

**CITY OF BELMONT
CITY COUNCIL AND BELMONT FIRE
PROTECTION DISTRICT BOARD OF
DIRECTORS**



www.belmont.gov

CITY COUNCIL REGULAR MEETING AGENDA

Tuesday, February 22, 2022

7:00 PM

City Council Chambers

City Hall, One Twin Pines Lane, Belmont, California

TELECONFERENCE PARTICIPANTS

Councilmembers will participate by teleconference under Government Code Section 54953(e), and City Council Resolution 2021-007. All votes shall be by roll call.

The meeting will be broadcast live to Belmont residents on Comcast Cable Channel 27, streamed live via the City's website at www.Belmont.gov. The public may also attend the meeting in the City Council Chambers and address the council from the chambers. Social distancing must be practiced, and seating will be limited.

PUBLIC COMMENT:

To maximize time for live public comment, we encourage members of the public to provide comments by joining the City Council meeting via Zoom: For web, visit <https://belmont.gov.zoom.us/> select "Join" and enter Meeting ID: 95745673035. Use the **Raise Hand** feature to request to speak. You may rename your profile if you wish to remain anonymous.

For dial-in comments, call *67 1-(669) 900-6833 (your phone number will appear on the live broadcast if *67 is not dialed prior to the phone number), enter Meeting ID: 95745673035, and press *9 to request to speak. All public comments are subject to a 3-minute time limit unless otherwise determined by the Mayor.

If you wish to submit written public comment, you may send an email to cclerk@belmont.gov before the council considers the item. Please indicate the agenda item topic or agenda item number you wish to comment on in your email's subject line. Any public comment regarding agenda items that are received from the publication of the agenda through the meeting date will be made part of the meeting record, but will not be read during the Council meeting.

- 1. ROLL CALL**
- 2. PLEDGE OF ALLEGIANCE**
- 3. REPORT FROM CLOSED SESSION**

4. SPECIAL PRESENTATIONS

- A. Proclamation Designating January 6th Eugene Goodman Day in the City of Belmont**
- B. San Mateo County Library System Annual Report**
- C. San Mateo County "Choose Local SMC" Small Business Support Shopping App**

5. PUBLIC COMMENTS ON ITEMS NOT ON THE AGENDA

This portion of the meeting is reserved for persons wishing to address the Body on any City matter not on the agenda. The period for public comment at this point in the agenda is limited to 15 minutes, with a maximum of 3 minutes per speaker. Speakers who requested but did not receive an opportunity to speak during this comment period will be given an opportunity to address the Body later in the meeting. State law prohibits the Body from acting on non-agenda items.

6. COUNCILMEMBER ANNOUNCEMENTS

7. CONSENT BUSINESS

Consent business items are considered to be routine in nature and will be enacted by one motion. There will be no separate discussion on these items unless a member or staff request specific items to be removed for separate action. The City Attorney will read the title of ordinances to be adopted.

A. CCN 579 - San Juan Sewer Pump Station Slope Repair Project

Recommendation: Adopt a resolution approving plans and specifications, authorizing advertisement for sealed bids, authorizing the City Manager to execute a contract with the lowest responsible bidder for an amount not to exceed \$275,000, plus an additional 15% construction contingency.

Attachment(s):

[Staff Report](#)
[Resolution](#)

B. CALeVIP and BAAQMD Grant Funding for EV Charging Project

Recommendation: Adopt resolutions (1) accepting CALeVIP grant funding for City Hall EV charging and (2) approving plans and technical specifications, authorizing the City to advertise for sealed bids for the City Hall and, as an add alternate, Twin Pines Park Electric Vehicle (EV) Charging Project (CCN 2022-610), and authorizing the City Manager to negotiate and execute an agreement for this project with the lowest responsible bidder for an amount not to exceed \$175,680, plus a ten percent (10%) construction contingency; additionally, directing staff to apply for the BAAQMD grant program for additional funding for EV charging stations at both City Hall and Twin Pines Park

Attachment(s):

[Staff Report](#)
[Resolution \(CALeVIP Grant Acceptance\).](#)
[Resolution \(CCN 2022-610\).](#)
[Plans](#)
[Technical Specifications](#)
[Charging Station Layouts](#)

8. PUBLIC HEARINGS

A. Public Hearing for Transition from At-Large Elections to by District Elections for Council Seats and At-Larger Mayor

(Presentation and Public Hearing will begin at 7:30 PM)

Recommendation: Consider demographer and staff presentation and public input on draft

district maps, mayoral term, and potential elections sequence, and provide direction.

Attachment(s):

[Staff Report](#)

9. GENERAL BUSINESS

General Business items are considered separately, typically in the order listed. The chair will call for public comment on each item when the body considers the item.

A. Report on Mid-Year Financial Results as of December 31, 2021 (Continued from 2/8/2022)

Recommendation: Adopt resolutions amending the City of Belmont and Belmont Fire Protection District (BFPD) Fiscal Year (FY) 2022 Budgets.

Attachment(s):

[Staff Report](#)

[Resolutions](#)

[Presentation](#)

B. Disposable Food Service Ware Ordinance Amendment

Recommendation: Introduce an ordinance adopting by reference San Mateo County Ordinance Code Chapter 4.107 with city amendments regulating the use of disposable food service ware by food facilities and schedule a public hearing.

Attachment(s):

[Staff Report](#)

[Ordinance](#)

10. BRIEF VERBAL REPORTS FROM MEMBERS AND STAFF

A.) Verbal report from Councilmembers on Intergovernmental (IGR) and Subcommittee Assignments

B.) Verbal report from City Manager

11. MATTERS OF INTEREST/CLARIFICATION

Items in this category are for discussion and direction to staff only. However, Council/Board may take final action on an item if there is no need for additional staff analysis.

12. ADJOURNMENT

If you need assistance to participate in this meeting, please contact the City Clerk at (650) 595-7413. The speech and hearing-impaired may call (650) 637-2999 for TDD services. Notification in advance of the meeting will enable the City to make reasonable arrangements to ensure accessibility to this meeting.

Meeting information can also be accessed via the internet at: www.belmont.gov. All staff reports will be posted to the web in advance of the meeting, and any writings or documents provided to a majority of the City Council/District Board or Commission regarding any item on this agenda will be made available for public inspection in the City Clerk's Office, One Twin Pines Lane, during normal business hours and at the Council Chambers at City Hall, Second Floor, during the meeting.



STAFF REPORT

Meeting Date: February 22, 2022
Agency: City of Belmont
Staff Contact: Nima Mazhari, Public Works Department, nmazhari@belmont.gov, (650) 730-5706
Agenda Title: CCN 579 - San Juan Sewer Pump Station Slope Repair Project
Agenda Action: Resolution

Recommendation

Adopt a resolution approving plans and specifications, authorizing advertisement for sealed bids, authorizing the City manager to execute a contract with the lowest responsible bidder for an amount not to exceed \$275,000, plus an additional 15% construction contingency.

Strategic Focus Area

Infrastructure and Mobility

Background

On February 2019, during a period of prolonged and intense rainfall, 1,200 square feet of the East Laurel Creek bank below the San Juan Sewer Pump Station failed. The bank became saturated and one tree that was helping to stabilize the slope was uprooted. The slope has been tarped since the incident to avoid further slippage. The creek bank adjacent to the pump station is steeply sloped along the edge of the pump station. The City initiated a geotechnical and structural assessment of the creek bank wall subsequent to the slope failure.

The pump station is a critical facility as one of Belmont's highest volume sanitary sewer lift stations.

Analysis

The proposed slope stabilization project includes shoring and restoration of a 60-foot-long section of the East Laurel Creek bank/slope adjacent to the San Juan Sewer Pump Station. To stabilize the bank and protect the pump station site, the project will install a retaining wall, recontour the bank, and the asphalt surface will be configured to drain away from the bank to the existing catch basins. Native riparian vegetation will be planted in the repair area to protect the bank from erosion and to restore the habitat.

This type of work affecting waterways is well-regulated. The U.S. Army Corps of Engineers (USACE) office granted approval of this project in early February. However, the approved permit package has only given the City until March 18 of this year to secure a contractor, which is a challenging timeline to meet. Staff has asked for extensions and if they are not granted, will attempt to meet the Army Corps deadline as there are other regulatory restrictions for the work to be completed in the dry season.

The estimated construction cost for the project is \$275,000. Staff is requesting the City Council to authorize the City Manager to execute a construction contract to the lowest responsible bidder with an amount not to exceed \$275,000, plus a 15% construction contingency for the project.



Alternatives

1. Take No Action
2. Refer back to staff for further information

Attachments

- A. Resolution

Fiscal Impact

☐ No Fiscal Impact

☒ Funding Source Confirmed: \$316,250 (\$275,000 + \$41,250 contingency) has been budgeted in the Sewer Collections Fund, Project 7036, Account 503-3-730-7036-8331 San Juan Pump Station Slide Repair.

Source:

Staff

Purpose:

Statutory/Contractual Requirement

Public Outreach:

Posting of Agenda

RESOLUTION NO. 2022 –

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BELMONT ADOPT A RESOLUTION APPROVING PLANS AND SPECIFICATIONS, AUTHORIZING ADVERTISEMENT FOR SEALED BIDS, AUTHORIZING THE CITY MANAGER TO EXECUTE A CONTRACT WITH THE LOWEST RESPONSIBLE BIDDER FOR AN AMOUNT NOT TO EXCEED \$275,000, APPROVING A FIFTEEN PERCENT CONSTRUCTION CONTINGENCY FOR THE SAN JUAN SEWER PUMP STATION SLOPE REPAIR PROJECT, CCN 579.

WHEREAS, the department of Public Works has prepared plans and specifications for the San Juan Sewer Pump Station Slope Repair Project, City Contract Number 579, to repair and restore 1200 square feet bank of the East Laurel Creek bank below the San Juan Pump failed which failed during storms of 2019; and,

WHEREAS, it is recommended to install a retaining wall, recontour the bank, and plant native, riparian vegetation in the repair area; and,

WHEREAS, the total estimate for the construction is \$275,000 plus a fifteen percent construction contingency and will be funded from Account 503-3-730-7036-8331 San Juan Pump Station Slide Repair.

NOW, THEREFORE, the City Council of the City of Belmont resolves as follows:

SECTION 1. Approves plans, specifications, authorizing advertisement for sealed bids, authorizing the City Manager to execute a contract with the lowest responsible bidder for an amount not to exceed \$275,000 plus a fifteen percent construction contingency for the San Juan Sewer Pump Station Slope Repair Project.

* * *

ADOPTED February 22, 2022 by the City of Belmont City Council by the following vote:

Ayes:

Noes:

Absent:

Abstain:

ATTEST:

City Clerk

Mayor

APPROVED AS TO FORM:

City Attorney

RESOLUTION NO. 2022 –

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BELMONT AUTHORIZING THE CITY MANAGER TO EXECUTE GRANT CONTRACTS IN THE TOTAL AMOUNT OF \$36,000 FROM CALEVIP FOR THE CONSTRUCTION OF ELECTRONIC VEHICLE (EV) CHARGING AT BELMONT'S CITY HALL

WHEREAS, The installation of electric vehicle (EV) chargers at public sites would advance the City of Belmont's 2017 Climate Action Plan (CAP) goal of reducing community-wide greenhouse gas (GHG) emissions 50% by 2035 by encouraging EV adoption; and,

WHEREAS, There is currently a significant shortfall of publicly available EV chargers, with the deficit expected to increase as EV use continues to rise; and,

WHEREAS, The City has been notified that it is eligible to receive up to \$4,500 per connector in CALeVIP funding for EV charging stations at the City Hall location (a total grant award of \$36,000 under the current design); and,

WHEREAS, Consultant Linkture, Inc. has provided the design drawings and technical specifications required to accept these grant fund; and,

WHEREAS, \$150,000 was also allocated to EV charging in the Fiscal Year 2022 Capital Improvement Project Budget.

NOW, THEREFORE, the City Council of the City of Belmont resolves as follows:

SECTION 1. The City Manager is authorized to execute grant contracts in the total amount of \$36,000 from CALeVIP.

* * *

ADOPTED February 22, 2022 by the City of Belmont City Council by the following
vote:

Ayes:

Noes:

Absent:

Abstain:

ATTEST:

City Clerk

Mayor

APPROVED AS TO FORM:

City Attorney

RESOLUTION NO. 2022 –

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BELMONT APPROVING PLANS AND TECHNICAL SPECIFICATIONS, AUTHORIZING THE CITY TO ADVERTISE FOR SEALED BIDS FOR THE CITY HALL AND TWIN PINES PARK ELECTRIC VEHICLE (EV) CHARGING PROJECT (CCN 2022-610), AND AUTHORIZING THE CITY MANAGER TO NEGOTIATE AND EXECUTE AN AGREEMENT FOR THIS PROJECT WITH THE LOWEST RESPONSIBLE BIDDER FOR A TOTAL AMOUNT NOT TO EXCEED \$175,680 PLUS A TEN PERCENT (10%) CONTINGENCY.

WHEREAS, the installation of electric vehicle (EV) chargers at public sites would advance the City of Belmont's 2017 Climate Action Plan (CAP) goal of reducing community-wide greenhouse gas (GHG) emissions 50% by 2035 by encouraging EV adoption; and,

WHEREAS, there is currently a significant shortfall of publicly available EV chargers, with the deficit expected to increase as EV use continues to rise; and,

WHEREAS, the City/County Association of Governments (CCAG) conducted a 2017 EV Supply Equipment Siting Plan suggesting potential EV charging sites, which were further evaluated by the City, with City Hall and Twin Pines Park identified as the optimal sites; and,

WHEREAS, Consultant Linkture, Inc. has provided design drawings and technical specifications for both locations, estimating construction costs of \$175,680 for the City Hall location and \$74,520 for the Twin Pines Park location, not including contingency funds; and,

WHEREAS, the City has been notified that it is eligible to receive up to \$4,500 per connector in CALeVIP funding for the City Hall location (a total grant award of \$36,000 under the current design); and,

WHEREAS, the City additionally applied for CALeVIP funding for the Twin Pines Park location and is awaiting notice of eligibility; and,

WHEREAS, the City continues to seek infrastructure funding support from BAAQMD and other sources; and,

WHEREAS, \$150,000 was allocated to EV charging in the Fiscal Year 2022 Capital Improvement Project Budget; and,

WHEREAS, an appropriation of \$7,248 will be required to complete the City Hall EV Charging project if no additional grant funding is secured by project commencement.

NOW, THEREFORE, the City Council of the City of Belmont resolves as follows:

SECTION 1. The plans and technical specifications for the City Hall and Twin Pines Park Electric Vehicle (EV) Charging Project (CCN 2022-610) are approved.

SECTION 2. The City Manager is authorized to advertise for sealed bids for this project.

SECTION 3. The City Manager is authorized to award an agreement for this project with the lowest responsible bidder for an amount not to exceed \$175,680, plus a ten percent (10%) construction contingency.

SECTION 4: The City is authorized to execute an appropriation of \$7,248 to complete the City Hall EV Charging project if no additional grant funding is secured by project commencement.

* * *

ADOPTED February 22, 2022 by the City of Belmont City Council by the following vote:

Ayes:

Noes:

Absent:

Abstain:

ATTEST:

City Clerk

Mayor

APPROVED AS TO FORM:

City Attorney

PROPERTY INFORMATION	
SITE ADDRESS:	1 TWIN PINES LN, BELMONT, CA 94002
PROPERTY OWNER:	CITY OF BELMONT
LATITUDE:	N 37° 31' 5.5626"
LONGITUDE:	W -122° 16' 36.588"
LAT/LONG TYPE	NAD 83
ELEVATION:	51.32' AMSL
JURISDICTION:	CITY OF BELMONT
APN NUMBER:	045181260
CURRENT ZONING:	PUBLIC FACILITY (PF)
PROPOSED USE:	ELECTRIC VEHICLE CHARGING FACILITY

PROPERTY OWNER: CITY OF BELMONT

LATITUDE:	N 37° 31' 5.5626"
LONGITUDE:	W -122° 16' 36.588"
LAT/LONG TYPE	NAD 83
ELEVATION:	51.32' AMSL
JURISDICTION:	CITY OF BELMONT
APN NUMBER:	045181260
CURRENT ZONING:	PUBLIC FACILITY (PF)
PROPOSED USE:	ELECTRIC VEHICLE CHARGING FACILITY

APPLICABLE CODES AND STANDARDS

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUCTED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

CALIFORNIA CODE OF REGULATIONS

2019 CALIFORNIA BUILDING STANDARDS CODE

2019 CALIFORNIA FIRE CODE

2019 CALIFORNIA ELECTRICAL CODE

2017 NATIONAL ELECTRICAL CODE

2018 INTERNATIONAL BUILDING CODE

IEEE 1584

CITY/COUNTY ORDINANCES

ANY LOCAL BUILDING CODE AMENDMENTS TO THE ABOVE

CALIFORNIA CODE OF REGULATIONS
2019 CALIFORNIA BUILDING STANDARDS CODE
2019 CALIFORNIA FIRE CODE
2019 CALIFORNIA ELECTRICAL CODE
2017 NATIONAL ELECTRICAL CODE
2018 INTERNATIONAL BUILDING CODE
IEEE 1584
CITY/COUNTY ORDINANCES
ANY LOCAL BUILDING CODE AMENDMENTS TO THE ABOVE

APPROVAL BLOCK	
OWNER:	DATE:
PROJECT MANAGER:	DATE:
ZONING MANAGER:	DATE:
CITY ENGINEER:	DATE:
FACILITY MANAGER:	DATE:
CONSTRUCTION MANAGER:	DATE:

OWNER:	DATE:
PROJECT MANAGER:	DATE:
ZONING MANAGER:	DATE:
CITY ENGINEER:	DATE:
FACILITY MANAGER:	DATE:
CONSTRUCTION MANAGER:	DATE:

PROJECT SUMMARY

CITY OF BELMONT PROPOSES TO CONSTRUCT, OPERATE AND MAINTAIN AN ELECTRIC VEHICLE (EV) CHARGING FACILITY AT THE CITY HALL AND THE MANOR BUILDING FOR GENERAL PUBLIC USE. AN EV CHARGER WILL ALSO BE INSTALLED AT THE SECURED POLICE STATION PARKING BUT FOR THE POLICE DEPARTMENT USE ONLY. THE SCOPE WILL CONSIST OF THE INSTALLATION OF (3) NEW LEVEL 2 CHARGERS AND (2) FUTURE LEVEL 2 CHARGER IN FRONT OF BELMONT CITY HALL, (1) NEW AND (1) FUTURE LEVEL 2 CHARGER LOCATED POLICE STATION PARKING, AND (1) NEW AND (1) FUTURE LEVEL 2 CHARGER LOCATED NEAR THE MANOR BUILDING. THE DESIGN COMPLIES WITH THE RECENT CALIFORNIA BUILDING CODE.

CITY OF BELMONT PROPOSES TO CONSTRUCT, OPERATE AND MAINTAIN AN ELECTRIC VEHICLE (EV) CHARGING FACILITY AT THE CITY HALL AND THE MANOR BUILDING FOR GENERAL PUBLIC USE. AN EV CHARGER WILL ALSO BE INSTALLED AT THE SECURED POLICE STATION PARKING BUT FOR THE POLICE DEPARTMENT USE ONLY. THE SCOPE WILL CONSIST OF THE INSTALLATION OF (3) NEW LEVEL 2 CHARGERS AND (2) FUTURE LEVEL 2 CHARGER LOCATIONS, (3) NEW LEVEL 1 CHARGER AND (1) FUTURE LEVEL 1 CHARGER, (2) NEW LEVEL 1 CHARGER, (1) NEW AND (1) FUTURE LEVEL 2 CHARGER LOCATED POLICE STATION PARKING, AND (1) NEW AND (1) FUTURE LEVEL 2 CHARGER LOCATED NEAR THE MANOR BUILDING. THE DESIGN COMPLIES WITH THE RECENT CALIFORNIA BUILDING CODE.

1 Twin Pines Ln., Belmont, CA 94002

1 Twin Pines Ln, Belmont, CA 94002, and 10 Twin Pines Ln, Belmont, CA 94002

VICINITY MAP

A vicinity map showing the location of Belmont City Hall, marked with a red dot and a black star. The map includes surrounding streets such as Ralston Ave, Twin Pines Ln, 6th Ave, and Emmett Ave. Nearby landmarks and businesses are labeled, including Aji Limo Peruvian, Falafelle, Safeway, Wells Fargo Bank, Morningstar Tattoo Parlor, Belmont Historical Society, and Twin Pines Park. A scale bar indicates N.T.S. (Not To Scale). A north arrow is present in the bottom right corner.

LOCATION MAP

CONTACT INFORMATION	
<u>APPLICANT</u> CITY OF BELMONT 1070 SIXTH AVENUE BELMONT, CA 90028 CONTACT: BRIGITTE SHEARER PHONE: 650-595-7488	<u>PROPERTY OWNER</u> CITY OF BELMONT 1070 SIXTH AVENUE BELMONT, CA 90028 CONTACT: BRIGITTE SHEARER PHONE: 650-595-7488
<u>ENGINEER</u> LINKTURE CORP. 41250 PLACER LAFITE TEMECULA, CA 92591 CONTACT: OPTY FERNANDEZ PHONE: (949) 589-1909	<u>ZONING</u> LINKTURE CORP. 41250 PLACER LAFITE TEMECULA, CA 92591 CONTACT: OPTY FERNANDEZ PHONE: (949) 589-1909
<u>ZONING:</u> PUBLIC FACILITY (PF)	<u>ASSESSOR'S PARCEL NO.:</u> 045181280
<u>EXISTING OCCUPANCY:</u> COMMERCIAL	<u>LOT SIZE:</u> 68,589 SF
<u>OCCUPANCY CLASSIFICATION:</u> GROUP I	
<u>TYPE OF CONSTRUCTION:</u> RENOVATION	

SHEET INDEX		
SHEET	DESCRIPTION	REV
T-1	TITLE SHEET	0
G-1	GENERAL CONSTRUCTION NOTES	0
P-1	SITE PLAN	0
E-1	SYMBOLS, ABBREVIATIONS & GENERAL NOTES	0
E-2	SINGLE LINE DIAGRAM, CONDUIT SCHEDULE, LOAD SUMMARY, FAULT CURRENT, AND ARC-FLASH.	0
E-3	CITYHALL EQUIPMENT PLAN AND ELECTRICAL PLAN	0
E-4	MANOR BUILDING EQUIPMENT PLAN AND ELECTRICAL PLAN	0
E-5	DETAILS	0
E-6	DETAILS	0

The logo for California Belmont is a circular emblem. The top half features a bright yellow sun with horizontal rays, partially obscured by a dark blue mountain range. A white lightning bolt strikes the mountains. The bottom half of the circle contains the text "CALIFORNIA" in a blue serif font and "BELMONT" in a larger, bold, red serif font with a blue outline.

PLANS PREPARED BY: -

INKTURE 
CONSULTING ENGINEERS
LEADER IN ELECTRIC VEHICLE INFRASTRUCTURE ENGINEERING
41250 Placer Lafite, Temecula, CA 92591
P:(949) 317-4700 F:(949) 589-1909
email@inkture.com www.inkture.com

[illegible]

**BELMONT CITY HALL,
POLICE DEPARTMENT,
AND MANOR BUILDING
ELECTRIC VEHICLE
CHARGING STATIONS**

SEAL: _____

SHEET TITLE: _____

SHEET NUMBER: _____

HEET OF 09

GENERAL NOTES

- THESE DRAWINGS AND COPIES THEREOF ARE LEGAL INSTRUMENTS OF SERVICE FOR THE USE OF THE OWNER AND AUTHORIZED AGENTS, ON THE DESIGNATED PROPERTY ONLY.
2. THE FACILITY IS AN UNOCCUPIED SPECIALIZED ELECTRIC VEHICLE CHARGING FACILITY.
3. THE CONTRACTOR AND ALL SUB-CONTRACTORS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE SITE AND ITS PERSONNEL AND COMPLY WITH CAL-OSHA REQUIREMENTS.
4. THE CONTRACTOR AND ALL SUB-CONTRACTORS SHALL BE RESPONSIBLE FOR THE MEANS AND METHOD OF CONSTRUCTION.
5. THE CONTRACTOR AND ALL SUB-CONTRACTORS SHALL REVIEW AND THOROUGHLY EXAMINE AND FAMILIARIZE THEMSELVES WITH ALL ELEMENTS AND CONDITIONS IN THE CONTRACT DOCUMENTS. THE CONTRACTOR AND ALL SUB-CONTRACTORS SHALL VERIFY ALL DIMENSIONS ON THE DRAWINGS AND REPORT ANY DISCREPANCIES AND/OR CONDITIONS NEEDING CLARIFICATION IMMEDIATELY TO THE ENGINEER IN WRITING PRIOR TO CONSTRUCTION.
6. THE BUILDING DEPARTMENT ISSUING THE BUILDING PERMIT SHALL BE NOTIFIED AT LEAST TWO WORKING DAYS PRIOR TO THE COMMENCEMENT OF WORK OR AS STIPULATED BY THE CODE ENFORCEMENT OFFICIAL HAVING JURISDICTION.
7. PLANS ARE NOT TO BE SCALED AND ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY, UNLESS NOTED OTHERWISE. THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT (EXCEPT FOR THE CHARGERS AND ITS APPURTENANCES), APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
8. THE CONTRACTOR SHALL VISIT THE JOB SITE AND BE RESPONSIBLE FOR ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE PROJECT MANAGER.
9. THE CONTRACTOR SHALL OBTAIN, IN WRITING, AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENTS.
10. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS INCLUDING SUPPLIED BY OWNER, UNLESS SPECIFICALLY OTHERWISE INDICATED OR WHERE LOCAL CODES, OR REGULATION TAKE PRECEDENCE.
11. ALL WORK PERFORMED AND MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES, CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY BEARING ON THE PERFORMANCE OF THE WORK. MECHANICAL AND ELECTRICAL SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
12. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK, USING BEST SKILLS AND ATTENTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT MANAGER AND WITH OWNER'S AUTHORIZED REPRESENTATIVE.
13. EACH SUB-CONTRACTOR IS CONSIDERED A SPECIALIST IN THEIR RESPECTIVE FIELD/TRADE AND SHALL (BEFORE PERFORMANCE OF WORK) NOTIFY THE CONTRACTOR AND THE OWNER, IN WRITING, OF ANY WORK CALLED OUT ON THE DRAWINGS WHICH CANNOT BE FULLY GUARANTEED OR CONSTRUCTED AS DESIGNED AND/OR DETAILED.
14. MATERIALS TO BE USED SHALL BE OF FIRST QUALITY. THE WORK SHALL BE PERFORMED BY SKILLED PERSONNEL IN THEIR TRADE IN A WORKMANLIKE MANNER.
15. SEAL PENETRATIONS THROUGH FIRE RATED AREAS WITH U.L. LISTED AND FIRE CODE APPROVED MATERIALS.
16. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.
17. WHERE CONSTRUCTION DETAILS ARE NOT SHOWN OR NOTED FOR ANY PART OF THE WORK, DETAILS SHALL BE THE SAME AS ON THE LATEST EDITION OF THE GREEN BOOK OR OTHER SIMILAR FIRST CLASS WORK FOR THE TRADE INVOLVED. THE PROJECT SHALL BE NOTIFIED IMMEDIATELY, IN WRITING, OF ANY ALTERNATE NON-STANDARD OR UNTESTED METHOD(S) PROPOSED.
18. KEEP GENERAL AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. LEAVE PREMISES IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
19. THE CONTRACTOR AND ALL SUB-CONTRACTORS SHALL BE RESPONSIBLE FOR THE ENFORCEMENT OF ALL REQUIREMENTS AND REGULATIONS AND SHALL PERFORM ALL WORK ON THIS PROJECT IN COMPLIANCE WITH THE STATE OF CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH ACT.
20. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES BOTH HORIZONTALLY AND VERTICALLY PRIOR TO START OF CONSTRUCTION. ANY DISCREPANCIES OR DOUBTS AS TO THE INTERPRETATION OF PLANS SHOULD BE IMMEDIATELY REPORTED TO THE ENGINEER FOR RESOLUTION AND INSTRUCTION, AND NO FURTHER WORK SHALL BE PERFORMED UNTIL THE DISCREPANCY IS CHECKED AND CORRECTED BY THE ENGINEER. FAILURE TO SECURE SUCH INSTRUCTION MEANS CONTRACTOR WILL HAVE WORKED AT THEIR OWN RISK AND EXPENSE. CONTRACTOR SHALL CALL LOCAL "CALL BEFORE YOU DIG" HOT-LINE FOR UTILITY LOCATIONS 48 HOURS PRIOR TO START OF CONSTRUCTION.
21. CONTRACTOR SHALL CLEAN ENTIRE SITE DAILY AND AFTER CONSTRUCTION SUCH THAT PAPERS, TRASH, WEEDS, BRUSH OR ANY OTHER DEPOSITS WILL REMAIN. ALL MATERIALS COLLECTED DURING CLEANING OPERATIONS SHALL BE DISPOSED OF OFF-SITE BY THE CONTRACTOR. BUILDING TRASH RECEPTACLES ARE NOT TO BE USED FOR CONSTRUCTION DEBRIS.
22. CONTRACTOR SHALL MAINTAIN AN UPDATED COMPLETE SET OF AS-BUILT DRAWINGS WEEKLY UNTIL PROJECT COMPLETION.

1. ALL NEW AND EXISTING UTILITY STRUCTURES ON SITE AND IN AREAS TO BE DISTURBED BY CONSTRUCTION SHALL BE ADJUSTED TO FINISH ELEVATIONS PRIOR TO FINAL INSPECTION OF WORK.
2. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, PAVING, CURBS, GALVANIZED SURFACES, ETC., AND UPON COMPLETION OF WORK, REPAIR ANY DAMAGE THAT OCCURRED DURING CONSTRUCTION TO THE SATISFACTION OF THE PROJECT MANAGER.
3. ANY DRAIN AND/OR FIELD SWALE ENCOUNTERED DURING CONSTRUCTION SHALL BE RETURNED TO ITS ORIGINAL CONDITION PRIOR TO COMPLETION OF WORK, SIZE, LOCATION AND TYPE OF ANY UNDERGROUND UTILITIES OR IMPROVEMENTS SHALL BE ACCURATELY NOTED AND PLACED ON AS-BUILT DRAWINGS BY CONTRACTOR AND ISSUED TO ENGINEER AT COMPLETION OF PROJECT.
4. ALL EXISTING UTILITIES, FACILITIES, CONDITIONS, AND THEIR DIMENSIONS SHOWN ON PLANS HAVE BEEN PLOTTED FROM AVAILABLE RECORDS. THE ENGINEER AND OWNER ASSUME NO RESPONSIBILITY WHATSOEVER AS TO THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN ON THE PLANS OR THE MANNER OF THEIR REMOVAL OR ADJUSTMENT. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL EXISTING UTILITIES AND FACILITIES PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL ALSO OBTAIN FROM EACH UTILITY COMPANY DETAILED INFORMATION RELATIVE TO WORKING SCHEDULES AND METHODS OF REMOVING OR ADJUSTING EXISTING UTILITIES.
5. GRADING OF THE SITE WORK AREA IS TO BE SMOOTH AND CONTINUOUS IN SLOPE AND IS TO FEATHER INTO EXISTING GRADES AT THE GRADING LIMITS.
6. ALL TEMPORARY EXCAVATIONS FOR THE INSTALLATION OF FOUNDATIONS, UTILITIES, ETC., SHALL BE PROPERLY LAID BACK OR BRACED IN ACCORDANCE WITH CORRECT OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REQUIREMENTS.
7. THE GRADES WITHIN THE FENCED IN AREA ARE TO BE ACHIEVED BY COMPACTING CLEAN FILL TO A DENSITY OF 90% OF STANDARD PROCTOR AND REPAVING WITH ASPHALT CONCRETE TO MATCH EXISTING.
8. ALL SITE WORK SHALL BE CAREFULLY COORDINATED BY CONTRACTOR WITH LOCAL UTILITY COMPANY, TELEPHONE COMPANY, AND ANY OTHER UTILITY COMPANIES HAVING JURISDICTION OVER THIS LOCATION.
9. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION.
10. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED LEGALLY.
11. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE EQUIPMENT CABINET AND TOWER AREAS.
12. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, AS DIRECTED BY THE RESPONSIBLE ENGINEER, AND SUBJECT TO THE APPROVAL OF THE OWNER AND/OR LOCAL UTILITIES.

1. CLEAN, PATCH AND/OR REPAIR ALL SURFACES DAMAGED BY DEMOLITION OR ALTERATION OF WORK AS REQUIRED.
2. ALL EXISTING WALLS SHALL BE FINISHED AS NECESSARY FOR SPECIFIED INTERIOR FINISH APPLICATION.
3. ITEMS ON EXTERIOR BUILDING WALLS INCLUDING ELECTRICAL CONDUIT, PIPING AND OTHER MISC.. ITEMS ARE TO BE PAINTED TO MATCH ADJACENT SURFACE (U.N.O.)

1. ALL TYPES OF STRUCTURAL TESTING AND INSPECTION SHALL BE IN ACCORDANCE WITH LOCAL JURISDICTIONS.

11. THE FULL EXTENT OF DEMOLITION MAY NOT BE INDICATED. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO STARTING CONSTRUCTION TO DETERMINE THE EXTENT, MEANS AND METHODS REQUIRED TO PROPERLY DEMOLISH AND COMPLETE THE NEW CONSTRUCTION.

THIS PROJECT SHALL COMPLY WITH ALL CURRENT REQUIREMENTS OF THE STATE PERMIT; CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD (SDRWQCB). THE CITY OF BEMONT LAND DEVELOPMENT CODE, AND THE STORM WATER STANDARDS MANUAL.

PRIOR TO ANY SOIL DISTURBANCE, TEMPORARY SEDIMENT CONTROLS SHALL BE INSTALLED BY THE CONTRACTOR OR QUALIFIED PERSON(S) AS INDICATED BELOW:

1. ALL REQUIREMENTS OF THE CITY OF BELMONT "STORM WATER STANDARDS MANUAL" MUST BE INCORPORATED INTO THE DESIGN AND CONSTRUCTION OF THE PROPOSED GRADING/IMPROVEMENTS CONSISTENT WITH THE APPROVED STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND/OR WATER POLLUTION CONTROL PLAN (WPCP) FOR CONSTRUCTION LEVEL BMPs, AND, IF APPLICABLE, THE STORM WATER QUALITY MANAGEMENT PLAN (SWQMP) FOR POST-CONSTRUCTION BMPs.
2. THE CONTRACTOR SHALL INSTALL AND MAINTAIN ALL STORM DRAIN INLET PROTECTION. INLET PROTECTION IN THE PUBLIC RIGHT-OF-WAY MUST BE TEMPORARILY REMOVED PRIOR TO A RAIN EVENT TO ENSURE NO FLOODING OCCURS AND REINSTALLED AFTER RAIN IS OVER.
3. ALL CONSTRUCTION BMPs SHALL BE INSTALLED AND PROPERLY MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION.
4. THE CONTRACTOR SHALL ONLY GRADE, INCLUDING CLEARING AND GRUBBING, AREAS FOR WHICH THE CONTRACTOR OR QUALIFIED CONTACT PERSON CAN PROVIDE EROSION AND SEDIMENT CONTROL MEASURES.
5. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL SUB-CONTRACTORS AND SUPPLIERS ARE AWARE OF ALL STORM WATER BMPs AND IMPLEMENT SUCH MEASURES. FAILURE TO COMPLY WITH THE APPROVED SWPPP/WPCP WILL RESULT IN THE ISSUANCE OF CORRECTION NOTICES, CITATIONS, CIVIL PENALTIES, AND/OR STOP WORK NOTICES.
6. THE CONTRACTOR OR QUALIFIED CONTACT PERSON SHALL BE RESPONSIBLE FOR CLEANUP OF ALL SILT, DEBRIS, AND MUD ON AFFECTED AND ADJACENT STREET(S) AND WITHIN STORM DRAIN SYSTEM DUE TO CONSTRUCTION VEHICLES/EQUIPMENT AND CONSTRUCTION ACTIVITY AT THE END OF EACH WORK DAY.
7. THE CONTRACTOR SHALL PROTECT NEW AND EXISTING STORM WATER CONVEYANCE SYSTEMS FROM SEDIMENTATION, CONCRETE RINSE, OR OTHER CONSTRUCTION-RELATED DEBRIS AND DISCHARGES WITH THE APPROPRIATE BMPs THAT ARE ACCEPTABLE TO THE CITY RESIDENT ENGINEER AND AS INDICATED IN THE SWPPP/WPCP.
8. THE CONTRACTOR OR QUALIFIED CONTACT PERSON SHALL CLEAR DEBRIS, SILT, AND MUD FROM ALL DITCHES AND SWALES PRIOR TO AND WITHIN 3 BUSINESS DAYS AFTER EACH RAIN EVENT OR PRIOR TO THE NEXT RAIN EVENT, WHICHEVER IS SOONER.
9. IF A NON-STORM WATER DISCHARGE LEAVES THE SITE, THE CONTRACTOR SHALL IMMEDIATELY STOP THE ACTIVITY AND REPAIR THE DAMAGES. THE CONTRACTOR SHALL NOTIFY THE CITY RESIDENT ENGINEER OF THE DISCHARGE, PRIOR TO RESUMING CONSTRUCTION ACTIVITY. ANY AND ALL WASTE MATERIAL, SEDIMENT, AND DEBRIS FROM EACH NON-STORM WATER DISCHARGE SHALL BE REMOVED FROM THE STORM DRAIN CONVEYANCE SYSTEM AND PROPERLY DISPOSED OF BY THE CONTRACTOR.
10. EQUIPMENT AND WORKERS FOR EMERGENCY WORK SHALL BE MADE AVAILABLE AT ALL TIMES. ALL NECESSARY MATERIALS SHALL BE STOCKPILED ONSITE AT CONVENIENT LOCATIONS TO FACILITATE RAPID DEPLOYMENT OF CONSTRUCTION BMPs WHEN RAIN IS IMMINENT.
11. THE CONTRACTOR SHALL RESTORE AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL BMPs TO WORKING ORDER YEAR-ROUND.
12. THE CONTRACTOR SHALL INSTALL ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES DUE TO UNFORESEEN CIRCUMSTANCES TO PREVENT NON-STORM WATER AND SEDIMENT-LADEN DISCHARGES.
13. THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT PUBLIC TRESPASS ONTO AREAS WHERE IMPOUNDED WATERS CREATE A HAZARDOUS CONDITION.
14. ALL EROSION AND SEDIMENT CONTROL MEASURES PROVIDED PER THE APPROVED SWPPP/WPCP SHALL BE INSTALLED AND MAINTAINED. ALL EROSION AND SEDIMENT CONTROLS FOR INTERIM CONDITIONS SHALL BE PROPERLY DOCUMENTED AND INSTALLED TO THE SATISFACTION OF THE CITY RESIDENT ENGINEER.
15. AS NECESSARY, THE CITY RESIDENT ENGINEER SHALL SCHEDULE MEETINGS FOR THE PROJECT TEAM (GENERAL CONTRACTOR, QUALIFIED CONTACT PERSON, EROSION CONTROL SUBCONTRACTOR IF ANY, ENGINEER OF WORK, OWNER/DEVELOPER, AND THE CITY RESIDENT ENGINEER) TO EVALUATE THE ADEQUACY OF THE EROSION AND SEDIMENT CONTROL MEASURES AND OTHER BMPs RELATIVE TO ANTICIPATED CONSTRUCTION ACTIVITIES.
16. THE CONTRACTOR OR QUALIFIED CONTACT PERSON SHALL CONDUCT VISUAL INSPECTIONS AND MAINTAIN ALL BMPs DAILY AND AS NEEDED. VISUAL INSPECTIONS AND MAINTENANCE OF ALL BMPs SHALL BE CONDUCTED BEFORE, DURING, AND AFTER EVERY RAIN EVENT AND EVERY 24 HOURS DURING ANY PROLONGED RAIN EVENT. THE CONTRACTOR SHALL MAINTAIN AND REPAIR ALL BMPs AS SOON AS POSSIBLE AS SAFETY ALLOWS.



PLANS PREPARED BY:

[illegible]**SITE INFORMATION:**

**BELMONT CITY HALL,
POLICE DEPARTMENT,
AND MANOR BUILDING
ELECTRIC VEHICLE
CHARGING STATIONS**

1 Twin Pines Ln, Belmont, CA 94002, and 10 Twin Pines L, Belmont, CA 94002

SEAL:

DATE SIGNED: 02/08/22

SHEET TITLE

GENERAL CONSTRUCTION NOTES

SHEET NUMBER

G-1

SHEET OF 09

[illegible]

SITE INFORMATION:

**BELMONT CITY HALL,
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1 Twin Pines Ln, Belmont, CA 94002, and 10 Twin
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SEAL:	
DATE SIGNED:	02/08/22
SHEET TITLE:	
SITE PLAN	
SHEET NUMBER:	
P-1	
SHEET	OF 09

GENERAL ELECTRICAL NOTES

1. THE ENTIRE INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE 2017 NATIONAL ELECTRICAL CODE, 2019 CALIFORNIA ELECTRICAL CODE, STATE FIRE MARSHALL REGULATIONS, AND ALL OTHER STATE AND LOCAL CODES, LAWS, AND ORDINANCES HAVING JURISDICTION ALBEIT NOT SHOWN ON DRAWINGS OR SHOWN OTHERWISE.
2. 110.2 APPROVAL: ALL ELECTRICAL ELECTRICAL EQUIPMENT SHALL BE LABELED, LISTED OR CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LABORATORY ACCREDITED BY THE UNITED STATES OCCUPATIONAL SAFETY HEALTH ADMINISTRATION.
3. ELECTRICAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND INSPECTION REQUIREMENTS.
4. ELECTRICAL CONTRACTOR SHALL VISIT JOB SITE AND VERIFY EXISTING CONDITIONS BEFORE BIDDING AND SHALL INCLUDE IN HIS BID THE NECESSARY COSTS TO CONSTRUCT THIS PROJECT IN ACCORDANCE WITH INTENT OF THE ELECTRICAL DRAWINGS, SPECIFICATIONS, SERVING UTILITY COMPANY'S REQUIREMENTS AND ALL APPLICABLE CODES. SUBMITTAL OF BID INDICATES CONTRACTOR IS COGNIZANT OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED UNDER THIS CONTRACT BEFORE SUBMITTING BID. CONTRACTOR SHALL VERIFY EXISTING SITE CONDITIONS, POWER AND TELEPHONE SERVICE REQUIREMENTS WITH UTILITY SERVICE PLANNER AND THE EXACT SERVING UTILITY POINTS OF CONNECTION AND PROVIDE ALL SERVICE RELATED EQUIPMENT AND INSTALLATION IN BID. UTILITY SERVICE REQUIREMENTS SHOWN ON THE DRAWINGS ARE BASED ON PRELIMINARY SITE VISIT AND INFORMATION AVAILABLE AT THIS TIME OF VISIT AND ARE NOT GUARANTEED BY ENGINEER OR SERVING UTILITY COMPANY. REFER TO ARCHITECTURAL DRAWINGS AND VISIT SITE PRIOR TO BID TO REVIEW EXISTING TOPOGRAPHY MAPS, LANDSCAPING AND CONSTRUCTION TO BECOME FAMILIAR WITH SLOPE CONDITIONS AND EXISTING CONSTRUCTION AND LANDSCAPING. ADJUST CONDUIT ROUTING INDICATED TO AVOID DISTURBING EXISTING CONDITION WHERE POSSIBLE. SAWCUT EXISTING SURFACE WHERE REQUIRED FOR CONDUIT AND STRUCTURE INSTALLATION AND PATCH TO MATCH EXISTING. REPAIR OR REPLACE ALL SOD, LANDSCAPING, SPRINKLER SYSTEMS, CONDUITS AND WIRING, PIPING ETC. ALTERED BY THE ELECTRICAL WORK TO MATCH EXISTING AND TO MAKE SYSTEMS OPERABLE.
5. THE INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF NECA MANUAL OF GOOD WORKMANSHIP" (STANDARD OF INSTALLATION).
6. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, INCLUDING BUT NOT LIMITED TO COMPLETE ELECTRICAL SYSTEMS, POWER AND LIGHTING, TELEPHONE CONDUIT SYSTEM, SIGNAL SYSTEMS, PANELBOARDS(S), CONTROL WIRING, GROUNDING, CONDUIT ONLY SYSTEMS ETC., FOR A COMPLETE AND PROPERLY OPERATING SYSTEM, ENERGIZED THROUGHOUT AND AS INDICATED ON THE DRAWINGS, AS SPECIFIED HEREIN AND/OR AS OTHERWISE REQUIRED.
7. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT. MATERIALS SHALL BE LISTED AND APPROVED BY UNDERWRITER'S LABORATORY AND SHALL BEAR THE INSPECTION LABEL UL WHERE SUBJECT TO SUCH APPROVAL. MATERIALS SHALL MEET WITH THE APPROVAL OF THE DIVISION OF INDUSTRIAL SAFETY AND ALL GOVERNING BODIES HAVING JURISDICTION. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA, AND NBFU.
8. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY EXISTING DIMENSIONS AND CONDITIONS. HE SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE ENGINEER LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
9. PVC CONDUIT SHALL BE USED IN ALL WIRING RUN UNDERGROUND. RIGID GALVANIZED CONDUIT SHALL BE USED WHERE EXPOSED TO WEATHER AND WHERE SUBJECT TO MECHANICAL DAMAGE. FLEXIBLE CONDUIT SHALL BE USED WHERE THE STRUCTURAL CONDITIONS MAKE THE USE OF RIGID CONDUIT IMPRACTICAL, AND FOR SHORT CONNECTIONS TO VIBRATING EQUIPMENT. USE NEOPRENE JACKETED FLEXIBLE CONDUIT AND FITTINGS WHERE EXPOSED TO WEATHER.
10. ALL WIRING SHALL BE CONCEALED IN FINISHED AREAS. INSTALL EXPOSED RACEWAYS PARALLEL WITH OR PERPENDICULAR TO THE LINE OF BUILDING. PAINT RACEWAYS TO MATCH MOUNTING SURFACE. PENETRATIONS OF ALL WALLS OR CEILINGS SHALL BE SEALED AND FIRE RATING MAINTAINED IN ACCORDANCE WITH UL WL1001, UL WL5001 AND ALL LOCAL AND NATIONAL CODES. DO NOT PENETRATE OR RUN CONDUITS IN AND OUT OF RATED CORRIDOR OR STAIRWELL ENCLOSURE FOR CIRCUITS NOT INTENDED TO SERVE THE EQUIPMENT WITHIN THE ENCLOSURE. CONDUIT MUST BE RUN OUTSIDE OF RATED ENCLOSURE ENVELOPS.
11. ALL CONDUCTORS SHALL BE COPPER AND RATED 600 VOLTS. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 60°C RATED COPPER TYPE DUAL RATED "THHN/THWN" #12, & #10 SOLID, #8 AND LARGER STRANDED.
12. OUTLET BOXES SHALL BE CAST FERROUS METAL WITH WATERIGHT GASKETED CAST FERROUS COVERS, THREADED HUBS, AND STAINLESS STEEL SCREWS. USE CROUSE-HINDS OR APPLETON TYPE FS OR FD BOXES OR APPROVED EQUAL BY ENGINEER.
13. VERIFY EXACT LOCATIONS AND MOUNTING HEIGHTS OF ALL OUTLETS WITH CONSTRUCTION MANAGER BEFORE ROUGH-IN.
14. ELECTRICAL LAYOUT DRAWINGS ARE DIAGRAMMATIC. INSTALL THE ELECTRICAL SYSTEMS WITHOUT INTERFERING WITH STRUCTURES OR OTHER SYSTEMS.
15. ALL SURFACE-MOUNTED ELECTRICAL EQUIPMENT AND DEVICES SHALL BE PROPERLY SECURED. PROVIDE STRUCTURAL SUPPORT AS NECESSARY FOR MOUNTING EQUIPMENT.
16. CONTRACTOR SHALL LABEL THE COVER PLATE OF EACH ELECTRICAL OUTLET AND JUNCTION BOX WITH INDELIBE INK FELT PEN. THE LABEL SHOULD SHOW PANEL AND CIRCUIT NUMBER CONTAINED IN THE BOX.
17. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT EQUIPMENT LOCATIONS. ALL LOCATIONS SHALL BE VERIFIED WITH ENGINEER BEFORE ROUGH-IN.
18. PROVIDE SEPARATE GROUND WIRE IN ALL FLEXIBLE AND PVC CONDUITS.
19. THE CONTRACTOR SHALL MAINTAIN THE UNIFORMITY AND CONTINUITY OF THE GROUNDING SYSTEM.
20. TEST THE ENTIRE SYSTEM TO DEMONSTRATE THAT THE ELECTRICAL COMPONENTS AND SPECIAL SYSTEMS ARE COMPLETE AND FUNCTION PROPERLY, INCLUDING BUT NOT LIMITED TO INSULATION AND GROUNDING TESTS. MAKE NECESSARY CORRECTIONS AND LEAVE SYSTEMS READY FOR OPERATION.
21. COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER DATE JOB ACCEPTANCE BY OWNER. ANY WORK, MATERIAL, OR EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE ELECTRICAL CONTRACTOR.
22. AT COMPLETION OF THE JOB, THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE OWNER WITH SPARE PARTS, ALL THE EQUIPMENT MANUALS, SPARE PARTS LIST AS RECOMMENDED BY THE MANUFACTURER, EQUIPMENT REPRESENTATIVE ADDRESS AND PHONE NUMBER. FURNISH ONE (1) COMPLETED SET OF "AS-BUILT" ELECTRICAL PLANS SHOWING LOCATIONS OF OUTLETS, CONDUIT RUNS, AND PANELBOARD CIRCUIT NUMBERS. ELECTRICAL CONTRACTOR SHALL PROVIDE ACCURATE DIRECTORIES IN PANELBOARD FRONTS AT COMPLETION OF BUILD-OUT. PANELBOARD DIRECTORIES SHALL INCLUDE THE EQUIPMENT SERVED AND WATTAGE.
23. REFER TO TELCO'S STANDARD SPECIFICATIONS AS PART OF THIS CONSTRUCTION DOCUMENT. ANY CONFLICT BETWEEN THESE DRAWINGS, TELCO'S STANDARD SPECIFICATIONS, AND APPLICABLE CODES, THE MORE STRINGENT REQUIREMENTS SHALL PREVAIL.
24. ALL WORK TO BE EXECUTED IN WORKMANLIKE MANNER AND SHALL PRESENT A NEAT MECHANICAL APPEARANCE WHEN COMPLETED.
25. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING RELATED TO ELECTRICAL WORK, UNLESS NOTED OTHERWISE AND COORDINATED WITH THE GENERAL CONTRACTOR.
26. ALL ELECTRICAL EQUIPMENT SHALL BE BRACED OR ANCHORED TO RESIST A HORIZONTAL FORCE ACTING IN ANY DIRECTION USING THE FOLLOWING CRITERIA:

FIXED EQUIPMENT ON GRADE	33% OF OPERATING WEIGHT
FIXED EQUIPMENT ON STRUCTURE	30% OF OPERATING WEIGHT
EMERGENCY POWER & COMMUNICATION EQUIPMENT ON GRADE	30% OF OPERATING WEIGHT
EMERGENCY POWER & COMMUNICATION EQUIPMENT ON STRUCTURE	163% OF OPERATING WEIGHT

FOR FLEXIBILITY OF MOUNTED EQUIPMENT USE 2X THE ABOVE VALUES. SIMULTANEOUS VERTICAL FORCE 1/3X HORIZONTAL FORCE.
27. THE CONTRACTOR AGREE THAT, IN ACCORDANCE WITH GENERALLY CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT AT ALL TIME. CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED IN CONNECTION WITH PERFORMANCE OF WORK ON THIS PROJECT.
28. CONTRACTOR SHALL PERFORM CONTINUITY AND INSULATION TEST AND COMPLY WITH CITY OF LOS ANGELES TESTING STANDARDS OR NATIONALLY RECOGNIZED TESTING STANDARDS. REPLACE ALL CONDUCTORS WHICH DO NOT MEET THE STANDARDS.
29. CONTRACTOR SHALL TEST ALL NEW BREAKERS AND EQUIPMENT AND SHOW THAT THEY FUNCTION AS INTENDED. USE CITY OF LOS ANGELES RECOGNIZED TESTING LABORATORY AND WITNESSED BY THE OWNER'S REPRESENTATIVE.
30. CONTRACTOR SHALL ARC-FLASH STUDY AND PROVIDE THE REQUIRED LABELS ON ALL THE ELECTRICAL EQUIPMENT NOT CURRENTLY LABELED AS REQUIRED BY 2019 CEC.
31. CONTRACTOR SHALL EMPLOY A COMPANY OR INDIVIDUAL WITH THE EXPERTISE TO PERFORM OVERCURRENT PROTECTION COORDINATION STUDY AND EMPLOY THE NECESSARY SETTING ON THE NEW OVERCURRENT PROTECTIONS. CONTRACTOR SHALL SUBMIT SUCH STUDY TO THE OWNER FOR REVIEW.
32. CONTRACTOR SHALL IMMEDIATELY COORDINATE WITH THE POWER UTILITY UPON AWARD OF CONTRACT. ANY DELAYS CAUSED BY NOT COORDINATING SHALL IMPOSE LIQUIDATED DAMAGES ON THE CONTRACTOR. OBTAIN APPROVAL OF ANY SERVICE RELATED EQUIPMENT PRIOR PROCUREMENT. SUBMIT SHOP DRAWING FOR REVIEW.

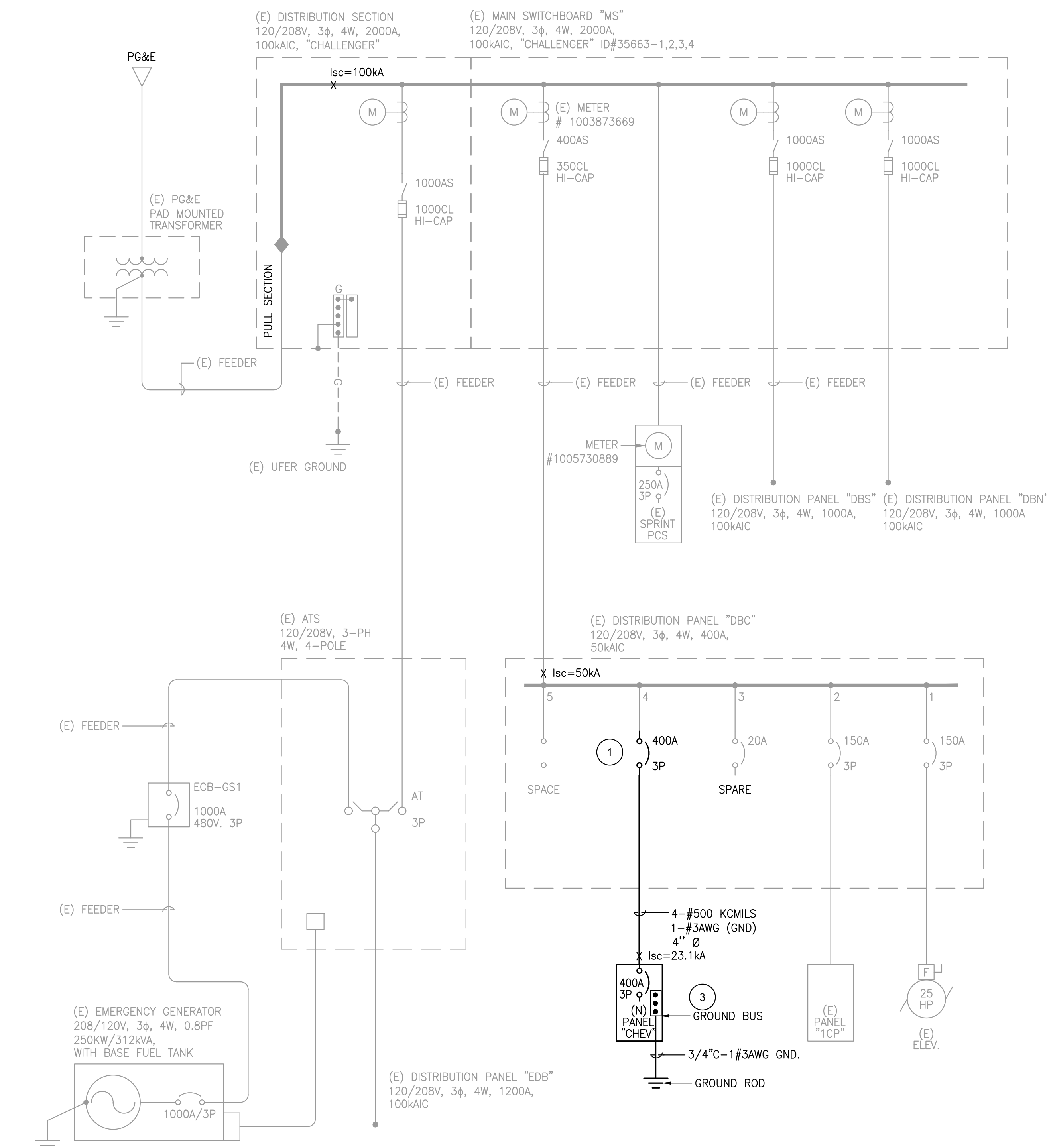
GENERAL GROUNDING NOTES

- ALL DETAILS ARE SHOWN IN GENERAL TERMS. ACTUAL GROUNDING INSTALLATION AND CONSTRUCTION MAY VARY DUE TO SITE SPECIFIC CONDITIONS.
- ALL GROUNDING ELECTRODES INCLUDING EXISTING ONES SHALL BE TIED TOGETHER VIA EXOTHERMIC CONNECTION WITH #2 AWG BARE TINNED SOLID COPPER CONDUCTOR TO MAKE A SINGLE EQUI-POTENTIAL GROUND ELECTRODE.
- ALL GROUND CONNECTIONS SHALL BE #2 AWG U.O.N. ALL WIRES SHALL BE COPPER THHN/THWN. ALL GROUND WIRE SHALL BE TIN COATED OR GREEN INSULATED WIRE.
- CONTRACTOR TO VERIFY AND TEST GROUND TO A MAXIMUM OF 25-OHM RESISTANCE TO EARTH. PROVIDE SUPPLEMENT GROUNDING RODS AS REQUIRED TO ACHIEVE SPECIFIED OHMS READING. GROUNDING AND OTHER OPTIONAL TESTING WILL BE WITNESSED BY THE CITY OF BELMONT REPRESENTATIVE.
- NOTIFY ENGINEER IF THERE ARE ANY DIFFICULTIES INSTALLING GROUNDING SYSTEM DUE TO SITE SOIL CONDITIONS.
- BARE GROUNDING CONDUCTOR SHALL BE HARD DRAWN TINNED COPPER SIZES AS NOTED ON PLAN.
- ALL HORIZONTALLY RUN GROUNDING CONDUCTORS SHALL BE INSTALLED MINIMUM 18" BELOW GRADE IN TRENCH, U.N.O., AND BACK FILL SHALL BE COMPACTED AS REQUIRED BY ENGINEER.
- ALL GROUND CONDUCTORS SHALL BE RUN AS STRAIGHT AND SHORT AS POSSIBLE, WITH A MINIMUM 12" BENDING RADIUS NOT LESS THAN 90 DEGREES.
- ALL CONDUCTIVE MATERIALS WITHIN THE CONSTRUCTION SITE AND ALL SUPPORT STRUCTURES, CABLE CHANNEL WAYS OR WIRE GUIDES SHALL BE BONDED TO GROUND SYSTEM AT A POINT NEAREST THE MAIN GROUNDING BUS "MGB" WITH A MINIMUM NO. 6 TINNED COPPER CONDUCTOR AND (2) -HOLE COMPRESSION CONNECTOR AT BUS.
- ACCEPTABLE CONNECTIONS FOR GROUNDING SYSTEM SHALL BE:
 - BURNDY, HY-GRADE U.L. LISTED CONNECTORS (MECHANICAL CONNECTIONS).
 - CADWELD, EXOTHERMIC WELDS (WELDED CONNECTIONS).
 - TWO -(2) HOLE TINNED COPPER COMPRESSION FITTINGS (BUS BAR CONNECTIONS).
- ALL CRIMPED CONNECTIONS SHALL HAVE EMBOSSED MANUFACTURER'S DIEMARK VISIBLE AT THE CRIMP.
- ALL GROUND CONNECTIONS SHALL BE BURNISHED AND SHALL HAVE A COATING OF "KOPR-SHIELD" OR "NO-OX-ID" APPLIED TO THE CONNECTION.
- ALL CONNECTION HARDWARE AT EQUIPMENT SHALL BE TYPE 316 SS, OR DURIEM BRONZE. "KOPR-SHIELD" OR "NO-OX-ID" APPLIED TO THE CONNECTION.
- THE GROUND RING SHALL BE INSTALLED 24" MINIMUM BEYOND ANY BUILDING DRIP LINE.
- CONTRACTOR SHALL CONNECT ALL THE GROUND ELECTRODES WHETHER OR NOT THE PLANS TO MAKE A EQUIPOTENTIAL GROUND SYSTEM. CONTRACTOR IS TO PERFORM A WITNESSED 3-POINT FALL-OF-POTENTIAL GROUND RESISTANCE MEASUREMENT TEST AND RESULTS MUST NOT EXCEED A RESISTANCE READING OF 5 OHMS MAXIMUM. PROVIDE SUPPLEMENT GROUNDING OR XIT RODS AS REQUIRED TO ACHIEVE THE SPECIFIED OHMS READING. CONTRACTOR SHALL PROVIDE GROUNDING AND OTHER OPTIONAL TESTING AS DIRECTED AND TO BE WITNESSED BY OWNER'S REPRESENTATIVE.
- MAINTAIN A MINIMUM OF 6 FT. SEPARATION BETWEEN GROUNDING RODS.

ABBREVIATIONS

(E)	EXISTING TO REMAIN	EW	ELECTRIC WATER HEATER	MLO	MAIN
(F)	FUTURE	MTD	MOUNTED	MTD	MOUNTED
(R)	EXISTING TO BE REMOVED	FBO	FURNISHED BY OTHERS	MTR	MOTOR
(RE)	RELOCATED EXISTING	FC	FOOT CANDLES	MTS	MANUAL
(RL)	EXISTING TO BE RELOCATED	FDS	FUSED DISCONNECT SWITCH	(N)	NEW
AB	ABOVE COUNTER BACKSPLASH	FF	FLUSH FLOOR MOUNTED	—N—	NEUTRAL
AC	ALTERNATING CURRENT, AIR CONDITIONER	FLA	FULL LOAD AMPERES	N	NEUTRAL
A, AMP	AMPERES AMPERE (RATED)	FLEX	FLEXIBLE	NC	NORMAL
AF	FUSE OR CB FRAME A	FU	FUSE	NEC	NEGATIVE
AFB	ABOVE FINISHED FLOOR	G	GROUND BUS	NEG	NEGATIVE
AFG	ABOVE FINISHED GRADE	G.E.C.	GROUND EARTH CONDUCTOR	NEMA	NATIONAL
AFS	ABOVE FINISHED SURFACE	GEN	GENERATOR	NL	NIGHT
AIC	MINIMUM RMS SYMMETRIC AMPERE (EQUIPMENT RATING)	GFCI	GROUND FAULT CIRCUIT INTERRUPTER	NO	NORM
ARS	AVAILABLE RMS SYMMETRICAL	GND	GROUND	NRTL	NATIONAL
AS	AMPERE AMPERE (RATED) SWITCH	HOA	HAND-OFF/AUTO SWITCH	NTS	NOT
AT	CIRCUIT BREAKER TRIP SETTING	HP	HORSEPOWER	OCF	OVER
ATS	AUTOMATIC TRANSFER SWITCH	HPF	HIGH POWER FACTOR	OFI	OWN
AUTO	AUTOMATIC	HZ	HERTZ (CYCLES PER SECOND)	OFI	OWN
AUX	AUXILIARY	IER	INTEGRATED EQUIPMENT (SHORT CIRCUIT) RATING (RMS SYM. AMPS)	P	POLE
AWG	AMERICAN WIRE GAUGE	IG	ISOLATED GROUND	PB	PUSH
BATT	BATTERY	IMC	INTERMEDIATE METALLIC CONDUIT	PH, φ	PHASE
BG	BELOW GRADE	Isc	SHORT CIRCUIT CURRENT	PL, P/L	PROP
BTWC	BARE TINNED STRANDED COPPER WIRE	K	KEY OPERATED, THOUSAND	PLCS	PLAC
BTSCW	BARE TINNED SOLID COPPER WIRE	KA	THOUSAND AMP	PME	PAD
C	CONDUIT (CIRCULAR RACEWAY)	KAIC	THOUSAND AMP INTERRUPTING CURRENT	PNL	PANE
CB	CIRCUIT BREAKER	KOMIL	THOUSAND CIRCULAR MILS	POS	POSIT
CKT	CIRCUIT	KW	KILOWATTS	PRI	PRIM
CLG	CEILING	KVA	KILOVOLT-AMPERES	PVC	POLY
CO	CONDUIT ONLY	LAFD	LOS ANGELES FIRE DEPARTMENT	REQD	REQU
CU	COPPER	LAEC	LOS ANGELES ELECTRICAL CODE, LATEST	RLA	RATE
DISC	DISCONNECT	LTG	LIGHTING	S/D	SING
DIA	DIAMETER	MAX	MAXIMUM	S/N	SOL
DIV	DIVISION	MBP	MAINTENANCE BYPASS PANEL	SPD	SUR
DWP	DEPARTMENT OF WATER AND POWER	MCA	MINIMUM CIRCUIT AMPERES	SPDT	SING
EMERG	EMERGENCY	MFR	MANUFACTURER	SPST	SING
EW	ELECTRIC WATER COOLER	MIN	MINIMUM		
		MISC	MISCELLANEOUS		

[illegible][illegible]

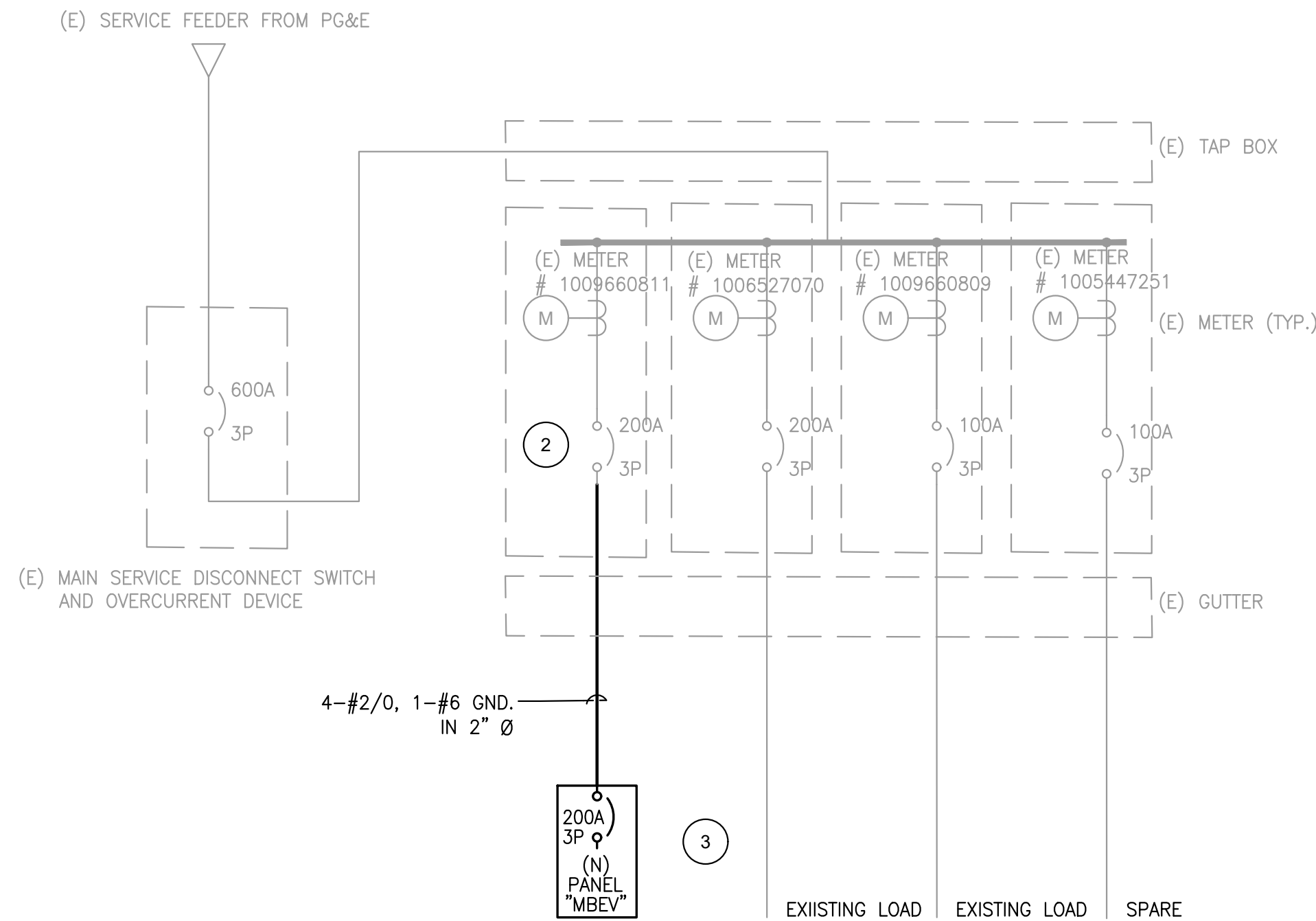


(E) PANEL "DBC" LOAD SUMMARY	
LOAD DESCRIPTION	LOAD (kW)
(E) METER# 1003873669	9.0
(N) PANEL "EV"	96.00
SAFETY FACTOR (25% OF TOTAL LOAD)	26.3
TOTAL (kW)	131.3
TOTAL AMPERE AT 208V, 3φ	364.3

ELECTRICAL DESIGN LOAD SUMMARY	
SERVICE DESCRIPTION	LOAD (kW)
(E) RECENT 1-YEAR MAXIMUM DEMAND METER# 1003873796	20.0
(E) RECENT 1-YEAR MAXIMUM DEMAND METER# 1003873669 + NEW CONNECTED LOAD	131.3
(E) RECENT 1-YEAR MAXIMUM DEMAND METER# 1003873797	0.0
(E) RECENT 1-YEAR MAXIMUM DEMAND METER# 5000036611	36.0
SAFETY FACTOR (25% OF TOTAL LOAD)	37.8
TOTAL (kW)	151.3
TOTAL AMPERE AT 208V, 3φ	420.0

CITY HALL AND POLICE STATION SINGLE LINE DIAGRAM

SCALE: NONE



MANOR BUILDING SINGLE LINE DIAGRAM

SCALE: NONE

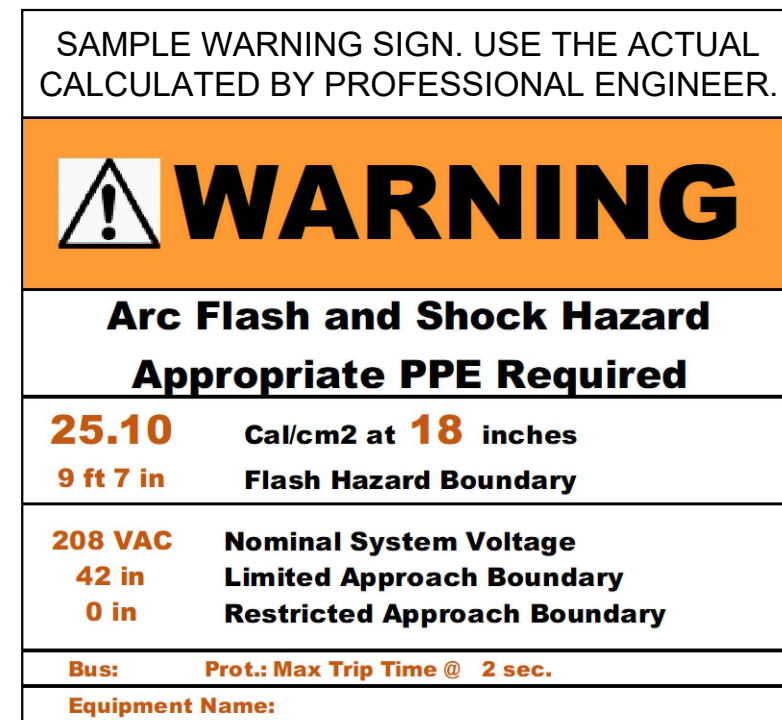
Branch Circuit	I_{sc} at beginning of circuit (Amps)	50,000	DISTRIBUTION BOARD "DBC"	Enter working distance (inches):	18
	Conductors per phase	1		Arc-In-Box Incident Energy:	265.20
	(\$)single conductors or (C)able	S		Flash Protection Boundary:	525
	AL or CU	CU			
	Conductor length	0			
	Conductor AWG or kcmil	350		I_{sc} at fault (Amps) =	50,000
	Metallic conduit? (Y or N)	N			
	Fault Clearing Time (seconds)	2	@ 25,931 arc fault current (Amps)		
Branch Circuit	I_{sc} at beginning of circuit (Amps)	50,000	PANEL "EV"	Enter working distance (inches):	18
	Conductors per phase	1		Arc-In-Box Incident Energy:	142.95
	(\$)single conductors or (C)able	S		Flash Protection Boundary:	357
	AL or CU	CU			
	Conductor length	172			
	Conductor AWG or kcmil	500		I_{sc} at fault (Amps) =	23,127
	Metallic conduit? (Y or N)	N			
	Fault Clearing Time (seconds)	2	@ 13,421 arc fault current (Amps)		

SINGLE LINE DIAGRAM GENERAL NOTES:

1. THE FAULT CURRENT RATING OF OVERCURRENT DEVICES ADDED TO THE EXISTING MAIN SERVICE EQUIPMENT SHALL HAVE GREATER THAN OR EQUAL TO THE FAULT CURRENT RATING OF THE EXISTING OVERCURRENT DEVICES. ALL ELECTRICAL SERVICE RELATED WORK SHALL COMPLY AND COORDINATE WITH UTILITY COMPANY.
2. ALL CIRCUIT BREAKERS SHALL BE 80% RATED.
3. ALL (N) CURRENT CARRYING EQUIPMENT SHALL BE U.L. LISTED AND BRACED TO WITHSTAND THE MAXIMUM AVAILABLE FAULT CURRENT AT ITS TERMINAL.
4. ALL OVERCURRENT DEVICES SHALL BE FULLY RATED TO AVAILABLE FAULT CURRENT.
5. ALL NEW ELECTRICAL EQUIPMENT SHALL BE U.L. LISTED OR APPROVED BY A ELECTRICAL TESTING LABORATORY APPROVED BY THE AUTHORITY HAVING JURISDICTION.
6. CONTRACTOR SHALL COORDINATE THE OVERCURRENT PROTECTION DEVICE INCLUDING BUT NOT LIMITED TO UTILITY MAIN CIRCUIT BREAKER AND ALL DOWNSTREAM BRANCH CIRCUIT BREAKERS.
7. HEAVY WEIGHT LINES ARE NEW, SCREENED LIGHT LINES ARE EXISTING.
8. USE A LICENSED CA ELECTRICAL ENGINEER TO CALCULATE THE ARC-FLASH AND PROVIDE ARC-FLASH WARNING SIGNS AT EACH ELECTRICAL EQUIPMENT INDICATING THE REQUIRED INFORMATION BY NFPA 70E AND CAL-OSHA. SEE SAMPLE BELOW.
9. CONDUCTOR LENGTH SHOWN HEREIN ARE FOR ENGINEERING CALCULATIONS ONLY AND ARE NOT FOR MATERIALS TAKE-OFF.

(1)	(2)	(3)	(4)
Nominal System Voltage Range, Phase to Phase ^a	Limited Approach Boundary ^b		Restricted Approach Boundary ^c , Includes Inadvertent Movement Adder
	Exposed Movable Conductor ^c	Exposed Fixed Circuit Part	
<50 V	Not specified	Not specified	Not specified
50 V–150 V ^d	3.0 m (10 ft 0 in.)	1.0 m (3 ft 6 in.)	Avoid contact
151 V–750 V	3.0 m (10 ft 0 in.)	1.0 m (3 ft 6 in.)	0.3 m (1 ft 0 in.)

(1)	(2)	(3)	(4)
Nominal Potential Difference	Limited Approach Boundary		Restricted Approach Boundary; Includes Inadvertent Movement Adder
	Exposed Movable Conductor	Exposed Fixed Circuit Part	
<100 V	Not specified	Not specified	Not specified
100 V–300 V	3.0 m (10 ft 0 in.)	1.0 m (3 ft 6 in.)	Avoid contact
301 V–1 kV	3.0 m (10 ft 0 in.)	1.0 m (3 ft 6 in.)	0.3 m (1 ft 0 in.)



SINGLE LINE DIAGRAM KEY NOTES:

- ① ADD A BRANCH CIRCUIT BREAKER AS SHOWN. MATCH THE EXISTING FAULT CURRENT RATING. COORDINATE WITH UPSTREAM AND DOWNSTREAM OCP.
- ② REPLACE EXISTING BREAKER AS SHOWN WITH INTERRUPTING CURRENT GREATER THAN OR EQUAL TO THE EXISTING BREAKER. COORDINATE UPSTREAM AND DOWNSTREAM BREAKERS.
- ③ INTERRUPTING RATING OF PANEL AND BREAKERS SHALL BE AS NOTED.

The logo for California Belmont is a circular emblem. The upper half features a bright yellow sun with horizontal rays, partially obscured by a dark blue mountain range. The lower half of the circle is filled with a solid dark blue color. Below the circle, the word "CALIFORNIA" is written in a white, serif, all-caps font. Below that, the word "BELMONT" is written in a large, bold, red, serif, all-caps font with a white outline. The entire logo is set against a white background.

1 Twin Pines Ln, Belmont, CA 94002,
United States

PLANS PREPARED BY:

LINKTURE 
CONSULTING ENGINEERS
LEADER IN ELECTRIC VEHICLE INFRASTRUCTURE ENGINEERING
41250 Placer Lafite, Temecula, CA 92591
P:(949) 317-4700 F:(949) 589-1909
email@linkture.com www.linkture.com

[illegible]

— SITE INFORMATION:

**BELMONT CITY HALL,
POLICE DEPARTMENT,
AND MANOR BUILDING
ELECTRIC VEHICLE
CHARGING STATIONS**

1 Twin Pines Ln, Belmont, CA 94002, and 10 Twin
Pines L, Belmont, CA 94002

SEAL:

DATE SIGNED: 02/08/22

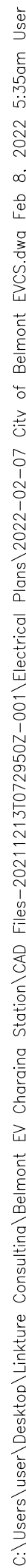
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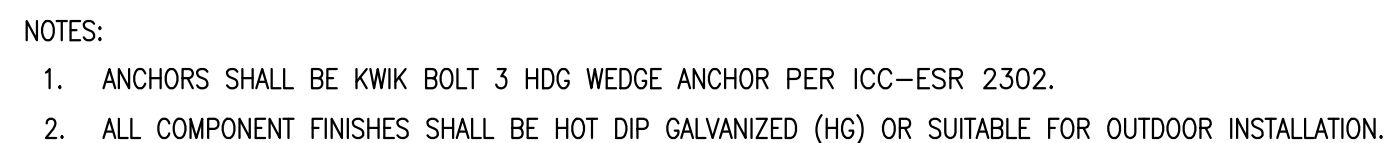
**SINGLE LINE DIAGRAM,
CONDUIT SCHEDULE, LOAD
SUMMARY, SHORT-CIRCUIT
AND ARC-FLASH.**

SHEET NUMBER

E-2

SHEET OF 09





SHEET OF 09

Technical Specifications

**City of Belmont
Electric Vehicle Charging
Station Installation
Project**

Final Design

Prepared for:
City of Belmont

Prepared by:
Linkture Corp.
41250 Placer Lafite
Temecula, CA 92591

December 27, 2021

Technical Specifications

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SECTION 01 0010

ELECTRIC VEHICLE CHARGING STATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions, Division 1 - GENERAL REQUIREMENTS, aopt999@gmail.cnd other applicable specification sections in the Project Manual apply to the work specified in this Section.
- B. Contractor shall comply with all the Federal, State, County, and local codes and ordinances related to Electric Vehicle Charging Stations.

1.2 SUMMARY

- A. Scope: Provide design and engineering, labor, material, equipment, related services, and supervision required, including, but not limited to, manufacturing, fabrication, erection, and installation for electric vehicle (EV) charging stations as required for the complete performance of the work, and as shown on the Drawings and as herein specified.
- B. Section Includes: The work specified in this Section includes, but shall not be limited to, complete, electric vehicle charging stations as indicated on the Drawings and as specified herein.
 - 1. The extent of the electric vehicle charging infrastructure work shall be as indicated by the Drawings and by the requirements of this Section, including, but not limited to, the following:
 - a. Panelboards or load centers.
 - b. Conduits and wiring.
 - c. Networked 19.2 kW Level 2 chargers with load management for individual pedestal and for the entire installation from the same power source.
 - d. Interface for demand response signals options (for future versions of electric vehicle charging station products).
 - e. Workstations, software, and communications hardware.
 - 2. System installation shall include, but shall not be limited to, the following:
 - a. Wiring of branch circuit conductors.
 - b. Installation of communications conductors and associated hardware where broadband and wifi wireless communication is not part of the charging system.

1.3 REFERENCES

- A. General: The publications listed below form a part of this Specification to the extent

referenced. The publications are referred to in the text by the basic designation only. The edition/revision of the referenced publications shall be the latest date as of the date of the Contract Documents, unless otherwise specified.

- B. American Society of Civil Engineers (ASCE):
 - 1. ASCE 7, "Minimum Design Loads for Buildings and Other Structures" (copyrighted by ASCE, ANSI approved).
- C. ASTM (ASTM):
 - 1. ASTM E 329, "Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction."
- D. California Code of Regulations (CCR):
 - 1. CCR Title 24, "California Building Standards Code."
- E. International Code Council (ICC):
 - 1. ICC-ES AC156, "Acceptance Criteria for Seismic Qualification by Shake-Table Testing of Nonstructural Components and Systems."
 - 2. ICC IBC, "International Building Code."
- F. National Fire Protection Association (NFPA):
 - 1. NFPA 70, "National Electrical Code" (copyrighted by NFPA, ANSI approved) - hereinafter referred to as NEC.
 - 2. NFPA 5000, "Building Construction and Safety Code."
- G. SAE International (SAE):
 - 1. SAE J1772, "Standard for Electric Vehicle Conductive Charge Coupler."
- H. Underwriters Laboratories, Inc. (UL):
 - 1. UL 991, "Standard for Tests for Safety Related Controls Employing Solid State Devices."
 - 2. UL 1998, "Standard for Software in Programmable Components."
 - 3. UL 2231-1, "Standard for Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits: General Requirements."
 - 4. UL 2231-2, "Standard for Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits: Particular Requirements for Protection Devices for Use in Charging Systems."
 - 5. UL 2251, "Standard for Plugs, Receptacles and Couplers for Electric Vehicles."
 - 6. UL 2594, "Standard for Electric Vehicle Supply Equipment."

1.4 SUBMITTALS

- A. General: See Section 01 33 00 - SUBMITTAL PROCEDURES.
- B. Product Data: Submit product data showing material proposed. Submit sufficient information to determine compliance with the Drawings and Specifications, including, but not limited to, manufacturer's product data and installation instructions for each component and system.
- C. Shop Drawings: Submit shop drawings for each product and accessory required.

Include information not fully detailed in manufacturer's standard product data, including, but not limited to, list of components and equipment to be supplied, including, but not limited to, proposed locations, clearances, and power requirements.

1. Panel Drawings: Submit manufacturer's dimensional drawings.
 2. One-Line Diagrams: Submit one-line diagrams of the system configuration proposed if it differs from that illustrated in the riser diagram included in these Construction Documents. Submit one-line drawings indicating location and addresses of all hardware, including, but not limited to, panelboard or load center, circuit breaker, and charging stations.
- D. Wiring Diagrams: Submit wiring diagrams detailing power, signal, and control systems, clearly differentiating between manufacturer-installed wiring and field-installed wiring, and between components provided by the manufacturer and those provided by others.
1. Submit typical connection diagrams for all components including, but not limited to, panelboards, communications devices, and personal computers.
- E. Qualification Data: Submit qualification data for firms and persons specified in Quality Assurance Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names of architects and owners, and other information specified.
- F. Contract Closeout Submittals:
1. Operation and Maintenance Data: Submit operation and maintenance data for electric vehicle charging stations to include in operation and maintenance manuals specified in Division 1 - GENERAL REQUIREMENTS.
 2. Warranty Data: Submit manufacturer's standard warranty documents.

1.5 QUALITY ASSURANCE

- A. Qualifications:
1. Manufacturer Qualifications: Manufacturer shall be a firm engaged in the manufacture of electric vehicle charging stations of types and sizes required, and whose products have been in satisfactory use in similar service for a minimum of 20 years.
 - a. The manufacturer shall be ISO 9001 certified and shall be designed to internationally accepted standards.
 - b. Factory fax/telephone/email system support shall be available free of charge from the manufacturer during normal business hours.
 2. Installer Qualifications: Installer shall be a firm that shall have a minimum of five years of successful installation experience with projects utilizing electric vehicle charging stations similar in type and scope to that required for this Project and shall be approved by the manufacturer. Electrician must be EVITP certified.

3. Inspecting and Testing Agency Qualifications: To qualify for acceptance, an independent inspecting and testing agency hired by the Contractor or manufacturer to test products shall demonstrate to the Architect/Engineer's satisfaction that they are qualified according to ASTM E 329 to conduct testing indicated.
- B. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances, and regulations of Federal, State, and local authorities having jurisdiction. Obtain necessary approvals from such authorities.
- C. Standards: Comply with applicable requirements of the following standards:
 1. NEMA Compliance: Applicable portions of NEMA standards pertaining to types of electrical equipment and enclosures.
 2. NEC Compliance: Applicable portions of the NEC, including, but not limited to, Article 625.
 3. UL Compliance: Applicable UL standards for electric vehicle supply equipment, panelboards, circuit breakers, and energy management equipment.
 4. FCC Emissions: Comply with FCC emissions standards.
 5. CCR Title 24: Lighting control equipment shall be certified by the California Energy Commission.
 6. New York City: Panelboards shall be certified for use in New York City by the New York City Authority.
 7. Seismic Compliance: NFPA 5000, ASCE 7, ICC-ES AC156, and/or ICC IBC, as applicable to the Project location and as required by authorities having jurisdiction.
- D. Electrical Components, Devices, and Accessories: Electrical components, devices, and accessories shall be listed and labeled as defined in NEC, Article 100, by an inspecting and testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- E. Pre-Installation Conference: Conduct pre-installation conference in accordance with the Construction Manager's requirements. Prior to commencing the installation, meet at the Project site with the CITY to review the material selections, installation procedures, and coordination with other trades. Pre-installation conference shall include, but shall not be limited to, the Contractor, the Installer, and any trade that requires coordination with the work. Date and time of the pre-installation conference shall be acceptable to the Owner and the Engineer.
- F. Coordination: Coordinate the work in this Section with all of the trades covered in other sections of the Specification to provide a complete and operable system. Furnish inserts and anchors that must be built into other work. Work closely with installers of finish materials so that units are properly aligned with adjacent materials.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the Project site in supplier's or manufacturer's original wrappings and containers, labeled with supplier's or manufacturer's name, material or product brand name, and lot number, if any.

- B. Store materials in their original, undamaged packages and containers, inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

1.7 PROJECT CONDITIONS

- A. Environmental Requirements: Do not install electric vehicle charging stations until space is enclosed and weatherproof, wet work in space is completed and nominally dry, work above ceilings is complete, and ambient temperature and humidity conditions are and will be continuously maintained at values near those indicated for final occupancy.

1.8 WARRANTY

- A. General: See [Section 01 77 00 - CLOSEOUT PROCEDURES] [Section 01770 - CLOSEOUT PROCEDURES].
- B. Special Warranty: The Contractor shall warrant the work of this Section to be in accordance with the Contract Documents and free from faults and defects in materials and workmanship for period indicated below. This special warranty shall extend the one year period of limitations contained in the General Conditions. The special warranty shall be countersigned by the Installer and the manufacturer.
 - 1. Warranty Period: Warranty period shall be 18 months from date of Substantial Completion.
- C. Additional Owner Rights: The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: Product specified is "Electric Vehicle (EV) Charging Station" shall be 19.2 kW, 240V/208V, 1-phase, dual port as manufactured by Blink Model IQ 200, SemaConnect Series 7 Plus, Amps2Go Series F19, Square D by Schneider Electric, or equal. Items specified are to establish a standard of quality for design, function, materials, and appearance. Equivalent products by other manufacturers are acceptable. The Architect/Engineer will be the sole judge of the basis of what is equivalent.
 - 1. Substitutions: This installation is designed around the Blink Model IQ200. If a system from another manufacturer is submitted for review and acceptance, the following submittals shall be required:
 - a. Compliance with NEC 625 and NEC 110-10.
 - b. Plans and elevation drawings showing placement and installation of the

equipment as shown on the construction plans and specifications.

- c. Re-engineer the entire installation including but not limited to the electrical and structural designs, ADA compliance requirements, EVCS installation codes, etc.

2.2 CIRCUIT BREAKERS

- A. Branch Circuit Breakers: Branch circuit breakers shall provide overload and short circuit protection suitable for the location in the electrical system, as defined in the panelboard and load center schedules. Circuit breaker devices shall have, but shall not be limited to, the following:
 - 1. Integral branch circuit overcurrent protection as required by the NEC. Circuit breakers shall have an UL-listed interrupting rating sufficient for the application or UL-listed series connected ratings for the maximum available fault current at that point in the system.
 - 2. UL-listed with ratings as shown on the plans.
 - 3. Upstream and downstream circuit breaker trip time settings shall be coordinated.
 - 4. There shall be an in-built auto ground fault reset functionality in the charging station that shall reset automatically after ground fault waits for 16 minutes and then shall attempt to supply power. This trial shall happen four times and at the end of fourth attempt the auto reset function shall quit. This functionality shall be nullified if a ground fault breaker is installed ahead of the charging station (so, do not use a GFCI breakers).
 - 5. Provide visible indicator that shall clearly indicate the status of the circuit breaker contacts with the panel trim installed. Indicator shall indicate, but shall not be limited to, on, off, and tripped circuit breaker states. The visible indicator shall be mechanical in nature, directly tied to the circuit breaker mechanism, and shall be provided in addition to any status indicator supplied by the system electronics.

2.3 PANELBOARD

- A. Panelboards shall provide power for operating branch circuit breakers.
- B. Panelboards shall contain a nameplate label, located on the panel trim, indicating its designation and the designations of associated loads.

2.4 ELECTRIC VEHICLE SUPPLY EQUIPMENT OUTDOOR (EVSE)

- A. Power Specifications (Each charging unit):
 - 1. Input Power: 208 volts AC to 240 volts AC/ amperes as indicated on the plans, single-phase, 60 hertz.
 - 2. Input Power Connection: Two lines, neutral, and ground. Some charging units may not require the neutral.

3. Feeder Circuit Breaker: Two-pole, amperes as noted, non-GFCI type.
 4. Output Power: 208 volts AC to 240 volts AC.
 5. Interrupting rating shall be as noted on the plans.
- B. Physical Specifications:
1. Enclosure Type: Type 3R.
 2. Enclosure Dimensions: See the Drawings.
 3. Enclosure Mounting: Wall-mounted or pedestal mounted.
 4. Cable Type: SAE J1772.
 5. Cable Length: 18 feet or longer.
 6. Cable Management: Non-retractable, integral with the enclosure.
 7. Unit Options: Dual units pedestal-mounted.
- C. Type 2 Charger Connector
1. SAE J1772 Charge Connector (Standard in the United States).
 2. Grounded pole – first to make contact, last to break contact.
 3. Designed for more than 10,000 cycles.
 4. Can withstand being driven over by a vehicle.
 5. Safe for use in wet or dry locations.
 6. Compatible with integrated charge connector holster.
- D. Energy Management
1. Internal meter to monitor energy and demand usage.
 2. Supports real-time energy usage data evaluation.
 3. Controllable output to support utility demand response requests.
 4. Local load management capability for optimal energy outputs.
- E. Network, Product, and Customer Support
1. Multiple modes of communication, including Wi-Fi and cellular.
 2. Over-the-air firmware management enables remote updates.
 3. Customer Support Center with tracking system.
 4. Network Operations Center actively monitors/manages network.
 5. Smart grid implementation and support for commercial use.
 6. Smart-phone applications for status changes and notifications.
 7. Role-based features to manage permissions and access levels.

8. Ability to manage multiple chargers with detailed data sets.
9. Secure, high-availability, enterprise-grade infrastructure.
10. Geographically separated secondary systems for disaster recovery and management.
11. Supports charging currents from 12A to 80A.
12. Height design conforms with ADA requirements.
13. Fee options include time-based, kWh-based, or session-based billing functionality.
14. Payment methods: RFID and all major credit cards.

F. Safety and Compliance

1. Ground monitoring circuit.
2. Charge circuit interrupting device (CCID) with automatic test.
3. Nuisance tripping avoidance and auto re-closure.
4. Cold load pickup (randomized auto-restart following a power outage).

G. Protection:

1. Ground fault protection integral, CCID 5 mA, auto reset.
2. Ground fault protection system test automatic at the beginning of each charge cycle.

H. Environmental:

1. Operating Temperature: -22 °F (-30 °C) to 131 °F (55 °C).
2. Electrostatic Discharge: 15 kV open air, 8 kV contact.
3. Surge: 6 kV.
4. Radiated Immunity: 20 V/m.
5. Conducted Immunity: 20 volts.
6. Electrical Fast Transient/Burst (EFTB): 2 kV.
7. Emissions FCC Class: Class B.

I. Standards Compliance:

1. NEC, Article 625.
2. SAE J1772.
3. UL 991, UL 1998, UL 2231-1, UL 2231-2, UL 2251, and UL 2594.

2.5 SOURCE QUALITY CONTROL

- A. Component Testing: Electronic component board assemblies shall be factory-tested and burned in prior to installation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Examine areas and conditions under which the work is to be installed, and notify the Owner in writing, with a copy to the Engineer, of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.
 - 1. Beginning of the work shall indicate acceptance of the areas and conditions as satisfactory by the Installer.

3.2 INSTALLATION

- A. Preparation and installation shall be in accordance with reviewed product data, final shop drawings, manufacturer's written instructions and recommendations, and as indicated on the Drawings. System installation shall be coordinated with related and adjacent work. Define each circuit breaker.
- B. Broadband/wifi network shall be as follows:
 - 1. The Contractor shall coordinate work with the network administrator to assure that proper connection points are available. The Contractor shall also secure static IP address for each individual power monitoring web server.
 - 2. Network shall support broadband communications.

3.3 DEMONSTRATION

- 1. If required by the manufacturer for advanced installations, provide the services of a factory-authorized service representative of the manufacturer to provide start-up service and to demonstrate and train the Owner's personnel.
- 2. Test and adjust controls and safeties. Replace damaged or malfunctioning controls and equipment.
- 3. Train the Owner's maintenance personnel on procedures and schedules related to start-up and shutdown, troubleshooting, servicing, and preventive maintenance.
- 4. Review data in operation and maintenance manuals with the Owner's personnel.
- 5. Schedule training with the Owner, through the Construction Manager, with at least seven day's advanced notice.

3.4 PROTECTION

- A. Provide final protection and maintain conditions in a manner acceptable to the Installer, that shall ensure that the electric vehicle charging stations shall be without damage at time of Substantial Completion.

END OF SECTION

SECTION 01 3300

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Transmittal of submittals
- B. Submittal procedures
- C. Definition of submittal types for construction
- D. Delegated design submittals and procedures
- E. Submittals for contract closeout
- F. Submittal list (log) – Attachment A
- G. Forms for transmittal and review – Attachment B

1.2 DEFINITIONS

- A. A/E: The architect-engineer of record if contracted by the CITY to manage or support the construction. Substitute A/E with CM if the CITY uses their own construction manager.
- B. CITY or CITY CM or CM: Construction manager for the CITY who is managing the project.
- C. Action Submittals: Written and graphic information and physical samples that require the A/E's or the CITY CM's responsive action. Action submittals are indicated in individual Specification Sections as such.
- D. Informational Submittals: Written or graphic information and physical samples that do not require the A/E responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are indicated in individual Specification Sections as such.
- E. Sustainable Design Submittals: Written and graphic information and physical samples that require the A/E responsive action. Sustainable design submittals are indicated in individual Specification Sections as such.
- F. Close-out Submittals: Written and graphic information and extra stock materials that require A/E responsive action. Close-out submittals are indicated in individual Specification Sections as such.
- G. Delegated Design Submittals: Product's and systems complying with specific performance and design criteria prepared by a design professional. Delegated design submittals require A/E responsive action. Delegated design submittals are indicated in individual Specification Sections as such.
- H. CITY Concurrent Review: Those submittals identified in Attachment A as "CITY Concurrent Review" or otherwise indicated in individual Specification Sections as requiring review by CITY. "Consecutive review" is similar but means CITY review after AE review.

1.3 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by A/E and additional time for handling and reviewing submittals required by those corrections.
 - 1. Coordinate submittal schedule with list of subtier Subcontractors, the schedule of values, and Construction Subcontractor's construction schedule.
 - 2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
 - 3. Final Submittal: Submit concurrently with the first complete submittal of Construction Subcontractor's construction schedule.
 - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
 - 4. Format:
 - a. Use CITY Construction Submittal Log (Attachment A)
 - b. Use submittal log from the CITY Construction STR (e.g., at the pre-construction conference).

1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Transmittal of Submittals:
 - 1. Provide submittals as indicated in the specific specification sections.
 - 2. Use a CITY Submittal Transmittal Form (Attachment B) to transmit submittals at the times specified in the Log.
- B. A/E Digital Data Files: Electronic digital files of the Construction Subcontract Drawings will [not] be provided by A/E for Construction Subcontractor's use in preparing submittals.
 - 1. A/E will furnish Construction Subcontractor one set of digital data drawing files of the Contract Drawings for use in preparing Submittals, Shop Drawings.
 - a. Digital Drawing Software Program: The Contract Drawings are available in PDF format.
- C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule [e.g., close-out submittals (see #4 below)]. In general, submitting earlier than required is always allowed/preferable.
 3. Submit close-out submittals required by the same Specification Section as separate package under separate transmittal as indicated on approved submittal schedule.
 4. Submit delegated design submittals required by same Specification Section as under the same transmittal.
 5. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. A/E reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- D. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on A/E's receipt of submittal. No extension of the Subcontract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including submittals.
1. Product data, samples, design data, test reports, qualification data and certifications: Allow five (5) working days for review of each submittal. Allow additional time if coordination with subsequent submittals is required. A/E will advise Construction Subcontractor when a submittal being processed must be delayed for coordination.
 2. Shop drawings, coordination drawings, sustainable design and delegated design submittals: allow 10 working days for review of each submittal. Allow additional time if coordination with subsequent submittals is required. A/E will advise Construction Subcontractor when a submittal being processed must be delayed for coordination.
 3. Close-out submittals: Allow 10 working days for review of each submittal. Allow additional time if coordination with subsequent submittals is required. A/E will advise Construction Subcontractor when a submittal being processed must be delayed for coordination.
 4. CITY Concurrent Review: Where the Subcontract Documents indicate that submittals may be transmitted simultaneously to A/E and to CITY, allow 10 working days for review of each submittal. Submittal will be returned to A/E, before being returned to Construction Subcontractor.
 5. Intermediate Review: If intermediate submittal is necessary, process it in same manner as specific submittal type.
 6. Resubmittal Review: Allow 10 working days for review of each resubmittal.

7. The Construction Subcontractor shall allow a minimum of five working days after completion of the submittal review for return of submittals.
- E. Submittal Review
1. After review of the submittal package the "Status Code" will be chosen and result returned to the Construction Subcontractor. A/E will document submittal review comments on a using an approved electronic system. Retain submittal review comments with the submittal documents.
 2. CITY will document concurrent submittal review comments using an approved electronic system. Retain concurrent submittal review comments with the submittal documents.
 3. Delegated Design: The Construction Subcontractor shall complete the Delegated Design Review Initiation section of the form and submit the form with the Delegated Design Review documents to the CITY STR. A/E and CITY will document Delegated Design review comments on the form. Retain delegated design submittal review comments with the submittal documents.
- F. CITY will utilize the following "Status Codes" to indicate the status of submittals resulting from the review, and the action required of the Subcontractor. Review and/or permission to proceed does not constitute acceptance or approval of submittals and does not relieve SUBCONTRACTOR from full compliance with the Subcontract requirements.
1. Final Unrestricted Release: Where the submittal is marked "**Reviewed-No Exceptions Taken.** Work may proceed," the Work covered by the submittal may proceed provided it complies with the Subcontract Documents. Final acceptance will depend on that compliance.
 2. Final-but-Restricted Release: Where the submittal is marked "**Make Corrections Noted, Do Not Resubmit.** Work may proceed," the Work covered by the submittal may proceed provided it complies both with AE/CITY notations and corrections on the submittal and the Subcontract Documents. Final acceptance will depend on that compliance.
 3. Resubmit: Where the submittal is marked "**Reviewed. Revise and resubmit.** Work may not proceed, do not proceed with the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity for the product submitted. Revise or prepare a new submittal according to AE/CITY notations and corrections.
 4. Rejected: Where the submittal is marked "**Rejected,**" do not proceed with the Work covered by the submittal. Prepare a new submittal for a product that complies with the Contract Documents.
 5. Other Action: If the submittal is primarily for information purposes, record purposes, special processing, or other Subcontractor activity, the submittal will be returned marked "**Permission to proceed not required.**"
- G. Physical (non-electronic) Submittals: Paper submittals are strongly discouraged, so physical submittals should be limited to items such as samples and mockups. Submit the CITY Submittal Transmittal Form electronically and follow by delivery

of physical submittal to CITY Records Management. Place a permanent label or title block on each submittal item for identification with same identifying information as the CITY Submittal Transmittal form.

1. Submittal number shall be composed of "SD", a hyphen, a hyphen, the spec section number using SP followed by the section number, another hyphen, the submittal's sequential number from the log, hyphen, and the revision number. Use revision 0 for the initial submittal then capital letters for subsequent submittal revisions. Example: SD – SP26 0519 – 05 – A for Square D – DWG E-4 – 06 - 0.
 2. Additional Copies: Unless additional copies are required for final submittal, and unless A/E observes noncompliance with provisions in the Construction Subcontract Documents, initial submittal may serve as final submittal.
 3. Transmittal for Physical Submittals: Assemble each submittal individually and appropriately for transmittal and handling. A/E will return without review submittals received from sources other than Construction Subcontractor.
 4. Metadata: Include the following information as keywords in the electronic submittal file metadata:
 - a. Project name.
 - b. Number and title of appropriate specification section.
 - c. Manufacturer name.
 - d. Product name.
- H. Options: Identify options requiring selection by A/E.
- I. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 3. Resubmit submittals until they are marked with review notation from A/E's status code.
- J. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- K. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with review notation from A/E status code.

PART 2 PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
1. Submit electronic submittals via email as PDF electronic files to the CITY unless another email is provided and copy the A/E. Copy (cc) the STR unless they have indicated they do not want to be copied. When over 20MB, use a DropBox account provided by the Contractor.
 - a. CITY will retain one copy of file as an electronic Project record document file.
 2. Action Submittals: Submit each submittal unless otherwise indicated.
 3. Informational Submittals: Submit of each submittal unless otherwise indicated. Project will not return copies.
 4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
 - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- B. Product Data (CD): Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 4. For equipment, include the following in addition to the above, as applicable:

- a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
- 5. Submit Product Data before or concurrent with Samples.
- 6. Submit Product Data in the following format:
 - a. PDF electronic file.
 - b. Five paper copies of Product Data unless otherwise indicated shall be submitted after the acceptance of the Submittal. Contractor shall maintain one copy at the job site at all times.
- C. Project Record Documents (RD): Contractor shall maintain a daily documentation marked in red all deviations from the Construction Documents and shall label the drawing set Project Record Documents. Enter the date when the work was completed and entered on the record documents.
- D. Samples/Colors (SC): Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
 - 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 - 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of applicable Specification Section.
 - e. Specification paragraph number and generic name of each item.
 - 3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
 - 4. Disposition: Maintain sets of approved Samples at Project site, available for quality control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.

- b. Samples not incorporated into the Work, or otherwise designated as CITY's property, are the property of Construction Subcontractor.
- 5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. A/E will return submittal with options selected.
- 6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit three sets of Samples. A/E will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record sample.
 - i. Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - ii. If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least [three] sets of paired units that show approximate limits of variations.
- E. Shop Drawings (SD): Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Construction Subcontract Documents or standard printed data unless submittal based on A/E's digital data drawing files is otherwise permitted.
 - 1. Preparation: Fully illustrate requirements in the Construction Subcontract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.

- g. Seal and signature of professional engineer if specified.
- 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
- 3. Submit Shop Drawings in the following format:
 - a. PDF electronic file.
- F. Spare Parts and Maintenance Materials (SP): Submit spare parts, extra materials and maintenance materials in quantities, sizes, finishes and colors as identified in each specific specification or as recommended by the product manufacturer. Parts and materials to be in manufacturer's original packaging with original labeling. Identify location where parts or materials are installed within facility.
- G. Test and Inspection Reports and Schedule of Tests and Inspections (TR)
Submittals: Comply with requirements of these specifications.
- H. Material Test Reports (TR): Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Construction Subcontract Documents.
- I. Field Test Reports (TR): Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Construction Subcontract Documents.
- J. Warranty (WA): Submit written and executed documentation of warranties as specified in applicable specification sections.

2.2 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Construction Subcontractor by the Construction Subcontract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to A/E.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file, signed and sealed by the responsible design professional registered in the State of California, for each product and system specifically assigned to Construction Subcontractor to be designed or certified by a design professional.
 - 1. Indicate that products and systems comply with performance and design criteria in the Construction Subcontract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 EXECUTION

3.1. CONSTRUCTION SUBCONTRACTOR'S REVIEW

- A. Construction Subcontractor Review: Certify that submittal has been reviewed, checked, and approved for compliance with the Construction Subcontract Documents in first section of the CITY Submittal Transmittal Form. Provide any comments on the form.
- B. Project Closeout and Maintenance Material Submittals.

3.2. A/E'S ACTION

- A. Action Submittals: A/E will review each submittal, make marks to indicate corrections or revisions required, and return it. A/E will indicate status (action) code using an approved electronic system (e.g., REVIEWED). Provide any comments on the form.
- B. Informational Submittals: A/E will review each submittal and return it with review code and the reason if it does not comply with requirements. A/E will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from A/E.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Submittals not required by the Construction Subcontract Documents may be returned by the A/E without action.

Attachment A

[illegible]

Attachment B

Submittal Transmittal/Certification Form

Project Name: _____

To: _____

Attn: _____

From: _____

Description: _____

Submittal #: _____ - _____ - _____ - _____ - _____
Type Specification No. (SP #) Section No. Submittal # Revision #
 Or Drawing No. (DWG #)

Date: _____ Date of Previous Submission: _____ Copies: _____

Supplier: _____ Phone No: _____

Manufacturer: _____ Phone No: _____

Additional Attachments

- ☐ PE Certificate Required
 - ☐ Identification of Revisions
 - ☐ Field Dimensions Clearly Identified
 - ☐ Identification of Deviations from Contract Docs
 - ☐ Certification Attached
 - ☐ Other _____

Remarks: _____

Relationship to Critical Features of Work: _____

Certification Statement: By this submittal, I hereby represent that I have determined and verified all materials, dimensions, catalog numbers and similar data, and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements.

By: _____
Signature Date

SECTION 26 0101

GENERAL ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Comply with all provisions of the General Conditions, Supplementary Conditions and General Requirements as applicable to work of all Sections of Division 26 concerning definitions, guarantees, submittals, as-builts, clean-up, etc.
- B. Examine all Technical Sections for work required to be included in work in Sections of Division 26 - Electrical Work.
- C. All work of this Division shall be coordinated with work of other trades.

1.2 SCOPE

- A. Required: Provide all labor, materials, equipment, tools and appliances required to furnish and install all electrical work shown on the Contract Drawing and herein specified in the Sections of Division 26 complete and operable but not limited to the following:
 - 1. All construction and power for testing equipment and systems through final acceptance of test.
 - 2. Complete distribution system(s) including panelboards, feeders, and auxiliary equipment.
 - 3. Complete Grounding System.
 - 4. Conduit System including pullboxes, wiring devices, grounding, etc. for the project
 - 5. Connection and testing of electrical equipment and controls specified in Division 26 and other technical sections, except where specifically indicated or noted elsewhere on the Contract Drawing or in the Specifications.
 - 6. Applicable excavating, trenching and backfilling.

1.3 WORK NOT INCLUDED

- A. Furnishing all electrical or partially electrically devices related uniquely to mechanical equipment and only as specified in the Mechanical Division 15.

- B. Furnishing and installing of all motors.

1.4 LEGAL REQUIREMENTS AND STANDARDS

- A. Required: Comply with the latest, as applicable and effective, during the progress of Contracted Work.
 - 1. Latest Los Angeles City Electrical, Fire and Building Codes and U.B.C. Supplement.
 - 2. California State Administrative Code, Title 24, State Building Standard.
 - 3. (CAL/OSHA) California State Occupational Safety and Health Act.
 - 4. California State Fire Marshal Standards.
 - 5. U.L. - Underwriters Laboratories Inc.
 - 6. NEC - National Electric Code.
 - 7. ASTM - American Society of Testing and Materials.
 - 8. Current publications of the National Fire Protection Association.
 - 9. National and American Standards Association.
- B. General Compliance As Applicable
 - 1. Drawings and specification requirements shall govern where they exceed Code requirements.
 - 2. Where requirements between governing Codes and Regulations vary, the more restrictive provision shall apply.
 - 3. Nothing contained in Contract Documents shall be construed as authority or permission to disregard or violate legal requirements.

1.5 GENERAL REQUIREMENTS

- A. Site Inspections:
 - 1. Carefully examine the job-site and existing facilities and compare the Contract Drawings for work coordination.
 - 2. By act of submitting bid, it will be deemed the Contractor has made required inspections and has accepted such job-site conditions and has made allowances thereof in the preparation of "Bid" figures.
- B. Verification of Dimensions: All dimensions (scaled, figured or noted) are

approximate, given for estimating purposes. Before proceeding with work Contractor shall carefully check and verify all dimensions, sizes, etc. and shall assume full responsibility for proper fitting in and attachment of all materials and equipment to other equipment and to the structure.

C. Examination of the Contract Drawings:

1. Carefully study Contract Drawings and Specifications to verify if any work as laid out or indicated is contrary to or in conflict with applicable Codes and Standards.

D. Substitutions:

1. Items, articles or products named on the Contract Drawings and in the Specifications are intended to establish a standard of quality and required functional performance.
2. If the Contractor desires to propose a substitution or alternate, submit a complete list with detailed specifications and manufacturer's data which differ from those specified within thirty-five (35) days after award of Contract for approval or rejection by the Architect or City Engineer.
3. If such submittals are not approved, use specified materials and equipment throughout the Electrical Work.

E. Interpretations:

1. Make all requests for interpretations of the Contract Drawings and/or Specifications to the Contractor through the Architect or City Engineer.
2. Manufacturer's or Supplier's requests for interpretations will be referred to the Contractor.

F. Submittals: Conform to applicable provisions of this Section 01340 and as hereinafter specified.

1. Prepare, review and coordinate schedule of submittals, determining necessary lead time for preparation, submitting, checking, and ordering and delivering materials and equipment to the job-site for timely arrival and conformance with the overall Construction schedule.
2. All submittals will be checked for general compliance with Specifications only. Contractor will be responsible for deviations from the Drawings or Specifications and for errors or omissions of any sort in the Submittals.
3. Shop drawings shall be submitted in completed groups of materials (i.e., all lighting fixtures or all devices, etc.). The Contractor shall add and sign the following paragraph on all

equipment and materials submitted for review.

- a. "It is hereby certified that the (equipment) (material) shown and marked in this submittal is that proposed to be incorporated into the project; is in compliance with the Contract Drawings and Specifications and can be installed in the allocated spaces".
 - b. Failure to add the above written statement for compliance will result in return of submittals to be reviewed.
4. All required submittals on electrical items and equipment shall include complete catalog information such as construction ratings, insulation systems, including manufacturer's certification that items or equipment meet or exceed U.L. and Trade Standards, and the Specifications.
 5. Materials list of items and equipment proposed to be provided for the work of this Division 26 and shall include the following as applicable:
 - a. Power panelboards.
 - b. Dry type transformers.
 - c. Conduits.
 - d. Conductors.
 - e. Switches, pull boxes and fuses.

G. Special Submissions:

1. Test Reports for The Following:
 - a. Ground fault circuit interrupter devices.
 - b. Megger Readings: Ground system and feeders.
 - c. Voltage Readings: Distribution.
2. Maintenance service and operating manuals for all equipment.
3. Items as outlined in other Sections.

H. "No Exceptions Taken": Be responsible for equipment ordered and/or installed prior to receipt of shop drawings returned from the Architect bearing the Electrical Engineer's stamp of "No Exceptions Taken". Corrections or modifications to equipment as noted on shop drawings shall be performed or equipment removed from the job site at request of Architect without additional compensation.

I. Disapprovals: Any article or equipment supplied by the Contractor disapproved by the Architect as not conforming to the Specifications or not of proper quality or grade or suitability shall be deleted and suitable article or equipment be provided in lieu thereof in conformance with the

Specifications at no added cost to the City.

- J. Terminology: Generally speaking throughout this Division 26 of the Specifications when the words "or equal" or other words of similar intent and meaning are used implying judgement or decision is to be exercised, it is understood that it is the judgement, discretion, or decision of the Architect to which reference is made.
- K. Modification of Contract Drawings: In each case where proposed substitute material or equipment will require changes to the design of the Project as indicated on the drawings, for proper installation or operation, appropriate proposed revision drawings prepared and signed by a licensed Architect or Engineer shall be furnished by the Contractor for approval by the Owner. Make such drawings sufficiently complete for the proper installation and operation of the proposed substitute materials or equipment, and for construction by all of the involved trades of the proposed revisions. The cost of the drawings and the proposed revised construction shall be borne by the Contractor.
- L. Record Drawings: Provide in strict accordance with applicable provisions of Section 30 in the GENERAL CONDITIONS of these Specifications concerning accurate locations of raceways, cable runs, outlets and equipment. See also applicable provisions of Section RECORD (as-built) Drawings of the GENERAL REQUIREMENTS of these Specifications.
- M. Operation and Maintenance Manuals: Prior to final acceptance of Contracted Work by the City, furnish 4 bound copies of operation and maintenance manuals for each electrical equipment, as required in this Section. The contents shall include description of equipment, names of manufacturers, parts lists, model numbers, maintenance schedules, location of nearest facility for replacement parts or service, wiring and connection diagrams, internal schematic drawings, and other electrical/mechanical data necessary for operation and maintenance.

1.6 QUALITY ASSURANCE

A. General:

1. All equipment and accessories to be the product of a manufacturer regularly engaged in its manufacture.
2. Supply all equipment and accessories new, free from defects and listed by Underwriters' Laboratories, Inc. or bearing its label. Special or custom equipment must bear the label of laboratory recognized by the City of Los Angeles Department of Building and Safety.
3. Supply all equipment and accessories in compliance with the applicable standards listed in Article 1.05 of this Section and

with all applicable National, State and Local codes.

4. All items of a given type shall be the product of the same manufacturer.

- B. Labor: Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and completely familiar with specifications, requirements and methods needed for proper performance of the work of Electrical Division 26.
- C. Superintendence: Provide an experienced Superintendent to be in charge of erection and/or installation of electrical work together with journeymen helpers to properly unload, erect, connect, adjust, operate and test the work involved to provide a neat, workmanlike and operable installation.

1.7 LOCATION

- A. The location of apparatus and equipment indicated on the Contract Drawings are approximate only and shall be changed to meet the Architectural and Structural conditions as required.
- B. Any change in work which has not been installed shall be made by the Contractor without additional compensation, except changes which are caused by Architectural changes which increase or decrease the size of apparatus or materials specified or indicated on the drawings. The Contractor shall submit a detailed breakdown cost estimate of, or credit for, such changes and shall proceed only upon the written authority of the Architect and Engineer.
- C. All apparatus and equipment shall be furnished and installed in a manner and in locations avoiding all obstructions, preserving head room, and keeping openings and passageways clear. Changes shall be made in locations of equipment and materials which may be necessary in order to accomplish this.
- D. The drawings are essentially diagrammatic to the extent that many offsets, bends, special fittings, and exact locations are not indicated. The Contractor shall carefully study the Contract Drawings and premises in order to determine the best methods, exact location, routes, and building obstructions, etc., and shall install all apparatus and equipment in the available location.

1.8 CUTTING AND PATCHING

- A. Conform to provisions of Section 01045 of the General Requirements.
- B. The Contractor shall do all drilling, cutting and patching of the general construction work existing or new, rough finish and trim, which may be required for the installation of electrical equipment. All patching shall be of the same materials, workmanship and finish as the original work, and shall accurately match all surrounding work.
- C. All cutting and patching shall be as approved by the Architect or his authorized representative.

1.9 PROTECTION OF WORK

- A. The Contractor shall protect all work, material and equipment from damage from any cause whatsoever, and shall provide adequate and proper storage facilities during the progress of the Work. Contractor shall provide for the safety and good condition of all work until final acceptance of the work by the City, and replace all damaged or defective work, materials and equipment before requesting final acceptance.
- B. The Contractor shall be held responsible for the protection and correction of the work of all trades from smears, splashes, stain or damages that might occur in the progress of the work.

1.10 WORK COORDINATION

- A. The Contractor shall so order electrical work that progress will harmonize with that of other trades so that all work may proceed as expeditiously as possible.
- B. So far as possible, the work has been indicated on the Contract Drawings in such positions as to suit and accommodate the work of the other trades, but the work as indicated is largely diagrammatic, and the correct finish position of all equipment and materials cannot always be indicated. Therefore, the Contractor is hereby made directly responsible for the correct placing of electrical work and the proper location and connection of electrical work in relation to the work of other trades.

1.11 JOB SAFETY

- A. The Contractor shall be solely and completely responsible for the condition of the premises on which the work is performed and for the safety of all persons and property on the site during performance of the Contract. These requirements shall not be limited to normal working hours, but shall apply continuously.
- B. Contractor shall conform with all governing safety regulations.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. All materials, items and equipment furnished under this Contract shall be new, recently manufactured and available locally.
- B. All materials shall comply with applicable legal requirements and standards hereinbefore specified in this Section 26 0101.
- C. The label of listing by UL shall appear on all materials and equipment for which standards have been established by that agency.
- D. Where local or other authorities having jurisdiction have established label or approval requirements, furnish all materials and equipment with either the required labels affixed or the necessary written approval.
- E. Examine the Drawings and Specifications and determine the work to be performed by the electrical and other trades. Provide the type and quantity of electrical materials and equipment necessary to complete this work and all systems in proper operation, tested and ready for use.
- F. Provide and install all incidental items not indicated on the Drawings nor mentioned in the Specifications that belong to the work described or are required for complete systems.

2.2 MATERIALS LISTING

- A. Required: See Subsection 1.06 G 6 of this Section 26 0101.

PART 3 - EXECUTION

3.1 UTILITY SERVICES (AS APPLICABLE)

- A. Every effort has been made to determine as accurately as possible the requirements of the Electric Vehicle Charging Station. However, before submitting bid, the Contractor shall verify the locations shown on the plans and shall include sufficient funds for material, labor and utility fees for installation of an approved utility service.
- B. Before any work is performed on these facilities, verify all electrical, civil, architectural and structural, dimensional and other requirements related to these facilities with the serving utility companies.
- C. Should any major changes to the work indicated be necessary to complete the power and telephone systems, notify the Architect at once and cease all work affected until approval for required modifications has been obtained from the Architect or City Engineer.

3.2 WORK RESPONSIBILITIES

- A. The drawings indicate diagrammatically the desired locations or arrangement of conduit runs, outlets, equipment, etc., and are to be followed as closely as possible. Proper judgment must be exercised in executing the work so as to secure the best possible installation in the available space and to overcome local difficulties due to space limitations or interference with structural conditions. The Contractor is responsible for the correct placement and coordination of electrical work in relation to the work of other trades. Advise appropriate trade as to locations of access panels.
- B. Locations shown on architectural plans and elevations shall take precedence over electrical plan locations, but where a major conflict is evident, notify the Architect for instructions.
- C. In the event changes in the indicated locations or arrangement are necessary due to developed conditions in the building construction or rearrangement of furnishings or equipment, such changes shall be made without extra cost, providing the change is ordered before the conduit runs, etc., and work directly connected to same are installed and no extra materials are required.

- D. Where equipment is furnished by others, verify dimensions and the correct location of this equipment before proceeding with the roughing in of connections.
- E. All scaled and figured dimensions are approximate of typical equipment of the class indicated. Before proceeding with any work, carefully check and verify all dimensions, sizes, etc., with the drawings to see that the equipment will fit into the spaces provided without violation of applicable codes.
- F. Should any changes to the work indicated on the Drawings or described in the Specifications be necessary in order to comply with the above requirements, notify the Architect immediately and cease work for all parts of the Contract Work which are affected until approval for any required modifications to the construction has been obtained from the Architect or City Engineer.
- G. Be responsible for any cooperative work which must be altered due to lack of proper supervision or failure to make proper provisions in time. Such changes shall be under the direction of the Architect and shall be made to their satisfaction.
- H. Perform all work with competent and skilled personnel. Conform to provisions of Subsection 1.07B of this Section.
- I. All work, including aesthetic as well as electrical and mechanical aspects of the work, shall be of the highest quality consistent with the best practices of the trade.
- J. Replace or repair, without additional compensation, any work which, in the opinion of the Architect does not comply with these requirements.

3.3 GENERAL INSTALLATION (AS APPLICABLE)

For special requirements, refer to specific equipment under other sections.

- A. Unless otherwise specified elsewhere in the Specifications, do all excavating necessary for the proper installation of the electrical work in accordance with the "Earthwork" Section 02220.
- B. Locations of Openings: Obtain approval for all chases, shafts and

openings required for the installation of the electrical work. Cutting or drilling in any structural member is prohibited without written approval of the Architect or City Engineer. Furnish access panels as required.

- C. Finish Around Sleeves: Rough edges shall be finished smooth. Space between conduit and sleeves where conduit passes through exterior walls shall be sealed to permit movement of conduit but prevent entrance of water. Space between conduit and sleeves where conduit passes through fire rated interior walls and slabs shall be sealed with approved materials to provide a fire barrier conforming to the requirements of the governing authorities having jurisdiction, use Dow Corning 3-6548 RTV silicone foam or equal by General Electric if so approved by the applicable and/or authorities having jurisdiction of the job site.
- D. Wherever conduit extends through roof, furnish and install flashings in accordance with Architect's or City Engineer's directions.
- E. Be responsible for all cutting and patching which may be required for the proper installation of the electrical work. Work shall be performed by the trade originally installing same and paid for under this Section of the work.
- F. Protect all work, materials and equipment from damage from any cause whatever and provide adequate and proper storage facilities during the progress of the work. Storage outdoors shall be weather protected and shall include space heaters to prevent condensation. Provide for the safety and good condition of all work until final acceptance of the work by the Architect and replace all damaged or defective work, materials and equipment before requesting final acceptance at no added cost to the City.
- G. Conduit and Equipment to be Installed: Clean thoroughly to remove plaster, spattered paint, cement and dirt on both exterior and interior.
- H. Conduit and Equipment to be Painted: Clean all conduit exposed to view in completed structure by removing plaster and dirt. Remove grease, oil and similar material from conduit and equipment by wiping with clean rags and suitable solvents in preparation for paint.
- I. All Items With Factory Finish: Remove cement, plaster, grease and oil, and leave all surfaces, including cracks and corners, clean and polished. Touch up any scratched or bare spots to match finish. Factory finish may be approved as prime coat by the Architect (see "Painting" Section).
- J. Site Cleaning: Remove from site all packing cartons, scrap materials and other rubbish relating to electrical installation.
- K. Electrical equipment and materials exposed to public and in finished areas shall be finish-painted after installation to coordinate with surrounding walls. Surfaces shall be thoroughly cleaned for receiving painting. Paint color coordination shall be as directed by the Architect or

City Engineer. Paint shall be identical to that on adjacent surfaces to insure proper matching of quality and color with surrounding areas.

3.4 EXCAVATION, CUTTING AND PATCHING

- A. All excavating, trenching and backfilling required for the work of this Division shall conform the applicable requirements of the "Earthwork" Section 02220 in the Project Specifications. All excavating and backfilling connected with electrical work, repaving all cuts and providing and maintaining all protective measures for the electrical work excavation required by the governing authorities having jurisdiction shall be performed as a part of the work of this Division.
- B. At a time in advance of the work, verify all openings indicated on the Drawings. Should the work of this division require it, furnish new instruction as to requirements for these openings, subject to the Architect's approval. All cutting, patching and reinforcement of the building (subject to the Architect's or City Engineer's approval) shall be performed under the Section of the Specifications under which the work was originally performed, but the cost shall be an obligation of the Contractor.

3.5 TESTS

- A. Conduct resistance to ground tests by qualified personnel to measure resistance to ground at all grounding electrodes. Make tests before slabs of affected areas are poured in order that corrective measures, if requested, may be taken. Submit to the Architect a report showing the results of these measurements. If the resistances exceed values specified elsewhere, perform all corrective measures as directed by the Architect at no additional cost to City.
- B. Prior to energizing any motors, measure the service voltage for phase balance and report immediately to the Architect if unbalance exceeds 1% from means.
- C. Measure the three-phase voltage at no load and at maximum load conditions and submit to the Architect a report showing the results of these measurements.
- D. Upon completion of the work and adjustment of all equipment, conduct an operating test for approval at such time as the Architect directs. Conduct the test in the presence of an authorized representative of the State. Demonstrate all systems and equipment to operate in accordance with all requirements of the Contract documents and to be free from all electrical and mechanical defects. Provide all systems free from short circuits and grounds and show an insulation resistance between phase conductors and ground not less than the requirements of the governing electric code. Test all circuits for proper neutral connections.

- E. Complete all tests prior to final inspection of project, including corrective work based on the results of the tests.
- F. Perform special tests on systems and equipment as specified herein in other sections of this division, using personnel qualified to perform such tests.
- G. Measure voltage on secondary side of all transformers with full load connected and adjust taps to provide rated secondary voltage.
- H. Submit to the Architect or the City Engineer a report showing test voltage of L-N on the secondaries of all transformers.

3.6 PROTECTION

- A. Besides the provisions of Subsection 1.10 of this Section comply with the following:
 - 1. Protect all finish parts of the materials and equipment against damage during the progress of the work and until final completion and acceptance. Cover all materials and equipment in storage and during construction in such a manner that no finished surfaces will be damaged or marred. Keep all moving parts clean, dry and lubricated.

3.7 PRELIMINARY OPERATIONS

- A. Required: Should the City require that any portion of the systems or equipment be operated prior to the final scheduled dates for completion and acceptance of the work, the Contractor shall consent. Such operation shall be under the direct supervision of, and at the expense of the Contractor, and shall not be construed as an acceptance of any of the work by the City.

3.8 CLEANING UP

- A. Conform to applicable provisions of Section 01710 of the General Requirements and the following as applicable.
- B. Upon completion of the work and at various times during the progress of the work, remove from the building all surplus materials, rubbish and debris resulting from the work of this division and leave the involved portions of the job-site in a neat, clean and acceptable conditions.
- C. Thoroughly clean all switchgear, apparatus, exposed conduit, metal work and accessories for the work of this Division of cement, plaster and other deleterious materials; remove all grease and oil spots with cleaning solvent; carefully wipe all surfaces and scrape all cracks and corners clean.

- D. Thoroughly polish all chromium and all plated work. Remove all dirt and stains from lighting fixtures.
- E. Leave the entire installation in a neat, clean and usable condition.

3.9 COMPLETION

- A. The work will not be reviewed for final acceptance until operating and maintenance data, manufacturer's literature, panel directories and nameplates specified herein have been approved and properly posted or installed and final cleaning of equipment and premises has been completed.
- B. When the installation is complete and all adjustments have been made, operate the systems for a period of one week, during which time demonstrate to the Architect that the systems are completed and operating in conformance with the Specifications.

3.10 GUARANTEE

- A. Conform to applicable provisions of Section 28 of the GENERAL CONDITIONS of these Specifications.
- B. Required: Except as may be specified under other sections in the Specifications, guarantee all equipment furnished under the specifications for a period of one year from date of acceptance against defective workmanship and material, and improper installation. Upon notification of failure, correct deficiency immediately and without cost to the City.
- C. Standard warranty of manufacturer shall apply for replacement of parts after expiration of the above period. Manufacturer shall furnish replacement parts to the City or his service agency as directed. Furnish to the Architect printed manufacturer's warranties complete with material included and expiration dates, upon completion of project.

3.11 OPERATING AND MAINTENANCE DATA

- A. Required: Submit to the Architect or City Engineer, complete and at one time, prior to acceptance of the installation, 10 copies of manufacturer's instructions for operation and maintenance of electrical equipment, including replacement parts lists. Each set to be bound in an indexed loose leaf ring binder with permanent cover and permanent identification on back.

3.12 RECORD DRAWINGS

- A. Required: Conform to the provisions of Subsection 1.06 M of this Section

and as noted hereinafter as applicable.

- B. Provide and maintain in good order at the field office a complete set of electrical contract prints. All changes to the contract shall be clearly recorded on this set of prints and initialed by the Contractor on a weekly basis. At the end of the project transfer all changes, using same symbols, to one set of Mylar transparencies. Obtain Mylar transparencies from the Architect at Contractor's cost.
- C. Accurately indicate and dimension all underground conduit runs and conduit stub-outs and all pullboxes from building walls on all Record Drawings.
- D. Upon completion of the work and as a prerequisite to issuance of certificate for final payment, deliver one complete set of final prints of the mylars and the mylar originals themselves.
- E. Initial and identify name and telephone number of installing Contractor on all sheets as being a correct and accurate record of the installation. This also includes, but is not limited to, fire alarm and control systems.

3.13 INSPECTION AND ACCEPTANCE PROCEDURES

- A. The Architect will submit observation reports periodically during the construction phase detailing Contract deficiencies. The Contractor is responsible for making all corrections immediately to avoid delaying other trades. Final acceptances of the project will not be made until all items have been corrected.

3.14 FINAL ACCEPTANCE OF ELECTRICAL SYSTEMS

- A. Prior to Final Acceptance of operating electrical systems Contractor shall do the following, as applicable:
 - 1. Provide materials of the type and quality specified and as necessary for proper operation, tested and ready for use.
 - 2. Deliver to the Architect the "as-built" transparency and set of prints as "Record Drawings".
 - 3. Furnish the required operating and maintenance data/manuals.
 - 4. Clean-up of the project pertaining to this Division of the work, as hereinbefore noted in Subsection 3.08 of this Division.
 - 5. After installation has been completed and adjustments made, operate the system for a period of one week, during which time, demonstrate to the Architect and the City that all systems are complete and operating in conformance with Contract documents.
 - 6. Conduct all tests required and as specified in Sections of this

Division and submit test reports and corrective actions taken.

7. Submission of all warranties and guarantees.

B. Final Acceptance of Electrical Work Shall Be Contingent On The Following:

1. Contractor replacing defective materials and workmanship.
2. Upon completion of work and adjustments made, Contractor shall conduct an operating test for each system for approval at such time as Architect directs. Conduct test in presence of authorized representative of the Architect demonstrate that systems and equipment do operate in accordance with requirements of the Contract documents and are free from electrical and mechanical defects.
3. Contractor shall provide the necessary training programs and instructions to the City's representative.
4. Submit copies of manufacturer's instructions and maintenance of electrical equipment including replacement parts lists. Each set shall include one set of shop drawings of equipment installed.

3.15 SUBMITTALS FOR CHANGE ORDERS

A. General: When changes are made during the construction phase, deletions and additions shall be presented in a manner that will indicate the cost of each item of material and corresponding labor. Overhead and profit makeup shall be then added in accordance with the requirements of the GENERAL CONDITIONS.

1. Unit costs shall apply in event of changes, additions and deletions to the contract, as follows:
2. Submit with Bid Costs a unit cost, covering one hour of labor, including all applicable supervision, nonproductive labor, burdens, benefits, insurance, taxes, direct and indirect job expenses including drawings, engineering, temporary power, warehouse, tools, equipment, clean-up, bonds, overhead and profit, charged for labor. Unit cost of labor shall be applicable for duration through completion of the project.
3. Material unit costs shall be based on the latest edition of "Electrical Trade Book", published by Trade Service Publications, Inc. Unit cost shall be taken from extreme right-hand column.
4. Labor unit quantities, for specific items required, shall be those listed in the third column from the National Electrical Contractors' Association, Inc., "NECA Manual of Labor Units".

END OF SECTION

SECTION 26 0519

LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Building wire (600 V)
- B. Metal-clad cable (600 V)
- C. Wire and cable connectors
- D. Insulating tape and tubing
- E. Wire pulling lubricant

1.2 QUALITY ASSURANCE

- A. Comply with the *National Electrical Code* (NEC) for components and installation.
- B. Provide products that are listed and labeled by a Nationally Recognized Testing Laboratory (NRTL). If listed products are unavailable, contact the CITY Electrical Safety Office.
- C. Calibrated tools and test instruments used shall be maintained and calibrated in accordance with NETA ATS.

1.3 DEFINITIONS

- A. Critical System. The following are critical systems:
 - 1. Safety Class systems
 - 2. Safety Significant systems
 - 3. Fire pump systems covered in NEC Article 695
 - 4. Emergency power systems covered in NEC Article 700
 - 5. Legally required standby power systems covered in NEC Article 701
 - 6. Critical operations power systems covered in NEC Article 708

1.4 ACTION SUBMITTALS

- A. Certification of the Subcontractor's tool and instrument calibration program.

1.5 CLOSEOUT SUBMITTALS

- A. Submit the following in accordance with the provisions of Section 01 7839 *Project Record Documents*:
 - 1. Field Test Records:
 - a. Tool and instrument calibration records.
 - b. Termination torque records.
 - c. Cable pulling records.
 - d. Field Quality Control inspection reports and tests results.

1.6 RECEIVING, STORING AND PROTECTING

- A. Receive, store, and protect, and handle products according to NECA 1, *Standard Practices for Good Workmanship in Electrical Construction*.

PART 2 PRODUCTS

2.1 PRODUCT OPTIONS AND SUBSTITUTIONS

- A. Refer to Section 01 2500 *Substitution Procedures*.

2.2 BUILDING WIRE

- A. Provide NRTL-listed building wire as shown on the Drawings with the following characteristics:
 - 1. Description: Single conductor 600 V insulated wire.
 - 2. Conductor:
 - a. [Unless otherwise indicated on the Drawings:] 98% conductivity, annealed, uncoated copper, ASTM B 3 *Standard Specification for Soft or Annealed Copper Wire*, solid or stranded as specified in Part 3 of this Section.
 - b. [Where indicated on the Drawings for conductors 1/0 AWG and larger: AA 8000 series aluminum alloy registered in ASTM B 800 *Standard Specification for 8000 Series Aluminum Alloy Wire for Electrical Purposes—Annealed and Intermediate Tempers*, compact stranded in

accordance with ASTM B 801 *Standard Specification for Concentric-Lay-Stranded Conductors of 8000 Series Aluminum Alloy for Subsequent Covering or Insulation.*]

3. Insulation: The following types, rated 600 volts:
 - a. [Unless otherwise indicated on the Drawings:] Type THHN/THWN-2 per UL Standard 83, “*Thermoplastic-Insulated Wires and Cables.*”]
 - b. [Where indicated on the Drawings: Type XHHW-2 per UL Standard 44, “*Thermoset-Insulated Wires and Cables.*”]

B. Color-code conductors in facilities as follows:

1. Use colored insulation for color coding conductors 6 AWG and smaller.
2. Use water and oil resistant colored plastic adhesive tape, 3/4 inch minimum width, for color coding conductor 4 AWG and larger.
Manufacturer: 3M “Scotch 35”
3. Provide black conductor insulation where colored tape is used for color coding.
4. Use the following color codes for AC power system conductors:

Conductor	System Type			
	480Y/277V	208Y/120V	208Y/120V Isolated Ground	120/240V
Phase A	Brown	Black	Black	Black
Phase B	Orange	Red	Red	Red
Phase C	Yellow	Blue	Blue	---
Grounded (Neutral)	Gray	White	White White/Red*	White White/Blue*
Equipment Grounding	Green	Green	Green	Green
Isolated Ground	---	---	Green/Yellow	---
Switched	Purple or color of feeding circuit with labels: S1, S2...	Pink or color of feeding circuit with labels: S1, S2...	---	Blue

* Provide grounded conductor insulation with colored stripe when installed in any raceway, box, or enclosure with wiring of another system voltage.

** Caution: The phasing at the load terminals of a breaker in a Schneider Electric I-Line panel may not be ABC top to bottom; color-code the conductors by phase as noted in the table.

5. Use the following color codes for DC power system conductors:
 Positive: Red
 Negative: Black
6. Provide color code for control conductors as indicated on equipment or control system manufacturer's drawings.

C. Color-code conductors in existing facilities as follows:

1. Use colored insulation for color coding conductors 6 AWG and smaller.
2. Use water and oil resistant colored plastic adhesive tape, 3/4 inch minimum width, for color coding conductor 4 AWG and larger.

Manufacturer: 3M "Scotch 35"

3. Provide black conductor insulation where colored tape is used for color-coding.
4. Use the following color codes for AC power system conductors:

Conductor	System Type			
	480Y/277V	208Y/120V	208Y/120V Isolated Ground	120/240V
Phase A				
Phase B				
Phase C				
Grounded (Neutral)				
Equipment Grounding	Green	Green	Green	Green
Isolated Ground	---	---	Green/Yellow	---
Switched				

* Provide grounded conductor insulation with colored stripe when installed in any raceway, box, or enclosure with wiring of another system voltage.

** Caution: The phasing at the load terminals of a breaker in a Schneider Electric I-Line panel may not be ABC top to bottom; color-code the conductors by phase as noted in the table.

5. Provide color code for control conductors as indicated on equipment or control system manufacturer's drawings.

Note: In existing facilities, in order to maintain rotation, it is sometimes necessary to swap two conductors in a three-phase feeder. In this situation, the color code of the line side of the conductors will be different from the color code on the load side of the conductors.

2.3 METAL-CLAD CABLE

- A. Provide metal-clad cable (Type MC) that complies with UL Standard 1569 – *Metal-Clad Cables*, the NEC, and this Section.
- B. Provide MC cables with quantities and sizes (minimum 12 AWG, maximum 2 AWG) of conductors as indicated on the Drawings.
- C. Metal-clad cable shall consist of 600 V THHN insulated copper circuit conductors, an insulated copper equipment grounding conductor, a Mylar wrapping around the conductor bundle, and a close-fitting aluminum or galvanized steel outer sheath.
- D. Provide metal-clad cables with conductors solid or stranded as specified in Part 3 of this Section.
- E. Provide metal-clad cables with conductors colored to match the color codes for AC power system conductors as specified in Part 2 of this Section.
- F. Metal-clad cables used to supply isolated-ground branch circuits shall have a neutral conductor, isolated ground conductor and equipment grounding conductor. Identify each isolated ground conductor with a yellow-colored stripe on the green insulation.
- G. Metal-clad cables used to supply multiple branch circuits shall have the appropriate phase conductors for the number of circuits, a separate neutral conductor for each circuit, and one equipment ground conductor per cable. Uniquely identify each neutral with a colored stripe on the white insulation corresponding to the phase conductor insulation color.
- H. Metal-clad cables used to supply multiple isolated-ground branch circuits shall have the appropriate phase conductors for the number of circuits, a separate neutral and isolated ground conductor for each circuit, and one equipment ground conductor per cable. Uniquely identify each neutral with a colored stripe on the white insulation corresponding to the phase conductor insulation color. Uniquely identify each isolated-ground conductor with one or more yellow-colored stripes on the green insulation.
- I. Manufacturer: AFC Cable Systems Inc.
- J. Provide NRTL-listed, insulated-throat or insulating-bushing connectors for Type MC cables.

Manufacturers: Arlington Industries “SNAP²IT” or O-Z/Gedney ETP “Speed-Lock,” “AMC,” “KC,” or “PK” as appropriate for MC cable diameter.

2.4 WIRING CONNECTORS

- A. For splices and taps on copper wire, sizes 12 to 10 AWG solid and 12 to 6 AWG stranded, use push-on, insulated, spring type connectors, or twist on connectors

with helical coiled spring rated 600 V and 105 °C that are NRTL-listed to UL 486C *Splicing Wire Connectors* and provide a means of visual inspection of the connection.

1. Manufacturer:
 - a. IDEAL “In-Sure.”
 - b. IDEAL “Twister Series”
 - c. 3M “Scotchlock”
 - d. Wago “773 Series”
- B. For splices and taps on copper wire, sizes 6 AWG through 1 AWG, use the following materials:
 1. Tin-plated copper split-bolt connectors that meet the requirements in UL 486A-486B, *Wire Connectors*; provide with matching 600-volt snap-on insulating cover.
 - a. Manufacturer: FCI Burndy “Type KSA” with “Type SC” insulating cover.
 2. Multi-tap connectors that meet the requirements of UL 486A-466B that have two or more range-taking mechanical lugs and matching 600-volt insulated cover.
 - a. Manufacturers: Burndy “POLYTAP” or “UNITAP”, IlSCO “Type PCT”, Blackburn “AMT.”
- C. For wire, sizes 12 AWG and larger, use UL 486A-486B listed mechanical terminals, splices, or adapters.
 1. Provide mechanical terminals and splices made from aluminum, aluminum alloy, copper or a copper alloy, and marked “CU”, “AL-CU” or “CU-AL”. Manufacturers: FCI Burndy, IlSCO, or Thomas & Betts.
- D. For aluminum wire, sizes 1/0 AWG and larger, use UL 486A-486B listed mechanical terminals, splices, or adapters.
 1. Provide mechanical terminals and splices made from aluminum, aluminum alloy, and marked “AL”, “AL-CU” or “CU-AL”. Manufacturer: FCI Burndy, IlSCO, or Thomas & Betts.
- E. For control wiring use nylon insulated crimp-on terminals with insulation grip that meet the requirements of UL 486A-486B. Manufacturer: 3M “Scotchlok MNG,” Thomas & Betts “Sta-Kon.”

1. Use ring tongue terminals for nutted studs.
 2. Use flanged fork terminals for barrier terminal blocks.
 3. Use pin terminals or ferrules for DIN type terminal blocks.
- F. Insulation-piercing type connectors are not acceptable for power or control wiring.

2.5 INSULATING TAPE AND TUBING

- A. Insulate taped splices and connections using ethylene propylene rubber (EPR) tape that meets the requirements of UL 510 - *Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape* and is rated for 90°C continuous operation and 130°C short-term overload service. Manufacturer: 3M “Scotch 130C”
- B. For the outer covering of tape-insulated splices and connections use vinyl plastic tape that meets the requirements of UL 510 - *Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape* and has the following characteristics:
1. 8.5 mil minimum thickness,
 2. ASTM D-3005, “Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape – Type 1.”
 3. Rated 600 volts and 105°C, suitable for indoor and outdoor applications.
 4. Retains flexibility, adhesion, and applicable at temperature ranges from 0 through 100°F without loss of physical or electrical properties.
 5. Resistant to abrasion, moisture, alkalis, acid, corrosion, and sunlight.
 6. Manufacturer: 3M “Scotch Super 88”
- C. Provide heat shrinkable tubing that meets the requirements of UL 486D – *Sealed Wire Connector Systems* and has the following characteristics:
1. Rated 600 volts
 2. Factory applied adhesive/sealant
 3. Split resistant
 4. Manufacturer: 3M “ITCSN”

2.6 WIRE PULLING LUBRICANT

- A. Provide NRTL-listed wire pulling lubricant that is compatible with the conductor insulation or jacket, has a maximum coefficient of dynamic friction of 0.25, and leaves no flammable residue. For cold weather installations, provide wire pulling lubricant suitable for conduit temperature.
- B. Compatibility with conductor insulation shall be determined in accordance with IEEE Standard 1210, *Standard Tests for Determining Compatibility of Cable-Pulling Lubricants with Wire and Cable*.
- C. Manufacturer:
 - 1. For conduit temperature above freezing: Polywater "Lubricant J."
 - 2. For conduit temperature below freezing: Polywater "Lubricant WJ."

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify interior of building has been protected from weather.
- B. Verify that work of other trades likely to damage wire and cable is completed.
- C. Verify raceway installation is complete and supported.
- D. Field verify dimensions shown on Drawings.
- E. Wire and cable routing shown on Drawings is approximate unless dimensioned.
 - 1. Route wire and cable as required meeting project conditions.
 - 2. Where cable routing is not shown, and destination only is indicated, determine exact routing and lengths required to meet Project conditions.

3.2 PREPARATION

- A. Examine raceways and building finishes that are to receive wires and cables for compliance with installation tolerances and other conditions. Do not proceed with installation until unsatisfactory conditions have been corrected.
- B. Swab raceway before installing wire.
- C. Do not handle or pull cables that are colder than +14 degrees F. Store cold cables for at least 24 hours in a heated building prior to installation.

3.3 EXISTING WORK

- A. Remove abandoned wire and cable, including abandoned wire and cable above accessible ceiling finishes. Patch surfaces where removed cables pass through building finishes.
- B. Disconnect abandoned circuits and remove circuit wire and cable. Remove abandoned boxes when wire and cable servicing boxes are abandoned and removed. Install blank cover for abandoned boxes not removed.
- C. Provide access to existing wiring connections remaining active and requiring access. Modify installation or install access panel.
- D. Extend existing circuits using materials and methods as specified.
- E. Determine and record the existing power distribution system phase rotation, ABC clockwise or ABC counterclockwise. Maintain the existing phase rotation throughout the new installation.

3.4 BUILDING WIRE INSTALLATION

- A. Install building wire according to, the NEC, the requirements in this Section, and the following NECA installation standards as applicable:
 - 1. NECA 1 *Standard for Good Workmanship in Electrical Construction* (ANSI).
 - 2. NECA/AA 104 *Recommended Practice for Installing Aluminum Building Wire and Cable* (ANSI).
- B. Do not “through-pull” conductors at boxes, fittings or cabinets where a change of raceway alignment occurs.
- C. Do not damage conductor, insulation, or jacket by excessive installation pulling tension or sidewall bearing pressure.
 - 1. Use a tension measuring device to monitor pulling force on conductors 1/0 AWG and larger where any of the following combinations of bends and raceway length is exceeded between accessible pull points:
 - a. 4 equivalent 90-degree bends and 10 feet of raceway.
 - b. 3 equivalent 90-degree bends and 40 feet of raceway.
 - c. 2 equivalent 90-degree bends and 80 feet of raceway.
 - d. 1 equivalent 90-degree bend and 150 feet of raceway.
 - e. Straight pull with more than 250 feet of raceway.

2. Use a tension measuring device to monitor pulling force on each pull of conductors for critical systems where a pulling winch is used. Record and submit the maximum measured pulling tension for each cable pull.
 3. Record the maximum measured pulling tension for each monitored cable pull.
 4. Obtain recommended maximum conductor or cable pulling tension and sidewall bearing pressure values from the manufacturer, or use the following maximum allowable values:
 - a. Maximum sidewall bearing pressure: 500 lb/ft.
 - b. Maximum tension, pulling directly on conductor: 0.008 lb/cmil
 - c. Maximum tension, pulling on basket grip over insulation jacket: 2000 lb, not to exceed 0.008 lb/cmil of conductor.
 5. Submit the recorded cable pulling tension for each monitored cable pull and the corresponding maximum allowable pulling tension.
 6. Notify the CITY Subcontract Technical Representative of any conductor pull where the maximum measured pulling tension exceeded 80 percent of maximum allowable pulling tension or sidewall bearing pressure. Replace the conductors where the maximum measured pulling tension exceeded 100 percent of maximum allowable pulling tension or sidewall bearing pressure.
- D. Use solid copper conductors for power circuits 10 AWG and smaller except use stranded conductors in flexible conduits.
 - E. Use stranded conductors for power circuits 8 AWG and larger.
 - F. Use copper conductors not smaller than 12 AWG for power and lighting branch circuits.
 - G. Use stranded copper conductors not smaller than 14 AWG for 120V control circuits.
 - H. For 20-ampere, 120-volt branch circuits longer than 75 feet use minimum 10 AWG copper conductors from panelboard to first outlet. Use larger conductors as indicated on the Drawings.
 - I. For 20-ampere, 277-volt branch circuits longer than 150 feet, use minimum 10 AWG copper conductors from panelboard to first outlet. Use larger conductors as indicated on the Drawings.
 - J. Install wiring at outlets with at least 6 inches of slack conductor at each outlet.

3.5 CONNECTOR INSTALLATION

- A. Install conductors in terminals, splices, adapters, and connectors in accordance with the manufacturer's instructions. Have the manufacturer's installation instructions available at the construction site.
- B. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise above the conductor temperature.
- C. Do not nick conductors when removing insulation.
- D. Do not cut conductor strands to fit into connectors, splices, adapters, or terminals.
- E. Make connections using clean connection surfaces. Wire brush conductors immediately before installing lugs, terminals, splices, or adapters.
- F. Terminate all power conductors using mechanical lugs.
- G. Terminate control conductors using crimp-on terminals or ferrules. Do not place stranded conductors directly under terminal screws. Install terminals or ferrules on conductors using ratchet-type compression tools.
- H. In existing facilities the power distribution system's phase rotation shall match the existing phase rotation. This phase rotation shall be maintained throughout the additions to the power distribution system. Make or correct connections at rotating equipment's input terminals to ensure proper equipment rotation.
- I. Terminate wiring on outlets and components as indicated on the drawings or per the manufacturer's instructions.
- J. The CITY shall be given 2 weeks written, advance-notice of the date and time when the torqueing of connectors and terminals, including screws and bolts in major electrical distribution equipment will be performed. Major electrical distribution equipment includes: transformers, switchgear, switchboards, MCCs, panelboards, disconnect switches, motors greater than 10HP, receptacles sized greater than 50A. The CITY or his /her representative shall witness the torqueing.
- K. Tighten connectors and terminals, including screws and bolts, to manufacturers published torque-tightening values using a calibrated torque wrench or torque screwdriver.
 - 1. Where manufacturer's torque-tightening values are not indicated, tighten connectors and terminals to torque-tightening values specified in UL Standard 486A-486B.
- L. Provide a tabulated torqueing record. This shall include as a minimum:
 - 1. The torque values applied to all connectors and terminals,

2. The identification of the torque tools used,
3. The torque tools next calibration due date,
4. The person making each termination,
5. Signing and dating by the person(s) performing the torqueing.
6. The report will be signed and dated by the CITY or CITY representative witnessing the torqueing.

3.6 INSULATING TAPE AND TUBING INSTALLATION

- A. Install insulating tape and tubing in accordance with the manufacturer's instructions. Have the manufacturer's installation instructions available at the construction site.
- B. Insulate splices and taps of irregular shapes with manufactured insulating covers or insulating tape built up to not less than 150 percent of insulation rating of conductor.
 1. Use rubber insulating tape in half-lapped layers to develop the basic insulation over splices and taps.
 2. Use vinyl plastic tape in half-lapped layers to provide the outer protective covering over splices and taps.
- C. Insulate cylinder shaped splices and taps, connector barrels and adapter barrels using heat shrinkable insulating tubing, insulating covers manufactured for the connector, or tape insulation as described above.

3.7 IDENTIFICATION

- A. Identify wire and cable under provisions of Section 26 0553, *Identification for Electrical Systems*.
- B. Identify each conductor with its circuit number or other designation indicated on Drawings.
- C. Apply color coding tape on conductors at each termination, splice, junction, and pull box.
- D. Post conductor color code on each panelboard, switchboard, switchgear assembly, motor control center, dry-type transformer, safety switch, and separate motor controller. Use type-written, adhesive-backed labels

3.8 FIELD QUALITY CONTROL

- A. The CITY shall be given 2 weeks, written advance-notice of the date and time when inspection and testing required by this section will be conducted. At the discretion of the CITY, any of the following tests or inspections may be witnessed by the CITY or CITY representative.
- B. Pre-installation Inspection and Tests
 - 1. Inspect conductors and cables for:
 - a. Freedom from material defect or physical damage,
 - b. Correct conductor size, material, and insulation type,
 - 2. For conductors 1/0 and larger, use a megohm meter in a 1-minute test to verify the insulation integrity of the conductors while still on the reel. Record all test results.
 - a. Use 1000-volts dc to test conductors rated 600 volts.
 - b. Conductors with insulation resistances over 50 megohms are acceptable.
 - c. Conductors with insulation resistances less than 2 megohms are defective.
 - d. If the conductor insulation resistance is between 50 megohms and 2 megohms consult the CITY Subcontract Technical Representative for further direction.
 - 3. Reject and replace entire reels, rolls, or boxes containing conductors or cables with material or manufacturing defects.
- C. Observe conductors and cables during the installation process.
 - 1. Reject and replace cable or conductor segments that have been kinked, dented, or otherwise damaged during handling or installation.
- D. After installation of wires and cables, perform the following inspections and tests:
 - 1. Inspect conductors and cables for:
 - a. Freedom from material defect or physical damage,
 - b. Correct conductor size, material, and insulation type,
 - c. Correct color coding and identification.

- E. Before energizing the circuit, perform the following and tests:
1. Before connecting conductors to equipment, use a megohm meter in a 1-minute test to verify the insulation integrity of each service conductor, feeder conductor, critical system branch circuit conductor, and critical system control conductor with respect to ground and other associated conductors in the same cable or raceway.
 - a. Use 1000-volts dc to test conductors rated 600 volts.
 - b. Conductors with insulation resistances over 50 megohms are acceptable.
 - c. Conductors with insulation resistances less than 2 megohms are defective.
 - d. If the conductor insulation resistance is between 50 megohms and 2 megohms consult the CITY for further direction.
 2. After connecting conductors to equipment, inspect connections for correct connector size and type.
 3. Measure and record torque pass/fail of not less than 10% of each size and type of connector and terminal using a calibrated torque wrench or torque screwdriver.
 - a. Compare measured torque with torque with the torque-tightening values indicated by the manufacturer or specified in UL Standard 486A-486B.
 - b. If any connection is found to be less than the recommended torque, notify the CITY and re-torque the connection. Record the torque-tightening values for connections that were re-torqued.
 - c. If more than 50% of the tested connections are found to be less than the recommended values the CITY shall require all bolted connections on the Project to be redone.
- F. Remove and replace defective, incorrect, or improperly installed conductors and connectors. Re-inspect and re-test replacement conductors and connectors.
- G. Submit test and inspection records to the CITY.
- H. Refer to Section 26 0813, *Electrical Acceptance Testing* for other inspections and tests that are required before conductors may be energized.

END OF SECTION

SECTION 26 0526

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Main Grounding Electrode System
- B. Circuit and System Grounding
- C. Enclosure and Equipment Grounding System

1.2 SUBMITTALS

- A. Submit the following in accordance with Section 01 3300 Submittal Procedures:
 - 1. Catalog Data: Submit catalog data for grounding conductors, grounding clamps, grounding bushings, grounding plates, grounding bars, chemical ground rods, exothermic weld materials, compression grounding connector materials, static grounding materials, and signal reference grid materials.
 - 2. Shop Drawings: Submit shop drawings for signal reference grid fabrication and installation.
 - 3. Project Record Documents: Submit project record documents to include specified certifications and field test reports of installed grounding systems.

1.3 REGULATORY REQUIREMENTS

- A. Comply with the National Electrical Code (NEC) for components and installation.
- B. Provide products that are listed and labeled by a Nationally Recognized Testing Laboratory (NRTL) for the application and environment in which installed.

1.4 RECEIVING, STORING AND PROTECTING

- A. Receive, store, and protect, and handle products according to NECA 1 Standard Practices for Good Workmanship in Electrical Construction.

PART 2 PRODUCTS

2.1 PRODUCT OPTIONS AND SUBSTITUTIONS

- A. Alternate products may be accepted; follow Section 01 2500, Substitution Procedures.

2.2 GROUND ELECTRODE CABLE

- A. Provide bare stranded, soft temper copper cable that conforms to ASTM B8 Standard Specification for Concentric-Lay Stranded Copper Conductors.

2.3 CHEMICAL GROUND ROD

- A. Provide NRTL listed chemical ground rod(s) as shown on the Drawings.
- B. Furnish chemical ground rods fabricated from Type K copper tubing approximately 10 feet long, 2 inches in diameter and containing a hygroscopic electrolyte material.
- C. Furnish each chemical ground rod with a 24-inch long 4/0 AWG copper pigtail, a protective cover box, and sufficient ground ground-enhancing backfill material for installation in a 6 inch augered hole.
- D. Manufacturers: Lyncole Industries Inc., LEC Inc., Superior Grounding Systems Inc.

2.4 GROUND ELECTRODE BACKFILL MATERIAL

- A. Provide ground enhancement backfill material for ground rods and cable type electrodes.
- B. Field-mixed backfill material shall consist of approximately 75 percent gypsum (calcium sulfate), 20 percent bentonite clay, and 5 percent sodium sulfate.
- C. Commercial backfill material, when at 300% moisture content ((weight of water/weight of material) x 100), shall have a resistivity of approximately 250 ohm-cm at 30% solids density and a pH of 8 to 10.
- D. Manufacturers: Lyncole "Lynconite", LEC Inc. "GAF", Superior Grounding Systems "Electro-Fill"

2.5 EQUIPMENT GROUNDING CONDUCTORS

- A. Provide NRTL-listed THHN/THWN insulated copper wire.
- B. Use solid grounding conductors 10 AWG and smaller where not subject to vibration or repeated flexing.
- C. Use stranded grounding conductors for 8 AWG and larger.
- D. Use stranded grounding conductors where subject to vibration or repeated flexing. Use stranded grounding conductors in flexible conduit at motor connections.
- E. Color code grounding conductors as follows:

1. Equipment ground:

- a. Conductors 6 AWG and smaller: Green colored insulation.
- b. Conductors 4 AWG and larger: Green colored insulation or black colored insulation with 3/4 inch wide band of water and oil-resistant green plastic adhesive tape.

2. Isolated ground:

- a. Conductors 6 AWG and smaller: Green colored insulation with continuous yellow stripe.
- b. Conductors 4 AWG and larger: Green colored insulation with continuous yellow stripe or black colored insulation with 3/4 inch wide bands of water and oil-resistant green and yellow plastic adhesive tape.

2.6 CONDUIT GROUNDING BUSHINGS

- A. Provide NRTL-listed, galvanized malleable iron, 150 C rated insulated throat grounding bushings with lay-in type ground cable lugs.
- B. Manufacturers: O-Z/Gedney Type "BLG"

2.7 EXOTHERMIC WELD GROUNDING CONNECTIONS

- A. Provide molds and welding material for making exothermic weld connections.
- B. In interior locations and in vaults, use low smoke emission type welding material.
- C. Match mold and weld material to material types, shapes and sizes to be joined.
- D. Manufacturer: ERICO Cadweld

2.8 COMPRESSION GROUNDING CONNECTIONS

- A. Provide wrought copper connectors, terminals, taps, and splices for making irreversible compression grounding connections.
- B. Furnish NRTL-listed grounding connectors that are suitable for direct burial and have been tested successfully according to the requirements of IEEE Std. 837 IEEE Standard for Qualifying Permanent Connections Used in Substation Grounding.
- C. Provide connector manufacturer's hydraulic compression tools and dies that match the connectors.
- D. Match connector and die size to material shapes and conductor sizes to be joined.

- E. Use two-hole heavy-duty compression lugs for bolted connections to ground bars, ground plates, and equipment ground pads.
- F. Manufacturer: Burndy "Hyground"

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that work of other trades likely to damage grounding and bonding material has been completed.
- B. Verify that field measurements are as shown on Drawings.
- C. Electrode locations and grounding cable routing shown on Drawings are approximate unless dimensioned.
 - 1. Install electrodes and route cable as required meeting project conditions.
 - 2. Where electrode location or cable routing is not shown, and destination only is indicated, determine exact locations, routing, and lengths required to meet project conditions.

3.2 PREPARATION

- A. Examine equipment and building finishes that are to receive grounding and bonding material for compliance with installation tolerances and other conditions. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.3 EXISTING WORK

- A. Remove exposed abandoned grounding and bonding material, including that abandoned above accessible ceiling finishes. Patch surfaces where grounding and bonding materials are removed.
- B. Disconnect abandoned grounding and bonding systems and remove.
- C. Provide access to existing grounding and bonding connections remaining active and requiring access. Modify installation or install access panel.
- D. Extend existing grounding and bonding systems using materials and methods specified.

3.4 GENERAL

- A. Comply with the requirements of the NEC, this Section and the Drawings.

- B. Install grounding and bonding material according to manufacturer's instructions. Have the manufacturer's installation instructions available at the construction site.
- C. Use the following connection methods unless otherwise specified or indicated on the Drawings:
 - 1. Use exothermic weld grounding connections for underground or concealed connections of dissimilar materials.
 - 2. Use exothermic weld or compression grounding connections for underground or concealed connections of like materials.
 - 3. Use exothermic weld, compression, or bolted grounding connections for accessible connections.
 - 4. Make bolted connections using bolts, nuts, flat washers, and toothed lock washers suitable for the connector and the installation environment; acceptable materials include high strength silicon bronze and 18-8 alloy stainless steel.
 - 5. Make irreversible bolted connections using 18-8 alloy stainless steel tamper-resistant bolts and tamper-resistant nuts along with flat washers, and toothed lock washers. Tamper-resistant nuts and bolts must resist loosening with common tools; acceptable tamper-resistant fasteners include penta-head, break-away, and oval designs.
- D. Tighten grounding and bonding connectors and terminals, including screws and bolts, in accordance with manufacturer's published torque tightening values for connectors and bolts. Where manufacturer's torquing requirements are not indicated, tighten connections to comply with torque tightening values specified in UL 486A and UL 486B. Use a calibrated torque wrench.
- E. Use hydraulic compression tools to provide the correct circumferential pressure for compression connectors. Follow connector manufacturer's installation instructions and use tools and dies recommended by the manufacturer of the connectors. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed.
- F. Install exothermic welds in accordance with manufacturer's instructions and recommendations. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.
- G. Make connections in such a manner as to minimize possibility of galvanic action or electrolysis. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
 - 1. Use electroplated or hot-tin-coated materials to assure high conductivity and make contact points closer in order of galvanic series.
 - 2. Make connections with clean bare metal at points of contact.

3. Make aluminum to steel connections with stainless steel separators and mechanical clamps.
 4. Make aluminum to galvanized steel connections with tin-plated copper jumpers and mechanical clamps.
 5. Coat and seal connections involving dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
- H. Comply with requirements in Section 26 0529, Hangers and Supports for Electrical Systems.

3.5 CIRCUIT AND SYSTEM GROUNDING

- A. Ensure the connection of the service entrance equipment ground bus to the main electrode ground bar are in good condition; if replacement is necessary use ground cable as indicated on the Drawings, or not smaller than the grounding electrode conductor required by the NEC and not smaller than 4 AWG.
- B. Ensure the service entrance equipment neutral bus to the ground bus is connection properly using a bonding jumper not smaller than the grounding electrode conductor required by the NEC; ensure a bonding screw for this purpose is not used. Ensure no other neutral-to-ground connections on the load side of the service entrance disconnect.

3.6 ENCLOSURE AND EQUIPMENT GROUNDING

- A. Provide permanent and effective equipment, enclosure, and raceway grounding in accordance with NEC requirements and as further specified or shown on the Drawings.
- B. Provide an equipment ground bar, separate from any neutral bar, in all switchgear, switchboards, panelboards, transformers, motor control centers, starters, disconnect switches, cabinets, etc., for grounding the enclosure and for connecting other equipment and raceway ground conductors. Make connections to the ground bar using mechanical lugs or compression lugs.
- C. Make connections and couplings on metallic conduit systems wrench tight.
- D. Bonding Bushings:
 1. Install bonding bushings on metallic conduit containing circuits rated 100 amperes and higher.
 2. Install bonding bushings on metallic conduits entering enclosures through concentric, eccentric or oversize knockouts.

3. Install bonding bushings on metallic conduits that terminate to a metallic enclosure without effective electrical connection such as locknuts or threaded bushings.
 4. Bond conduit bonding bushing lug to the equipment ground bar or ground lug in switchgear, panelboards, transformers, motor control centers, starters, disconnect switches, cabinets, etc. Size bonding jumpers in accordance with the NEC.
- E. Provide an insulated equipment grounding conductor for each feeder and branch circuit.
1. Install the grounding conductor within the common conduit or raceway with the related phase and neutral conductors and connect to the grounding terminal or grounding bus in each box or cabinet.
 2. Size equipment ground conductor in accordance with the NEC or as shown on the Drawings.
- F. In each 15 or 20 ampere branch circuit outlet box and junction box, install a green colored washer head grounding screw with a 12 AWG equipment grounding conductor pigtail.
- G. Connect receptacle grounding terminals to the equipment ground system using minimum 12 AWG equipment grounding conductor. Do not use a "self-grounding" receptacle strap as the only equipment grounding path.

3.7 FIELD QUALITY CONTROL

- A. General: Perform on-site verification, certification and acceptance testing of the grounding installation during construction. Verification and testing will be witnessed by designated CITY representatives.
- B. Notify the CITY Subcontract Technical Representative (STR) ten (10) working days in advance of the expected completion of a grounding system installation. Verification and testing can be scheduled in parts or by area depending on the system and construction schedule.
- C. Before work is concealed verify and certify that the following grounding installations have been made correctly:
1. The building grounding electrode system. This includes the bonding of the foundation reinforcing bars, bonding of the structural steel columns, and bonding of other metallic systems and other grounding electrode systems.
 2. Ground plates and grounding bars.
 3. All other underground grounding installations.

- D. Acceptance Testing: Perform acceptance testing and submit written reports to the CITY in accordance with the requirements of Section 26 0813, Electrical Acceptance Testing. Tests will be witnessed by designated CITY representatives.
1. Perform ground-impedance measurements using the "fall-of-potential" method in accordance with IEEE 81 Guide for Measuring Earth Resistivity, Ground Impedance and Earth Surface Potentials of a Grounding System. Use instrumentation specifically designed for ground impedance testing. Provide sufficient spacing of test electrodes so that the plotted curves flatten in the 62% area of the distance between the item under test and the current electrode. When sufficient spacing of electrodes is impractical for the "fall-of-potential" method, perform ground-impedance measurements using either the "intersecting curves method" or the "slope method", referenced in IEEE Std. 81. Investigate and correct ground resistances that exceed the following values:
 - a. Service rated 50 kVA or less: as required by the NEC
 - b. Service rated more than 50 kVA but less than 2500 kVA: 5 Ohms
 - c. Service rated 2500 kVA or greater: 1 Ohm
 2. Test equipment ground resistances for the following items. Measure resistance between the equipment item and the Main Ground Electrode Ground Bar. Use the "two-point method" of IEEE Std. 81. Investigate and correct equipment ground resistances that exceed 0.5 ohm.
 - a. Panelboards
- E. Test static electricity bonding and grounding system resistances. Measure resistance between the static protection area ground bus and the Main Ground Electrode Ground Bar. Use the "two-point method" of IEEE Std. 81. Investigate and correct equipment ground resistances that exceed 10 ohms.
- F. Prepare test reports, certified by the testing organization, of the ground resistance at each test location. Include observations of weather and other phenomena that may affect test results. Describe any measures taken to improve test results.

END OF SECTION

SECTION 26 0533

RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Conduits and fittings
- B. Outlet boxes
- C. Pull and junction boxes
- D. Surface metal raceways
- E. Underground Schedule 40 PVC raceways

1.2 SUBMITTALS

- A. Submit the following in accordance with project submittal procedures:
 - 1. Catalog Data: Submit catalog data describing floor boxes. Include data substantiating that materials comply with specified requirements.
 - 2. Catalog Data: Submit catalog data describing surface metal raceway. Include data substantiating that materials comply with specified requirements.
 - 3. Catalog Data: Submit catalog data describing wireway. Include data substantiating that materials comply with specified requirements.

1.3 QUALITY ASSURANCE

- A. Comply with the *National Electrical Code* (NEC) for components and installation.
- B. Provide products that are listed and labeled by a Nationally Recognized Testing Laboratory (NRTL).

1.4 RECEIVING, STORING, AND PROTECTING

- A. Receive, store, and protect, and handle products according to NECA 1 – *Standard Practices for Good Workmanship in Electrical Construction*.

PART 2 PRODUCTS

2.1 PRODUCT OPTIONS AND SUBSTITUTIONS

- A. Alternate products may be accepted; follow Section 01 2500 – *Substitution Procedures*.

2.2 COATINGS

- A. Provide products with zinc coating or with treatment of equivalent corrosion resistance using approved alternative treatment, finish, or inherent material characteristic that is suitable for the environment in which the product will be installed and used.

2.3 ELECTRICAL METALLIC TUBING AND FITTINGS (EMT)

- A. Furnish galvanized electrical metallic tubing (EMT) that conforms to UL797 – *Electrical Metallic Tubing*, NEMA C80.3 – *Steel Electrical Metallic Tubing (EMT)*.
- B. Furnish compression- or set-screw-type fittings that meet UL514B – *Fittings for Conduit and Outlet Boxes*, and ANSI/NEMA FB1 – *Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies*. Furnish insulated-throat connectors.

2.4 INTERMEDIATE METAL CONDUIT AND FITTINGS (IMC)

- A. Furnish intermediate metal conduit (IMC), nipples, elbows, and couplings that conform to UL1242 – *Intermediate Metal Conduit*, NEMA C80.6 – *Electrical Intermediate Metal Conduit (EIMC)*.
- B. Furnish zinc-plated, threaded, malleable iron fittings and conduit bodies that meet the requirements of UL514B – *Fittings for Conduit and Outlet Boxes*, and ANSI/NEMA FB1 – *Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies*.

2.5 RIGID METAL CONDUIT AND FITTINGS (RMC)

- A. Furnish rigid metal conduit (RMC) that meets the requirements of UL6 – *Rigid Metal Electrical Conduit*, NEMA C80.1 – *Electrical Rigid Steel Conduit (ERSC)*.
- B. Furnish zinc-plated, threaded, malleable iron fittings and conduit bodies that meet the requirements of UL514B and ANSI/NEMA FB1.

2.6 RIGID NON-METALLIC CONDUIT AND FITTINGS (RNC)

- A. Furnish rigid non-metallic conduit (RNC) that conforms to UL651 – *Schedule 40 and 80 Rigid PVC Conduit*, NEMA TC 2 – *Electrical Plastic Tubing and Conduit*.

- B. Furnish non-metallic, solvent-welded socket fittings that meet the requirements of UL514C – *Non-Metallic Fittings for Conduit and Outlet Boxes*, and NEMA TC 3 – *PVC Fittings for Use with Rigid PVC Conduit and Tubing*.

2.7 FLEXIBLE METAL CONDUIT AND FITTINGS

- A. Furnish galvanized steel flexible metal conduit that meets the requirements of UL1 – *Flexible Metal Electrical Conduit*.
- B. Furnish zinc-plated malleable iron fittings that meet the requirements of UL514B – *Fittings for Conduit and Outlet Boxes*, and ANSI/NEMA FB1 – *Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies*. Furnish insulated throat connectors.

2.8 LIQUID-TIGHT FLEXIBLE METAL CONDUIT AND FITTINGS

- A. Furnish liquid-tight flexible metal conduit that meets the requirements of UL360 – *Liquid-Tight Flexible Steel Conduit, Electrical*.
- B. Furnish zinc-plated malleable iron or zinc-plated steel liquid-tight fittings that meet the requirements of UL514B – *Fittings for Conduit and Outlet Boxes*, and ANSI/NEMA FB1 – *Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies*. Furnish insulated-throat connectors.

2.9 INSULATING BUSHINGS

- A. Provide NRTL-listed, insulating bushings with 105 °C rated insulation.
- B. Manufacturer: O-Z/Gedney, Type IB.

2.10 GROUNDING BUSHINGS

- A. Provide NRTL listed, malleable iron, 150 °C rated insulated-throat grounding bushings with lay-in type ground cable lugs -- zinc-plated for interior applications, galvanized for exterior applications.

2.11 EXPANSION FITTINGS

- A. Furnish NRTL listed expansion fittings with hot dipped galvanized malleable iron body, factory installed packing and a bonding jumper.
- B. Manufacturer: O-Z/Gedney, Type AX, TX or EXE with Type BJ bonding jumper.

2.12 RACEWAY SEALS

- A. Duct Sealant
 - 1. Furnish a two-part, foam-based, duct sealing system.

2. Provide sealing compound specifically listed for use with the foam damming materials.

3. Manufacturer: Polywater FST-250

B. Sealing Fittings for Use in Hazardous-Classified Locations

1. Furnish zinc-plated, malleable iron sealing fittings that meet the requirements of UL1203 Explosion-Proof and Dust-Ignition-Poof Electrical Equipment for Use in Hazardous (Classified) Locations.
2. Select each sealing fitting so the cross-sectional area of conductors passing through the seal is not more than 25 percent of the cross-sectional area of a rigid metal conduit of the same trade size unless the fitting is specifically identified for a higher percentage of fill.
3. Provide sealing compound specifically listed for use with the sealing fitting.
4. Manufacturer: Crouse-Hinds Type EYS, EYSX, EYD.

2.13 CORROSION PROTECTION TAPE

- A. Furnish pressure-sensitive, 10 mil thick. PVC based tape for corrosion protection of metal conduit and fittings.
- B. Manufacturer: 3M, Type 50.

2.14 RACEWAY MEASURING TAPE

- A. Furnish raceway measuring tape with permanently printed measurements in one-foot increments and minimum 1200 lb average breaking strength.
- B. Manufacturer: Greenlee "39243".

2.15 SURFACE METAL RACEWAY

- A. Furnish surface metal raceway that meets the requirements of UL5 – *Surface Metal Electrical Raceways and Fittings*.
- B. Furnish surface metal raceway fabricated from cold rolled galvanized steel with a thickness of not less than 0.040 inches and coated with a baked enamel finish.
- C. Furnish fittings required for a complete installation.
- D. Manufacturer: Wiremold "500" or "700" series.

2.16 POWER AND COMMUNICATIONS SURFACE METAL RACEWAY

- A. Furnish power and communications surface metal raceway that meets the requirements of UL5 – *Surface Metal Electrical Raceways and Fittings*.
- B. [Furnish power and communications surface metal raceway fabricated from cold rolled galvanized steel with a thickness of not less than 0.04 inches and coated with a gray baked enamel finish.]
- C. [Furnish power and communications surface metal raceway fabricated from cold rolled galvanized steel with a thickness of not less than 0.04 inches and coated with a polyester topcoat over an ivory colored base.]
- D. [Furnish power and communications surface metal raceway fabricated from Type 304 stainless steel with a thickness of not less than 0.04 inches.]
- E. Raceway shall consist of a metal base and a snap on metal cover.
- F. Nominal dimensions of the assembled raceway shall be 4-3/4 inches wide by 1-3/4 inches high.
- G. Furnish fittings required for a complete installation to include a full-length partition separating the power wiring from the communications cables. [Provide suitable internal fittings to accommodate bending radii for fiber optic cables.]
- H. Provide a plastic snap-in plate for each 36 inches of the power and communications surface metal raceway. Each snap-in plate shall include one isolated ground duplex receptacle and one connector faceplate for two RJ11/RJ45 telecommunications connectors.
- I. Manufacturer: Wiremold “4000” or “6000”.

2.17 OUTLET BOXES

- A. Provide outlet boxes selected for specific installations using the guidance in NEMA OS 3, *Selection and Installation Guidelines for Electrical Outlet Boxes*, and the requirements of this Section.
- B. For dry locations provide galvanized steel outlet boxes that comply with UL Standard 514-A – *Metallic Outlet Boxes* and ANSI/NEMA OS1 – *Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports*.
 - 1. For luminaire outlets use 4 inch x 1-1/2 inch deep octagonal boxes with fixture stud attachment as required to support luminaires.
 - 2. For fire detection and alarm device outlets use boxes specified in Section 28 3100.

3. For flush outlets in stud walls or above-grade cast-in-place concrete walls use 4 inch square x 1-1/2 inch deep boxes; provide deeper boxes or multiple gang boxes as required to fit devices. Provide raised device covers that match the thickness of the wallboard and the number of devices. Provide supplemental box supports to prevent movement of the box.
 4. For flush outlets in above-grade masonry walls use masonry boxes with conduit knockouts. Provide boxes with depth suitable for the masonry unit size. Provide multiple gang boxes as required by the number of devices.
 5. For surface outlet boxes in EMT raceway systems, use 4 inch x 2-1/8 inch deep square boxes. Provide deeper boxes or multiple gang boxes as required to fit devices. Provide square surface covers that match the installed device and have not less than two holes for securing the device to the cover.
- C. For damp or wet locations and for surface-mounted RMC or IMC raceway systems, provide outlet boxes that comply with UL Standard 498 and 514, ANSI/NEMA FB1.
1. For lighting fixture outlets use 4 inch x 2-1/16 inch deep round cast gray or malleable iron boxes with threaded hubs.
 2. For flush or surface wall-mounted outlets, use 4-11/16 square, 2-11/16 inch deep cast gray or malleable iron boxes with threaded hubs. Provide multiple gang boxes as required to fit devices. Provide gasketed cast gray or malleable iron or cast copper-free aluminum covers that match the installed device and have not less than two holes for securing the device to the cover.

2.18 PULL AND JUNCTION BOXES

- A. For dry locations in clean, non-contamination environments use galvanized sheet steel pull and junction boxes that comply with UL Standard 50 Type 1 and the NEC as to size and construction. Use boxes not less than 4 inches square x 1-1/2 inches deep with screw-secured covers. Provide larger boxes as required by the number and size of conduits and conductors.
- B. For dry locations in dusty or possible contamination (e.g. beryllium, explosives, or uranium) environments use galvanized steel pull and junction boxes that comply with UL Standard 50 Type 12 and the NEC as to size and construction. Use boxes not less than 6 inches square x 4 inches deep with gasketed covers. Provide larger boxes as required by the number and size of conduits and conductors.
- C. For damp or wet, non-corrosive locations, in conduit runs up to 3/4 inch trade size, provide 4-11/16 inches square, 2-11/16 inches deep cast gray or malleable iron pull and junction boxes with threaded hubs and gasketed cast gray or malleable iron or cast copper-free aluminum covers.

- D. For damp or wet, non-corrosive locations, in conduit runs 1 inch trade size and larger, provide galvanized sheet-steel pull and junction boxes and covers that comply with UL 50 Type 3R.
- E. For damp or wet, non-corrosive locations that are subject to hose-directed water, provide pull and junction boxes and covers that comply with UL 50 Type 4.
- F. For damp or wet, corrosive locations provide pull and junction boxes and covers that comply with UL 50 Type 4X.
- G. For locations subject to occasional submersion, provide pull and junction boxes and covers that comply with UL 50 Type 6.
- H. For in-ground flush-mounted cast metal boxes, provide UL 50 Type 6 boxes with flanged, recessed cover.
 - 1. Material: Galvanized cast iron or galvanized gray or malleable iron.
 - 2. Cover: Non-skid cover with neoprene gasket and stainless steel screws.
 - 3. Identification: Permanent mark or logo on cover prominently identifying the function of the enclosure in accordance with NEC requirements.
- I. For in-ground, non-metallic, open-bottom handholes use products that are NRTL-listed to ANSI/SCTE 77 – *Specification for Underground Enclosure Integrity*.
 - 1. Material: Polymer concrete.
 - 2. Minimum ANSI/SCTE 77 load rating:
 - a. Located in sidewalks: Tier 8.
 - b. Located in driveways, parking lots, and off-roadway locations: Tier 15.
 - 3. Size: Up to 30" x 48"
 - 4. Cover: Non-skid cover with stainless steel cover bolts.
 - 5. Identification: Permanent mark or logo on cover prominently identifying the function of the enclosure in accordance with NEC requirements.
 - 6. Manufacturer: Quazite "Style PC, PG, or PT"
- J. Provide connection points for equipment grounding conductors in each box.

PART 3 EXECUTION

3.1 EXISTING WORK

- A. Remove all exposed abandoned raceways, including abandoned raceways above accessible ceiling finishes, to the point that non-removable building construction (e.g. concrete or masonry) covers the raceway. Cut raceways flush with non-removable building construction.
- B. Disconnect abandoned outlets and remove devices. Remove abandoned outlets when raceway is abandoned and removed. Install blank cover for abandoned outlets not removed.
- C. Cap, plug, or seal remaining raceway openings to restore the original fire rating [and acoustical STC rating] of floors, walls, and ceilings after electrical demolition. Patch surfaces to match existing.
- D. Maintain access to existing boxes and other installations remaining active and requiring access. Modify installation or provide access panel.
- E. Extend existing raceway and box installations using materials and methods [compatible with existing electrical installations, or] as specified.
- F. Clean and repair existing raceway and boxes to remain or to be reinstalled.

3.2 EXAMINATION

- A. Examine surfaces to receive raceways and boxes for compliance with installation tolerances and other conditions affecting performance of the raceway system. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.3 GENERAL

- A. Install complete systems of raceways and boxes for wiring systems.
- B. Install raceways and boxes according to NECA 1 – *Standard Practices for Good Workmanship in Electrical Construction*, NECA 101 – *Standard for Installing Steel Conduits (Rigid, IMC, EMT)*, NECA 111 – *Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC)*, the NEC, the manufacturer's instructions, and requirements in this Section.
- C. Raceway termination points and box locations shown on the Drawings are in approximate locations unless dimensioned. Verify locations before rough-in.
- D. Raceway routing is shown on the Drawings in approximate locations unless dimensioned. Coordinate routing with structure and with work of other trades. Route as required for a complete wiring system.

- E. Ground and bond raceways and boxes as required in Section 26 0526 – *Grounding and Bonding for Electrical Systems*.
- F. Support raceways and boxes in accordance with the requirements the National Electrical Code, Section 26 0529 – *Hangers and Supports for Electrical Systems*, and Section 26 0548 – *Vibration and Seismic Controls for Electrical Systems*.
- G. Identify raceways and boxes as required in Section 26 0553 – *Identification for Electrical Systems*.
- H. Arrange raceway and boxes to maintain headroom and present neat appearance.
- I. Install knockout closures in unused openings in boxes or raceways.

3.4 CONDUIT INSTALLATION

- A. For low-voltage wiring systems (less than 1000 volts) use conduit materials according to the NEC and the following:
 - 1. Outdoors - underground:
 - a. Direct buried: Use RNC, tape-wrapped RMC, or tape-wrapped IMC. Do not use RNC where subject to physical damage. Install with 24 inches minimum cover from top of conduit to finished grade or top of paving.
 - b. Concrete encased: Use RNC, RMC, or IMC for concrete encased underground work. Install with 24 inches minimum cover from top of encasement to finished grade or paving.
 - c. Grade ducts to drain a minimum of 4 inches per 100 ft to manholes, hand-holes, or drainage point.
 - d. Align and support ducts to prevent trapping moisture at any point.
 - 2. Outdoors - exposed: Use RMC.
 - 3. Outdoor corrosive locations (including cooling towers): Use corrosive-resistant conduit and fittings.
 - 4. Outdoors - concealed: Use RMC or IMC for concealed outdoor work. Do not use bare RMC or IMC in direct contact with earth. EMT may be used for indoor work only where not in contact with earth, not encased in concrete, and where not exposed to deteriorating agents.
 - 5. Indoors – exposed outside of designated electrical rooms or telecommunications rooms:

- a. Exposed to severe physical damage during or after installation: Use RMC or IMC.
 - b. Exposed to moisture: Use RMC or IMC.
 - c. Exposed to corrosives: Use corrosive resistant conduit and fittings..
 - d. Not exposed to deteriorating agents and not subject to severe physical damage during or after installation: Use RMC, IMC, or EMT.
6. Indoors – concealed:
- a. Within drywall partitions and above false ceilings: Use RMC, IMC, or EMT.
 - b. Within masonry or cast-in-place concrete walls or floors: Use RMC or IMC.
 - c. Direct-buried under building floor slabs on grade: Use RNC, tape-wrapped RMC, or tape-wrapped IMC. Locate top of conduits not less than 12 inches below the bottom of the concrete slab. Install warning tape approximately 6 inches above the conduits; install multiple warning tapes above parallel conduit runs wider than 18 inches.
 - d. Concrete encased under building floor slabs on grade: Use RNC, RMC, or IMC. Locate top of concrete encasement not less than 12 inches below the bottom of the concrete slab. Install warning tape approximately 6 inches above the concrete encasement; install multiple warning tapes above concrete encasements wider than 24 inches.
7. Install flexible conduit sections where raceways cross expansion joints or seismic joints, where they are attached to parts of the structure with a potential for differential seismic displacement, and where they connect to equipment with designed anchors (seismic controls) or vibration isolators. Refer to Section 26 0529 – *Hangers and Supports for Electrical Systems* and Section 26 0548 – *Vibration and Seismic Controls for Electrical Systems*.
- a. For raceway systems from 1/2 through 1-1/4 inches, install a minimum of 2 feet of flexible conduit, maximum length as determined by the NEC.
 - b. For raceway systems from 1-1/2 through 2 inches, install a minimum of 3 feet of flexible conduit, maximum length as determined by the NEC.
 - c. For raceway systems larger than 2 inches, install a minimum of 4 feet of flexible conduit, maximum length as determined by the NEC.

- d. Arrange the flexible conduit sections to accommodate 4 inches of movement in all directions,
 - e. Use liquidtight flexible metal conduit outdoors, in wet, damp, or corrosive indoor locations, and in mechanical rooms. Use flexible metal conduit in dry indoor locations.
 - f. Install pull boxes as required to comply with the limits on conduit bends and distance between pull points in the CONDUIT INSTALLATION article of this Section; count each flexible conduit section described in this article as not less than a 90-degree bend.
8. Connection to vibrating equipment (including transformers and hydraulic, pneumatic, or electric solenoid or motor-driven equipment) - Use a minimum of 24 inches; maximum length as determined by the NEC:
- a. Outdoors: Use liquidtight flexible metal conduit.
 - b. In mechanical rooms: Use liquidtight flexible metal conduit.
 - c. Wet, damp, or corrosive indoor locations: Use liquidtight flexible metal conduit.
 - d. Dry indoor locations: Use flexible metal conduit.
9. Connections to luminaires: Use 3/8 inch flexible metal conduit or metal-clad cable in 6 foot maximum lengths for tap conductors to luminaires above suspended ceilings.

B. Sealing Fittings

- 1. Install conduit sealing fittings according to the manufacturer's written instructions. Locate fittings at suitable, approved, accessible locations and fill them with NRTL-listed conduit sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points and elsewhere as indicated:
- 2. Where conduits enter or leave NEC Class I hazardous locations.
- 3. Where conduits pass from warm locations to cold locations, such as the boundaries of refrigerated spaces and air-conditioned spaces.
- 4. Where conduits enter or leave radiological "controlled areas."
- 5. Where conduits go between areas where air pressure differential must be maintained.

6. Where conduits enter an enclosure protected by a clean agent total flooding fire suppression system.
 7. Where otherwise required by the NEC.
- C. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduits dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.
 - D. Install plastic-coated RMC and fittings according to the NEC and manufacturer's instructions. Use only fittings approved for use with that material. Patch all nicks and scrapes in PVC coating after installing conduits.
 - E. Do not use RNC 90 degree elbows larger than 2 inch trade size; use plastic-coated RMC, tape-wrapped RMC, or tape-wrapped IMC for 2-1/2 inch trade size and larger 90 degree elbows.
 - F. Maintain the following minimum clearances between conduit and surfaces with temperatures exceeding 104 degrees F (40 degrees C):
 1. 6 inches at perpendicular crossings.
 2. 12 inches between parallel runs.
 - G. Avoid moisture traps in conduit system; provide junction boxes with drain fitting at low points in conduit system.
 - H. Install corrosion protection tape on metal conduits and fittings in contact with soil using half-lapped wrappings.
 - I. Install grounding bushings at the following locations:
 1. At every entry to enclosures on metallic conduits containing circuits rated 100 amperes and higher.
 2. On metallic conduits entering enclosures through concentric, eccentric or oversize knockouts.
 3. On metallic conduits that terminate to a metallic enclosure without effective electrical connection such as locknuts or threaded bushings.
 - J. Install conduit measuring tape in empty raceways. Leave not less than 12 inches of slack at each end of the tape. Secure each end of tape.

3.5 FIRE-STOPPING

- A. Install an NRTL approved fire-stop system at each electrical penetration in a fire-rated wall, floor, or partition.

- B. Refer to Section 07 8400 – *Firestopping* for materials and installation requirements.

3.6 PULL AND JUNCTION BOX INSTALLATION

- A. Install pull and junction boxes as shown on the Drawings and as required for splices, taps, wire pulling, and compliance with regulatory requirements.
- B. Install pull boxes as required to comply with limits on conduit bends and distance between pull points in the CONDUIT INSTALLATION article of this Section.
- C. Install indoor pull and junction boxes in accessible locations above accessible ceilings and in unfinished spaces. Position boxes so covers can be removed. Place boxes to maintain headroom.
- D. Install a concrete collar around handholes not placed in sidewalks or pavement.

3.7 SURFACE METAL RACEWAY INSTALLATION

- A. Install surface metal raceway at locations indicated on the Drawings.
- B. Use flat-head screws, clips, and straps to fasten raceway channel to surfaces.
- C. Mount plumb and level.

3.8 ADJUSTING

- A. Adjust flush-mounted outlets to make front flush with finished floor, wall, or ceiling material.
- B. Install knockout closures in unused openings in boxes.

3.9 CLEANING

- A. Clean interior of boxes to remove dust, debris, and other material.
- B. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
- C. Repair damage to paint finishes with matching touch-up coating recommended by the manufacturer.

3.10 FIELD QUALITY CONTROL

- A. Provide final protection and maintain conditions to ensure that coatings and finishes are without damage or deterioration at final inspection.

- B. Inspection Points – Provide not less than 2 working days advance notice to the CITY STR for the following inspection points. In the notice identify the particular areas of the Project for which inspection is requested. Correct deficiencies identified during inspections. If the requested inspection does not occur within 1 working day of the inspection point, work may proceed.
1. Underground conduits: After conduits have been installed but before concrete-encasement or trench backfilling commences. inspection may include but is not limited to:
 - a. Correct conduit material and size,
 - b. Proper conduit spacing and supports,
 - c. Correct conduit stub-up locations.
 - d. Conduit connection and coupling integrity
 2. Raceway systems in concrete walls, floors, slabs, and equipment pads: After raceways and boxes have been installed but before concrete placement commences. inspection may include but is not limited to:
 - a. Correct raceway system materials and sizes,
 - b. Proper conduit spacing and supports,
 - c. Raceway system connection integrity,
 - d. Correct conduit stub-up locations.
 - e. Correct floor box locations and proper height setting,
 - f. Correct outlet box locations.
 3. Raceway systems in drywall partitions: After raceways and boxes have been installed but before drywall installation that would cover the raceway system commences. inspection may include but is not limited to:
 - a. Correct raceway system materials and sizes,
 - b. Proper supports for raceways and boxes,
 - c. Raceway system connection integrity,
 - d. Correct outlet box locations and proper depth setting.
 4. Raceway systems above ceilings: After raceways and boxes have been installed but before ceiling system installation commences. inspection may include but is not limited to:

- a. Correct raceway system materials and sizes,
 - b. Proper supports for raceways and boxes,
 - c. Raceway system connection integrity,
 - d. Correct outlet box locations and proper depth setting.
5. Fire-stop installation: After fire-stop system has been installed but before covering the installation (with gypsum board etc) commences. inspection may include but is not limited to:
- a. Proper selection and installation of fire stop system.

END OF SECTION

SECTION 26 0813

ELECTRICAL ACCEPTANCE TESTING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Provide the services of a qualified Electrical Testing Agency (ETA) to perform the functions described below:
 - 1. Acceptance tests, inspections, and system function tests of certain electrical systems, equipment, components, and material (EECs) installed under the scope of this Project; refer to Part 3 of this Section.
 - 2. System function tests after completion of acceptance tests on certain electrical EECs installed under the scope of this Project.
 - 3. The following power system studies based on the installed electrical EECs:
 - a. Final short circuit study
 - b. Final coordination study
 - c. Arc-flash hazard analysis

1.2 REGULATORY REQUIREMENTS

- A. Make inspections and tests in accordance with the following codes and standards:
 - 1. InterNational Electrical Testing Association - NETA ATS-[current edition], Acceptance Testing Specifications (ANSI). NETA ATS forms a part of this specification to the extent referenced.
 - 2. National Fire Protection Association – NFPA
 - a. NFPA 70: *National Electrical Code* (ANSI) (NEC)
 - b. NFPA 70B: *Recommended Practice for Electrical Equipment Maintenance* (ANSI)
 - c. NFPA 70E: *Standard for Electrical Safety in the Workplace* (ANSI).
 - 3. Institute of Electrical and Electronics Engineers - IEEE
 - a. IEEE Std 242: *IEEE Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems*
 - b. IEEE Std 399: *IEEE Recommended Practice for Industrial and Commercial Power Systems Analysis*

- c. IEEE Std 1584: *IEEE Guide for Performing Arc-Flash Hazard Calculations*

1.3 QUALITY ASSURANCE

- A. The ETA shall be an independent testing organization which shall function as an unbiased testing authority, professionally independent of the manufacturers, suppliers, and installers of the equipment or systems to be evaluated.
- B. The ETA shall be regularly engaged in the testing of electrical equipment devices, installations, and systems.
- C. The ETA shall have a documented quality assurance program, documented inspection and test and procedures, and a documented electrical safety program.
- D. The ETA shall have successfully completed not less than five acceptance testing, inspection and calibration projects of similar scope to this project.
- E. The ETA shall have a calibration program, and test instruments used shall be calibrated in accordance with NETA ATS.
- F. Each ETA technician performing testing, inspection, calibration, and adjustments shall be a “qualified person” as defined by NFPA 70E and the NEC.
 - 1. Technicians performing these electrical tests and inspections shall be trained and experienced concerning the apparatus and systems being evaluated.
 - 2. Technicians shall be capable of conducting the tests in a safe manner with complete knowledge of the hazards involved and the appropriate safety-related work practices.
 - 3. Technicians shall be qualified to evaluate the test data and make a judgment on the serviceability of the specific equipment.
- G. Testing, inspection, calibration, and adjustments shall be performed or supervised on the Project site by an ETA employee with the following minimum qualifications:
 - 1. A minimum of 5 years' experience inspecting, testing, and calibrating electrical distribution and generation equipment, systems, and devices, and
 - 2. One of the following certifications/registrations:
 - a. An engineering technician certified to at least Level III in accordance with ANSI/NETA ETT *Standard for Certification of Electrical Testing Technicians* (ANSI), or
 - b. An engineering technician certified to at least the NICET ET-grade in Electrical Testing Engineering Technology, or

- c. Only applicable to ML-3 and ML-4 EECs, as determined by CITY AP-341-502: An engineering technician certified by the ETA's internal training/qualification program. As part of the submittal of qualifications, ETA must provide material demonstrating that its certification program is at least equivalent to ANSI/NETA ETT Level III and that the on-site technician's training and certification is up to date.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 Submittal Procedures:

1. Certifications: Submit name and qualifications of the ETA.
2. Certifications: Submit quality assurance program of the ETA.
3. Certifications: Submit instrument calibration program of the ETA.
4. Certifications: Submit electrical safety program of the ETA.
5. Certifications: Submit name and qualifications of the lead engineer or engineering technician performing the required testing services. Include a list of three comparable jobs performed by the individual with specific names and telephone numbers for reference.
6. Test Plans: Submit acceptance and system functions test plan for each item of equipment or system to be field tested at least 45 days prior to planned testing date. Include applicable procedures, forms, and lists of test equipment. Do not perform testing until test plan and procedures have been approved.
7. Test Reports: Submit certified copies of inspection reports, test reports, and system function tests. Reports shall include certification of compliance with specified requirements including test instrument calibration, identification of deficiencies, and recommendation of corrective action when appropriate. Type and neatly bind test reports to form a part of the final record. Submit test report not more than 10 days after each test is completed.
8. Calculations: Submit certified copies of power system studies listed below. Calculations shall include certification of compliance with specified requirements, identify deficiencies, and recommend corrective action when appropriate. Type and neatly bind Calculations to form a part of the final record. Submit power system studies in paper format and also in electronic format transmitted on a CD-ROM.
 - a. Final short circuit study
 - b. Final coordination study
 - c. Arc-flash hazard analysis

1.5 COORDINATION

- A. Schedule the project to allow adequate time for electrical acceptance testing BEFORE equipment or system is energized.
 - 1. Notify the ETA when equipment becomes available for acceptance inspections and tests.
 - 2. Coordinate work to expedite inspections and tests.
- B. Notify the CITY Subcontract Technical Representative (STR) at least 14 days in advance scheduled acceptance tests, inspections, and system function tests.
 - 1. Notify the CITY STR again approximately 24 hours before start of testing.
 - 2. The CITY STR will arrange for witnessing of the tests and inspections by appropriate CITY personnel when required by the Test & Inspection Plan, the applicable codes and consensus Standards or when deemed appropriate by the CITY Design Authority.

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

3.1 GENERAL

- A. Perform the installation insulation-resistance and continuity tests for electrical EECs described in each Section of these Specifications before, and in addition to, tests performed by the ETA that are specified in this Section.
- B. Supply suitable and stable electrical power, adequate lighting, and heating or ventilation as required at each test site for the ETA to perform the specified acceptance testing.
- C. Supply one set of the following to ETA prior to the performance of any final testing:
 - 1. Preliminary short-circuit analysis
 - 2. Preliminary coordination study and protective device setting table
 - 3. Complete set of electrical Drawings, Specifications, and any pertinent Change Orders
 - 4. Approved construction submittal documents for material and equipment

5. Site specific hazard notification and safety training.
6. Other information necessary for a safe and accurate test and inspection of the system.

3.2 INSPECTION AND TEST PROCEDURES

- A. The ETA shall perform the acceptance tests and inspections.
- B. The ETA shall use test methods, follow procedures, and evaluate test values in accordance with the applicable sections of the NETA ATS, the manufacturer's recommendations, and each applicable specification section.
- C. Tests identified as optional in NETA ATS are not required unless specified.
- D. Place equipment in service only after completion of required tests and evaluation of the test results.
- E. The ETA shall perform acceptance tests and inspections on electrical EECs as identified in the following paragraphs. Perform tests and inspections as specified in the applicable clauses of the NETA ATS and as modified by the following paragraphs:
 1. Section 26 0519 – Low Voltage Electrical Power Conductors and Cables.
 - a. Test low-voltage conductors using the graded approach indicated in
 2. Section 26 0526 – Grounding and Bonding for Electrical Systems.
 - a. Test grounding and bonding for each system and circuit.
 3. Section 26 2416 – Panelboards
 - a. Test each panelboard and each included circuit breaker.

3.3 SYSTEM FUNCTION TESTS

- A. The ETA shall develop and perform system function tests on the following EECs in accordance with NETA ATS after completion of the inspection and test procedures described above.
 1. Section 26 2713 – Electric Vehicle Charging System
 - a. Verify proper operation of charging equipment and interfaces with other systems.

3.4 POWER SYSTEM STUDIES

- A. The ETA shall provide power system studies described below based on the installed electrical distribution system and equipment in accordance with procedures described in NETA-ATS and the referenced codes and standards.
 - 1. Include in the study the effect of all portions of the electrical distribution system.
- B. Final Short-Circuit Study. Perform final short circuit calculations using procedures outlined in IEEE Std 242.
 - 1. As a minimum, calculate the short-circuit momentary and interrupting duty on the basis of maximum available fault current at each bus in the distribution system down to the following points in the low-voltage system:
 - a. 208 or 240 volt system where available short circuit current is less than 10,000 amperes RMS symmetrical.
 - 2. Extend the short-circuit study to include the branch-circuit overcurrent protective devices.
- C. Final Coordination Study. Perform final coordination study using procedures outlined in IEEE Std 242.
 - 1. As a minimum, include in the coordination study all voltage classes of equipment from the utility incoming line protective device(s) down to and including each low voltage load protective rated 100 amperes and larger.
- D. Arc-Flash Hazard Analysis. Perform arc-flash hazard analysis and shock hazard analyses based on the final short-circuit study and the final coordination study. Use procedures outlined in IEEE Std 1584 and NFPA 70E. Provide the following information in tabular form for the arc-flash warning labels described in Section 26 0553, *Identification for Electrical Systems*:
 - 1. Flash hazard boundary (inches) calculated in accordance with IEEE Std 1584 or NFPA 70E.
 - 2. Arc-flash incident energy (cal/cm^2) calculated in accordance with IEEE Std 1584 or NFPA 70E.
 - 3. Working distance (inches) selected from IEEE Std 1584 or NFPA 70E (Annex D) based on equipment type.
 - 4. Hazard/risk category number from NFPA 70E Table 130.7(C)(9) for operations with doors closed and covers on
 - 5. System phase-to-phase voltage

6. Condition that exposes worker to electrical shock hazard
7. Limited Approach Boundary from NFPA 70E Table 130.2(C) based on nominal system phase-to-phase voltage.
8. Restricted Approach Boundary from NFPA 70E Table 130.2(C) based on nominal system phase-to-phase voltage.
9. Prohibited Approach Boundary from NFPA 70E Table 130.2(C) based on nominal system phase-to-phase voltage.
10. Class for insulating gloves based on system voltage (e.g. Class 00 for up to 500 volts).
11. Voltage rating for insulated or insulating tools based on system voltage (e.g. 1000 volts).
12. Equipment ID code based on Drawings and including TA number, building number, and system identifier.
13. Date that hazard analysis was performed.
14. "Served from" circuit directory information including the serving equipment ID code, location (e.g. room number), circuit number, and circuit voltage/phases/wires.
15. If applicable, "serves" circuit directory information including the served equipment ID code, location (e.g. room number), circuit number, and circuit voltage/phases/wires.

3.5 TEST REPORT

- A. The ETA shall include the following information in the final test report:
 1. Summary of project.
 2. Description of equipment inspected and tested.
 3. Description of inspections and tests.
 4. Data record resulting from each inspection and test.
 5. Results of system function tests.
 6. Analysis of the tests, identification of deficiencies, and recommendations for corrective action.

- B. Include the following minimum information in each data record:
 - 1. Identification of the ETA.
 - 2. Equipment identification: Equipment ID code based on Drawings and including TA number, building number, and system identifier.
 - 3. Humidity, temperature, and other conditions that may affect the results of the tests or calibration of test equipment.
 - 4. Date inspection, test, or function test was performed.
 - 5. Identification and signature of the testing technician.
 - 6. Description of inspections, tests, maintenance, and function tests performed and recorded.
 - 7. Test equipment used and references to calibration records.
 - 8. Indication of as-found condition and as-left results.
- C. Submit six copies of the complete report to the CITY STR.

3.6 FIELD QUALITY CONTROL

- A. Report to the CITY STR, within three working days, any EEC or construction that is found defective based on acceptance tests or inspections by the ETA.
- B. Within 15 days of direction from the CITY STR, rework, repair or replace any EEC or construction that is found defective based on acceptance tests or inspections.
- C. The ETA shall retest any EEC or construction that did not pass acceptance tests or inspections.

END OF SECTION

SECTION 26 2416

PANELBOARDS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Panelboards for feeder and branch circuit loads.

1.2 SUBMITTALS

- A. Submit the following in accordance with Section 01 3300, Submittal Procedures:
 - 1. Catalog Data: Submit catalog data describing each type panelboard, accessory item, and component specified. Include data substantiating that materials comply with specified requirements.
 - 2. Certification: Submit certification and backup information that panelboard can perform required functions after a design earthquake as specified in "SERVICE CONDITIONS" below.
 - a. Panelboards designated with I_p greater than 1.0 shall be certified by the manufacturer to withstand the total lateral seismic force and seismic relative displacements specified in the *International Building Code (IBC)* or *ASCE 7 – Minimum Design Loads for Buildings and Other Structures*.
 - b. Manufacturer's certification shall be based on shake table testing or experience data (ie, historical data demonstrating acceptable seismic performance), or by more rigorous analysis providing for equivalent safety.
 - c. Required response spectra shall exceed 1.1 times the in-structure spectra determined in accordance with *IBC AC156 – Acceptance Criteria for Seismic Qualification by Shake-Table Testing of Nonstructural Components and Systems*.
 - 3. Shop Drawings: Submit shop drawings for each panelboard including dimensioned plans and elevations and component lists. Include front and side views of enclosure showing overall dimensions, enclosure type, enclosure finish, unit locations, and conduit entrances. Include the following:
 - a. Enclosure type with details for types other than NEMA Type 1.
 - b. Bus configuration and current ratings.

- c. Short-circuit current rating of panelboard.
 - d. Features, characteristics, ratings, and factory settings of individual protective devices and auxiliary components.
4. Wiring Diagrams: Submit detailing schematic wiring diagrams including control wiring, and differentiating between manufacturer-installed and field-installed wiring.
 5. Installation Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Quality Assurance. Include instructions for storage, handling, protection, examination, installation, and starting of Product.
 6. Operation and Maintenance Instructions: Submit operation and maintenance instructions. Include instructions for testing circuit breakers.

1.3 QUALITY ASSURANCE

- A. Comply with the *National Electrical Code (NEC)* for components and installation.
- B. Furnish products that are listed and labeled by a Nationally Recognized Testing Laboratory (NRTL) for the application, installation condition, and the environment in which installed.
- C. Comply with NEMA PB 1 *Panelboards*, NEMA PB 1.1 *General Instructions for Proper Installation, Operation, and Maintenance of Panelboards Rated 600 Volts or Less*, and NEMA AB 3 *Molded Case Circuit Breakers and Their Application*.
- D. Comply with UL 67 *Panelboards*, UL 50 *Enclosures for Electrical Equipment*, and UL 489 *Molded Case Circuit Breakers*.
- E. The manufacturer of the panelboards shall have an ISO 9001 certified quality management system.

1.4 RECEIVING, STORING AND PROTECTING

- A. Receive, inspect, handle, and store panelboards according to NECA 1 *Standard Practices for Good Workmanship in Electrical Construction* (ANSI) and NECA 407 *Recommended Practice for Installing and Maintaining Panelboards* (ANSI).
- B. Perform receipt inspection of panelboard circuit breakers in accordance with CITY P 840-1 *Procurement Quality*. For each panelboard complete a CITY Form 838c, *Quality Assurance Supplement*, specifically using clause QC-27 Suspect/Counterfeit Items. Examine each panelboard circuit breaker to verify that it is genuine, new, and unaltered. Report any suspect/counterfeit circuit breakers to the CITY Subcontract Technical Representative (STR) and the CITY Suspect/Counterfeit Item Coordinator (SCIC). Indicators of suspect/counterfeit molded-case circuit breakers include the following:

1. Missing date code.
2. Date code is older than two years, or style is no longer manufactured.
3. Factory seals broken or removed.
4. Mislabelled or over-labeled to change size or type.
5. Non-English text in labels.
6. Missing or suspect UL sticker; CE is not an acceptable NRTL.
7. Low quality labeling and/or misspelled words on labels.
8. Outdated manufacturer's label or logo, or refurbisher's name on label.
9. Not received in original, sealed packaging.
10. Screwdriver or wrench marks on terminals.
11. Handle modified to change ampere rating.
12. Contradicting amperage, voltage, or interrupting ratings.

1.5 EXTRA MATERIALS

- A. Furnish two spare keys of each type for panelboard cabinet locks.
- B. Furnish one spray can of touch-up paint that matches panelboard finish.

1.6 SERVICE CONDITIONS

- A. Provide panelboards and accessories that will perform satisfactorily in the following service conditions:
 1. Maximum ambient temperature of 104 °F.
 2. 24-hour average temperature not exceeding 86 °F.
 - a. Load current harmonic factor not exceeding 5% THD.
 3. International Building Code seismic criteria:
 - a. Seismic Design Category = D
 - b. S_{DS} = spectral acceleration, short period = 0.75g
 - c. S_{D1} = spectral acceleration, 1-second period = 0.64g

- d. a_p = component amplification factor = 2.5
- e. R_p = component response modification factor = 6.0
- f. I_p = Component importance factor
 - $I_p = 1.5$ for life safety related components such as emergency system panelboards
 - $I_p = 1.5$ for safety class or safety significant system panelboards.
 - $I_p = 1.0$ for all other panelboard applications

4. Maximum solar heat gain: 110 W/sq ft.

- B. Conform to NEMA PB1 service conditions during and after installation of panelboards.

PART 2 PRODUCTS

2.1 PRODUCT OPTIONS AND SUBSTITUTIONS

- A. Alternate products may be accepted; follow Section 01 2500, Substitution Procedures.

2.2 PANELBOARDS

- A. Furnish panelboards as indicated on the Drawings and specified in this Section.
- B. Panelboards shall be UL67 listed and shall conform to NEMA PB1.
- C. Furnish panelboard cabinets for surface mounted as indicted on the Drawings.
 - 1. Furnish NEMA Type 3R enclosures, except where the Drawings or conditions of installation indicate the following enclosure requirements:
 - 2. Cabinets shall be not less than 20 inches wide.
 - 3. Furnish galvanized steel cabinets constructed according to UL 50 requirements.
 - 4. NEMA 3 boxes shall have end walls welded and sealed.
- D. Furnish trim fronts that meet the strength and rigidity requirements of UL 50.
 - 1. Each panelboard trim front shall include a door.
 - 2. Fronts for surface-mounted panels shall be same dimensions as box.
 - 3. Fronts for flush panels shall overlap boxes at least 1 inch.

4. Fronts shall have ANSI 49 medium gray enamel electro-deposited over cleaned, phosphatized steel.
 5. Furnish a panelboard circuit directory card in a metal frame mounted inside the panelboard door. The directory card shall include spaces for circuit numbers and sufficient spaces to allow each circuit to be described in sufficient detail to be distinguished from all others.
 6. Furnish cylindrical tumbler type locks for doors. Furnish sliding vault locks with 3-point latching for enclosures more than 48 inches high. Key all lock assemblies alike. Furnish two (2) keys with each lock plus spares as required in the Extra Materials paragraph above.
- E. Furnish panelboard box with dimensions as required to accommodate compression lugs on cables for the panelboard mains, neutral bar, and circuit breakers rated 100 amperes and larger. Refer to Section 26 0519 - Low Voltage Electrical Power Conductors and Cables for compression lug requirements.
 - F. Furnish copper equipment ground bus that is adequate for feeder and branch circuit equipment ground conductors. Bond ground bus to cabinet.
 - G. Panelboards having a main circuit breaker shall be NRTL-listed for use as service entrance equipment.
 - H. Equip panelboards with mounting brackets, bus connections, and necessary appurtenances, for the future installation of circuit breakers in the "spaces" scheduled on the Drawings.
 - I. Furnish panelboards having NRTL-listed short circuit current ratings not less than the available fault current indicated on the Drawings. With the exception of panelboard with a current-limiting main circuit breaker, do not use "series ratings" for circuit breaker interrupting capacities. The short circuit rating for a panelboard without a current-limiting main circuit breaker shall not exceed the lowest interrupting capacity rating of any circuit breaker installed in the panelboard.
 - J. Furnish thermal-magnetic circuit breakers that meet the requirements of UL 489 and NEMA AB 3.
 1. Furnish circuit breakers of the type, rating, and features as indicated on the Drawings.
 2. Furnish circuit breakers with the following minimum NRTL-listed interrupting capacities:
 - a. 208Y/120V and 120/240V applications: 10,000 amperes, RMS symmetrical
 3. Furnish field adjustable instantaneous trip setting for circuit breakers with frame size greater than 100 amperes.

4. Do not use tandem circuit breakers.
 5. Furnish multi-pole breakers with a common trip.
 6. Furnish bolt-on type circuit breakers or circuit breakers that connect to the panel bus through positive gripping connector jaws and are secured by an independent mechanical locking device.
 7. Furnish circuit breakers with provisions for connecting the size and number of conductors indicated on the Drawings. Refer to Section 26 0519 - Low Voltage Electrical Power Conductors and Cables for conductor connection requirements.
- K. Furnish a permanently-installed handle lock-off device for each circuit breaker.
1. Furnish handle lock-off device that will accept a 1/4-inch padlock shackle.
 2. Securely attach the device to the circuit breaker case; the attachment shall not depending on a friction fit or the presence of the panelboard front for the handle lock-off device to remain in place and be functional.
- L. Furnish the following accessories, modifications, or special features for panelboards as indicated on the Drawings.
1. Split Bus: Vertical buses of indicated panels divided into two vertical sections with connections as indicated.
 2. Conduit Covers for Surface Mounted Panels: Same gage and finish as panel front with flanges for attachment to panel, wall, and the floor.
 3. Neutral bus rated 200% of the phase bus for high harmonic applications.
 4. Subfeed circuit breaker or lug provision as indicated.
 5. Feed-Through Lugs: Sized to accommodate feeders indicated.
 6. Transient Voltage Surge Suppressors: Refer to Section 26 4123, Lightning Protection Surge Arresters and Suppressors, and Section 26 4313, Transient Voltage Suppressors.
- M. Manufacturers:
1. Eaton:
 - a. 208Y/120 V: "PRL1a" and "PRL2a"
 2. Siemens:
 - a. 208Y/120 V and 120/240 V: "P1"

3. Square D:

- a. 208Y/120 V and 120/240 V: “NQ” and “I-Line”

PART 3 EXECUTION

3.1 EXISTING WORK

- A. Disconnect and remove abandoned panelboards.
- B. Maintain access to existing panelboards and other installations that are to remain active and to require access. Modify installation or furnish access panel.
- C. Clean and repair existing panelboards that are to remain or be reinstalled.

3.2 EXAMINATION

- A. Examine surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the control system. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.3 INSTALLATION

- A. Install panelboards where indicated on the Drawings and according to manufacturer's instructions, NEMA PB 1.1, NECA 407, and the *NEC*. Have the manufacturer's installation instructions available at the construction site.
- B. Furnish supports in accordance with the requirements of Section 26 0529 Hangers and Supports for Electrical Systems
- C. Position panelboards so the top circuit breaker handle is not more than 6'-7" above the surface of the working space in front of the panelboard.
- D. Ground and bond panelboards as required in Section 26 0526 Grounding and Bonding for Electrical Systems.
- E. At flush panelboards install four 1-inch conduits to junction boxes in accessible ceiling space or space designated to be ceiling space in future. [Install four 1-inch conduits to junction boxes in raised floor space.] Install branch circuit conductors from panelboard spare circuit breakers to junction boxes for future extension.
- F. Install an auxiliary gutter with permanently installed terminal blocks where a panel is tapped to a riser at an intermediate location.

3.4 IDENTIFICATION

- A. Furnish typed circuit directories for each branch circuit panelboard. Revise directories to reflect circuiting changes required to balance phase loads.
 - 1. Furnish one hard copy and an electronic copy of the panelboard schedule to the Facility Manager at project closeout.
 - 2. Install a plastic-laminated copy of the circuit directory on the inner side of the panelboard door.
- B. Identify panelboards and install warning signs and arc-flash warning labels as required in Section 26 0553, Identification for Electrical Systems.
- C. Mark floor in front of panelboards to show *NEC* required working space according to Section 26 0553, Identification for Electrical Systems..

3.5 FIELD QUALITY CONTROL

- A. Clean, inspect, test, and energize panelboards in accordance with NECA 407. Exercise each circuit breaker three times to verify smooth mechanical operation.
- B. Coordinate inspections and tests with those required by Section 26 0813, Electrical Acceptance Testing.
- C. After completing installation, cleaning, and testing, touch-up scratches and mars on finish to match original finish.

3.6 LOAD BALANCING

- A. After Substantial Completion, but not more than two months after Final Acceptance, conduct load-balancing in accordance with NECA 407 and as follows:
 - 1. Do measurements during period of normal working loads as advised by the User.
 - 2. Make load-balancing circuit changes outside the normal occupancy/working schedule of the facility. Arrange with User to avoid disrupting critical services.
 - 3. Recheck loads after circuit changes during a normal load period. Record all load readings before and after changes and submit test records.

END OF SECTION



STAFF REPORT

Meeting Date: February 22, 2022
Agency: City of Belmont
Staff Contact: Jozi Plut, City Clerk/Communications Coordinator, jplut@belmont.gov, 650-595-7414
Agenda Title: Public Hearing for Transition from At-Large Elections to by District Elections for Council Seats and At-Large Mayor
Agenda Action: Discussion & Direction

Recommendation

Consider demographer and staff presentation and public input on draft district maps, mayoral term, and potential elections sequence, and provide direction.

Strategic Focus Area

Fiscal and Organizational Sustainability

Background

On July 30, 2021, the City received a letter from Kevin Shenkman, of the law firm Shenkman & Hughes, alleging that the City's at-large election system violated the California Voting Rights Act of 2001 (CVRA) on behalf of Southwest Voter Registration Education Project alleging violation of California Voting Rights Act demanding the city change to its at-large method of electing councilmembers.

An “at-large” system of elections is subject to legal challenge under the CVRA if that method of election impairs the ability of a protected class to elect candidates of its choice or its ability to influence the outcome of the election, as a result of the dilution or the abridgment of the rights of the voters who are members of the protected class. The threshold of proof to establish a violation is low and does not require discriminatory intent.

Many dozens of cities and other public agencies in California have been sued under the CVRA. Prevailing CVRA plaintiffs are guaranteed to recover their attorneys’ fees and costs. With the exception of one case still in litigation, all public entities that have tried to contest the conversion to elections by district have either lost or have agreed to make the transition. In either instance, these jurisdictions have paid at least a portion of the plaintiff’s attorney’s fees and costs. Further, those cities that have litigated CVRA cases have paid millions of dollars in fees and were still forced to transition to by-district elections.

The Council met in closed session on October 26, 2021, to consider the litigation threat and held a public study session on November 2, 2021, to consider transitioning to district-based elections and whether to directly elect the mayor at-large. The Council concurred to transition to district elections with four districts and an at-large Mayor. At a regular Council meeting on November 9, 2021, the Council adopted Resolution 2021-096 outlining the city’s intent to change the City's system of election for the City Council from an at-large system to a district-based system by adoption of an ordinance. The district-based elections



system will be in use in the City's General Municipal Election for City Councilmembers beginning in November 2022.

The City Council authorized the City Manager to retain legal, demographic, and communication services to assist the City in its transition to a district-based elections system for the election of City Council members. The City Manager retained the services of Hanson Bridgett LLP, who retained Redistricting Partners to assist the City in its transition to district-based elections by providing a detailed analysis of the City's current demographics and other information or data necessary to prepare a draft map or maps that divide(s) the City into voting districts in a manner consistent with the intent and purpose of the CVRA, the Federal Voting Rights Act, and all other federal and state laws.

Analysis

The City Council held initial informational public meetings on this matter on January 11, 2022; January 25, 2022. During this time Staff began an outreach campaign including but not limited to dedicated website creation, social media posting, e-newsletters, mapping workshop and pop-up informational booths throughout the City.

On February 8, 2022, City the City's consultant drafted three district plans for City Council and public review. The plans are drafted based on traditional districting criteria as established by the Fair Maps Act including that districts are of relatively equal size, contiguous, maintain "communities of interest", follow city and census designated place boundaries and keep districts compact. Council held a public hearing on the item for public input. A series of community of interest themes were identified by Councilmembers and members of public who participated. These include:

- Sterling Downs and Homeview neighborhoods should be kept whole and united within a district Hwy 101, Old County Road, and El Camino are natural boundaries to be used to create district borders on the eastside of the city
- There are potentially neighborhoods and other considerations such as geological or areas of common interest, such as open space, transit, schools within the city that could be considered as communities of interest and should be kept together as much as possible, some examples shared were:
 - SterlingDowns, Homeview, Belmont Heights, Plateau-Skymont
- Instead of the four-quadrant architecture of the draft plans, a different architecture should be evaluated for additional draft maps: creating eastern, western, and two central council districts
 - Eastern District could include Sterling Downs, Homeview, and area east of Hwy 101
 - Western District could include Plateau-Skymont and Belmont Heights
- Other governmental lines should be considered as possible borders, including:
 - 2021 Supervisor Lines
 - 2021 Water District Lines
 - School Attendance Areas ("soft school boundaries")
- Major thoroughfares through the city are not necessarily appropriate district borders as they split communities of interest in parts of the city



On Saturday, February 19, 2022, subsequent to the drafting of this report, a district mapping public workshop was held at the Belmont Twin Pines Community Center to allow for in-person participation on drawing district maps and provide community of interest input.

Recommendation and Next Steps:

Staff recommends that the City Council take the following actions:

1. Hold a public hearing for the purpose of receiving public comment regarding the draft maps of City Council voting district boundaries and sequence of elections
2. Receive a presentation from the City's demographer on the draft maps
3. Provide direction on the preferred map(s) for additional analysis, revisions, or comment
4. Provide direction on the term of the At-Large Mayor (2- or 4-year term) and whether to elect the Mayor in 2022 or 2024
5. Provide direction on which districts will have an election in 2022 and which districts will have an election in 2024
6. Set the next public hearing for March 8, 2022, or such other date for introduction of ordinance establishing the election districts, office and term of elected Mayor, and sequence of elections

Alternatives

1. Defer to Staff for more information
2. Take no action

Attachments

- A. Draft Maps and PPT presentation will be made available after the mapping workshop on Saturday, February 19, 2022, which will take place subsequent to the posting of this staff report.

Fiscal Impact

☐ No Fiscal Impact

☒ Funding Source Confirmed: City Council approved appropriation of \$180,000 at its October 26, 2021 meeting that is included as part of the mid-year budget review to cover costs associated with this process.

Source:

Staff

Purpose:

Discretionary Action

Public Outreach:

Posting of Agenda *

*Public Outreach also conducted at a public workshop and informational pop-ups in various locations throughout the City, on City's social media platform's, banner across Ralston Avenue, the Weekly Update newsletter and item specific news blasts and press releases.



STAFF REPORT

Meeting Date: February 22, 2022 (Continued from 2/8/2022)
Agency: City of Belmont
Staff Contact: Grace Castaneda, Finance Director, gcastaneda@belmont.gov
Jennifer Rose, Housing & Economic Development Manager, jrose@belmont.gov
Agenda Title: Report on Mid-Year Financial Results as of December 31, 2021
Agenda Action: Resolution

Recommendation

Adopt resolutions amending the City of Belmont and Belmont Fire Protection District (BFPD) Fiscal Year (FY) 2022 Budgets.

Strategic Focus Area

Fiscal and Organizational Sustainability

Background

- The City continues to address the fiscal and operational impacts of the COVID-19 pandemic and the ongoing takeaway of key revenue sources as a result of actions taken by the State of California.
- Final dissolution of the Belmont Successor Agency is anticipated to occur in June 2022, resulting in a shift of certain property tax revenues. Due to the timing of the final dissolution and distribution of property taxes from the County, secured property taxes will be lower than FY 2022 budget estimates for both the City and BFPD, while residual property tax payments are expected to increase slightly. Overall property tax revenues are down.
- Property tax in-lieu of vehicle license fee (VLF) continues to be underfunded by the State for a third straight year. Due to the shift of a local school district to non-basic aid, the current County estimates of VLF payments are higher than budget. This one-time increase does not make the City whole on VLF funding for FY's 2020 through 2022. There is still a substantial shortfall in FY 2022, currently estimated county-wide at \$57 million.
- Staffing vacancies and hiring freezes implemented to address State revenue actions and local pandemic impacts continue to provide cost savings City-wide.
- Sales tax revenues, including Measure I, are exceeding FY2022 budget estimates.
- Local development generated revenues such as impact fees and in-lieu fees provide critical funding for infrastructure, but other locally controlled funding is needed to support City services.
- General Fund balance is trending higher than the FY 2022 Budget target, mainly attributable to staff vacancy savings in the current fiscal year. Staff vacancies are not sustainable long-term.



- The City must take action to ensure long-term financial sustainability and local control over revenue sources to prevent further cuts to City Services including cuts to public safety, parks and public works services.

Analysis

The City prepares a Mid-Year Review annually, analyzing the current budget at the six-month midpoint. The Mid-Year Review serves to discuss the financial results of the organization from July through December, and suggests corrective actions in the event expectations differ from results

This year's Mid-Year Review provides important details on the City's financial status and includes the following components.

Mid-Year Budget Presentation

The attached presentation summarizes year-to-date financial results, trends on major revenue sources, fund balance forecasts, and an overview of financial challenges facing the City.

Results Summary Overview

- **Like many California cities, revenues are slowly recovering.** General Fund revenues were \$14.3 million, representing 108% of the year-to-date budget, mainly due to a smaller than anticipated VLF shortfall. All Fund revenues (including General Fund) were \$44.1 million, representing 82% of the year-to-date budgets.
- **General Fund balance is up.** The City ended December 31, 2021 with a fund balance of \$16.4 million, not including budgeted fund transfers which will be booked at the end of the fiscal year. With 50% of the budgeted fund transfers at mid-year at \$1.5 million, the General Fund balance is \$14.9 million at December 31, 2021. In comparison, General Fund balance was \$12.1 million at December 31, 2020, which included 50% of fund transfers. The fund balance increase is largely due to the City receiving the first half of the American Rescue Plan Act (ARPA) one-time funding of \$3.2M in FY 2022. Without this one-time funding, General Fund balance would be down from prior year.

Major Revenue Source Trends

- **Sales Tax revenue is holding steady.** Sales Tax Revenues, including Measures I/A/W and Public Safety, are trending \$635,000 higher than Fiscal Year FY 2022 budget.
- **Hotel Room Tax revenue is slowly rebounding.** A nominal increase of Hotel Tax Revenues (i.e., Transient Occupancy Tax or TOT) is projected for FY 2022, but this remains a highly volatile source of revenue and overall revenues for FY 2022 are still projected to be down \$2 million compared to pre-pandemic years.
- **Property Tax revenue is down.** The Belmont Successor Agency is expected to be fully dissolved by June 2022. In FY 2023, both the City and BFPD are expected to see an increase in general property tax revenues as a result of Successor Agency dissolution. Overall general property tax revenues are down, with a key exception described below:



- **Property Tax In-lieu of Vehicle License Fee (VLF) is higher than budget estimates.** VLF continues to be underfunded by the State for the third straight year; however, when a school shifts to non-basic aid, additional funding is made available for VLF. For FY 2022, the County currently estimates a \$57 million shortfall of VLF due to one school district shifting to non-basic aid. Because the FY 2022 adopted budget anticipated a larger shortfall, this results in a \$1 million increase in VLF funding to the City for FY 2022. This one-time increase does not make the City whole on VLF funding for FY's 2020 through 2022, and the long-term trend continues to assume all school districts will convert to basic aid, which results in increasing VLF shortfall year-over-year.

Mid-Year Financial Reports & Budget Adjustments

The Mid-Year Review provides an analysis of actual results compared to Fiscal Year 2021 while addressing any significant variances that have occurred or will likely occur prior to the end of this Fiscal Year. To assist in this analysis, staff generates the Mid-Year Financial Reports (Attachment C) which includes the December 2021 Monthly Financial Reports and a detailed Statement of Revenues and Expenditures. These reports compare budget amounts vs. actual results by major revenue source and expenditure division.

- Routine adjustments to budget *revenues* include variances associated with the timing of the receipt of certain General Fund revenues and variances associated with the timing of the receipt for fees related to large development projects expected to be completed by the end of the Fiscal Year.
- Routine adjustments to budget *expenditures* reflect operational and staffing needs for departments and timing of capital improvement project expenditures.

Other notable FY 2022 budget adjustments include:

- A request to transfer \$580,000 from Measure I Fund 102 to Street Improvement Fund 234 to fund completion of the Ralston Avenue Corridor Improvement Project Segment 3 (CIP Project #3223) pavement restoration as well as additional work associated with sidewalk conforms/restorations. Project funding initially allocated to the project by Council in January 2021 was reduced by \$500,000 in the FY 2022 adopted budget because bids came in lower than the engineer's estimate. However, updated total project cost estimates (including supplemental work) indicate that the originally approved project funding will be required; a total \$580,000 is requested to be reprogrammed in FY 2022 to complete this major improvement.
- The project has experienced delays related to the contractor scheduling and the need for sidewalk modifications. The updated total project cost is projected to exceed the original estimate by approximately \$580,000. The City will continue to use all grant funds for the project prior to using Measure I funds.
- An appropriation request in the Development Services Fund 210 for \$60,000 to 1) eliminate one temporary part time position and add one permanent Office Assistant FTE position, and 2) provide funding for temporary part-time building inspector services, both in the Community Development Department (Permit Center) to help respond to the steady increase in City-wide development



activity. A targeted scope Community Development fee study is slated for later this Fiscal Year which may help generate additional revenues to offset cost of providing services and offset the proposed staffing augmentations.

Successor Agency Final Dissolution Timeline

Actions taken by the State of California to dissolve redevelopment agencies and a recent court case have resulted in reductions to key revenue sources for both the City and Belmont Fire Protection District (BFPD). One of the most significant takeaways was a change in the methodology for distribution of Residual Redevelopment Property Tax Trust Funds (RPTTF). To address this impact, the City has taken steps over the past year to accelerate the timeline for final dissolution of the Belmont Successor Agency, which is anticipated to occur by June 2022. Fiscal impacts of the Successor Agency dissolution are as follows:

- Because the dissolution will not be finalized until June 2022 after a majority of property taxes have been distributed, both the City and BFPD will continue to see a reduction in general property tax for FY 2022, which is reflected in the midyear adjustments.
- The City (in its capacity as Successor Agency) requests an appropriation to fund a one-time Successor Agency reconciliation payment to the County Auditor that will facilitate final dissolution. The City is working with the County Auditor to complete a comprehensive financial reconciliation to determine the total amount of unspent Belmont RPTTF to be remitted back to the County Auditor for distribution to the taxing entities (including both the City and BFPD).
- In June 2022, funds that previously would have been deposited into RPTTF will be distributed to the taxing entities as general property tax.
- In FY 2023 and beyond, both the City and BFPD will see an increase in general property tax revenues.

As part of the City's efforts to ensure long-term fiscal and organizational sustainability, the City continues to engage the community on identifying targeted locally controlled sources of revenue that fund community priority services such as public safety and public works services.

Proposed Resolutions

Staff recommends that Council adopt resolutions amending the City of Belmont and Belmont Fire Protection District (BFPD) Fiscal Year 2022 Budgets as proposed. These mid-year resolutions are considered annually as part of the budget management process.

Next Steps

Once the Mid-Year Budget Review is complete, the City will continue to provide monthly financial reports to City Council. Feedback from Council on the results of the Mid-Year Financial Reports and Presentation will help guide the budget development process for FY 2023. Furthermore, the City will also continue to engage residents on their City service needs and priorities and reporting on these when the FY 2023 Budget is introduced to the Council in May 2022.



Alternatives

1. Take No Action

Attachments

- A. Resolutions with Exhibit A summarizing proposed budget amendments by Fund
- B. Mid-Year Budget Presentation
- C. Mid-Year Financial Reports

Fiscal Impact

- ☐ No Fiscal Impact
- ☒ Funding Source Confirmed: The resolutions attached to this report itemize the fiscal impacts by fund.

Source:

Staff

Purpose:

Discretionary Action

Public Outreach:

Posting of Agenda

RESOLUTION NO. 2022 –

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BELMONT AMENDING THE FISCAL YEAR 2022 BUDGET BY APPROVING REVISIONS TO REVENUE AND AUTHORIZING SUPPLEMENTAL APPROPRIATIONS

WHEREAS, the City of Belmont Fiscal Year 2022 Budget includes adopted Revenue, Appropriations, and Capital Improvement Program Budgets; and,

WHEREAS, the City continues to address the fiscal and operational impacts of the COVID-19 pandemic and the ongoing takeaway of key revenue sources by the State of California; and,

WHEREAS, several key General Fund revenues are trending below year-to-date budget estimates, including property tax revenues taken by Sacramento, while other revenues are trending above conservative year-to-date estimates; and,

WHEREAS, final dissolution of the Belmont Successor Agency is anticipated to occur by June 2021, resulting in a reduction of certain property tax revenues, and a one-time increase in residual redevelopment property tax trust fund revenues, which are reflected Exhibit A; and,

WHEREAS, the City Council finds that it is necessary to amend the Fiscal Year 2022 Revenue Budget, as identified in Exhibit A, and reduce the estimated Fund balance; and,

WHEREAS, the City has determined that additional funding is required for certain operational expenditures identified in Exhibit A; and,

WHEREAS, the City Council finds that it is necessary to augment the Fiscal Year 2022 budget for those expenditures; and,

WHEREAS, the City Council wishes to add one permanent Office Assistant full time employee (1.0 FTE) position to the Community Development Department staffing plan to ensure ongoing service delivery in the Permit Center as development activity continues to increase City-wide; \$30,000 has been appropriated for this staffing increase to fund the rest of FY 2022, and the City is directed to conduct a fee study to ensure fee revenues are meeting service needs.

NOW, THEREFORE, the City Council of the City of Belmont resolves as follows:

SECTION 1. The Fiscal Year 2022 Budget is hereby amended as reflected in Exhibit A.

SECTION 2. The summary effect on funds is shown in the table below:

Summary Combined Effect on Funds				
Fund	Description	Revenues Increase (Decrease)	Expenditures Increase (Decrease)	Net Change on Fund Balance Increase (Decrease)
101	General Fund	1,218,000	378,000	840,000
102	Measure I	200,000	580,000	(380,000)
205	Co-Sponsored Recreation	88,078	140,000	(51,922)
207	Athletic Field Maintenance	5,000	5,000	-
210	Development Services	275,000	90,000	185,000
212	General Plan Maintenance	300,000	(55,000)	355,000
227	Supplemental Law Enforcement	63,000	-	63,000
231	Street Maintenance	(100,000)	-	(100,000)
233	Measure W	100,000	-	100,000
234	Street Improvement	720,000	255,000	465,000
237	Traffic Impact Fees	(1,400,000)	-	(1,400,000)
308	General Facilities	-	(35,000)	35,000
310	Infrastructure	(985,000)	300,000	(1,285,000)
341	Park Improvement	-	45,000	(45,000)
342	Park Impact Fees	(1,200,000)	56,900	(1,256,900)
501	Sewer Collections	6,275	-	6,275
503	Sewer Operations-Capital	(750,000)	5,000	(755,000)
505	Sewer Collections	(175,000)	-	(175,000)
507	Sewer Treatment	-	10,000	(10,000)
525	Storm Drainage	(200,000)	-	(200,000)
530	Solid Waste	13,690	-	13,690
573	Fleet & Equipment Management	17,400	(90,000)	107,400
575	Benefit Prefunding	-	150,000	(150,000)
775	Successor Agency	235,000	-	235,000

SECTION 3. The City's Permanent Staffing Plan is increased by 1.0 full time employee (FTE), for a total of 137.30 full time equivalent positions for FY 2022, intended to add one permanent full time Office Assistant to the Community Development Department to ensure ongoing service delivery in the Permit Center amid increased development activity. The City Manager, subject to compliance with all applicable City Code and Personnel Rules and Regulations, may revise the Permanent Staffing Plan provided that the total number of full-time, regular personnel citywide does not exceed the total number of authorized positions approved by the City Council.

* * *

ADOPTED February 22, 2022 by the City of Belmont City Council by the following
vote:

Ayes:

Noes:

Absent:

Abstain:

ATTEST:

City Clerk

Mayor

APPROVED AS TO FORM:

City Attorney

City of Belmont

FY 2022

Mid-Year Budget Augmentations

Revenues

Ref #	Fund	Account #	Description	Amount Increase (Decrease)
Community Development				
	210	5-905-6523	Projected increase in complex project revenues to fund third party consultants	\$95,000
	210	5-905-6524	Projected increase in Environmental Consulting Service revenues reflecting an increase in development activity	\$180,000
	212	5-906-6530	Projected increase in General Plan Maintenance Fee revenues from development activity	\$300,000
Finance				
	101	0-000-6101	Forecasted decrease in property tax to reflect timing of Belmont Successor Agency dissolution	(\$535,000)
	101	0-000-6103	Reduced supplemental property tax based on County estimates.	(\$60,000)
	101	0-000-6110	Increased Excess ERAF based on actual revenues and County estimate.	\$265,000
	101	0-000-6111	Adjusted VLF in-lieu revenues based on County estimates	\$1,000,000
	101	0-000-6121	Forecasted increase in Sales and Use Tax based on current trends	\$180,000
	101	0-000-6125	Forecasted increase in Transient Occupancy Tax based on current trends	\$65,000
	101	0-000-6129	Increased property transfer tax to reflect one time sale of high value properties	\$125,000
	101	0-000-6133	Projected increase in cable franchise fees	\$56,000
	101	0-000-7124	Reduced office lease revenues due to one office vacancy	(\$22,000)
	101	0-000-7252	Reflects several one time reimbursement payments	\$40,000
	775	1-504-7601	Transfer from General Fund for final dissolution of Belmont Successor Agency	\$235,000
Police				
	101	2-601-6123	Forecasted increase in Public Safety Sales Tax Revenue	\$15,000
	101	2-601-6621	Reflects one time increase in police contract fee revenues	\$12,000
	101	2-601-6690	Forecasted increase in police services revenue related to the County Narcotics Task Force	\$77,000
	227	1-504-7601	Increased transfer from General Fund to fund Supplemental Law Enforcement (SLESF) personnel costs	\$63,000
Public Works				
	102	3-730-6122	Forecasted increase in Measure I Sales Tax based on current trends	\$200,000
	231	1-504-7601	Reduced transfer from General Fund to reflect reduced fund expenditures	(\$100,000)
	233	3-730-6126	Forecasted increase in Measure W Sales Tax	\$100,000
	234	3-730-6122	Forecasted increase in Measure A Sales Tax	\$140,000
	234	3-730-9030	Transfer of Measure I Funds for completion of Ralston Avenue Corridor Improvement Project Segment 3	\$580,000
	237	0-000-6998	Deferred traffic impact fees to reflect timing of development activity	(\$1,400,000)
	310	3-760-6359	Reduction to reflect timing of CRNA funding received	(\$985,000)
	501	3-710-6705	Correct Public Works Service Charge Revenue Estimate	\$6,275
	503	3-730-6820	Deferred development project sewer connection fees	(\$750,000)
	505	3-730-6820	Deferred development project sewer connection fees	(\$175,000)
	525	1-504-7601	Reduced transfer from General Fund reflecting reduced fund expenses and a one time Measure M reimbursement	(\$200,000)
	530	3-770-6359	Reflects one-time Recology curbside supplemental payment	\$13,690

City of Belmont
FY 2022
Mid-Year Budget Augmentations

Revenues

Ref #	Fund	Account #	Description	Amount Increase (Decrease)
	573	0-000-7501	Reflects one-time sale of capital asset equipment	\$17,400

Parks and Recreation

	205	1-504-7601	Increased transfer from General Fund to cover co-sponsored recreation activities	\$85,000
	205	4-823-6302	CARES Act senior services funding	\$3,078
	207	4-812-7270	Reflects fund donations received for McDougal Field Improvements CIP Project #8059	\$5,000
	342	4-810-6997	Deferred Park Impact Fees to reflect timing of development activity	(\$1,200,000)

Revenues

TOTAL REVENUE ADJUSTMENT (\$1,568,557)

City of Belmont

FY 2022

Mid-Year Budget Augmentations

Expenditures

Ref #	Fund	Account #	Description	Amount Increase (Decrease)
Finance				
	101	1-501-8619	Funding for office renovations in Human Resources and City Clerk suites to accommodate operational changes	\$40,000
	101	1-504-9675	Transfer to Successor Agency to facilitate final dissolution	\$235,000
	575	1-503-8119	Increased funding for retiree payouts	\$150,000
Police				
	101	1-504-9603	Increased transfer to provide funding for supplemental law enforcement (SLESF) personnel costs.	\$63,000
Public Works				
	101	1-504-9606	Reduced transfer to Street Maintenance reflecting reduced fund expenditures	(\$100,000)
	101	1-504-9673	Reduced transfer to Storm Drain Fund reflecting reduced fund expenditures	(\$200,000)
	102	3-730-9030	Transfer of Measure I Funds for completion of Ralston Avenue Corridor Improvement Project Segment 3	\$580,000
	234	3-730-9030	Expenditure of Street Improvement Funds previously authorized by City Council 11/09/21 for the Ralston Adaptive Signal Timing Project #3230	\$255,000
	503	3-730-9030	Funding for Hiller Pump Station Rehabilitation CIP Project #7037	\$5,000
	507	3-730-8351	Funding for sewer treatment bond administration and reporting fees	\$10,000
Parks and Recreation				
	101	1-504-9602	Increase Expense to fund co-sponsored recreation activities	\$85,000
	205	4-820-8101	Funding for Recreation Manager position for five months that had been previously frozen for FY2022	\$60,000
	205	4-822-8103	Increased funding for temporary part time and seasonal staff	\$65,000
	205	4-823-8103	Increased funding for temporary part time staff	\$15,000
	207	4-812-9030	Increased expense for McDougal Field Project 8059 Improvements to include fund donations	\$5,000
	308	4-802-9030	Fire Station 15 facility maintenance expenditures moved to the Belmont Fire Protection District FY2022 budget	(\$35,000)
	310	3-760-9040	Expenditure of CalOES grand funds approved by City Council 9/14/21 for emergency generators	\$300,000
	341	4-810-9030	Funding for Sports Complex security camera installation	\$45,000
	342	3-810-9030	Increased funding to reflect bid costs for Hallmark Park Tennis Court Resurfacing Project 8101	\$15,800
	342	3-810-9030	Increased funding to reflect bid costs for Alexander Park Improvement Project 8102	\$41,100
Information Technology				

City of Belmont

FY 2022

Mid-Year Budget Augmentations

Expenditures

Ref #	Fund	Account #	Description	Amount Increase (Decrease)
	573	1-302-9040	Projected reduction in CIP project expenditures (Project #2145 Access Control System and Project #2153 Sewer Software)	(\$90,000)

City Attorney

	101	1-121-8101	Increased personnel expense to reflect one-time benefit payouts	\$40,000
	101	1-121-8322	Projected increase in funding for contract legal services	\$40,000

City Manager

	101	1-114-8101	Adjusted personnel expenses for full time City Clerk position	\$5,000
	101	1-202-8351	Supplemental appropriation for redistricting services approved by City Council 10/26/21 (\$180,000) plus a reduction of \$50,000 election related expenses	\$130,000

ComDev

	210	5-904-8101	Funding to convert temporary part time staff position to permanent office assistant FTE	\$30,000
	210	5-904-8351	Funding for temporary building inspector services to accommodate increased construction activity	\$30,000
	210	5-904-8535	Projected increase in fire prevention consulting services provided by SMCDFD	\$30,000
	212	5-906-8351	Projected reduction in advanced planning contract expenditures in FY2022	(\$55,000)

Human Resources

	101	1-401-8103	Increased funding for temporary part time personnel expenses	\$40,000
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Expenditures

TOTAL EXPENDITURE ADJUSTMENT \$1,834,900

RESOLUTION NO. 2022 –

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE BELMONT FIRE PROTECTION DISTRICT AMENDING THE FISCAL YEAR 2022 BUDGET BY APPROVING REVISIONS TO REVENUE AND AUTHORIZING SUPPLEMENTAL APPROPRIATIONS

WHEREAS, the Belmont Fire Protection District (BFPD) Fiscal Year 2022 Budget includes adopted Revenue and Appropriations Budgets; and,

WHEREAS, several key District revenues are trending below year-to-date estimates, including property tax revenues taken by Sacramento; and,

WHEREAS, the Board of Directors finds that it is necessary to amend the Fiscal Year 2022 Revenue Budget, as identified in Exhibit A, and reduce the estimated Fund balance; and,

WHEREAS, the City has determined that additional funding is required for certain operational expenditures identified in Exhibit A; and,

WHEREAS, the City Council finds that it is necessary to augment the Fiscal Year 2022 budget for those expenditures.

NOW, THEREFORE, the Board of Directors of the Belmont Fire Protection District resolves as follows:

SECTION 1. The Fiscal Year 2022 Budget is hereby amended as reflected in Exhibit A.

SECTION 2. The summary effect on funds is shown in the table below.

Summary Combined Effect on Funds				
Fund	Description	Revenues Increase (Decrease)	Expenditures Increase (Decrease)	Net Change on Fund Balance Increase (Decrease)
223	Belmont Fire Protection District	(1,983,500)	133,500	(1,850,500)

* * *

ADOPTED February 22, 2022 by the Board of Directors of the Belmont Fire Protection District by the following vote:

Ayes:

Noes:

Absent:

Abstain:

ATTEST:

City Clerk

Mayor

APPROVED AS TO FORM:

City Attorney

Belmont Fire Protection District

FY 2022

Mid-Year Budget Augmentations

Revenues

Ref #	Fund	Account #	Description	Amount Increase (Decrease)
Fire				
	223	0-000-6101	Adjustment to reflect timing of Successor Agency dissolution	(\$1,050,000)
	223	0-000-6103	Adjustment to reflect timing of Successor Agency dissolution	(\$150,000)
	223	2-115-8430	Adjustment to reflect timing of Successor Agency dissolution	(\$135,000)
	223	0-000-6108	Adjustment to reflect timing of Successor Agency dissolution	(\$650,000)
	223	0-000-6328	Adjustment to reflect timing of Successor Agency dissolution	(\$5,500)
	223	0-000-7252	One-time reimbursement for fire station sewer charges.	\$7,000
TOTAL REVENUE ADJUSTMENT				(\$1,983,500)

Belmont Fire Protection District

FY 2022

Mid-Year Budget Augmentations

Expenditures

Ref #	Fund	Account #	Description	Amount Increase (Decrease)
Fire				
	223	1-115-8303	Increase to reflect actual personnel costs for Police Department support of Fire District related activities	\$10,000
	223	1-115-8417	Funding for fire station sewer charges that will be reimbursed to the district	\$7,000
	223	2-115-8430	Funding for Fire station 15 facility improvements	\$42,500
	223	2-119-8351	Increased funding for actuarial studies	\$4,000
	223	2-119-8519	Increased funding for OPEB retiree benefit payments	\$70,000

TOTAL EXPENDITURE ADJUSTMENT \$133,500

CITY OF BELMONT

Fiscal Year 2022 Budget Mid-Year Review

February 22, 2022





EXECUTIVE SUMMARY

FINANCIAL RESULTS

FISCAL SUSTAINABILITY

FINANCIAL OUTLOOK

RECOMMENDATION

EXECUTIVE SUMMARY



One-time ARPA funding received



Impacts to key revenues continue



Property tax mitigation strategies in place & on target



Take action to maintain City service levels



Resolutions requested from Council



FINANCIAL RESULTS

FINANCIAL RESULTS

GENERAL FUND



12/31 Fund Balance

- Up \$2.8M over last year
- Includes \$3.2M ARPA

Revenues

- 8% over YTD budget including ARPA

Local Economy

- Leading indicators mixed

Expenditures

- 87% YTD budget

FINANCIAL RESULTS

YEAR-TO-DATE RESULTS AS OF
DECEMBER 31, 2021 (IN MILLIONS)

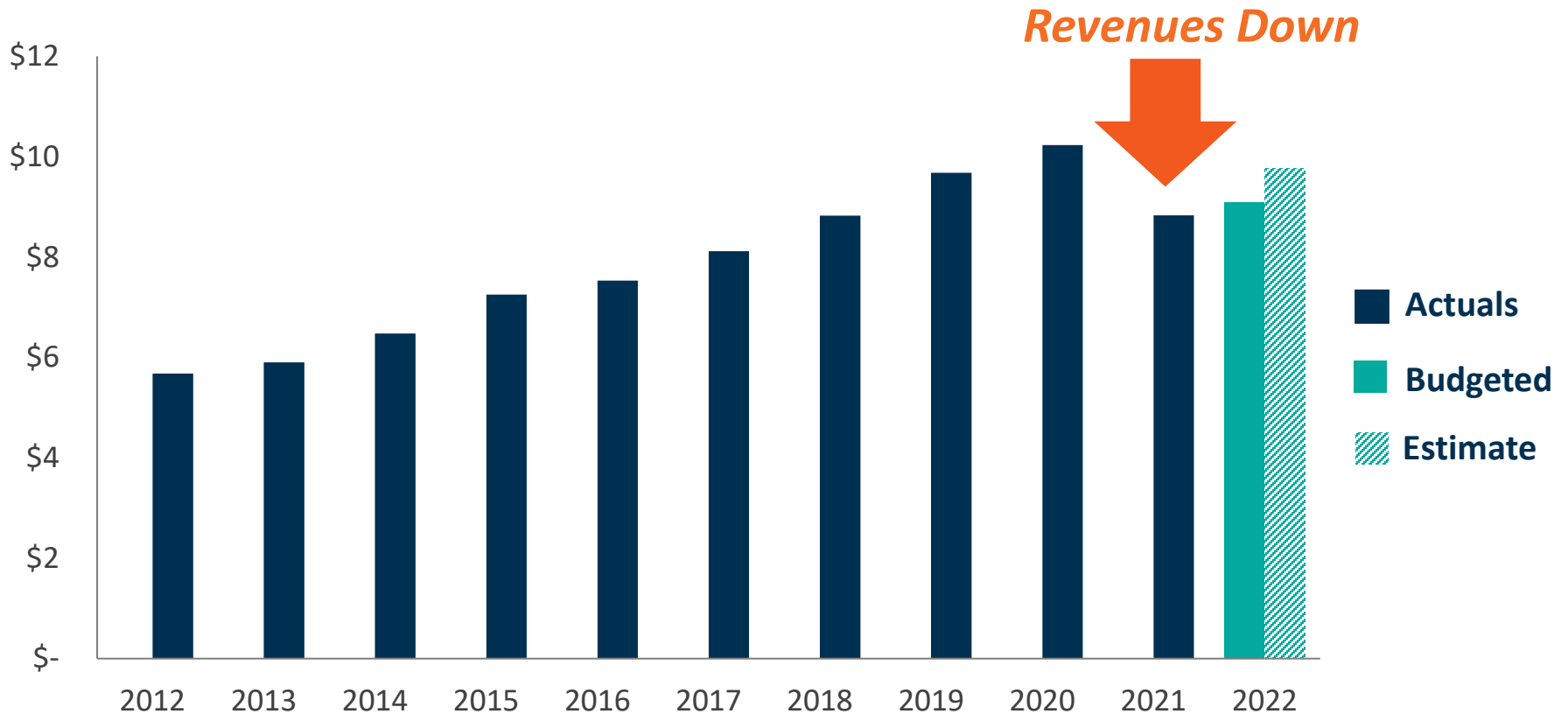


	Revenues		Expenditures	Fund Balance	
	Rev.	ARPA		2021	2020
General Fund (Excluding Measure I)	\$11.1	\$3.2	\$12.7*	\$14.9	\$12.1
Belmont Fire Protection District	6.2		8.8	12.8	12.0
Development Services	2.1		2.5	-	0.6
Recreation	0.6		1.4	(0.8)	(0.4)
Storm Drain	0.5		1.0	3.1	4.4

**Includes 50% of budgeted operating transfers anticipated at year-end*

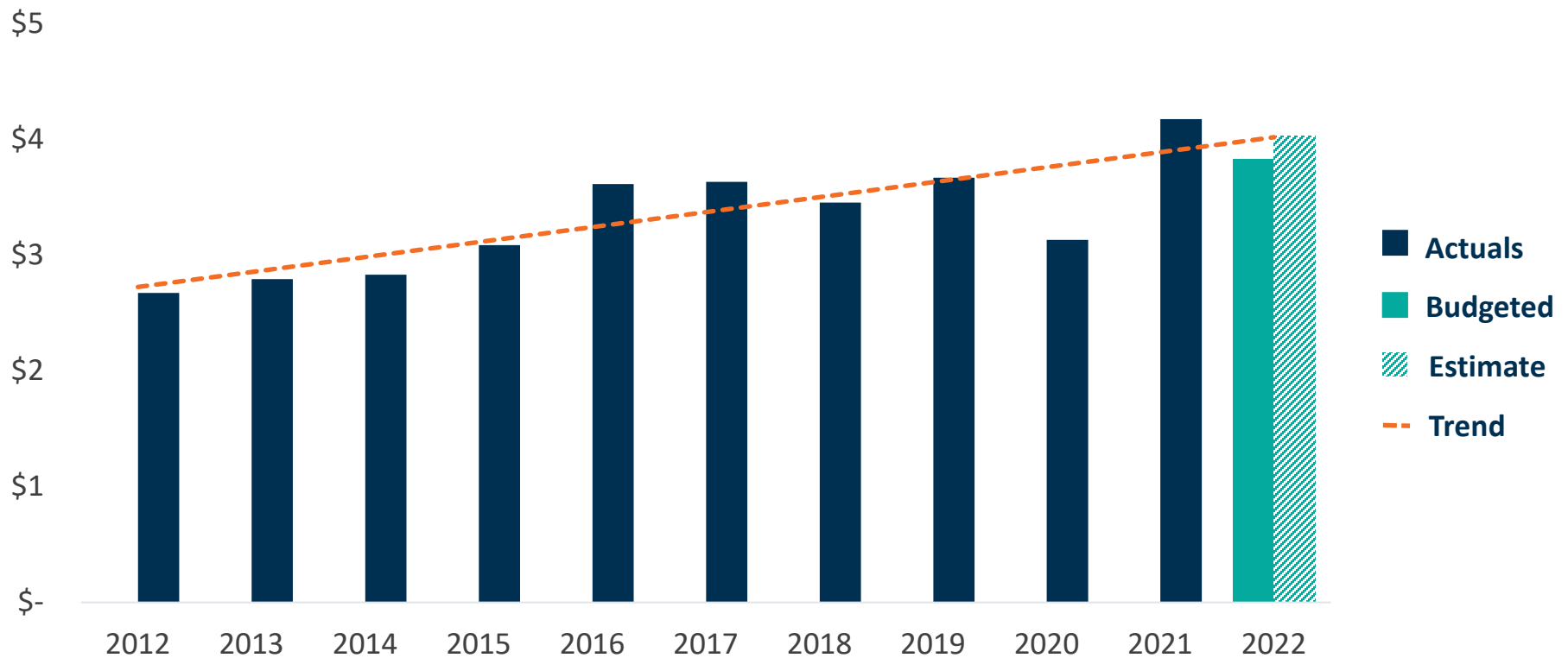
FINANCIAL RESULTS

PROPERTY TAX (IN MILLIONS)



FINANCIAL RESULTS

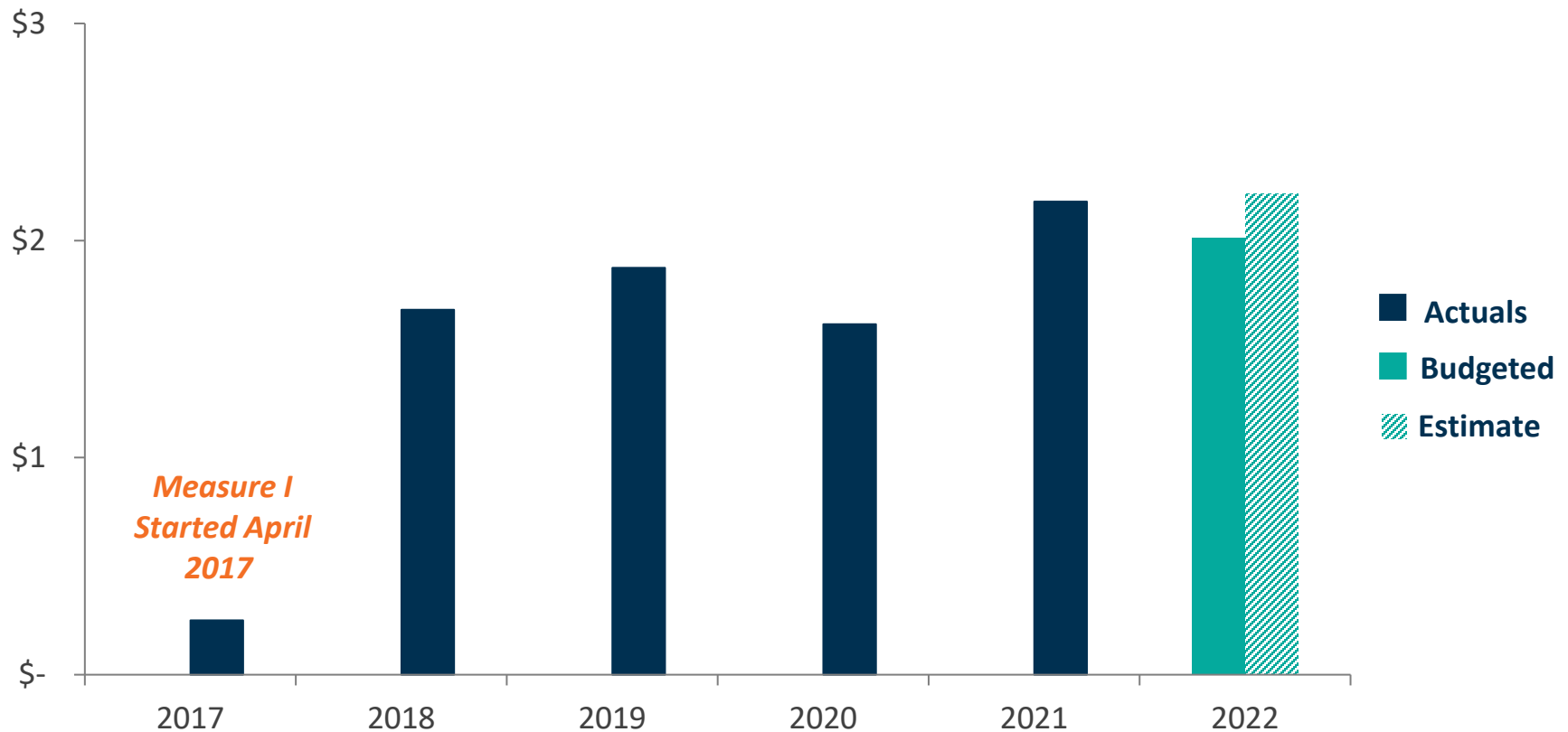
SALES TAX (1% BRADLEY BURNS) IN MILLIONS



****Excludes Measure I ½-Cent Tax***

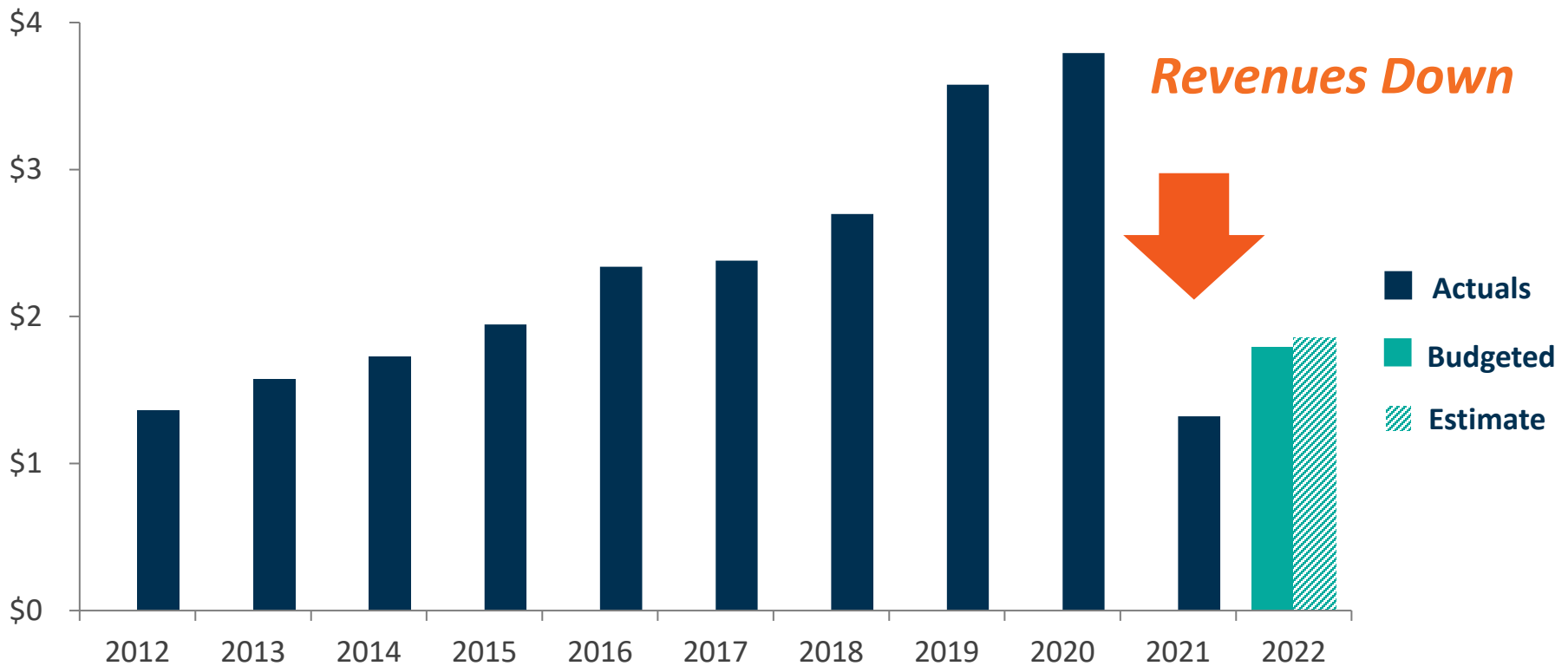
FINANCIAL RESULTS

SALES TAX (MEASURE I) IN MILLIONS



FINANCIAL RESULTS

HOTEL ROOM TAX (IN MILLIONS)



FINANCIAL RESULTS

GENERAL FUND EXPENDITURE (IN MILLIONS)



Category	FY 2022 Budget	12/31/21	% of Total
Personnel	\$16.0	\$6.4*	40%
Services & Supplies	\$3.1	1.3	41%
Admin & Other	\$3.7	1.8	50%

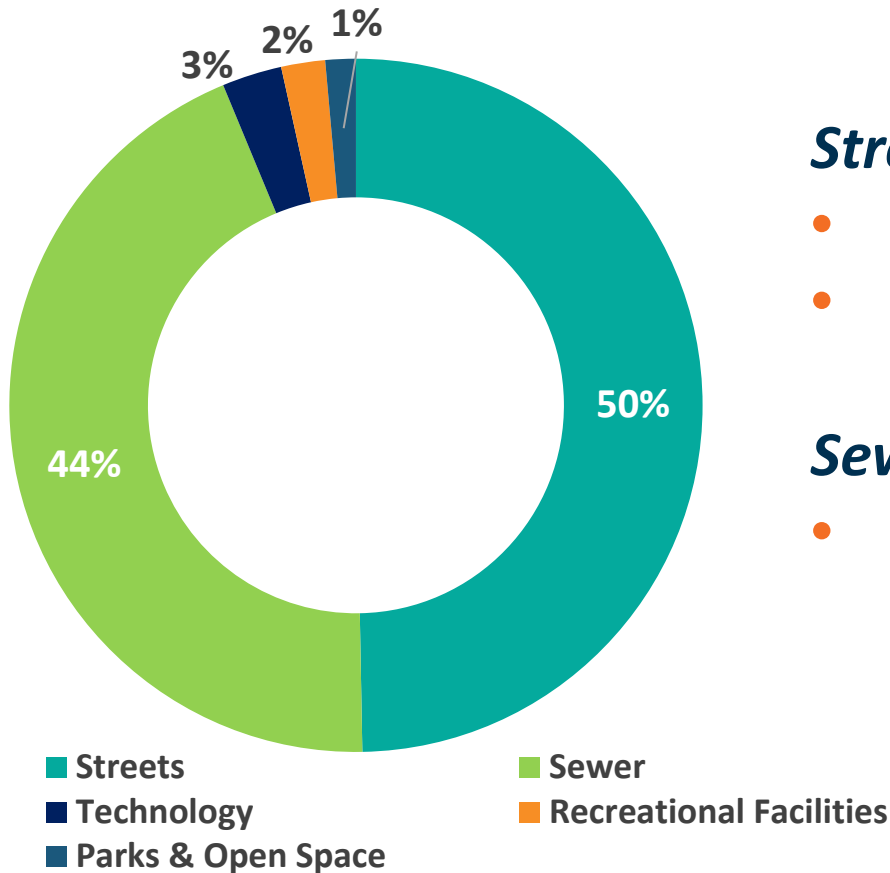
*Reflects benefit correction made in subsequent period.

General Fund-Supported Transfers

- Recreation Fund \$1M
- Development Services Fund \$1M
- Street Maintenance Fund \$0.5M
- Storm Drainage Fund \$0.5M

FINANCIAL RESULTS

CAPITAL IMPROVEMENT PLAN



Streets Projects Completed FY 2022

- 2021 Slurry Seal Pavement
- 2020 Street Reconstruction

Sewer Treatment

- Significant ongoing contributions to SVCW for RESCU program



FISCAL SUSTAINABILITY

FISCAL SUSTAINABILITY

COVID-19 UPDATE



FEMA Reimbursement

\$160K submitted; \$60K ineligible

Lengthy approval process

Ongoing PPE/sanitation costs may not be reimbursed

ARPA Funding

Based on population

One-time, \$6.4M allocation

First half received in FY 2022

FISCAL SUSTAINABILITY

PROPERTY TAX IMPACTS



VLF Shortfall

- \$1.5M General Fund FY 2021
- Grows to >\$4M 6-7 years out

Residual RDA

- \$700K/yr General Fund
- \$900K/yr Fire District
- Retroactive Application

\$0.9M
BFPD/
Year

\$2.2M
General
Fund/Year

FISCAL SUSTAINABILITY

SUCCESSOR AGENCY BOND DEFEASANCE



FISCAL SUSTAINABILITY

PROPERTY TAX IN-LIEU OF VLF



City Manager's group
working in conjunction with
the County

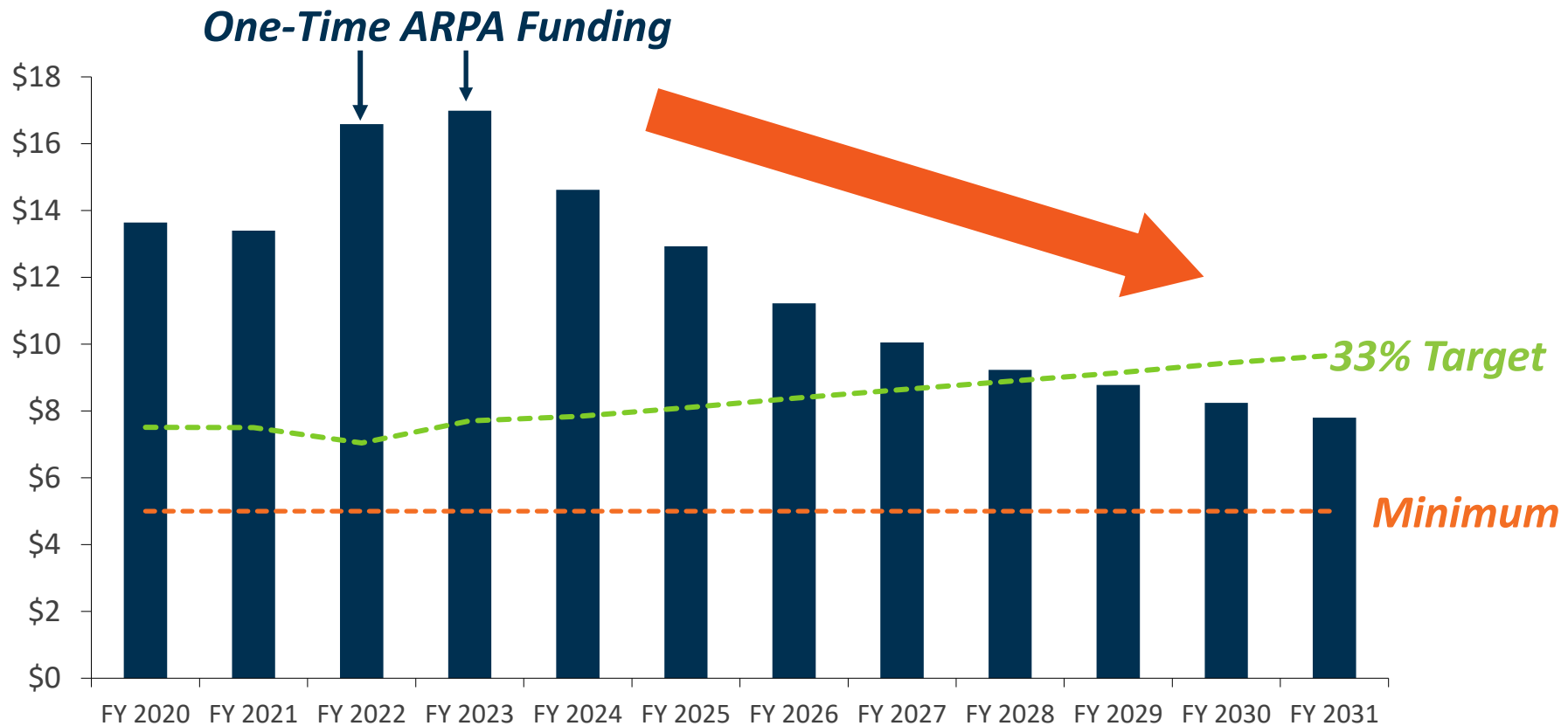
Backfill of FY 2021 shortfall
in Governor's proposed FY
2023 Budget



FINANCIAL OUTLOOK

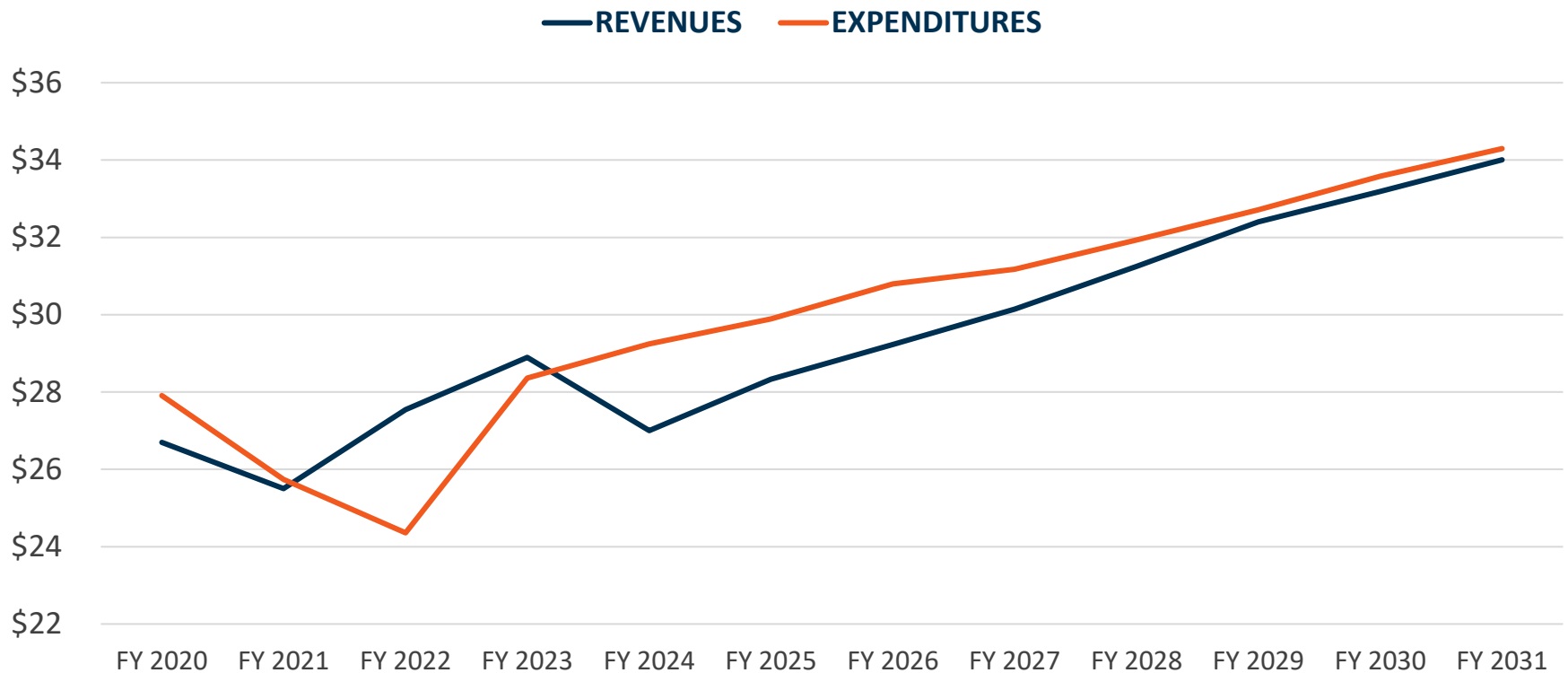
FINANCIAL OUTLOOK

FUND BALANCE IMPACT (IN MILLIONS)



FINANCIAL OUTLOOK

FUND BALANCE PROJECTIONS (IN MILLIONS)



RECOMMENDATION



RECOMMENDATION

NEXT STEPS



Continue community engagement to identify community service priorities & explore targeted, locally-controlled revenue sources

FY 2023 Budget directive will reflect ongoing efforts to address financial sustainability efforts & City Council's Strategic Focus Areas

RECOMMENDATION

FY 2022 MID-YEAR BUDGET RESOLUTIONS



- Community Development staffing (+1 FTE)
 - Increasing development activity
 - Targeted scope fee study
- Successor Agency dissolution reconciliation
- Address actions previously approved by Council, variances based on YTD estimates





STAFF REPORT

Meeting Date: February 22, 2022
Agency: City of Belmont
Staff Contact: Diane Lynn, Public Works Department, dlynn@belmont.gov, 650-595-7467
Agenda Title: Disposable Food Service Ware Ordinance Amendment
Agenda Action: Ordinance

Recommendation

Introduce an ordinance adopting by reference San Mateo County Ordinance Code Chapter 4.107 with city amendments regulating the use of disposable food service ware by food facilities and schedule a public hearing.

Strategic Focus Area

Quality of Life

Background

Many disposable foodware items are made from polystyrene and plastic and are used one time before becoming waste that remains in our landfills for hundreds of years. They are also a major contributor to street litter, water pollution, marine/wildlife endangerment, and climate change. In addition, foodware made from natural fiber (e.g., paper, sugarcane, etc.) can contain perfluoroalkyl and polyfluoroalkyl substances, a class of hazardous chemicals known as PFAS, which is used to make fiber-based foodware resistant to water and grease. These lingering chemicals persist in the environment and the human body, leading to continued exposure and health risks.

On February 25, 2020, the County Board of Supervisors adopted its Disposable Food Service Ware Ordinance, codified as San Mateo County Ordinance Code (SMCOC) Chapter 4.107, regulating the use of disposable food service ware by food facilities. This county-wide model ordinance was available for cities to adopt and created uniformity and consistency via county-wide implementation. On November 24, 2020, the Belmont City Council unanimously adopted SMCOC Chapter 4.107 by reference with city amendments.

On February 23, 2021, the San Mateo County Board amended SMCOC Chapter 4.107 to extend the enforcement start date of March 25, 2021 to March 25, 2022 to give food facilities additional time to comply after recognizing the hardship caused by COVID-19 on restaurants and other food facilities.

On October 5, 2021, Governor Newsom signed into law AB 1200, which prohibits the sale or distribution of single-use foodware comprised of paper or other plant-based natural fiber that contains intentionally added PFAS. AB 1200 goes into effect on January 1, 2023, and does not direct a specific entity to be the enforcement agency.



On February 8, 2022, San Mateo County Board of Supervisors repealed and replaced SMCOC Chapter 4.107 to align with the new State requirements on foodware in AB 1276 and AB 1200.

Analysis

New SMCOC Chapter 4.107 incorporates provisions to reflect changes in state law. Below is a summary comparison of the changes to SMCOC Chapter 4.107 and the new state requirements.

Alignment changes for AB 1276

1. Previous Chapter 4.107 requirement: All food facilities may offer single-use foodware accessories to consumers.
New State requirement: Food facilities can offer single-use foodware accessories only at drive-throughs and public airports.
New Chapter 4.107: Only food facility drive-throughs and food facilities at public airports can offer accessories to consumers.
2. Previous Chapter 4.107 requirement: Food facilities may distribute foodware accessories using dispensers and have them available at self-serve areas, including in open bins/containers for consumers to grab-and-go.
New State requirement: Open bins/containers are not allowed for distribution of accessories. Consumers must request them from the employee and/or food facilities may have them available at refillable dispensers that dispense accessories one item at a time.
New Chapter 4.107: Food facilities cannot have available accessories in open bins/containers at self-serve areas for consumers to grab-and-go, and dispensers can only dispense accessories one item at a time.
3. Previous Chapter 4.107 requirement: Food facilities are not prohibited from using self-serve, refillable bulk condiment dispensers.
New State AB 1276 requirement: Food facilities are explicitly allowed to use self-serve, refillable bulk condiment dispensers to distribute condiments.
New Chapter 4.107: Explicitly allow for use of refillable bulk condiment dispensers.

Enforcement Start Date

San Mateo County extended the current enforcement start date of the Ordinance from March 25, 2022 to October 1, 2022 to provide additional time for food facilities to come into compliance with the new state requirements.

Alignment changes for AB 1200

1. The PFAS requirements for all single-use fiber-based foodware will go into effect on January 1, 2023 and supersede those previously in Chapter 4.107. The County will look to the State to assume responsibility for implementing and enforcing the new requirements pertaining to AB 1200 starting on January 1, 2023.

Adoption by reference of the new Chapter 4.107 will makes the County updates to Chapter 4.107 effective in Belmont.



Alternatives

1. Direct any questions to staff for additional research and response.

Attachments

- A. Disposable Food Service Ware Ordinance Amendment

Fiscal Impact

- ☒ No Fiscal Impact
☐ Funding Source Confirmed:

Source:

Staff

Purpose:

Plan Implementation*

Public Outreach:

Posting of Agenda

ORDINANCE NO. _____

AN ORDINANCE OF THE CITY OF BELMONT, CALIFORNIA ADOPTING BY REFERENCE SAN MATEO COUNTY ORDINANCE CODE CHAPTER 4.107 ENTITLED "REGULATING THE USE OF DISPOSABLE FOOD SERVICE WARE" AS ENACTED BY SECTION 2 OF COUNTY OF SAN MATEO ORDINANCE NO. 4860

The City Council of the City of Belmont does ordain as follows:

SECTION 1. LEGISLATIVE FINDINGS

- (a) After the first reading of this ordinance, the City Council scheduled a public hearing.
- (b) Notice of the public hearing stating the time and place of the hearing, stating that copies of San Mateo County Ordinance Code Chapter 4.107 are on file with the City Clerk and open to public inspection, and providing a description of this ordinance and its subject matter was published one a week for two weeks in a newspaper of general circulation before the public hearing as required by Government Code Section 6066.
- (c) The description provided in the published public notice was sufficient to give notice to interested parties of the purpose of the ordinance and its subject matter.
- (d) The ordinance description adequately summarized the ordinance for purposes of Government Code Section 36933(c)(1).
- (e) Since before the publication of the public hearing notice, and for a period of at least 15 days before the public hearing, the City Clerk has continuously maintained at least one certified copy of San Mateo County Ordinance Code Chapter 4.107 on file in the City Clerk's Office for public inspection.
- (f) The City has complied with the requirements of Government Code Section 50022.2 through 50022.9 for adopting a County code by reference.

SECTION 2. BCC § 31-11 AMENDED

Belmont City Code Chapter 31, Article II, section 31-11 is amended to read:

- (a) San Mateo County Ordinance Code Title 4, Chapter 4.107, entitled "Regulating the Use of Disposable Food Service Ware," as enacted by County of San Mateo Ordinance No. 4860, Section 2, is hereby adopted by reference under Government Code Section 50022.9, except as provided in subsection (d). Amendments to Chapter 4.107 as may be adopted by the Board of Supervisors will not be effective unless subsequently adopted by the city council in accordance with Government Code Section 50022.7.
- (b) The City Clerk is directed to maintain at least one copy of Chapter 4.107 on file in the City Clerk's office for public inspection.
- (c) The regulations set forth in San Mateo County Ordinance Code Chapter 4.107 as adopted by subsection (a) will be operative and enforced in the City of Belmont beginning October 1, 2022.

(d) The following sections in San Mateo County Ordinance Code Title 4, Chapter 4.107 are not adopted: 4.107.080(b), 4.107.080(c).

SECTION 3. SEVERABILITY.

If any section, subsection, sentence, clause or phrase of this Ordinance is for any reason held by a court of competent jurisdiction to be invalid, such a decision shall not affect the validity of the remaining portions of this Ordinance. The City Council of the City of Belmont hereby declares that it would have passed this Ordinance and each section or subsection, sentence, clause and phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases be declared invalid.

SECTION 4. EFFECTIVE AND OPERATIVE DATES.

This Ordinance takes effect 30 days after its adoption and is operative beginning on October 1, 2022.

* * *

The City Council of the City of Belmont, California introduced the foregoing ordinance, on February 22, 2022 and adopted the ordinance at a regular meeting held on _____ by the following vote:

Ayes:

Noes:

Absent:

Abstain:

ATTEST:

City Clerk

Mayor

APPROVED AS TO FORM:

City Attorney