent applicable, if any, incorporated herein by reference and made a part hereof.
4. In no event will the Surety be liable in the aggregate to Obligee for more than the penal sum of this Performance Bond regardless of the number of suits that may be filed by Obligee.
5. Whenever the CONTRACTOR shall be, and is declared by TAMPA BAY WATER to be in default under the CONTRACT, TAMPA BAY WATER having performed TAMPA BAY WATER'S obligations thereunder, the SURETY shall promptly remedy the default, as set forth below and at the sole option of TAMPA BAY WATER, by promptly:

(1) Completing the CONTRACT in accordance with its terms and conditions and paying TAMPA BAY WATER all of its losses, damages, costs and attorneys' and legal assistants' fees,

whether at trial, on appeal or in bankruptcy, that TAMPA BAY WATER sustains because of any default by Principal under the CONTRACT, including, but not limited to, all delay damages, whether liquidated or actual. In the event SURETY takes over and completes the CONTRACT, then in such event it shall be entitled to receive the balance of the CONTRACT PRICE, as defined in sub-paragraph 2 below; or

(2) Indemnifying TAMPA BAY WATER for all of its damages, expenses, costs, delay damages, attorneys' and legal assistant's fees, including appellate and bankruptcy proceedings, that TAMPA BAY WATER has incurred, suffered or sustained as a result of TAMPA BAY WATER'S completion of the CONTRACT or the Principal's default under the CONTRACT, less the remaining unpaid balance of the CONTRACT PRICE, if any. The term "balance of the CONTRACT PRICE", as used in this Performance Bond, shall mean the total amount payable by TAMPA BAY WATER to the CONTRACTOR under the CONTRACT and any amendments thereto, less the amount previously paid by TAMPA BAY WATER to the CONTRACTOR.

IN WITNESS WHEREOF, the above parties have executed this instrument this _____ day of _____, 20__, the name of each party being affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered
in the presence of:

PRINCIPAL:

_____ _____

_____ By: _____

Witnesses as to Principal Name: _____

Its: _____

STATE OF _____
COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 20_____, by _____, as _____ of _____, a _____ corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

My Commission Expires: _____

(Signature of Notary)

Name: _____

(Legibly Printed)

(AFFIX OFFICIAL SEAL) Notary Public, State of _____

Serial No., If Any: _____

ATTEST: **SURETY:**

_____

(Printed Name)

_____

_____

_____

(Business Address)

_____ _____

Witness as to Surety

(Authorized Signature)

_____

(Printed Name)

OR

_____

Florida Resident Agent and As Attorney in Fact

_____

Witness

(Attach Power of Attorney)

_____

_____

_____

(Business Address)

_____

(Printed Name)

_____

(Telephone Number)

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 20____, by _____, as the _____, of the above named Surety. He/She is personally known to me **OR** has produced _____ as identification and who did (did not) take an oath.

My Commission Expires:

_____

(Signature of Notary)

Name: _____

(Legibly Printed)

(AFFIX OFFICIAL SEAL)

Notary Public, State of _____

Serial No., If Any:_____

2) 255.05 PUBLIC PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That _____ as Principal, located at _____ (Business Address) and _____ as Surety, located at _____ (Business Address) are held and firmly bound to the TAMPA BAY WATER, A Regional Water Supply Authority as Obligee in the sum of _____ ($_____) for the payment whereof we bind ourselves, our heirs, executors, personal representatives, successors and assigns, jointly and severally.

Whereas, Principal has entered into a contract dated as of the _____ day of _____, 20__, with Obligee for _____**, Project No.:** _____ in accordance with drawings and specifications, which contract is incorporated by reference and made a part hereof, and is referred to as the Contract.

THE CONDITION OF THIS BOND is that if Principal:

1. Promptly makes payment to all claimants as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor, materials or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in the Contract; and
2. Pays Obligee all losses, damages, expenses, costs, and attorneys' fees, including appellate proceedings that Obligee sustains because of default by the Principal under paragraph 1 of this bond;

then this bond is void; otherwise it remains in full force.

BE IT FURTHER KNOWN:

1. Any changes, regardless of scope or amount, in or under the Contract and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect Surety's obligation under this Bond.

2. The Surety, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or other work to be performed hereunder, or the specifications referred to therein shall in anyway affect its obligations under this bond, and it does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to work or to the specifications.
3. This Payment Bond is a statutory payment bond and is not intended to be a common law Payment Bond. This Payment Bond is issued in compliance with the terms and conditions set forth in Florida Statute 255.05. The Notice and time limitations of Florida Statute 255.05 (2) are also expressly incorporated herein by reference and made a part hereof. Any action instituted by a claimant under this bond must be in accordance with the Notice and Time limitations contained in Florida Statute 255.05 (2).

In no event shall the Surety be liable in the aggregate to claimants for more than the penal sum of this Payment Bond, regardless of the number of suits that may be filed by such claimants.

IN WITNESS WHEREOF, the above parties have executed this instrument this _____ day of _____, 20__, the name of each party being affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered in the presence of:

PRINCIPAL:

_____ _____

Witnesses as to Principal By:_____

Name: _____
It:_____

STATE OF _____
COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 20____, by _____, as _____ _____ of _____, a _____corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

My Commission Expires:

_____
(Signature of Notary)

Name: _____
(Legibly Printed)

(AFFIX OFFICIAL SEAL)
Serial No., If Any: _____

Notary Public, State of _____

ATTEST:

_____

SURETY:

_____
(Printed Name)

_____
_____
_____
(Business Address)

_____
(Authorized Signature)

OR

_____ _____

Florida Resident Agent and As Attorney in Fact

_____ (Attach Power of Attorney)

Witness _____

_____

_____

(Business Address)

_____

(Printed Name)

_____

(Telephone Number)

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me this ____ day of _____, 20____, by _____, as the _____, of the above named surety. He/She is personally known to me **OR** has produced _____ as identification and who did (did not) take an oath.

My Commission Expires: _____

(Signature of Notary)

Name: _____

(Legibly Printed)

(AFFIX OFFICIAL SEAL) Notary Public, State of _____

Serial No., If Any: _____

South Hillsborough Pipeline Third Amendment to Contract 2023-027

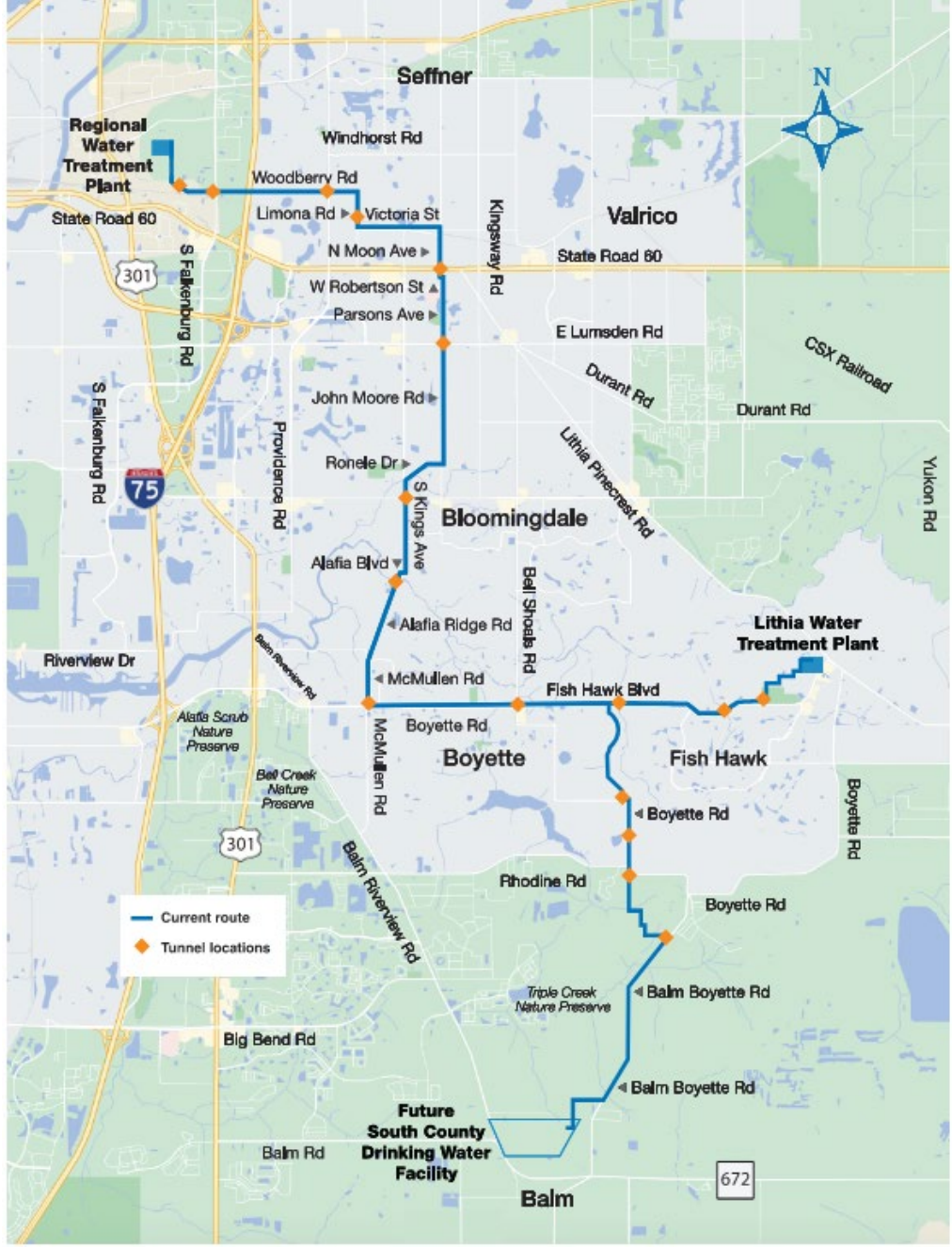
Agenda Item C.3

October 20, 2025

Maribel Medina, P.E., PMP
Planning and Projects Director
Tampa Bay Water

Project Overview

- 26-miles, up to 5 feet in diameter
- Up to 65 million gallons per day
- Funding:
  - Segment A - Tampa Bay Water
  - Segment B - Hillsborough County
  - Southwest Florida Water Management District



Completed and Ongoing Project Milestones

Complete

30%, 60% and 90% design

Primary permit applications

Value engineering

Ongoing

60% design review of the point of connection facilities

Property acquisition

Permits acquisition

Public outreach

Critical Path - Permitting

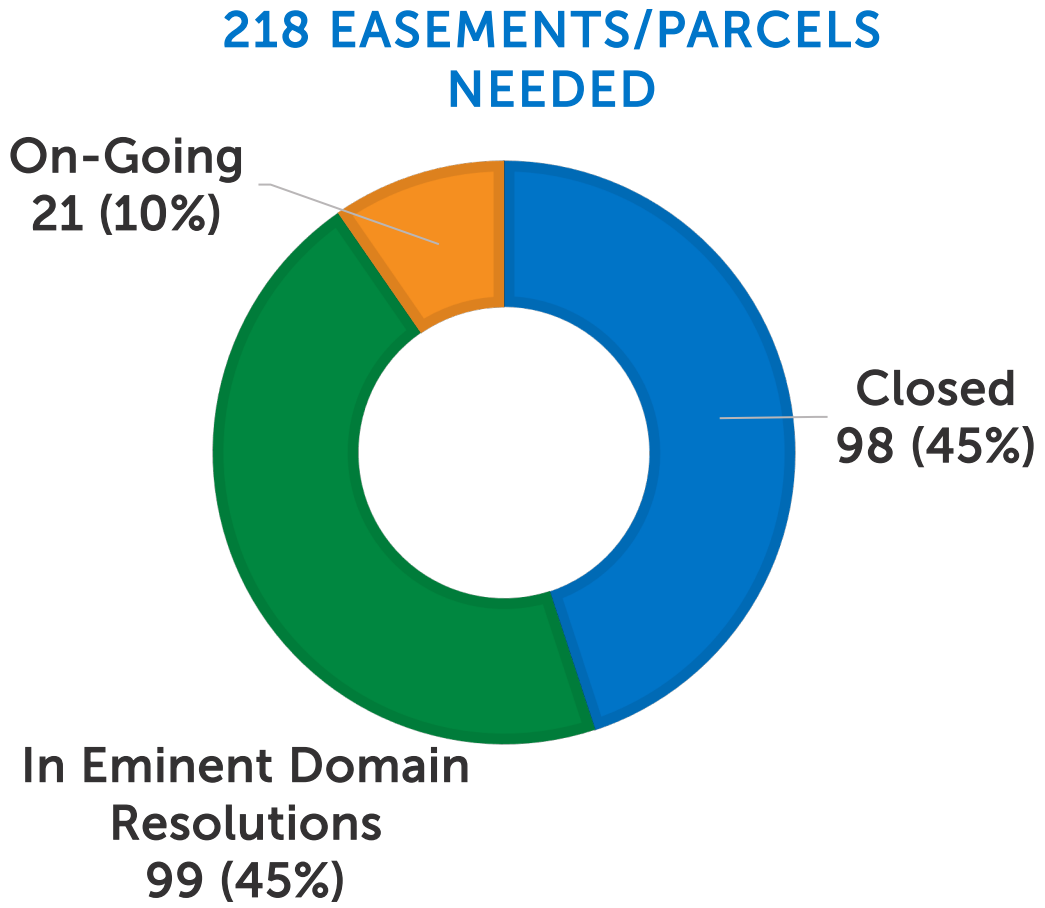
Applied

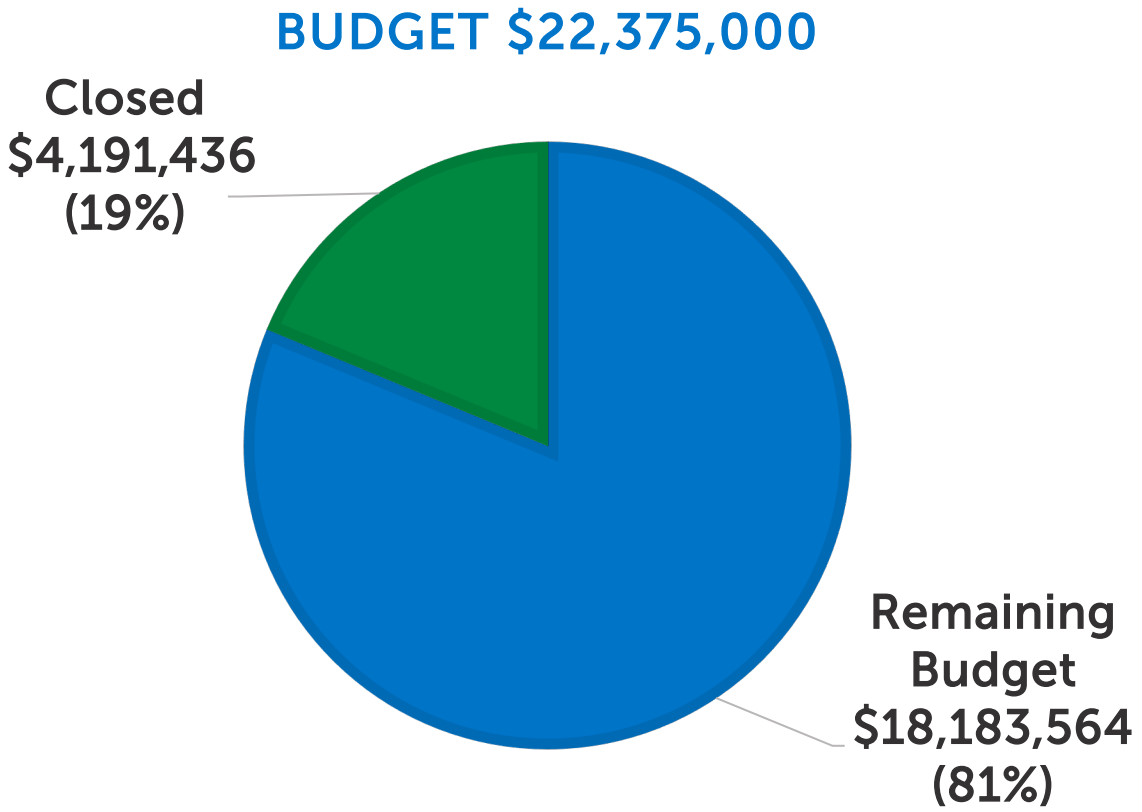
16

Pending Submittal

12

Easements/Parcels Acquisition Status





Project Summary Budget

Budget Line Description	Cost
Engineering/Professional Services/Legal /Property	$97,212,636
GMP 1-Materials	$56,529,173
GMP 2-Trenchless operations	$129,252,544
GMP 3-Open trench construction	$216,718,601
GMP 4-Points of connection and County infrastructure	To be determined
Total	**$499,712,954**

Tampa Bay Water funding	$372,858,482
Hillsborough County funding	$126,854,472

Project Schedule

All dates subject to change

Guaranteed Maximum Price Proposal No. 3

Package Description	Total	Funding
South Hillsborough Pipeline (Segment A)	$ 170,516,311	Tampa Bay Water Revenue Bonds*
South Hillsborough Pipeline (Segment B)	$ 44,644,655	Hillsborough County*
Hillsborough County infrastructure	$ 1,557,635	Hillsborough County
TOTAL	**$ 216,718,601**	

*Portion of this cost is reimbursable by the Southwest Florida Water Management District

Recommendation

- Staff recommends Board approval of the negotiated third amendment of Contract 2023-027 with Garney Companies, Inc. for GMP Proposal No. 3 in the amount of $216,718,601 inclusive of $14,672,284 for Owner's Allowances and contingencies.

TAMPA BAY WATER

Questions?

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM C.4

DATE: September 26, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: Feasibility Study for New Groundwater Sources, Project No. 11022 - Tampa Bay Seawater Desalination Expansion with Brackish Groundwater Scope Reduction - *Approve*

SUMMARY

Tampa Bay Water staff recommend deferring further study of the expansion of the Tampa Bay Seawater Desalination Expansion with Brackish Groundwater due to the projected lack of net benefit groundwater options available in southern Hillsborough County at this time.

SUGGESTED ACTION

Reduce the scope of the Tampa Bay Seawater Desalination Expansion with Brackish Groundwater Project by eliminating the groundwater modeling and detailed yield evaluations, concentrate discharge evaluation, and conceptual design of the transmission system and water treatment facilities for this concept.

COST/FUNDING SOURCE

N/A

DISCUSSION

The Tampa Bay Seawater Desalination Expansion with Brackish Groundwater, included in the Feasibility Study for New Groundwater Sources, Project No. 11022, explores expanding Tampa Bay Water's existing Desalination Plant using brackish groundwater from a new wellfield. Brackish water

could be blended with seawater and treated at the existing Desalination Plant or treated separately at a new brackish groundwater treatment facility in southern Hillsborough County.

Expanding the Tampa Bay Seawater Desalination Plant using brackish groundwater is dependent on the availability of brackish groundwater in southern Hillsborough County. This area is located within the Most Impacted Area (MIA) of the Southern Water Use Caution Area (SWUCA) established by the Southwest Florida Water Management District (District). Therefore, the availability of brackish groundwater is determined by the District based on a Mitigation Plus Recovery Net Benefit evaluation. This requires any new or increased existing groundwater withdrawals provide a net environmental benefit. The preliminary net benefit evaluations completed by the consultant, WSP (sub-contracted through AECOM), anticipated that approximately 9.48 million gallons per day (mgd) could be available through the acquisition of Water Use Permits in southern Hillsborough County and as a result of the net benefits associated with the South Hillsborough Aquifer Recharge Program (SHARP). These quantities could change based on the final benefit determinations made by the District.

However, another project included in the 2018 and 2023 Long-term Master Water Plans, the South Hillsborough Wellfield, is also seeking groundwater in this area and may be dependent on the net benefits provided by SHARP. The South Hillsborough Wellfield could produce an estimated 6-12 mgd of additional drinking water for the region as early as 2030. The South Hillsborough Wellfield is anticipated to produce high-quality fresh groundwater requiring relatively low levels of treatment compared to brackish groundwater. As such, there is a desire to first maximize productivity of the South Hillsborough Wellfield before considering development of additional brackish groundwater resources within southern Hillsborough County.

The original scope for the Tampa Bay Seawater Desalination Expansion with Brackish Groundwater Study, anticipated this and included several tasks that were contingent upon the results of preliminary evaluations including the net benefit evaluation, collection and review of existing data, evaluation of the District's Mitigation Plus Recovery Net Benefit and water use permitting requirements and the identification of additional net benefit sources that may be available for this project. A summary of this information is included in the attached Feasibility Evaluation for Expansion of the Tampa Bay Desalination Facility Using Brackish Water Technical Memorandum.

Based on the preliminary evaluations and the projected lack of net benefit groundwater options available in southern Hillsborough County, it is recommended that further study into the expansion of the Tampa Bay Seawater Desalination Plant using brackish groundwater, be deferred and tabled for consideration in future iterations of the Long-term Master Water Plan. The attached Feasibility Evaluation for Expansion of the Tampa Bay Desalination Facility Using Brackish Water Technical Memorandum provides a summary of the preliminary findings and future project considerations.

Staff recommends eliminating the groundwater modeling and detailed yield evaluations, concentrate discharge evaluation, and conceptual design of the transmission system and water treatment facilities from the Tampa Bay Seawater Desalination Plant Expansion using Brackish Groundwater Study. The

reduction in scope will save the agency $892,572.

BACKGROUND

In November 2023, Tampa Bay Water's Board of Directors approved the 2023 Long-term Master Water Plan which included recommendations to further study the seven top-ranked water supply projects to meet the region's future water supply needs. The Feasibility Study for New Groundwater Sources and the Feasibility Study for Surface Water Sources each consist of three of the seven board approved projects selected for further evaluation.

The three surface water supply projects are:

- North Pinellas Surface Water Treatment Plant and Reservoir
- Surface Water Treatment Plant at C.W. Bill Young Regional Reservoir
- South Hillsborough Surface Water Treatment Plant and Reservoir

The three groundwater supply projects are:

- Eastern Pasco Wellfield with Fresh and/or Brackish Groundwater
- Consolidated Water Use Permit Increase
- Tampa Bay Seawater Desalination Expansion with Brackish Groundwater

The Tampa Bay Seawater Desalination Expansion with seawater and the South Hillsborough Wellfield remain on the list of options, however, studies on these concepts were already completed in 2021.

With these changes, the Tampa Bay Seawater Desalination Expansion with brackish groundwater will not be further evaluated to meet the region's 2033 drinking water supply needs, but may be re-evaluated in future iterations of the Long-term Master Water Plan as a potential water supply source to meet future demands.

Attachments (2)

Feasibility Evaluation for Expansion of the Tampa Bay Desalination Facility Using Brackish Water Technical Memorandum
C.4 Feasibility Study for New Groundwater Sources, Project No. 11022 - Desalination Expansion Scope Reduction Presentation

AECOM

Feasibility Evaluation for Expansion of the Tampa Bay Desalination Facility Using Brackish Water

Technical Memorandum

October 6, 2025

Delivering a better world

Quality information

Prepared by	Checked by	Verified by	Approved by
Christopher Hill, PE			

Revision History

Revision	Revision date	Details	Authorized	Name	Position
1.0	09/16/025	Initial draft	CPH	Chris Hill	Project Manager
2.0	10/01/2025	Revised draft	CPH	Chris Hill	Project Manager
3.0	10/06/26	Revised draft	CPH	Chris Hill	Project Manager

Distribution List

# Hard Copies	PDF Required	Association / Company Name

Prepared for:

Danielle Keirsey, PMP
2575 Enterprise Road
Clearwater, FL 33763

Prepared by:

Christopher Hill, PE

AECOM

7650 West Courtney Campbell Causeway
Tampa, FL 33607
aecom.com

Copyright © 2025 by AECOM

All rights reserved. No part of this copyrighted work may be reproduced, distributed, or transmitted in any form or by any means without the prior written permission of AECOM.

Table of Contents

Executive Summary 1
1. Introduction 2
   1.1 Background 2
   1.2 Objective and Purpose 2
2. Need for Additional Water 3
3. Availability of Groundwater in South Hillsborough County 3
   3.1 Southern Water Use Caution Area and Most Impacted Area 3
   3.2 Summary of Area Hydrogeology 4
   3.3 South Hillsborough Aquifer Recharge Program 8
   3.4 Acquisition of Additional Water Use Permits in South Hillsborough County 8
4. Desalination Expansion Using Brackish Water 8
   4.1 Brackish Water Desalination Overview 9
   4.1.1 Required Infrastructure Components 9
   4.2 Implementation Alternatives 11
   4.2.1 Alternative 1: Parallel BWRO at Tampa Bay Seawater Desalination Plant 11
   4.2.2 Alternative 2: Blended Feed Water System 11
   4.2.3 Alternative 3: SWRO Retrofit for Brackish Water 12
   4.2.4 Alternative 4: Offsite BWRO Facility 12
   4.3 Comparison of Alternatives 13
5. Net Benefits Discussion 16
6. Conclusions and Recommendations 16
7. References 17

ABBREVIATIONS LIST & ACRONYMS

bls	below land surface
IAS	Intermediate Aquifer System
BBS	Tampa Big Bend Station
BWRO	brackish water reverse osmosis
FDEP	Florida Department of Environmental Protection
FRP	fiberglass reinforced plastic
HDPE	high-density polyethylene
LFA	Lower Floridan Aquifer
MCU	Middle Confining Unit
MGD	million gallons per day
MIA	Most Impacted Area
MIT	mechanical integrity testing
NPDES	National Pollution Discharge Elimination System
psi	pounds per square inch
PVC	polyvinyl chloride
RO	reverse osmosis
ROMP	Regional Observation Monitoring Well Program
SHARP	South Hillsborough Aquifer Recharge Program
SHW	South Hillsborough Wellfield
District	Southwest Florida Water Management District
SWIMAL	Saltwater Intrusion Minimum Aquifer Level
SWUCA	Southern Water Use Caution Area
TDS	total dissolved solids
UIC	Underground Injection Control
UFA	Upper Floridan Aquifer
WUP	Water Use Permit

Executive Summary

Tampa Bay Water has the unequivocal obligation to meet the drinking water demands of its six member governments which include Hillsborough, Pasco and Pinellas counties and the cities of New Port Richey, St. Petersburg and Tampa. Regional water demands are anticipated to increase by approximately 50 million gallons per day (MGD) through the year 2043. The 2023 Long-term Water Master Plan identified seven potential water supply projects for further evaluation to meet these obligations. This included four potential future groundwater supply alternatives. Expansion of the Tampa Bay Seawater Desalination Plant using brackish water is one of the four shortlisted potential groundwater supply options being considered to meet some or all the projected future needs of the region.

The objective of this technical memorandum is to quantify the potential net benefit of expanding the Tampa Bay Seawater Desalination Plant using brackish groundwater and assess its feasibility under current permitting and regional planning constraints. This memorandum is intended to support informed decision-making for future investments in desalination infrastructure by identifying environmental, technical, and regulatory barriers.

Expansion of the Desalination Plant could be done in several ways. Two options were considered for this evaluation: treatment of brackish water at the Desalination Plant and treatment of brackish water at an offsite location nearer to a potential future brackish wellfield. If treated at an offsite location, treated brackish water could be pumped directly to the Tampa Bay Water regional transmission system or it could be pumped to the Desalination Plant where it would be blended with treated seawater. . In both scenarios, it was determined the most cost-effective approach is to treat the brackish water separately and blend it with treated seawater.

The feasibility of expansion of the Tampa Bay Seawater Desalination Plant using brackish groundwater is dependent on the availability of brackish groundwater in southern Hillsborough County. The availability of groundwater will be determined by the Southwest Florida Water Management District based on a Mitigation Plus Recovery Net Benefit evaluation as the Southern Water Use Caution Area is in a state of recovery and new groundwater quantities cannot be permitted without providing a net environmental benefit. A preliminary net benefit evaluation anticipated approximately 9.48 MGD will be available through the acquisition of Water Use Permits in southern Hillsborough County and as a result of the net benefits associated with Hillsborough County's South Hillsborough Aquifer Recharge Program (SHARP). These quantities could potentially increase by up to 2 MGD depending on the benefit determinations to be made by the Southwest Florida Water Management District if this project is pursued.

However, another Long-term Master Water Plan project is also seeking groundwater in the area and likewise may rely on the net benefit provided by SHARP. The South Hillsborough Wellfield (SHW) is projected to bring an additional 6 –12 MGD to the region as early as 2030. The SHW is anticipated to produce high-quality fresh groundwater requiring relatively low levels of treatment compared to brackish groundwater. As such, there is a desire to first maximize productivity of the SHW before considering the development of additional, i.e., brackish, groundwater resources within southern Hillsborough County. The SHW Project will be evaluated by the Tampa Bay Water Board for approval in October 2025.

Due to the projected lack of net benefit groundwater options available in southern Hillsborough County, it is recommended that expansion of the Tampa Bay Seawater Desalination Plant using brackish water be tabled for consideration in future iterations of the Long-term Water Master Plan.

If warranted by future regional water supply needs and if Tampa Bay Water can secure additional permitted groundwater quantities in southern Hillsborough County or Hillsborough County expands its SHARP program, it would be worth re-considering development of a brackish groundwater supply in southern Hillsborough County for the purpose of expanding the Tampa Bay Seawater Desalination Plant. Until such time, it is recommended that Tampa Bay Water maximize production from the South Hillsborough Wellfield which is expected to produce higher-quality water at a lower anticipated treatment cost compared to development and treatment of a brackish water supply.

1. Introduction

1.1 Background

The Long-term Master Water Plan (LTMWP) ensures that Tampa Bay Water prepares for the provision of adequate supplies over a 20-year planning horizon. The LTWMP not only contains the planning process, but it is also required by the 1998 Reinstated and Amended Interlocal Agreement to be updated every 5 years to ensure Tampa Bay Water has enough water supply over the 20-year planning horizon.

At a high level, the LTMWP identifies when new supplies will need to be built considering annual demand forecasts, water shortage mitigation strategies, and demand management. The plan also contains the process of identifying what to build by considering new water supply projects, optimization of existing assets and facilities, where and how to deliver additional water, and public input.

During the 2023 LTWMP planning process, new water supply options were evaluated and scored based on three equally weighted Tampa Bay Water Board-approved selection criteria categories: environmental sustainability, project cost, and reliability. Based on the shortlist evaluation and scoring, seven projects were recommended to undergo feasibility studies. This included four potential future groundwater supply alternatives:

- Increased groundwater allocations from the Consolidated Water Use Permit (CWUP)
- A new wellfield in Eastern Pasco County,
- Expansion of the Tampa Bay Seawater Desalination Plant using brackish groundwater or seawater
- South Hillsborough Wellfield (previously studied)

This memorandum provides a summary of the evaluation of the expansion of the Tampa Bay Seawater Desalination Plant using brackish groundwater.

1.2 Objective and Purpose

The objective of this technical memorandum is to quantify the potential net benefit of expanding the Tampa Bay Seawater Desalination Plant using brackish groundwater and assess its feasibility under current permitting and regional planning constraints. This memorandum is intended to support informed decision-making for future investments in desalination infrastructure by identifying environmental, technical, and regulatory barriers.

2. Need for Additional Water

Tampa Bay Water has the unequivocal obligation to meet the drinking water demands of its six member governments which include Hillsborough, Pasco and Pinellas counties and the cities of New Port Richey, St. Petersburg and Tampa. Tampa Bay Water and the governments provide water to more than 2.6 million people. To ensure it meets its obligations, Tampa Bay Water annually forecasts the water demands for each member.

Regional water demands are anticipated to increase by approximately 50 MGD through the year 2043. Tampa Bay Water is evaluating new water supply options to meet these needs. These new supplies can be brought online incrementally to align supply with demand and prevent overburdening the wholesale rate with supply that is not yet needed. Based on the most recent demand projections, an additional 10 to 20 MGD is anticipated to be needed by 2033 and an additional 25 MGD will be needed by 2043.

Expansion of the Tampa Bay Seawater Desalination Plant using brackish water is one of the four shortlisted future groundwater supply options being considered to meet some or all of these projected future needs.

3. Availability of Groundwater in South Hillsborough County

3.1 Southern Water Use Caution Area and Most Impacted Area

The Southern Water Use Caution Area (SWUCA) was established by the District in 1992 to address declines in the potentiometric surface of the UFA due to excess groundwater withdrawals in the region. The SWUCA was delineated to address impacts to the upper Peace River and Ridge Lakes in Polk County, and saltwater intrusion in Hillsborough, Manatee, and Sarasota Counties. The Most Impacted Area (MIA) of the SWUCA was delineated to address saltwater intrusion in the western portion of these counties and is shown in Figure 1. The SWUCA MIA has a Saltwater Intrusion Minimum Aquifer Level (SWIMAL) set in the UFA to prevent additional saltwater intrusion from occurring within the MIA. The MIA is in recovery mode, and new or increased existing groundwater withdrawals cannot result in additional drawdown within the MIA boundary. New or increased existing withdrawals from the UFA that result in additional drawdown impact within the MIA can be permitted via use of a Net Benefit. The Net Benefit must offset the predicted drawdown within the MIA and provide an additional 10 percent of the predicted drawdown as recovery in the MIA. Net Benefit options are defined in Section 3.9.2.6.2.2.4 Net Benefit of the District's Water Use Permit (WUP) Applicant's Handbook Part B, which is incorporated by reference in Chapter 40D-2, Consumptive Use of Water.

New groundwater withdrawals proposed by Tampa Bay Water for either the South Hillsborough Wellfield (SHW) or desalination expansion with brackish groundwater would utilize the Mitigation Plus Recovery Net Benefit method, using the recovery in the MIA provided by either a portion or all of 10 MGD of aquifer recharge in the SHARP recharge well system. The recovery of the UFA potentiometric surface within the MIA from the SHARP recharge must offset the UFA drawdown within the MIA due to withdrawal from the SHW or brackish groundwater wellfield for desal expansion and provide an additional 10 percent of the drawdown as recovery (the "Net Benefit Requirement"). District staff have stated that a WUP application for these potential sources will be

evaluated using average annual quantities for both the wellfield withdrawals and SHARP recharge quantities.

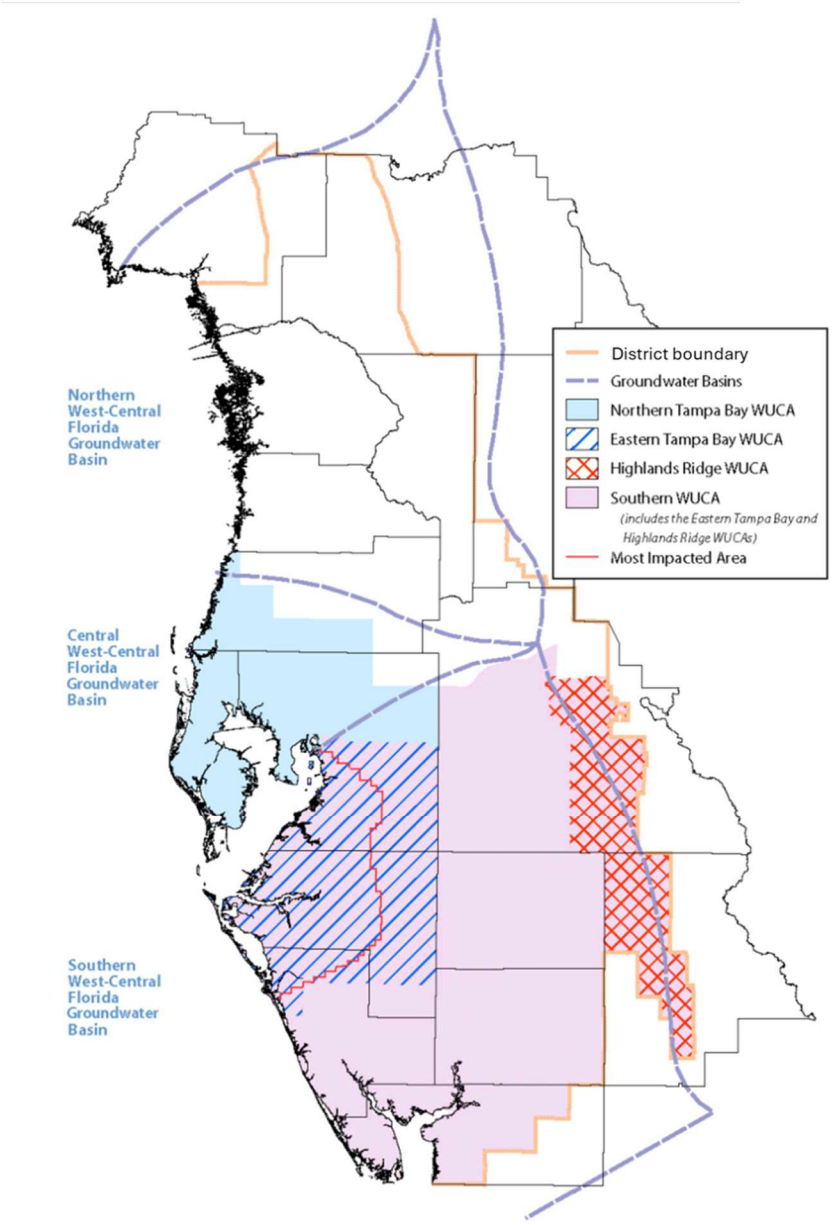


Figure 1. Water Use Caution Areas and Most Impacted Area (District, 2012)

3.2 Summary of Area Hydrogeology

The 2023 Long-term Master Water Plan (Black & Veatch, 2023) included a conceptual layout for a brackish groundwater wellfield located to the west and the southwest of the Tampa Bay Water Seawater Desalination Plant (Figure 2). The northern portion of the wellfield is shown in an area between US 41 and I-75, while the southern portion is adjacent to the east side of I-75. These locations are approximately two miles west of the South Hillsborough Aquifer Recharge Project (SHARP) Well No.1 (SRW-1) and one mile west of SRW-4, respectively. The wellfield was conceptualized to produce brackish groundwater from the Suwannee Limestone of the Upper Floridan aquifer (UFA).

Area hydrogeology was defined using information from the SHARP Well No.1 (HDR, 2016), the deep injection well at the TECO Tampa Big Bend Station (BBS) (ASRus, 2022), and Southwest Florida Water Management District (District) Regional Observation Well Program (ROMP) monitoring wells. Well locations are shown in Figure 2. A geologic cross section from lithologic logs for these wells is shown on Figure 3.

The lithologic logs for SRW-1 and the TECO injection well, located approximately 6,000 feet south-southwest of SRW-1, indicate that the geology consists of surficial sand to a depth of 20 feet below land surface (bls), the Hawthorn Group to 210 feet bls, Suwannee Limestone to 410 feet bls, Ocala Limestone to 650 feet bls, and the Avon Park Formation to 2,150 feet bls. The TECO injection well lithologic log indicates that the Avon Park Formation is underlain by the Oldsmar Formation to a depth of 2,950, which is underlain by the Cedar Keys Formation.

ROMP TR9-2 is located on the east side of US 41, approximately two miles south of Big Bend Road. The location is 0.6 miles west of SRW-4 and approximately two miles west of the conceptual location of the southern portion of the brackish groundwater wellfield as shown in Figure 2. The lithologic log at ROMP TR9-2 indicates that the geology consists of surficial sand to a depth of 38 feet bls, the Hawthorn Group to 268 feet bls, Suwannee Limestone to 460 feet bls, Ocala Limestone to 697 feet bls, and the Avon Park Formation to greater than 1,260 feet bls (District, 1990).

ROMP TR AB-3 is located approximately one mile east of SRW-4, within the proposed southern portion of the brackish groundwater wellfield along I-75. The lithologic log at ROMP TR AB-3 indicates that the geology consists of surficial sand to a depth of 40 feet below land surface, the Hawthorn Group to 280 feet bls, Suwannee Limestone to 485 feet bls, Ocala Limestone to 723 feet bls, and the Avon Park Formation to greater than 1,200 feet bls (District, 1994).

The geologic units described above comprise four aquifer systems in the area. The surficial sand unit contains the unconfined surficial aquifer. The Hawthorn Group makes up the Intermediate Aquifer System (IAS). Clayey layers within the Hawthorn Group comprise the intermediate confining unit, which separates the surficial aquifer from the IAS and the underlying UFA. The UFA extends from the top of the Suwannee Limestone to the middle of the Avon Park Formation at a depth of approximately 1,400 feet bls. The lower half of the Avon Park Formation makes up Middle Confining Unit (MCU) II, which separates the UFA and the Lower Floridan Aquifer. The Lower Floridan Aquifer extends into the upper portion of the Cedar Keys Formation.

The UFA contains two primary producing zones. The upper producing zone in the Suwannee Limestone and the lower producing zone in the upper portion of the Avon Park Formation, referred to as the Avon Park High Permeability Zone. Transmissivity of the Suwannee Limestone producing zone in ROMP TR9-2 calculated from aquifer test data as approximately 14,600 ft^2/day, while transmissivity of the Avon Park High Permeability Zone calculated from aquifer test data is 73,500 ft^2/day (District, 1990).

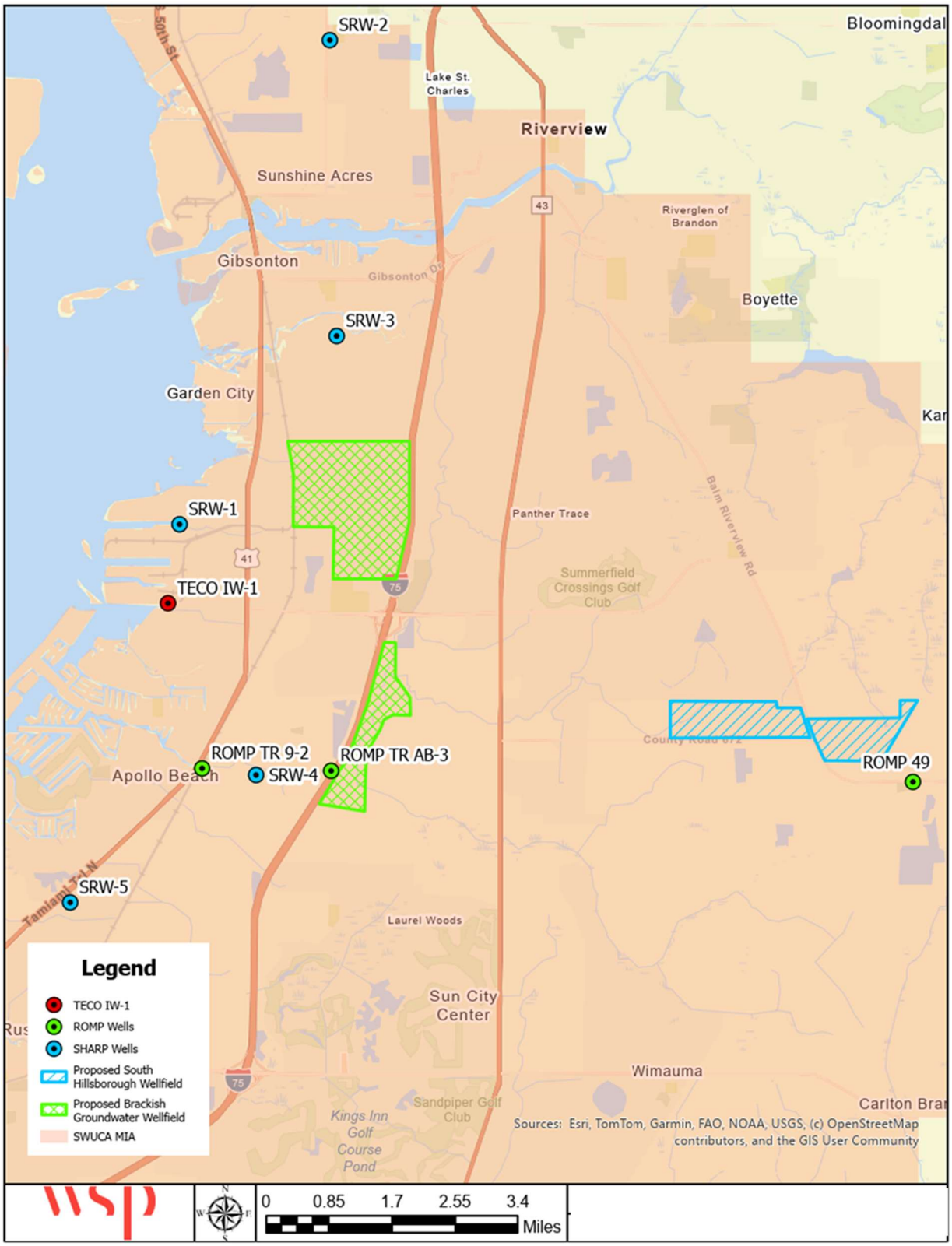


Figure 2. Well Location Map

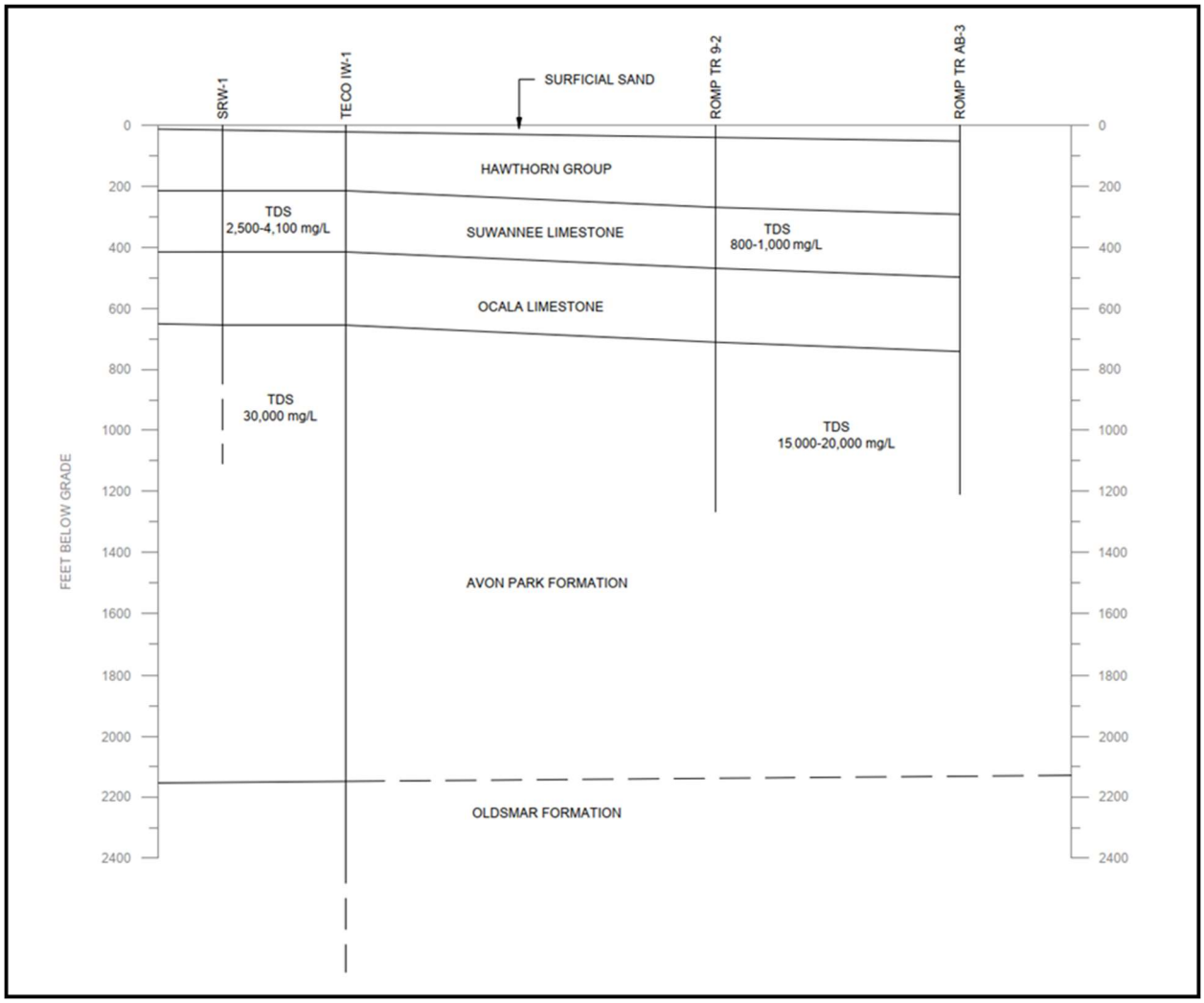


Figure 3. Geologic Cross-Section and Total Dissolved Solids

Water quality in the UFA varies from west to east across the area and with depth. The area is within the freshwater/saltwater transition zone along the coast. Total dissolved solids are about 30,000 mg/L in the Avon Park Formation near the Desalination Plant. Total dissolved solids (TDS) concentration at ROMP TR9-2 is approximately 800 to 1,000 mg/L in the Suwannee Limestone and 15,000 to 20,000 mg/L in the Avon Park Formation (Figure 3). Total dissolved solids (TDS) concentration at ROMP TR AB-3 is not available for the Suwannee Limestone. The concentrations are 15,000 to 20,000 mg/L in the Avon Park Formation. It should be noted that the monitor interval at this well is over 100 feet deeper than that at ROMP TR9-2.

Based on water quality, the Suwannee Limestone would be the target producing zone for a brackish groundwater wellfield in the area identified in the 2023 Long-Term Master Water Plan. However, due to the available data indicating a relatively low transmissivity for the Suwannee Limestone, the desired quantity for the brackish groundwater wellfield (10 to 12 MGD) would likely require over 20 wells dispersed over a large area. Additionally, due to the low transmissivity in the Suwannee Limestone, the amount of drawdown induced by a 10 to 12 MGD withdrawal would require a recharge quantity that is significantly greater than the projected SHARP recharge quantity of 10 MGD to meet the 10 percent Net Benefit requirement.

3.3 South Hillsborough Aquifer Recharge Program

Hillsborough County (County) is constructing the South Hillsborough Aquifer Recharge Program (SHARP) recharge well system adjacent to a portion of the eastern coast of Tampa Bay. The system will consist of six Class V recharge wells that will initially inject a total of at least 10 MGD of reclaimed water from three water reclamation facilities in southern Hillsborough County. The SHARP system is being developed to provide a means to reduce the current surface water discharge to Tampa Bay while creating a saltwater intrusion barrier in the UFA along the eastern coast of Tampa Bay. This coastal recharge increases aquifer water levels in the MIA, which can be applied to net benefit strategies for additional groundwater supply development in the SWUCA MIA.

Two wells, SRW-1 and SRW-2, are currently operating under an Operation Permit. Hillsborough County recently obtained a Notice of Draft Operation Permit for SRW-4 and should have an Operation Permit soon. Construction and Operational Testing Permits were issued for SRW-3, SRW-5, and SRW-6 in 2024. The construction status of these wells is not known currently.

SRW-1 is permitted to inject 3.0 MGD average and 4.5 MGD maximum. SRW-2 and SRW-4 are each permitted for a maximum injection rate of 5.0 MGD. The wells are currently operated at an injection rate of 2.0 to 2.5 MGD each. Upon the completion of construction of SRW-3, SRW-5, and SRW-6, the wells will be operationally tested under the Construction and Testing Permit for two years. An application for an Operation Permit is submitted at least six months before the end of the two-year operational test period. Upon receipt of the Operation Permit, the recharge quantities for these wells will be eligible for Net Benefit use.

3.4 Acquisition of Additional Water Use Permits in South Hillsborough County

In addition to the potential benefits associated with Hillsborough County's SHARP program, another method for implementing the Mitigation Plus Recovery Net Benefit method is to negotiate with a third-party WUP holder to retire all or a portion of their permitted groundwater withdrawal to Tampa Bay Water. The quantity would subsequently be retired and applied to retirement credits used for a Mitigation Plus Recovery net benefit analysis. Tampa Bay Water and Hillsborough County are co-permittees for the Balm Farm WUP No. 20021046, which had an initial average annual quantity of 250,000 gallons per day (gpd). Tampa Bay Water has secured agreements with two permittees for transfer and retirement quantities from five WUP's that will provide a minimum estimated total average annual quantity of approximately 2.5 MGD for the Balm Farm WUP. An application for this Net Benefit supported increase was expected to be submitted in 2025 and should be permitted in early 2026. Tampa Bay Water continues to identify additional permittees for opportunities to obtain and transfer retire permitted quantities to apply to future Net Benefit supported WUP quantity increases.

4. Desalination Expansion Using Brackish Water

Expansion of the Tampa Bay Seawater Desalination Plant using brackish groundwater could be done in multiple ways. First, brackish water could be treated at the Desalination Plant. Two options exist: blending the brackish water and seawater prior to treatment or treating both separately and blending the treated water. The second option is to treat brackish water at a separate offsite location and then pump treated water to the Desalination Plant where it can be blended with treated seawater. For the purposes of this evaluation, a preliminary finished water capacity of 5 – 10 MGD was considered. The following sections provide more detail regarding each of the options

considered.

4.1 Brackish Water Desalination Overview

Brackish water typically contains dissolved solids concentrations ranging from 1,000 to 10,000 mg/L, which is significantly lower than seawater (approximately 35,000 mg/L). Brackish water reverse osmosis (BWRO) is the preferred treatment technology for brackish water due to its proven reliability, energy efficiency, and ability to achieve high water recovery rates of 80-85 percent (AWWA, 2007). BWRO also offers several advantages compared to seawater desalination, including lower energy requirements and reduced environmental impacts (Greenlee et al., 2009), but still requires substantially higher energy than conventional fresh groundwater treatment (Voutchkov, 2018).

4.1.1 Required Infrastructure Components

Planning, design, and ultimately construction of a new brackish water wellfield that would yield 5 – 10 MGD finished water capacity requires a comprehensive siting investigation, including hydrogeological surveys, aquifer testing, and strategic well placement and design to optimize yield while minimizing drawdown impacts. Typical brackish water wells in this area within Hillsborough County range from 200 to 1,000 feet in depth, with production capacities of 500 to 2,000 gallons per minute per well (Maliva & Missimer, 2012). For the target capacity range, approximately 8 – 15 production wells would be required, along with 3 – 5 monitoring wells. Wellfield infrastructure includes production wells, transmission pipelines, monitoring wells, pump stations, electrical systems, and access roads.

Raw water conveyance systems must be constructed from corrosion-resistant materials due to the high dissolved solids content of the brackish groundwater. For 5 – 10 MGD finished water capacity assuming an 80% BWRO recovery rate, the required wellfield supply capacity would be approximately 6 – 12.5 MGD. This translates to pipeline diameters of 16 to 24 inches or greater inches with appropriate pressure ratings are required to transport raw water from the wellfield to treatment facilities. Recommended pipeline construction materials would include polyvinyl chloride (PVC) or high-density polyethylene (HDPE) to reduce the risk of corrosion. Booster pump stations may be necessary depending on transmission distances and elevation changes. If BWRO is investigated in the future, a full hydrogeologic study will be required to determine the well locations and necessary conveyance pipelines.

A BWRO plant would require reverse osmosis (RO) skids along with ancillary equipment, including prefiltration (cartridge filters), cleaning system, and flushing system. For the capacities discussed, an example 5 MGD system expandable to 10 MGD is shown in Figure **4.** 4. Depending on the raw water quality, various levels of pretreatment may be required, ranging from no additional treatment to screening, multimedia or low-pressure membrane filtration, and chemical addition. The level of pretreatment required would need to be determined through evaluation of the expected raw water quality, treatment process modeling, and possibly bench- and/or pilot-scale studies. The example BWRO system shown in Figure **4.** 4 includes skid-mounted high-pressure pumps and assumes sufficient raw water pressure from the wellfield. This layout also allows for pipe / raceway trenches to facilitate maintenance and reduce overhead piping/wiring. The total land area required for a 10 MGD BWRO facility is approximately 2 – 3 acres, including additional treated water storage.

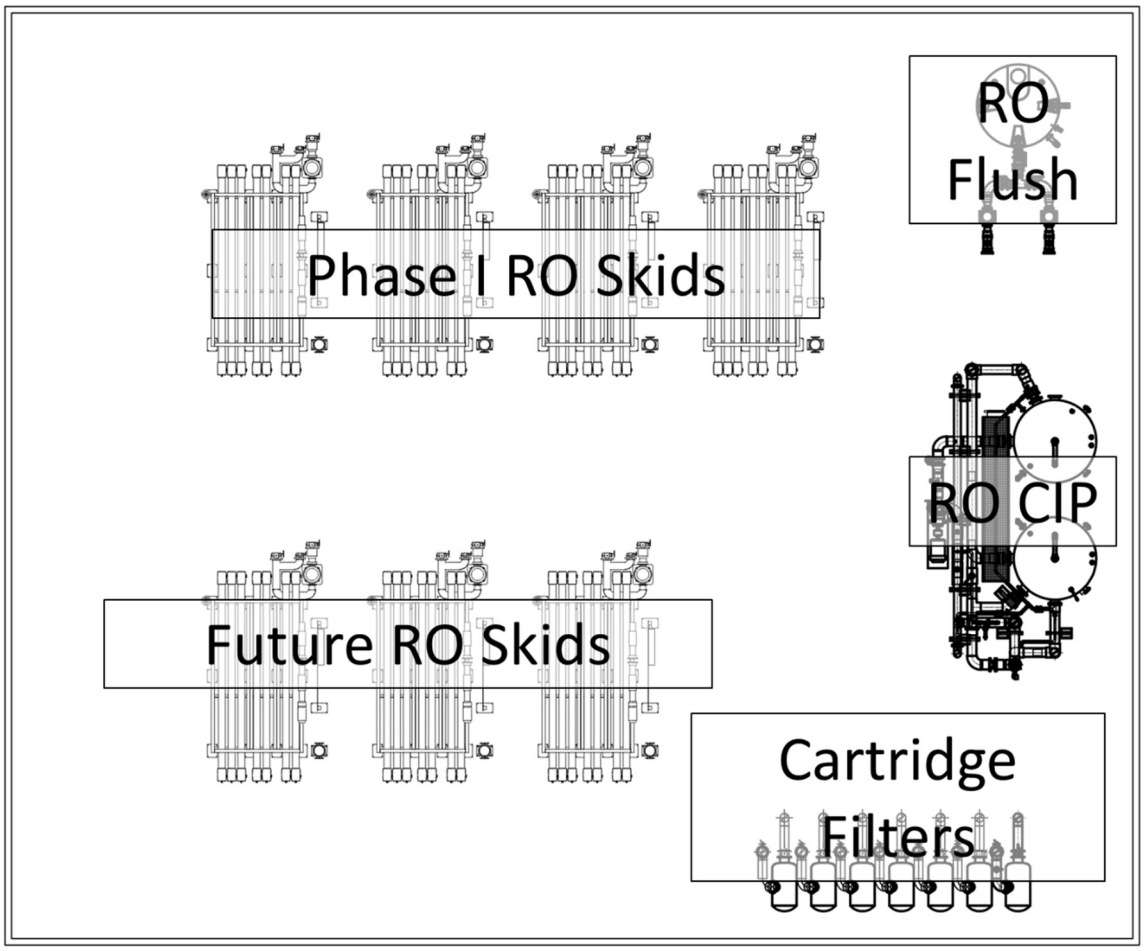


Figure 4. Example Layout of a New BWRO Facility

Concentrate disposal represents a critical design consideration, as BWRO systems typically produce concentrate streams containing 10-20% of the feed water volume with dissolved solids concentrations of 5,000-15,000+ mg/L (Mickley, 2006). For a 5-10 MGD facility, concentrate flows of approximately 1-2 MGD must be managed through deep well injection or surface water discharge. If the BWRO system is located at the existing Desalination Plant, there may be an option to discharge into the existing concentrate discharge pipeline for the existing seawater desalination process. This needs to be further investigated and may require modifications to the existing National Pollution Discharge Elimination System (NPDES) permit.

Treated water storage provides operational flexibility and emergency reserve capacity. Tampa Bay Water has existing storage facilities at the Tampa Bay Seawater Desalination Plant; however, if a new facility is constructed, ground storage tanks would be recommended onsite to increase operational flexibility. The exact size and number of tanks would depend on final selected capacity along with needs of the system.

Distribution of 5 – 10 MGD of treated water to Tampa Bay Water's existing regional supply system requires integration with current infrastructure. If brackish groundwater treatment is located at the Desalination Plant, it may be possible to use the existing connection to the regional system based on planned production from the seawater desalination process. If BWRO treatment is located at a new site nearer to a future brackish groundwater wellfield, then treated water transmission mains of 16 – 24 inches in diameter would be required a. The new transmission mains would convey treated

brackish water to either the Desalination Plant or the regional transmission system. If conveyed to the Desalination Plant, treated brackish water would be blended with treated seawater prior to distribution to the regional system. In both instances a study of the existing regional transmission system is required to determine the most appropriate configuration of any new treated water conveyance system.

4.2 Implementation Alternatives

4.2.1 Alternative 1: Parallel BWRO at Tampa Bay Seawater Desalination Plant

This alternative involves implementing dedicated 5-10 MGD BWRO treatment trains at the existing Tampa Bay Seawater Desalination Plant and operating in parallel with the current seawater reverse osmosis (SWRO) system. Installation of separate BWRO treatment trains within the existing facility allows for optimized treatment of each water source. This approach requires additional RO membrane systems designed specifically for brackish water conditions, separate high-pressure pumping systems optimized for 200-400 psi operating pressures, and independent pretreatment processes. Similar to the existing SWRO process, energy recovery systems can be used for BWRO to optimize system performance and result in improved energy efficiency compared to seawater treatment. The final treated water can then be blended with treated water from the SWRO process and post-treated prior to pumping to the distribution system.

Utilization of existing infrastructure including electrical systems, control systems, chemical feed facilities, and maintenance capabilities reduces capital costs. Existing concentrate disposal systems (pending any required modifications to the existing NPDES permit) and treated water transmission infrastructure can be expanded to accommodate additional capacity if required. Operational synergies include shared staffing, maintenance resources, and administrative functions. If this alternative were to be evaluated further in the future, a comprehensive assessment of the existing facility infrastructure and its adequacy/inadequacy to accommodate a future BWRO facility is required, including the potential costs and impacts to facility operations and the ability to maintain production at the seawater facility during construction.

Site space constraints may also limit expansion potential for the additional 5 – 10 MGD BWRO treated water capacity, requiring careful engineering design to maximize capacity within existing property boundaries. Integration of the treated water from the BWRO process with existing treated water from the SWRO process requires further study to establish appropriate treated water quality requirements and sophisticated control systems to manage varying water quality parameters and operational modes.

4.2.2 Alternative 2: Blended Feed Water System

This alternative involves blending 5 – 10 MGD of raw brackish water with seawater prior to treatment, creating a feed stream with intermediate salinity levels processed through the existing SWRO system. It is assumed that the lower feed water salinity would allow for greater production from the SWRO without the addition of additional RO equipment. Raw brackish water would be transported to the Tampa Bay facility and blended with seawater at optimal ratios to achieve desired feed water characteristics. This approach requires minimal modifications to existing treatment processes, utilizing current pretreatment and RO membranes with appropriate operational adjustments.

Blending ratios must be carefully optimized to maintain membrane performance while achieving final water quality objectives (Fritzmann et al., 2007). The intermediate salinity levels would result in

energy consumption between that of pure seawater and pure brackish water treatment. Feed water salinity management requires sophisticated control systems to maintain consistent blend ratios and treatment performance. In addition, the existing equipment needs to be evaluated to determine if it is compatible with the reduced pressure requirements driven by the reduced salinity.

4.2.3 Alternative 3: SWRO Retrofit for Brackish Water

This alternative involves retrofitting the existing SWRO plant to operate with only a brackish water feed. The retrofit would include modification of high-pressure pumping systems to accommodate lower operating pressures (200-400 psi), potential replacement or reconfiguration of RO membranes optimized for brackish water treatment, and adjustment/modification of energy recovery systems for improved efficiency at lower pressures.

Disposal and treated water transmission infrastructure may remain largely unchanged assuming the continued availability of the seawater outfall. This option provides maximum utilization of existing infrastructure while optimizing energy consumption for brackish water treatment. Note the existing SWRO systems have been recently rehabilitated to continue operation of the SWRO so modification in the near future may not be desirable.

Retrofitting the existing facility to treat brackish water eliminates the ability to treat seawater, requiring commitment to brackish water as the sole feed source and eliminating seawater as a supply option for Tampa Bay Water. Because insufficient groundwater is likely to be available in southern Hillsborough County to make up for the loss of seawater as a source of supply, this option is not considered feasible.

4.2.4 Alternative 4: Offsite BWRO Facility

Development of a dedicated brackish water reverse osmosis facility at a separate location offers several strategic advantages including optimal siting relative to brackish water resources.

Optimal facility locations require proximity to brackish water wellfields to minimize raw water transmission costs, access to electrical infrastructure capable of supporting the power requirements, availability of concentrate disposal options, and integration potential with existing distribution networks (NRC, 2008).

Standalone 5-10 MGD facilities can be designed specifically for brackish water treatment, incorporating latest technology advances including energy-efficient RO membranes, variable frequency drives, and advanced process control systems. Plant capacity would be sized to meet specific regional demand projections with appropriate expansion capability for future growth. The example layout in Figure **4.** 4 shows an initial build of 5 MGD with a future expansion to 10 MGD. Additional alternatives could be investigated based on capacity requirements.

Complete infrastructure development includes wellfield systems, raw water transmission, treatment facilities, concentrate management systems, treated water storage, and connections to the regional transmission system. This could be done at the Desalination Plant, where treated brackish water would be pumped to the plant and blended with treated seawater before it is sent to the regional system or it could be a separate treated brackish water connection to the regional system. Electrical infrastructure requires transmission capabilities to support operations. Depending on selected capacities and configurations, there is potential for medium voltage requirements. These details would need to be worked out during the detailed design phase.

Independent facility operations require dedicated staffing, maintenance programs, and emergency response capabilities. Remote monitoring and automated control systems can optimize operational efficiency while minimizing staffing requirements.

4.3 Comparison of Alternatives

A high-level evaluation of each of the alternatives was performed to obtain a better, big-picture view for further evaluation. Table 1 summarizes the key characteristics and rates them for each alternative relative to the other alternatives.

Table 1 Summary of Alternative Characteristics

Criteria	Alternative 1: Parallel BWRO	Alternative 2: Blended Feed	Alternative 3: SWRO Retrofit	Alternative 4: Offsite BWRO
Capital Cost	Medium-High	Low	Medium	High
Operating Cost	Low	Medium	Low	Low
Energy Efficiency	High	Medium	High	High
Implementation Timeline	Long	Long	Short	Long
Technical Complexity	High	Medium	Medium	Medium
Operational Flexibility	High	Medium	Low	High
Property Requirements	High	Minimal	Minimal	High
Infrastructure Sharing	High	High	High	None

The advantages and disadvantages of each implementation alternative are outlined in

Table **2**. The outlined advantages and disadvantages are dependent on technologies selected and requirements as outlined by raw water quality and available infrastructure.

Table 2 Advantages and Disadvantages by Alternative

Alternative	Advantages	Disadvantages
Alternative 1: Parallel BWRO at Tampa Bay Seawater Desalination Plant	• Optimized energy efficiency for brackish water • Maintains seawater treatment capability • Shared infrastructure reduces costs • Operational synergies and staffing efficiency • Existing concentrate disposal systems • Proven site with established permits	• High capital investment for new equipment • Space constraints at existing site • Complex integration with existing systems • Extended construction timeline • Potential operational interference during construction
Alternative 2: Blended Feed Water at Tampa Bay Seawater Desalination Plant	• Minimal modifications to existing SWRO plant • Utilizes existing infrastructure	• Suboptimal energy efficiency • Limited blending ratio flexibility • Membrane performance compromises • Complex feed water quality control • Loss of benefit of lower pressure, separate BWRO treatment • Raw brackish water storage required to ensure proper blending ratio
Alternative 3: SWRO Retrofit	• Lowest capital cost option • Shortest implementation timeline • Good energy efficiency for brackish water • Utilizes existing infrastructure • Moderate implementation cost • Simplified operations (single water source) • Existing site and permits (needs investigation) • Proven concentrate disposal	• Loss of seawater treatment capability • Commitment to single water source • Potential loss of capacity • Equipment replacement costs • Operational limitations during conversion • Reduced operational flexibility
Alternative 4: Offsite BWRO	• Optimal siting near brackish water source • Purpose-built for brackish water treatment • Limited space constraints • Independent operations • Latest technology implementation • Future expansion capability	• Highest capital cost • Complete new infrastructure required • New permits and regulatory approvals • Dedicated staffing requirements • Longest implementation timeline • No infrastructure cost sharing

Alternatives 1 – 3 assume that the existing outfall can be used for concentrate disposal. This discharge relies on continued operation of TECO's cooling towers for that system. If the availability of this outfall changes, additional options for disposal will need to be investigated, including constructing a new outfall, or construction of deep wells for disposal. Additional permitting considerations and hydrogeologic studies would be required for these scenarios.

5. Net Benefits Discussion

The feasibility of expansion of the Tampa Bay Seawater Desalination Plant using brackish groundwater is dependent on the availability of brackish groundwater in southern Hillsborough County. The availability of groundwater will be determined based on the Mitigation Plus Recovery Net Benefit evaluation. As described above, it is projected that approximately 10 MGD will be available through the acquisition of additional WUP quantities and if negotiations with Hillsborough County for aquifer recharge credits associated with the SHARP program are successful.

The SHW is anticipated to produce high-quality groundwater requiring relatively low levels of treatment compared to brackish groundwater. As such, there is a desire to first maximize productivity of the SHW before considering the development of additional, i.e., brackish, groundwater resources within southern Hillsborough County.

The South Hillsborough Wellfield is projected to bring an additional 6 – 12 MGD to the region as early as 2030. Based on the current anticipated groundwater availability, there will be little if any additional groundwater available for development of a brackish groundwater supply in the near term.

6. Conclusions and Recommendations

Based on the projected availability of groundwater resources in southern Hillsborough County, it is recommended that expansion of the Tampa Bay Seawater Desalination Plant using brackish water be tabled for consideration in future iterations of the Long-term Water Master Plan. If warranted by future regional water supply needs and if Tampa Bay Water can secure additional permit quantities in southern Hillsborough County or Hillsborough County expands the SHARP program, it may be worth re-considering development of a brackish groundwater supply in southern Hillsborough for the purpose of expanding the Tampa Bay Seawater Desalination Plant. Until such time, it is recommended that Tampa Bay Water maximize production from the South Hillsborough Wellfield, which is expected to produce higher-quality fresh water at a lower anticipated treatment cost compared to development and treatment of a brackish water supply.

7. References

American Water Works Association (AWWA). (2007). *Reverse Osmosis and Nanofiltration*. Manual of Water Supply Practices M46. Denver, CO: American Water Works Association.

Fritzmann, C., Löwenberg, J., Wintgens, T., & Melin, T. (2007). State-of-the-art of reverse osmosis desalination. *Desalination*, 216(1-3), 1-76.

Greenlee, L. F., Lawler, D. F., Freeman, B. D., Marrot, B., & Moulin, P. (2009). Reverse osmosis desalination: Water sources, technology, and today's challenges. *Water Research*, 43(9), 2317-2348.

Gude, V. G. (2017). Desalination and water reuse to address global water scarcity. *Reviews in Environmental Science and Bio/Technology*, 16(4), 591-609.

Maliva, R., & Missimer, T. (2012). *Arid Lands Water Evaluation and Management*. Berlin: Springer-Verlag.

Mickley, M. (2006). *Treatment of Concentrate*. Denver, CO: U.S. Department of the Interior, Bureau of Reclamation.

National Research Council (NRC). (2008). *Desalination: A National Perspective*. Washington, DC: The National Academies Press.

Voutchkov, N. (2018). *Energy use for membrane seawater desalination – current status and trends*. *Desalination*, 431, 2-14.

Tampa Bay Seawater Desalination Expansion Feasibility Study Scope Reduction

Agenda Item C.4

October 20, 2025

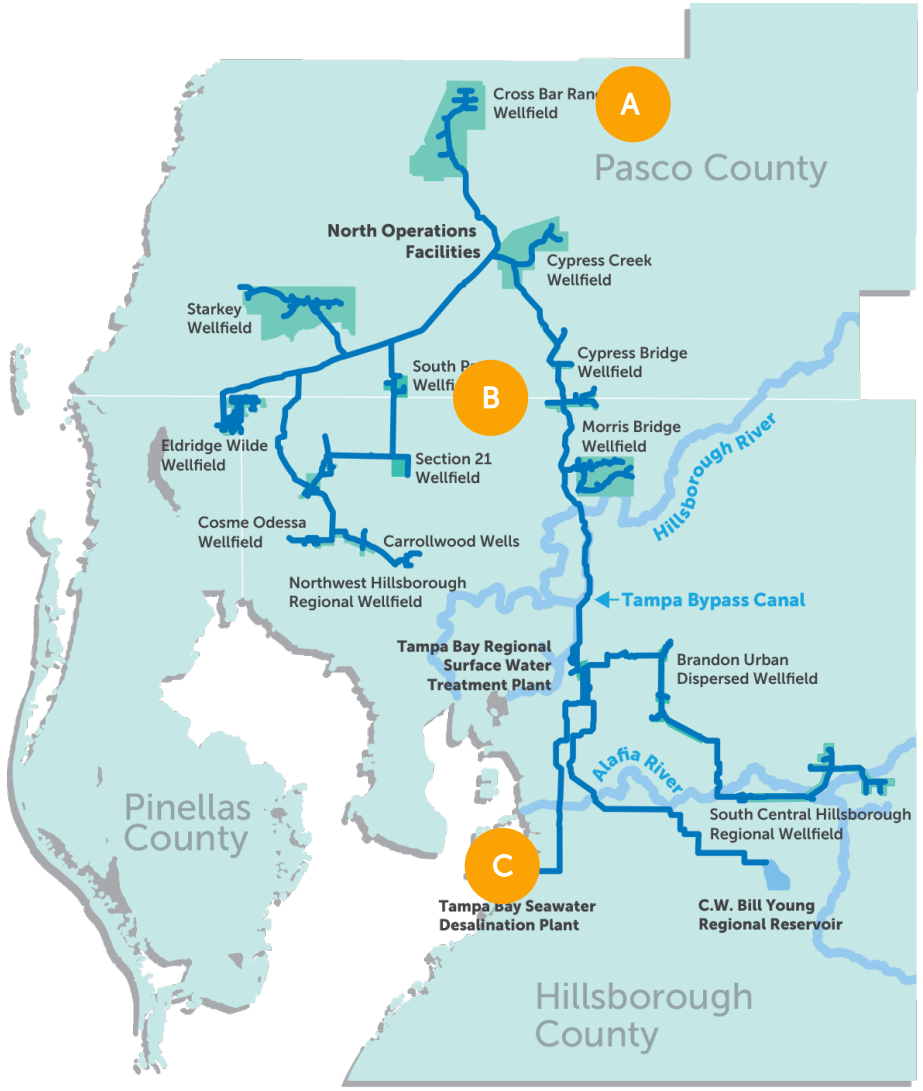
Danielle Keirsey, PMP
Senior Project Manager
Tampa Bay Water

Feasibility Study for New Groundwater Sources

A. Eastern Pasco Wellfield

B. Consolidated Water Use Permit Increase

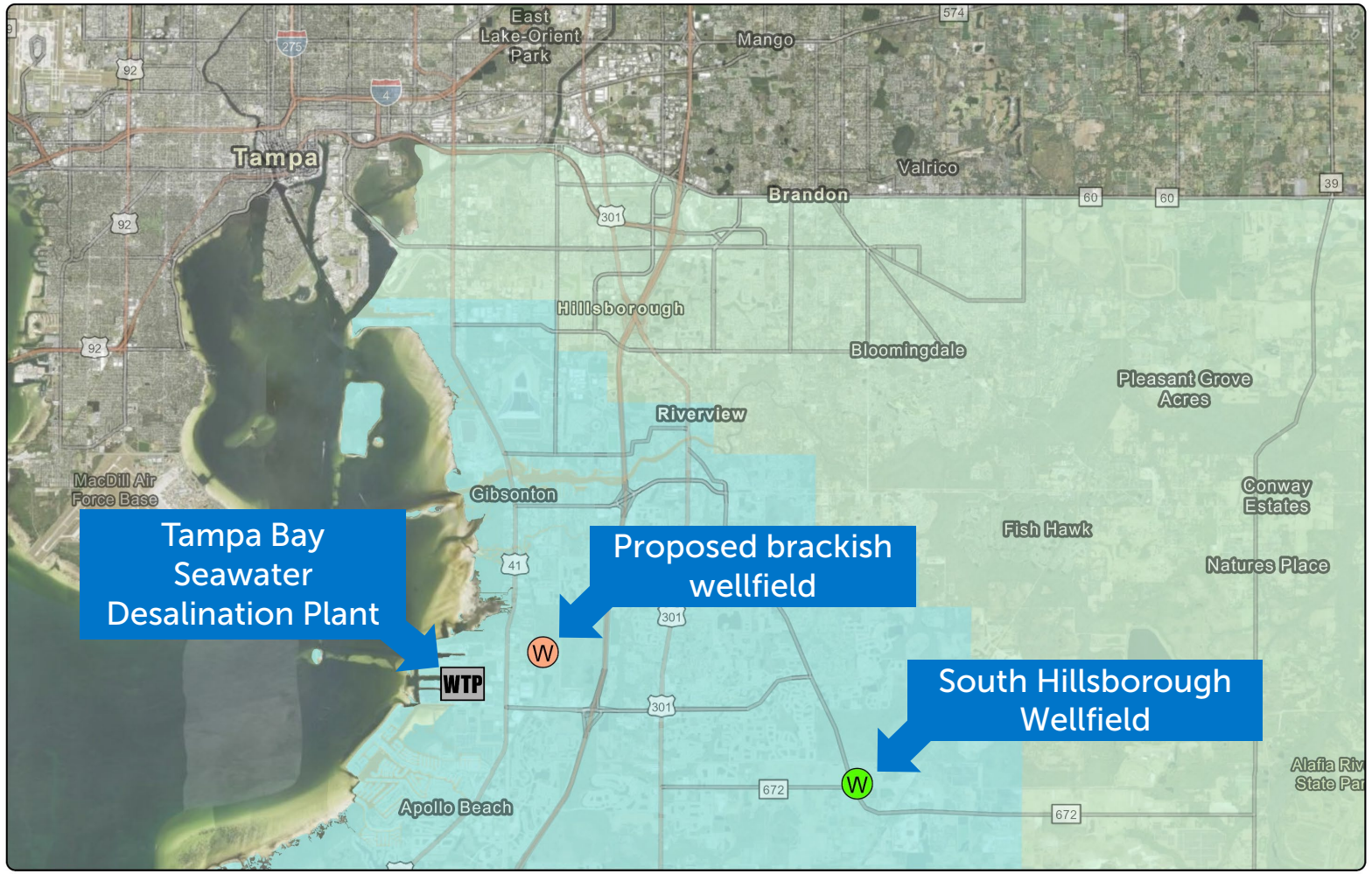
C. Desalination Plant Expansion with Brackish



Desalination Plant Expansion

Source Water	Seawater or brackish groundwater
Treatment	Reverse osmosis
Estimated Yield	6 to 11 million gallons per day
Estimated Capital Costs	$583 million (brackish) $624 million (seawater)
$/1,000 gallons	$11.99 (brackish) $13.17 (seawater)

Southern Water Use Caution Area



October 16, 2025

Desalination Expansion with Brackish Groundwater Feasibility Study Scope

Task Description	Original Scope	Reduced Scope
Existing data review	✓	✓
Water use permit requirements review	✓	✓
Preliminary net benefit evaluation	✓	✓
Groundwater modeling	✓	
Yield evaluations	✓	
Concentrate discharge evaluation	✓	
Deep injection well evaluation	✓	
Regional system water quality blending modeling	✓	
Conceptual design of brackish water wellfield, collector main and treatment facilities	✓	

Scope Reducing Benefits

- Optimizes the project budget
- Reduces project costs by nearly $900,000
- Project may be considered for further study in the future

TAMPA BAY WATER

Questions?

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM C.5

DATE: October 1, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: South Hillsborough Wellfield (Project No. 01612) - Development of New Water Supply Infrastructure - *Approve*

SUMMARY

The 2023 Long-term Master Water Plan was approved by the Board of Directors in November 2023 and included several recommendations, notably the need for further evaluation of seven top-ranked water supply project concepts to meet the region's future water needs by 2033. The South Hillsborough Wellfield was included as one of the concepts and was also a top-ranked project in the previous 2018 Long-term Master Water Plan. A detailed Feasibility Study was completed in 2021, followed by additional field data collection and testing through 2023. These efforts showed that this water supply concept is cost-effective, environmentally sound and technically feasible.

SUGGESTED ACTION

Approve the South Hillsborough Wellfield (Project No. 01612) as a new water supply project and authorize staff to proceed with the design and construction of the associated infrastructure.

COST/FUNDING SOURCE

Between $126.2M to $166.5M/Revenue Bonds

DISCUSSION

The last two Long-term Master Water Plan Updates, approved by the Board in December 2018 and November 2023, recommended the South Hillsborough Wellfield as a potential water supply option. The feasibility study for the South Hillsborough Wellfield, completed in 2021, showed that the project is cost-effective, environmentally sound and technically feasible. A second aquifer performance test conducted in 2023 confirmed these results. The studies show that the aquifer in the area is highly productive and yields high-quality water requiring only hydrogen sulfide removal and disinfection to meet state and federal drinking water standards.

As part of the completed feasibility study, staff recommended a project configuration that includes:

- Eight production wells
- A raw water collector main
- Groundwater treatment facilities with ozone treatment for hydrogen sulfide removal

The South Hillsborough Wellfield is projected to provide between 6 and 12 million gallons per day (mgd) under a Water Use Permit (WUP) to be issued by the Southwest Florida Water Management District (District). Since early 2024, Tampa Bay Water has been actively securing permit quantities from private landowners in south Hillsborough County to support development of the wellfield. The following table summarizes the future Water Use Permit quantities, their sources, and current permitting status.

Permit Quantity	Source	Status
775,000 gallons/day	Board-approved agreement with Suburban Land Reserve, Inc. (Feb 2024) and original AgMart Balm Farm WUP	Initial Balm Farm WUP, in place
Approximately 3.1 to 5.1 mgd	Board-approved agreements with private landowners (Jan 2025)	Existing WUP increase; final quantity to be determined by the District; expected by mid-2026
6.1 mgd	Based on net aquifer benefit from Hillsborough County's recharge system	Existing WUP increase; application pending approval of a long-term agreement with Hillsborough County

With the acquired permit quantities to be transferred to Tampa Bay Water's existing Balm Farm WUP, the District will reserve 10% of the impact from the acquired permit quantities for environmental recovery in the Southern Water Use Caution Area, in accordance with its rules for this area.

Strategic Benefits

The South Hillsborough Wellfield offers several strategic and operational benefits that support its early implementation and long-term value to the region's water supply system:

- **Strategic Location**: Southern Hillsborough County is the fastest-growing area in the region.
- **Cost-Effectiveness**: Among the lowest-cost alternatives under review. Budgetary estimates range from $126.2 to $166.5 million, or $3.16/1,000 to $4.32/1,000 gallons. This adds $0.08 to $0.11 to the uniform rate for 6-12 million gallons per day, phased in over five or more years.
- **Permitting & Property Acquisition**: Expected to face minimal challenges.
- **Infrastructure Synergy**: Co-located with Hillsborough County's new Water Resources drinking water facility and adjacent to the South Hillsborough Pipeline at the future Balm Point of Connection (POC). One well site has been acquired, and a production well has already been constructed under the feasibility study.
- **Water Quality**: Groundwater quality at the site meets all State and Federal drinking water regulations and will require minimal treatment.
- **Environmentally Sound:** A 250-foot-thick confining layer separates the shallow and deep aquifers. Impacts to lakes, wetlands, springs, rivers, or other existing legal users in this area are not expected as demonstrated by the minor drawdown observed during two aquifer tests and groundwater flow modeling performed in the feasibility study. Hillsborough County's aquifer recharge system also benefits aquifer levels in this area.
- **Public Engagement**: Outreach efforts have been conducted since 2021 to engage residents and support implementation.
- **Schedule Advantage:** Selecting this project now positions Tampa Bay Water to stay ahead of rapidly increasing future water demands; early implementation ensures timely delivery of new capacity to meet regional needs before critical thresholds are reached.

Staff recommends Board approval of the South Hillsborough Wellfield as a new water supply and treatment capacity project. Early implementation will help meet the region's projected water needs by 2033, offsetting up between 6 and 12 million gallons per day (mgd) of the 10 and 20 mgd of new supply required, as identified in the 2023 Long-Term Master Water Plan.

Next Steps

If approved, staff will return to the Board with additional actions related to:

- Property Acquisition – November 2025 through mid 2026
- Long-term agreement with Hillsborough County – Early 2026
- Engineering Professional Services Contract approval – Fall 2026
- Construction Manager at Risk (CMAR) Pre-construction Services approval – Spring 2027
- Permit Applications – Multiple Board meetings during 2027–2028
- CMAR Guaranteed Maximum Price Proposal – Multiple Board meetings during 2028

BACKGROUND

The 2018 Long-term Master Water Plan, approved in December 2018, identified the need for 10 mgd of new supply by 2028. It recommended further study of three top-ranked concepts:

- South Hillsborough Wellfield
- Desalination Treatment Plant Expansion
- Surface Water Treatment Plant Expansion/New Facility near the C.W. Bill Young Reservoir

While all three concepts were deemed feasible, the South Hillsborough Wellfield was removed from consideration in June 2022 due to the absence of a long-term agreement between Tampa Bay Water and Hillsborough County regarding aquifer recharge program operations and compensation terms. The Board subsequently selected the Surface Water Treatment Plant Expansion, which is now under construction.

The 2023 Long-Term Master Water Plan, approved in November 2023, identified a need for 10 to 20 mgd of new water supply and treatment capacity by 2033 to meet projected regional demands.

Since 2023:

- Tampa Bay Water has proactively acquired WUPs from Hillsborough County and private landowners, potentially providing 3.1 to 5.1 mgd while providing a 10% net benefit for the environment (final permit transfer quantities to be determined by the District during permitting).
- In mid-2023, Tampa Bay Water and Hillsborough County resumed discussions to establish terms for a long-term agreement for aquifer recharge credits to provide an additional 6.1 mgd of capacity to this new wellfield.
- Tampa Bay Water and Hillsborough County have been negotiating the location of production well sites on County-owned land, formerly known as the Ag-Mart site. The County has designated four production well sites, a monitoring well site and collector main easements—at no cost to Tampa Bay Water—on land preserved under the Jan K. Platt Environmental Lands Acquisition and Protection Program (ELAPP), now known as the Stacy R. White Nature Preserve. The County made this offer based on Tampa Bay Water its rights for future water supply development from the Cone Ranch property, which is now known as the Lower Green Swamp Preserve and managed for conservation as part of the ELAPP. Details of this have been previously reported at the December 2020, April 2021, and June 2021 Board meetings.

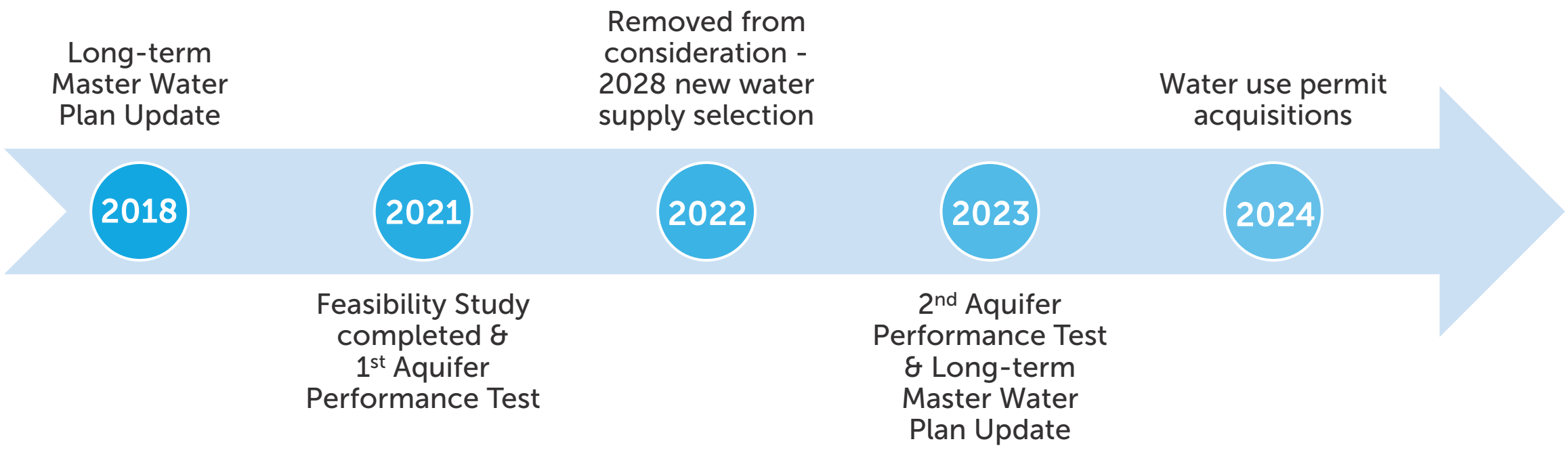
C.5 South Hillsborough Wellfield Project Presentation

South Hillsborough Wellfield - Development of New Water Supply Infrastructure

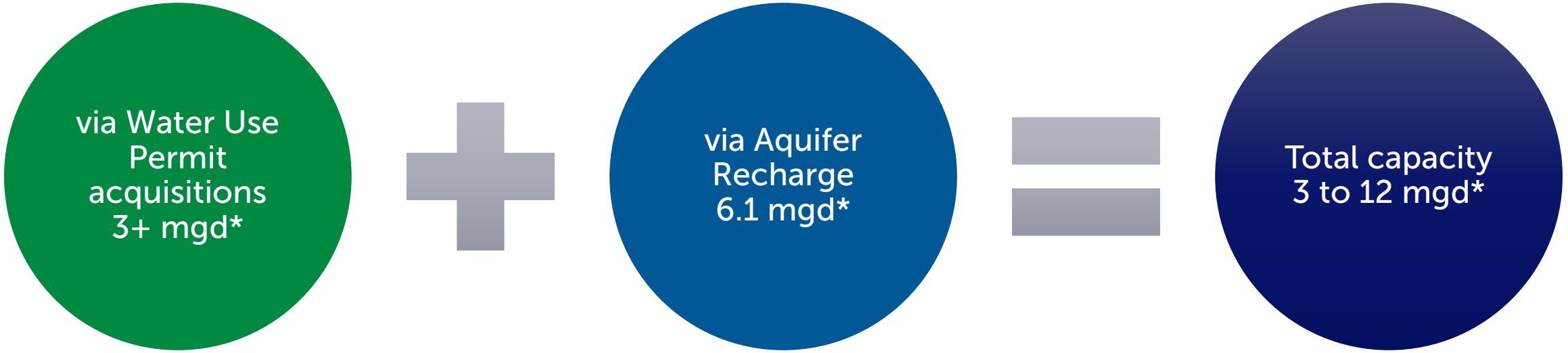
Agenda Item C.5
October 20, 2025

Maribel Medina, P.E., PMP
Planning and Projects Director
Tampa Bay Water

South Hillsborough Wellfield Project History



South Hillsborough Wellfield Capacity

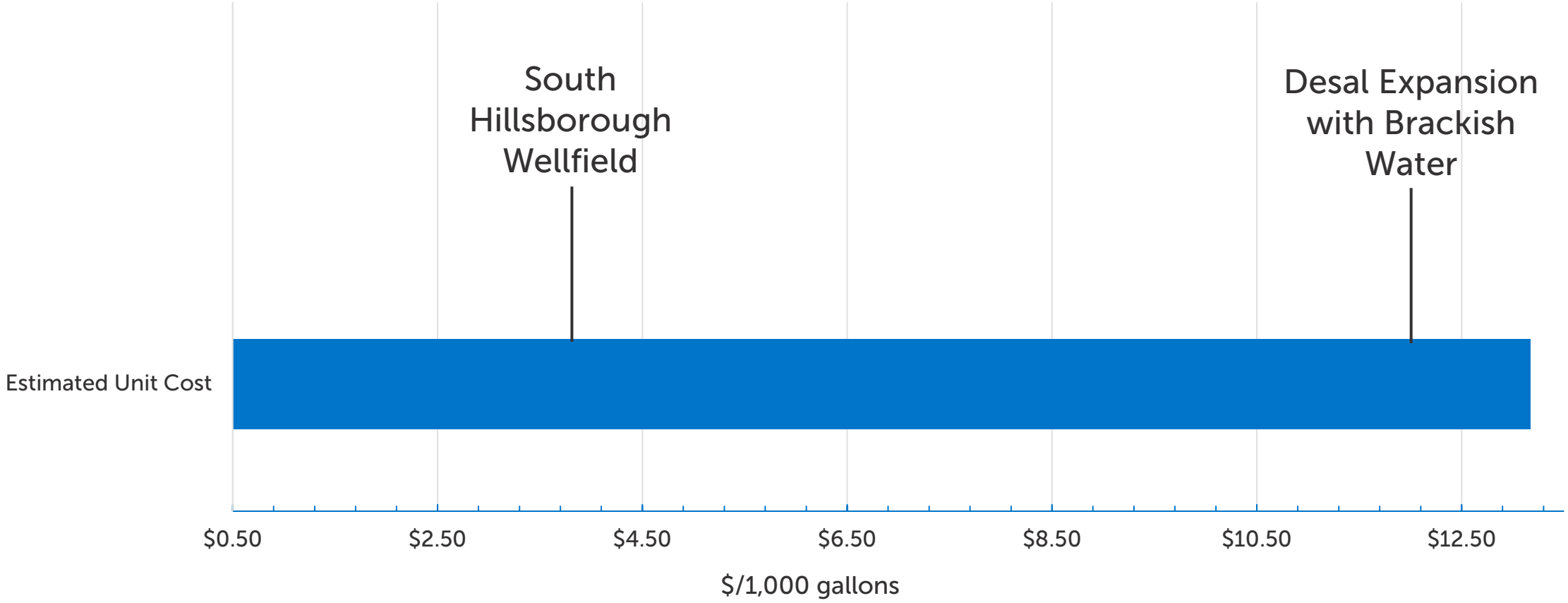


*mgd=million gallons per day

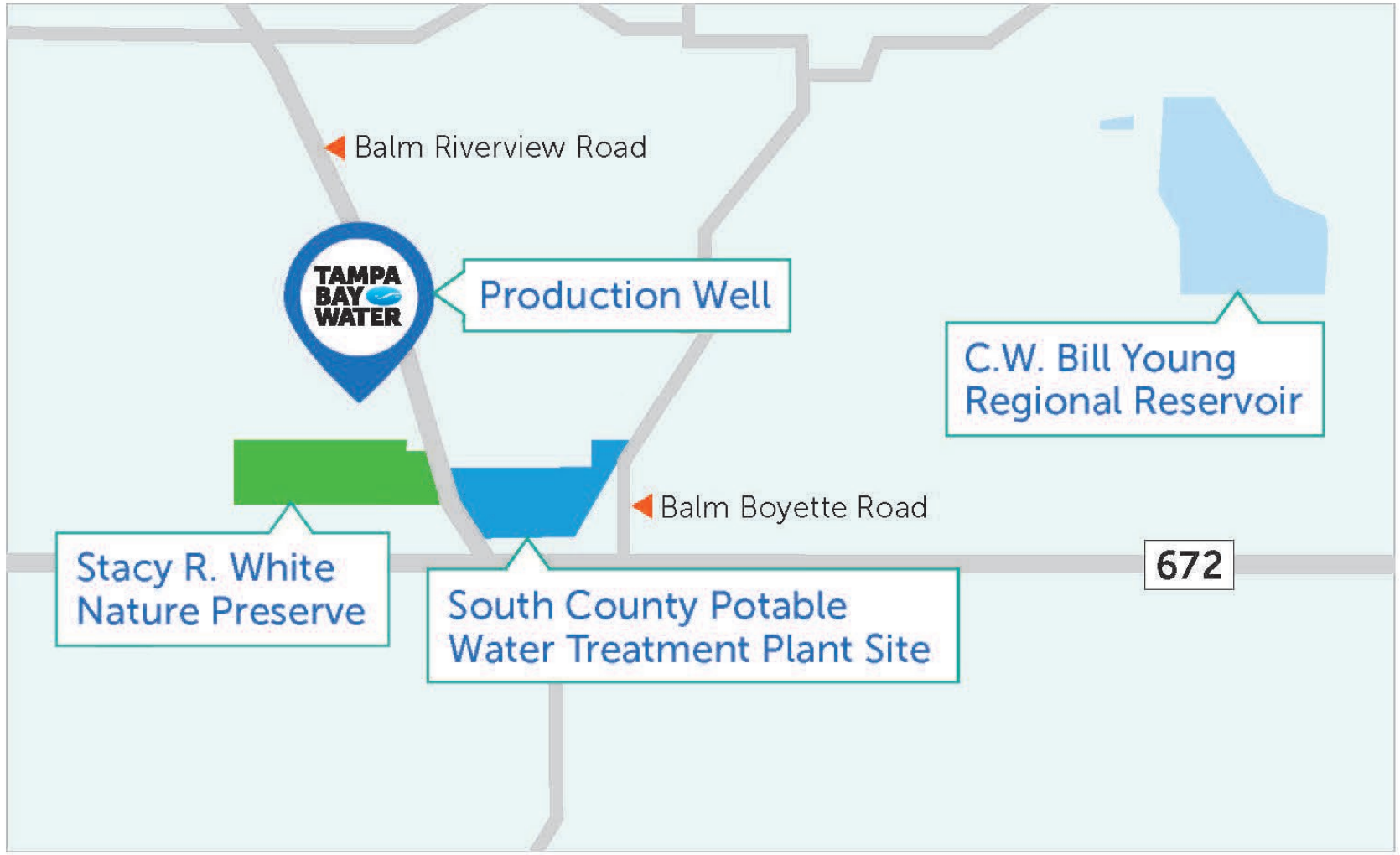
Infrastructure & Costs (6-12 mgd)

- 8 production wells
- 4 miles of collector main
- Groundwater ozone treatment facility
- Point of connection/metering facilities
- Estimated capital costs: $126.2 million to $166.5 million
- Uniform Rate Impact: $0.08 to $0.11

An Affordable Option



New Water Where It's Needed Most



Strategic Benefits

- Location and Property
- Cost Effective
- Permitting
- Infrastructure Synergy
- Water Quality
- Environmentally Sound
- Schedule Advantage

Next Steps

Property

- Cone Ranch Water Development Rights in Exchange for Property at the Stacy R. White Nature Preserve with ELAPP: November 2025
- Water Resources Department Balm Water Campus: Summer 2026
- Other Property Rights: South Fork CDD Easements, TECO Corridor, and Right of Way: Summer 2026

Capacity

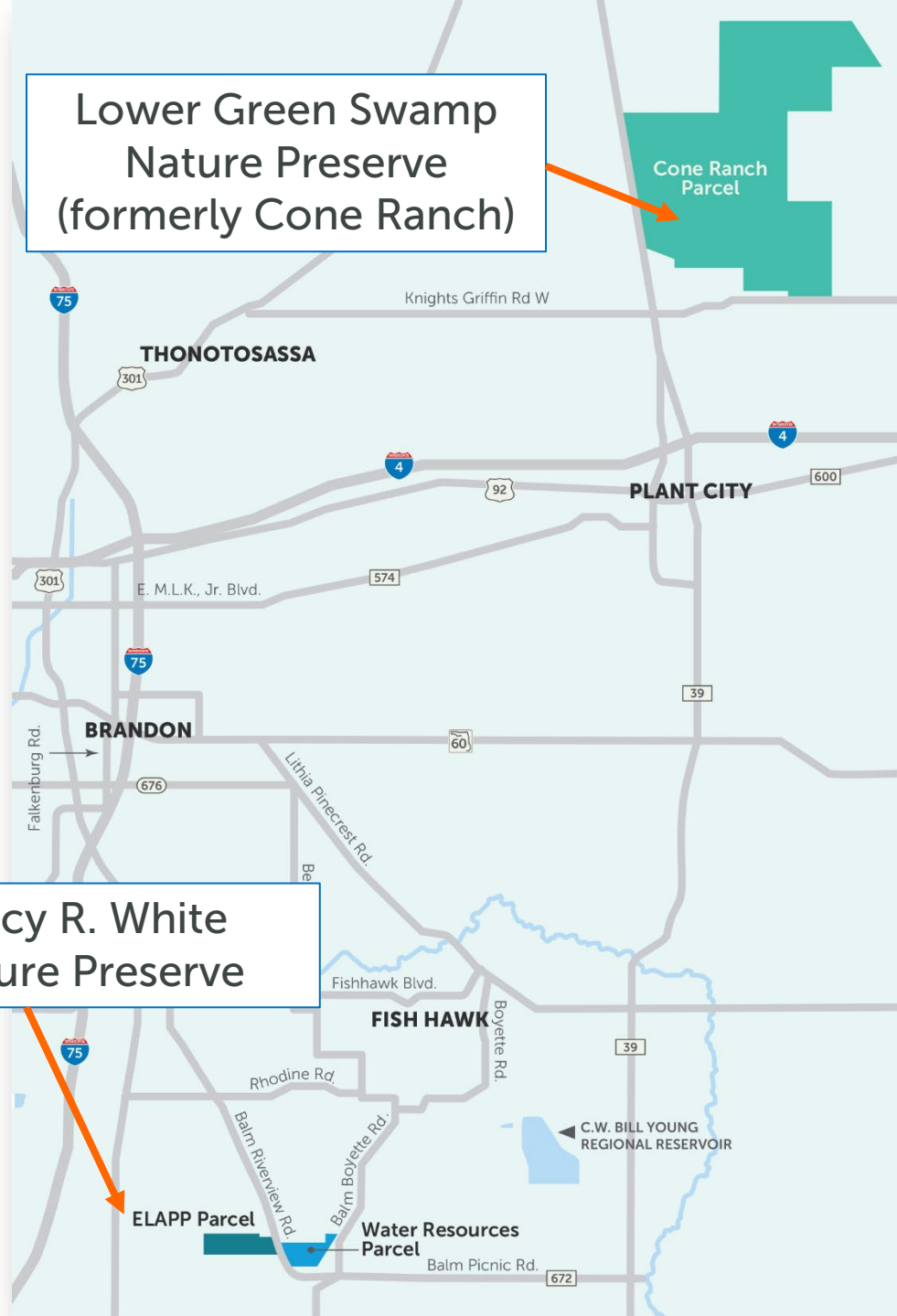
- Long-term Agreement with Hillsborough County: Early 2026

Contracts

- Engineering Services Selection: Fall 2026
- CMAR Selection: Spring 2027
- CMAR Contract Amendments for Guaranteed Maximum Price Proposals-Multiple During 2028

Cone Ranch Agreement

- Release wellfield development rights at Cone Ranch/Lower Green Swamp in exchange for easements
  - 5-acres for 4 well sites and collector main
  - At no cost to Tampa Bay Water



Recommendation – C.4 and C.5

C.4 and C.5

Reduce and defer the scope of Tampa Bay Seawater Desalination Expansion with Brackish Groundwater Project and approve the South Hillsborough Wellfield as a new water supply and treatment capacity project.

Questions?

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM D.1

DATE: October 1, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Warren Hogg, Chief Science Officer

SUBJECT: Regional Water Supplies, Member Demands and Environmental Conditions - *Presentation*

SUMMARY

This item provides the status of Tampa Bay Water's water demand and water supply conditions including hydrologic conditions, climate, surface water and reservoir management, and source rotation. Water Shortage Mitigation Plan status and an outlook for the fall season are also included. Tampa Bay Water continues to work with Hillsborough County to implement supply and demand management measures in the South Hillsborough County service area.

SUGGESTED ACTION

Receive Report.

COST/FUNDING SOURCE

N/A

DISCUSSION

Summary Highlights

Tampa Bay Water delivered an average of 198.47 million gallons per day (mgd) of high-quality drinking water to the member governments during Water Year 2025 using a source mix of groundwater,

river water and desalinated seawater. The amount of water delivered was 0.58 mgd (0.3%) less than the amount of water delivered in Water Year 2024 and was 11.23 mgd (5.4%) less than the Water Year 2025 budgeted delivery of 209.7 mgd (Table 1). Regional supplies and demand are impacted by climate variability, outdoor water use and socio-economic development in the service area. Rainfall in the service area in Water Year 2025 varied seasonally with significantly above-average rainfall in October 2024 from Hurricane Milton, followed by six months of below-average precipitation (November 2024 to April 2025). From May to August 2025, average monthly rainfall across the Tampa Bay area was slightly above average but was intermittent and the coastal areas received more rainfall than the inland areas that contain the Hillsborough and Alafia Rivers. Flow in both rivers was below typical summer levels and in September 2025, the service area recorded a rainfall deficit of nearly 5 inches below average (Figure 1). River flow was sufficient in July and August 2025 to allow the Agency to fill the reservoir to a storage volume of 14.56 billion gallons (94% of capacity) by September 30, 2025.

A La Niña climate event is expected to occur in October to December 2025 and is expected to persist through early calendar year 2026. A La Niña climate event typically brings warmer and drier than average conditions to our region; these impacts typically peak in the winter months from November to January. Based on seasonal forecasts issued by the National Oceanic and Atmospheric Administration (NOAA) at the end of September 2025, hydrologic conditions are expected to be normal for the remaining months of calendar year 2025.

A summary of demand and hydrologic conditions are highlighted below.

- The region received 2.1 inches of rainfall in September 2025, about 5 inches below the long-term average for September.
- The Regional Reservoir storage volume was 14.56 billion gallons as of September 30, 2025 (94% full).
- The 12-month running average pumping rate for the Consolidated Permit Wellfields was 78.01 mgd at the end of September 2025.
- The 12-month running average pumping rate for the South-central Hillsborough Regional Wellfield was 24.71 mgd at the end of September 2025, which is 0.24 mgd below the permit limit of 24.95 mgd.

Water Year 2025 Operational Summary

A comparison of production between Water Year 2024 and Water Year 2025 is provided in Table 2. Total production from different supply sources (not delivered water) in Water Year 2025 was 0.99 mgd less than the total amount of water produced in Water Year 2024. There were also differences in production from each supply source. The primary differences were a total groundwater production decrease of 9.33 mgd (7.86%) and an increase in production from the desalinated seawater facility of 8.76 mgd in Water Year 2025. The desalination facility was in scheduled maintenance during Water Year 2024 as approved by the Board of Directors and did not produce any finished water that year. The 12-month running average production rate from the Consolidated Permit Wellfields was 78.01 mgd at the end of September 2025. The Regional Surface Water Treatment Plant produced an average of 81.81 mgd in Water Year 2025, 0.42 mgd less than in Water Year 2024.

Hydrologic Conditions Summary

Water Year 2025 began with an average of nearly 13 inches of rainfall in October 2024 from Hurricane Milton, followed by six months of below-average precipitation from November 2024 to April 2025. From May to August 2025, average rainfall for each month was slightly above average, but was intermittent and the heaviest rainfall fell in the coastal areas. The lower rainfall totals during the summer months in the inland areas kept river flows below typical summer levels. In September 2025, the service area recorded a rainfall deficit of nearly 5 inches, further reducing the flow in the Hillsborough and Alafia Rivers (Figure 2). A normal river flow condition is defined when the flow falls within the range of the 34th and 67th percentiles compared to the historical baseline for a given month. Hillsborough River flow was below-normal conditions (29th percentile) at the Morris Bridge gage for September 2025. The Alafia River recorded normal flow (42nd percentile) for September 2025. The flow in both rivers was sufficient in July and August 2025 for the Agency to fill the reservoir to a storage volume of 14.56 billion gallons (94% of capacity) by September 30, 2025.

Water Demand and Supply Summary

Tampa Bay Water's budgeted delivery for Water Year 2025 was 209.7 mgd (Table 1). This included a projected average annual delivery to the City of Tampa of 4.1 mgd. The amount of water delivered in Water Year 2025 was 0.58 mgd (0.3%) lower than the amount of water delivered in Water Year 2024 (Figure 3). Total average delivery to the member governments in September 2025 was 200.29 mgd. This was 13.97 mgd (7.0%) more water delivered compared to September 2024. This also included an average delivery of 5.72 mgd of finished water to the City of Tampa. The increase of water delivery in September 2025 was largely affected by the below-average rainfall received in September 2025 compared to the above-average rainfall total (9.90 inches) received in September 2024. Treated surface water totaled 65.70 mgd in September 2025. Finished water produced from the Tampa Bay Desalination Facility totaled 13.5 mgd in September 2025.

Surface water withdrawals and system conditions for September 2025 were as follows:

- Average withdrawal from the Tampa Bypass Canal was 88.18 mgd in September 2025.
- Average withdrawal from the Alafia River was 63.29 mgd in September 2025.
- The City of Tampa's Hillsborough River Reservoir was at an elevation of 21.61 ft. at the end of September 2025. There was no Harney augmentation for the month of September 2025.
- Finished water purchased by the City of Tampa at the Morris Bridge Point of Connection totaled 5.72 mgd in September 2025.
- The Tampa Bay Seawater Desalination Facility average production in September 2025 was 13.5 mgd.
- The Regional Reservoir stored volume was 14.56 billion gallons at the end of September 2025 (94% full).
- Aggregate groundwater production from the 13 Tampa Bay Water wellfields averaged 121.3 mgd in September 2025.
- The 12-month running average withdrawal rate from the Consolidated Permit Wellfields was

78.01 mgd through September 30, 2025 (Figure 4).
- The 12-month running average water production rate from the South-central Hillsborough Regional Wellfield was 24.71 mgd through September 30, 2025 (Figure 5).

Comparison of total water production from different supply sources through the end of September between Water Year 2024 and Water Year 2025 is shown in Figure 6. The primary differences are the desalination facility production of 8.8 mgd in Water 2025 as compared to 0.0 mgd in Water Year 2024 and an increase in total groundwater production in Water Year 2025. Tampa Bay Water continues to work with Hillsborough County to implement supply and demand management measures in the South Hillsborough County service area. Additional regional water supply delivery to the Lithia Point of Connection through the Brandon Booster Station continues based on regional water availability. The 12-month running average pumping rate from the wellfield is expected to remain close to the permit limit for the upcoming fiscal year considering the continued growth in water demand in the service area. An application for a Water Use Permit modification through a net-benefit transfer was submitted to the Southwest Florida Water Management District in March 2025 to transfer groundwater credits acquired from two donor water use permits which agreed to retire permitted quantities. This quantity includes a 10% net benefit to the Upper Floridan Aquifer and upon approval, will increase the South-central Hillsborough Regional Wellfield annual average permit limit to approximately 26.8 mgd with the final quantity to be determined by the District during permitting. Approval of the increased permit limit is expected later this year.

Environmental Conditions

Tampa Bay Water closely monitors the environmental conditions around Agency wellfields and this data is used to guide production and wellfield management decisions. The water levels in area lakes and wetlands, which have a strong relation to rainfall conditions, were lower than expected through early summer 2024 then increased substantially with the rainfall from multiple hurricanes. Below-average rainfall in November 2024 through April 2025 resulted in a decrease in surface water levels that slowly increased with mid-summer rainfall but began to decline with the low rainfall received in September 2025. General water level changes are summarized as follows:

- Groundwater levels generally increased about 0.3 foot during September 2025.
- Groundwater levels in September 2025 were generally 1.5 feet lower than in September 2024.
- Average water levels in the 10 indicator lakes and wetlands located on and near Consolidated Permit Wellfields decreased about 0.7 inch through September 2025 (based on data collected throughout the month, not necessarily end-of-month).
- Average water levels in these same 10 indicator lakes and wetlands in September 2025 were about 11.0 inches lower than water levels in September 2024.

Water Shortage Mitigation Plan

The Board approved the updated Water Shortage Mitigation Plan (WSMP) in April 2017. The WSMP uses rainfall, stream flow, and reservoir storage as indicators of the health of the region's water supplies. Figure 7 shows the surplus/deficit for regional rainfall and Hillsborough River flow for the

past year.

- The Tampa Bay Water service area is currently not under a water shortage condition; however, there is a significant chance of entering a Stage I Drought Alert by the beginning of November 2025 without well above-normal rainfall in October.
- Cumulative rainfall in the region was at a 0.7-inch surplus through September 2025.
- Stream flow was at a 16.7 mgd surplus through September 2025.
- The storage volume in the Regional Reservoir was 14.56 billion gallons (94% of full storage) on September 30, 2025.

Staff continues to work with the members in collecting watering restriction and conservation information, discussing and exploring various short-term and long-term demand management alternatives, implementing a consistent public awareness campaign throughout the region, and identifying additional opportunities to optimize existing water resources.

Water Year 2026 Outlook

The Water Year 2026 budgeted annual delivery to Tampa Bay Water's member governments is 209.70 mgd. The budgeted water delivery is based on the Agency's long-term demand forecasting models and a planned delivery of 4.0 mgd to the City of Tampa during the Water Year. The planned delivery to the City of Tampa accounts for uncertainty in flow in the Hillsborough River should drier hydrologic conditions occur. The long-term demand forecast is updated annually and presented to the Board of Directors at the February Board meeting.

A water supply source allocation has been developed for Water Year 2026 with a focus on maximizing the use of surface water (available river flows and reservoir storage), continued reliance on groundwater, and the use of desalinated seawater. The source allocation results in a planned usage of 79.07 mgd (37.7%) of surface water, 12.0 mgd (5.7%) of desalinated seawater and 118.63 mgd (56.6%) of groundwater in Water Year 2026. Factors considered in the allocation strategy include remaining within all permit limits and maintaining a cost-effective and rate-sensitive balance of sources. The budget forecast for Water Year 2026 was developed in November 2024 as part of the annual budget preparation process. At that time, climatic conditions for the fall and winter (2025 - 2026) were uncertain. It appears that based on current projections, the Tampa Bay region may experience the effects of a La Niña climate condition with warm and dry weather in the winter months. Updates to the expected monthly delivery of water to the members occurs throughout the Water Year based on actual hydrologic conditions, member government needs, and operational considerations.

BACKGROUND

Data collection, analysis, and interpretation as well as decision-making are ongoing for a multitude of factors that influence and constrain Agency operations. These include hydrologic and environmental conditions, supply and demand conditions, treatment plant parameters, water quality constituents, along with equipment/machinery and infrastructure variables. A summary of monthly information is compiled

and provided to the Board in each Agenda Packet and is supplemented as necessary. A summary of highlights is presented annually.

Attachments (2)

Demand, Supply and Environmental Conditions through September 2025
Table WY 2025
D.1 Regional Supplies Demand and Environmental Conditions Presentation

Figure 1: Water Year 2025
Monthly Rainfall vs. Average Monthly Rainfall

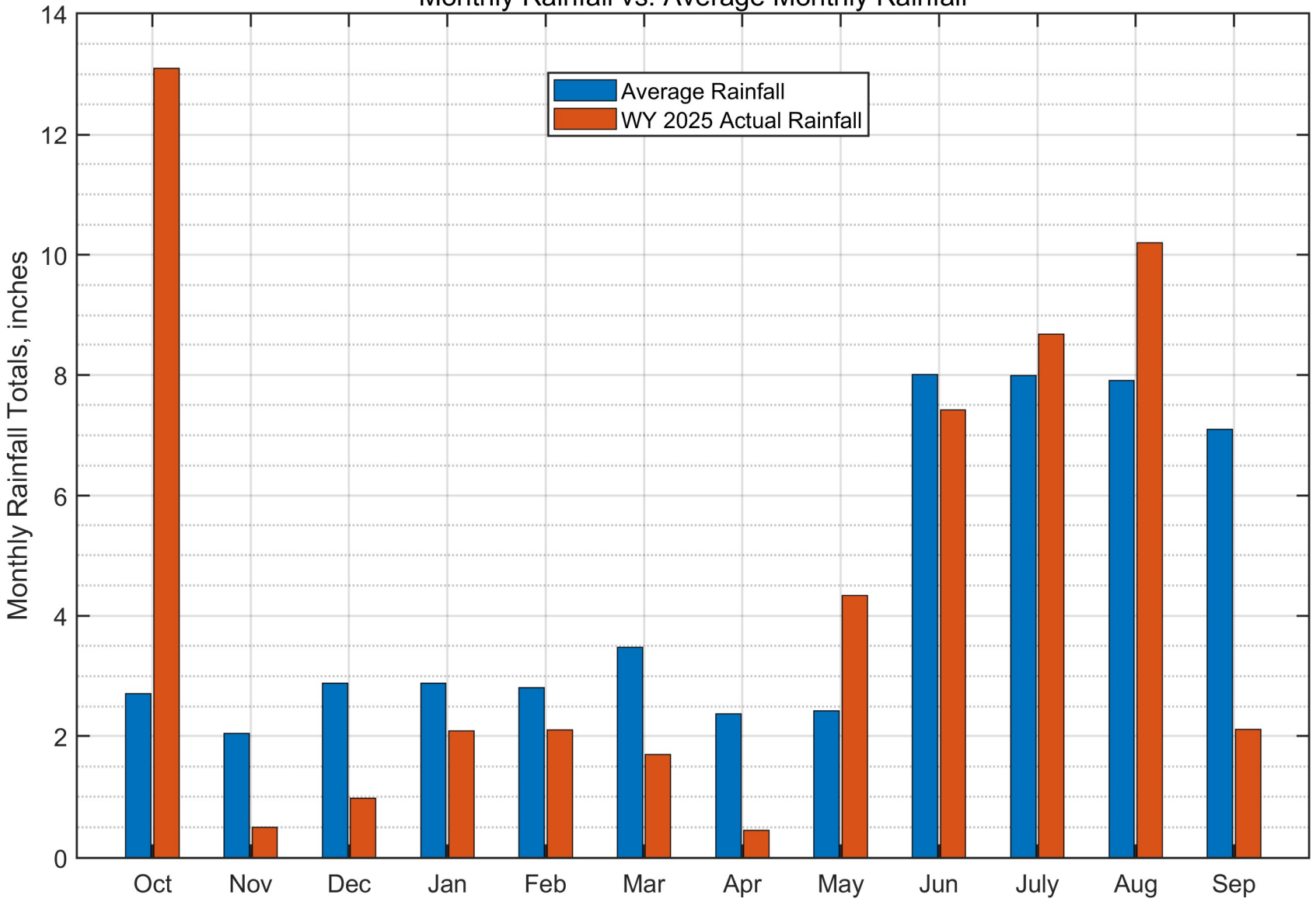


Figure 2: Streamflow Conditions at Alafia and Hillsborough Rivers Through Sep 30 2025

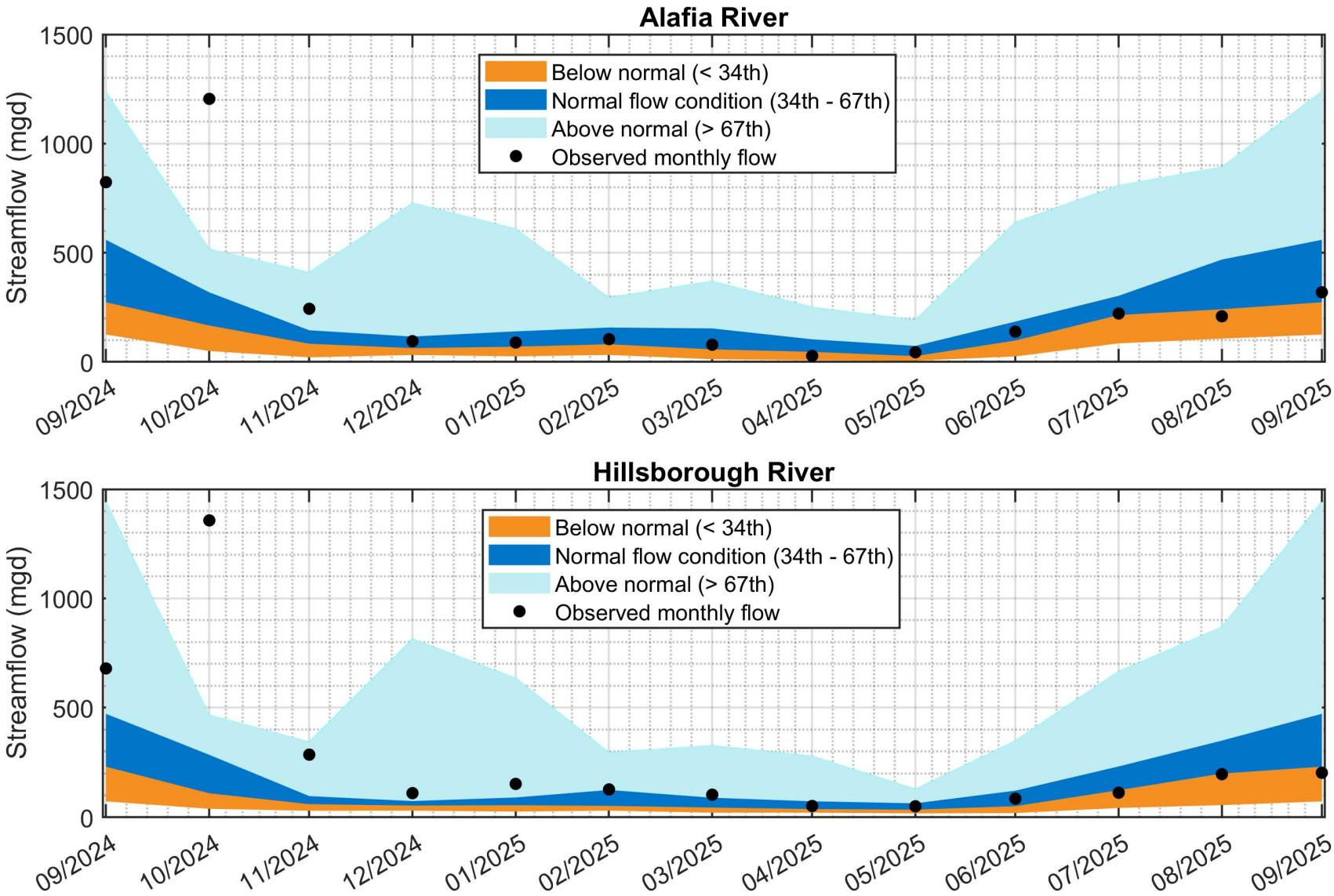


Figure 3: Tampa Bay Water Delivery Through Sep 30
Water Year 2025 Compared To Water Year 2024

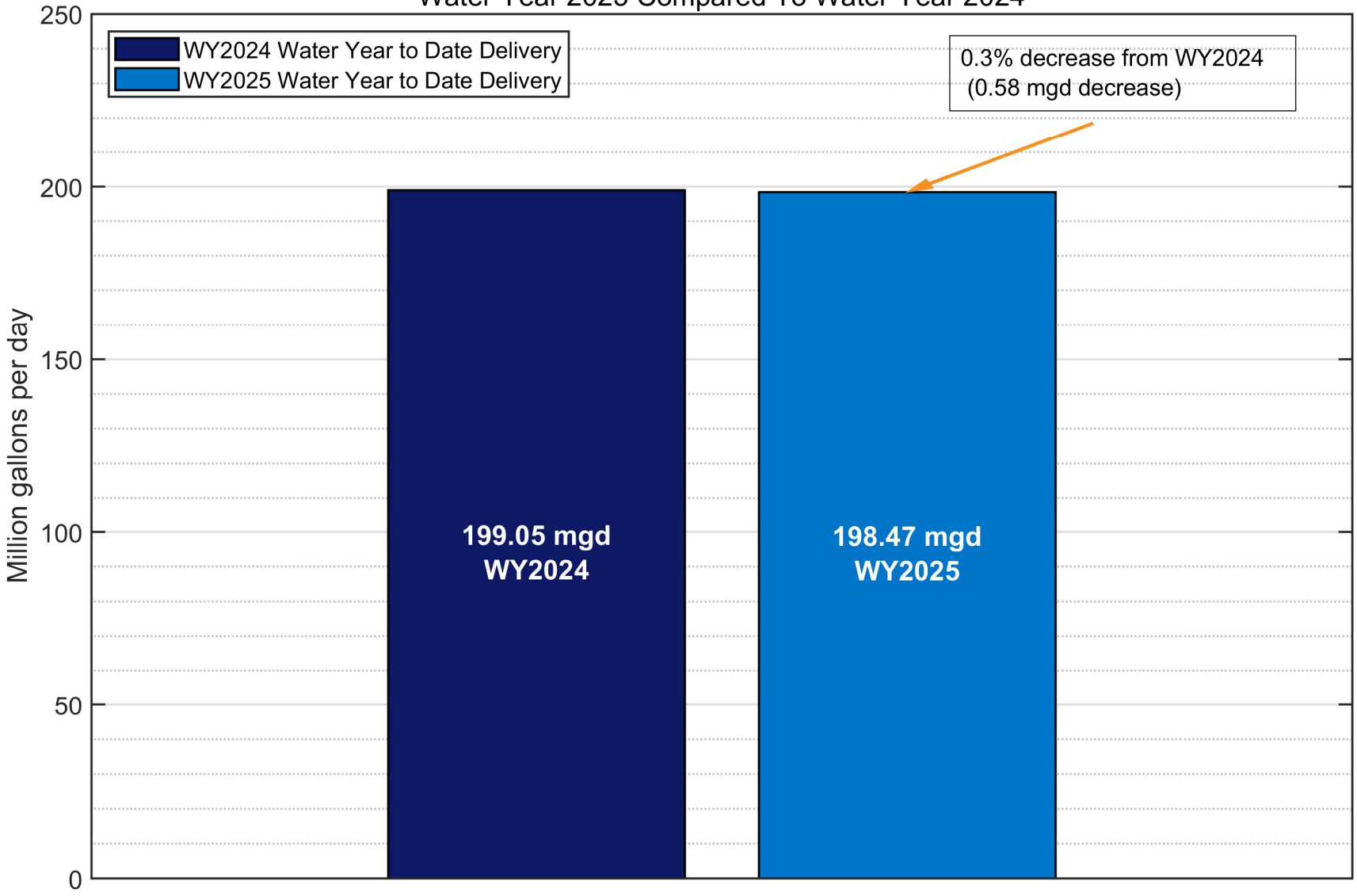


Figure 4: Consolidated Wellfield Production

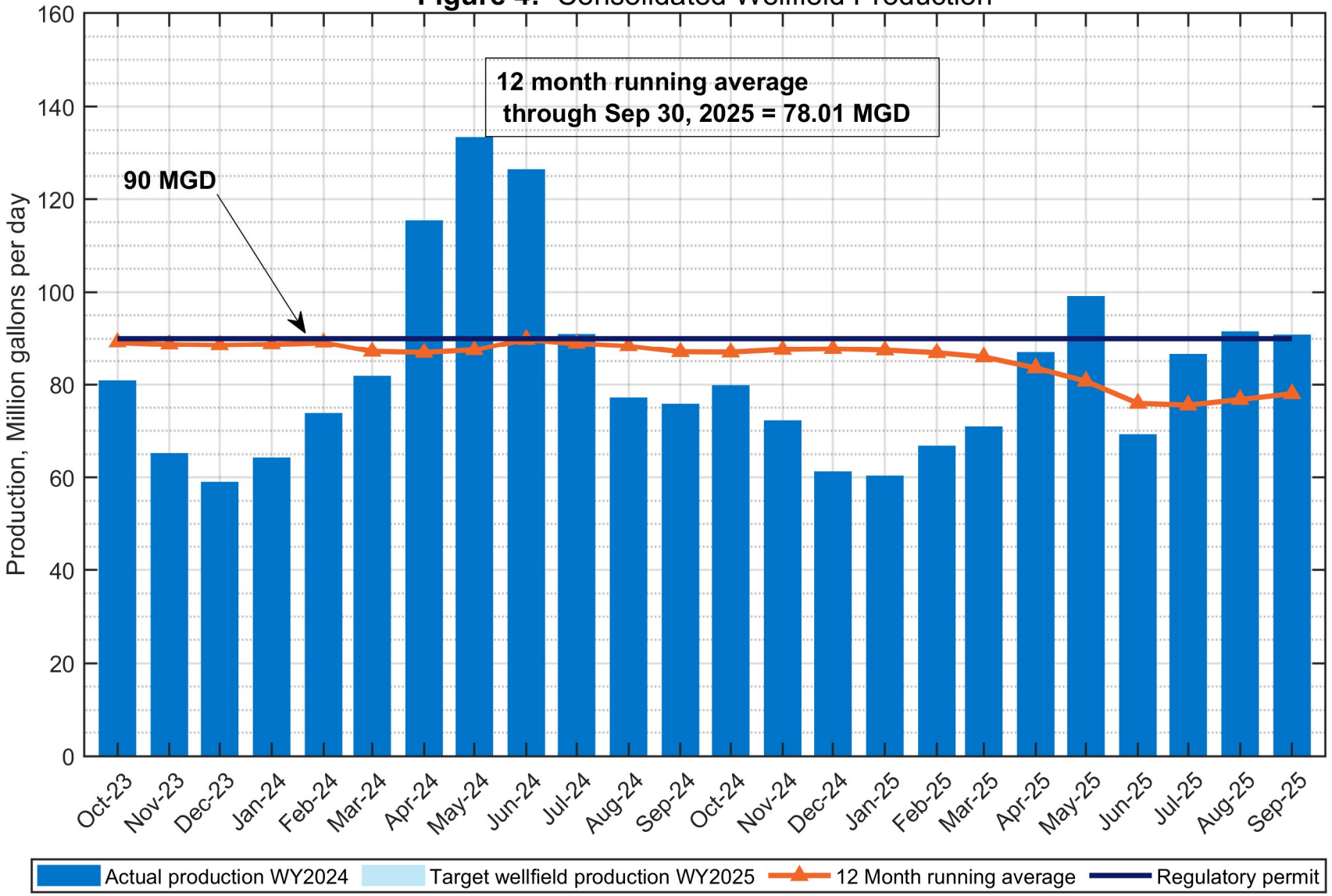


Figure 5: South-Central Hillsborough Regional Wellfield

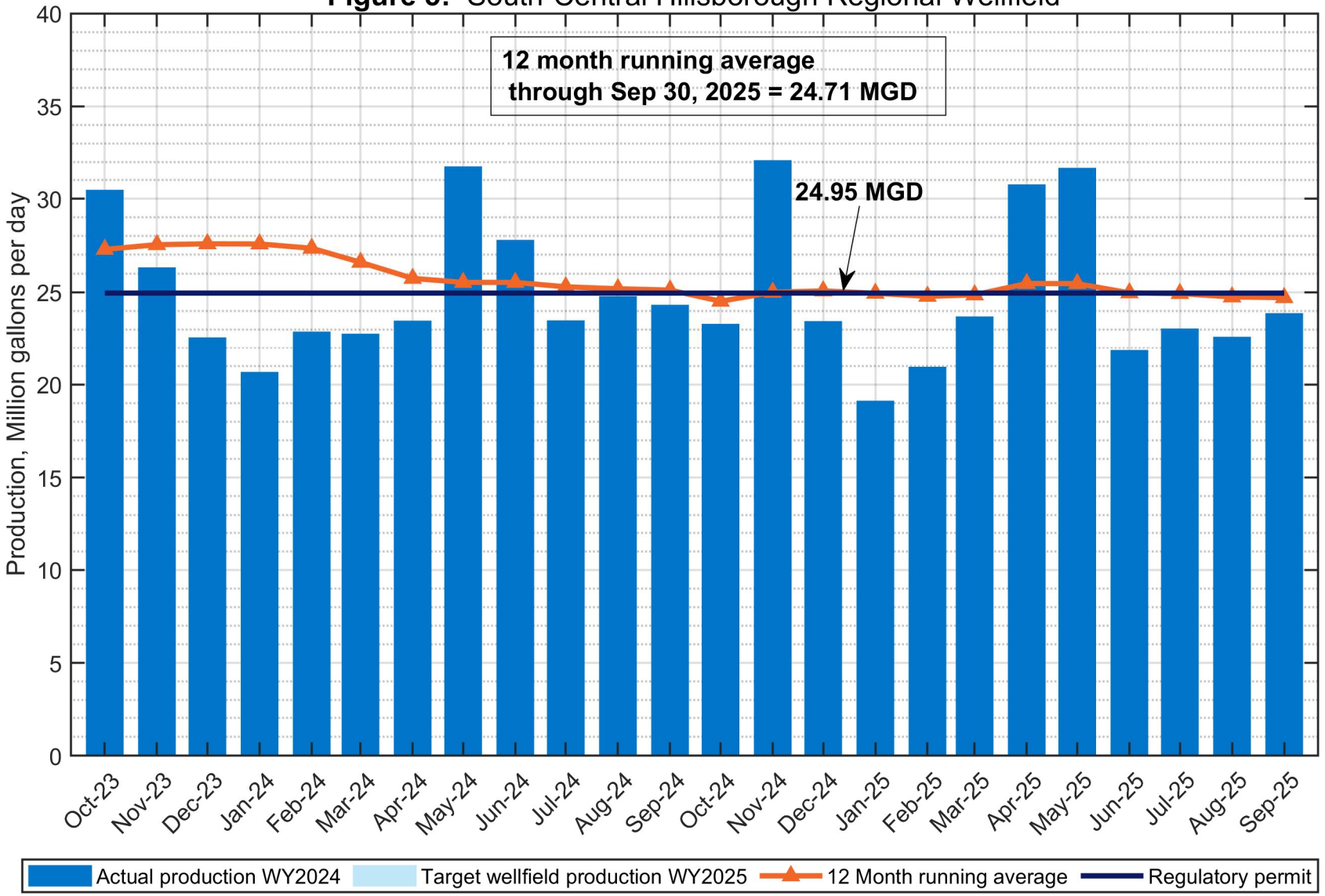


Figure 6: Tampa Bay Water Supply Sources Through Sep 30
Water Year 2024 Compared To Water Year 2025

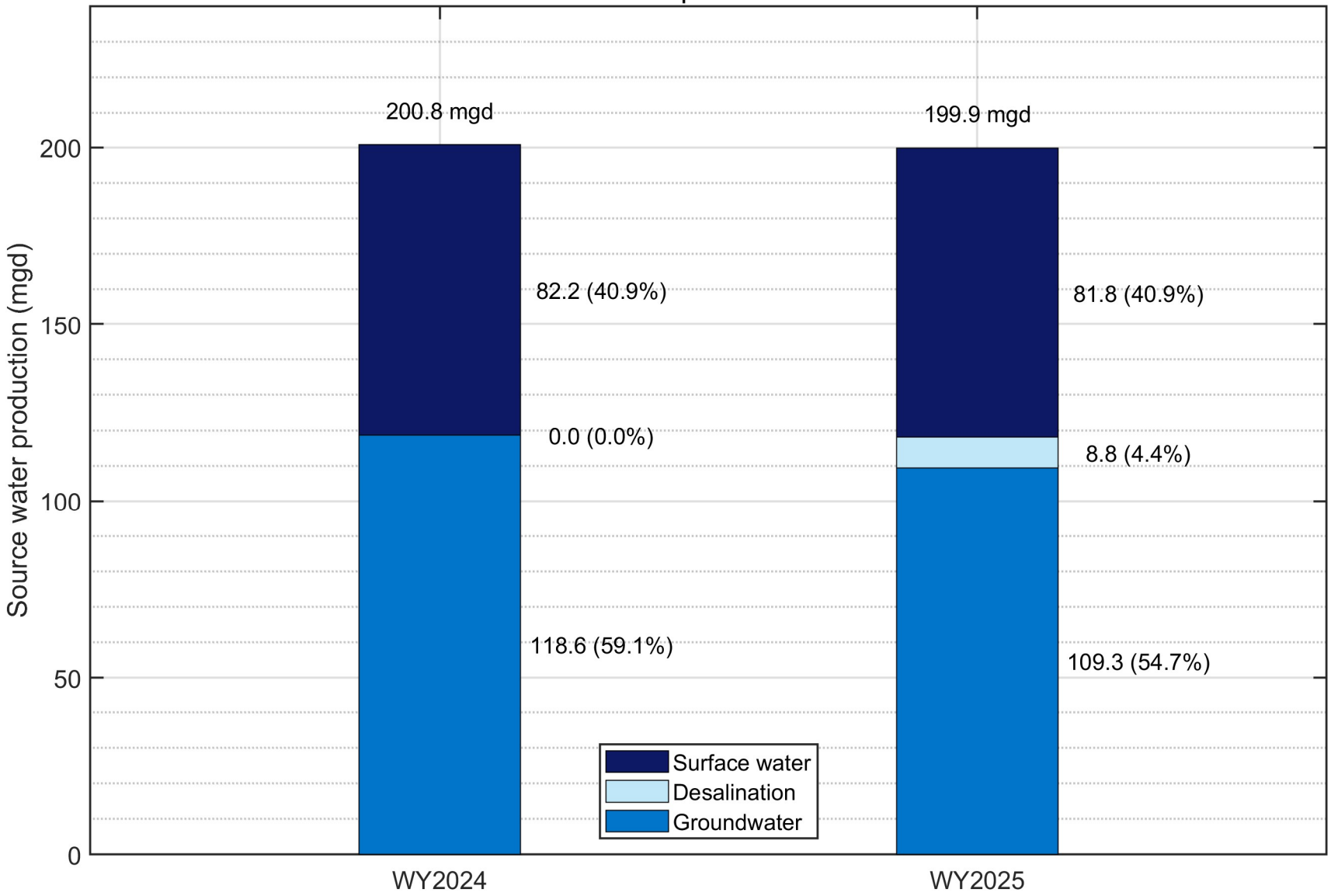


Figure 7: Regional Water Shortage Indicators
Through Sep 30 2025

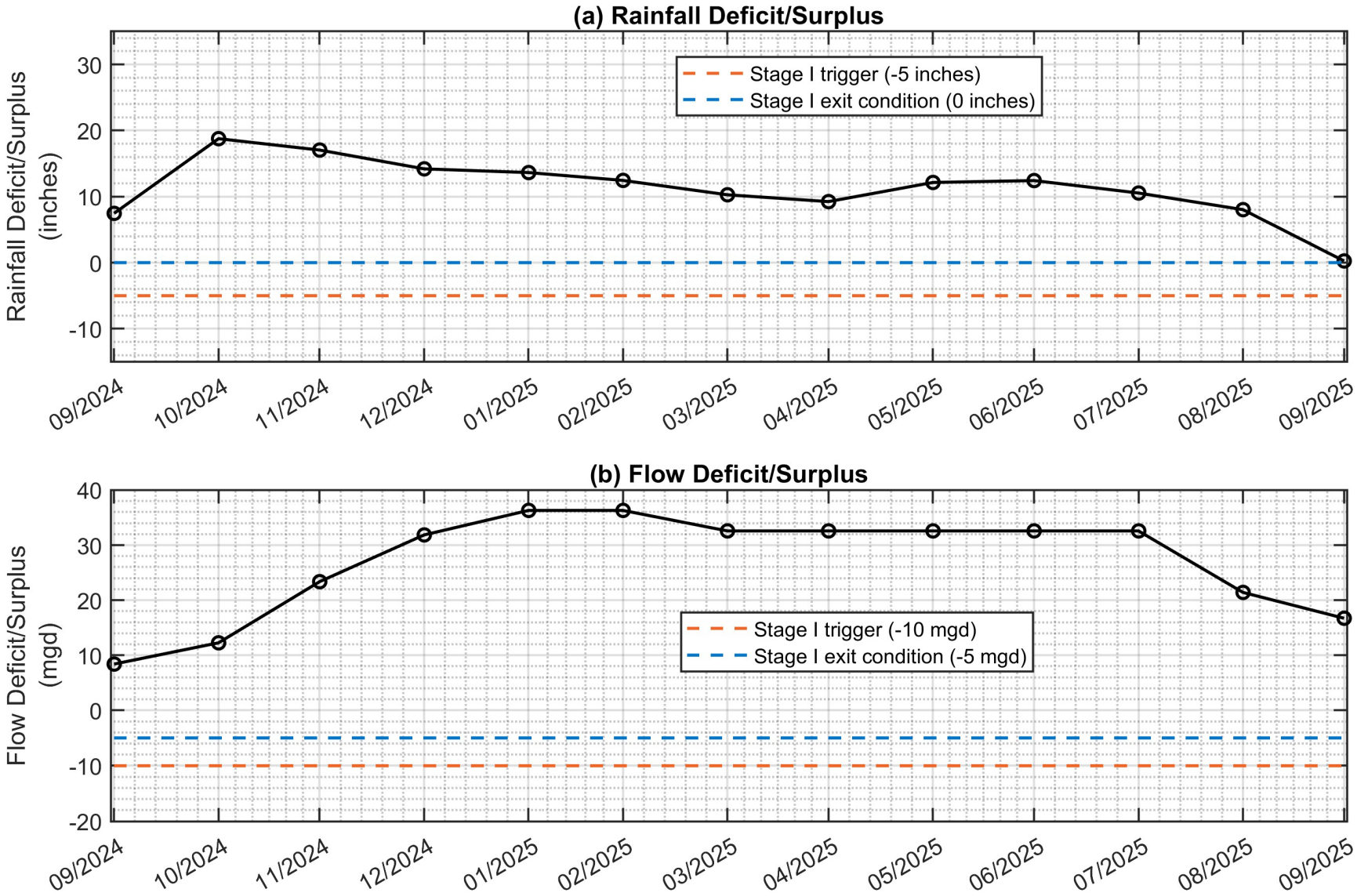


Table 1. Budgeted vs. Actual Demand and Supply Allocation for Water Year 2025

			Difference	
Metric	Budgeted	Actual	Percent	MGD
Water Delivery [1][2][3][4]	209.7 MGD	198.47 MGD	5.36% (Decrease)	11.23
Groundwater supplies	120.0 MGD	109.32 MGD	8.9% (Decrease)	10.68
Surface Water supplies	77.7 MGD	81.81 MGD	5.29% (Increase)	4.11
Desalinated Water	12.0 MGD	8.76 MGD	27% (Decrease)	3.24

[1] Budgeted Water Delivery does not include environmental augmentation quantities

[2] Budgeted Water Delivery includes delivery of 4.1 mgd to City of Tampa

[3] Total supplies are greater than water delivered due to environmental augmentation and operational activities, such as pipeline flushing.

[4] Water delivery includes finished water purchased from City of Tampa

Table 2. Operational Summary of Water Year 2025 compared with Water Year 2024

			Difference	
Metrics	Water Year 2025	Water Year 2024	Percent	MGD
Water Produced [1]	199.89 MGD	200.88 MGD	0.50% (Decrease)	0.99
Groundwater supply	109.32 MGD	118.65 MGD	7.86% (Decrease)	9.33
Consolidated wellfields	78.01 MGD	87.05 MGD	10.38% (Decrease)	9.04
Desalinated seawater [2]	8.76 MGD	0 MGD	NA (Increase)	8.76
Surface water supply	81.81 MGD	82.23 MGD	0.5% (Decrease)	0.42
End of year reservoir storage	14.56 BG	15.17 BG	4.0% (Decrease)	0.61 BG

[1] Includes all raw water pumped

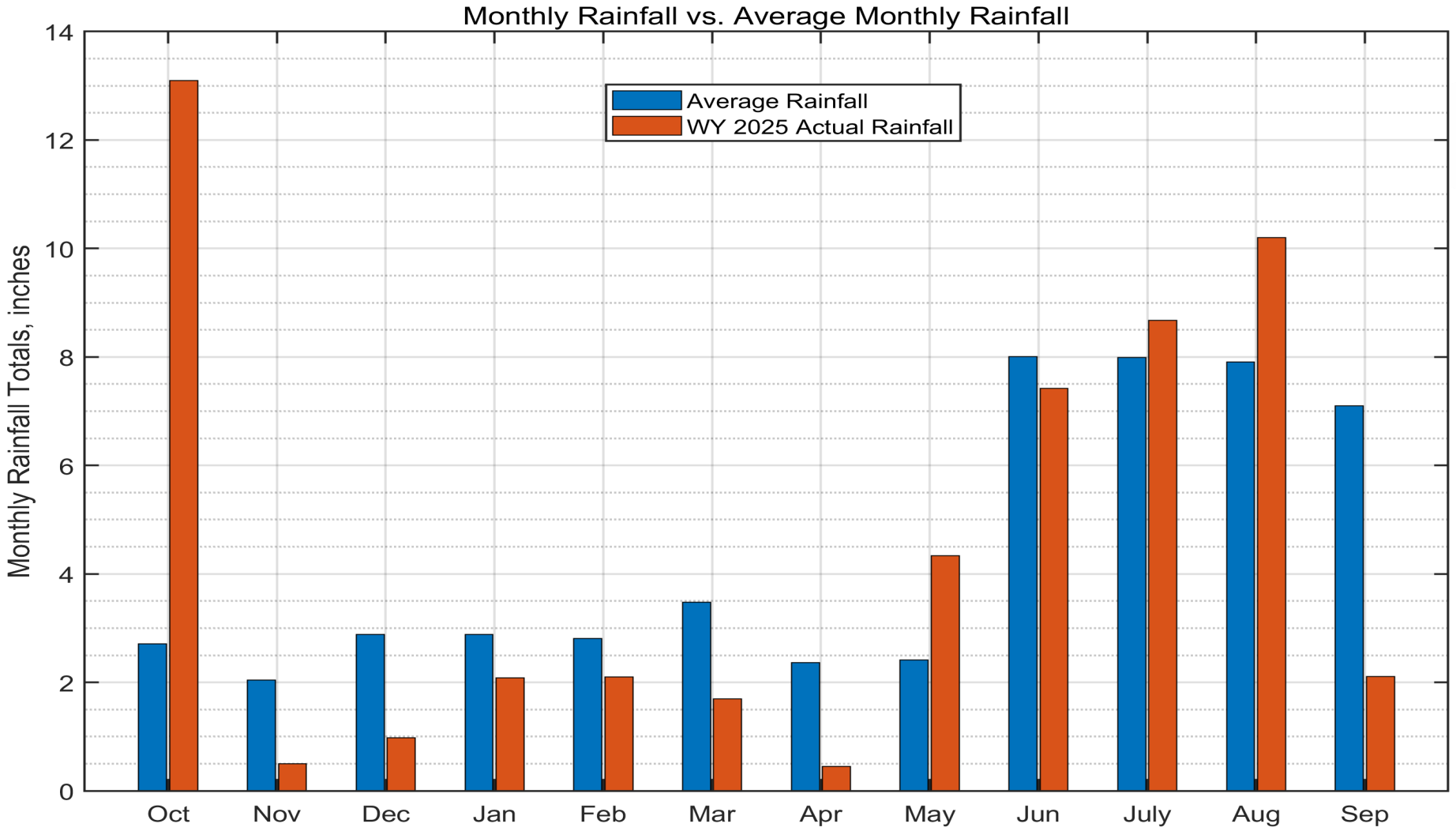
[2] The Desalination Plant was in scheduled maintenance, as approved by the Board of Directors, during Water Year 2024

Regional Water Supplies, Member Demands and Environmental Conditions

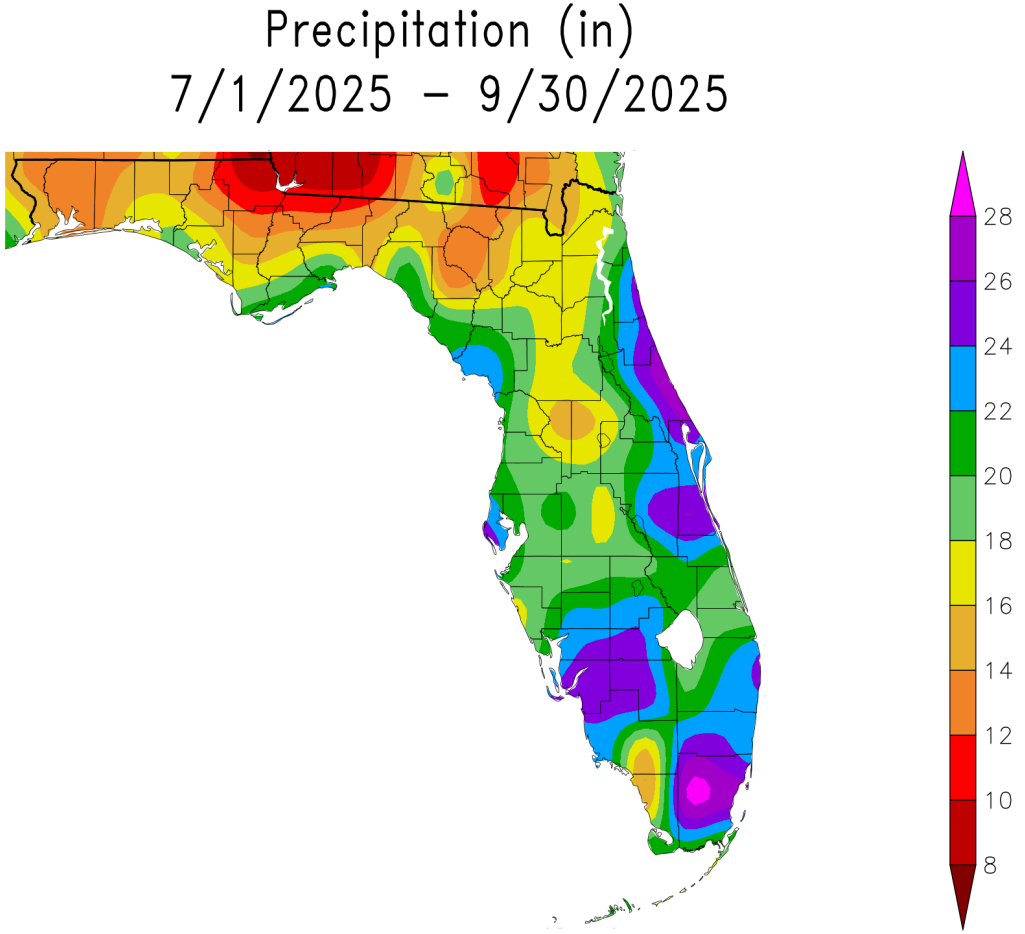
Agenda Item D.1
October 20, 2025

Warren Hogg, P.G.
Chief Science Officer
Tampa Bay Water

Regional Rainfall Through September 2025



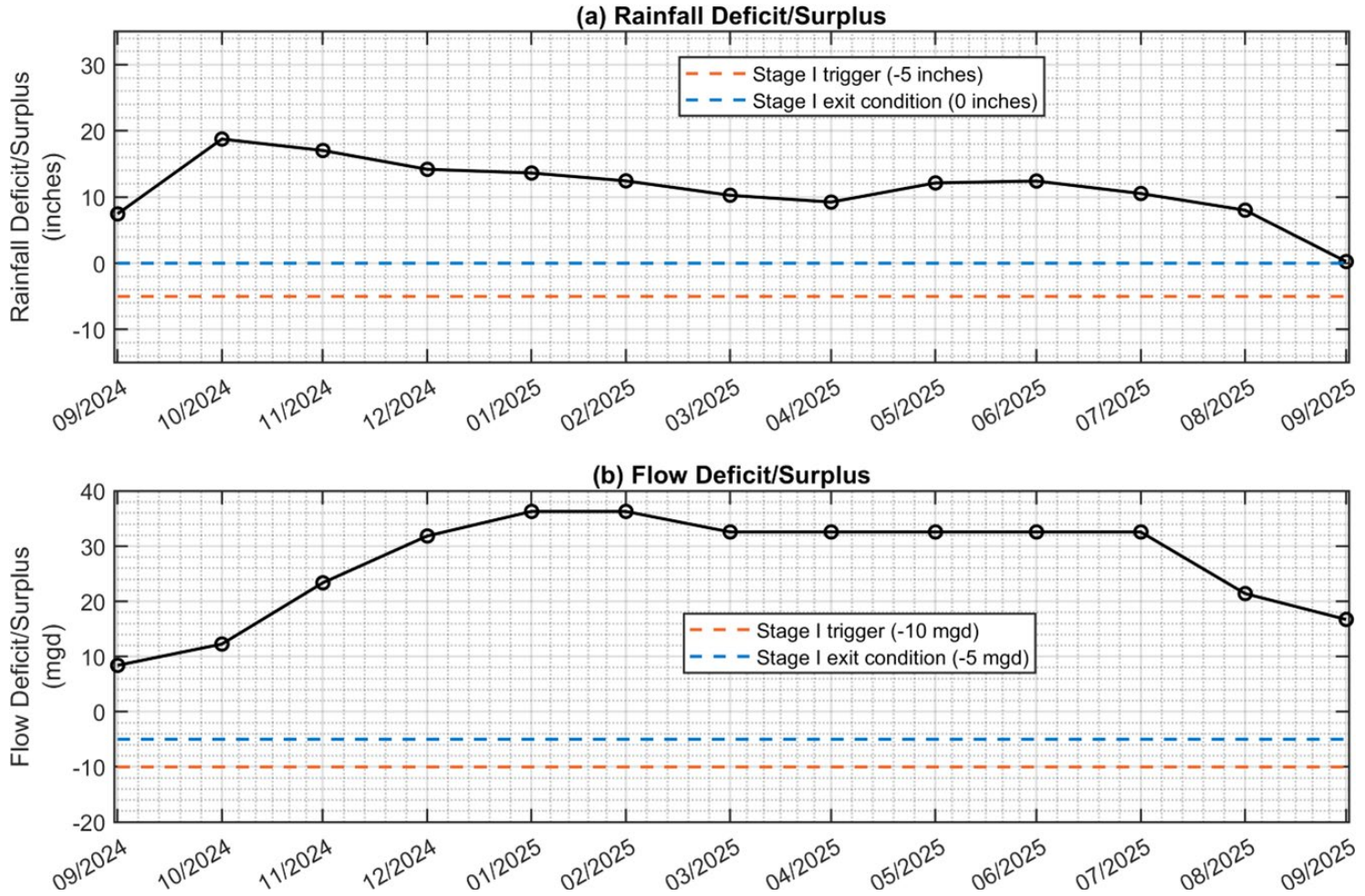
Summer Rainfall (July – September 2025)



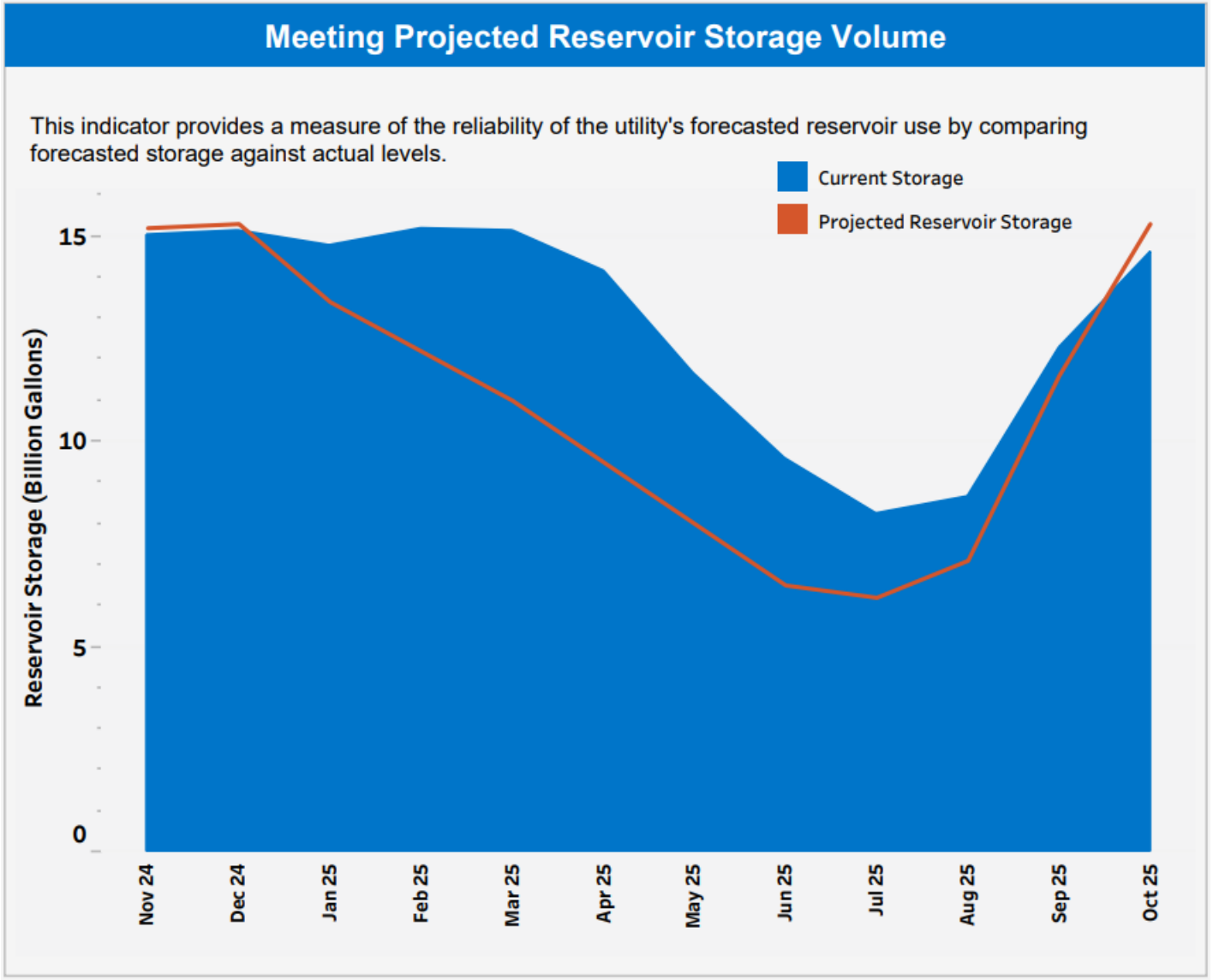
Generated 10/10/2025 using provisional data.

ACIS Web Services

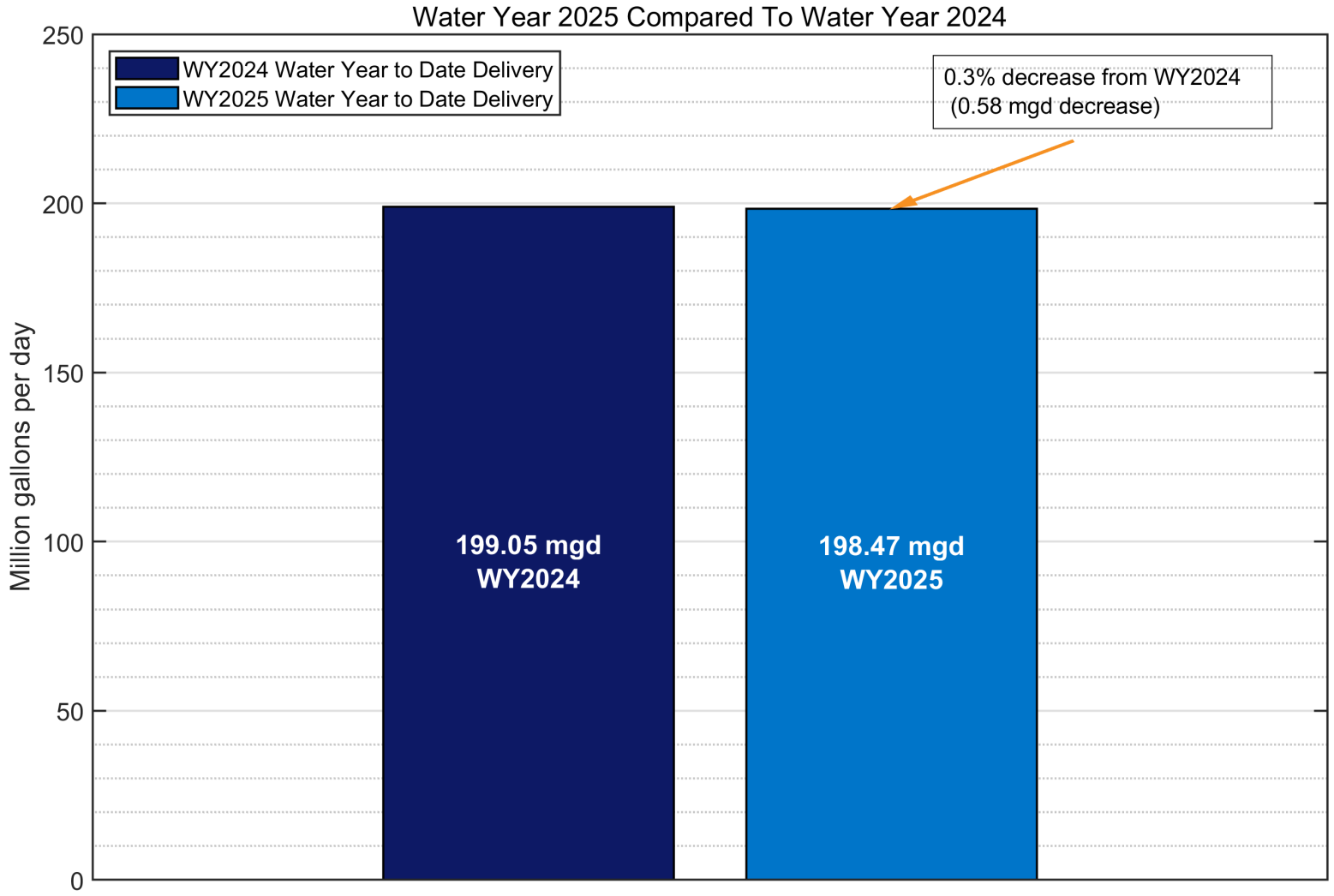
Water Shortage Indicators Through September 30



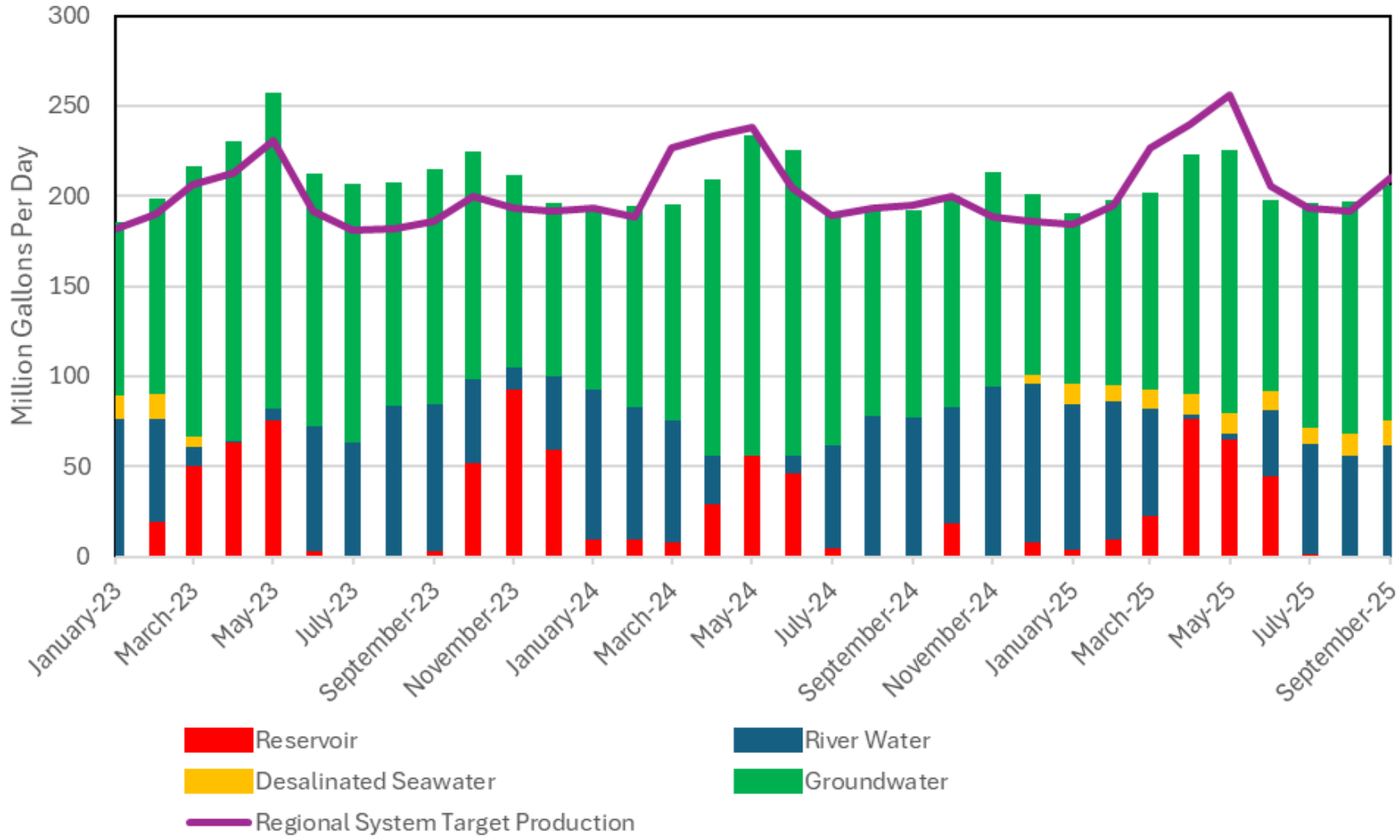
C.W. Bill Young Regional Reservoir Storage



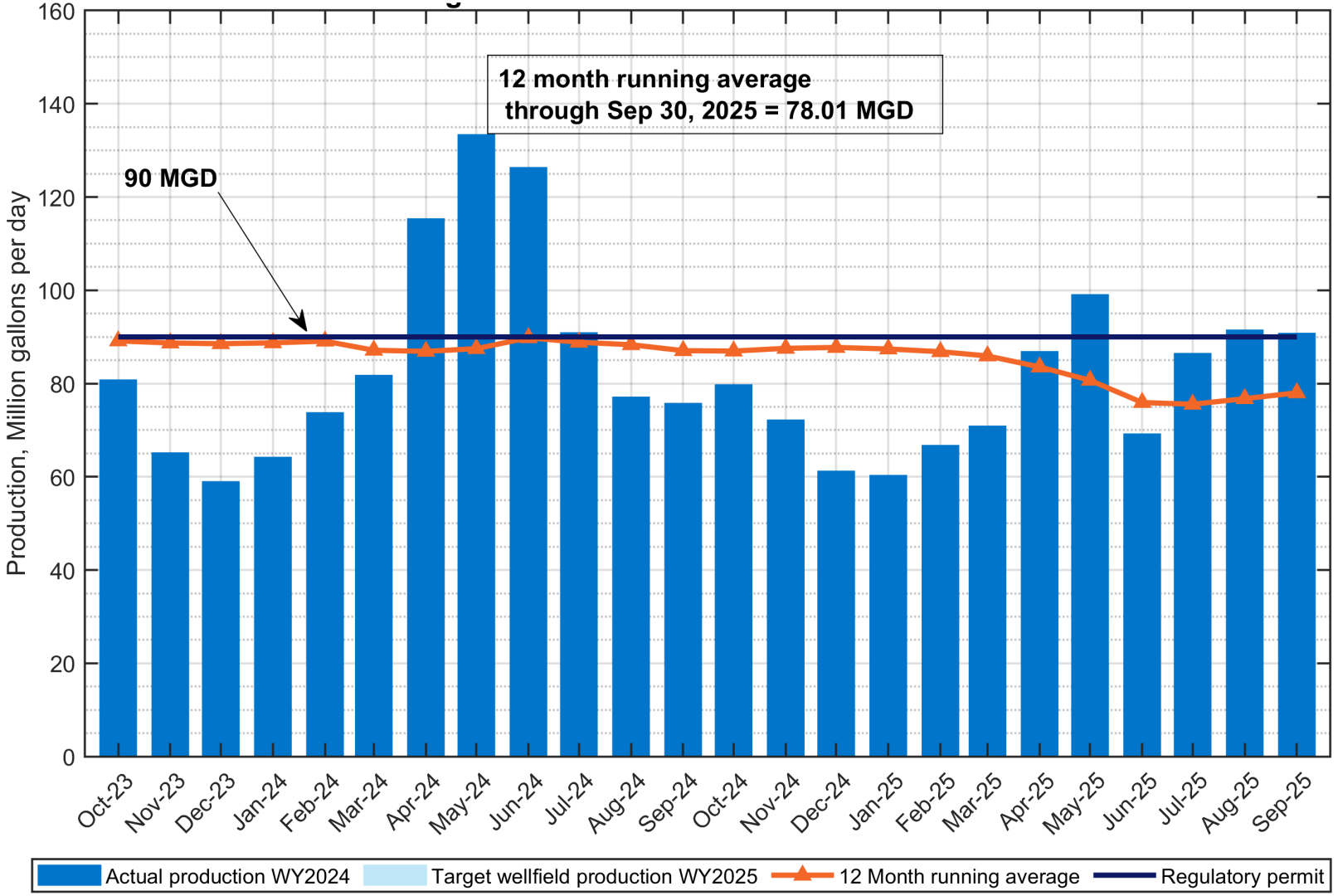
Water Delivery Through September 30



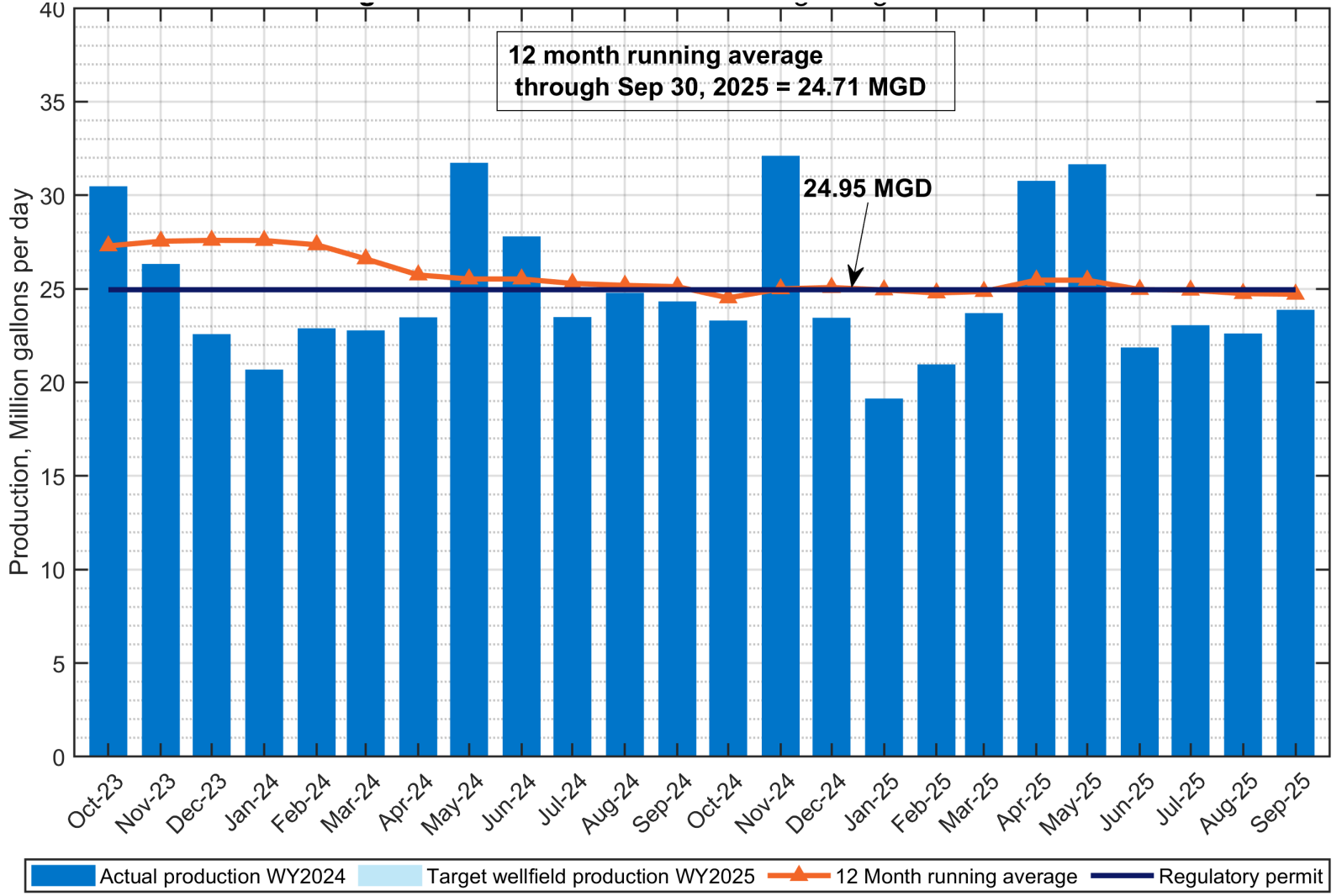
Tampa Bay Water Monthly Water Delivery



Consolidated Water Use Permit Wellfields

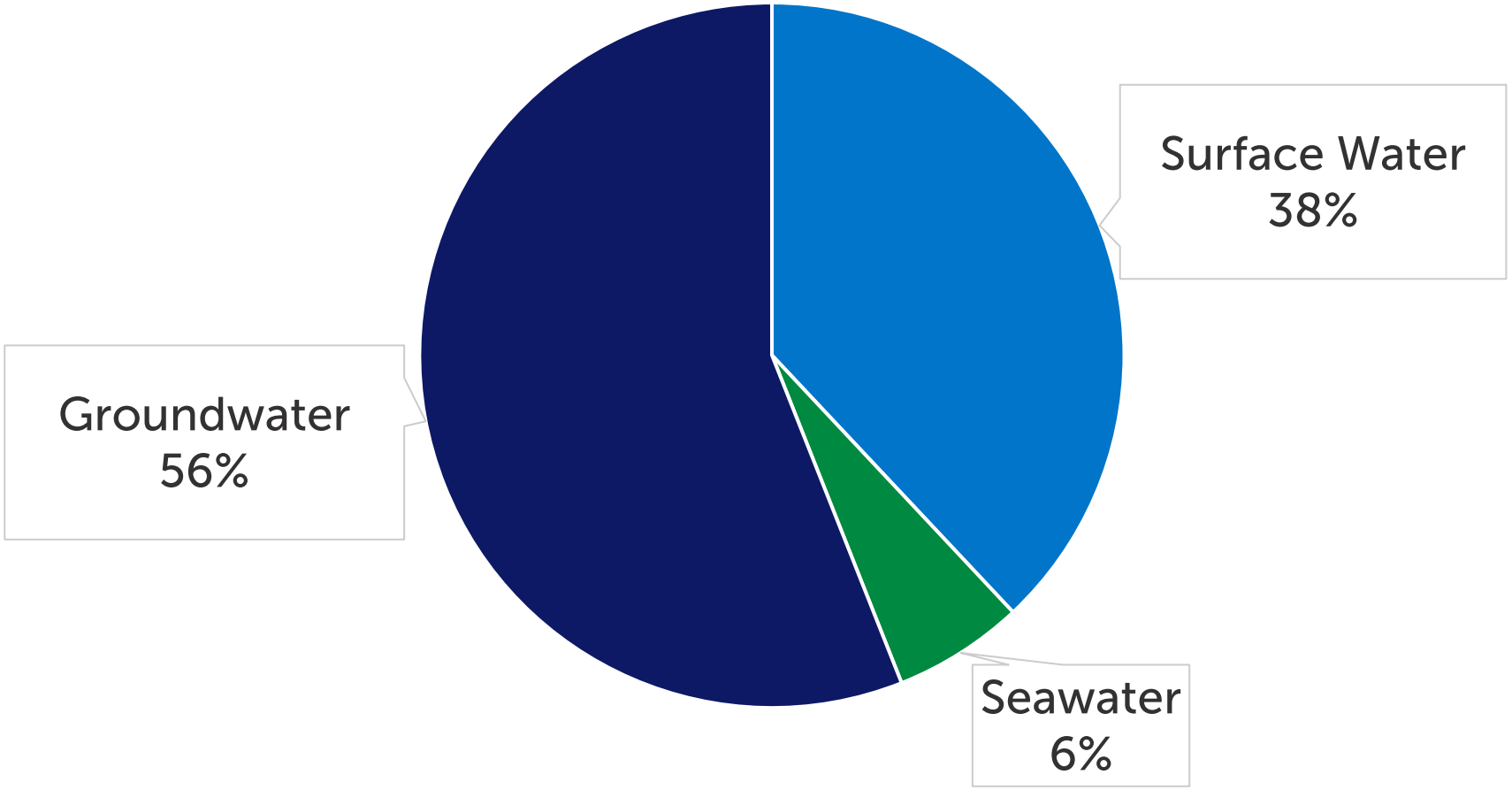


South-central Hillsborough Regional Wellfield

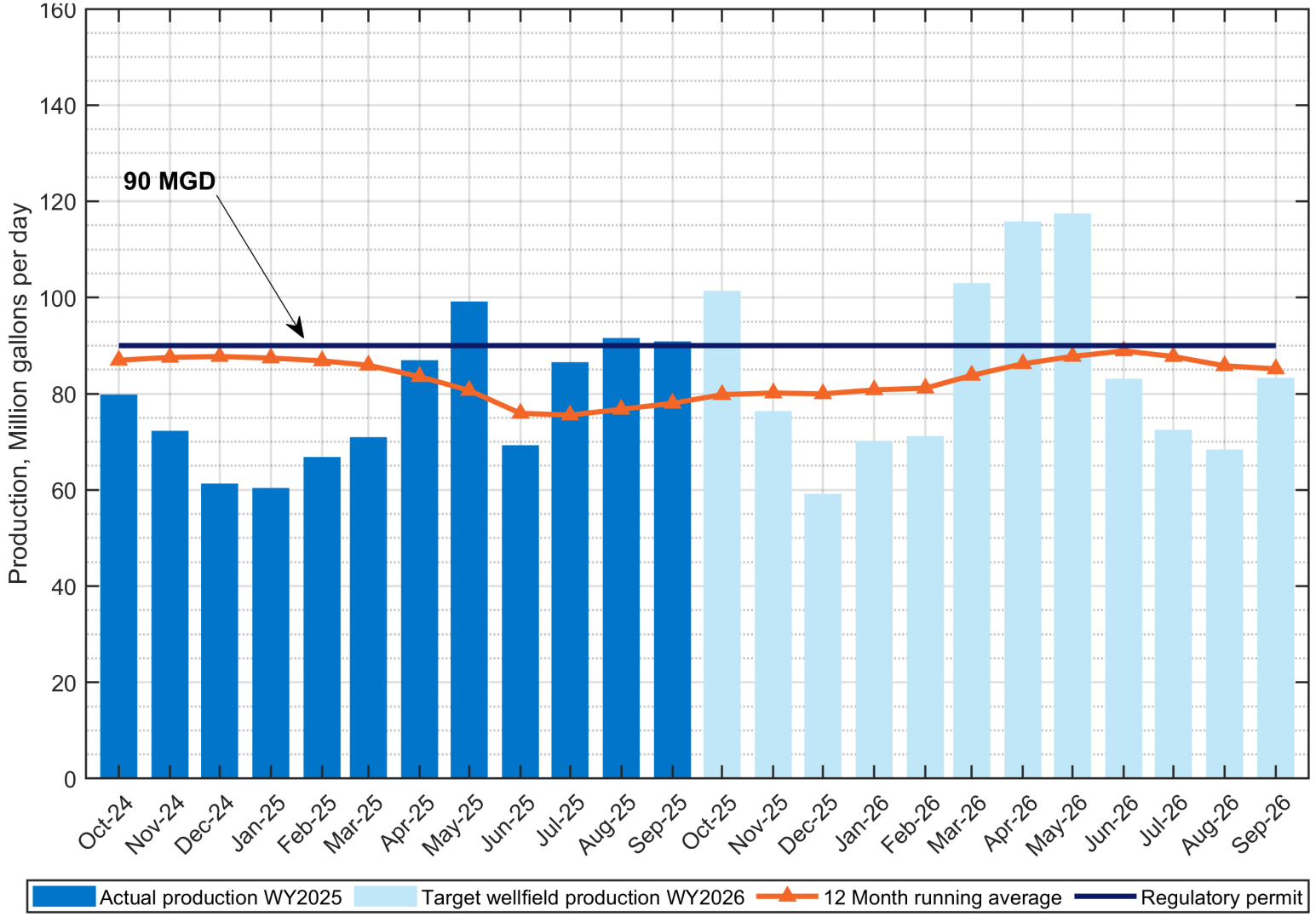


Water Year 2026 Budgeted Delivery

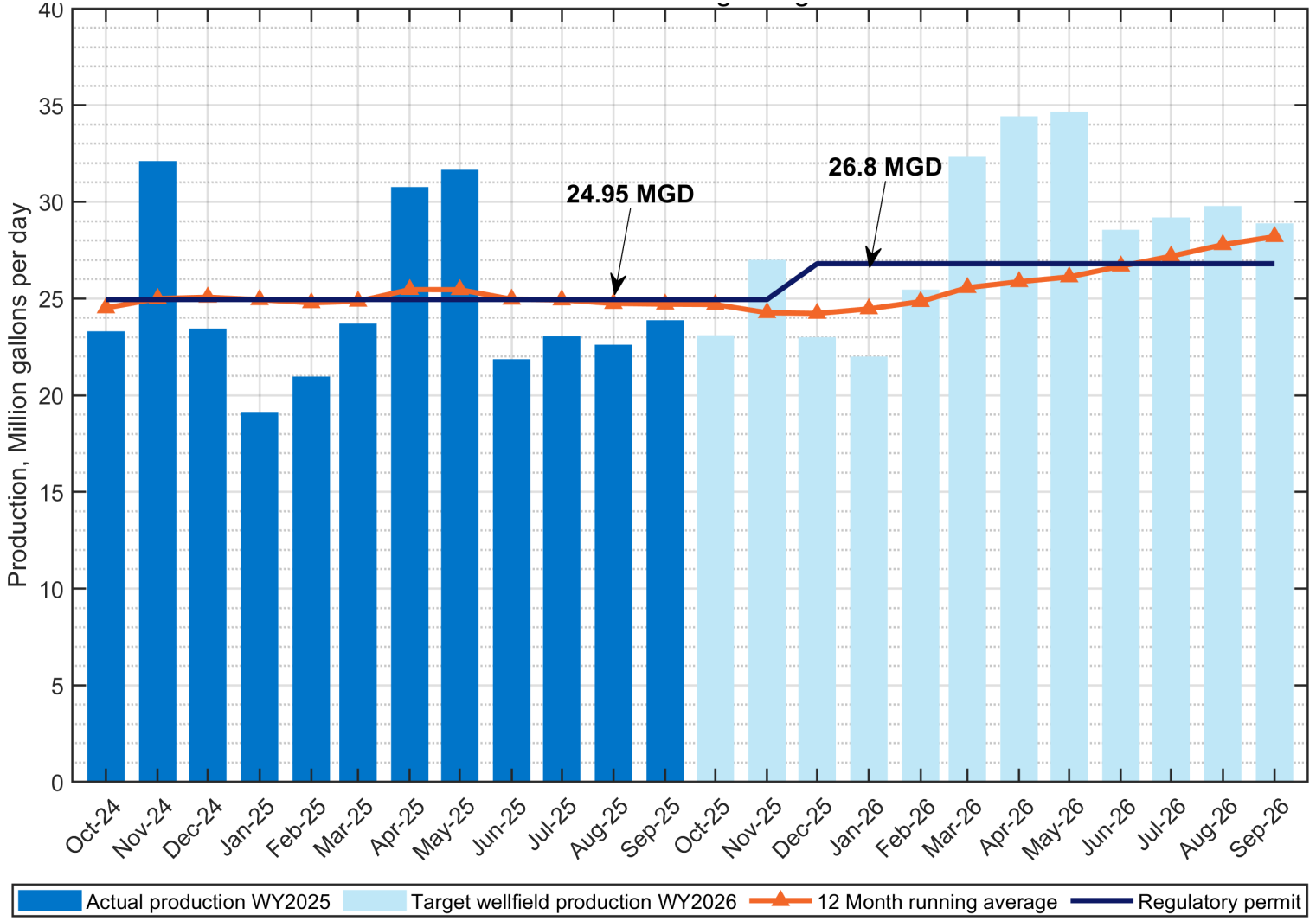
Total: 209.7 Million Gallons per Day (MGD)



Consolidated Water Use Permit Wellfields – Water Year 2026 Projection



South-central Hillsborough Regional Wellfield – Water Year 2026 Projection



Summary

- Summer rainfall: below-average; lower in the interior river basins
- Drought alert condition likely November 1
- C.W. Bill Young Regional Reservoir: essentially full
- Consolidated Permit Wellfields: less than 90 million gallons per day
- South-central Hillsborough Wellfield: running average pumping rate remains near permit limit

TAMPA BAY WATER

Questions?

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM F.1

DATE: October 6, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Division Officers and Directors

SUBJECT: Agency Division Activity Reports for September 2025 - *Receive Report*

SUMMARY

The following is an update on current activities for each Tampa Bay Water Division for the month of September 2025.

SUGGESTED ACTION

Receive and File.

COST/FUNDING SOURCE

N/A

DISCUSSION

The following is an update on current activities for each Tampa Bay Water Division for the month of September 2025.

Business Strategies Division

The Business Strategies Division manages relationships that are critical to the agency's success including with staff, elected officials, member governments, stakeholders and the public. The division oversees the agency's board services, continuous improvement, human resources, legislative affairs, public engagement, safety services and strategic planning functions.

Continuous Improvement Department

The Continuous Improvement Department is responsible for establishing and implementing continuous improvement programs and projects for the agency and ensuring the safety and security of the agency's employees and assets.

- **Continuous Improvement**
  - Convened seven cross-functional working group sessions to assess corrective and preventive actions, recommend efficiencies, and document improvements to strengthen agency-wide operations.
  - Delivered two presentations on *Extreme Event Preparedness and Climate Resilience* and *Comprehensive Water Resource Management* at the Leading Utilities of the World Conference.
  - Initiated development of the agency's next five-year Strategic Plan to ensure alignment of priorities, resources, and outcomes with the agency's mission and vision.
- **Business Process Improvement**
  - Expanded the PowerDMS library with 54 newly published documents, supporting transparency and consistency in agency operations.
  - Facilitated three process mapping sessions to capture complex workflows and streamline process standardization.
- **Emergency Management**
  - Completed a damage readiness assessment for the Florida Recovery Obligation Calculation, positioning the agency to expedite FEMA Public Assistance Grant funding after major storm events.
  - Enhanced emergency operations through completion of WebEOC implementation training, improving coordination and decision-making during incident response.
  - Established an annual emergency management training plan to institutionalize knowledge and strengthen agency readiness.

Human Resources Department

The Human Resources Department is responsible for establishing and administering human resources policies and procedures in accordance with federal, state and local laws and requirements, under the oversight and approval by the agency's general manager and board of directors. In addition, Human Resources is responsible for employee recruitment and retention, benefits administration, employee relations, training and development, employee compensation, workers compensation and oversight of the Employee Appreciation Team.

- Human Resource Administration: Completed adjustments for new pay rates for Fiscal Year 2026. Reviewed uniform policy, worked with Operations on recommended changes. Reviewed FMLA requests, researched improvements to current HR system.
- Benefits: Completed Open Enrollment for employee benefits.
- Recruitment and Hiring: Recruited for Data Analytics Co-Op, Public Communications Co-Op, Lab Co-Op and Electrician 1, Mechanical Group Lead. Hired I&E Group Lead, Purchasing Co-Op.
- Training and Development: Completed Leadership Development and MAXIMO training, developed 2026 Training Calendar Matrix, continued development of Succession Planning matrix.

Grant Funding and Government Affairs Department

Grant Funding and Government Affairs develops strategic initiatives to advocate for the agency and its members and is responsible for developing and implementing strategic positions and priorities for the Agency's legislative, grant funding and regulatory policy initiatives.

- Attended Agency on Bay Management Meeting at Tampa Bay Regional Planning Council office on behalf of Tampa Bay Water
- Work with staff and consultants to start Tampa Bay Water's FDEP Vulnerability Assessment
- Conducted meetings with federal consultants to outline expectations and provide insight into Tampa Bay Water's mission and funding priorities
- Attended the Pinellas County Legislative Delegation Meeting to establish and strengthen relationships, and to identify upcoming legislative initiatives of interest
- Attended Commissioner Boles Town Hall Meeting to bring awareness to the community about Tampa Bay Water and our upcoming pipeline project
- Presented Tampa Bay Water's Legacy Leadership Awards to 2025 recipients honoring their commitment to providing safe, clean drinking water for now and future generations
- Reviewed and finalized FY2026 Legislative Goals and Priorities
- Reviewed and finalized Tampa Bay Water's 2026 CIP funding priority list

Public Communications Department

The Public Communication Department builds and maintains the agency reputation through various communications tools and methods; provides education, information and outreach on agency projects, programs and policies to stakeholders; and develops and implements critical water supply plans.

Project Public Engagement

Tampa Bay Water includes public outreach and public engagement in each agency project – from conception to completion. The agency has several on-going projects through the renewal & replacement program, capital improvement program and Long-term Master Water Plan.

- **South Hillsborough Pipeline** – Created and sent six email blasts regarding night work and/or

lane closures associated with preliminary construction activities; attended Hillsborough County Commissioner Boles' community open house to discuss construction start with residents; conducted field survey to count the number of students walking to/from Randall Middle and Newsome High School; created a video featured on the project home page to prepare residents for the start of construction; distributed nearly 10,000 postcard to residents within .25 miles of the centerline of the pipeline route advising that construction will start in October or November and directing residents to the project website; fielded 10 calls to the project hotline and 21 emails; visited 38 businesses regarding night closures/detours; sent letters to 15 residents in the immediate vicinity of the Alafia River tunnel crossing properties to notify them of utility location work; met with several department representatives in a meeting coordinated with Hillsborough County Office of Emergency Management, including Fire Rescue and the Sheriff's Office; designed and produced door hangers.

- **Long-term Master Water Plan Feasibility Studies** – For the Eastern Pasco Wellfield Feasibility Study, the project team responded to resident inquiries via the project hotline and email address. For the Consolidated Water Use Permit Feasibility Study, the project team is finalizing project-specific messages, updating the fact sheet and creating the frequently asked questions. For the Tampa Bay Seawater Desal Plant Expansion, the project team began updating project collateral materials. For surface water feasibility projects, the project team updated the project fact sheets for posting on the website.
- **Brandon Booster Station** – Coordinating with resident to remove trees and relocate the fence on the facility property.

Public Communications, Outreach and Education

Public Communications, Outreach and Education develop and execute strategic communications programs that support and promote agency projects, policies and initiatives, and build and maintain relationships with agency stakeholders.

- Hosted six facility tours for 36 guests and staff at the Tampa Bay Water Desalination Plant, Regional Reservoir, and Surface Water Treatment Plant; coordinated water quality communications with member government communications staff through monthly Water Quality Communications Working Group meetings; sponsored and exhibited at the Glazer Children's Museum Birthday Bash to educate residents on water conservation and source water protection; attended the Girl Scout of West Central Florida's launch of the Water Conservation Academy; coordinated outreach and collaborations for US Water Alliance's Imagine a Day Without Water social media campaign; created and executed social media content for Tampa Bay Water's presence at the Glazer Children's Museum Birthday Bash, Tampa Bay Water job openings, the launch of the grant-sponsored Girl Scouts' Water Conservation Academy, Commissioner Boles' open house, presenting Rep. Danny Alvarez with the Legacy Leadership Award, the Tampa Bay Women of Water Panel & Networking Event, the Mini-Grant Program, siren testing, the Best of the Bay contest, Source Water Protection Week video, and more; began work on the 2025 Year in Review video; created and distributed the monthly Water News newsletter.

Employee Communications:

- Coordinated, created, and distributed monthly employee newsletter; coordinated, created, and launched digital signage at facilities across the Agency.

Web, Graphics, Audio-visual and Video

- Continued project to develop new agency intranet; kicked off project to replace and upgrade the boardroom audio-visual systems.

Safety Services Department

Safety Services is responsible for the agency Safety and Security programs.

- Safety Technicians completed 59 site inspections.
- Department completed a ride-a-long of South facilities.
- Department completed annual DAM Safety training.
- Completed CPR / AED training for all South Maintenance team.

Planning and Projects Division

The Planning and Projects Division is responsible for the delivery of the Agency's Capital Improvements Program including, design, permitting, and construction of capital projects. Additionally, the Division is responsible for engineering evaluations, surveying, utility conflict management, and real estate management and acquisition.

Division staff continues to work in the following critical projects/programs. Projects and Programs detailed reports are included in the project specific status reports in this agenda.

- Surface Water Treatment Plant Expansion (Project 01014)
- South Hillsborough Pipeline (Projects 01610/01616)
- Long-term Master Water Plan Feasibility Program and Developmental Alternative (Projects 11020/11021/112022/11025)

Construction

Construction administers capital projects construction contracts to be following the design, permitting, regulatory requirements, property rights, budget, schedule, and all related agreements.

- Eldridge-Wilde Wellfield Improvements (Project No. 50016): The seven Group 2 well houses have been built and dried in. New electrical equipment is being installed.
- Cypress Creek Water Treatment Plant Chemical Piping Replacement (Project No. 50051): Completed the sodium hypochlorite post treatment piping and pumps.
- Surface Water Treatment Plant Renewal and Replacement Program (Project No. 50075): One of the two new ozone generators has been installed and is in operation. Work has started on installing the second ozone generator.

- Groundwater Feasibility Study – East Pasco Test Well (Project No. 11022): The site has been cleared. Drilling of the core hole and the test well has begun.

Engineering

Engineering conducts limited in-house design; provides capital projects project management services in as-needed basis; conducts engineering studies and assessments; manage Agency design standards and specifications; ensure that all capital projects meet Agency's engineering standards and specifications; and provides quality review of capital projects design completed by outsourced services.

- 2045 System Hydraulic and Emergency Scenario Analysis Report (Project 11023): Draft of the analysis report was submitted on September 18 for Tampa Bay Water review. The team is also coordinating a presentation for draft results for the Executive Team targeting October 2025 and Board meeting presentation targeting November 2025.
- High Service Pump Station VFDs (Project 50070): Contract negotiations with top ranked firm (McKim and Creed) concluded. Contract for negotiated scope of work, fee and schedule are being brought to October 2025 Board meeting for approval request.
- Cypress Creek Generators Study (Project 50037): WREC completed distribution modifications to provide standby power from their generator for the Warehouses, Maintenance Shop, Hydro Bldg. and Fuel Island at the Cypress Creek WTP. Generator operational and testing procedures are being documented in a Memorandum of Understanding (MOU). Stantec is finalizing the Cypress Creek Generator Study based on feedback gathered in a Workshop held on September 17th.
- Arc Flash Program Standard Operating Procedure (SOP): A Standard Operating Procedure (SOP) for arc flash calculations, studies, mitigation, and equipment labeling is being developed. Final deliverables will be submitted in the coming months.

Planning and Projects

Planning & Projects manages and implements the update of the Agency's Capital Improvements Program, the Long-term Master Water Plan, and the Energy Management Program and other Agency critical plans and reports and provides capital projects project management services. They also are responsible for the development of all processes and procedures for effective project management following project management best practices.

- Cypress Creek Water Treatment Plant 72-inch Valve (Project 50073): The consultant has completed 90% of the design, and Guaranteed Maximum Price (GMP) No. 1 for the procurement of material and GMP No.2 for construction, are expected to go to the board for approval in January 2026.
- Cross Bar Ranch Wellfield Water Transmission Main – Utility Conflict (Project 07153): The Environmental Resource Permit has been submitted to the Florida Department of Environmental Protection and is under review. Coordination with the Florida Department of Transportation continues. Bidding is anticipated to start in late October.

- IT Technology Infrastructure Renewal & Replacement Program (Project 07541): All parts and software renewals under phase 3 have been delivered and installed. With the conclusion of the work under phase 3, all activities have been completed, and the project will be closed at the November board meeting.
- Lake Bridge Water Treatment Plant – Pump No. 4 (Project 07542): The consultant has submitted the 100% design, and the project has received its Public Water System permit from the Florida Department of Environmental Protection. A Pre-Submittal meeting was conducted with Hillsborough County Site Development, and it was determined that no permit was required based on the design scope. Additionally, after evaluating the lowest bid received, the construction contract will be presented during the October Board for approval.
- Surface Water Treatment Plant – SCADA System Upgrades (Project 06912): The design team has completed the 30% phase and reviewed the Basis of Design Report. The consultant is addressing comments while moving forward with development of the 60% design deliverables.

Real Estate

Real Estate is responsible for the negotiation and acquisition of property rights for capital projects and supports other departments by verifying that property rights under existing agreements allow proposed projects and other activities. Additionally, it manages existing lease and license agreements, property address changes, verifies taxes due or exemption status annually, and disposes of surplus property.

- South Hillsborough Pipeline (Projects 01610 and 01616) - Mutual Use Agreement with Hillsborough County approved at BOCC Meeting on September 27, 2025. Easement offer letters provided to Hillsborough County ELAPP and Real Estate Departments for all County owned property needed for project. Final revised FCT application submitted to liaison in HC ELAPP Department.
- South Hillsborough Wellfield (Project 01612): Returned internally reviewed Interlocal Agreement and exhibits for both Environmental Lands Acquisition and Protection Program (ELAPP) and Hillsborough County Water Resources Department for wellfield infrastructure to Hillsborough County with suggested revisions; reviewed survey department scope for sketch & legal descriptions; and appraisal pending sketch and legals for Water Resources Dept easement.
- Cypress Trails Horse Farm parcels (near Eldridge Wilde Wellfield) and Parsons Professional Park lots 10 and 11 were approved for surplus.

Surveying

Surveying manages the utility conflicts and cathodic protection programs; manages and conducts surveys; manages and maintain record drawings; and maintain and develop computer-aided design (CAD) and geospatial data for the Agency. They also assist with engineering, construction, real estate, and geographic information systems (GIS) activities.

- Agency’s Utility Conflicts Program: Ongoing documentation and responses to utility conflicts and creation of new processes meeting Sunshine 811 documentation, guidelines, and software, Florida laws, and coordination with internal and external stakeholders.

- Cypress Creek Transmission Main Review and Impacts: Consolidation of multiple utility conflicts along the Cypress Creek Transmission Main corridor with impacts have been reviewed. Tasks and schedules are being prepared for multiple phases of additional surveys to be performed to meet the needs of various impacts. Continuing to gather inventory of pipeline above ground appurtenances and reviewing their locations.
- Cosme Wellfield: The Cosme Production Well 12 ALTA Survey has finished and finalized documents have been received.
- Cypress Bridge Transmission Main: Cypress Creek Pump Station to Cypress Bridge Well 2 Survey Project scope has been prepared. The contractors will begin to locate appurtenances, underground pipelines, and reestablish baseline control stationing.
- Cypress Bridge Transmission Main: The computer-aided design (CAD) drawings of the Cypress Bridge Transmission Main Contract A are being modified to Tampa Bay Water's new standards and converted and added to the agency's geographic information systems (GIS).
- Starkey Collection Main: Contractor has completed the majority of utility locates and surveying along Decubellis Rd., Pasco County to identify Tampa Bay Water's underground pipelines and above ground appurtenances prior to road widening.

Finance and Administration Division Activity Report

The Finance and Administration Division is responsible for finances, procurement, inventory, risk and vital records. Departments include Finance, Purchasing and Warehouse and Records.

Finance

Finance manages the budget, payroll, account payables and receivables, capital assets, cash and investments, debt management and financial compliance for the Agency. They also assist with the training and maintenance of the accounting software, Munis.

- Started working on fiscal year 2025 close of purchase orders.
- Continued working on completing procedures in PowerDMS related to Finance department responsibilities
- Worked in Gravity on finalizing the year end profit and loss statement.

Purchasing and Warehouse

Purchasing issues, processes and administers the appropriate solicitations and ensures that all procurement activities are conducted in compliance with statutes, policies and provides best value solutions for the Agency. They also are responsible for the management and accountability of the agency's warehouse and inventory items.

- One Purchasing Specialist I attended the Eunaverse (formerly Bonfire) Conference in Orlando, FL
- Four Purchasing staff attended the Tampa Bay Area Chapter of NIGP quarterly meeting/luncheon

- Purchasing & Warehouse Manager attended Water Leadership Development Training
- Purchasing Specialist I & II attended NIGP Construction Procurement Course
- New Purchasing Intern started on September 29
- Both Purchasing Specialist II staff attended Florida Department of Management Services (DMS) Contract Management Class as part of Florida Certified Contract Manager (FCCM) certification.

Administrative Services

Management of board services, including overseeing the monthly board agenda process, legal liaison services that include coordinating activities between staff and general counsel, and management of the agency liability insurance and records programs.

- Worked with vendor to gather documents responsive to non-party subpoena.
- Completed employee performance evaluation meetings.
- Assessment of agency multi-functional copiers to determine requirements for new lease.

Information Technology Department

The Information Technology (IT) department supports Tampa Bay Water's computer, communications, and data systems. IT staff design, build, support, manage, procure, and maintain various technology systems to ensure the ability for staff to accomplish their key objectives and optimize productivity. The group is responsible for the management and security of the Agency's data, electronic information, and network systems. The department is composed of three core cross-functional teams: Applications, Systems, and SCADA (Supervisory and Control and Data Acquisition).

Applications

The Applications team supports data and software systems built within various technologies. This includes development, maintenance, and procurement for custom applications, databases and flows, and third-party software including GIS systems.

- Long Term Demand Forecast System – 2025 production run was completed in early September.
- Data Management Program - Continued development of selected pilot applications and data presentation layer. The pilot for water sample reporting has been released for user evaluation and acceptance testing. Water permit reporting pilot in progress.
- Integrated Hydrological Model – Ongoing migration from a structured to an unstructured grid; this period's activities included implementation of new code branch for handling both shape file and geodatabase imports.
- GIS / Asset Management System (Maximo) Integration – Completed production deployment. Addressing minor issues as needed, warranty period for project deliverables is for 30 days and will end October 8, at which time we will close the project.
- Completed upgrade of the Microsoft .Net framework across all internal applications, eliminating aged versions and reducing vulnerabilities.

- Completed integration with WebEOC, an emergency management platform. This will enable continued development for Tampa Bay Water's emergency management needs.
- Completed improvements to the Waterwise data export.

Systems

The Systems team manages Agency's enterprise technology infrastructure encompassing: PCs, computer peripherals, servers, networks, data centers, cloud environments, and telecommunication systems. The team also oversees cybersecurity systems, polices, risk assessments, and vulnerability scanning, including ongoing system patching and backups.

- CIP project 11024 The Network Uplift Study: Final deliverables received, project ready for closure.
- Completed draft of Enterprise Network Infrastructure Strategy, which will serve as the multi year road map for maintaining and modernizing the Agency's enterprise network for the agency. Final version will completed in October and project execution will commence at that time.
- CIP project 07541 IT Technology Infrastructure Renewal & Replacement Program – Enterprise Compute and Storage replacement is the last phase of this project effort and has been completed. Equipment installation and all migration activity is complete. This project is ready for closure.

SCADA

The SCADA (Supervisory and Control and Data Acquisition) system is a mission critical component of Tampa Bay Water managing and monitoring water production facilities both physically and wirelessly connected. The team is responsible for the ongoing development, maintenance, and security of the SCADA system, including managing dedicated hardware, software, networks, and telecommunications.

- Completed upgrade of hyperconverged hardware management system in production.
- Completed multiple modifications and enhancements to SCADA database and graphics at the request of Operations and Maintenance.
- Completed install and configuration of addition network circuits, adding additional network redundancy to the Lithia location.
- Alarm Management Optimization Project - Initiated the implementation phase of this project. The agency has defined our alarm management philosophy and rules in advance of this phase where we are applying the rules to existing alarms in a systematic manner.
- Provided support for requirements definition and data source identification need for chemical management system development.

Science Division

The Science Division provides water resource technical support for planning, operations, demand management, water quality and regulatory functions of the Agency and manages the Tampa Bay Water Wise conservation rebate program.

Systems Decision Support

Addresses the Agency's system-wide decision support needs on a multi-scale time horizon; designs, implements, and maintains water resources optimization tools, integrated hydrological models, risk and reliability analysis tools, water demand management and forecasting programs and models all in support of operational, annual budgeting and long-range planning needs; leads the Agency's effort in climate variability and climate change assessment and adaptation.

- Master Water Supply Feasibility Study Modeling: The Integrated Northern Tampa Bay model update is complete. This updated model run will be used as the starting condition for evaluating future pumping scenarios as part of the groundwater feasibility studies.
- Long-term demand forecast update: continued work on the Long-term Demand Forecast System annual update run and data preparation including processing member government billing data and analyzing new Traffic Analysis Zone (TAZ) data (updated every five years by the FDOT) to understand regional growth patterns and expected roadway expansions.
- Completed the draft demand and source allocation plan for FY 2026 based on current climate and hydrologic conditions and estimated reservoir use for the upcoming year.

Tampa Bay Water Wise

Tampa Bay Water Wise is the agency's water conservation rebate program. The goal is to save up to 3.8 million gallons of potable water per day by 2030 and cost-effectively defer the need for equivalent new water supplies.

- The program has saved 872,745 gallons per day from the installation of 36,735 rebated devices since the program launched March 30, 2020 through September 22, 2025. This fiscal year since October 1, 2024, the program has saved 178,279 gallons per day.
- The working group has indefinitely extended the Sprinkler System rebate pilot program. To date, 20 customers have participated in this new program and the number of participating irrigation contractors increased from 5 to 10 over the last six months. The program has been gathering feedback from customers and will gather feedback from contractors in October. This feedback will be used to inform any changes made to the program to increase participation and save additional water.

Permitting

The Water Use Permitting Department is responsible for the acquisition and renewal of, and compliance with, Agency Water Use Permits including implementation of the Domestic Well Mitigation Program and environmental/hydrologic/hydrobiologic monitoring. Work also includes monitoring and management of wetland impacts associated with construction and/or past operation of Agency facilities and infrastructure and management of lands owned by the Agency to maintain an appropriate natural habitat.

- Continued technical and project coordination support for the Consolidated Permit increase and

East Pasco Wellfield feasibility projects for the Master Water Plan. Supported mobilization of drilling contractors to East Pasco test site and coordinated the startup of an aquifer performance test at a Dade City location to collect additional data for the East Pasco Wellfield study.

- Submitted final information required to support the South-central Hillsborough Regional Wellfield Water Use Permit modification to increase the permitted quantity through permit quantity acquisitions from Hillsborough County and TECO. The permit is scheduled to be considered by the District Governing Board at their November 18 meeting.
- Determined the final groundwater credit quantities to be acquired from four permits held by Land Reserve Inc. and Farmland Reserve, Inc. and transferred to our Balm Farm permit. Groundwater modeling analysis of the increased yield to the Balm Farm permit is underway.
- Initiated the investigation of existing public supply water use permits in Pasco County for potential acquisition and incorporation into the Consolidated Permit.

Environmental/Hydrologic Monitoring

- Installed water level and rainfall monitoring equipment to support the aquifer performance test in Dade City as part of the East Pasco Wellfield feasibility study.
- Continued cross training with the Hydrologic Technicians to learn additional data collection runs at different facilities for enhanced monitoring coverage.
- Continued mapping the environmental monitoring routes and sites to improve monitoring coverage and safety.

Water Quality Services

Water Quality Services is responsible for laboratory testing, water quality compliance reporting, source water assessment and protection, and water quality treatment support to operations.

Laboratory

- Completed analytical compliance sampling for monthly drinking water quality samples collected in September 2025 per Exhibit D and state/federal requirements.
- Completed analyses of samples collected in August 2025 at PFAS Quarterly Compliance Monitoring locations and the Brandon Urban Dispersed Wells.
- Laboratory Manager continued cross training a senior laboratory scientist on quality control functions and began training a laboratory co-op student on general wet chemistry methods.
- Completed additional revisions to EPA method 1633 to improve quality of PFAS data and provide sample preparation cost savings.

Source Water Assessment and Protection

- S::CAN advanced water quality instrumentation monitoring and maintenance continued at the Alafia River pump station intake and TBC lower and middle pool intakes and provided algae bloom test results to Operations. These data assist in source water selection and improve treatment efficiency at the Regional Surface Water Treatment Plant.

- Continued S::CAN instrument data integration with the Aquarius Webportal platform to enhance useability by water production operators and water quality scientists and technicians.
- Continued evaluating options for improving yield reliability of the Regional Surface Water Treatment Plant and surface water supplies under extreme water quality events and other conditions.
- Developing a technical memorandum for the source water assessment and protection program to detail recommended actions, enhancement of program data collection, and next steps.

Water Quality Support

- Facilitated the Water Quality Working Group meeting with members on September 11, 2025.
- Completed reviews of analytical results received in September 2025 from PFAS Quarterly Compliance Monitoring locations collected in August 2025 and post-UCMR5/PFAS monthly analytical data collected from agency sampling locations in September 2025.
- The Carollo Engineers draft technical memorandum report updating their Regional Water Quality Study (RWQS) concept designs, estimated costs, and implementation plan recommendations based on PFAS bench-scale treatability studies was distributed to member government staffs and meetings were held with each member staff to review the report and findings. Staff and Carollo Engineers are responding to questions from member governments, particularly in light of recent and pending EPA actions. Revisions are being made to the Carollo Engineers draft report, and a meeting is scheduled on October 20, 2025 with all member governments to receive feedback on the technical basis for RWQS update recommendations. An update on the EPA rulemaking for PFAS regulations is included in the Water Quality Update agenda item in this packet.
- Evaluating alternative water treatment chemical equipment and real-time water quality monitoring technologies with Operations staff to optimize removal of TOC and other parameters with existing treatment processes.

Water Production Division

The Water Production Division is responsible for the operation and maintenance of the agency's water production assets that provide drinking water to the members. Departments within the division include: Buildings & Grounds and Fleet Services, Maintenance Planning & Reliability, and Operations & Maintenance.

- Provided drinking water to meet member government demands in compliance with Exhibit D and Safe Drinking Water Act water quality standards.
- Provided support for the Surface Water Treatment Plant Expansion project and several other active CIP projects.

Buildings & Grounds and Fleet Services

The Buildings & Grounds and Fleet Services team is responsible for maintaining the primary physical plants of each facility, including HVAC systems, roadways, fire safety systems, and roofing and

coating systems. The team also takes care of the acquisition and maintenance of fleet vehicles for the entire agency. Highlights from the Buildings, Grounds, and Fleet Services team include:

- As part of a Team with Engineering, Maintenance, and the power utility – reconfigured the utility power supply at the Cypress Creek Pump Station to place the Warehouse, Maintenance Building, Environmental Building, and Fuel Island on utility-supplied generator power.
- Removed four large (10 foot by 10 foot) roof vents from above the Cypress Creek Pump Station Electrical Rooms. These legacy vents from the days of fan cooling posed a risk to the electrical gear in severe storms due to the potential for rainwater leakage into the 2,400-volt switchgear.
- Began work in the Clearwater Building removing chiller two and installing a more efficient HVAC system to cool the second floor IT communications switch area.
- Continued the Engineering task and data gathering effort to determine Clearwater Building Generator capacity, current building load, and the possibility of running the entire building from the existing generator.
- Installed and ran wiring for a Starlink communications antenna /system that will provide backup communications in case other primary systems are disabled.
- After Board approval – met with Enterprise and began the planning/ordering process for the FY'26 fleet vehicle purchases and disposals.

Maintenance Planning & Reliability

The Maintenance Planning & Reliability team is responsible for overseeing the Agency's Asset Management System, including the MAXIMO software and the Renewal and Replacement Program. Highlights from the Maintenance Planning & Reliability team include:

- Asset tags installed in multiple locations.
- 1 jobplan modified. 2 PM's modified. 1 PM created.
- MAXIMO / GIS Integration is in Production and the project is complete.
- EZMAXMobile Offline Operator Log is in Production and the project is complete.

Operations & Maintenance

The Operations & Maintenance team is responsible for ensuring that the Agency's production assets are maintained and operated in a sustainable and resilient manner to fulfill the drinking water needs of the member governments. They provide continuous attention to the system, adjusting to changing conditions and in compliance with permit and environmental recovery constraints. Highlights from the Operations & Maintenance team include:

- The Surface Water Treatment Plant produced an average of 65.70 million gallons per day through September 2025.
- The Seawater Desalination Facility produced an average of 13.48 million gallons per day through September 2025.
- As of the end of September 2025, the level in the regional reservoir is 134.24 feet, corresponding to 14.56 billion gallons of storage. This resulted in a total surface water harvest of 2.41 billion

gallons.

- Reservoir siren replacement project completed and new units tested for proper operation in September 2025.
- Annual dam safety training for the Regional Reservoir staff, consultants and contractors completed September 2025.
- Resurfacing and recoating of the Morris Bridge 5 MG ground storage tank completed September 2025.
- Project in process for resurfacing and recoating of the South-Central Hillsborough Intertie Booster Station 0.330 MG raw water ground storage tank. Anticipated project completion October 2025 (weather dependent).
- Project in process for replacement of Cypress Creek SCADA UPS power distribution panel. A temporary 8-slot UPS is currently installed, and the permanent 12-slot UPS has been received. Anticipated project completion October 2025.
- O&M is facilitating an AWWA Florida Water Loss Workshop on October 7, 2025.
- Temporary piping modifications and maintenance to the Alafia River Pump Station intake air burst system completed August 2025. A permanent repair solution is currently under evaluation with the Engineering and O&M departments. An underwater inspection for measurements to be conducted once reservoir filling is completed (anticipated late-October 2025).

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM F.2

DATE: October 3, 2025

TO: Board of Directors

FROM: Kelly M. Fernandez, General Counsel

SUBJECT: Legal Services Activity Report for September 2025 - *Receive Report*

SUMMARY

The General Counsel Activity Report summarizes the major activities and work effort of the General Counsel and provides an update on the status of ongoing litigation and any other matters being handled by Special Counsel.

SUGGESTED ACTION

Receive and File.

COST/FUNDING SOURCE

Uniform Rate

DISCUSSION

The General Counsel's Office provides legal services to the Board and agency staff and manages Special Counsel in their representation of Tampa Bay Water. During September 2025, the major activities and work effort for legal services included:

Board of Directors

- Attended the August regular Board meeting and advance briefings with Board members.

Facilities and Property

- Assisted with property acquisition, permitting, and wetland mitigation related to the South Hillsborough Pipeline project.
- Continued working with staff and special counsel on a property donation with Pinellas County for a wellsite.
- Coordinated with staff on surplus property matters.

Contracts and Procurement

- Reviewed contracts and contract amendments for commodities, construction, grants, and professional services.
- Continued coordinating with staff on a review and update of the purchasing policy, procurement forms and procedures.
- Continued work with staff and consultants on various contractual matters related to next phases of Surface Water Treatment Plant Expansion and South Hillsborough Pipeline projects.

Coordination with Agency Management

- Participated in weekly meetings with the General Manager and Executive Team.
- Initiated rulemaking to rescind agency rules.
- Assisted with drafting of Board policies.

Litigation

Polk Regional Water Cooperative v. Tampa Bay Water and Southwest Florida Water Management District

Counsel: TBD

Issue: Polk Regional Water Cooperative is challenging the issuance by Southwest Florida Water Management District of a water use permit to Tampa Bay Water to increase its surface water withdrawal from the Alafia River from 10% to 19% above the minimum flow threshold.

Status: Petition for Formal Administrative Hearing filed with the Southwest Florida Water Management District on September 29, 2025.

Tampa Bay Water v. E.I. Dupont de Nemours and Company, et al.
Case No. 2:20-cv-1867 RMG, United States District Court for the District of South Carolina, Charleston Division

Counsel: Frazer PLC, Napoli Shkolnik, PLLC, Ventura Law, and Frank Charles Miranda, P.A.

Issue: Complaint for damages pertaining to PFAS and related compounds including counts for strict liability, failure to warn, design defect, negligence, private nuisance, public nuisance, and fraudulent conveyance.

Status:

Complaint filed May 14, 2020. Litigation sampling performed and results posted to agency website in April 2023. Submitted agency's supplemental response to fact sheet in August 2023. Judge Gergel issued a Final Approval Order and Judgment for the DuPont settlement on February 26, 2024. On March 29, 2024, a Final Approval Order and Judgment for the 3M settlement was entered. On July 25, 2024, Tampa Bay Water filed its claims for the DuPont and 3M settlements with the assistance of special counsel for Tampa Bay Water. On August 26, 2024, Tampa Bay Water filed a special needs claim with the assistance of special counsel. During the summer of 2024, settlements were reached with TYCO/Chemguard ($750 million) and BASF ($312,500 million). Claims for these settlements were filed by Tampa Bay Water in early April 2025. Agreements have also been reached in the Kidde-Fenwal bankruptcy case, which if approved through both the bankruptcy court and this class action case, will result in $129.2 million to be distributed to the water provider litigations. Claims against other defendants remain pending. The Claims Administrator will allocate compensation to all eligible class members as the claims review periods conclude for each settlement. Tampa Bay Water has thus far been awarded approximately 181 million points in both the 3M and Dupont settlements. A portion of the first 3M settlement payment in the net amount of $2,961,827.37 was received by Tampa Bay Water on approximately June 24, 2025, with the final portion of the first settlement payment received in August 2025. The second 3M settlement payment in the net amount of $8,076,613.10 was received in September 2025.

WPC Industrial Contractors, LLC and Randall Environmental, Inc. v. Tampa Bay Water
Case No. 24-5494-CI, Circuit Court for Pinellas County, Florida

Counsel: GrayRobinson, P.A.

Issue: Complaint for damages alleging Tampa Bay Water breached its contract with WPC Industrial Contractors, LLC and Randall Environmental, Inc. for the Eldridge-Wilde Wellfield Pumps and Motors Replacement Project and the Cypress Trails Property Improvements Project.

Status: Complaint filed in Hillsborough County on October 29, 2024. Motion to Dismiss filed by Tampa Bay Water on November 21, 2024 due to improper venue (Hillsborough County instead of Pinellas County as required by the contract). The case was transferred to Pinellas County on December 19, 2024. An Answer and Affirmative Defenses was filed on behalf of Tampa Bay Water on January 14, 2025. The Board approved the filing of a counterclaim at its January 2025 meeting, and it was filed on February 4, 2025. The Plaintiffs filed an Amended Complaint on February 25, 2025. On July 18, 2025, a Motion for Leave to Amend Answer and Counterclaim was filed on behalf of Tampa Bay Water, which was granted on August 7, 2025. Counsel for Tampa Bay Water learned that WPC Industrial Contractors' assets were liquidated and distributed to creditors in a proceeding in Duval

County. As a result, there likely will not be any assets against which to collect a judgment from WPC Industrial Contractors if awarded. Randall Environmental was the only entity named on the applicable insurance policy, allowing pursuit of full relief against it on the counterclaim. Discovery and initial negotiations are ongoing. An Initial Case Management Conference was held on August 6, 2025, and February 2027 is presently targeted for a trial.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM F.3

DATE: October 3, 2025

TO: Board of Directors

FROM: Kelly M. Fernandez, General Counsel

SUBJECT: Legal Services Budget Report through September 2025 - *Receive Report*

SUMMARY

This item presents the status of the budget for the General Counsel and legal services paid in September 2025.

SUGGESTED ACTION

Receive and File.

COST/FUNDING SOURCE

Uniform Rate/Bond Funds

DISCUSSION

Legal expenditures paid in September 2025 total $53,648.10. These expenditures were associated with general operations activities and appropriately paid for from the uniform rate. In September there were expenditures in the amount of $79,914.20 paid from bond funds for legal services for the South Hillsborough Pipeline. Attached is a spreadsheet showing payments made to each law firm.

Attachments (1)

Legals_Expense_September

STATUS OF FY 2025 LEGAL BUDGET - AS OF SEPTEMBER 30, 2025							
Law Firm	**Task**	**PO#**	**PO DATE**	**PO Amount**	**Monthly Expenses**	**Expend to Date**	**Remaining PO Balance**
UNIFROM RATE FUNDS							
BUSH GRAZIANO RICE	Employment Law	20250092	10/1/2024	$25,000.00	$1,789.60	$8,142.18	$16,857.82
BUENAVENTURA LAW	Special Counsel Services	20250372	1/8/2025	$20,000.00	$1,421.00	$1,740.00	$18,260.00
GRAY ROBINSON	Admin, Construction, Contracts, Civil Claims, Property, etc.	20250054	10/1/2024	$25,000.00	$437.50	$14,863.66	$10,136.34
HANKIN & HANKIN	Real Estate	20250654	7/29/2025	$10,000.00	$0.00	$0.00	$10,000.00
NABORS, GIBLIN & NICKERSON	Admin, Construction, Contracts, Civil Claims, Property, etc.	20250019	10/1/2024	$25,000.00	$0.00	$5,563.95	$19,436.05
PERSSON, COHEN, MOONEY,FERNANDEZ	General Counsel Services	20250093 CLOSED	10/1/2024	$136,125.00	$0.00	$123,807.45	$12,317.55
PERSSON, COHEN, MOONEY,FERNANDEZ	General Counsel Services	20250498	3/12/2025	$192,500.00	$50,000.00	$175,000.00	$17,500.00
UNIFORM RATE TOTALS				**$433,625.00**	**$53,648.10**	**$329,117.24**	**$104,507.76**
BOND FUNDS							
CONN & BUENAVENTURA	Property Acquisition and Eminent Domain	20250079 CLOSED	10/1/2024	$12,241.18	$0.00	$12,241.18	$0.00
GRAY ROBINSON	Property Acquisition and Eminent Domain	20230399	10/3/2023	$1,186,900.50	$68,894.20	$495,124.66	$691,775.84
BUENAVENTURA LAW	Property Acquisition and Eminent Domain	20250373	1/8/2025	$94,758.82	$11,020.00	$70,808.70	$23,950.12
BOND FUNDS TOTALS				**$1,293,900.50**	**$79,914.20**	**$578,174.54**	**$715,725.96**

Uniform Rate Funds: Total Budget $725,000 Allocated Funds $423,625 Unallocated Funds $301,375

Bond Funds: *Additional funds are available from bond funds as needed and fees associated with Segment B are reimbursed by Hillsborough County pursuant to the JPA. A combined additional $836,900.50 was added to PO 20230399.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM F.4

DATE: September 30, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Christina Sackett, Chief Financial Officer

SUBJECT: Comprehensive Check List with Delegated Check Approval Items for September 2025 - *Receive Report*

SUMMARY

Attached is a list of all checks and wire transfers written for the months of September 2025. Additional information is provided for checks over $50,000 and for delegated approval items.

SUGGESTED ACTION

Receive and File.

COST/FUNDING SOURCE

N/A

DISCUSSION

The attached report lists all checks and wire transfers which have been written during the months of September 2025. To provide the Board additional information, a description is included for all delegated approval item payments. Delegated approval items were authorized by the General Manager under his delegated approval authority and are marked “Delegated Approval”.

Items with delegated approval are generally items such as payroll taxes, Florida Retirement System, utilities, and so forth, which are approved by the board in the budget process but for which there is not a

specific approved contract or agenda item.

By policy, the General Manager is authorized to approve all expenditures of $100,000 or less. All contractual obligations or purchase orders issued in excess of $100,000 are approved by the Board through the contract approval, agenda approval, or budget approval processes. The comprehensive check list includes a description for all payments over $50,000 and identifies those items previously approved by the board with “Receive”.

Attachments (1)

2025 SEPT CHECK REGISTER

TAMPA BAY WATER

CHECK REGISTER - SEP 2025

CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
637630	09/03/2025	ADVANCED ENVIRONMENTAL LABORATORIES, INC	590.00		
637631	09/03/2025	ADVANCED ROOFING, INC.	774.27		
637632	09/03/2025	AMERICAN FAMILY LIFE ASSURANCE COMPANY OF COLUMBUS	1,329.52		
637633	09/03/2025	AIR MECHANICAL & SERVICE CORP.	1,445.47		
637634	09/03/2025	AIRGAS USA, LLC	56,704.39	CHEMICAL CARBON DIOXIDE	RECEIVE
637635	09/03/2025	UNIVERSAL PROTECTION SERVICE LP	116,748.29	SECURITY SRV 6/27-7/31/25	RECEIVE
637636	09/03/2025	ALLIED UNIVERSAL CORPORATION	85,716.71	CHEMICAL - SODIUM HYDROXIDE	RECEIVE
637637	09/03/2025	BLACK & VEATCH CORPORATION	87,984.25	IPM FEASIBILITY STUDY, & ELDRIDGE WILDE WF PROJ'S	RECEIVE
637638	09/03/2025	MCTEMPO INVESTMENT	180.00		
637639	09/03/2025	STEPHEN CANTIN	251.50		
637640	09/03/2025	CARAHSOFT TECHNOLOGY CORP	58,790.81	I.T. SENTINELONE ENDPOINT PROTECTION	RECEIVE
637641	09/03/2025	CARMEUSE LIME & STONE, INC.	126,646.56	CHEMICAL - QUICKLIME	RECEIVE
637642	09/03/2025	CDS ANALYTICAL LLC	3,381.00		
637643	09/03/2025	CHEMICAL SYSTEMS OF ORLANDO, INC.	22,377.00		
637644	09/03/2025	CHILDREN'S MUSEUM OF TAMPA, INC.	5,000.00		
637645	**09/03/2025**	**CITY OF CLEARWATER UTILITIES**	**2,757.05**	**UTILITY PAYMENT**	**DELEGATED APPROVAL**
637646	09/03/2025	DIALOGUE PUBLIC RELATIONS, LLC	9,865.00		
637647	**09/03/2025**	**DUKE ENERGY CORPORATION**	**52,598.43**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
637648	09/03/2025	ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION	4,892.72		
637649	09/03/2025	EYEMED VISION CARE	1,353.67		
637650	09/03/2025	FEDERAL EXPRESS CORPORATION	8.97		
637651	09/03/2025	FISHER SCIENTIFIC COMPANY LLC	727.88		
637652	09/03/2025	FLORIDA DEPT OF MANAGEMENT SERVICES	20,582.32		
637653	09/03/2025	FLORIDA DEPT OF STATE	141.12		
637654	09/03/2025	FORESTRY SUPPLIERS INC	215.81		
637655	**09/03/2025**	**FRONTIER COMMUNICATIONS**	**308.65**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
637656	**09/03/2025**	**FRONTIER COMMUNICATIONS**	**680.00**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
637657	09/03/2025	GSI ENVIRONMENTAL, INC.	6,111.40		
637658	09/03/2025	HACH COMPANY	10,615.47		
637659	09/03/2025	HARRISON CONTRACTING CO., INC.	2,890.00		
637660	09/03/2025	HAWKINS, INC.	7,562.25		
637661	09/03/2025	HAYS HOLDING CORPORATION	3,240.96		
637662	09/03/2025	HAZEN & SAWYER, P.C.	8,870.40		
637663	09/03/2025	HAZEN & SAWYER, P.C.	18,257.80		
637664	09/03/2025	ARROW EXTERMINATORS	79.00		
637665	09/03/2025	ARROW EXTERMINATORS	500.00		
637666	09/03/2025	IDEXX LABORATORIES INC	786.59		
637667	09/03/2025	INTERACID NORTH AMERICA, INC.	49,626.23		

TAMPA BAY WATER

CHECK REGISTER - SEP 2025

CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
637668	09/03/2025	JACOBS ENGINEERING GROUP INC	43,000.00		
637669	09/03/2025	JF ACQUISTION LLC	1,538.39		
637670	09/03/2025	KEMIRA WATER SOLUTIONS, INC.	81,580.62	CHEMICAL - FERRIC SULFATE	RECEIVE
637671	09/03/2025	LHOIST NORTH AMERICA OF ALABAMA, LLC	10,592.47		
637672	09/03/2025	MATHESON TRI-GAS INC.	18,073.22		
637673	**09/03/2025**	**MICHIGAN STATE DISBURSEMENT UNIT**	**368.51**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
637674	09/03/2025	BRANDON MOORE	982.61		
637675	09/03/2025	NETWRIX CORPORATION	7,217.47		
637676	09/03/2025	ODYSSEY MANUFACTURING COMPANY	102,001.70	CHEMICAL - SODIUM HYPOCHLORITE	RECEIVE
637677	09/03/2025	ODYSSEY MANUFACTURING COMPANY	21,474.50		
637678	09/03/2025	PINELLAS COUNTY BOARD OF COUNTY COMMISSIONERS	10,868.74		
637679	09/03/2025	PIPER FIRE PROTECTION, INC.	2,714.00		
637680	09/03/2025	POLYDYNE INC	20,196.00		
637681	09/03/2025	PRITCHETT STEINBECK GROUP, INC.	22,816.14		
637682	09/03/2025	RAFTELIS FINANCIAL CONSULTANTS, INC.	12,252.59		
637683	09/03/2025	RICOH USA, INC.	2,890.80		
637684	09/03/2025	RYAN HERCO PRODUCTS CORPORATION	169.40		
637685	09/03/2025	SHI INTERNATIONAL CORP	18,364.26		
637686	09/03/2025	SMITH INDUSTRIES INC	1,479.95		
637687	09/03/2025	NATHAN SPRUNGER	446.04		
637688	**09/03/2025**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**326.03**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
637689	**09/03/2025**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**346.15**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
637690	**09/03/2025**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**194.28**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
637691	**09/03/2025**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**466.79**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
637692	**09/03/2025**	**TAMPA ELECTRIC CO**	**1,048,610.45**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
637693	**09/03/2025**	**TAMPA ELECTRIC CO**	**33,442.88**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
637694	09/03/2025	TK ELEVATOR CORPORATION	4,103.39		
637695	09/03/2025	TLC DIVERSIFIED, INC.	426,079.75	CYP CRK WTP CHEMICAL PIPING CONSTRUCTION PRJ	RECEIVE
637696	09/03/2025	TRINOVA INC.	2,586.34		
637697	09/03/2025	UNIFIRST CORPORATION	76.29		
637698	09/03/2025	UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL	20,128.73		
637699	09/03/2025	VEOLIA WATER NORTH AMERICA	2,323,648.69	SWTP JULY O&M, OXONE GENERATOR PRJ & SWTP EXPANSION PRJ	RECEIVE
637700	09/03/2025	WADE-TRIM INC	5,999.07		
637701	09/03/2025	WATER & AIR RESEARCH, INC.	4,308.25		
637702	09/03/2025	WSP USA INC	2,722.50		
WIRE	**09/05/2025**	**FLORIDA DIV OF RETIREMENT CASHIER**	**223,591.22**	**FEDERAL PAYROLL TAX DEPOSIT**	**DELEGATED APPROVAL**
WIRE	**09/05/2025**	**INTERNAL REVENUE SERVICE**	**145,263.72**	**FEDERAL PAYROLL TAX DEPOSIT**	**DELEGATED APPROVAL**
637703	09/10/2025	ACCESSIBLE360 LLC	750.00		

TAMPA BAY WATER

CHECK REGISTER - SEP 2025

CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
637704	09/10/2025	ACLARIAN LLC	675.00		
637705	09/10/2025	ADVANCED ENVIRONMENTAL LABORATORIES, INC	270.00		
637706	09/10/2025	AECOM TECHNICAL SERVICES, INC.	12,778.00		
637707	09/10/2025	AIR CENTERS OF FLORIDA, INC.	9,611.00		
637708	09/10/2025	AIR MECHANICAL & SERVICE CORP.	18,269.42		
637709	09/10/2025	AIRGAS USA, LLC	67,460.87	CHEMICAL - CARBON DIOXIDE	RECEIVE
637710	09/10/2025	AIRGAS SPECIALTY PRODUCTS, INC.	39,531.68		
637711	09/10/2025	UNIVERSAL PROTECTION SERVICE LP	93,505.25	SECURITY SRV 8/1 -8/28/25	RECEIVE
637712	09/10/2025	ALLIED UNIVERSAL CORPORATION	84,108.02	CHEMICAL - SODIUM HYDROXIDE	RECEIVE
637713	09/10/2025	ALLIED UNIVERSAL CORPORATION	3,042.87		
637714	09/10/2025	AMERICAN EXPRESS TRAVEL RELATED SERVICES CO INC	783.54		
637715	09/10/2025	FINGER LAKES BUSINESS SERVICES, INC.	90.00		
637716	09/10/2025	APPLIED ECOLOGY, INC	18,817.30		
637717	**09/10/2025**	**BRIGHT HOUSE NETWORKS LLC**	**1,279.68**	**UTILITIES - INTERNET**	**DELEGATED APPROVAL**
637718	09/10/2025	BUENAVENTURA LAW, PLLC	2,030.01		
637719	09/10/2025	CARMEUSE LIME & STONE, INC.	88,189.96	CHEMICAL - QUICKLIME	RECEIVE
637720	09/10/2025	CDW LLC	382,904.08	I.T. R&R PROJ AND DATA PROTECTION RETENTION SRV	RECEIVE
637721	09/10/2025	CHEMICAL SYSTEMS OF ORLANDO, INC.	22,377.00		
637722	09/10/2025	CINTAS CORPORATION	320.00		
637723	09/10/2025	CITY OF CLEARWATER POLICE DEPT	260.00		
637724	09/10/2025	COLENE ROGERS	18,866.00		
637725	09/10/2025	DG INVESTMENT INTERMEDIATE HOLDINGS 2, INC.	3,293.30		
637726	09/10/2025	EVELYN DOOLEY	200.57		
637727	**09/10/2025**	**DUKE ENERGY CORPORATION**	**35,135.70**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
637728	09/10/2025	ECOHYDROLOGIX LLC	17,043.75		
637729	09/10/2025	FEDERAL EXPRESS CORPORATION	103.02		
637730	09/10/2025	FISHER SCIENTIFIC COMPANY LLC	70.74		
637731	09/10/2025	FLATWOODS CONSULTING GROUP, INC.	1,425.00		
637732	09/10/2025	FLORIDA TREND	8,500.00		
637733	09/10/2025	FLUID CONTROL SPECIALTIES, INC.	6,708.00		
637734	**09/10/2025**	**FRONTIER COMMUNICATIONS**	**341.95**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
637735	09/10/2025	GANNETT FLEMING, INC	13,598.17		
637736	09/10/2025	JOHN H GRANGER MAINTENANCE & CONSTRUCTION, INC.	11,500.00		
637737	09/10/2025	HACH COMPANY	7,761.78		
637738	09/10/2025	HAWKINS, INC.	2,782.50		
637739	09/10/2025	HAYS HOLDING CORPORATION	21,717.88		
637740	09/10/2025	HERC RENTALS, INC.	1,720.00		
637741	**09/10/2025**	**HILLSBOROUGH COUNTY**	**22.03**	**UTILITY PAYMENT**	**DELEGATED APPROVAL**

TAMPA BAY WATER

CHECK REGISTER - SEP 2025

CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
637742	09/10/2025	ARROW EXTERMINATORS	220.00		
637743	09/10/2025	INTERACID NORTH AMERICA, INC.	29,851.44		
637744	09/10/2025	LUCIE JOURET	49.00		
637745	09/10/2025	KEMIRA WATER SOLUTIONS, INC.	97,150.50	CHEMICAL - FERRIC SULFATE	RECEIVE
637746	09/10/2025	KEMIRA WATER SOLUTIONS, INC.	47,350.12		
637747	09/10/2025	STEVEN KROESEN	62.30		
637748	09/10/2025	LDM LAWN SERVICE, LLC	890.00		
637749	09/10/2025	LHOIST NORTH AMERICA OF ALABAMA, LLC	21,633.80		
637750	09/10/2025	MATHESON TRI-GAS INC.	28,015.38		
637751	09/10/2025	TANJA MILIC	975.00		
637752	09/10/2025	NEWARK CORPORATION	8,724.52		
637753	09/10/2025	NORTHWEST PIPE COMPANY	1,678,048.68	ODP STELL CASING SEGMENT A PROJ	RECEIVE
637754	09/10/2025	ODYSSEY MANUFACTURING COMPANY	102,262.70	CHEMICAL - SODIUM HYPOCHLORITE	RECEIVE
637755	09/10/2025	ODYSSEY MANUFACTURING COMPANY	95,804.40	CHEMICAL - SODIUM HYPOCHLORITE	RECEIVE
637756	09/10/2025	ODYSSEY MANUFACTURING COMPANY	35,875.90		
637757	09/10/2025	OFFICE DEPOT	863.02		
637758	09/10/2025	PAFF TREE SERVICE, LLC	277.00		
637759	09/10/2025	PASCO COUNTY OFFICES	36,669.77		
637760	09/10/2025	PCL CONSTRUCTION, INC.	72,341.81	HSPS CHEMICAL PIPING REPLACEMENT PROJ	RECEIVE
637761	09/10/2025	PERSSON, COHEN, MOONEY, FERNANDEZ & JACKSON, P.A.	25,000.00		
637762	09/10/2025	PIPER FIRE PROTECTION, INC.	4,448.68		
637763	09/10/2025	PVS TECHNOLOGIES, INC.	11,751.68		
637764	09/10/2025	MALIQUE RANKIN	149.35		
637765	09/10/2025	REPUBLIC SERVICES OF FLORIDA	809.78		
637766	09/10/2025	RICOH USA, INC.	660.06		
637767	09/10/2025	STANTEC CONSULTING SERVICES, INC.	9,898.75		
637768	09/10/2025	SUNSHINE STATE ONE CALL OF FLORIDA INC	249.35		
637769	**09/10/2025**	**TAMPA ELECTRIC CO**	**224,207.73**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
637770	**09/10/2025**	**TAMPA ELECTRIC CO**	**1,631.60**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
637771	09/10/2025	MAINZER MANAGEMENT INC	974.00		
637772	09/10/2025	THATCHER CHEMICAL OF FLORIDA INC.	12,565.60		
637773	09/10/2025	UNIFIRST CORPORATION	162.95		
637774	09/10/2025	UNIVERSITY OF CENTRAL FLORIDA	12,857.14		
637775	09/10/2025	UNIVERSITY OF SOUTH FLORIDA	20,000.00		
637776	09/10/2025	USABLE LIFE	6,911.75		
637777	09/10/2025	NATIONAL EC SERVICES, INC.	398.50		
637778	**09/10/2025**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**12.60**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
637779	**09/10/2025**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**2,650.76**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**

TAMPA BAY WATER

CHECK REGISTER - SEP 2025

CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
637780	**09/10/2025**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**3,009.86**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
637781	**09/10/2025**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**8,722.86**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
637782	**09/10/2025**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**2,053.42**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
637783	**09/10/2025**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**9,233.10**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
637784	09/10/2025	W W GRAINGER INC	237.40		
637785	09/10/2025	WADE-TRIM INC	11,270.90		
637786	09/10/2025	WASTE MANAGEMENT INC. OF FLORIDA	480.85		
637787	09/10/2025	WASTE MANAGEMENT INC. OF FLORIDA	657.89		
637788	**09/10/2025**	**WITHLACOOCHEE RIVER ELECTRIC COOPERATIVE, INC.**	**117,695.82**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
637789	09/10/2025	XTREMELY CLEAN JANITORIAL SERVICES, LLC.	21,086.57		
WIRE	**09/11/2025**	**COF MITIGATION HOLDINGS LLC**	**1,350.00**		
637790	09/17/2025	AECOM TECHNICAL SERVICES, INC.	11,958.00		
637791	09/17/2025	AIR MECHANICAL & SERVICE CORP.	6,478.70		
637792	09/17/2025	AIRGAS USA, LLC	46,816.28		
637793	09/17/2025	AIRGAS SOUTH, INC.	337.87		
637794	09/17/2025	AIRGAS SPECIALTY PRODUCTS, INC.	7,759.00		
637795	09/17/2025	ALLIED UNIVERSAL CORPORATION	68,916.17	CHEMICAL - SODIUM HYDROXIDE	RECEIVE
637796	09/17/2025	J.C. EHRLICH CO.	256.39		
637797	09/17/2025	AMERICAN SPIRALWELD PIPE CO.	6,511,106.25	SO HILLSB PIPELINE ODP STEEL PIPE PROJ	RECEIVE
637798	09/17/2025	AMICI ENGINEERING CONTRACTORS, LLC	44,838.11		
637799	09/17/2025	APPLIED ECOLOGY, INC	1,874.28		
637800	09/17/2025	ARCADIS US INC.	52,619.50	I.T. DATA MGMT STRATEGY PROJ	RECEIVE
637801	**09/17/2025**	**AT&T MOBILITY II, LLC**	**72.48**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
637802	09/17/2025	BLACK & VEATCH CORPORATION	39,218.50		
637803	09/17/2025	BUENAVENTURA LAW, PLLC	3,566.99		
637804	09/17/2025	BUSH GRAZIANO RICE & HEARING, P.A.	1,789.60		
637805	09/17/2025	MCTEMPO INVESTMENT	1,111.00		
637806	09/17/2025	CARMEUSE LIME & STONE, INC.	36,886.24		
637807	09/17/2025	CAROLLO ENGINEERS INC	12,463.75		
637808	09/17/2025	CATALYST COMMUNICATIONS GROUP LLC	1,468.75		
637809	09/17/2025	CHANDLER ASSET MANAGEMENT, INC.	6,165.38		
637810	09/17/2025	INTERNATIONAL CHEMTEX CORPORATION	1,116.43		
637811	09/17/2025	DG INVESTMENT INTERMEDIATE HOLDINGS 2, INC.	5,907.22		
637812	09/17/2025	DEWBERRY ENGINEERS, INC	22,978.93		
637813	09/17/2025	THE DOOR WHISPERER LLC	7,488.00		
637814	09/17/2025	ECHOSAT, INC.	47.74		
637815	09/17/2025	ECOHYDROLOGIX LLC	23,067.95		
637816	09/17/2025	ELECTRIC GAS INDUSTRIES ASSOCIATION	52,373.07	DEMAND MGMNT 3RD PARTY ADMIN SUPPORT	RECEIVE

TAMPA BAY WATER

CHECK REGISTER - SEP 2025

CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
637817	09/17/2025	ENTERPRISE FM TRUST	13,975.53		
637818	09/17/2025	ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION	34,990.98		
637819	09/17/2025	FEDERAL EXPRESS CORPORATION	29.04		
637820	09/17/2025	FISHER SCIENTIFIC COMPANY LLC	1,952.74		
637821	09/17/2025	FLORIDA TREE AND PROPERTY MAINTENANCE	35,976.50		
637822	**09/17/2025**	**FRONTIER COMMUNICATIONS**	**130.98**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
637823	**09/17/2025**	**FRONTIER COMMUNICATIONS**	**214.92**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
637824	**09/17/2025**	**FRONTIER COMMUNICATIONS**	**179.49**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
637825	**09/17/2025**	**FRONTIER COMMUNICATIONS**	**179.49**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
637826	09/17/2025	FSAWWA	2,280.00		
637827	09/17/2025	GARNEY COMPANIES, INC.	2,408,551.29	SO HILLSB PIPELINE GMP #2 PROJ	RECEIVE
637828	09/17/2025	JEFF GEURINK	1,420.00		
637829	09/17/2025	JOHN H GRANGER MAINTENANCE & CONSTRUCTION, INC.	4,080.00		
637830	09/17/2025	HACH COMPANY	585.32		
637831	09/17/2025	HAWKINS, INC.	2,831.50		
637832	09/17/2025	HAYS HOLDING CORPORATION	11,165.92		
637833	09/17/2025	HAZEN & SAWYER, P.C.	45,101.00		
637834	**09/17/2025**	**HILLSBOROUGH COUNTY**	**19.36**	**UTILITY PAYMENT**	**DELEGATED APPROVAL**
637835	**09/17/2025**	**HILLSBOROUGH COUNTY**	**83.44**	**UTILITY PAYMENT**	**DELEGATED APPROVAL**
637836	09/17/2025	INFOARMOR, INC.	1,532.55		
637837	09/17/2025	INTERACID NORTH AMERICA, INC.	9,806.01		
637838	09/17/2025	JONES WALKER, LLP	6,666.67		
637839	09/17/2025	KAT CONSTRUCTION & MATERIALS, INC.	496,850.00	ELDRIDGE WILDE WF PUMPS & MOTORS PROJ	RECEIVE
637840	09/17/2025	KEMIRA WATER SOLUTIONS, INC.	97,209.13	CHEMICAL - FERRIC SULFATE	RECEIVE
637841	09/17/2025	KEMIRA WATER SOLUTIONS, INC.	54,164.55	CHEMICAL - FERRIC SULFATE	RECEIVE
637842	09/17/2025	STEVEN KROESEN	22.97		
637843	09/17/2025	MATHESON TRI-GAS INC.	26,621.04		
637844	**09/17/2025**	**MICHIGAN STATE DISBURSEMENT UNIT**	**368.51**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
637845	09/17/2025	NEW DIRECTIONS BEHAVIORAL HEALTH LLC	1,520.00		
637846	09/17/2025	NORTHWEST PIPE COMPANY	191,401.20	SO HILLBS ODP STEEL CASING PIPELINE PROJ	RECEIVE
637847	09/17/2025	ODYSSEY MANUFACTURING COMPANY	100,113.80	CHEMICAL - SODIUM HYPOCHLORITE	RECEIVE
637848	09/17/2025	ODYSSEY MANUFACTURING COMPANY	10,560.35		
637849	09/17/2025	OFFICE DEPOT	468.80		
637850	09/17/2025	PALMA CEIA LOCK & KEY, INC.	264.80		
637851	09/17/2025	PDQ INTERMEDIATE, INC	5,940.00		
637852	09/17/2025	PINELLAS COUNTY BOARD OF COUNTY COMMISSIONERS	52,431.88	FLORIDA FRIENDLY PROGRAM	RECEIVE
637853	09/17/2025	PIPER FIRE PROTECTION, INC.	780.00		
637854	09/17/2025	POLYDYNE INC	8,580.00		

TAMPA BAY WATER

CHECK REGISTER - SEP 2025

CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
637855	09/17/2025	PROVANTAGE LLC	19,071.44		
637856	09/17/2025	QUEST ECOLOGY INC	40,706.00		
637857	09/17/2025	RAZORBACK LLC	189,800.00	SCIBS & MBWTP CLEANING & PREVENTATIVE MAINT	RECEIVE
637858	09/17/2025	RING POWER CORPORATION	5,467.70		
637859	09/17/2025	RING POWER CORPORATION	4,494.00		
637860	09/17/2025	SIGN-AGE OF TAMPA BAY, INC.	1,294.76		
637861	09/17/2025	STAG INDUSTRIES LLC	19,834.38		
637862	09/17/2025	STANDARD INSURANCE CO	45,983.42		
637863	09/17/2025	STARBOARD CONSULTING LLC	48,500.00		
637864	**09/17/2025**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**326.03**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
637865	**09/17/2025**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**346.15**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
637866	**09/17/2025**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**194.28**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
637867	**09/17/2025**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**466.79**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
637868	09/17/2025	KEITH SURRATT	400.00		
637869	09/17/2025	TAMPA ARMATURE WORKS INC	4,765.00		
637870	**09/17/2025**	**CITY OF TAMPA OFFICES**	**21.87**	**UTILITY PAYMENT**	**DELEGATED APPROVAL**
637871	**09/17/2025**	**TAMPA ELECTRIC CO**	**36,055.25**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
637872	**09/17/2025**	**TAMPA ELECTRIC CO**	**1,305.78**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
637873	09/17/2025	SYLINT GROUP INC	2,993.00		
637874	09/17/2025	UNIFIRST CORPORATION	222.32		
637875	09/17/2025	UNIVERSITY OF SOUTH FLORIDA	14,999.00		
637876	09/17/2025	US WATER-ACCIONA SEAWATER DESLINATION PARTNERS	1,303,018.20	JULY & AUGUST DESAL O&M	RECEIVE
637877	09/17/2025	V&A CONSULTING ENGINEERING, INC.	60,196.90	CYP CRK PS RELAY UPGRAD & SYSTEM HYDRAULIC REPORTING	RECEIVE
637878	09/17/2025	VANASSE HANGEN BRUSTLIN INC	13,165.00		
637879	**09/17/2025**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**20.02**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
637880	**09/17/2025**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**3,371.50**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
637881	09/17/2025	VITAL RECORDS HOLDINGS, LLC	476.16		
637882	09/17/2025	WASTE MANAGEMENT INC. OF FLORIDA	2,327.74		
637883	09/17/2025	WILDLANDS CONSERVATION, INC.	7,244.60		
637884	09/17/2025	WISE CONSULTING GROUP	10,235.00		
637885	09/17/2025	WRIGHT EXPRESS CORPORATION	12,542.36		
637886	09/17/2025	WSP USA INC	5,085.00		
WIRE	**09/18/2025**	**BOOKY OREN GLOBAL WATER TECHNOLOGIES LTD.**	**12,464.00**		
WIRE	**09/18/2025**	**ALAFIA RIVER WETLAND MITIGATION BANK INC**	**259,500.00**		
WIRE	**09/19/2025**	**INTERNAL REVENUE SERVICE**	**146,868.10**	**FEDERAL PAYROLL TAX DEPOSIT**	**DELEGATED APPROVAL**
637887	09/24/2025	22ND CENTURY TECHNOLOGIES, INC.	1,854.72		
637888	09/24/2025	ADVANCED ENVIRONMENTAL LABORATORIES, INC	510.00		
637889	09/24/2025	AIR MECHANICAL & SERVICE CORP.	416.50		

TAMPA BAY WATER

CHECK REGISTER - SEP 2025

CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
637890	09/24/2025	AIRGAS USA, LLC	3,040.02		
637891	09/24/2025	ARCHER WESTERN CONSTRUCTION LLC	152,000.00	HSPS BALL VALVE REPLACEMENT CONSTRUCTION PRJ	RECEIVE
637892	09/24/2025	BLACK & VEATCH CORPORATION	200,901.00	SWTP EXPANSION PRJ, IMP SRV PRJ & SO HILLSB PIPELINE PRJ	RECEIVE
637893	**09/24/2025**	**BRIGHT HOUSE NETWORKS LLC**	**1,271.37**	**UTILITIES - INTERNET**	**DELEGATED APPROVAL**
637894	09/24/2025	CDW LLC	3,217.76		
637895	09/24/2025	CORE & MAIN LP	487,559.00	SHP ODP VALVES PRJ	RECEIVE
637896	09/24/2025	ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION	48,613.27		
637897	09/24/2025	FEDERAL EXPRESS CORPORATION	78.41		
637898	09/24/2025	FERGUSON ENTERPRISES INC	9,000.00		
637899	09/24/2025	FISHER SCIENTIFIC COMPANY LLC	4,088.36		
637900	09/24/2025	FLORIDA DEPT OF MANAGEMENT SERVICES	22,407.57		
637901	09/24/2025	FLORIDA DEPT OF STATE	55.16		
637902	09/24/2025	GEOPOINT SURVEYING, INC.	4,684.56		
637903	09/24/2025	HACH COMPANY	5,076.65		
637904	09/24/2025	HAYS HOLDING CORPORATION	13,136.98		
637905	09/24/2025	ARROW EXTERMINATORS	79.00		
637906	09/24/2025	TAYLOR KLINKO	491.60		
637907	09/24/2025	MCKIM & CREED PA	56,698.15	CYC WF IMPROVEMENTS PRJ	RECEIVE
637908	09/24/2025	PAFF TREE SERVICE, LLC	16,335.00		
637909	09/24/2025	PIPER FIRE PROTECTION, INC.	3,332.51		
637910	09/24/2025	RISK MANAGEMENT ASSOCIATES, INC	16,720.05		
637911	09/24/2025	ATLANTA FORKLIFTS INC.	994.81		
637912	09/24/2025	RING POWER CORPORATION	6,610.81		
637913	09/24/2025	SHI INTERNATIONAL CORP	40,185.21		
637914	09/24/2025	JAMES SMITH	360.10		
637915	09/24/2025	STANTEC CONSULTING SERVICES, INC.	40,890.48		
637916	**09/24/2025**	**TAMPA ELECTRIC CO**	**3,506.01**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
637917	09/24/2025	UNIVERSITY OF CENTRAL FLORIDA	14,480.00		
637918	09/24/2025	US BANK NATIONAL ASSOCIATION	2,000.00		
637919	09/24/2025	US WATER-ACCIONA SEAWATER DESLINATION PARTNERS	58,420.46	DESAL ROOF REPAIR PRJ	RECEIVE
637920	**09/24/2025**	**VERIZON FLORIDA INC**	**36,856.28**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
637921	09/24/2025	VITAL RECORDS HOLDINGS, LLC	39.45		
637922	09/24/2025	WISE CONSULTING GROUP	11,628.00		
637923	**09/24/2025**	**WITHLACOOCHEE RIVER ELECTRIC COOPERATIVE, INC.**	**43,513.43**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
637924	09/30/2025	ADVANCED ROOFING, INC.	37,342.50		
637925	09/30/2025	AIRGAS USA, LLC	74,841.29	CHEMICAL - CARBON DIOXIDE	RECEIVE
637926	09/30/2025	AIRGAS SPECIALTY PRODUCTS, INC.	25,065.18		
637927	09/30/2025	ALLIED UNIVERSAL CORPORATION	77,794.46	CHEMICAL - SODIUM HYDROXIDE	RECEIVE

TAMPA BAY WATER

CHECK REGISTER - SEP 2025

CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
637928	09/30/2025	ALLIED UNIVERSAL CORPORATION	13,334.98		
637929	09/30/2025	APG ELECTRIC, INC.	98,661.57	CLW BOARDROOM AUDIO VISUAL SYSTEM UPGRADE	RECEIVE
637930	09/30/2025	BIG SEA, INC.	8,900.00		
637931	09/30/2025	BLACK & VEATCH CORPORATION	69,460.75	IPM CIP PROJ	RECEIVE
637932	**09/30/2025**	**BRIGHT HOUSE NETWORKS LLC**	**3,208.60**	**UTILITIES - INTERNET**	**DELEGATED APPROVAL**
637933	09/30/2025	CARMEUSE LIME & STONE, INC.	112,797.41	CHEMICAL - QUICKLIME	RECEIVE
637934	09/30/2025	CAROLLO ENGINEERS INC	3,629.45		
637935	09/30/2025	AARON CARTER	200.00		
637936	09/30/2025	CATALYST COMMUNICATIONS GROUP LLC	5,125.00		
637937	09/30/2025	CHEMICAL SYSTEMS OF ORLANDO, INC.	44,754.00		
637938	**09/30/2025**	**CITY OF CLEARWATER UTILITIES**	**2,757.05**	**UTILITY PAYMENT**	**DELEGATED APPROVAL**
637939	09/30/2025	CUMBEY & FAIR, INC.	18,216.00		
637940	09/30/2025	DEWBERRY ENGINEERS, INC	28,177.44		
637941	09/30/2025	DIALOGUE PUBLIC RELATIONS, LLC	17,380.00		
637942	**09/30/2025**	**DUKE ENERGY CORPORATION**	**38,826.04**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
637943	09/30/2025	ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION	4,419.00		
637944	09/30/2025	FISHER SCIENTIFIC COMPANY LLC	2,114.67		
637945	09/30/2025	BLUE CROSS BLUE SHIELD OF FLORIDA	331,564.02	PPO, HMO & NOTHSTEIN MONTH PREM - OCT 2025	RECEIVE
637946	09/30/2025	FRONT LINE POWER LLC	40,718.66		
637947	**09/30/2025**	**FRONTIER COMMUNICATIONS**	**680.00**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
637948	**09/30/2025**	**FRONTIER COMMUNICATIONS**	**341.95**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
637949	09/30/2025	GANNETT FLEMING, INC	93,780.00	3RD PARTY RESERVOID RAM SAFETY ENG WORK	RECEIVE
637950	09/30/2025	HACH COMPANY	17,499.58		
637951	09/30/2025	HAWKINS, INC.	17,544.00		
637952	09/30/2025	HAYS HOLDING CORPORATION	12,716.25		
637953	09/30/2025	INTERACID NORTH AMERICA, INC.	44,674.19		
637954	09/30/2025	KELLER AMERICA, INC	11,313.90		
637955	09/30/2025	KEMIRA WATER SOLUTIONS, INC.	95,769.90	CHEMICAL - FERRIC SULFATE	RECEIVE
637956	09/30/2025	KEMIRA WATER SOLUTIONS, INC.	72,800.76	CHEMICAL - FERRIC SULFATE	RECEIVE
637957	09/30/2025	LHOIST NORTH AMERICA OF ALABAMA, LLC	22,489.24		
637958	09/30/2025	PIER AQUARIUM INC.	5,591.97		
637959	09/30/2025	MATHESON TRI-GAS INC.	23,739.71		
637960	**09/30/2025**	**MICHIGAN STATE DISBURSEMENT UNIT**	**368.51**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
637961	09/30/2025	MUTUAL OF OMAHA COMPANY	2,707.94		
637962	09/30/2025	ODYSSEY MANUFACTURING COMPANY	103,218.25	CHMICAL - SODIUM HYPOCHLORITE	RECEIVE
637963	09/30/2025	ODYSSEY MANUFACTURING COMPANY	101,582.65	CHMICAL - SODIUM HYPOCHLORITE	RECEIVE
637964	09/30/2025	ODYSSEY MANUFACTURING COMPANY	61,279.90	CHMICAL - SODIUM HYPOCHLORITE	RECEIVE
637965	09/30/2025	ODYSSEY MANUFACTURING COMPANY	14,124.45		

TAMPA BAY WATER

CHECK REGISTER - SEP 2025

CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
637966	09/30/2025	PALMA CEIA LOCK & KEY, INC.	3,540.96		
637967	09/30/2025	PIPER FIRE PROTECTION, INC.	1,191.00		
637968	09/30/2025	DONALD J POLMANN	1,500.00		
637969	09/30/2025	PVS TECHNOLOGIES, INC.	11,823.84		
637970	09/30/2025	RAFTELIS FINANCIAL CONSULTANTS, INC.	12,914.92		
637971	09/30/2025	RED GATE SOFTWARE. LTD	6,435.00		
637972	09/30/2025	RING POWER CORPORATION	6,899.35		
637973	09/30/2025	STANTEC CONSULTING SERVICES, INC.	17,762.52		
637974	**09/30/2025**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**326.03**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
637975	**09/30/2025**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**346.15**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
637976	**09/30/2025**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**194.28**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
637977	**09/30/2025**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**466.79**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
637978	**09/30/2025**	**TAMPA ELECTRIC CO**	**1,299,315.16**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
637979	**09/30/2025**	**TAMPA ELECTRIC CO**	**67,565.20**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
637980	**09/30/2025**	**TAMPA ELECTRIC CO**	**12,299.49**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
637981	**09/30/2025**	**TAMPA ELECTRIC CO**	**136.85**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
637982	09/30/2025	TEAM TECHNICAL SERVICES	1,073.93		
637983	09/30/2025	THATCHER CHEMICAL OF FLORIDA INC.	6,293.96		
637984	09/30/2025	TLC DIVERSIFIED, INC.	76,264.59	CYC WTP CHEMICAL PIPING CONSTRUCTION PROJ	RECEIVE
637985	09/30/2025	UNIFIRST CORPORATION	165.02		
637986	09/30/2025	USGS	35,350.00		
637987	09/30/2025	VANASSE HANGEN BRUSTLIN INC	5,130.40		
637988	09/30/2025	VEOLIA WATER NORTH AMERICA	1,965,340.26	SWTP AUG O&M, SCADA SYSTEM UPGRADE & EXPANSION PROJ	RECEIVE
637989	09/30/2025	NATIONAL EC SERVICES, INC.	2,569.08		
637990	09/30/2025	KADEN WAGNER	347.57		
637991	09/30/2025	WSP USA INC	2,035.00		
637992	09/30/2025	XTREMELY CLEAN JANITORIAL SERVICES, LLC.	11,481.85		
369 CHECKS			28,650,388.98		

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM F.5

DATE: October 1, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Christina Sackett, Chief Financial Officer

SUBJECT: Disposition of Fixed Assets for September 2025 - *Receive Report*

SUMMARY

Attached is a list of fixed assets and minor equipment removed from service and approved by the General Manager for disposal in accordance with agency policy in the month of September 2025.

SUGGESTED ACTION

Receive and File.

COST/FUNDING SOURCE

N/A

DISCUSSION

Items for disposal:

- The Teledyne Tekmar Atomx Sampler was no longer cost-effective to maintain and has since been replaced with a newer unit.
- The Hach SC200 Controller w/ DO Sensor was no longer in operational condition and has been cannibalized for its useful parts.
- The 2016 Chevy Equinox vehicle was no longer cost-efficient to maintain. It has been replaced with a newer vehicle that better meets the needs of the agency.

- The Swan Turbiwell AMI monitor was no longer in operational condition and was discarded.
- The Denora Water Titrator was no longer in operational condition and has been cannibalized for its useful parts.
- The surplus conference room/meeting chairs were disposed as they were no longer needed for agency use.
- The miscellaneous surplus computer equipment was obsolete and was no longer needed by the agency.

Attachment (1)

Agenda Page_Asset Disposal List_SEP_25

TAMPA BAY WATER
SURPLUS ITEMS APPROVED FOR DISPOSITION BY THE GENERAL MANAGER
UNDER DELEGATION OF AUTHORITY FROM THE BOARD PER POLICY 650-08
MONTH OF SEPTEMBER 2025

ASSET#	ASSET DESCRIPTION	SERIAL NUMBER	ACQ DATE	ACQ COST	ACCUM DEPR	BOOK VALUE	CLASS	ASSET TYPE
10919	SAMPLER,TELEDYNE TEKMAR ATOMX	US11291003	11/03/11	34,564.69	34,564.69	-	10	LAB EQUIP.
11447	CONTROLLER, HACH SC200 W/ DO SENSOR	1406C0106758	08/07/14	2,609.86	2,609.86	-	13	ELECTRONIC EQUIP.
11699	2016 CHEVROLET EQUINOX AWD (#612)	2GNFLEEK7G6294532	04/28/16	21,862.00	21,862.00	-	07	VEHICLES
11745	MONITOR AMI TURBIWELL W/LED, SWAN	3478	09/30/16	4,051.75	4,051.75	-	13	ELECTRONIC EQUIP.
11987	TITRATOR, DENORA WATER	17T2012000001146	05/10/18	2,640.00	2,640.00	-	13	ELECTRONIC EQUIP.
						-		
na	(80+) CONFERENCE ROOM/MEETING CHARIS	-	-	-	-	-		#N/A
na	MISC SURPLUS EQUIPMENT	-	-	-	-	-		#N/A
	Total			-	-	-		

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM F.6

DATE: September 29, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Christina Sackett, Chief Financial Officer

SUBJECT: Financial Statement - September 2025 - *Receive Report*

SUMMARY

The attached Statement of Revenues and Expenditures summarizes the Agency's uniform rate basis financial activity for September 2025.

SUGGESTED ACTION

Receive and File.

COST/FUNDING SOURCE

N/A

DISCUSSION

Financial Statement - Summary of Major Points:

Revenues – Operating revenue consists of water sales (fixed and variable components), sales from the Tampa Bypass Canal to the City of Tampa, operating grants, other additional surcharges revenue and the board-approved balance carried forward from the previous year through the Rate Stabilization Fund. Fixed rate revenue is earned in level monthly increments and only catches up to the expenditures at year end. Non-Operating Income consists of investment income, miscellaneous income, litigation recoveries and capital contributions.

Expenditures - Throughout the year, actual expenditures normally lag behind by at least one to two months. This is due to the fact that vendor bills and the subsequent payment of those bills generally lag behind the actual performance of the services by 30 to 45 days. When the fiscal year end approaches, the books are held open to allow for all fiscal year activity to be accounted for and shown in the appropriate fiscal year. Variable rate expenditures will have seasonal peaks as the agency enters the dry season and adjusts the supply sources.

The “Encumbrance” balance shown on the bottom of the financial statements represents the amount of open purchase orders (committed funds and blanket purchase orders) as of the end of the month, including purchase orders carried forward from the previous year. Although the encumbrance is presented for informational purposes, it gives a projected contractual commitment against current year funds. There are many purchase orders established at the beginning of the year that will be spent through the year and monthly revenue will be collected through the year to offset that expense, some of the categories with larger encumbrances at the beginning of the year include Water Treatment Chemicals, Power, and Professional Services. Professional service tasks frequently carry over beyond the end of a fiscal year, in which case the applicable open purchase orders and the associated budget dollars are carried into the next fiscal year to allow for completion of those tasks as mentioned above.

Attachments (1)

Financial Statements 09.2025

TAMPA BAY WATER - UNIFORM RATE BASIS
Statement of Revenues and Expenditures
September 30, 2025

	Current Month Actual	Original Budget	Revised Budget	Year to Date (YTD) Actual	YTD Actual % of Revised Budget
OPERATING REVENUE:					
Operating Grant - SWFWMD	53,260	398,000	398,000	259,319	65.16%
Water Sales - Fixed	12,914,025	154,968,302	154,968,302	154,968,303	100.00%
Water Sales - Variable	0	45,389,055	45,389,055	39,390,796	86.78%
Water Sales - Other	3,500	42,000	42,000	171,548	408.45%
Water Sales - Tampa By-Pass Canal	0	392,000	392,000	436,636	111.39%
Rate Stabilization (Note 1)	534,007	6,408,085	20,606,285	20,606,285	100.00%
TOTAL OPERATING REVENUE	13,504,793	207,597,442	221,795,642	215,832,886	97.31%
OPERATING EXPENSES:					
FIXED OPERATING EXPENSE:					
Personnel Services	1,761,794	26,888,100	26,888,100	22,146,996	82.37%
Materials & Supplies	96,467	3,214,094	3,422,607	2,286,544	66.81%
Members Water Quality costs	4,000	48,000	48,000	48,000	100.00%
Legal Services	27,631	725,000	803,274	303,988	37.84%
Professional Services	1,541,726	35,650,815	46,150,433	27,872,211	60.39%
Repairs & Other Services	286,192	11,342,045	13,698,463	8,280,535	60.45%
Rent, Lease & Insurance	19,100	4,016,750	4,048,943	3,372,688	83.30%
TOTAL FIXED OPERATING EXPENSE	3,736,911	81,884,804	95,059,820	64,310,962	67.65%
VARIABLE OPERATING EXPENSE:					
Water Treatment Chemicals	1,262,272	25,679,820	25,679,820	23,360,218	90.97%
Electricity	458,240	19,050,635	19,050,635	14,169,675	74.38%
Water for Resale	0	658,600	658,600	519,886	78.94%
TOTAL VARIABLE OPERATING EXPENSE	1,720,512	45,389,055	45,389,055	38,049,779	83.83%
NON-OPERATING INCOME:					
Investment Income (Note 2)	0	5,033,012	5,033,012	5,957,961	118.38%
Investment Income-Unrealized Gain/(Loss)	0	0	0	877,305	0.00%
Miscellaneous	5,491	0	0	294,584	0.00%
Litigation Recoveries	0	0	0	136,429	0.00%
Capital Contributions (Grants)	0	0	0	0	0.00%
TOTAL NON-OPERATING INCOME	5,491	5,033,012	5,033,012	7,266,279	144.37%
NON-OPERATING EXPENSES:					
Bond Issue Cost	0	0	0	0	0.00%
Interest - Acquisition Credits	151,970	1,823,643	1,823,643	1,823,643	100.00%
Interest - Bonds	2,543,601	29,514,037	29,514,037	28,850,200	97.75%
TOTAL NON-OPERATING EXPENSES	2,695,571	31,337,680	31,337,680	30,673,843	97.88%
Excess of Revenues over Expenditures before Capital Transactions	5,357,290	54,018,915	55,042,099	90,064,582	163.63%
OTHER EXPENDITURES:					
Principal - Acquisition Credits	700,660	8,407,915	8,407,915	8,407,914	100.00%
Principal - Bonds	3,522,333	43,518,000	43,518,000	42,268,000	97.13%
Capital Expenditures	0	2,093,000	3,116,185	917,081	29.43%
TOTAL OTHER EXPENDITURES	4,222,993	54,018,915	55,042,100	51,592,996	93.73%
Excess Revenue over Expenditures/(Expenditures over Revenue)	**1,134,297**			**38,471,587**	
Encumbrances as of 09/30/2025					**26,911,804**

Financial Statements completed on 09.29.2025. Still missing some month end Journal Entries for September 2025

Note 1 - Rate stabilization year to date actual reflects 12/12th of the approved budget transfer of $6,408,085, plus the carried forward purchase orders of $10,890,377, and $3,307,823 of FY24 unencumbered funds carried forward into FY25, as approved by the Board.

Note 2 - Investment income actuals includes revenue earned and realized gains/losses on investments. Unrealized gains/losses are reflected separately.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM F.7

DATE: October 2, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Christina Sackett, Chief Financial Officer

SUBJECT: Investment Schedules for September 2025 - *Receive Report*

SUMMARY

The attached investment statements and reports provides details of Tampa Bay Water's investments for September 2025.

SUGGESTED ACTION

Receive and File.

COST/FUNDING SOURCE

N/A

DISCUSSION

The attached Chandler Asset Management Consolidated Statement and Bond Market Review provide a monthly summary of the agency's asset allocations and the drivers of the economy that may affect investment performance.

Chandler Asset Management, the Board's contracted investment advisor, manages a portion of the agency's funds to earn a higher return, without sacrificing or risking principal.

As of September 30, 2025, the funds currently managed by Chandler Asset Management had a Market Value $181,272,473 o f and are detailed in the attached statement. all the investments are held in a third-party trust account with US Bank as custodian.

As of September 30, 2025, the Agency had $834,954,140 held in deposit accounts or certificates of deposits with multiple banking institutions, with interest rates ranging from 2.57% to 3.25%. In addition, these banking institutions participate in the State of Florida Public Funds pool and are designated Public Funds. Under this program, each participating bank is required to post collateral with the State at a percentage of the amount of Public Funds held by that bank. The percentage of collateral required is determined by the State and may vary by institution. Of the funds held by Tampa Bay Water, 95% are restricted as to purpose. An additional $31.9 million in the Utility Reserve Fund is not restricted as to purpose but must be maintained at levels sufficient to ensure compliance with debt coverage requirements.

BACKGROUND

Resolution 2017-002 approves the Agency's Investment Policy.

US Government Securities - Treasuries (100%) - Collective term used to describe debt instruments backed by the US Government and issued through the US Department of Treasure.

US Government Agency (50%) – A debt instrument issued by one of the Federal Agencies.

Federal Instrumentalities (80%) - A government sponsored/owned entity created by US Congress.

Mortgage-Backed Securities (20%) – An ownership interest in a pool of mortgage loans made by financial institutions to finance the borrower's purchase of a home or other real estate.

Repurchase Agreements (50%) - A short-term investment vehicle where an investor agrees to buy securities from a counterparty and simultaneously agrees to resell the securities back to the counterparty at an agreed upon time for an agreed upon price.

Commercial Paper (25%) – Short term unsecured promissory note issued by a company or financial institution. Issued at a discount and matures for par or face value.

Corporate Note (25%) – A debt instrument issued by a corporation with a maturity of greater than one year and less than ten years.

Bankers' Acceptances (25%) – A draft or bill of exchange drawn upon and accepted by a bank.

Municipal Note/Bond (20%) – A debt instrument issued by a state, local government or public agency.

Supranationals (15%) – A debt instrument issued by the International Bank for Reconstruction and Development, International Finance Corporation or Inter-American Development Bank.

Money Market Mutual Funds (50%) – Market in which short-term debt instruments are issued/traded.

Intergovernmental Investment Pool (25%) – An investment by local governments in which their money is pooled as a method for managing local funds.

Attachments (2)

Investment Schedule for September 2025 (1 of 2)
Investment Schedule for September 2025 (2 of 2)

CHANDLER ASSET MANAGEMENT

Portfolio Summary

09/01/2025 - 09/30/2025

Tampa Bay Water Cons Agg (362512)

Dated: 10/02/2025

Portfolio Characteristics

	Portfolio
Average Modified Duration	1.64
Average Coupon Rate*	3.995
Average Purchase YTM	4.18
Average Market YTM	3.81
Average Credit Quality	AA
Average Final Maturity	1.83
Average Life	1.67

Footnote: 1

Account Summary

	Portfolio
Beginning Market Value	179,078,567.43
Ending Market Value	179,572,701.53
Beginning Accrued Balance	1,777,377.34
Ending Accrued Balance	1,734,201.92
Beginning Total Market Value	180,855,944.76
Ending Total Market Value	181,272,473.01
Beginning Current Par	178,100,067.68
Ending Current Par	178,584,275.88
Beginning Book Value	177,572,900.90
Ending Book Value	178,079,921.50
Beginning Original Cost	177,084,481.36
Ending Original Cost	177,595,024.74

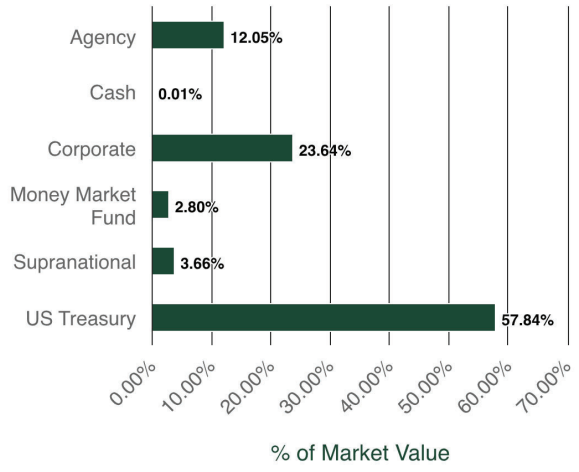
Footnotes: 2,3,4,5

Top Issuers

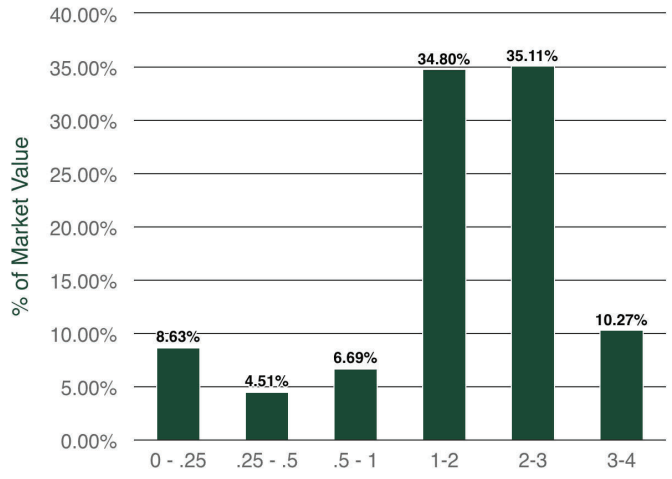
Issuer	% of Market Value
United States	57.84%
Farm Credit System	5.67%
Federal Home Loan Banks	5.27%
International Bank for Recon and Dev	3.08%
First American Govt Oblig fund	2.81%
JPMorgan Chase & Co.	1.72%
The Home Depot, Inc.	1.56%
Blackrock, Inc.	1.53%
Caterpillar Inc.	1.39%
Duke Energy Corporation	1.30%

Footnotes: 6,7,8

Sector Allocation



Maturity Distribution



Credit Quality*

Chart calculated by: Market Value

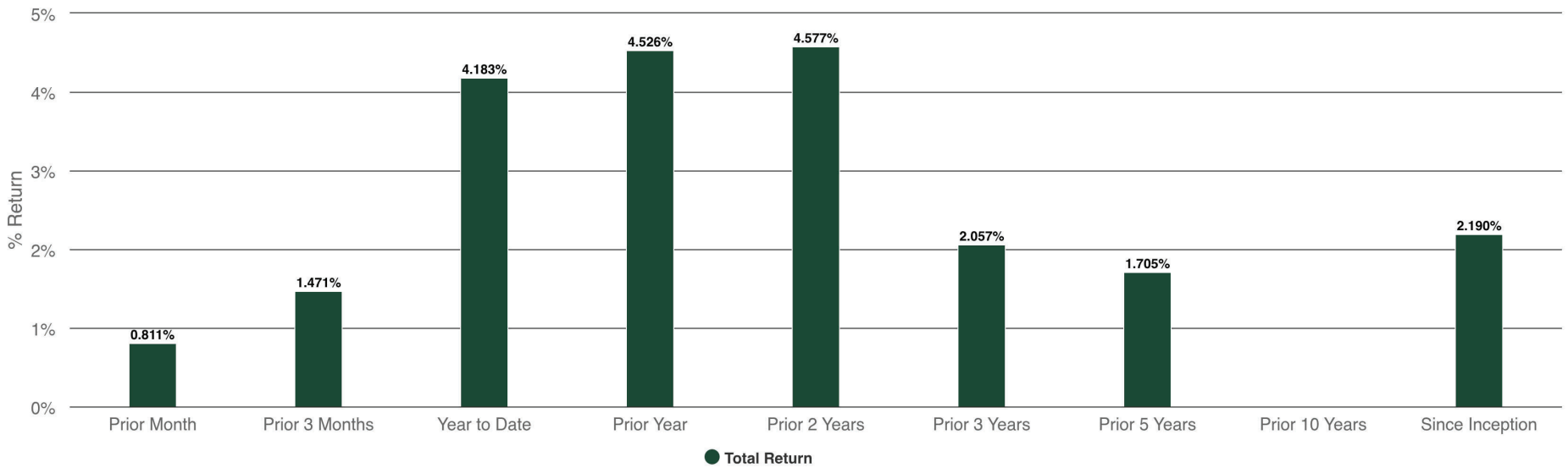
Portfolio Summary

09/01/2025 - 09/30/2025

Tampa Bay Water Cons Agg (362512)

Dated: 10/02/2025

Performance Review (Gross)



1: * Weighted by: Market Value. 2: * Weighted by: Ending Market Value. 3: * Formula Column: Beginning Accrued Balance = [Beginning Due and Accrued]+[Beginning Cash Mutual Fund Dividend Receivable]. 4: * Formula Column: Ending Accrued Balance = [Ending Due and Accrued]+[Ending Cash Mutual Fund Dividend Receivable]. 5: * Formula Column: Beginning Total Market Value = [Beginning Market Value]+([Beginning Due and Accrued]+[Beginning Cash Mutual Fund Dividend Receivable]). 6: * Grouped by: Issuer. 7: * Groups Sorted by: % of Market Value. 8: * Weighted by: Ending Total Market Value.

CHANDLER ASSET MANAGEMENT

Holdings

As of 09/30/2025

Tampa Bay Water Cons Agg (362512)

Dated: 10/02/2025

CUSIP	Security Type	Issue	Maturity Date, Years to Final Maturity	Original Par, Purchase Date, Original Cost	Coupon Rate	Current Par	Market Price	Market Value, Accrued Balance, Total Market Value	Moody's Rating, S&P Rating, Fitch Rating
3135G06G3	Agency	FEDERAL NATIONAL MORTGAGE ASSOCIATION 0.5 11/07/2025	11/07/2025 0.104	2,000,000.00 11/09/2020 1,992,840.00	0.50	2,000,000.00	99.6288	1,992,575.16 4,000.00 1,996,575.16	Aa1 AA+ AA+
3130ATS57	Agency	FEDERAL HOME LOAN BANKS 4.5 03/10/2028	03/10/2028 2.444	600,000.00 04/20/2023 618,726.00	4.50	600,000.00	101.8685	611,210.77 1,575.00 612,785.77	Aa1 AA+ AA+
3130ATUS4	Agency	FEDERAL HOME LOAN BANKS 4.25 12/10/2027	12/10/2027 2.194	450,000.00 05/18/2023 457,983.00	4.25	450,000.00	101.0562	454,752.76 5,896.88 460,649.63	Aa1 AA+ AA+
3130AV6J6	Agency	FEDERAL HOME LOAN BANKS 4.5 03/13/2026	03/13/2026 0.449	1,600,000.00 --- 1,624,390.00	4.50	1,600,000.00	100.2922	1,604,675.54 3,600.00 1,608,275.54	Aa1 AA+ AA+
3130AWLZ1	Agency	FEDERAL HOME LOAN BANKS 4.75 06/12/2026	06/12/2026 0.698	1,650,000.00 08/28/2023 1,645,297.50	4.75	1,650,000.00	100.6928	1,661,431.84 23,730.21 1,685,162.05	Aa1 AA+ AA+
3133EPC60	Agency	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.625 11/15/2027	11/15/2027 2.126	2,150,000.00 11/09/2023 2,142,023.50	4.63	2,150,000.00	101.8707	2,190,220.57 37,565.28 2,227,785.84	Aa1 AA+ AA+
3130AXU63	Agency	FEDERAL HOME LOAN BANKS 4.625 11/17/2026	11/17/2026 1.131	1,100,000.00 11/29/2023 1,104,400.00	4.63	1,100,000.00	101.0108	1,111,118.90 18,936.81 1,130,055.70	Aa1 AA+ AA+
3133EPH81	Agency	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.5 10/04/2027	10/04/2027 2.011	1,800,000.00 12/07/2023 1,812,906.00	4.50	1,800,000.00	101.6922	1,830,459.22 39,825.00 1,870,284.22	Aa1 AA+ AA+
3133ERFJ5	Agency	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.5 05/20/2027	05/20/2027 1.635	3,700,000.00 --- 3,697,095.00	4.50	3,700,000.00	101.2784	3,747,300.36 60,587.50 3,807,887.86	Aa1 AA+ AA+
3130AWN63	Agency	FEDERAL HOME LOAN BANKS 4.0 06/30/2028	06/30/2028 2.750	1,600,000.00 07/18/2023 1,593,696.00	4.00	1,600,000.00	101.0656	1,617,050.11 16,177.78 1,633,227.89	Aa1 AA+ AA+
3130AYPN0	Agency	FEDERAL HOME LOAN BANKS 4.125 01/15/2027	01/15/2027 1.293	1,000,000.00 01/29/2024 998,860.00	4.13	1,000,000.00	100.6448	1,006,448.36 8,708.33 1,015,156.69	Aa1 AA+ AA+
3130ATUC9	Agency	FEDERAL HOME LOAN BANKS 4.5 12/12/2025	12/12/2025 0.200	900,000.00 05/25/2023 902,754.00	4.50	900,000.00	100.0494	900,444.67 12,262.50 912,707.17	Aa1 AA+ AA+
3133EPCR4	Agency	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.75 03/09/2026	03/09/2026 0.438	1,400,000.00 03/27/2023 1,430,534.00	4.75	1,400,000.00	100.3936	1,405,510.05 4,063.89 1,409,573.94	Aa1 AA+ AA+
3133EPNG6	Agency	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.375 06/23/2026	06/23/2026 0.728	1,000,000.00 06/20/2023 999,470.00	4.38	1,000,000.00	100.3936	1,003,936.08 11,909.72 1,015,845.80	Aa1 AA+ AA+
3130AWTQ3	Agency	FEDERAL HOME LOAN BANKS 4.625 09/11/2026	09/11/2026 0.947	500,000.00 09/27/2023 494,865.00	4.63	500,000.00	100.7955	503,977.38 1,284.72 505,262.10	Aa1 AA+ AA+
CCYUSD	Cash	Receivable	09/30/2025 0.000	17,215.22 --- 17,215.22	0.00	17,215.22	1.0000	17,215.22 0.00 17,215.22	Aaa AAA AAA
26444HAC5	Corporate	DUKE ENERGY FLORIDA LLC 3.2 01/15/2027	01/15/2027 1.293	1,850,000.00 05/16/2024 1,764,826.00	3.20	1,850,000.00	99.1261	1,833,832.96 12,497.78 1,846,330.74	A1 A WR
74456QBU9	Corporate	PUBLIC SERVICE ELECTRIC AND GAS CO 3.7 05/01/2028	05/01/2028 2.586	1,300,000.00 05/20/2025 1,276,964.00	3.70	1,300,000.00	99.4314	1,292,608.03 20,041.67 1,312,649.70	A1 A WR
63743HFF4	Corporate	NATIONAL RURAL UTILITIES COOPERATIVE FINANCE CORP 5.45 10/30/2025	10/30/2025 0.082	350,000.00 10/21/2022 350,080.50	5.45	350,000.00	100.0591	350,206.80 8,000.90 358,207.70	A2 A- A
06051GLE7	Corporate	BANK OF AMERICA CORP 5.08 01/20/2027	01/20/2027 1.307	500,000.00 05/29/2024 495,840.00	5.08	500,000.00	100.1837	500,918.41 5,009.44 505,927.85	A1 A- AA-

CHANDLER ASSET MANAGEMENT

Holdings

As of 09/30/2025

Tampa Bay Water Cons Agg (362512)

Dated: 10/02/2025

CUSIP	Security Type	Issue	Maturity Date, Years to Final Maturity	Original Par, Purchase Date, Original Cost	Coupon Rate	Current Par	Market Price	Market Value, Accrued Balance, Total Market Value	Moody's Rating, S&P Rating, Fitch Rating
78016HZT0	Corporate	ROYAL BANK OF CANADA 4.875 01/19/2027	01/19/2027 1.304	1,250,000.00 01/17/2024 1,248,762.50	4.88	1,250,000.00	101.1545	1,264,431.57 12,187.50 1,276,619.07	A1 A AA-
91324PEY4	Corporate	UNITEDHEALTH GROUP INC 4.6 04/15/2027	04/15/2027 1.539	350,000.00 07/03/2024 347,910.50	4.60	350,000.00	100.8193	352,867.56 7,423.89 360,291.45	A2 A+ A
89115A2W1	Corporate	TORONTO-DOMINION BANK 4.98 04/05/2027	04/05/2027 1.512	500,000.00 --- 496,150.75	4.98	500,000.00	101.4212	507,105.75 12,173.33 519,279.09	A2 A- AA-
14913UAL4	Corporate	CATERPILLAR FINANCIAL SERVICES CORP 5.0 05/14/2027	05/14/2027 1.619	1,900,000.00 --- 1,903,967.00	5.00	1,900,000.00	101.7352	1,932,969.62 36,152.78 1,969,122.39	A2 A A+
437076DB5	Corporate	HOME DEPOT INC 4.875 06/25/2027	06/25/2027 1.734	2,750,000.00 --- 2,746,480.50	4.88	2,750,000.00	101.6551	2,795,514.31 35,750.00 2,831,264.31	A2 A A
09290DAH4	Corporate	BLACKROCK INC 4.6 07/26/2027	07/26/2027 1.819	2,710,000.00 --- 2,712,067.80	4.60	2,710,000.00	101.3309	2,746,066.36 22,508.06 2,768,574.42	Aa3 AA- NA
532457CP1	Corporate	ELI LILLY AND CO 4.15 08/14/2027	08/14/2027 1.871	1,750,000.00 08/13/2024 1,752,240.00	4.15	1,750,000.00	100.6523	1,761,415.00 9,481.60 1,770,896.60	Aa3 A+ NA
46647PEU6	Corporate	JPMORGAN CHASE & CO 4.915 01/24/2029	01/24/2029 3.318	1,555,000.00 --- 1,555,339.50	4.92	1,555,000.00	101.8029	1,583,035.02 14,224.15 1,597,259.16	A1 A AA-
857477CU5	Corporate	STATE STREET CORP 4.536 02/28/2028	02/28/2028 2.413	1,150,000.00 --- 1,149,977.50	4.54	1,150,000.00	101.2826	1,164,750.28 4,781.70 1,169,531.98	Aa3 A AA-
06405LAH4	Corporate	BANK OF NEW YORK MELLON 4.729 04/20/2029	04/20/2029 3.553	1,300,000.00 05/14/2025 1,306,422.00	4.73	1,300,000.00	101.6426	1,321,353.72 27,152.34 1,348,506.06	Aa2 AA- AA
025816ED7	Corporate	AMERICAN EXPRESS CO 4.731 04/25/2029	04/25/2029 3.567	1,500,000.00 05/01/2025 1,511,415.00	4.73	1,500,000.00	101.5759	1,523,639.24 30,751.50 1,554,390.74	A2 A- A
91324PCW0	Corporate	UNITEDHEALTH GROUP INC 3.45 01/15/2027	01/15/2027 1.293	1,500,000.00 --- 1,454,295.00	3.45	1,500,000.00	99.4000	1,490,999.48 10,925.00 1,501,924.48	A2 A+ A
38141GWZ3	Corporate	GOLDMAN SACHS GROUP INC 4.223 05/01/2029	05/01/2029 3.583	850,000.00 08/20/2025 849,184.00	4.22	850,000.00	100.1167	850,991.75 14,956.46 865,948.21	A2 BBB+ A
46647PAV8	Corporate	JPMORGAN CHASE & CO 4.203 07/23/2029	07/23/2029 3.810	800,000.00 09/04/2025 802,728.00	4.20	800,000.00	100.1934	801,547.25 6,351.20 807,898.45	A1 A AA-
89236TJZ9	Corporate	TOYOTA MOTOR CREDIT CORP 3.05 03/22/2027	03/22/2027 1.474	500,000.00 01/08/2024 477,045.00	3.05	500,000.00	98.7643	493,821.34 381.25 494,202.59	A1 A+ A+
89115A2C5	Corporate	TORONTO-DOMINION BANK 4.108 06/08/2027	06/08/2027 1.687	1,000,000.00 03/07/2024 975,470.00	4.11	1,000,000.00	100.1462	1,001,462.16 12,894.56 1,014,356.72	A2 A- NA
341081GN1	Corporate	FLORIDA POWER & LIGHT CO 4.4 05/15/2028	05/15/2028 2.624	1,300,000.00 --- 1,305,816.00	4.40	1,300,000.00	101.1271	1,314,651.92 21,608.89 1,336,260.81	Aa2 A+ AA-
24422EXF1	Corporate	JOHN DEERE CAPITAL CORP 4.5 01/08/2027	01/08/2027 1.274	1,500,000.00 --- 1,499,311.00	4.50	1,500,000.00	100.7884	1,511,825.83 15,562.50 1,527,388.33	A1 A A+
63743HFM9	Corporate	NATIONAL RURAL UTILITIES COOPERATIVE FINANCE CORP 4.8 02/05/2027	02/05/2027 1.350	1,500,000.00 --- 1,502,865.00	4.80	1,500,000.00	100.9668	1,514,501.97 11,200.00 1,525,701.97	A2 A- A
17275RBQ4	Corporate	CISCO SYSTEMS INC 4.8 02/26/2027	02/26/2027 1.408	1,200,000.00 --- 1,202,504.90	4.80	1,200,000.00	101.2006	1,214,406.72 5,600.00 1,220,006.72	A1 AA- NA

CHANDLER ASSET MANAGEMENT

Holdings

As of 09/30/2025

Tampa Bay Water Cons Agg (362512)

Dated: 10/02/2025

CUSIP	Security Type	Issue	Maturity Date, Years to Final Maturity	Original Par, Purchase Date, Original Cost	Coupon Rate	Current Par	Market Price	Market Value, Accrued Balance, Total Market Value	Moody's Rating, S&P Rating, Fitch Rating
857477CN1	Corporate	STATE STREET CORP 4.53 02/20/2029	02/20/2029 3.392	1,000,000.00 05/20/2025 1,000,930.00	4.53	1,000,000.00	101.0707	1,010,706.73 5,159.17 1,015,865.90	Aa3 A AA-
61690DK72	Corporate	MORGAN STANLEY BANK NA 5.016 01/12/2029	01/12/2029 3.285	1,100,000.00 01/16/2025 1,100,946.00	5.02	1,100,000.00	101.7914	1,119,705.72 12,108.07 1,131,813.79	Aa3 A+ AA-
95000U3R2	Corporate	WELLS FARGO & CO 4.9 01/24/2028	01/24/2028 2.318	1,400,000.00 01/16/2025 1,400,000.00	4.90	1,400,000.00	100.9195	1,412,873.43 12,767.22 1,425,640.66	A1 BBB+ A+
06051GMK2	Corporate	BANK OF AMERICA CORP 4.979 01/24/2029	01/24/2029 3.318	1,075,000.00 01/17/2025 1,075,000.00	4.98	1,075,000.00	101.8484	1,094,870.43 9,961.46 1,104,831.89	A1 A- AA-
74460WAD9	Corporate	PUBLIC STORAGE OPERATING CO 1.85 05/01/2028	05/01/2028 2.586	500,000.00 06/09/2025 466,315.00	1.85	500,000.00	94.8288	474,144.09 3,854.17 477,998.25	A2 A NA
61747YER2	Corporate	MORGAN STANLEY 4.21 04/20/2028	04/20/2028 2.556	600,000.00 01/16/2025 591,414.00	4.21	600,000.00	100.1087	600,652.45 11,296.83 611,949.29	A1 A- A+
46647PDA1	Corporate	JPMORGAN CHASE & CO 4.323 04/26/2028	04/26/2028 2.572	700,000.00 01/16/2025 692,055.00	4.32	700,000.00	100.2471	701,729.50 13,029.04 714,758.54	A1 A AA-
06051GKP3	Corporate	BANK OF AMERICA CORP 4.376 04/27/2028	04/27/2028 2.575	700,000.00 08/20/2025 701,001.00	4.38	700,000.00	100.3604	702,522.77 13,103.69 715,626.46	A1 A- AA-
38141GZU1	Corporate	GOLDMAN SACHS GROUP INC 4.482 08/23/2028	08/23/2028 2.898	700,000.00 08/20/2025 702,758.00	4.48	700,000.00	100.6257	704,379.63 3,311.70 707,691.33	A2 BBB+ A
89115A2K7	Corporate	TORONTO-DOMINION BANK 5.103 01/09/2026	01/09/2026 0.277	280,000.00 07/07/2023 278,958.40	5.10	280,000.00	100.2198	280,615.39 3,254.58 283,869.97	A2 A- AA-
341081GR2	Corporate	FLORIDA POWER & LIGHT CO 4.45 05/15/2026	05/15/2026 0.621	500,000.00 06/14/2023 494,880.00	4.45	500,000.00	100.1680	500,840.16 8,405.56 509,245.72	A1 A A+
89115A2S0	Corporate	TORONTO-DOMINION BANK 5.532 07/17/2026	07/17/2026 0.794	500,000.00 09/27/2023 496,480.00	5.53	500,000.00	101.1016	505,508.00 5,685.67 511,193.67	A2 A- AA-
69371RS56	Corporate	PACCAR FINANCIAL CORP 5.05 08/10/2026	08/10/2026 0.860	165,000.00 08/24/2023 164,825.10	5.05	165,000.00	100.9939	166,639.89 1,180.44 167,820.33	A1 A+ NA
14913UAE0	Corporate	CATERPILLAR FINANCIAL SERVICES CORP 4.5 01/08/2027	01/08/2027 1.274	550,000.00 01/11/2024 550,858.00	4.50	550,000.00	100.7742	554,258.09 5,706.25 559,964.34	A2 A A+
78017FZQ9	Corporate	ROYAL BANK OF CANADA 4.51 10/18/2027	10/18/2027 2.049	500,000.00 01/22/2025 497,835.00	4.51	500,000.00	100.3398	501,699.06 10,210.14 511,909.20	A1 A AA-
24422EXZ7	Corporate	JOHN DEERE CAPITAL CORP 4.65 01/07/2028	01/07/2028 2.271	475,000.00 01/06/2025 474,857.50	4.65	475,000.00	101.6342	482,762.26 5,153.75 487,916.01	A1 A A+
26442UAT1	Corporate	DUKE ENERGY PROGRESS LLC 4.35 03/06/2027	03/06/2027 1.430	500,000.00 03/03/2025 500,135.00	4.35	500,000.00	100.7503	503,751.30 1,510.42 505,261.72	Aa3 A NA
31846V203	Money Market Fund	FIRST AMER:GVT OBLG Y	09/30/2025 0.000	5,037,060.66 --- 5,037,060.66	3.76	5,037,060.66	1.0000	5,037,060.66 0.00 5,037,060.66	Aaa AAAm AAA
459058JL8	Supranational	INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPM 0.5 10/28/2025	10/28/2025 0.077	4,255,000.00 --- 4,190,627.85	0.50	4,255,000.00	99.7200	4,243,085.02 9,041.88 4,252,126.90	Aaa AAA NA
459058KT9	Supranational	INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPM 3.5 07/12/2028	07/12/2028 2.783	1,300,000.00 07/07/2023 1,242,982.00	3.50	1,300,000.00	99.5191	1,293,748.43 9,984.72 1,303,733.15	Aaa AAA NA

CHANDLER ASSET MANAGEMENT

Holdings

As of 09/30/2025

Tampa Bay Water Cons Agg (362512)

Dated: 10/02/2025

CUSIP	Security Type	Issue	Maturity Date, Years to Final Maturity	Original Par, Purchase Date, Original Cost	Coupon Rate	Current Par	Market Price	Market Value, Accrued Balance, Total Market Value	Moody's Rating, S&P Rating, Fitch Rating
45950KDD9	Supranational	INTERNATIONAL FINANCE CORP 4.5 07/13/2028	07/13/2028 2.786	1,020,000.00 07/06/2023 1,018,867.80	4.50	1,020,000.00	102.1337	1,041,763.27 9,945.00 1,051,708.27	Aaa AAA NA
91282CEF4	US Treasury	UNITED STATES TREASURY 2.5 03/31/2027	03/31/2027 1.498	3,300,000.00 --- 3,081,140.63	2.50	3,300,000.00	98.3125	3,244,312.50 226.65 3,244,539.15	Aa1 AA+ AA+
91282CFU0	US Treasury	UNITED STATES TREASURY 4.125 10/31/2027	10/31/2027 2.085	1,650,000.00 09/07/2023 1,625,378.91	4.13	1,650,000.00	101.0156	1,666,757.81 28,482.68 1,695,240.49	Aa1 AA+ AA+
91282CFZ9	US Treasury	UNITED STATES TREASURY 3.875 11/30/2027	11/30/2027 2.167	3,570,000.00 --- 3,587,190.62	3.88	3,570,000.00	100.5273	3,588,826.18 46,490.47 3,635,316.65	Aa1 AA+ AA+
91282CGC9	US Treasury	UNITED STATES TREASURY 3.875 12/31/2027	12/31/2027 2.252	2,100,000.00 01/20/2023 2,129,613.28	3.88	2,100,000.00	100.5508	2,111,566.40 20,564.88 2,132,131.28	Aa1 AA+ AA+
91282CGE5	US Treasury	UNITED STATES TREASURY 3.875 01/15/2026	01/15/2026 0.293	2,300,000.00 01/20/2023 2,302,605.47	3.88	2,300,000.00	99.9697	2,299,303.72 18,890.63 2,318,194.35	Aa1 AA+ AA+
91282CGH8	US Treasury	UNITED STATES TREASURY 3.5 01/31/2028	01/31/2028 2.337	2,200,000.00 --- 2,182,371.10	3.50	2,200,000.00	99.7344	2,194,156.25 12,972.83 2,207,129.08	Aa1 AA+ AA+
91282CHA2	US Treasury	UNITED STATES TREASURY 3.5 04/30/2028	04/30/2028 2.583	2,400,000.00 05/12/2023 2,406,750.00	3.50	2,400,000.00	99.7109	2,393,062.51 35,152.17 2,428,214.69	Aa1 AA+ AA+
91282CHK0	US Treasury	UNITED STATES TREASURY 4.0 06/30/2028	06/30/2028 2.750	750,000.00 02/04/2025 743,115.23	4.00	750,000.00	100.9805	757,353.52 7,581.52 764,935.04	Aa1 AA+ AA+
91282CHX2	US Treasury	UNITED STATES TREASURY 4.375 08/31/2028	08/31/2028 2.920	2,625,000.00 --- 2,632,719.72	4.38	2,625,000.00	102.0352	2,678,422.85 9,834.69 2,688,257.53	Aa1 AA+ AA+
91282CJW2	US Treasury	UNITED STATES TREASURY 4.0 01/31/2029	01/31/2029 3.337	2,700,000.00 --- 2,673,058.60	4.00	2,700,000.00	101.0820	2,729,214.84 18,195.65 2,747,410.49	Aa1 AA+ AA+
91282CKA8	US Treasury	UNITED STATES TREASURY 4.125 02/15/2027	02/15/2027 1.378	2,950,000.00 --- 2,923,935.55	4.13	2,950,000.00	100.5781	2,967,054.69 15,541.61 2,982,596.30	Aa1 AA+ AA+
91282CKD2	US Treasury	UNITED STATES TREASURY 4.25 02/28/2029	02/28/2029 3.413	750,000.00 02/04/2025 747,685.55	4.25	750,000.00	101.9023	764,267.58 2,729.63 766,997.21	Aa1 AA+ AA+
91282CKE0	US Treasury	UNITED STATES TREASURY 4.25 03/15/2027	03/15/2027 1.454	2,050,000.00 04/30/2024 2,016,287.11	4.25	2,050,000.00	100.8125	2,066,656.25 3,850.83 2,070,507.08	Aa1 AA+ AA+
91282CKG5	US Treasury	UNITED STATES TREASURY 4.125 03/31/2029	03/31/2029 3.498	3,250,000.00 --- 3,192,529.30	4.13	3,250,000.00	101.5234	3,299,511.73 368.30 3,299,880.04	Aa1 AA+ AA+
91282CKJ9	US Treasury	UNITED STATES TREASURY 4.5 04/15/2027	04/15/2027 1.539	3,800,000.00 04/25/2024 3,763,039.07	4.50	3,800,000.00	101.2344	3,846,906.25 78,959.02 3,925,865.27	Aa1 AA+ AA+
91282CKR1	US Treasury	UNITED STATES TREASURY 4.5 05/15/2027	05/15/2027 1.621	1,400,000.00 --- 1,397,375.00	4.50	1,400,000.00	101.3047	1,418,265.63 23,796.20 1,442,061.83	Aa1 AA+ AA+
91282CKX8	US Treasury	UNITED STATES TREASURY 4.25 06/30/2029	06/30/2029 3.747	750,000.00 02/04/2025 747,158.20	4.25	750,000.00	101.9883	764,912.11 8,055.37 772,967.47	Aa1 AA+ AA+
91282CMN8	US Treasury	UNITED STATES TREASURY 4.25 02/15/2028	02/15/2028 2.378	4,850,000.00 --- 4,831,451.17	4.25	4,850,000.00	101.4180	4,918,771.50 26,325.75 4,945,097.24	Aa1 AA+ AA+
91282CMS7	US Treasury	UNITED STATES TREASURY 3.875 03/15/2028	03/15/2028 2.457	1,400,000.00 --- 1,395,664.07	3.88	1,400,000.00	100.6289	1,408,804.68 2,397.79 1,411,202.47	Aa1 AA+ AA+

CHANDLER ASSET MANAGEMENT

Holdings

As of 09/30/2025

Tampa Bay Water Cons Agg (362512)

Dated: 10/02/2025

CUSIP	Security Type	Issue	Maturity Date, Years to Final Maturity	Original Par, Purchase Date, Original Cost	Coupon Rate	Current Par	Market Price	Market Value, Accrued Balance, Total Market Value	Moody's Rating, S&P Rating, Fitch Rating
91282CMW8	US Treasury	UNITED STATES TREASURY 3.75 04/15/2028	04/15/2028 2.542	2,900,000.00 04/17/2025 2,898,414.07	3.75	2,900,000.00	100.3047	2,908,835.95 50,215.16 2,959,051.12	Aa1 AA+ AA+
91282CGL9	US Treasury	UNITED STATES TREASURY 4.0 02/15/2026	02/15/2026 0.378	2,500,000.00 --- 2,483,105.47	4.00	2,500,000.00	100.0156	2,500,390.63 12,771.74 2,513,162.36	Aa1 AA+ AA+
91282CGP0	US Treasury	UNITED STATES TREASURY 4.0 02/29/2028	02/29/2028 2.416	2,800,000.00 --- 2,784,195.32	4.00	2,800,000.00	100.8828	2,824,718.74 9,591.16 2,834,309.90	Aa1 AA+ AA+
91282CGT2	US Treasury	UNITED STATES TREASURY 3.625 03/31/2028	03/31/2028 2.501	2,000,000.00 09/18/2025 2,003,046.88	3.63	2,000,000.00	100.0273	2,000,546.88 199.18 2,000,746.06	Aa1 AA+ AA+
91282CHE4	US Treasury	UNITED STATES TREASURY 3.625 05/31/2028	05/31/2028 2.668	2,000,000.00 08/20/2025 1,997,031.25	3.63	2,000,000.00	100.0156	2,000,312.50 24,364.75 2,024,677.25	Aa1 AA+ AA+
91282CJC6	US Treasury	UNITED STATES TREASURY 4.625 10/15/2026	10/15/2026 1.041	1,700,000.00 10/30/2023 1,687,382.81	4.63	1,700,000.00	100.9246	1,715,718.35 36,304.99 1,752,023.34	Aa1 AA+ AA+
91282CJN2	US Treasury	UNITED STATES TREASURY 4.375 11/30/2028	11/30/2028 3.167	1,550,000.00 12/14/2023 1,585,662.11	4.38	1,550,000.00	102.1602	1,583,482.42 22,789.45 1,606,271.86	Aa1 AA+ AA+
91282CKK6	US Treasury	UNITED STATES TREASURY 4.875 04/30/2026	04/30/2026 0.580	2,000,000.00 --- 1,995,312.50	4.88	2,000,000.00	100.5859	2,011,718.76 40,801.63 2,052,520.39	Aa1 AA+ AA+
91282CLG4	US Treasury	UNITED STATES TREASURY 3.75 08/15/2027	08/15/2027 1.873	2,300,000.00 09/26/2024 2,313,566.41	3.75	2,300,000.00	100.2070	2,304,761.71 11,015.63 2,315,777.34	Aa1 AA+ AA+
91282CLL3	US Treasury	UNITED STATES TREASURY 3.375 09/15/2027	09/15/2027 1.958	5,000,000.00 --- 4,981,855.47	3.38	5,000,000.00	99.5391	4,976,953.10 7,458.56 4,984,411.66	Aa1 AA+ AA+
91282CLQ2	US Treasury	UNITED STATES TREASURY 3.875 10/15/2027	10/15/2027 2.041	2,250,000.00 10/18/2024 2,250,703.13	3.88	2,250,000.00	100.4922	2,261,074.23 40,258.71 2,301,332.94	Aa1 AA+ AA+
91282CLS8	US Treasury	UNITED STATES TREASURY 4.125 10/31/2026	10/31/2026 1.085	2,700,000.00 --- 2,698,179.68	4.13	2,700,000.00	100.4297	2,711,601.58 46,608.02 2,758,209.59	Aa1 AA+ AA+
91282CNH0	US Treasury	UNITED STATES TREASURY 3.875 06/15/2028	06/15/2028 2.709	1,800,000.00 06/18/2025 1,800,632.81	3.88	1,800,000.00	100.6563	1,811,812.50 20,581.97 1,832,394.47	Aa1 AA+ AA+
91282CNM9	US Treasury	UNITED STATES TREASURY 3.875 07/15/2028	07/15/2028 2.791	2,800,000.00 07/15/2025 2,795,734.37	3.88	2,800,000.00	100.6484	2,818,156.26 22,997.28 2,841,153.55	Aa1 AA+ AA+
91282CNY3	US Treasury	UNITED STATES TREASURY 3.375 09/15/2028	09/15/2028 2.961	2,050,000.00 --- 2,037,859.38	3.38	2,050,000.00	99.3203	2,036,066.40 3,058.01 2,039,124.41	Aa1 AA+ AA+
91282CET4	US Treasury	UNITED STATES TREASURY 2.625 05/31/2027	05/31/2027 1.665	1,100,000.00 12/14/2023 1,051,746.09	2.63	1,100,000.00	98.3438	1,081,781.25 9,703.89 1,091,485.14	Aa1 AA+ AA+
91282CEW7	US Treasury	UNITED STATES TREASURY 3.25 06/30/2027	06/30/2027 1.747	1,100,000.00 01/31/2024 1,073,015.63	3.25	1,100,000.00	99.3516	1,092,867.18 9,034.65 1,101,901.83	Aa1 AA+ AA+
91282CFB2	US Treasury	UNITED STATES TREASURY 2.75 07/31/2027	07/31/2027 1.832	1,000,000.00 04/25/2024 937,382.81	2.75	1,000,000.00	98.4375	984,375.00 4,633.15 989,008.15	Aa1 AA+ AA+
91282CFH9	US Treasury	UNITED STATES TREASURY 3.125 08/31/2027	08/31/2027 1.917	1,000,000.00 04/25/2024 947,695.31	3.13	1,000,000.00	99.0742	990,742.19 2,676.11 993,418.30	Aa1 AA+ AA+
91282CFM8	US Treasury	UNITED STATES TREASURY 4.125 09/30/2027	09/30/2027 2.000	1,000,000.00 04/25/2024 978,046.88	4.13	1,000,000.00	100.9648	1,009,648.44 113.32 1,009,761.76	Aa1 AA+ AA+

Holdings

As of 09/30/2025

Tampa Bay Water Cons Agg (362512)

Dated: 10/02/2025

CUSIP	Security Type	Issue	Maturity Date, Years to Final Maturity	Original Par, Purchase Date, Original Cost	Coupon Rate	Current Par	Market Price	Market Value, Accrued Balance, Total Market Value	Moody's Rating, S&P Rating, Fitch Rating
91282CFP1	US Treasury	UNITED STATES TREASURY 4.25 10/15/2025	10/15/2025 0.041	1,050,000.00 --- 1,047,398.44	4.25	1,050,000.00	100.0000	1,050,000.39 20,605.53 1,070,605.92	Aa1 AA+ AA+
91282CFW6	US Treasury	UNITED STATES TREASURY 4.5 11/15/2025	11/15/2025 0.126	1,400,000.00 11/10/2022 1,409,132.81	4.50	1,400,000.00	100.0430	1,400,601.57 23,796.20 1,424,397.76	Aa1 AA+ AA+
91282CGA3	US Treasury	UNITED STATES TREASURY 4.0 12/15/2025	12/15/2025 0.208	500,000.00 12/31/2022 497,578.13	4.00	500,000.00	100.0029	500,014.65 5,901.64 505,916.29	Aa1 AA+ AA+
91282CHB0	US Treasury	UNITED STATES TREASURY 3.625 05/15/2026	05/15/2026 0.621	1,150,000.00 05/16/2023 1,147,259.77	3.63	1,150,000.00	99.8629	1,148,423.25 15,746.09 1,164,169.34	Aa1 AA+ AA+
91282CJK8	US Treasury	UNITED STATES TREASURY 4.625 11/15/2026	11/15/2026 1.126	1,500,000.00 --- 1,495,129.88	4.63	1,500,000.00	100.9727	1,514,589.84 26,204.14 1,540,793.98	Aa1 AA+ AA+
91282CJT9	US Treasury	UNITED STATES TREASURY 4.0 01/15/2027	01/15/2027 1.293	1,500,000.00 01/11/2024 1,496,542.97	4.00	1,500,000.00	100.3750	1,505,625.00 12,717.39 1,518,342.39	Aa1 AA+ AA+
91282CKS9	US Treasury	UNITED STATES TREASURY 4.875 05/31/2026	05/31/2026 0.665	1,500,000.00 06/18/2024 1,504,628.91	4.88	1,500,000.00	100.6656	1,509,984.38 24,574.80 1,534,559.17	Aa1 AA+ AA+
91282CKY6	US Treasury	UNITED STATES TREASURY 4.625 06/30/2026	06/30/2026 0.747	1,000,000.00 07/03/2024 998,945.31	4.63	1,000,000.00	100.5984	1,005,984.37 11,688.18 1,017,672.55	Aa1 AA+ AA+
91282CLP4	US Treasury	UNITED STATES TREASURY 3.5 09/30/2026	09/30/2026 1.000	2,000,000.00 10/18/2024 1,983,046.88	3.50	2,000,000.00	99.7891	1,995,781.24 192.31 1,995,973.55	Aa1 AA+ AA+
91282CLX7	US Treasury	UNITED STATES TREASURY 4.125 11/15/2027	11/15/2027 2.126	650,000.00 05/21/2025 651,675.78	4.13	650,000.00	101.0195	656,626.95 10,127.55 666,754.50	Aa1 AA+ AA+
91282CMB4	US Treasury	UNITED STATES TREASURY 4.0 12/15/2027	12/15/2027 2.208	1,750,000.00 12/12/2024 1,743,164.06	4.00	1,750,000.00	100.8203	1,764,355.46 20,655.74 1,785,011.20	Aa1 AA+ AA+
91282CME8	US Treasury	UNITED STATES TREASURY 4.25 12/31/2026	12/31/2026 1.252	1,200,000.00 12/30/2024 1,199,859.38	4.25	1,200,000.00	100.6445	1,207,734.37 12,888.59 1,220,622.96	Aa1 AA+ AA+
91282CND9	US Treasury	UNITED STATES TREASURY 3.75 05/15/2028	05/15/2028 2.624	850,000.00 05/14/2025 842,927.73	3.75	850,000.00	100.3203	852,722.65 12,039.74 864,762.39	Aa1 AA+ AA+
91282CNU1	US Treasury	UNITED STATES TREASURY 3.625 08/15/2028	08/15/2028 2.876	1,000,000.00 08/20/2025 998,593.75	3.63	1,000,000.00	100.0000	1,000,000.00 4,629.76 1,004,629.76	Aa1 AA+ AA+
---	**---**	**---**	**07/29/2027 1.828**	**178,584,275.88 --- 177,595,024.74**	**3.99**	**178,584,275.88**	**97.7748**	**179,572,701.53 1,699,771.48 181,272,473.01**	**Aa2 AA AA**

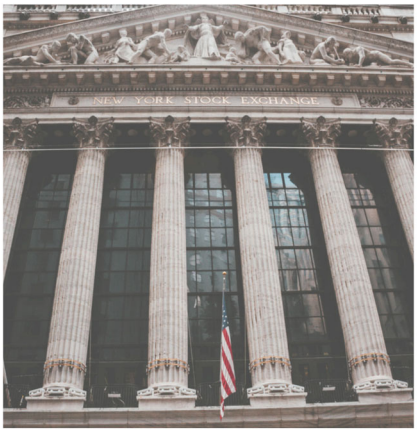
* Weighted by: Market Value. * Holdings Displayed by: Position.

CHANDLER ASSET MANAGEMENT

BOND MARKET REVIEW

A Monthly Review of Fixed Income Markets

September 2025



Market Data

World Stock Market Indices
data as of 8/29/2025

		Change (7/31/2025)	%CHG
S&P 500	**6,460.26**	120.87	1.91%
NASDAQ	**21,455.55**	333.10	1.58%
DOW JONES	**45,544.88**	1,413.90	3.20%
FTSE (UK)	**9,187.34**	54.53	0.60%
DAX (Germany)	**23,902.21**	(163.26)	(0.68%)
Hang Seng (Hong Kong)	**25,077.62**	304.29	1.23%
Nikkei (Japan)	**42,718.47**	1,648.65	4.01%

Source: Bloomberg. Please see descriptions of indices on Page 2.

CHANDLER ASSET MANAGEMENT

Toll Free: 800.317.4747
info@chandlerasset.com
chandlerasset.com

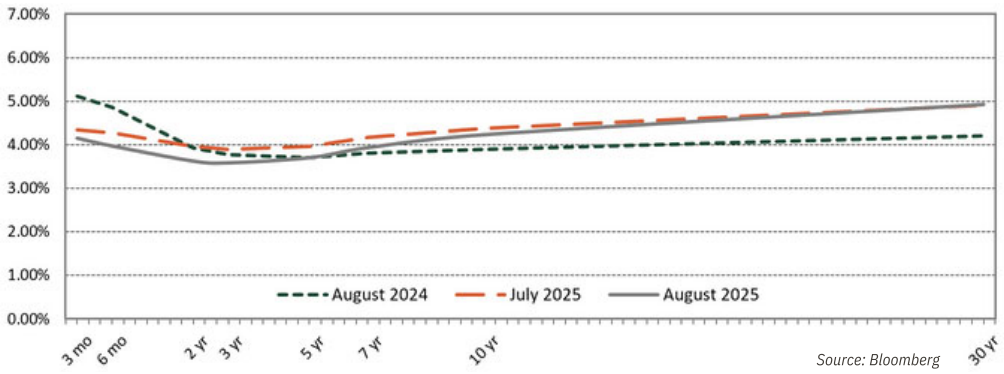
Market Summary

Economic data was mixed in August as market participants braced for a probable rate cut in September. Treasury yields were lower across the curve as the labor market and housing market showed signs of slowing. However, the consumer remained resilient as Retail Sales increased, while Consumer Confidence showed neither signs of exuberance nor caution. Core inflation levels remain above the Fed's target, and tariff impacts remain uncertain. Given the economic outlook, our view at Chandler is for a steeper yield curve driven mainly by gradual normalization of monetary policy starting with a 25 basis point rate cut in September.

After holding its benchmark federal funds rate steady at 4.25% to 4.50% at the July Federal Open Markets Committee meeting in July, the Federal Reserve did not convene in August. Nevertheless, Chair Jerome Powell indicated an interest-rate cut could be on the table for September, telling attendees at the Jackson Hole Economic Symposium, "The stability of the unemployment rate and other labor market measures allows us to proceed carefully as we consider changes to our policy stance".

The US Treasury yield curve steepened in August, as the 2-year Treasury yield declined 34 basis points to 3.62%, the 5-year Treasury was 28 basis points lower to 3.70%, and the 10-year Treasury yield was down 15 basis points to 4.23%. The spread between the 2-year and 10-year Treasury Note yield increased to +61 basis points at August month-end versus +42 basis points at July month-end. The spread between the 2-year Treasury and 10-year Treasury yield one year ago was -1.5 basis points. The spread between the 3-month Bill and 10-year Treasury Note yield was -7 basis points in August versus +4 basis points in July.

U.S. Treasury Yields Fall Sharply in August as a Rate Cut Looms in September



Source: Bloomberg

Expectations of Federal Reserve rate cuts pushed short-term yields lower in August. Investors anticipated the Fed would begin easing monetary policy soon, as economic growth moderated and recent data pointed to a slowing labor market. Although yields fell across the curve, long-term inflation expectations remained heightened amid trade policy uncertainty which slowed the decline in yields on the long end of the yield curve, thus the yield curve steepened. The 2-year Treasury Note, which tends to lead the Fed Funds Rate, dropped 34 basis points from the end of July to the end of August.

TREASURY YIELDS	Trend (▲/▼)	8/29/25	7/31/25	Change
3-Month	▼	4.15	4.34	(0.19)
2-Year	▼	3.62	3.96	(0.34)
3-Year	▼	3.58	3.90	(0.32)
5-Year	▼	3.70	3.97	(0.27)
7-Year	▼	3.93	4.16	(0.23)
10-Year	▼	4.23	4.38	(0.15)
30-Year	▲	4.93	4.90	0.03

Source: Bloomberg

BOND MARKET REVIEW

Since 1988, Chandler Asset Management has specialized in providing fixed income investment solutions to risk-averse public agencies and institutions. Chandler's mission is to provide fully customizable client-centered portfolio management that preserves principal, mitigates risk, and generates income in our clients' portfolios.

Credit Spreads Were Slightly Wider in August

CREDIT SPREADS	Spread to Treasuries	One Month Ago	Change
3-month top rated commercial paper	0.13	0.00	0.13
2-year A corporate note	0.39	0.33	0.06
5-year A corporate note	0.57	0.53	0.04
5-year Agency note	0.04	0.03	0.01

Source: Bloomberg

Data as of 8/29/2025

Crude Oil Prices Decreased in August

ECONOMIC INDICATOR	Current Release	Prior Release	One Year Ago
Trade Balance	(78.31) $B JUL. 31	(59.09) $B JUN. 30	(78.64) $B JUL. 31
Gross Domestic Product	3.30% JUN. 30	(0.50%) MAR. 31	3.00% JUN. 30
Unemployment Rate	4.30% AUG. 31	4.20% JUL. 31	4.20% AUG. 31
Prime Rate	7.50% AUG. 29	7.50% JUL. 31	8.50% AUG. 30
Refinitiv/CoreCommodity CRB Index	302.35 AUG. 29	299.78 JUL. 31	277.03 AUG. 30
Oil (West Texas Int.)	$64.01 AUG. 29	$69.26 JUL. 31	$73.55 AUG. 30
Consumer Price Index (y/o/y)	2.90% AUG. 31	2.70% JUL. 31	2.50% AUG. 31
Producer Price Index (y/o/y)	1.90% AUG. 31	1.90% JUL 31	0.30% AUG. 31
Euro/Dollar	1.17 AUG. 29	1.14 JUL 31	1.10 AUG. 30

Source: Bloomberg

Economic Roundup

Consumer Prices

Inflation ticked up in August, but tariff pass-through was not the cause. The Consumer Price Index (CPI) increased more than expected at 0.4% month-over-month and 2.9% year-over-year, while the Core CPI rose 0.3% month-over-month and 3.1% year-over-year. Core Services components, such as medical care services and auto insurance, led the increase. The Personal Consumption Expenditures (PCE) price index rose 0.2% month-over-month and held at 2.6% year-over-year in July. The Core PCE deflator, which excludes food and energy and is the Fed's preferred gauge, edged up 0.3% month-over-month and 2.9% year-over-year. Although inflation has trended toward the Federal Reserve's 2% target, the overall impact of tariff policy has not yet fully flowed through to the US economy.

Retail Sales

Back-to-school shopping was a likely catalyst to boost Retail Sales as online shopping, clothing, and sporting goods stores sales increased in August. Total Advance Retail Sales showed continued strength jumping 0.6% month-over-month, while July data was also revised up to 0.6% from the prior month. Control Group Sales, which feed into GDP, also jumped 0.74% in August from the prior month. Retail Sales rose 5.0% from the prior year in August, building on the 4.1% increase in July. The Conference Board's Consumer Confidence Index fell to 97.4 in August from a revised 98.7 in July. Measures of current conditions and future expectations declined, reflecting weaker sentiment on employment and income prospects. Views on business conditions ticked higher, helping offset the dip. While consumers have shown resilience, rising debt, increased delinquencies, persistent inflation concerns and signs of labor market softening may threaten future spending.

Labor Market

The U.S. economy added just 22,000 jobs in August, falling short of consensus expectations and punctuating the softening trend in the labor market. The three-month moving average and six-month moving average payrolls totaled 29,000 and 64,000 respectively. The unemployment rate rose to 4.3% in August from 4.2% in July. The labor participation rate inched up to 62.3%, remaining below the pre-pandemic level of 63.3%. The U-6 underemployment rate, which includes those who are marginally attached to the labor force and employed part time for economic reasons jumped to 8.1% in August from 7.9% in July. Average hourly earnings fell to 3.7% year-over-year from 3.9% last month.

Housing Starts

Housing starts dropped 8.5% in August to 1.307 million units, marking a pullback amid elevated inventory levels and a softening labor market. Single-family starts fell 7.0% in August to 890,000 units, hitting their lowest level since July 2024. Meanwhile, the Freddie Mac 30-year fixed mortgage rate declined to 6.6% in August. According to the S&P CoreLogic Case-Shiller 20-City Home Price Index, home prices slipped 0.25% month-over-month in June marking the fourth straight month home prices have fallen. The decline pulled the annual gain down to 2.1%, the weakest pace since the market turned higher in mid-2023, adding to signs of cooling in the housing market. Elevated mortgage rates and asking prices presented affordability challenges which have weighed on housing demand.

World Stock Market Index Descriptions
S&P 500–The S&P 500 is a market value-weighted index of 500 large-capitalization stocks. The 500 companies included in the index capture approximately 80% of available US market capitalization. NASDAQ–The NASDAQ Composite Index is the market capitalization-weighted index of over 3.300 common stocks listed on the NASDAQ stock exchange. Dow Jones–The Dow Jones Industrial Average is an index that tracks 30 large, publicly-owned companies trading on the New York Stock Exchange and the NASDAQ. The Financial Times Stock Exchange Group (FTSE)–The FTSE is a share index of the 100 companies listed on the London Stock Exchange with the highest market capitalization. DAX–The Deutscher Aktienindex (DAX) is a blue chip stock market index consisting of the 30 major German companies trading on the Frankfurt Stock Exchange. Hang Seng–The Hang Seng Index is a freefloat-adjusted market-capitalization- weighted stock market index in Hong Kong. It is used to record and monitor daily changes of the largest companies of the Hong Kong stock market and is the main indicator of overall market performance in Hong Kong. Nikkei–Japan's Nikkei 225 Stock Average is a price-weighted index composed of Japan's top 225 blue-chip companies traded on the Tokyo Stock Exchange.

© 2025 Chandler Asset Management, Inc. An independent, SEC-registered investment adviser. Data source: Bloomberg, Federal Reserve, and the US Department of Labor. This report is provided for informational purposes only and should not be construed as specific investment or legal advice. The information contained herein was obtained from sources believed to be reliable as of the date of publication, but may become outdated or superseded at any time without notice. Any opinions or views expressed are based on current market conditions and are subject to change. This report may contain forecasts and forward-looking statements which are inherently limited and should not be relied upon as an indicator of future results. Past performance is not indicative of future results. This report is not intended to constitute an offer, solicitation, recommendation, or advice regarding any securities or investment strategy and should not be regarded by recipients as a substitute for the exercise of their own judgment. Fixed income investments are subject to interest rate, credit, and market risk. Interest rate risk: The value of fixed income investments will decline as interest rates rise. Credit risk: the possibility that the borrower may not be able to repay interest and principal. Low-rated bonds generally have to pay higher interest rates to attract investors willing to take on greater risk. Market risk: the bond market, in general, could decline due to economic conditions, especially during periods of rising interest rates. The S&P Corelogic Case-Shiller home price index tracks monthly changes in the value of residential real estate in 20 metropolitan regions across the nation.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM F.8

DATE: October 3, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Christina Sackett, Chief Financial Officer

SUBJECT: True-Up of Fixed Costs between Member Governments through September 2025 - *Receive Report*

SUMMARY

Member Government actual contributions are adjusted at year-end to the current year's budgeted fixed costs, based upon their pro-rata portion of current year production. The process is referred to as True-Up and occurs after each fiscal year has closed (September 30). The attached table reports the members' actual allocation of fixed costs through September 2025.

SUGGESTED ACTION

Receive and File.

COST/FUNDING SOURCE

N/A

DISCUSSION

To assist our Members in their planning and budgeting, we present a monthly schedule that shows the potential true-up adjustment due each September based on the water production to date for the current fiscal year. This is done to ensure that each member is aware of the upcoming true-up billing and that the member government will have time to take appropriate planning measures for the September 2025 year-end closeout.

Each member is billed for fixed charges through the year based upon their respective pro-rata share of the prior year's production.

BACKGROUND

As required by the Master Water Supply Contract, each member's actual contributions are adjusted at year-end to the current year's budgeted fixed costs, based upon their pro-rata portion of current year production.

Attachments (1)

Actual True Up SEPTEMBER-30-2025

ACTUAL TRUE UP FOR FY 2025 AS OF 9/30/2025

	MONTHLY DEMAND							
	ST PETE	PINELLAS	TAMPA (Morris Br)	HILLSBOROUGH	PASCO	NEW PORT RICHEY	TOTALS	
Oct-24	904.65	1,561.19	-	2,291.20	1,189.80	92.80	6,039.64	
Nov-24	875.78	1,532.79	-	2,521.60	1,207.78	88.75	6,226.70	
Dec-24	852.96	1,503.59	-	2,423.36	1,188.49	90.50	6,058.90	
Jan-25	822.77	1,453.04	-	2,257.00	1,130.56	87.17	5,750.54	
Feb-25	754.74	1,332.85	-	2,138.32	1,074.72	80.44	5,381.07	
Mar-25	848.35	1,486.85	-	2,419.29	1,216.40	90.79	6,061.68	
Apr-25	863.53	1,551.32	-	2,686.77	1,351.80	92.55	6,545.97	
May-25	902.39	1,602.31	-	2,816.22	1,384.25	95.57	6,800.74	
Jun-25	809.26	1,387.30	-	2,302.05	1,173.08	86.52	5,758.21	
Jul-25	829.27	1,422.67	-	2,388.81	1,162.65	91.60	5,895.00	
Aug-25	842.34	1,411.99	-	2,363.73	1,198.00	91.79	5,907.85	
Sep-25	809.97	1,345.47	171.73	2,373.67	1,216.09	91.72	6,008.65	
FY 24 FYE	10,205.79	18,489.55	1,384.86	27,783.45	13,827.04	1,166.15	72,856.84	199.06 MGD
FY 25 YTD	10,116.01	17,591.37	171.73	28,982.02	14,493.62	1,080.20	72,434.95	198.45 MGD
+ / -	(89.78)	(898.18)	(1,213.13)	1,198.57	666.58	(85.95)	(421.89)	(0.61) MGD
FY25 YTD MGD	27.72	48.20	0.47	79.40	39.71	2.96	198.45	
% of YTD	13.97%	24.29%	0.24%	40.01%	20.01%	1.49%	100.00%	
FY 24 MGD	27.88	50.52	3.78	75.91	37.78	3.19	199.06	
% of FY 24	14.12%	25.09%	2.30%	39.48%	17.49%	1.52%	100.00%	
Fixed billed FY25	21,704,592.98	39,329,843.52	2,942,731.76	59,095,970.34	29,411,747.59	2,483,416.49	154,968,302.68	
Actual fixed based on % of ytd	$ 21,642,327.35	$ 37,635,212.71	$ 367,401.46	$ 62,004,521.96	$ 31,007,844.85	$ 2,310,994.36	$ 154,968,302.68	
Potential True-up	$ (62,265.63)	$ (1,694,630.81)	$ (2,575,330.30)	$ 2,908,551.62	$ 1,596,097.26	$ (172,422.13)	$ (0.00)	

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM F.9

DATE: October 1, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Christina Sackett, Chief Financial Officer

SUBJECT: Vendor's Status Report for September 2025 - *Receive Report*

SUMMARY

The attached is a status report of As-Needed Professional Service Contractors and Vendors utilized by Tampa Bay Water through September 2025.

SUGGESTED ACTION

Receive and File

COST/FUNDING SOURCE

N/A

DISCUSSION

Attached is a summary of the as-needed contracted services being utilized by the agency through September 2025. This report shows the total contract values, cumulative purchase orders issued against the contracts, and actual expenditures made under the contracts.

Attachment (1)

Contract Summary

Monthly Status Report of Vendors

September 1, 2025 thru September 30, 2025

Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
A.C. SCHULTES OF FLORIDA, INC. 08/19/19 thru 09/30/22 2019053	$800,000.00		$830,000.00	$830,000.00	$682,975.00	$147,025.00
A.C. SCHULTES OF FLORIDA, INC. 11/18/24 thru 03/30/26 2025700	$500,000.00		$0.00	$0.00	$0.00	$0.00
ACLARIAN LLC 10/20/22 thru 05/25/25 2023702	$98,000.00		$98,000.00	$98,000.00	$80,084.10	$17,915.90
ADVANCED ENVIRONMENTAL LABORATORIES, 03/21/22 thru 02/28/23 2022036	$200,000.00		$190,000.00	$190,000.00	$130,549.10	$59,450.90
ADVANCED ROOFING, INC. 11/22/23 thru 11/30/24 2024012	$600,000.00	$130,000.00	$150,000.00	$280,000.00	$99,873.35	$180,126.65
AECOM TECHNICAL SERVICES, INC. 09/20/21 thru 09/01/26 2021038	$2,000,000.99	$300,840.00	$792,010.00	$1,092,850.00	$360,649.55	$732,200.45
AECOM TECHNICAL SERVICES, INC. 07/15/24 thru 12/31/26 2024029	$5,254,167.00		$5,254,167.00	$5,254,167.00	$801,589.87	$4,452,577.13
AIR MECHANICAL & SERVICE CORP. 10/01/22 thru 02/02/23 2023701	$2,163,069.60	$341,910.97	$1,187,068.08	$1,528,979.05	$1,387,449.56	$141,529.49
AIRGAS SPECIALTY PRODUCTS, INC. 01/01/23 thru 12/31/23 2023016V	$2,439,522.95		$1,814,539.00	$1,814,539.00	$1,725,652.87	$88,886.13
AIRGAS USA, LLC 08/19/24 thru 09/30/25 2025012	$11,641,440.00		$2,842,895.00	$2,842,895.00	$2,777,935.62	$64,959.38
AJAX PAVING INDUSTRIES OF FLORIDA LLC 10/18/21 thru 09/02/23 2022701	$925,000.00		$754,763.00	$754,763.00	$754,493.00	$270.00
ALAN PLUMMER AND ASSOCIATES, INC. 05/09/22 thru 09/01/26 2021036V	$2,001,205.65		$189,376.00	$189,376.00	$189,376.00	$0.00
ALLIED UNIVERSAL CORPORATION 10/01/23 thru 09/30/24 2024006	$16,554,611.91		$9,706,145.91	$9,706,145.91	$8,485,755.21	$1,220,390.70
AMERICAN SPIRALWELD PIPE CO.	$55,000,000.00		$46,085,053.72	$46,085,053.72	$8,823,837.27	$37,261,216.45

Contract Summary

Monthly Status Report of Vendors

September 1, 2025 thru September 30, 2025

Vendor Name and Contract Dates		Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
10/29/24 thru 12/31/29	2025707						
AMERICAN WATER ACCIONA AGUA LLC		$52,976,932.15		$30,283,041.89	$30,283,041.89	$28,300,029.48	$1,983,012.41
11/15/04 thru	2005062						
AMICI ENGINEERING CONTRACTORS, LLC		$2,000,000.00		$2,100,151.00	$2,100,151.00	$1,003,143.35	$1,097,007.65
08/16/21 thru 09/30/25	2021046						
AMICI ENGINEERING CONTRACTORS, LLC		$800,000.00		$0.00	$0.00	$0.00	$0.00
10/01/25 thru 09/30/30	2026009						
APG ELECTRIC, INC.		$206,323.18		$206,323.18	$206,323.18	$98,661.57	$107,661.61
08/21/25 thru 09/30/28	2025053						
APPLIED DRILLING ENG		$1,735,110.00		$1,235,110.00	$1,235,110.00	$0.00	$1,235,110.00
11/18/24 thru 03/30/26	2025701						
APPLIED ECOLOGY, INC		$400,000.00	$21,575.12	$162,453.30	$184,028.42	$100,640.43	$83,387.99
03/15/22 thru 03/31/25	2022035						
APPLIED ECOLOGY, INC		$364,150.83		$297,723.02	$297,723.02	$233,770.93	$63,952.09
10/01/22 thru 09/30/26	2022054						
ARCADIS US INC.		$750,000.00		$624,183.00	$624,183.00	$495,396.54	$128,786.46
03/21/22 thru 05/01/27	2022019						
ARCHER WESTERN CONSTRUCTION LLC		$22,450,100.00		$22,450,100.00	$22,450,100.00	$20,908,628.32	$1,541,471.68
11/14/22 thru 12/31/25	2023001						
ARCHER WESTERN CONSTRUCTION LLC		$3,319,100.00		$3,319,100.00	$3,319,100.00	$178,315.00	$3,140,785.00
02/03/25 thru 07/23/27	2025036						
ARDURRA GROUP, INC		$2,000,001.00		$341,505.00	$341,505.00	$193,164.14	$148,340.86
09/20/21 thru 09/01/26	2021030						
ARDURRA GROUP, INC		$500,000.00	$48,600.00	$0.00	$48,600.00	$0.00	$48,600.00
10/03/24 thru 09/30/29	2025002						
ARTEMIS CONSULTING COLLECTIVE INC		$1,237,342.52	$199,694.00	$0.00	$199,694.00	$0.00	$199,694.00
08/18/25 thru 09/30/26	2022003V						

Contract Summary

Monthly Status Report of Vendors

September 1, 2025 thru September 30, 2025

Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
ARTEMIS CONSULTING COLLECTIVE INC 09/15/25 thru 09/30/26 2022028V	$96,088.95	$93,579.50	$0.00	$93,579.50	$0.00	$93,579.50
ARTEMIS CONSULTING COLLECTIVE INC 09/15/25 thru 09/30/26 2022052V	$225,663.48	$162,632.00	$0.00	$162,632.00	$0.00	$162,632.00
B & I CONTRACTORS, INC. 09/19/22 thru 09/30/23 2022059V	$368,984.50		$354,871.26	$354,871.26	$323,855.75	$31,015.51
BAKER TILLY ADVISORY GROUP 07/21/25 thru 07/21/26 2025047	$125,000.00		$125,000.00	$125,000.00	$0.00	$125,000.00
BAL ENGINEERING, INC. 02/14/19 thru 2019700	$90,000.00		$87,400.00	$87,400.00	$76,795.00	$10,605.00
BAL ENGINEERING, INC. 09/18/23 thru 12/10/25 2024701	$200,000.00	$6,000.00	$49,000.00	$55,000.00	$6,300.00	$48,700.00
BAYVIEW PUBLIC RELATIONS INC. 10/01/22 thru 09/30/25 2023024	$525,000.00		$65,523.00	$65,523.00	$62,184.50	$3,338.50
BEST LINE OIL COMPANY 05/19/25 thru 09/30/27 2025715	$300,000.00		$10,000.00	$10,000.00	$1,203.36	$8,796.64
BIG SEA, INC. 10/01/22 thru 09/30/24 2023011	$400,000.00		$127,425.00	$127,425.00	$127,425.00	$0.00
BLACK & VEATCH CORPORATION 09/01/16 thru 10/26/25 2016031	$3,950,877.00		$3,950,877.00	$3,950,877.00	$2,966,412.76	$984,464.24
BLACK & VEATCH CORPORATION 09/20/21 thru 09/30/29 2022001	$24,024,246.92		$16,320,948.80	$16,320,948.80	$11,937,112.97	$4,383,835.83
BUENAVENTURA LAW, PLLC 11/25/24 thru 12/31/25 2024025V	$115,000.00	$94,758.82	$20,000.00	$114,758.82	$1,160.00	$113,598.82
BUSH GRAZIANO RICE & HEARING, P.A. 10/16/23 thru 10/16/24 2024014	$150,000.00		$55,000.00	$55,000.00	$19,458.30	$35,541.70
CARMEUSE LIME & STONE, INC.	$10,133,383.35		$7,062,946.00	$7,062,946.00	$6,750,694.85	$312,251.15

Contract Summary

Monthly Status Report of Vendors

September 1, 2025 thru September 30, 2025

Vendor Name and Contract Dates		Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
08/15/22 thru 09/30/23	2023018						
CAROLLO ENGINEERS INC		$2,000,000.00		$680,681.50	$680,681.50	$579,730.35	$100,951.15
09/20/21 thru 09/01/26	2021029						
CATALYST COMMUNICATIONS GROUP LLC		$945,000.00		$271,268.15	$271,268.15	$229,473.05	$41,795.10
10/01/22 thru 09/30/25	2023010						
CDM SMITH INC		$2,000,001.00		$529,678.98	$529,678.98	$508,368.01	$21,310.97
09/20/21 thru 09/01/26	2021033						
CDW LLC		$287,327.00		$0.00	$0.00	$0.00	$0.00
01/16/25 thru 12/31/26	2025712						
CEC MOTOR & UTILITY SERVICES LLC		$1,000,000.00		$100,000.00	$100,000.00	$59,379.50	$40,620.50
04/17/23 thru 04/30/27	2023032						
CHANDLER ASSET MANAGEMENT, INC.		$526,975.00		$360,451.30	$360,451.30	$338,788.60	$21,662.70
08/17/20 thru 12/13/22	2021700						
CHEMICAL SYSTEMS OF ORLANDO, INC.		$2,754,612.56		$837,162.00	$837,162.00	$704,852.57	$132,309.43
08/19/24 thru 09/30/25	2025013						
CITRUS PARK WELL DRILLING & IRRIGATION INC		$400,000.00		$0.00	$0.00	$0.00	$0.00
06/20/22 thru 06/30/23	2022058						
CITRUS SPRINGS UTILITY, LLC		$144,500.00		$144,500.00	$144,500.00	$52,750.00	$91,750.00
11/18/24 thru 12/31/25	AGR2025006						
CIVILSURV DESIGN GROUP, INC.		$500,000.00		$0.00	$0.00	$0.00	$0.00
10/01/24 thru 09/30/29	2025003						
CL2 SOLUTIONS, LLC.		$30,000.00		$0.00	$0.00	$0.00	$0.00
10/23/24 thru 10/23/25	2025706						
CLEAN SPRAY CORPORATION		$300,000.00		$0.00	$0.00	$0.00	$0.00
05/16/22 thru 08/03/25	2022708						
CONN & BUENAVENTURA, P.A.		$195,000.00		$182,000.00	$182,000.00	$91,807.71	$90,192.29
11/13/23 thru 12/31/24	2024025						

Contract Summary

Monthly Status Report of Vendors

September 1, 2025 thru September 30, 2025

Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
CORCORAN & ASSOCIATES, INC. 08/18/20 thru 08/18/23 2021004	$750,000.00		$702,200.00	$702,200.00	$679,470.00	$22,730.00
CORCORAN & ASSOCIATES, INC. 10/01/25 thru 09/30/27 2025051	$750,000.00		$0.00	$0.00	$0.00	$0.00
CORE & MAIN LP 11/06/24 thru 12/31/29 2025709	$4,000,000.00		$2,576,187.02	$2,576,187.02	$487,559.00	$2,088,628.02
CORRPRO COMPANIES, INC. 01/01/22 thru 12/31/26 2022011	$750,000.00		$616,153.00	$616,153.00	$427,773.97	$188,379.03
CUMBEY & FAIR, INC. 10/03/24 thru 09/30/29 2025004	$500,000.00	$273,000.00	$0.00	$273,000.00	$0.00	$273,000.00
DESIGNER AT LARGE 10/01/22 thru 09/30/24 2023012	$160,000.00		$42,089.00	$42,089.00	$42,089.00	$0.00
DEWBERRY ENGINEERS, INC 05/17/21 thru 12/31/25 2017026V	$566,095.97		$197,920.00	$197,920.00	$179,423.91	$18,496.09
DEWBERRY ENGINEERS, INC 09/20/21 thru 09/01/26 2021034	$2,000,001.00		$173,953.00	$173,953.00	$20,570.13	$153,382.87
DEWBERRY ENGINEERS, INC 10/03/24 thru 09/30/29 2025005	$500,000.00		$64,044.98	$64,044.98	$51,156.37	$12,888.61
DG INVESTMENT INTERMEDIATE HOLDINGS 2, 07/21/25 thru 02/18/29 2025719	$881,062.08		$0.00	$0.00	$0.00	$0.00
DIALOGUE PUBLIC RELATIONS, LLC 10/01/22 thru 09/30/25 2023009	$945,000.00	$30,000.00	$753,887.50	$783,887.50	$334,331.69	$449,555.81
DIGITAL AERIAL SOLUTIONS, LLC 10/21/24 thru 09/30/28 2025010	$807,383.68		$393,422.76	$393,422.76	$190,076.82	$203,345.94
DONALD J POLMANN 04/17/23 thru 04/30/26 2023509	$150,000.00		$10,625.00	$10,625.00	$10,625.00	$0.00
EARTH RESOURCES, INC.	$400,000.00	$90,300.00	$7,389.24	$97,689.24	$7,389.24	$90,300.00

Contract Summary

Monthly Status Report of Vendors

September 1, 2025 thru September 30, 2025

Vendor Name and Contract Dates		Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
03/15/22 thru 03/31/25	2022027						
EARTH RESOURCES, INC.		$417,406.07		$336,324.26	$336,324.26	$289,516.02	$46,808.24
10/03/22 thru 09/30/26	2022053						
EARTHBALANCE		$400,000.00		$32,994.00	$32,994.00	$32,994.00	$0.00
03/29/22 thru 03/31/25	2022041						
ECO-LAND DESIGN, LLC		$284,000.00		$2,500.00	$2,500.00	$150.00	$2,350.00
08/19/24 thru 09/30/25	2025025						
ECOHYDROLOGIX LLC		$400,000.00		$29,750.00	$29,750.00	$29,750.00	$0.00
03/15/22 thru 03/31/25	2022032						
ECOHYDROLOGIX LLC		$655,976.00		$511,400.00	$511,400.00	$453,382.29	$58,017.71
10/03/22 thru 09/30/26	2022055						
ELECTRIC GAS INDUSTRIES ASSOCIATION		$18,145,813.00		$6,143,184.00	$6,143,184.00	$3,932,918.59	$2,210,265.41
10/21/19 thru 10/31/24	2020010						
ELECTRIC GAS INDUSTRIES ASSOCIATION		$12,098,169.00		$0.00	$0.00	$0.00	$0.00
11/01/25 thru 10/31/30	2026015						
ELECTRICAL ENGINEERING ENTERPRISES INC		$1,615,000.00		$1,579,248.00	$1,579,248.00	$1,328,709.40	$250,538.60
12/14/20 thru 12/14/22	2021014						
ELECTRICAL ENGINEERING ENTERPRISES INC		$1,717,198.00		$1,717,198.00	$1,717,198.00	$151,993.54	$1,565,204.46
12/19/24 thru 08/24/26	2025028						
ELECTRICAL ENGINEERING ENTERPRISES INC		$456,350.00	$250,000.00	$0.00	$250,000.00	$0.00	$250,000.00
11/18/24 thru 12/31/26	2025040						
EMERGENCY MANAGEMENT SERVICES		$75,000.00		$25,000.00	$25,000.00	$21,907.41	$3,092.59
12/16/24 thru 10/23/27	2025710						
ENERGY CAP, LLC		$148,662.25		$148,662.25	$148,662.25	$142,667.85	$5,994.40
02/18/19 thru	2019030						
ENTERPRISE FM TRUST		$3,656,500.00		$2,826,904.49	$2,826,904.49	$2,768,510.93	$58,393.56
02/19/18 thru	2018704						

Contract Summary

Monthly Status Report of Vendors

September 1, 2025 thru September 30, 2025

Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
ENTERPRISE FM TRUST 09/15/25 thru 05/31/26 2026702	$790,000.00	$175,000.00	$0.00	$175,000.00	$0.00	$175,000.00
ENVIRONMENTAL SCIENCE ASSOCIATES 06/15/20 thru 12/31/24 2020709	$1,520,000.00		$1,614,104.96	$1,614,104.96	$1,484,945.57	$129,159.39
ENVIRONMENTAL SCIENCE ASSOCIATES 08/17/20 thru 09/30/25 2021001	$2,739,331.00		$2,739,331.00	$2,739,331.00	$2,675,983.16	$63,347.84
ENVIRONMENTAL SCIENCE ASSOCIATES 04/14/22 thru 03/31/25 2022030	$400,000.00		$364,724.00	$364,724.00	$328,819.98	$35,904.02
ENVIRONMENTAL SCIENCE ASSOCIATES 03/21/22 thru 03/31/25 2022034V	$400,000.00		$65,127.00	$65,127.00	$64,137.16	$989.84
ENVIRONMENTAL SCIENCE ASSOCIATES 09/20/24 thru 06/14/29 2025704	$2,374,000.00		$489,858.00	$489,858.00	$47,993.90	$441,864.10
ENVIRONMENTAL SCIENCE ASSOCIATES 05/19/25 thru 09/30/29 2025716	$2,477,000.00		$0.00	$0.00	$0.00	$0.00
FARMLAND RESERVE, INC. 02/11/25 thru 12/31/25 AGR202507B	$9,475,019.00		$0.00	$0.00	$0.00	$0.00
FIVE12 PAINTING & REMODELING LLC 10/01/22 thru 09/30/23 2023014	$775,993.00		$359,280.00	$359,280.00	$235,611.00	$123,669.00
FLATWOODS CONSULTING GROUP, INC. 03/15/22 thru 03/31/25 2022029	$400,000.00		$70,300.00	$70,300.00	$29,784.35	$40,515.65
FLORIDA TREE AND PROPERTY MAINTENANCE 01/01/23 thru 12/31/23 2023025	$1,040,313.75		$925,000.00	$925,000.00	$857,511.00	$67,489.00
FRONT LINE POWER LLC 11/18/24 thru 12/31/26 2025039	$764,182.40		$690,000.00	$690,000.00	$152,292.30	$537,707.70
GANNETT FLEMING, INC 08/17/20 thru 2020020	$2,499,999.10		$1,528,303.60	$1,528,303.60	$1,412,789.70	$115,513.90
GANNETT FLEMING, INC	$2,100,000.00		$208,799.00	$208,799.00	$146,198.76	$62,600.24

Contract Summary

Monthly Status Report of Vendors

September 1, 2025 thru September 30, 2025

Vendor Name and Contract Dates		Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
03/17/25 thru 03/31/28	2025043						
GARNEY COMPANIES, INC.		$204,100,336.07		$131,991,326.62	$131,991,326.62	$10,263,852.25	$121,727,474.37
11/13/23 thru 12/31/27	2023027						
GEOPOINT SURVEYING, INC.		$598,281.60		$340,272.24	$340,272.24	$310,537.20	$29,735.04
09/20/21 thru 09/30/25	2021043						
GEOPOINT SURVEYING, INC.		$1,661,360.00		$0.00	$0.00	$0.00	$0.00
09/15/25 thru 09/30/29	2026001						
GEORGE F YOUNG INC		$500,000.00		$0.00	$0.00	$0.00	$0.00
10/01/24 thru 09/30/29	2025006						
GEOSYNTEC CONSULTANTS, INC.		$600,000.00		$146,735.00	$146,735.00	$146,735.00	$0.00
10/17/22 thru 09/30/25	2023007						
GHD SERVICES, INC.		$450,000.00		$218,925.77	$218,925.77	$163,027.94	$55,897.83
09/20/21 thru 09/30/24	2022007						
GRAY ROBINSON, P.A.		$1,546,900.50		$1,428,875.61	$1,428,875.61	$662,057.17	$766,818.44
12/17/18 thru 09/30/19	2019039						
GREENMAN-PEDERSEN, INC.		$300,000.00		$274,835.75	$274,835.75	$271,153.41	$3,682.34
02/18/19 thru 02/19/22	2019017						
GSI ENVIRONMENTAL, INC.		$1,500,000.00		$1,426,343.96	$1,426,343.96	$1,359,448.67	$66,895.29
10/21/19 thru 10/31/24	2020017						
GSI ENVIRONMENTAL, INC.		$1,000,000.00		$0.00	$0.00	$0.00	$0.00
11/15/24 thru 10/31/29	2025021						
HAWKINS, INC.		$1,767,673.30	$113,236.00	$711,184.00	$824,420.00	$585,075.35	$239,344.65
08/15/22 thru 09/30/23	2023019						
HAZEN & SAWYER, P.C.		$400,000.00		$359,650.83	$359,650.83	$344,008.33	$15,642.50
10/21/19 thru 10/30/25	2020013						
HAZEN & SAWYER, P.C.		$800,000.00		$220,000.00	$220,000.00	$194,749.14	$25,250.86
10/21/19 thru 10/31/24	2020018						

Contract Summary

Monthly Status Report of Vendors

September 1, 2025 thru September 30, 2025

Vendor Name and Contract Dates		Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
HAZEN & SAWYER, P.C.		$2,000,001.00		$867,650.00	$867,650.00	$379,658.00	$487,992.00
09/20/21 thru 09/01/26	2021032						
HAZEN & SAWYER, P.C.		$750,000.00		$475,263.00	$475,263.00	$412,929.54	$62,333.46
03/21/22 thru 05/01/27	2022020						
HAZEN & SAWYER, P.C.		$1,089,370.10		$819,965.00	$819,965.00	$636,311.03	$183,653.97
11/08/22 thru 12/31/25	2022060						
HAZEN & SAWYER, P.C.		$600,000.00		$66,200.00	$66,200.00	$11,098.00	$55,102.00
10/17/22 thru 09/30/25	2023006						
HAZEN & SAWYER, P.C.		$2,630,698.00		$2,630,698.00	$2,630,698.00	$125,529.30	$2,505,168.70
11/18/24 thru 05/18/26	2024030						
HAZEN & SAWYER, P.C.		$1,000,000.00	$40,000.00	$20,000.00	$60,000.00	$18,352.00	$41,648.00
11/15/24 thru 10/31/29	2025022						
HILLSBOROUGH COUNTY		$200,245.00		$200,245.00	$200,245.00	$139,356.32	$60,888.68
10/01/24 thru 09/30/25	AGR2025001						
HILLSBOROUGH COUNTY		$1,261,968.00		$0.00	$0.00	$0.00	$0.00
03/14/25 thru 12/31/25	AGR2025008						
HPC INDUSTRIAL SERVICES, LLC		$283,453.00		$0.00	$0.00	$0.00	$0.00
08/19/24 thru 09/30/25	2025020						
HSW CONSULTING LLC		$450,000.00		$106,572.00	$106,572.00	$98,306.25	$8,265.75
09/20/21 thru 09/30/24	2022006						
HUSS DRILLING, INC		$806,525.00		$806,525.00	$806,525.00	$0.00	$806,525.00
08/19/24 thru 09/30/26	2024702						
IN DEPTH INC.		$200,000.00	$100,000.00	$100,000.00	$200,000.00	$68,115.00	$131,885.00
10/16/23 thru 03/30/25	2024008						
INTERA, INC.		$749,999.90		$346,400.58	$346,400.58	$225,618.99	$120,781.59
10/21/19 thru 10/31/24	2020019						
INTERACID NORTH AMERICA, INC.		$4,891,461.26		$1,000,000.00	$1,000,000.00	$502,207.72	$497,792.28

Contract Summary

Monthly Status Report of Vendors

September 1, 2025 thru September 30, 2025

Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
05/19/25 thru 09/30/25 2025016V						
JACOBS ENGINEERING GROUP INC 09/20/21 thru 09/01/26 2021037	$1,999,001.00		$598,793.24	$598,793.24	$572,743.24	$26,050.00
JACOBS ENGINEERING GROUP INC 08/21/23 thru 05/30/27 2023026	$836,348.00		$836,348.00	$836,348.00	$591,354.89	$244,993.11
JACOBS ENGINEERING GROUP INC 08/20/25 thru 09/30/28 2025029	$369,499.00	$369,499.00	$0.00	$369,499.00	$0.00	$369,499.00
JOHN H GRANGER MAINTENANCE & 08/16/21 thru 09/30/25 2021044	$2,000,000.00		$1,927,504.00	$1,927,504.00	$1,592,442.70	$335,061.30
JONES WALKER, LLP 01/01/24 thru 01/01/25 2024040	$160,000.00	$80,125.04	$80,000.00	$160,125.04	$60,170.03	$99,955.01
JONES WALKER, LLP 10/01/25 thru 09/30/27 2025052	$750,000.00		$0.00	$0.00	$0.00	$0.00
KAT CONSTRUCTION & MATERIALS, INC. 09/30/24 thru 12/31/26 2020044V	$10,663,512.64		$10,663,512.64	$10,663,512.64	$2,095,764.90	$8,567,747.74
KAT CONSTRUCTION & MATERIALS, INC. 12/01/23 thru 12/31/25 2024011	$1,335,340.00		$1,335,340.00	$1,335,340.00	$1,302,915.98	$32,424.02
KELLER AMERICA, INC 08/19/24 thru 09/30/26 2025001	$226,224.60	$11,313.90	$41,575.17	$52,889.07	$41,575.17	$11,313.90
KEMIRA WATER SOLUTIONS, INC. 04/21/25 thru 09/30/25 2023017V	$6,893,963.00		$2,000,000.00	$2,000,000.00	$1,696,430.18	$303,569.82
LAND RESERVE, INC. 02/11/25 thru 12/31/25 AGR202507A	$9,475,019.00		$0.00	$0.00	$0.00	$0.00
LHOIST NORTH AMERICA OF ALABAMA, LLC 09/05/24 thru 09/30/25 2025011	$1,494,353.20		$375,113.00	$375,113.00	$345,014.63	$30,098.37
LOCHER ENVIRONMENTAL TECHNOLOGY LLC 01/05/22 thru 12/01/27 2022704	$143,673.00		$50,000.00	$50,000.00	$31,447.69	$18,552.31

Contract Summary

Monthly Status Report of Vendors

September 1, 2025 thru September 30, 2025

Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
MAINZER MANAGEMENT INC 10/01/23 thru 09/30/25 2024004	$278,700.00		$185,800.00	$185,800.00	$126,858.00	$58,942.00
MANSFIELD OIL COMPANY OF GAINSVILLE INC 09/15/25 thru 05/01/28 2026701	$250,000.00		$0.00	$0.00	$0.00	$0.00
MATHESON TRI-GAS INC. 01/01/25 thru 09/30/25 2025017	$3,171,057.98		$856,610.00	$856,610.00	$701,928.93	$154,681.07
MAULDIN & JENKINS, LLC 04/18/22 thru 02/28/27 2022900	$601,900.00		$433,000.00	$433,000.00	$393,700.00	$39,300.00
MCKIM & CREED PA 09/20/21 thru 09/01/26 2021035	$2,000,001.01		$298,645.00	$298,645.00	$207,041.64	$91,603.36
MCKIM & CREED PA 05/27/25 thru 04/19/27 2025042	$1,464,000.00		$1,464,000.00	$1,464,000.00	$177,375.95	$1,286,624.05
MICHAEL T. HANKIN, P.A. 07/21/25 thru 12/31/27 2025054	$20,000.00		$10,000.00	$10,000.00	$0.00	$10,000.00
MONTROSE ENVIRONMENTAL SOLUTIONS, INC. 09/20/21 thru 09/30/24 2022008	$450,000.00		$138,466.00	$138,466.00	$128,042.69	$10,423.31
MORENO INDUSTRIAL 10/01/25 thru 09/30/30 2026007	$800,000.00		$0.00	$0.00	$0.00	$0.00
NABORS, GIBLIN, & NICKERSON P.A. 12/17/18 thru 09/17/19 2019040	$135,000.00		$151,292.14	$151,292.14	$63,116.62	$88,175.52
NATIONAL EC SERVICES, INC. 10/17/22 thru 09/30/25 2023005	$600,000.00	$85,000.00	$514,960.00	$599,960.00	$445,382.08	$154,577.92
NORTHWEST PIPE COMPANY 05/02/25 thru 12/31/28 2025718	$9,678,046.80		$9,678,046.80	$9,678,046.80	$3,303,646.80	$6,374,400.00
ODYSSEY MANUFACTURING COMPANY 01/01/25 thru 09/30/25 2025018	$31,206,767.20	$3,972,497.00	$0.00	$3,972,497.00	$0.00	$3,972,497.00
PAFF TREE SERVICE, LLC	$650,000.00		$548,609.00	$548,609.00	$483,900.00	$64,709.00

Contract Summary

Monthly Status Report of Vendors

September 1, 2025 thru September 30, 2025

Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
03/29/22 thru 03/31/23 2022046						
PARTRIDGE WELL DRILLING COMPANY, INC 11/18/24 thru 03/30/26 2025702	$500,000.00		$0.00	$0.00	$0.00	$0.00
PASCO COUNTY OFFICES 10/01/24 thru 09/30/25 AGR2025002	$193,107.00		$193,107.00	$193,107.00	$148,323.48	$44,783.52
PASCO COUNTY OFFICES 10/01/25 thru 12/31/27 AGR2026002	$428,400.00		$0.00	$0.00	$0.00	$0.00
PCL CONSTRUCTION, INC. 08/21/23 thru 06/30/26 2023028	$1,504,600.00		$1,504,600.00	$1,504,600.00	$1,447,147.83	$57,452.17
PCL CONSTRUCTION, INC. 08/21/23 thru 05/30/27 2023029	$147,958.00		$147,958.00	$147,958.00	$101,556.17	$46,401.83
PERSONNEL SOLUTIONS PLUS LLC 05/15/23 thru 04/02/30 2023705	$200,000.00		$25,000.00	$25,000.00	$23,575.35	$1,424.65
PERSSON, COHEN, MOONEY, FERNANDEZ & 03/01/25 thru 02/28/26 2025045	$437,500.00		$192,500.00	$192,500.00	$150,000.00	$42,500.00
PFM ASSET MANAGEMENT LLC 06/09/06 thru 09/30/17 2006067	$500,000.00		$278,915.00	$278,915.00	$223,407.50	$55,507.50
PFM FINANCIAL ADVISORS LLC 05/15/23 thru 03/21/26 2023703	$144,000.00		$36,000.00	$36,000.00	$17,500.00	$18,500.00
PINELLAS COUNTY BOARD OF COUNTY 10/01/24 thru 09/30/25 AGR2025003	$188,107.00		$188,107.00	$188,107.00	$140,441.22	$47,665.78
PIPER FIRE PROTECTION, INC. 10/01/22 thru 09/30/23 2023020	$700,000.00		$434,955.92	$434,955.92	$341,324.74	$93,631.18
PLYMOUTH PLAZA, LLC 01/01/25 thru 12/31/25 2025044	$67,500.00	$16,875.00	$50,625.00	$67,500.00	$46,633.06	$20,866.94
POLYDYNE INC 10/01/23 thru 09/30/24 2024005	$1,618,110.00	$88,785.00	$906,107.00	$994,892.00	$764,230.50	$230,661.50

Contract Summary

Monthly Status Report of Vendors

September 1, 2025 thru September 30, 2025

Vendor Name and Contract Dates		Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
POND & COMPANY 12/14/20 thru 12/14/25	2021017	$682,000.00	$40,000.00	$652,049.98	$692,049.98	$631,896.76	$60,153.22
PRITCHETT STEINBECK GROUP, INC. 08/16/21 thru 09/30/26	2022003	$788,415.00		$712,358.00	$712,358.00	$602,714.37	$109,643.63
PRITCHETT STEINBECK GROUP, INC. 03/15/22 thru 03/31/25	2022028	$470,000.00		$368,911.05	$368,911.05	$245,934.63	$122,976.42
PRITCHETT STEINBECK GROUP, INC. 10/03/22 thru 09/30/26	2022052	$616,926.00		$454,294.00	$454,294.00	$368,446.38	$85,847.62
PVS TECHNOLOGIES, INC. 09/05/24 thru 09/30/25	2025014	$1,809,000.00		$480,067.00	$480,067.00	$142,273.78	$337,793.22
QUEST ECOLOGY INC 03/29/22 thru 03/31/25	2022043	$400,000.00		$399,245.65	$399,245.65	$324,307.79	$74,937.86
RADIO ONE, INC. 09/29/21 thru 02/28/24	2021710	$1,488,600.00		$548,012.14	$548,012.14	$486,933.58	$61,078.56
RAFTELIS FINANCIAL CONSULTANTS, INC. 03/21/22 thru 05/01/27	2022021	$750,000.00		$560,150.00	$560,150.00	$370,069.92	$190,080.08
RAZORBACK LLC 10/16/23 thru 03/30/25	2024009	$1,152,200.00		$1,016,200.00	$1,016,200.00	$622,400.00	$393,800.00
RICK RICHARDS, INC. 04/05/22 thru 03/31/25	2022045	$833,000.00		$125,550.00	$125,550.00	$94,850.00	$30,700.00
RICK RICHARDS, INC. 03/21/22 thru 03/31/23	2022047	$950,000.00	$135,000.00	$548,885.00	$683,885.00	$196,824.00	$487,061.00
ROWLAND (DE), LLC 08/16/21 thru 09/30/25	2021045	$2,000,000.00		$1,008,610.00	$1,008,610.00	$535,654.82	$472,955.18
ROWLAND (DE), LLC 08/16/21 thru 09/30/25	2021047	$2,000,000.00		$1,870,000.00	$1,870,000.00	$1,590,135.65	$279,864.35
ROWLAND (DE), LLC		$800,000.00		$0.00	$0.00	$0.00	$0.00

Contract Summary

Monthly Status Report of Vendors

September 1, 2025 thru September 30, 2025

Vendor Name and Contract Dates		Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
10/01/25 thru 09/30/30	2026006						
ROWLAND (DE), LLC		$800,000.00		$0.00	$0.00	$0.00	$0.00
10/01/25 thru 09/30/30	2026008						
SMITH INDUSTRIES INC		$800,000.00		$468,976.90	$468,976.90	$443,689.50	$25,287.40
03/21/22 thru 03/31/23	2022049						
SOLAR JET PRODUCTIONS LLC		$200,000.00		$12,070.80	$12,070.80	$12,070.80	$0.00
10/01/22 thru 09/30/24	2023023						
SOUTHEAST DRILLING SERVICES INC		$3,000,000.00	$140,000.00	$0.00	$140,000.00	$0.00	$140,000.00
08/19/24 thru 09/30/26	2025026						
SOUTHEAST DRILLING SERVICES INC		$500,000.00		$0.00	$0.00	$0.00	$0.00
11/18/24 thru 03/30/26	2025703						
SOUTHWEST FLORIDA WATER MANAGEMENT		$145,054,000.00		$0.00	$0.00	$0.00	$0.00
10/01/21 thru	AGR2021013						
STAG INDUSTRIES LLC		$350,000.00		$175,000.00	$175,000.00	$148,662.55	$26,337.45
07/15/24 thru 07/31/25	2024018						
STANTEC CONSULTING SERVICES, INC.		$2,787,414.98	$489,843.98	$2,297,571.00	$2,787,414.98	$1,435,899.84	$1,351,515.14
10/27/20 thru 09/30/26	2021002						
STANTEC CONSULTING SERVICES, INC.		$26,995,874.64		$20,995,874.64	$20,995,874.64	$10,603,016.04	$10,392,858.60
08/16/21 thru 02/28/29	2021025						
STANTEC CONSULTING SERVICES, INC.		$2,000,001.00		$552,414.00	$552,414.00	$352,576.69	$199,837.31
09/20/21 thru 09/01/26	2021028						
STANTEC CONSULTING SERVICES, INC.		$450,000.00		$39,715.00	$39,715.00	$9,898.75	$29,816.25
09/20/21 thru 09/30/24	2022009V						
STANTEC CONSULTING SERVICES, INC.		$299,435.00		$285,280.00	$285,280.00	$241,793.96	$43,486.04
03/21/22 thru 03/31/25	2022040V						
STARBOARD CONSULTING LLC		$243,020.00		$243,020.00	$243,020.00	$189,020.00	$54,000.00
04/15/24 thru 06/30/26	2024001						

Contract Summary

Monthly Status Report of Vendors

September 1, 2025 thru September 30, 2025

Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
SULPHURIC ACID TRADING CO. INC 09/05/24 thru 09/30/25 2025016	$3,582,555.13		$2,273,649.00	$2,273,649.00	$1,297,948.79	$975,700.21
SURVTECH SOLUTIONS, INC. 10/01/24 thru 09/30/29 2025007	$500,000.00		$0.00	$0.00	$0.00	$0.00
TAMCO ELECTRIC INC 11/18/24 thru 12/31/26 2025038	$260,875.00		$110,000.00	$110,000.00	$71,905.82	$38,094.18
TAMPA ARMATURE WORKS INC 05/11/23 thru 04/30/27 2023031	$1,500,000.00		$485,000.00	$485,000.00	$299,671.49	$185,328.51
TAMPA BAY ESTUARY PROGRAM 07/19/21 thru 12/31/26 AGR2021010	$60,000.00		$0.00	$0.00	$0.00	$0.00
TAMPA ELECTRIC CO 11/18/24 thru 12/31/25 AGR2025005	$1,744,735.00		$0.00	$0.00	$0.00	$0.00
THATCHER CHEMICAL OF FLORIDA INC. 08/15/22 thru 09/30/23 2023017	$14,054,958.71		$12,623,511.30	$12,623,511.30	$12,340,798.53	$282,712.77
THATCHER CHEMICAL OF FLORIDA INC. 08/19/24 thru 09/30/25 2025015	$838,754.00		$313,466.00	$313,466.00	$99,305.67	$214,160.33
THE VALERIN GROUP, INC. 10/01/22 thru 09/30/24 2023013	$160,000.00		$1,500.00	$1,500.00	$1,500.00	$0.00
THERMO ELECTRON NORTH AMERICA LLC 03/18/24 thru 03/31/26 2024015	$232,780.65		$155,187.10	$155,187.10	$123,407.65	$31,779.45
TK ELEVATOR CORPORATION 03/24/25 thru 12/31/25 2025713	$60,000.00		$53,482.86	$53,482.86	$26,741.43	$26,741.43
TLC DIVERSIFIED, INC. 05/20/24 thru 11/20/25 2024013	$6,508,280.00		$6,508,280.00	$6,508,280.00	$3,675,474.27	$2,832,805.73
TUCKER ENTERPRISE SERVICES, INC. 03/21/22 thru 03/31/23 2022048	$650,000.00		$275,000.00	$275,000.00	$215,415.00	$59,585.00
U.S. DEPARTMENT OF AGRICULTURE - FLORIDA	$54,993.17		$54,993.17	$54,993.17	$23,089.55	$31,903.62

Contract Summary

Monthly Status Report of Vendors

September 1, 2025 thru September 30, 2025

Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
10/01/24 thru 09/30/25 2025035						
U.S. DEPARTMENT OF AGRICULTURE - FLORIDA 10/01/25 thru 09/30/26 AGR2026005	$50,000.00	$50,000.00	$0.00	$50,000.00	$0.00	$50,000.00
UNIVERSAL PROTECTION SERVICE LP 06/15/20 thru 03/09/25 2020707	$6,456,588.78		$6,268,670.13	$6,268,670.13	$6,226,301.77	$42,368.36
UNIVERSAL PROTECTION SERVICE LP 02/24/25 thru 09/30/27 2025714V	$575,087.00		$233,748.29	$233,748.29	$210,253.54	$23,494.75
UNIVERSITY OF CENTRAL FLORIDA 08/16/24 thru 06/30/25 2024017	$90,000.00		$90,000.00	$90,000.00	$38,571.42	$51,428.58
UNIVERSITY OF CENTRAL FLORIDA 09/30/24 thru 11/30/26 2024021	$115,840.00		$115,840.00	$115,840.00	$43,440.00	$72,400.00
UNIVERSITY OF CENTRAL FLORIDA 02/18/21 thru 12/31/24 AGR2021008	$168,343.00		$115,486.00	$115,486.00	$115,486.00	$0.00
UNIVERSITY OF FLORIDA 10/01/24 thru 09/30/25 2025031	$70,000.00		$70,000.00	$70,000.00	$52,500.00	$17,500.00
UNIVERSITY OF NORTH CAROLINA AT CHAPEL 07/01/24 thru 06/30/25 2024016	$99,000.00		$99,000.00	$99,000.00	$10,186.09	$88,813.91
UNIVERSITY OF SOUTH FLORIDA 09/19/22 thru 08/31/25 2022066	$80,000.00		$80,000.00	$80,000.00	$80,000.00	$0.00
UNIVERSITY OF SOUTH FLORIDA 09/01/24 thru 02/28/26 2024019	$89,996.00		$89,996.00	$89,996.00	$74,996.00	$15,000.00
UNIVERSITY OF SOUTH FLORIDA 05/01/24 thru 07/31/25 2024020	$99,987.00		$99,987.00	$99,987.00	$77,962.00	$22,025.00
US WATER-ACCIONA SEAWATER DESLINATION 07/17/23 thru 11/15/29 2005062V	$41,929,058.42		$33,476,291.47	$33,476,291.47	$28,865,941.29	$4,610,350.18
USGS 10/01/23 thru 12/31/25 2024003	$134,900.00		$134,900.00	$134,900.00	$134,900.00	$0.00

Contract Summary

Monthly Status Report of Vendors

September 1, 2025 thru September 30, 2025

Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
USGS 10/01/24 thru 09/30/25 AGR2025004	$141,400.00		$0.00	$0.00	$0.00	$0.00
USGS 10/01/25 thru 09/30/26 AGR2026004	$109,800.00		$0.00	$0.00	$0.00	$0.00
V&A CONSULTING ENGINEERING, INC. 08/17/22 thru 09/01/26 2021027V	$2,040,278.53	$271,189.50	$989,754.63	$1,260,944.13	$404,769.46	$856,174.67
VANASSE HANGEN BRUSTLIN INC 04/05/22 thru 03/31/25 2022033	$400,000.00		$187,885.00	$187,885.00	$143,535.40	$44,349.60
VEOLIA WATER NORTH AMERICA 04/10/00 thru 01/15/28 2000028	$229,897,678.62		$190,549,233.49	$190,549,233.49	$41,463,869.62	$149,085,363.87
VERIZON FLORIDA INC 08/25/20 thru 12/31/26 2020054	$1,954,614.10	$443,600.00	$1,238,000.00	$1,681,600.00	$1,054,614.10	$626,985.90
WADE-TRIM INC 08/16/21 thru 02/28/29 2021024	$45,126,791.00		$45,126,791.00	$45,126,791.00	$17,718,734.46	$27,408,056.54
WADE-TRIM INC 09/20/21 thru 09/01/26 2021031	$2,000,001.00		$289,766.00	$289,766.00	$141,526.13	$148,239.87
WANTMAN GROUP, INC 10/01/24 thru 09/30/29 2025009	$500,000.00		$16,805.00	$16,805.00	$0.00	$16,805.00
WATER & AIR RESEARCH, INC. 03/21/22 thru 03/31/25 2022042	$400,000.00		$406,683.96	$406,683.96	$284,196.46	$122,487.50
WILDLANDS CONSERVATION, INC. 03/21/22 thru 03/31/25 2022044	$500,000.00		$483,603.71	$483,603.71	$350,656.46	$132,947.25
WISE CONSULTING GROUP 08/16/21 thru 09/30/26 2022004	$539,028.00		$429,012.00	$429,012.00	$349,027.24	$79,984.76
WSP USA INC 09/20/21 thru 09/30/24 2022005	$481,520.00		$131,215.00	$131,215.00	$96,971.58	$34,243.42
WSP USA INC	$360,660.50		$0.00	$0.00	$0.00	$0.00

Contract Summary

Monthly Status Report of Vendors

September 1, 2025 thru September 30, 2025

Vendor Name and Contract Dates		Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
03/21/22 thru 03/21/26	2022031V						
WSP USA INC		$750,000.00		$164,910.37	$164,910.37	$37,009.50	$127,900.87
03/21/22 thru 05/01/27	2022051						
WSP USA INC		$500,000.00		$0.00	$0.00	$0.00	$0.00
10/01/24 thru 09/30/29	2025008						
XTREMELY CLEAN JANITORIAL SERVICES, LLC.		$743,726.59	$169,300.00	$988,166.59	$1,157,466.59	$489,970.17	$667,496.42
07/01/23 thru 10/31/23	2023704						