CHARLES TOWN UTILITY BOARD
AGENDA

WEDNESDAY, JULY 9, 2025

Regular Meeting | **661 South George Street, Charles Town, WV 25414** | **4:00 PM**

CALL TO ORDER

1. **APPROVAL OF MINUTES**
   a. Approval of June 25, 2025 Regular Meeting Minutes
   UB Minutes 06.25.25.pdf

2. **PUBLIC COMMENT**
   This portion of the agenda is designed for members of the general public to share thoughts on items of interest in the community. By law, Board members may ask clarifying questions or discuss procedural matters but are not permitted to discuss the policy merits of any issue unless it is scheduled for discussion.

   The public is invited to attend this meeting in person or via webcast (www.ctubwv.com- Board Meeting - Meeting Agendas and Minutes 2025) or by accessing the following zoom link:

   https://us06web.zoom.us/j/87084396500?pwd=zalz202WtMe6KVq6b4plnBdZlUy5gz.1

   Meeting ID: 870 8439 6500
   Passcode: 087402
   (301)715-8592

3. **UNFINISHED BUSINESS**
   a. Update on WV PSC Cases - Possible Executive Session under the provision of W. VA Code 6-9a-4(b)(12) - To discuss any matter which, by express provision of federal law or state statute or rule of court is rendered confidential, or which is not considered a public record within the meaning of the freedom of information act as set forth in article one, chapter twenty-nine-b of the code.
   i. 25-0079-W-PC - Sidewinder Service Agreement for Mountain Pure Development
   ii. 25-0263-W-C – West Virginia American Water Complaint Case

4. **NEW BUSINESS**
   a. Draft Sewer System Design and Construction Standards Manual
   Draft Sewer System Design and Construction Standards Manual.pdf

b. Raw Water Intake By-pass Quotes
Raw Water Intake By-pass Quotes.pdf
c. Summit Point Raceway Source Water Grant Report
Water & Sewer Feasibility Study June 2025.pdf
d. Riverpointe (formerly Ranson Heights) Pump Station Operation and Maintenance Agreement
Riverpointe Pump Station Operation & Maintenance Agreement.pdf
e. Collection System Project - Authorized Representative Resolution
Authorized Resolution.pdf

5. **MANAGER REPORTS**
   a. Utility Manager Report
   UM Report July 2025.pdf
   b. Chairman Report

6. **APPROVAL OF BILLS**
   a. July 9, 2025
   Board Report 6.30.25.pdf

7. **ADJOURNMENT**

8. **INFORMATION ONLY**
   a. Next Meeting - July 23, 2025 at 4:00P.M.

CHARLES TOWN UTILITY BOARD

Wednesday, July 9, 2025

Regular Meeting

661 South George Street
Charles Town, WV 25414

Approval of June 25, 2025 Regular Meeting Minutes

Attachments:

UB Minutes 06.25.25.pdf

Charles Town Utility Board
Regular Board Meeting
June 25, 2025

The Charles Town Utility Board held a regular meeting on June 25, 2025 at 4:00 P.M. Members of the Board present were John Maxey, Vice Chairman; Duke Pierson, Treasurer; Heidi Parker, Board Member; Patrick Kratovil, Board Member; and newly appointed board member, Mayor Micheal George. Also present were Kristen Stolipher, Utility Manager; April Shultz, Assistant Utility Manager; Ashley Stottlemyer, Secretary; and Robert Rodecker, Legal Counsel (Zoom).

CALL TO ORDER

The Vice Chairman called the meeting to order at 4:00 P.M.

SWEARING IN OF NEW CHAIRMAN

The Vice Chairman swore in the new Chairman, Micheal George.

APPROVAL OF MINUTES

Approval of June 11, 2025 Regular Meeting Minutes

The Chairman called for changes or corrections to the June 11, 2025 regular meeting minutes. Mrs. Stolipher proposed a correction to change the PSC hearing date to July 30th instead of June. With no objections from the Board, the minutes were approved as amended.

PUBLIC COMMENT

Public comment was received by Jacquelyn Milliron.

UNFINISHED BUSINESS

Update on WV PSC Cases - Possible Executive Session under the provision of W. VA Code 6-9a-4(b)(12) - To discuss any matter which, by express provision of federal law or state statute or rule of court is rendered confidential, or which is not considered a public record within the meaning of the freedom of information act as set forth in article one, chapter twenty-nine-b of the code.

i. 25-0079-W-PC - Sidewinder Service Agreement for Mountain Pure Development

Mr. Rodecker provided he is still waiting for feedback from the other party on the revised lease agreement as there is no timeline for a response.

Action: No action required by the Board.

ii. 25-0263-W-C – West Virginia American Water Complaint Case

Mr. Rodecker mentioned he is continuing to prepare for the July 30 hearing in Charles Town. Mrs. Stolipher provided she has requested to be on a County Commission agenda to discuss this case.

Action: No action required by the Board.

NEW BUSINESS

Public Service Commission Presentation by Jim Ellars - Mainline/Alternate Mainline Extension Agreements

Mr. Jim Ellars from the PSC provided an overview on the differences between mainline and alternate mainline extension agreements and the PSC administrative rules that correlate with each for both water and sewer. He also discussed how to apply the agreements in varying situations. The Board provided discussions. Mr. Ellars addressed the Board's questions and concerns.

Action: No action required by the Board.

Draft Consumer Confidence Reports

Mrs. Stolipher included the drafts of the reports for the Boards review. Mrs. Stolipher will post final versions on the website and Facebook page, provide a link on the utility bills and hand-deliver to the Glen Haven and Cavaland developments. Mrs. Parker provided comments and suggested adding a column to the chart showing if there are violations or not by red or green check marks for an easier read.

Action: No action required by the Board.

Kay Casto Chaney, PLLC Legal Services Agreement Amendment No. 2

Mrs. Stolipher provided the amendment No. 2 to the Kay Casto Cheney agreement is to extend services of the existing contract for the Collection System Project for an increase of an additional $30,000, but not to exceed $170,000 for the total contract.

Action: Motion made by Mrs. Parker, second by Mr. Maxey, the Board unanimously approved the Kay Casto Chaney, PLLC Legal Services Agreement Amendment No. 2

Collection System Project – Resolution No. 10 – CIF Payment No. 7

Mrs. Stolipher included the pay application for Resolution No. 10, CIF Payment No. 7 in the amount of $26,287.75 for work completed. Mr. Maxey requested clarification on the payment being funded from the CIF account. Mrs. Stolipher stated the percentages and funding strategies were agreed to throughout the process and what was committed to for the funding agencies.

Action: Motion made by Mr. Maxey, second by Mr. Pierson, the Board unanimously approved Resolution No. 10 – CIF Payment No. 7.

Collection System Project – Resolution No. 11 – CWSRF No. 4, Pay Application No. 3

Mrs. Stolipher included the pay application for Resolution No. 11, CWSRF Payment No. 4, Pay Application No. 3 in the amount of $21,600 for work completed.

Action: Motion made by Mr. Maxey, second by Mr. Pierson, the Board unanimously approved Resolution No. 11, CWSRF Payment No. 4, Pay Application No. 3.

Renewal and Replacement Project - Resolution No. 30 - Contractor Pay Application No. 30

Mrs. Stolipher included the pay application for Resolution No. 30 – Contractor Pay Application No. 30 in the amount of $266,712.95 for work completed. She mentioned there will be one more pay application to close out the project.

Action: **Motion made by Mrs. Parker, second by Mr. Pierson, the Board unanimously approved Resolution No. 30 – Contractor Pay Application No. 30.**

Collection System Project - Change Order No. 2

Chris Eckenrode presented Change Order No. 2 for HRI to perform a jack and bore of the 48" casing pipe under the entirety of Augustine Avenue rather than open-cutting to prevent a major disturbance to the surrounding area due to road closures. He proposed the Board approve the unit costs for soil at $80/foot at $2317/LF and for rock at $80/foot at $3237/LF. Mr. Eckenrode mentioned the subcontractor performing the jack and bore will be Snyder Environmental as they are local and have the equipment. The Board provided discussions.

Action: **Motion made by Mrs. Parker, second by Mr. Pierson, the Board unanimously approved Change Order No. 2.**

Charles Town South Third Amendment to Lease Agreement

Mrs. Stolipher provided the third lease amendment with Verizon for the Route 9 tank to replace equipment with no rent increase. Mike Hofe, CTUB's consultant, reviewed the agreement finding no issues.

Action: **Motion made by Mrs. Parker, second by Mr. Maxey, the Board unanimously approved the Charles Town South Third Amendment to Lease Agreement.**

MANAGER REPORTS

Utility Manager Report

Mrs. Stolipher mentioned the approved CIP have both the water and sewer plant expansions costing an estimated $40 million, but suggested adding inflation since these are projects are still years out. Mr. Eckenrode was in agreeance. Mrs. Stolipher provided this information as been provided to Rafetelis and they will present their findings at the July 23rd meeting.

Mr. Eckenrode also mentioned he will have the review of the specs and standards complete this week and ready for the Board to adopt at the next meeting. He also provided an update on the work being done for the Collections System project.

Mrs. Shultz provided the new software will go live next month for the financial module and the billing in August.

Action: **No action required by the Board.**

Chairman Report

The Chairman mentioned he will not be at the next board meeting due to a prior engagement.

Action: **No action required by the Board.**

APPROVAL OF BILLS

June 25, 2025

Action: **Motion made by Mr. Pierson, second by Mrs. Parker, the Board unanimously approved the payment of the bills.**

ADJOURNMENT
There being no further business at this time, the Board adjourned the meeting at 5:19 P.M.

INFORMATION ONLY
The next meeting is scheduled for Wednesday, July 9, 2025 at 4:00 P.M. at 661 S. George Street.

_____	_____
Micheal George	Ashley Stottlemyer
Chairman	Secretary

CHARLES TOWN UTILITY BOARD

Wednesday, July 9, 2025

Regular Meeting

661 South George Street
Charles Town, WV 25414

Update on WV PSC Cases - Possible Executive Session under the provision of W. VA Code 6-9a-4(b)(12) - To discuss any matter which, by express provision of federal law or state statute or rule of court is rendered confidential, or which is not considered a public record within the meaning of the freedom of information act as set forth in article one, chapter twenty-nine-b of the code.

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25-0079-W-PC - Sidewinder Service Agreement for Mountain Pure Development

CHARLES TOWN UTILITY BOARD

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25-0263-W-C – West Virginia American Water Complaint Case

CHARLES TOWN UTILITY BOARD

Wednesday, July 9, 2025

Regular Meeting **661 South George Street**
Charles Town, WV 25414

Draft Sewer System Design and Construction Standards Manual

Attachments:

Draft Sewer System Design and Construction Standards Manual.pdf

CHARLES TOWN UTILITY BOARD

SEWER SYSTEM
DESIGN AND CONSTRUCTION STANDARDS MANUAL

JULY 2025

INTRODUCTION

The mission of the Charles Town Utility Board (CTUB) is to provide reliable water and sewer services that protect health and the environment with financial accountability, regional stewardship, and superior customer service. This Sewer System Design and Construction Standards Manual is intended to provide guidance to the development community as to the acceptable public facilities construction for CTUB. This document is meant to be a user-friendly guide in matters relating to sewer facilities within the CTUB service area and is not all inclusive. Basic policies, standards, and construction requirements of CTUB are set forth herein to aid CTUB employees, contractors and DEVELOPERS, and the general public.

CTUB reserves the right to modify these requirements or add additional requirements/ conditions which may be deemed necessary by a particular project.

The goal of the CTUB Sewer System Design and Construction Standards Manual is to set forth a minimum level of quality and to not impose an undue burden on the CTUB's existing or future customers. Should other regulatory agency requirements differ from these specifications, the more stringent shall apply.

TABLE OF CONTENTS

APPLICATION PROCESS/PERMITS/INSPECTION/FEES

APPLICATION PROCESS

PRELIMINARY APPLICATION REQUEST

The DEVELOPER shall submit a written request to the CTUB describing the project. The description shall include:

1. Owner name, title, address and contact information.
2. Location of project (include City/County Road map with project site indicated).
3. Location of proposed connection to the CTUB sewer system.
4. Number and type of dwelling(s) or facility proposed, including all phases and/or projected future growth.
5. Aerial mapping indicating overall projected growth area.
6. Terms of connection proposed, including lateral type, size and material.
7. Anticipated construction start and completion dates for all phases.
8. Letter of confirmation that DEVELOPER or their consultant has received and reviewed the CTUB DEVELOPER sewer design specifications.

Staff will issue the DEVELOPER a letter of availability, with or without, limitations based on the project location, size, type, etc. Some projects may warrant additional review and/or coordination with the Utility Board of Directors, the WVDEP, WVBPH or others as necessary.

PERMITS

DEVELOPERS requesting connection to the CTUB Infrastructure are responsible for obtaining any and all permits or approvals necessary for the intended project and any costs required for the permits. This includes, but is not limited to, the necessary permits from the West Virginia Department of Public Health (BPH); the West Virginia Department of Highways (WVDOH); West Virginia Department of Environmental Protection (WVDEP); Building Permits, Land Development; federal permits and/or railroads for pipe line crossings and longitudinal occupancies; etc.

Permits submitted to the BPH for approval must be reviewed, approved and signed by an official of CTUB, prior to their submission. The DEVELOPER is responsible for paying any permitting fees.

RIGHTS-OF-WAY AND EASEMENTS

DEVELOPERS requesting connection to the CTUB Infrastructure are responsible for obtaining the rights-of-way and easements that are necessary for the intended project and for the connection to the CTUB's sewer infrastructure, including rights-of-way and easement from private individuals as well as those from public agencies such as the WVDOH and from corporate entities such as railroads, gas, electric, and telecommunication utilities.

The rights-of-way and easements shall be written so as to facilitate transfer of same to the CTUB. Adequate easement area shall be obtained such that CTUB can make necessary repairs, perform maintenance, access, etc. The minimum permanent

easement width shall be 20 feet, with proposed utility line being in the center. Where parallel sewer lines exist, the minimum permanent easement width shall be 30 feet.

INSPECTIONS

The DEVELOPER shall conduct all work in accordance with the rules and regulations of those respective agencies. Any and all inspections and/or flagmen costs incurred and deemed necessary by the governing agencies at any and all locations where work under this project is performed shall be borne by the DEVELOPER.

The use of equipment on WVDOH right-of-way and all related construction activities shall comply with the provisions of the WVDOH.

DESIGN REVIEW PROCESS

Once CTUB has approved the project application in principle, the DEVELOPER must submit detailed construction drawings for review. All projects requiring a WV BPH Construction Permit must have the plans signed by a Registered Professional Engineer in the State of West Virginia.

The DEVELOPER will be responsible for the cost of the CTUB in obtaining supplementary Engineering review, if deemed necessary, including any fees associated with Engineering review (both in-house and/or retained Engineer) of the construction drawings for all phases of design and construction.

NOTIFICATION

The CTUB shall notify the DEVELOPER within thirty (30) working days of acceptance of the design or, in writing, of review comments requiring follow-up action.

DEVELOPER'S AGREEMENT

Concurrent with the design review process, CTUB and the DEVELOPER must prepare and execute an Extension (or Project) Agreement. The agreement must satisfy the West Virginia Public Service Commission (PSC) regulations and other legal requirements. CTUB hereby establishes the use of the Alternate Mainline Extension Agreement Form as the basic instrument to be used for all CTUB - Developer Agreements. The agreement format may be modified accordingly to fit unique projects with approval of CTUB.

A. The DEVELOPER must bear the expense of the CTUB engineering review. Any project proposing a gravity main, a pump station or a forcemain must have an engineering review.

B. The DEVELOPER shall bear the expense of any legal costs associated with processing the agreement and preparations of deeds, etc. necessary to transfer ownership of the project to the CTUB.

C. The DEVELOPER shall provide, in writing or by signed extension agreement, a (2) two-year extended maintenance warranty of the project beginning at date of transfer of ownership of the project to CTUB.

D. The project's sewer infrastructure, once completed and accepted by the CTUB, shall become the property of the CTUB.

E. Inspection

1. CTUB reserves the right to inspect the project on either a full time or interim basis. When CTUB provides inspection, the cost of the inspection will be borne by the DEVELOPER. All work found not to be in compliance with state and/or CTUB rules and regulations shall be amended and paid for fully by DEVELOPER.

2. Due to CTUB's limited manpower, resources and operation schedule, CTUB and DEVELOPER may negotiate the inspection process to an extent acceptable to both parties. All third-party inspection fees shall be borne by the DEVELOPER.

3. Refer to Acceptance Testing Section for all required construction testing required for sewer infrastructure prior to CTUB acceptance.

F. Fees

CTUB's website (www.ctubwv.com) contains applicable PSC approved tariff charges for service fees, Capacity Improvement Fee, application for sewer service, security deposit, etc.

G. Bonds and Insurance

The DEVELOPER shall furnish a Performance bond of an acceptable Surety in the full amount of the final cost of work to be taken over by CTUB. The DEVELOPER and their contractors shall list CTUB as an additional insured pertaining to all applicable certificates of Liability Insurance.

ASSET TRANSFER PROCESS

REQUIRED DOCUMENTATION

At the time of phase build-out, The DEVELOPER shall provide to CTUB the following documentation for asset acceptance of the sanitary sewer system.

- Confirmation of transfer of ownership of sewer infrastructure system to CTUB.
- Construction cost for sanitary sewer system.
- Quantities for sanitary sewer system.
- Electronic PDF copy of As-built plan.
- Electronic GIS shapefile of sanitary sewer system.
- Recorded copy of easement plat conveying sanitary sewer system to CTUB.

- Confirmation that all engineers, materialman, contractors and sub-contractors have been paid for their work of the sanitary sewer system.
- Verification that there are no legal disputes, outstanding liens or known potential liens regarding the sanitary sewer system.

AS-BUILT DRAWINGS

A. The DEVELOPER shall keep one copy of all Contract Documents, including working drawings, at the site, in good order, and annotated to show all changes made during the construction process. These as-built drawings shall be available to CTUB, kept current during the project, and shall be delivered to CTUB upon completion of the project.
The as-built drawings shall include the following at a minimum:

- Length, size and type of all sewer line installed, including updated pipe profiles.
- Location of all valves, manholes, vaults and meters with reference ties as needed.
- Location of all sewer lines with reference ties as needed.
- GIS shape files of the entire sewer system shall be provided to CTUB.
- Elevations of sewer manhole rim, invert of line in, and invert of line out.
- Distance from manhole to service lateral connections.
- For new systems, locations of the end of all installed lateral with reference ties as needed to assure ability to relocate.
- Distances between manholes and reference ties to manholes as needed.
- Length of service lateral installed.
- Location of clean-outs with reference ties as needed.
- Location, size, type and length of casing pipe.
- Location, size and type of pipe installed.
- Location, size, type and invert elevation of mainline clean-out with reference ties as needed.
- Pump Stations, Treatment Plants, Basins, etc.
    - All information necessary to describe location, configuration and composition of facility including utilities, equipment, drains, fencing, roadways and other related items.
- Existing Utilities Encountered
    - Location, size and type of utility encountered with reference ties as needed.
    - Note any repairs made to damaged utilities.
    - Location, size and type for any relocated utilities with reference ties as needed.

- NOTE: Location must be established by shown distances, reference ties, or co-ordinates and not by physical placement on a map alone.

OPERATING AND MAINTENANCE MANUAL

A. Manuals shall include operating and maintenance information on all systems and items of equipment. The data shall consist of catalogs, brochures, bulletins, charts, schedules, working drawings corrected to as-built conditions and assembly drawings and wiring diagrams describing location, operation, maintenance, lubrication, operating weight, lubrication chart showing manufacturer-recommended lubricants for each rotating or reciprocating unit, and other information necessary for the Engineer to establish an effective operating and maintenance program. The following data shall also be included:

1. Title page giving name and location of facility.

2. Four eight-inch by ten-inch color pictures of the facility, views as directed by CTUB.

3. Photographs (color) of each piece of equipment in place.

4. "Name Plate" data of all equipment.

5. Performance curves for all pumps installed, including VFD curves.

6. Approved working drawings of each piece of equipment.

7. Manufacturers' cuts and dimension drawings of each piece of equipment, and details of all replacement parts.

8. Manufacturers' erection, operation, and lubrication instructions for all equipment and apparatus.

9. Complete wiring diagrams of all individual pieces of equipment and systems including one line diagram; schematic or elementary diagrams; and interconnection and terminal board identification diagrams.

10. Complete piping and ductwork layout and interconnecting drawings.

B. All items noted in paragraph 1 that are of sheet size of 8-1/2 inches by 11 inches shall be bound in loose leaf 3-ring type binders with black plastic- coated or blue canvas covers. Binders shall be Vernon Line Royal Number R-6372 or Number R-372.

C. Working drawings 24-inches by 36-inches or similar in size shall be folded such that they can be bound into the 3-ring binder, their title

block is exposed, and they can be folded out without being removed from the binder. Alternatively, they may be folded as described and placed in clear pockets which are bound in the manual. Drawings descriptive of a single item of equipment shall be grouped together.

D. The DEVELOPER shall deliver to CTUB CAD files and a pdf of all relative sewer system drawings. A shape file (used for GIS purposes) of all the sewer lines encountered or installed as part of the project shall also be provided. The digital information shall be provided on WV North NAD 83 datum (or latest version).

FINAL APPROVAL

A. Approval for the utilization of the sanitary sewer system shall not be given until all site work and base asphalt is complete, the sewer line is tested and inspected by CCTV or other means. Final acceptance and approval will not be granted until all testing is performed and acceptance documents have been received.

SANITARY SEWER DESIGN STANDARDS

Applicability:

These Design Standards are intended as a reference for the installation of complete sewage collection systems, including public sewer mains, public sewer laterals and private sewer laterals, pump stations and force mains, which connect into the CTUB Sewage System. Specific types or brands of equipment or material are specified to intended to maintain uniformity within the CTUB's system, minimize maintenance and repair problems, and facilitate operations.

All collection system sewer pump stations and force mains will require the review and approval of CTUB prior to submission for state approval. In cases where a particular project requirement is not defined herein, the CTUB reserves the right to review and define the requirement.

During the construction phase, all project submittals pertaining to the sewer system shall be submitted electronically to CTUB for review and approval prior to ordering materials. CTUB has the right to reject any and all submittals which do not apply with their standards and/or do not meet the expected quality. Any material found which is not in compliance with CTUB standards shall be replaced by DEVELOPER at their costs.

All sanitary sewer systems shall be designed in (at a minimum) accordance with the West Virginia Division of Health "Sewage Treatment and Collection Systems Design Standards" Title 64-Series 47. Failure to specifically mention a particular requirement in this manual does not excuse DEVELOPER from meeting requirement.

Under no circumstances shall stormwater, surface water, ground water, roof runoff, subsurface drainage or untreated industrial process water be discharged into any sanitary sewerage system.

The criteria established herein are minimum requirements for design and review by CTUB. The requirements included herein are critical to ensure that CTUB maintain compliance with

the West Virginia Department of Environmental Protection (WVDEP) National Pollutant Discharge Elimination System Permit authorizing the discharge of pollutants, under prescribed conditions, to State waters pursuant to the applicable regulations of the West Virginia Department of Environmental Quality.

Relocation of Public Improvements:

When a development proposes to:

1. Relocate existing public improvements.

2. Encroach upon existing public rights-of-way of easements with physical improvements.
3. Reduce the cover over existing public improvements to less than that specified by this manual.

4. Increase cover over existing public improvements to more than that specified by this manual.

The DEVELOPER shall be responsible for replacement of the public improvements on new location during development of the property. Such replacement shall be to the standards and specifications set forth in this manual, shall be approved by CTUB, and shall be at no cost to CTUB.

SEWER GRAVITY MAINS

A. Infiltration Allowance - An infiltration allowance of 200 gallons per inch diameter per mile per day may be added to the per capita flows to arrive at the average daily flow (ADF).

B. Peak Flows - The sewer collection system needs to be designed to carry a peak flow, when flowing full, of:

- Laterals 4 ADF
- Trunk and Interceptor and Outfall Sewers 2.5 ADF

C. Minimum Size - No gravity sewer (sewer) shall be less than 8" in diameter. The only exception is when there is no possibility of future expansion, no more than 10 mobile homes or 5 residences can be served by a 6" diameter gravity sewer. 4" diameter pipe will not be allowed for the CTUB's sewer collection system.

D. Slope - All new sewers shall be so designed and constructed to give velocities, when flowing full, of not less than 2.0 feet per second based on Kutter's and Manning's formula using an "n" value of 0.013. The following table lists the minimum slopes to be provided. Slopes greater than these are desirable.

E.

Sewer Size	Minimum Slope in feet per 100 feet
6"	0.62
8"	0.40
10"	0.28

12"	0.22
14"	0.17
15"	0.15
16"	0.14
18"	0.12
21"	0.10
24"	0.08
27" and larger	0.07

F. Slopes less than those specified shall be prohibited.

G. Sewers shall be designed to be free-flowing with the hydraulic grade below the crown and with hydraulic slopes sufficient to provide an average velocity of not less than 2.0 feet per second (fps). Calculations shall indicate that a cleansing velocity of 2.0 fps will be maintained at the designed peak flow condition.

H. Computations of velocity of flow shall be based on a coefficient of roughness "n" in the Manning formula of 0.013 for ductile iron pipe (DIP) or 0.010 for PVC based on actual material used.

I. In no case shall terminal lines serving less than 8,000 gpd have a slope of less than 1 percent.

J. The maximum permissible velocity occurring with average flow shall be 15 feet per second (before applying peak flow factor).

K. Sewers shall be laid in straight line with uniform slope between manholes. Sewers on 20% slope or greater shall be anchored securely with concrete anchors, or approved equal, spaced as follows: (See Standard Detail No. 6)

a. Not over 36 feet center to center on slopes between 20% and 35%
b. Not over 24 feet center to center on slopes between 35% and 50%
c. Not over 16 feet center to center on slopes greater than 50%

L. Alignment - Sewers shall be laid with straight alignment between manholes.

M. Increasing Size - When a sewer joins a larger one, the invert of the larger sewer line should be lowered sufficiently to maintain the same energy gradient.

N. Bedding - No. 8 limestone shall be used for bedding unless otherwise approved by CTUB. All mains must have a minimum of 6" of stone below and 12" above and on the sides of the pipe. (See Standard Detail No. 1)

O. All pipe must have a born-on date within one year from pre-construction meeting or start of the project.

P. All gravity sewer shall have a minimum of 48" of cover.

Q. Maximum sewer line depth of cover shall be 15 feet, NO EXCEPTIONS unless otherwise approved by CTUB.

In general, the maximum allowable depths to inverts of various types and sizes of pipe are dependent on different types of bedding, earth loading, and live loading.

Pipes with less than minimum cover and pipes with cover greater than 15 feet require pipe strength calculations to be submitted with the design. The maximum depth for all types of pipe shall be 15 feet. Under very unusual circumstances and with prior approval of CTUB, the depth of cover may be increased to 22 feet for short runs of ductile iron pipe. Request for a waiver of the 15-foot requirement shall be made in writing and approved by CTUB.

R. Acceptable gravity sewer pipe types shall be: PVC SDR-35 or SDR-26 and shall conform to ASTM D3034 and ASTMF679. SDR-26 shall be utilized for pipe burial depths equal to or greater than 12 feet. Ductile iron pipe (minimum thickness Class 52) double cement lined may be used for sewers 20' or deeper, under certain circumstances.

S. The thickness class of ductile iron pipe is minimum and shall be increased as required by individual trench loading considerations.

T. There shall be no physical connection between a drinking water supply system and a sewer system.

U. Joints in sewer pipe lines shall be designed to prevent infiltration and to prevent entrance of roots. The joint design shall conform to the appropriate ASTM specifications for the type of pipe and type of joint utilized. Joints for PVC pipes shall be flexible elastomeric seals ASTM D-3212, gaskets ASTM F477. Joints for ductile iron pipe shall be single rubber gasket, AWWA C111.

V. In general, sewers shall be located within legally established public streets or rights-of-way along the centerline of the street, and shall be equidistant from property lines or curb lines wherever possible.

- In order to reduce the number of manholes in curvilinear streets, manholes must be located within the pavement area but beyond the spread of stormwater gutter flow and a minimum of ten feet from the water lines (outside edge to outside edge).

W. Horizontal Separation - A minimum of 10 feet separation between sewer lines and water lines must be maintained. The distance shall be measured edge-to-edge. In cases where the 10 feet minimum cannot be maintained, the sewer line shall be 18" lower than the water line and constructed of a pressure type pipe. When the lines are placed within 5 feet of each other, permanent identification tape must be buried directly above the lines denoting "Sewer Line" or "Potable Water Line".

X. Vertical Separation - A minimum of 18" of separation between the top of the sewer lines and the bottom of the water lines must be maintained. When local conditions prohibit this vertical separation, the sanitary sewer shall be constructed of AWWA specified water pipe and pressure tested in place without leakage prior to backfilling. The hydrostatic test shall be conducted in accordance with the most recent edition of the AWWA Standard, with a minimum test pressure of 30 psi. Sewers crossing over watermains shall:

- Be laid to provide a separation of at least 18 inches between the bottom of the sanitary sewer and the top of the watermain.

- Be constructed of AWWA approved water pipe and pressure tested in place without leakage prior to backfilling, in accordance with the provisions of the most recent edition of the AWWA Standard, with a minimum test pressure of 30 psi.

- Have adequate structural support to prevent damage to the watermain.

- Have the sewer joints placed equidistant and as far as possible from the watermain joints and encase in concrete.

- Sewer shall cross under watermains such that the top of the sewer is at least 18 inches below the bottom of the watermain.

Y. Sewer shall be designed as gravity type to the maximum extent practical. Pump stations shall be a last resort and number of pump stations shall be limited.

Z. DEVELOPER may be asked by CTUB to upsize their proposed sewer system to accommodate future growth and/or eliminate existing or proposed pump stations. DEVELOPER shall submit cost increase backup information to CTUB for review and approval.

AA. Sewers shall not be located in the rear of lots unless no other location will provide the sewer depth and slope requirements herein. Sewers so located must provide access for an AASHTO SU vehicle to all manholes.

BB. Proposed sewers to be publicly maintained shall not be located within the plane of influence of the building footing and in no case closer than one-half the required easement width from an existing or proposed building.

CC. Sewers shall be designed such that they do not create skewed crossings with other utilities with an acute angle of less than 45 degrees, 90 degrees is preferred. Where skewed crossings are unavoidable due to existing utilities and/or where the crossing angle is greater than 45 degrees and involves a pipe larger than 48 inches in diameter, the crossing must be specifically designed and construction details provided.

DD. Sewer lines shall not be located within stormwater management impoundment areas, within stormwater management embankment dams, or closer than 15 feet to the point of discharge for any outfall structure or spillway. In all cases, the sewer shall be located such that excavation on a 1:1 side slope, from the sewer invert to the proposed finished grade, will not disturb the impoundment area (defined as the 100-year water surface elevation), the embankment dam, the outfall structure, or the spillway. This requirement shall include wet and dry ponds.

EE. When abandoning existing sewers (mains or laterals), they shall be capped at the active main.

FF. When an entire run of a sewer line is constructed in a fill, the pipe shall be a continuous ductile iron run from manhole to manhole (i.e., no adapter). Fill material directly beneath pipe shall be select material compacted to 95 percent density at optimum moisture (ASTM Proctor Test).

GG. All newly installed sewers shall be plugged at their outfall and the plug removed only when the lines have been tested, flushed, and vacuumed. The plug shall be placed on the invert out of the manhole. All debris must be vacuumed from the manhole before the plug is removed.

HH. Stream Crossings

1. Sewers adjacent to or crossing streams, estuaries, lakes and reservoirs shall conform to conditions set forth in the WV Public Lands Corporation permit. (See Standard Detail No. 9).

2. The connection of main sewer lines (not laterals) shall be made only at manholes. The use of adapters for a change in pipe type shall not be permitted. Connection to existing manholes shall be made by core borings.

3. Sewer lines crossing streams shall be ductile iron pipe and provided with a minimum cover where the stream is located in rock and three feet of cover where the stream is located in other materials.

4. Sewers located in areas of unstable soil conditions or other special circumstances may need to be encased in concrete or relocated as required by CTUB.

II. The minimum permanent easement width shall be 20 feet, with proposed utility line being in the center. Where parallel sewer lines exist, the minimum permanent easement width shall be 30 feet. Increased public easement widths may be requested by CTUB.

1. No privately owned permanent structure or landscaping other than shrubs shall be permitted within a public easement.

JJ. If an existing copper or galvanized pipe, brass or bronze fittings, are encountered during sewer utility excavation, they shall be bedded in silica sand (not limestone).

MANHOLES

A. Location - Manholes shall be provided at the following locations (See Standard Detail Nos. 10 & 10A):

1. At all intersections or connections of differing or same size sanitary sewer mains.

2. At all points of change in alignment.

3. At all points of change in grade.

4. At points of industrial discharge as required by CTUB.

5. At the terminal ends of the sanitary sewer line.

6. At intervals not exceeding 300 feet on all sanitary sewers 15 inches in diameter or less, and not exceeding 400 feet on all sanitary sewers larger than 15 inches in diameter.

B. Depth

1. Maximum Depth - Maximum manhole depth shall be 15', NO EXCEPTIONS unless otherwise approved by CTUB.

2. Flow Channel - The inside base of the manhole shall be filled with concrete to form a bench sloping toward the flow channel. Both the flow channel and the bench shall be welled to a smooth surface. Typical invert in to out drop shall be 0.1 feet.

3. Special Lining of Force Main Discharge Manholes – The entire interior of all manholes where force main discharges, including first two (2) manholes downstream shall be spray lined per Standard Detail No. 10A. This includes existing CTUB manholes.

4. Combined Manhole - A combined flow manhole shall be provided inside of the fence at pump station and prior to wet well in the event that wet well would need bypassed.

5. Inside Drop Manholes - An inside drop connection shall be installed when the pipe inverts into the manhole are 2'-0" or more above invert out of the manhole. Outside drop manholes are prohibited. (See Standard Detail No. 12).

6. All manholes shall be vacuum tested after backfill per ASTM C1244. All 48" diameter manholes are expected to hold a vacuum of 10 inches/mg or -9.5 psi for 1 minute. The vacuum may fall to 9 inches/mg or -9.0 psi during the 1 minute and still be approved.

7. Doghouse manholes will be permitted on a case-by-case basis and as approved by CTUB. (See Standard Detail No. 10B)

8. When the incoming (new or existing) sewer line into a manhole is smaller than the sewer line out, the invert of the smaller pipe shall match the centerline of the larger pipe. If the diameter of the smaller pipe is equal to or greater than one-half of the diameter of the larger pipe, then the crowns must match.

9. All sewer manholes shall be precast concrete in accordance with ASTM-C478 consisting of precast reinforced sections, an eccentric conical section or sections, and a base section conforming with the typical manhole.

10. All manholes shall have reinforced plastic steps.

11. No water pipe shall pass through or come into contact with any part of a sanitary sewer manhole. Manholes shall be placed at least 10 feet horizontally from a watermain whenever possible. The distance shall be measured edge-to- edge of the pipes or structures (widest part of a manhole). When local conditions prohibit this horizontal separation, the manhole shall be of watertight construction and tested in place.

12. Nothing herein shall modify BPH requirements for lines and horizontal and vertical separation between waterlines and sanitary sewer manholes.

13. Manholes for sewers up to 21 inches in diameter shall not be less than four feet, inside diameter. Manholes for sewers 24 inches and up to 36 inches shall have an inside diameter of not less than five feet. If the angle of deflection does not permit use of a four-foot inside diameter manhole, then a five-foot manhole or special manhole detail must be provided.

14. For all new construction, line connection to the manhole shall be made with an approved flexible sleeve.

15. When designing new sewers to tie into existing manholes, the bench of the existing manhole must be considered so that the invert of the new tie-in is not established lower than the existing bench.

C. Control of Infiltration and Inflow

1. All sanitary sewer manholes shall be provided with an approved chimney seal installed to cover the joints at the frame adjusting rings and cone section. The chimney seal may be omitted only upon specific approval of CTUB in isolated locations when infiltration is highly unlikely.

2. All sanitary sewer manholes or appurtenances subject to inflow of ponded surface water and those with top elevations below the 100- year flood elevation shall be provided with watertight manhole frame and cover. (See Standard Detail No. 11)

3. Nothing in this paragraph shall be construed to permit the location of sanitary sewer manholes within the spread of stormwater gutter flow in paved areas.

4. Manhole tops outside paved areas and or developed lawns shall be raised at least one foot above the finished grade.

5. The bottom of manholes located in fill shall be extended to undisturbed earth unless otherwise approved by CTUB with compaction requirements. Inside of manhole filled with non-shrink grout and provided with appropriate shaping.

SANITARY SEWER LATERALS

A. For all subdivisions and development plans, the DEVELOPER, as part of the required public improvements, shall extend the sanitary sewer lateral from the main to the property line. (See Standard Detail Nos. 16 & 17).

B. Minimum lateral size shall be 4" in diameter for single family residences or 6" diameter whenever a double lateral is proposed.

C. All plastic pipelines (i.e., laterals) must be provided with a tracer wire and warning tape. The tracer wire shall be attached to the top of the pipe.

D. The sewer lateral pipe material shall be SDR 35 or SDR 26 installed at 2% minimum slope.

E. DEVELOPER is responsible for installing and maintaining all sewer piping and

appurtenances located on private property.

F. Laterals shall require a minimum of 3.5 feet of cover unless otherwise approved by CTUB.

G. The extension of the lateral 5 feet beyond the sidewalk will allow the building plumber to install the sewer without undermining the sidewalk or curb and gutter.

H. Each lateral shall contain two cleanouts located at 18 to 36 inches from any building and at the property line. The cleanout shall be installed on the private side of the sidewalk, as applicable. (See Standard Detail Nos. 16A & 17A)

I. The sanitary sewer easement for the lateral and the CTUB responsibility for maintenance shall extend to the property line only.

J. The lateral table shall specifically list, for each lot, the length of the lateral, from the main to the end of lateral extension specified above, and the plan view shall agree with the lateral table.

K. Sanitary lateral connections tying to the public sanitary sewer main shall have a minimum spacing of five (5) feet at the main.

L. Sanitary laterals shall have a minimum clearance of five feet from water service lines or other laterals. Connection of private lateral to public lateral shall be by fitting of same type as pipe. Where grade change precludes use of standard fitting, a Fernco type (or CTUB approved alternate) fitting may be used.

M. In general, each building must have its own dedicated lateral connection, unless a 6" double wye connection is provided and is approved by CTUB. (See Standard Detail No. 17) Building laterals, from multi-family buildings (condominiums and apartments only), may upon approval by CTUB connect to a single collector submain serving a single building before discharging into a public sewer. A sanitary sewer lateral shall be provided to all lots or individual buildings and shall be extended by the DEVELOPER to each lot or building in accordance with the provisions of this article unless further extension of service is required by CTUB. A sanitary sewer easement running to CTUB for this lateral extension shall be platted and recorded if the line is outside the public right-of-way. If authorized by CTUB a lateral extension servicing a single residential unit may extend from the sewer main easement or road right-of-way across lands of another to the serviced property. In this specific case, CTUB's easement and maintenance responsibilities shall end at the limits of the sewer main easement or road right-of-way, and a private easement, running to the benefit of the serviced property, shall extend from the end of the CTUB maintenance to the serviced property. A project's lateral sizes shall be tabulated in a lateral table and included on the approved construction drawings.

N. CTUB makes no guarantee of providing gravity basement sewer service. DEVELOPERS are fully responsible for providing “Hung Sewer" and/or providing and maintaining ejector/grinder pumps, pits, piping, etc., to achieve a hung sewer. Any floor level below existing grade is considered basement sewer service.

O. Laterals shall be installed with minimum of 6" bedding below pipe and 12" over and on the sides of pipe. Bedding shall be No. 8 limestone or other material as approved by CTUB.

GREASE, OIL/WATER AND SAND INTERCEPTORS AND SEPARATORS

In accordance Section 921.14 of the City of Charles Town Codified Ordinances, the following are the requirements for grease, oil/water/sand separators:

GENERAL

A. Installation Requirements: All existing, proposed, or newly remodeled Food Service facilities shall be required to install, at the user's expense an approved, properly operated and maintained grease trap.

B. Sanitary Sewer Flows: Sanitary sewer flows from toilets, urinals, lavatories, etc. shall not be discharged into the grease trap. These flows shall be conveyed separately to the sanitary sewer service lateral.

C. Floor Drains: Only floor drains which discharge or have the potential to discharge grease shall be connected to a grease trap.

D. Garbage Grinders/Disposers: It is recommended that solid food waste products be disposed of through normal solid waste/garbage disposal means. If a grinder/disposal is used it must be connected to the grease trap. The use of grinders is discouraged since it decreases the operational capacity of the grease trap and will require an increased pumping frequency to ensure continuous and effective operation.

E. Dishwashers: Commercial dishwashers must be connected to the grease trap. Dishwashers discharge soap and hot water which can melt grease and allow it to pass through an undersized grease trap. Traps must be sized accordingly to allow enough detention time to allow water to cool and grease to solidify and float to the top of the trap.

F. Location: Grease trap shall be installed outside the building upstream from the sanitary sewer service lateral connection. This will allow easy access for inspection, cleaning, and removal of the intercepted grease at any time. A grease trap may not be installed inside any part of a building without written approval by the City of Charles Town Utility Board.

G. Pass Through Limits: No User shall allow wastewater discharge concentration from grease trap to exceed 100 Mg/L (milligrams per liter) as identified by EPA Method 413.

DESIGN

A. Construction: Grease traps shall be constructed in accordance with CTUB's standards and shall have a minimum of two compartments with fittings designed for grease retention. All grease removal devises or technologies shall be subject to the written approval of the CTUB. Such approval shall be based on demonstrated removal efficiencies of the proposed technology. The volume-based grease interceptor shall carry an IAPMO Certification.

B. Access: Access to grease traps shall be available at all times, to allow for their maintenance and inspection. Access to trap shall be provided by two

manholes (one on each compartment) terminating at finished grade with cast iron frame and cover.

C. Load-Bearing Capacity: In areas where additional weight loads may exist, the grease trap shall be designed to have adequate load- bearing capacity. (Example: vehicular traffic in driving or parking areas).

D. Inlet and Outlet Piping: Wastewater discharging to a grease trap shall enter only through the inlet pipe of the trap. Each grease trap shall have only one inlet and one outlet pipe.

E. Grease Trap Sizing: The required size of the grease trap shall be calculated using EPA-2 model. All grease traps shall have a capacity of not less than 1,000 gal. nor exceed a capacity of 3,000 gal. If the calculated capacity exceeds 3,000 gal., multiple units plumbed in series shall be installed.

F. Central Business District: The Central Business District (CBD) shall be exempt to the sizing requirements of 921.14 and subject to the following requirements:

1. Compliance with the WV State Building Code.

2. If sized by gallon capacity the tank shall have a liquid volume of not less than 150 gals. (ref: WVDHHR manual of Environmental Health Procedures - Procedure WW13).

3. If sized by standard PDI-G101 method the tank shall have a minimum of 50 lbs. of grease capacity.

4. All calculations shall be using maximum occupancy numbers established by the State Fire Marshall or the Code Official. All plans are subject to Fire Marshall and Health Department review as part of building plan review.

MAINTENANCE

A. Cleaning/Pumping: The user at the user's expense shall maintain all grease traps to assure proper operation and efficiency and maintain compliance with the City's Pass-Through Limits. Maintenance of grease trap shall include the complete removal of all contents, including floating materials, wastewater, and bottom sludge and solids. This work shall be performed by a qualified and licensed hauler. Decanting or discharging of removed waste back into the trap from which it was removed or any other grease trap, for the purpose of reducing the volume to be disposed, is prohibited. This service shall also include a thorough inspection of the trap and its components. Any needed repairs shall be noted. Repairs shall be made at user's expense.

B. Cleaning/Pumping frequency: The grease trap must be pumped out completely a minimum of once every four months, or more frequently, as determined by the City of Charles Town Utility Board, as needed to prevent carry over of grease into the sanitary sewer system.

C. Disposal: All waste removed from each grease trap must be disposed of at a facility approved to receive such waste in accordance with the provisions of this program. In no way shall the pumpage be returned to any private or public portion of the City's sanitary sewer collection system. All pumpage from grease traps must be tracked by a manifest, which confirms pumping, hauling, and disposal of waste. The customer must obtain and retain a copy of the original manifest from the hauler.

D. Maintenance Log: A grease trap cleaning/maintenance log indicating each pumping for the previous 24 months shall be maintained by each Food Service Facility. This log shall include the date, time, amount pumped, hauler, and disposal site.

E. Submittal of Records: Each user shall submit all cleaning and maintenance records to CTUB on a biannual basis (twice per year). Records shall be submitted by March 1st and September 1st of each year. The records shall be submitted to:

Attn. CTUB Utility Manager
661 South George Street, Suite 101
Charles Town, WV 25414

CTUB may perform periodic inspections of these facilities.

1. Additives: Any biological additive(s) placed into the grease trap or building discharge line including but not limited to, enzymes, commercially available bacteria, or other additives designed to absorb, purge, consume, treat, or otherwise eliminate fats, oils, and grease shall require written approval by CTUB prior to use. The use of such additives shall in no way be considered as a substitution to the maintenance procedures required herein.

2. Chemical Treatment: Chemical treatments such as drain cleaners, acid, or other chemical solvents designed to dissolve or remove grease shall not be allowed to enter the grease trap.

3. Sand, Soil, and Oil Interceptors: All car washes, truck washes, garages, service stations, car and truck maintenance facilities, fabricators, utility equipment shops, and other facilities (as determined by CTUB) that have sources of sand, soil, and oil shall install effective sand, soil and oil traps, interceptors, and/or oil/water separators. These systems shall be sized to effectively remove sand, soil, and oil at the expected flow rates. These systems shall be, at the user's expense, cleaned or pumped on a regular basis to prevent impact upon the wastewater collection and treatment systems.

4. Laundries: Commercial laundries shall be equipped with an interceptor with a wire basket or similar device, removable for cleaning, that prevents passage (into the wastewater collection system) of solids ½" or larger in size such as rags, strings, buttons, or other solids detrimental to the system.

5. Control Equipment: The equipment or facilities installed to control FOG, food waste, sand, soil, oil, and lint must be designed in accordance with the Southern Plumbing Code, the WVDEP guidelines, most current engineering standards, or other applicable guidelines approved by CTUB. Underground equipment shall be tightly sealed to prevent inflow of rainwater and shall be easily accessible to allow regular maintenance and inspection. Control equipment shall be maintained by the owner and/or operator of the facility as to prevent a stoppage of the wastewater collection system, and the accumulation of FOG, food waste, sand, soil, and lint in the collection lines, pump stations, and wastewater treatment plant. If CTUB is required to clean out the wastewater collection lines, as a result of a stoppage resulting from poorly maintained control equipment (or lack thereof) the owner or operator shall be required to refund the labor, equipment, materials, and any overhead costs to CTUB including any fines incurred due to any sanitary sewer overflow due directly to the stoppage. CTUB retains the right to inspect and approve any and all installations of control equipment.

6. Alteration of Control Methods: CTUB reserves the right to request additional control measures if existing control equipment is shown to be insufficient to protect the wastewater collection system and wastewater treatment plant from interference due to the discharge of FOG, sand, soil, lint, or any other undesirable materials.

SANITARY SEWER FORCE MAINS

A. All force mains shall have a minimum of 42" of cover. Acceptable force main pipe types shall be Class 52 (min.) ductile iron double cement lined, PVC SDR-21, C900 PVC or HDPE (DR9/DR11). Maximum force main depth shall be 14 feet (with certain exceptions for stream, road and railroad crossings).

B. In general, force mains 3" in diameter or smaller should be PVC SDR-21 minimum thickness and contain concrete thrust blocks at all joints and fittings. Force mains 4" in diameter or larger should be C900 PVC, HDPE (fused fittings) or ductile iron pipe with double cement lined, ductile iron, restrained joints.

C. 90-degree bends are prohibited on sewer force mains. Two (2) 45-degree bends shall be provided.

D. Bell restraints are required on force mains 6" and larger. Bell restraints to be placed on the 3 joints prior to and 3 joints after any bend fittings.

E. Concrete thrust blocks are required at each buried fitting for all lines 4" in diameter or smaller. (See Standard Detail No. 7)

F. All force main to force main tie-ins shall feature a Wye fitting with cleanout. Tees are not acceptable.

G. Air release valves/pits shall be located along force main at all system high points. Profiles of force mains shall be such that they avoid excessive changes in elevation. In such instances, the pipes shall be installed deeper to flatten out the pipe system.

(See Standard Detail No. 24)

H. A pressure cleanout shall be located along force main at all system low points. (See Standard Detail Nos. 21 & 22)

I. All force main pipes crossing state routes, railroads and streams shall be installed in a steel casing pipe. Certain exceptions apply for fused HDPE as permitted by the applicable agencies and CTUB.

J. All manholes (including doghouse) which force mains discharge into, including at least 2 manholes downstream shall be provided with an interior coating system.

K. CTUB has the authority to shift and/or alter force main alignment to accommodate future developments and planning.

L. All force main lines shall be pressure tested for a minimum of 1 hour at 1.5 times the normal working pressure or equal to the shutoff head of the pumps. The force main discharge pipe shall be temporarily extended into the discharge manhole where a DIMJ cap (or other appropriately pressure rated cap) with pressure gauge can be installed. Once the line passes pressure testing, the pipe can be cut flush with the manhole.

M. At pumping capacity, a minimum line velocity of two feet per second shall be maintained.

N. The maximum line velocity shall be eight feet per second.

O. Force main shall terminate in manhole with its centerline elevation set as to ensure a smooth transition to gravity flow. The design shall be such as to prevent turbulence. (See Standard Detail No. 13)

P. All pipe used for force mains shall be pressure type with pressure type retrained joints.

SEWAGE PUMP STATIONS

GENERAL

A. All previous specifications still apply. This section is intended to expand upon certain portions of the design of sewer systems by DEVELOPER.

B. Design of the sewer pump station shall be such that it is a complete and fully functioning system prior to CTUB acceptance. Design of wet wells shall be such that they are not excessively deep. In general, the maximum wet well depth shall be 30 feet unless otherwise approved by CTUB. DEVELOPER shall layout proposed sewer system such that it minimizes the number of Pump Stations. If the subject site can accommodate one pump station, DEVELOPERS engineer shall design it as such. All drawing/design review, redesign and/or changes stemming from CTUB or its Consulting Engineers comments shall be paid for by the DEVELOPER. CTUB nor its consulting engineer claim any responsibility in the design of the sewer pump station. If it is determined by CTUB that the pump station is either over or undersized, it shall be redesigned and re-constructed by DEVELOPER.

C. Tops of all wet wells, vaults and electrical equipment shall be such that they are at least 1-foot above the 500-year flood per the latest FEMA Maps. All 100- and 500-year floodplains shall be clearly denoted on drawings. If H&H modeling is required to properly and adequately determine flood elevations, this shall be done so by DEVELOPER. Horizontal datum shall be based on NAD 83, vertical datum shall be based on NAD 88 (or latest versions). Pump stations shall not be located in or installed within 50 feet of any delineated wetlands or streams.

D. All temporary and permanent stormwater and E&S facilities that are designed and constructed for purposes of the pump stations are solely the responsibility of the DEVELOPER to install and maintain.

E. DEVELOPER/contractor is solely responsible for all construction means, methods, techniques, temporary controls, sequences, schedules, procedures and safety protocol.

F. All pump station design calculations including pump and wet well sizing, buoyancy, headloss, EDU counts, etc. shall be submitted to CTUB for review. All calculations and drawings shall be signed and sealed by a licensed WV professional engineer.

G. All fees such as but not limited to legal, administrative, land, easements/ROWs, permits, utility, state, county, taxes, insurance, professional, review, inspection, etc. associated with the project shall be fully paid by the DEVELOPER. All such documents shall be turned over to CTUB prior to takeover.

H. During the construction phase, all project submittals pertaining to the sewer system shall be submitted electronically to CTUB for review and approval prior to ordering materials. CTUB has the right to reject any and all submittals which do not apply with their standards and/or do not meet the expected quality. Any material found which is not in compliance with CTUB standards shall be replaced by DEVELOPER at their costs.

I. Industrial Users (IU's) shall be responsible for all required pretreatment prior to discharging to CTUB including but not limited to screening, grit removal, solids reduction, removal of volatiles, FOG, PFOA/PFAS, etc. These specifications do not include industrial type facilities. These would require additional permitting and requirements per WVDEP and CTUB.

J. The Sanitary sewer system shall be for sanitary sewer flow only. Any and all storm lines, French drains, gutters/downspouts, sump pumps, etc., shall NOT be tied into the sewer system. If any of these instances are ever found to be present by CTUB, they shall be properly fixed by the DEVELOPER within 30 days.

K. Burying and/or paving over of manhole covers, valve box covers, vaults, etc., is strictly prohibited. DEVELOPER shall be fully responsible for assuring that this does not happen at any time during construction and/or following turnover to CTUB. If future development or grade changes, DEVELOPER is responsible for installing all necessary risers and/or extensions.

DESIGN

A. Design flows in gallons per day shall be taken from the Usage Equivalents for Multiple Residential or Non-residential Capacity Impact Fees table. Refer to Table 64-47-B. - Minimum Design Loadings for Sewage Treatment per the DHHR Design Standards. Consult with CTUB prior to design for any design flow assumptions.

B. Pump Stations shall be sized accordingly for all flows both current projected and future. Pumps shall NOT be oversized for future flows if they cannot be turned down (via VFDs) to meet the minimum or average daily demands. In this case, sufficient wet well volume, physical space in the wet well, larger or spare conduits, etc., shall be provided to allow installation of future additional pumps or larger pumps. The minimum force main design pipe velocity shall be 2.0 feet per second in all discharge lines. An infiltration allowance of 200 gallons per inch diameter per mile per day should be added to the pump station flow. The peaking factor used shall be 2.5-3 times the average daily flow.

C. DEVELOPERS engineer shall submit pump VFD curves for each flow condition at various speeds to confirm proper pump turndown at low flows and adequate flows with multiple pumps running simultaneously.

Drawing Requirements

1. All construction documents for sewer extensions/pump stations shall be prepared and submitted in accordance with the applicable State regulations and CTUB standards. The requirements outlined herein are to supplement the applicable State regulations (WV Health 64 CSR 3 and 64 CSR 77), and the more stringent shall govern.

2. DEVELOPER shall submit one electronic set of the construction documents and one copy of the pump station computations for review. A review will be made and the comments transmitted directly to the DEVELOPER and/or the Project Designer. Project Designer shall address all review comments, make the necessary modifications and return revised copies of the documents to CTUB for additional review. If necessary, a meeting will be scheduled at the CTUB office to discuss the construction documents.

3. Original drawings and their reproducibles shall be accurate, explicit, clear and legible to provide an accurate basis for review and construction. Drawing size shall be 24" x 36".

4. Drawings shall include a location map, a site map showing the extent of the project, an index of the sheets in the set of drawings, bench mark and control point descriptions and locations and description with plane of datum, and a legend.

5. A suitable north arrow shall be provided on all plan views. Graphic scales (both horizontal and vertical when applicable) shall be shown on each sheet.

6. Plan drawings shall consist of and/or show:

   a. The area to be developed with all property lines, all lot lines, all easements and all street rights-of-way, complete with property monuments and pins.

   b. Existing and proposed contours, features and utilities.

   c. Sewer extension and appurtenances (shown as symbols). Sewer extension shall be stationed continuously from point of connection to the existing system or point of origin.

   d. Reference data to be shown on each drawing shall include: (1) the center-line stationing of all streets with tick mark and station label at 100 ft. intervals; (2) station equations at each street intersection; (3) referenced benchmark and description located within 500 ft. of the sheet limits; and (4) 1–2-foot contour intervals labeled at the ten-foot interval. Where the sewer extension, appurtenances and easements are referenced to a survey baseline, this baseline must be shown and stationed.

   e. Easements shall be provided for sewer extensions and shall be located to maximize current and future utilization of the adjoining property. Easements shall show survey and alignment data and shall be dimensioned. Minimum easement width shall be 20 feet with the sewer main and/or appurtenance located in the center of said easement (30 feet for parallel lines). For dead-end mains, manholes, blow-offs, and similar appurtenances, the easement shall extend full width perpendicular to the centerline of the mainline extension and shall extend a minimum of 10 feet beyond the limits of the appurtenance.

   f. Service connections to buildings shall be located water up-grade and sewer down-grade from the building.

   g. Proposed, typical street cross-section showing the location of all utilities to be installed in the project.

   h. Provide landscape plan drawings. No trees or shrubs shall be planted within ten (10) feet of any force main or gravity sewer line.

7. Profile drawings shall consist of and/or show:

   a. Existing and proposed features and utilities.

b. A continuous profile of the proposed sewer extension showing existing ground surface and finished roadway center-line grade for a proposed sewer main extension to be installed parallel to and within 15 feet of the center-line of the street. All other proposed sewer line extensions shall have the finished grade shown at the center-line of the sewer line extension.

c. All pipes (gravity and force main) shall be profiled showing all existing and proposed intersecting utilities along with existing and proposed grade elevations. Show utility clearances on the profiles. The linear feet distance of pipe to each manhole shall be indicated on profiles along with proper stationing.

d. Pipe size, specification, material and pressure class: EXAMPLE: 8" PVC SDR 35 Gravity, shall be shown on both plan and profile.

e. Main sewer line extension appurtenances shall be shown using a vertical leader at the station of location. Vertical lettering along the leader shall give the station and type of appurtenance.

f. The limiting pipe deflection where pipe joints are deflected.

g. Waterline, storm sewer, electrical and gas crossings and clearance from water main at water main crossings. A minimum of 18" of vertical separation is required between top of the sewer lines and bottom of the water lines. In no instance shall a sewer line be constructed overtop of a water line. A minimum of 10' of horizontal separation is required between parallel water and sewer lines.

8. Supplemental construction specifications shall stipulate and describe any construction material, special structure, equipment, or any other work not covered by the Construction Standards.

9. All proposed sewer line extension projects shall be referenced to the West Virginia State Coordinate System. A minimum of 2 reference points will be required for each project or 1,000 feet of sewer line extension.

- West Virginia State Coordinates shall be given for each reference point. The reference point shall be a significant point on the sewer line extension or the intersection of streets within a subdivision or land development.

10. All laterals and lateral connections shall be indicated on the plan drawings and profiles. All cleanouts shall be indicated on the plan drawings and profiles. All manholes shall be labeled/identified on the plan and profile sheets. Identify which manhole frames and covers are to be watertight on both plan and profile.

11. All applicable CTUB standard details and notes shall be included on the contract drawings.

Pump Station Site Layout (See Standard Detail No. 33)

1. A minimum 12' wide stabilized or paved access roadway to the pump station shall be provided with appropriate drainage and stormwater. All culvert pipes used shall be either HDPE or concrete, galvanized steel pipes are strictly prohibited.

2. Landscaping shall be planted as necessary or determined by CTUB or the DEVELOPER. Maintenance of any landscaping shall not be the responsibility of CTUB.

3. Site shall be surrounded by an 8' high black vinyl coated chain link fence topped with three strands of barbed wire in a V-shape. Chain link fence shall have plastic slats installed from the same side of the fence to provide 80% opacity. A double swing manually locked entrance gate shall be provided that is equal to the access road width. At least one (1) lockable 3' man gate shall also be provided. (See Standard Detail No. 35)

4. Minimum distance from fence to any equipment pad, building, or structure shall be 5 feet with sufficient space left for an emergency generator and/or bypass pump configuration. Entire inside area of fence, including a 1-foot-wide mow strip around fence shall feature geotextile fabric and a minimum 6" of crushed stone subbase or pavement. Entire inside area of fence shall be graded level. Top of wet well, valve/meter vaults and concrete pads/buildings shall be at least 6" above finished grade.

5. A non-freeze yard hydrant shall be provided near wet well where potable water line is in the site vicinity. A backflow preventer with isolation shutoff valves in a precast concrete vault is required on the line leading to the hydrant. (See Standard Detail No. 34)

6. All pump stations 150 GPM or less shall have an automatic transfer switch and a permanent emergency generator located on a concrete pad. Generator shall be sized to run all pumps at 100% speed.

7. In lieu of an emergency generator, all pump stations greater than 150 GPM shall feature installation of a permanent Godwin (Xylem) DBS Dri-Prime Backup Pump Station in lieu of a permanent generator. Station shall come with its own independent submersible pressure transducer and automatic pump VFD controller. Station shall consist of a fully enclosed single dry-prime pump/motor that is diesel powered with belly fuel tank. Contact Tom Vance with Xylem at 301-332-6457 for sizing, selection and startup services. Station shall include a permanent DI or SS suction line that is installed approximately 2' off wet well floor and tied into pump. A 10–20-foot piece of removable flexible hose shall connect the suction line to the pump above grade. Discharge line shall be permanently tied into force main with a check and plug valve prior to the flow meter. Standby station shall be installed on a reinforced concrete equipment

pad. Fuel tank shall be filled by DEVELOPER/Contractor prior to turn-over to CTUB including copy of receipt.

8. A combined influent flow manhole shall be provided within the fence just prior to the wet well. This shall be used for any bypass pumping associated with the wet well.

9. DEVELOPER will be responsible for obtaining all temporary or permanent easements, driveway permits, DOH, stormwater/E&S permits, etc., as needed and they shall be transferred over to CTUB.

Wet Wells (See Standard Detail Nos. 29, 30, 31 & 32)

1. Wet wells shall either be constructed of precast concrete or FRP. Wet wells constructed of FRP are limited to 10' deep and 48" diameter.

2. All wet wells shall be designed and constructed for anti-flotation and calculations shall be included in the submission that include a minimum 1.2 FOS.

3. Minimum wet well diameter is 48 inches and shall include either an attached or separate valve vault. Bottom of wet well shall be grout sloped to pumps.

4. The minimum distance from the lowest pipe invert elevation to the high-level alarm float is 1.0 foot.

5. The wet well shall include a submerged pressure transducer with lightning arrestor located inside a 6" diameter PVC stilling well as the primary means of level control. A minimum of six (6) backup floats shall also be provided (high high-level alarm, high level alarm, lag pump on, lead pump on, both pumps off and low-level alarm). An independent float shall be tied into the pump controller. Floats shall be Roto-Float signal-duty float switches, SPST, normally open with internal weight.

6. The designer shall consider the minimum required submergence depth of the submersible pumps to set the low-level alarm. The volume below this low-level alarm shall not be included in the overall wet well usable volume calculations.

7. All supports and accessories shall be type 304 or 316 stainless steel and sized appropriately.

8. All wet wells shall feature passive vents with odor control system (Wager Company Model 2050-50) or approved equal.

9. Wet well shall feature lockable aluminum access hatches with safety grates.

10. Gravity drains with check valves from valve/meter vaults shall enter wet well.

11. A float hanger/support system shall be easily accessible and mounted just below the access hatches.

12. All piping entering wet well shall be sealed with stainless steel pipe sleeves and link seals.

13. Wet well inlet flows shall be designed to minimize pump cavitation to the maximum extent practical.

14. Inside drops shall be provided in wet well when applicable.

15. In some instances, stainless steel removable trash racks may be required as directed by CTUB.

16. Removable lifting cranes, hoists, and/or monorails, utilized to facilitate pump/trash rack removal are required. Lifting hoist shall be stainless steel with stainless steel hardware.

17. All pumps in excess of 25 HP shall be equipped with an onsite electric motorized overhead lifting jib crane to facilitate pump removal.

18. The entire interior concrete surface of all wet wells shall be lined with a special three (3) layer aromatic polyurea coating system. Coating system shall be two (2) coats of OBIC 1000 with 1306 middle layer or equal. Total minimum system dry film thickness shall be 500 mils (1/2 inch).

Protection Against Clogging

1. Larger pump stations, which CTUB deems to have a potential for clogging, shall have a comminutor vault (or manhole) directly after the inlet manhole for the station. The comminutor will be sized for the estimated peak hourly flow into the station. This is to prevent clogging issues associated with pumps and check valves which are prone to clogging. Consult with CTUB during the design phase to see if a comminutor is necessary.

2. The comminutor shall be designed to be easily removed from the flow channel without disturbing any piping connections.

3. The comminutor channel shall be designed to settle out grit upstream of the screening area.

4. Comminutors shall be designed for continuous operations and shall automatically restart after power failures.

5. The vault shall also be equipped with a stainless-steel bar screen (inline or as a bypass), so that the comminutor can be taken out of service for repair and maintenance. The clear openings on the bar

screen will not exceed 2.0 inches. In the event the comminutor must be taken out of service, stainless steel slide gates shall be provided to direct comminutor vault influent flow to a bypass bar screen.

6. The comminutor vault may be a precast concrete manhole provided it is large enough for equipment access and maintenance.

7. All lighting and electrical equipment shall be explosion proof inside the comminutor vault.

8. All lighting shall be LED and on a switch near the entrance.

9. An emergency stop button shall be provided in the comminutor vault for the comminutor.

10. When a generator is provided, the comminutor shall be connected to the generator.

Pumps and Discharge Lines

1. All pumps shall be submersible type with explosion proof motors. A minimum of two (2) pumps shall be provide with one (1) pump being fully redundant. For sewage pump stations with more than two pumps, with the largest pump out of service, the remaining pumps must be able to pump the design peak flow.

2. Pumps 2.0-10 HP (typically pumps 125 GPM or less) and smaller shall be grinder pumps as manufactured by FE Meyers and be the VS or WG Series or latest edition as approved by CTUB. At a minimum, pump stations are required to have one (1) primary pump to be sized to handle peak flow, and one (1) fully redundant pump with separate discharge line. Triplex pump stations are discouraged. Fiberglass basins are approved for pump stations 2.0 HP or smaller. Pumps shall pass a minimum of a 2" sphere.

3. Pumps greater than 10.0 HP shall be Grundfos SL/SE/S Series or latest edition as approved by CTUB. These stations shall be precast concrete construction. Minimum wet well volume is 210 gallons per vertical foot for designs with less than 300 GPM pumps and 376 gallons per vertical foot for pumps over 300 GPM, and 587 gallons per foot minimum for pumps greater than 700 GPM.

4. All pumps greater than 2.0 HP shall be placed on variable frequency drives sized appropriately for the maximum amperage draws. Input and output filters may be required as directed by CTUB.

5. All pumps shall contain stainless steel guiderails, stainless steel top rail brackets, stainless steel intermediate guide rail brackets, stainless steel lifting chains and ANSI flanged base assemblies of adequate size for the pump.

6. All pump discharge piping inside wet well and vaults shall either be Schedule 40 stainless steel or minimum Class 52 double cement lined ductile iron unless otherwise approved by CTUB.

7. Pressure gauge assemblies are required on the discharge line of each pump. The assembly shall be equipped with a ½"-1" process connection, SS isolation ball valve, SS diaphragm seal, 4.5" gauge and an aluminum wall support with SS connection hardware.

8. Sewerage air release valve assemblies are required on all individual pump discharge lines.

Valves/Meters and Vaults (See Standard Detail Nos. 28, 29, 30, 31 & 32)

1. Above grade valve vaults are strictly prohibited. All valve vaults shall be below grade. Valve vaults shall either be FRP or precast concrete construction depending on type and size.

2. All valve vaults and wet wells shall have a minimum of a 36" x 36" aluminum watertight hatch with safety grating. Designer shall ensure that all proposed pumps and future larger pumps will fit through proposed hatch openings. FRP or aluminum ladders with safety up-posts are required for all valve/meter vaults. Manhole steps are prohibited.

3. All valve vaults shall feature an eccentric flanged plug valved and Bauer type fitting emergency bypass line.

4. All pump stations in excess of 30 gpm shall feature a combined magnetic flow meter with digital transmitter as manufactured by Krohne Enviromag 2000 flowtube with IFC 050 or 100 converter. Flow tube shall be installed inside a vault with appropriate number of straight run pipe diameters upstream and downstream. Remote mounted flow converter is generally installed inside pump control panel. Flow meter shall have 4-20mA and pulse output.
5. A buried plug valve with valve box is required immediately downstream of the flow meter for isolation purposes.

6. Each pump discharge line shall have a check valve. All check valves 3" in diameter and larger shall be American Flow Control 2100 Series with flushing connection, resilient seated type. Weighted check valves are strictly prohibited.

7. All valves 3" and larger shall be ductile iron body, full-port, flanged, eccentric gear operated plug valves with operating wheels as manufactured by Dezurik or equal. A plug valve is required after the check valve on each discharge line.

8. Pressure gauges with SS isolation valves shall be provided on each pump discharge line.

9. A pump station bypass/emergency connection is required at each station either after valve vault or within valve vault. Connection to

include plug valves, fittings and a stainless-steel female Bauer type camlock fitting with cap (same line size as pump discharge lines in vault).

10. Restrained flanged coupling adapters are required at all valves and meters to facilitate replacement.

11. All hardware shall be Type 304 or 316 stainless steel including pipe supports.

12. All exposed ductile iron piping and fittings shall be primed and painted with 8 mils minimum of epoxy with direction of flow arrows.

13. Meter and valve vaults shall be grout sloped to a gravity drain. In cases where no gravity drain is possible, a recessed sump pit is required.

14. Restrained type couplings are required within 5 feet of all meter and valve vaults on all lines to account for differential settlement.

15. Meters and vaults shall be placed on a minimum 6" of compacted crushed stone.

Electrical

1. DEVELOPER is fully responsible for providing power to pump station site.

2. All power to the pump stations shall be 3 Phase, 208, 240 or 480 Volt unless otherwise approved by CTUB. If 3 Phase power is not available, DEVELOPER shall be responsible for providing VFDs and transformers to achieve 3 Phase power for pumps. Single phase pumps are strictly prohibited, except for instances using a 2 HP or smaller grinder pump station where 3-Phase power is not readily available. Engineer/DEVELOPER must verify voltage availability with utility provider prior to submission.
3. Local pump disconnects shall be provided independently for all pumps.

4. Conduit/wireways shall be designed such that sewer gases do not enter electrical enclosures. This involves stainless steel screened/caged air gaps.

5. A means of disconnecting the pump cables at the wet well shall be provided in all cases to facilitate pump removal. The junction box shall be freestanding and mounted on a stainless steel Kindorf assembly. CHICO type conduit packing is strictly prohibited. (See Standard Detail No. 37)

6. All wooden backboards, sheathing, framing, posts, etc. shall be pressure treated.

7. Electrical support structures shall be stainless steel, aluminum or FRP. Galvanized or carbon steel items are prohibited.

8. In general, all electrical panels/equipment shall be covered by a minimum 3 feet on all sides with an aluminum standing seam metal roof structure with aluminum gutters and downspout. (See Standard Detail Nos. 40, 41 & 42)

9. A minimum 4" thick reinforced concrete pad shall be provided beneath the canopy/pavilion.

10. Under canopy/roof LED lights and weatherproof GFCI service receptacles are required.

11. Minimum conduit size shall be ¾". In general, all conduit from control panel to junction box shall be oversized by a factor of 2 to allow for larger future cables. Spare conduits are also required.

12. All enclosures and control panels shall be NEMA 4X stainless steel construction.

13. The transfer switch will be fully automatic with the ability to sense a -phase loss condition and switch to the generator power system with a minimum time delay. When a phase loss condition occurs., the transfer switch will move to the neutral position to check for emergency or commercial power voltage.

14. The station's power supply shall be protected from power surges. The surge protector for the station shall be adequately sized to protect all equipment and have at least a 250kA rating.

Controls

1. Pump stations with 25 HP pumps and smaller shall use the Primex View Controller. Pump stations with pumps 25 HP or larger shall be controlled by means of a Programmable Logic Controller (PLC) which monitors a level transducer. The PLC can be included in the HMI. The PLC shall be programmed to turn the pumps on or off at various levels in the wet well. The secondary method of level control will be floats. CTUB will require six (6) Roto-floats that report the following alarms through the remote monitoring system:
   a. High High-level wet well
   b. High-level wet well
   c. Low-level wet well
   d. Lag Pump on
   e. Lead Pump on
   f. Both Pumps off

   The level transducer shall be hydrostatic submersible type as manufactured by ProSense model number NFLT-015-L60 with protective spacer accessory or equal. It shall be installed inside of a stilling well to limit the agitation to the level transducer. A stilling well shall be 6" diameter SCH 40 PVC pipe with 4-1" diameter holes drilled around the top of the well (to stop a vacuum from occurring), and 4-2.5" diameter holes drilled every 6" of length from 3" off the bottom

of the pipe to the “pump on" elevation to allow for liquid to enter the well. The stilling well shall run from the top of the wet well to 6" off of the bottom of the wet well.

2. Check valve limit switch telemetry shall be used for pump failure logic.

3. A local elapsed run time indicator will be provided for each pump.

4. A press-to-test circuit will be provided for the control panel indicator lights.

5. All stations shall be equipped with a remote monitoring and telemetry system shall be OMNISITE Crystal Ball Remote Telemetry Unit capable of alarming via text message, email and phone call. Duplex and triplex configurations shall be thoroughly incorporated into the pump controls and monitoring equipment.

6. All stations shall have the following alarms connected to the remote monitoring system:

   a. Commercial power failed
   b. Generator/Emergency pump power failure
   c. Check valve failed
   d. Generator/Emergency pump running
   e. Generator/Emergency pump fuel low
   f. Backup controller running
   g. UPS alarm

7. Controller shall be View Series Dedicated Pump Controller by PRIMEX.

8. The following minimum electrical components are required in the pump station controllers: Transformers, terminal blocks, incoming power surge suppression system, circuit breakers, power supply, control relays, selector switches, push buttons, variable speed pump controller, backup float controller, pilot lights, elapsed time meters, anti-condensation heater, cooling fans and thermostat, pump seal and thermal failures and relay alarms, voltage/phase monitoring relays, 5.7" minimum touch screen HMI, auxiliary contacts and VFD bypass around each pump. VFDs with line reactors shall be provided for each pump greater than 2.0 HP and shall be installed inside pump control panel or other NEMA 4X enclosure or temperature-controlled building.
9. All monitoring points shall have digital and analog outputs on a terminal strip within the control panel.

Lighting

1. Adequate lighting will be provided throughout the station.

2. All lighting fixtures shall be LED, at least 400K color.

3. All lighting fixtures shall be rated for the environment in which they are installed.

4. There shall be no lights in the wet well in submersible pump stations.

5. At least one LED flood light installed on a 15' tall post shall be installed in the parking area of the pump station to shine light on the hatches. The light shall automatically come on at dusk and automatically shut off at dawn. In dense residential neighborhoods, CTUB may approve a motion sensor with an on/off switch for time when actual work is taking place.

Pump Station Startup/Testing

1. A representative from the pump, controls, generator and dry-prime pump system manufacturers shall all be present concurrently in the presence of CTUB for startup and testing of the system. The pumps shall be tested and documented for rotation, voltage and amp current draw. The pumps shall be operated at various speeds with documented flow rates in GPM. Both or all pumps shall also be tested simultaneously to confirm proper working condition and to verify the flow rate with both/all pumps running. The VFDs shall be started up and adjusted accordingly for proper acceleration/deceleration, ramp up speed, alarms, etc. The pumps shall run to maintain a level in the wet well. The pump station shall be tested for loss of incoming power with all standby equipment automatically turning on and maintaining pumping operations. All level sensors and flow meters shall be calibrated and scaled correctly. A written startup report shall be provided to CTUB. CTUB shall be properly trained on all new equipment, controls and instrumentation, including maintenance activities.

CONSTRUCTION INSPECTION

ACCEPTANCE TESTS

A. An acceptance test shall be specified for all gravity sewer lines by the contractor and test schedule communicated with CTUB's Utility Inspector. The test may be either a water test or an air test.

B. The contractor shall schedule all acceptance tests with the assigned CTUB Utility Inspector at least 48 hours in advance of testing.

1. Each section of completed sewer shall be tested.
2. Generally, the sewers shall be tested from manhole to manhole.

3. No sewers or building spur connections shall be excluded from this testing procedure.

C. All sanitary sewers, including manholes, shall be inspected prior to acceptance testing using visual, television test, light test or other approved methods. Prior to this inspection, any trench dewatering pumps shall be

disconnected and any noticeable trickle or leakage shall be corrected and eliminated prior to undertaking the acceptance test.

D. Acceptance tests shall not be made until the sanitary sewer, manholes and required building spurs, as shown on approved construction plans, have been installed, the sewer trenches backfilled to finish grade and compacted within easement areas and base paved in right of ways and easement areas.

E. Inspection approval will not be issued for any newly constructed sewer line until the sewer line and the lateral have undergone and successfully completed acceptance testing as required by this Manual and as required by State regulations. Acceptance testing shall insure that the sewer construction conforms to all applicable criteria and specifications.

F. Television inspection shall not be used in lieu of specified acceptance testing. Television inspection will be utilized at the conclusion of acceptance testing to locate deficient areas of construction. Base pavement must be in place prior to TV inspection.

G. Structural repairs to pipe (i.e., holes, bellies, or slipped joints), required as a result of acceptance tests, shall be made in accordance with the industry standards and guidelines of this manual.

H. The contractor shall furnish all equipment and materials necessary to perform these tests. All acceptance tests shall be conducted by the contractor in the presence of the CTUB's Utility Inspector.

AIR TESTING (Preferred Method)

1. Air test methods and acceptability criteria shall be in accordance with the appropriate ASTM specifications. Air testing shall generally be acceptable for all types of pipe materials.

2. The contractor shall thoroughly clean and remove all debris, silt, earth, or other material from the sewer prior to acceptance testing. The pipe may be flushed or sprayed with water to facilitate this process. This water, including debris, shall be pumped and disposed of properly. Under no circumstances shall it be allowed to enter the existing sewer.

3. Test plugs shall be supplied and installed by the contractor within the pipe at each manhole or at suitable locations to test a section of the pipe. Each plug shall be securely braced.

4. If the pipe to be tested is expected to be below the ground water table, the contractor shall either:
   a. Install a small diameter perforated vertical pipe from the invert elevation of the sewer to the surface prior to backfilling, or

   b. Insert a pipe probe by boring or driving into the backfill material adjacent to the invert elevation of the pipe, and

determine the depth of the ground water level above the pipe invert immediately prior to acceptance testing the sewer.

5. All gauge pressures in the test shall be increased by the amount of this back pressure due to ground water submergence over the end of the probe. In no case shall the starting test pressure exceed nine pounds per square inch.

6. The contractor shall add air slowly to the portion of the pipe under test until the internal air pressure is raised to four pounds per square inch greater than the average back pressure of any ground water above the invert of the pipe.

7. The contractor shall allow the air temperature to stabilize for at least two minutes to ensure accurate gauge pressure reading, thereafter adding only the amount of air required to maintain the four (4) psi pressure.

8. Pipe which fails to maintain the stipulated pressure for a minimum of four (4) minutes shall be deemed to have failed to pass the low-pressure air test and is unsatisfactory for acceptance by CTUB. Any sewer or house connection that fails to pass this test shall be repaired by the contractor. Following corrections, the sanitary sewer shall be retested in accordance with the above procedures.

9. As a safety precaution, no one shall be allowed in a manhole after the air pressure is increased in the sewer line. If the CTUB Utility Inspector suspects that the test plug may be leaking, the pressure first shall be relieved before any adjustments are made to eliminate air leakage at the plug. The contractor may precoat the plug with a soap solution to check the plugs for leakage.

10. For accuracy and safety precautions, air tests shall be limited to the diameters of pipe and lengths of pipe indicated in the previously referenced air test timetable.

11. Pressure gauges used in the air test procedure shall have a minimum four- inch diameter face, a range of zero to ten psi, shall be calibrated in divisions of 0.10 pounds per square inch, and have an accuracy of plus or minus one percent.

12. For air testing pipes of larger diameter than 36 inches, a thorough visual inspection shall be required and all joints shall be tested with a special joint testing device such as the Cherge "Joint tester" System, or approved equal. Testing procedure shall be as recommended by the manufacturer.

13. If air testing is employed, the manholes shall be tested by exfiltration.

a. Inflatable stoppers shall be used to plug all lines into and out of the manhole being tested.

b. The stoppers shall be positioned in the lines far enough from the manhole to ensure testing to those portions of the lines not air tested.

c. The manhole shall then be filled with water to a level four feet above the top of the pipe. A 24-hour soak shall be allowed.

d. Leakage shall not exceed one-half gallon per hour. Manholes determined to be or suspected of poor-quality jointing or construction practices by CTUB, shall be tested to the top of the manhole and repaired as necessary.

WATER TESTING (Only Used if/when preapproved by CTUB)

1. Where water testing is specified (infiltration or exfiltration), the leakage inward or outward shall not exceed 100 gallons per inch of nominal pipe diameter per mile per day (2,400 gpd/mi maximum) for any section of the system including manholes.

   a. The exfiltration test may be permitted by CTUB. When permitted, the line shall be subjected to a minimum of four feet of head, or head based on filling to the top of the manhole with water, whichever is the lesser, above the crown of the pipe at the upstream manhole of the section being tested.

   b. All service laterals, stubs and fittings into the sewer lines being tested should be properly capped or plugged, and carefully braced to resist the thrust actions developed by the internal water pressure.

2. The upper manhole standpipe must be capable of handling from five to ten feet of water head to determine the tightness and soundness of the sewer line, as specified and directed by the CTUB Utility Inspector.

3. Water shall be introduced into the line at the downstream manhole until the standpipe in the upstream manhole has been completely filled. Care must be taken to minimize entrapped air by filling the pipe slowly.

4. After filling with water, the line must be allowed to stand for a minimum of 12 hours before beginning the test. After the water absorption has stabilized, the water level in the standpipe must be checked and water added if necessary.

5. After assuring stabilization, the drop in the standpipe shall be measured and recorded over a ten-minute period. The measured drop must be converted to leakage in terms of gallons per inch

diameter per mile per day.

6. Caution shall be taken conducting exfiltration tests on sewer lines laid on steep grades. Consideration must be given to the downstream portion of the system to prevent excessive pressure in these lower lines.

VACUUM TESTING OF MANHOLES

1. In those specific instances where a manhole is constructed or reconstructed astride an existing and active sewer line, and where conventional exfiltration would require pumping of the existing sewage flows around the newly constructed manhole, vacuum testing of the manhole may be authorized by CTUB.

   a. This test method is only applicable to precast concrete manholes.

   b. Manholes should be tested from the frame down after the base course is placed.

   c. Stub outs, manhole boots, and pipe plugs shall be secured to prevent movement while the vacuum is drawn.

   d. Installation and operation of vacuum equipment and indicating devices shall be in accordance with equipment specifications for which performance information has been provided by the manufacturer.

   e. A measured vacuum of 10 inches of mercury shall be established in the manhole. The time for the vacuum to drop to nine inches of mercury shall be recorded.

   f. Acceptance standards for leakage shall be established from the elapsed time for negative pressure change from ten inches to nine inches of mercury. The maximum allowable leakage rate for a four-foot diameter manhole shall be in accordance with the following:

Manhole Depth	Minimum Elapsed Time for a Pressure Change of 1 inch Hg
10 feet or less	60 seconds
>10 feet but < 15 feet	75 seconds
>15 feet but < 25 feet	90 seconds

   g. For manholes five feet in diameter, add an additional 15 seconds and for manholes six feet in diameter, add an additional 30 seconds to the time requirements for four-foot diameter manholes.

   h. If the manhole fails the test, necessary repairs shall be made

and the vacuum test and repairs shall be repeated until the manhole passes the test or the manhole shall be tested in accordance with the standard exfiltration test and rated accordingly.

i. If a manhole joint mastic is completely pulled out during the vacuum test, the manhole shall be disassembled and the mastic replaced.

DEFLECTION TESTING OF PVC PIPES

1. Prior to acceptance of a PVC sanitary sewer line, the pipe shall be thoroughly flushed and cleaned. The deflection testing shall be conducted by using a closed-circuit television (CCTV) camera truck provided by the DEVELOPER. If the CCTV shows standing water due to sags, the contractor will be required to correct the problem. At times, a mandrel test may also be required if the CCTV indicates excessive pipe deflection.

CTUB APPROVED MATERIAL LIST

The design engineer shall follow the Approved Materials List when specifying materials and equipment with the following additions and exceptions:

Suction Lift Pump:	Gorman-Rupp Co.
Submersible Pumps:	Grundfos (large) F.E. Myers (small)
Comminutor:	Franklin Miller or JWC
Magnetic Flow Meter:	Krohne Enviromag 2000 flowtube with IFC 050 or 100 converter.
Swing Check Valve:	American Flow Control 2100 Series
Generator:	Cummins, Cat or Kohler
Submersible Level Transducer:	ProSense NFLT-015-L60 with protective spacer
Backup Floats:	Roto-Float, SPST, normally open with internal weight
Wet Well Lining System:	OBIC 1000 with 1306
Automatic Air Release Valve:	Val-Matic or DeZurik
Surge Relief Valve:	GA or DeZurik
Hatches:	Halliday or Bilco

STANDARD DETAIL INDEX:

NOTE:

* INDICATES 11X17 SHEET

Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
PHONE: (304) 725-2316 FAX: (304) 725-4313

STANDARD DETAIL INDEX

STANDARD DETAIL NO.
S-INDEX

NOT TO SCALE

JULY 2025

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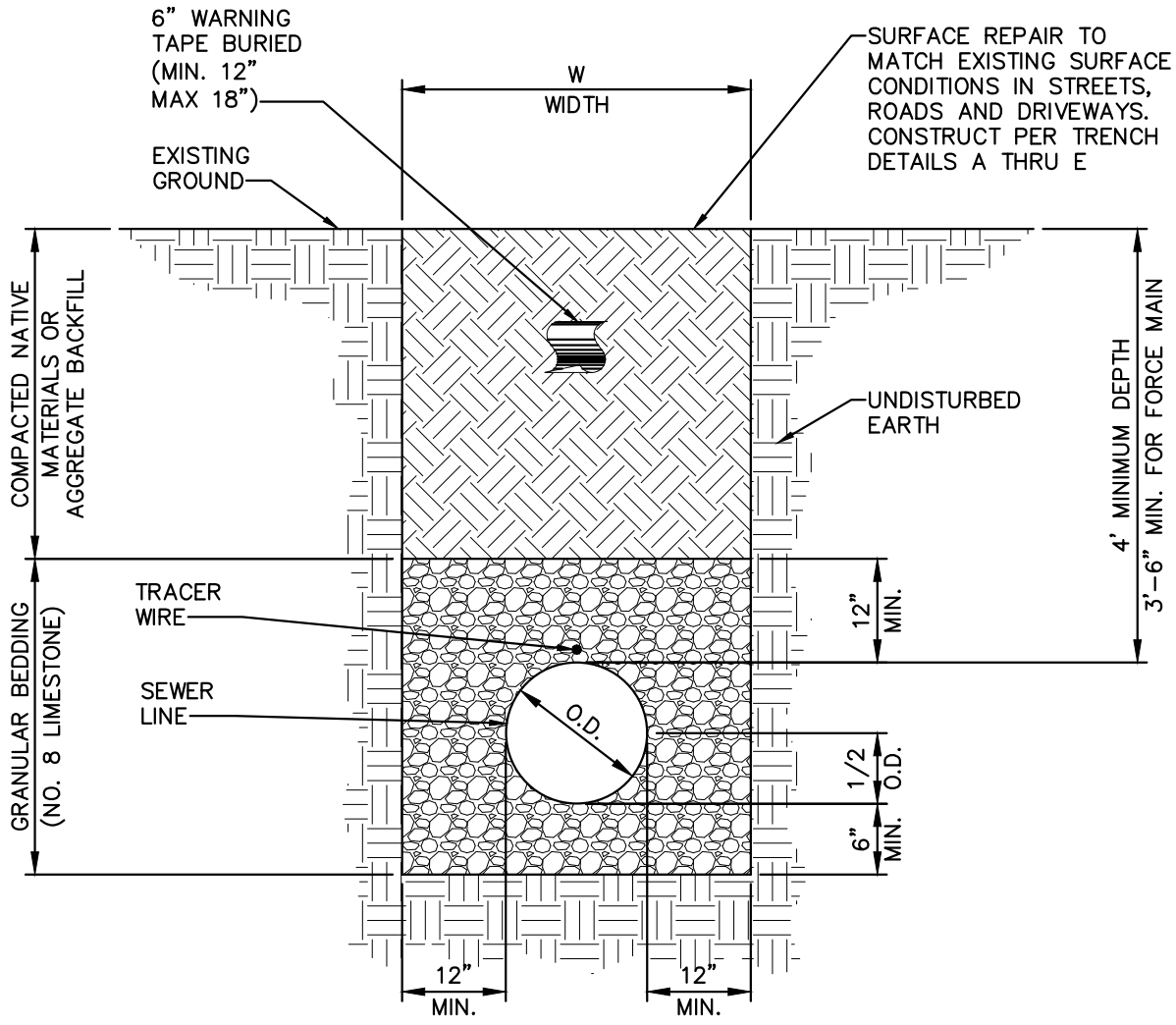

NOTES:

1. W = MAXIMUM PERMISSIBLE TRENCH WIDTH, BASED UPON, W = O.D. + 24", UNLESS APPROVED BY THE ENGINEER.
2. CONTRACTOR IS FULLY RESPONSIBLE FOR ALL MEANS, METHODS AND SAFETY FOR TRENCH EXCAVATIONS.
3. PROVIDE BEARING FOR FULL LENGTH OF BARREL, DIG HOLES FOR THE BELL.
4. BACKFILL ON SIDES TO 1/2 O.D. OF PIPE TO HOLD PIPE IN PLACE PRIOR TO PLACING ADDITIONAL BEDDING.
5. BACKFILL TO BE COMPACTED IN 6" LAYERS TO 95% OF MAXIMUM DENSITY (MODIFIED PROCTOR) AT OPTIMUM MOISTURE (+2%) IN ROADS AND STREETS. COMPACT TO MATCH EXISTING OR PROPOSED GRADE IN OTHER AREAS.
6. A CASING PIPE SHALL BE REQUIRED IN ROAD CROSSINGS WHERE SHOWN ON PLANS.

Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
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SEWER LINE TRENCH DETAIL

STANDARD DETAIL NO.
S-1

NOT TO SCALE

JULY 2025

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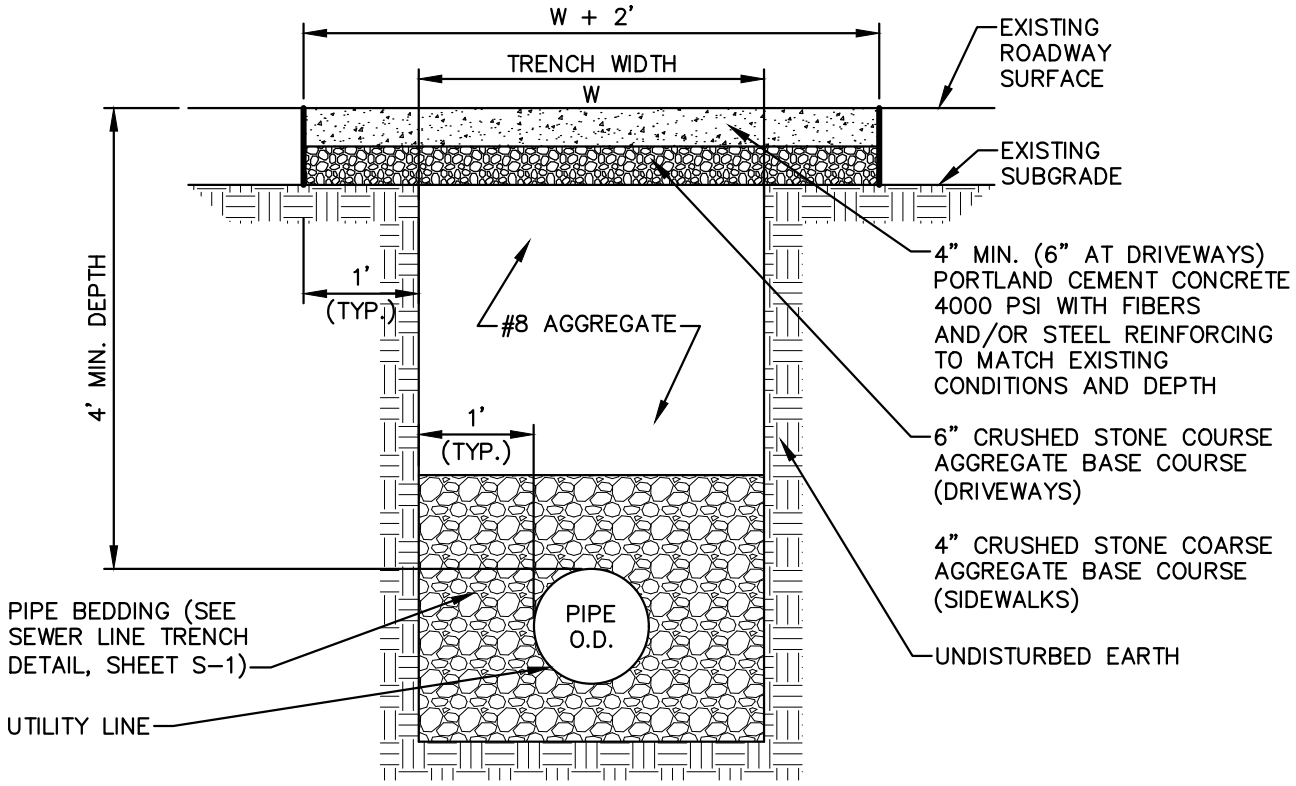
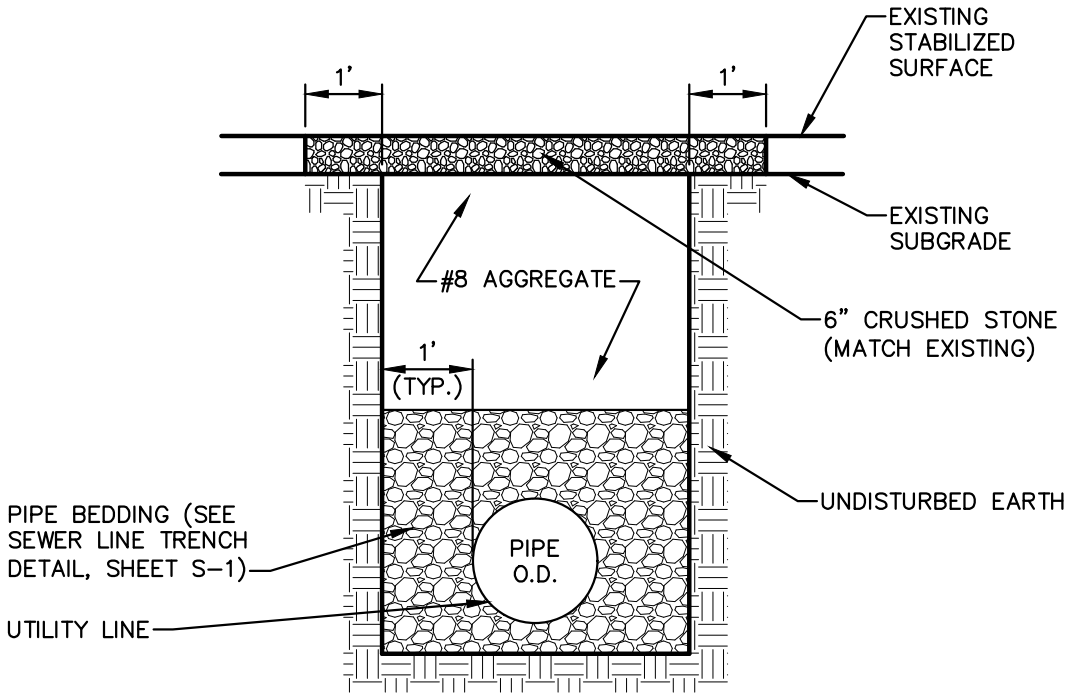


TYPE A
TRENCH REPAIR CONCRETE DRIVEWAYS AND SIDEWALKS



TYPE B
TRENCH REPAIR STABILIZED AREAS

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TYPE A AND B TRENCH REPAIR DETAILS

STANDARD DETAIL NO.
S-2

NOT TO SCALE

JULY 2025

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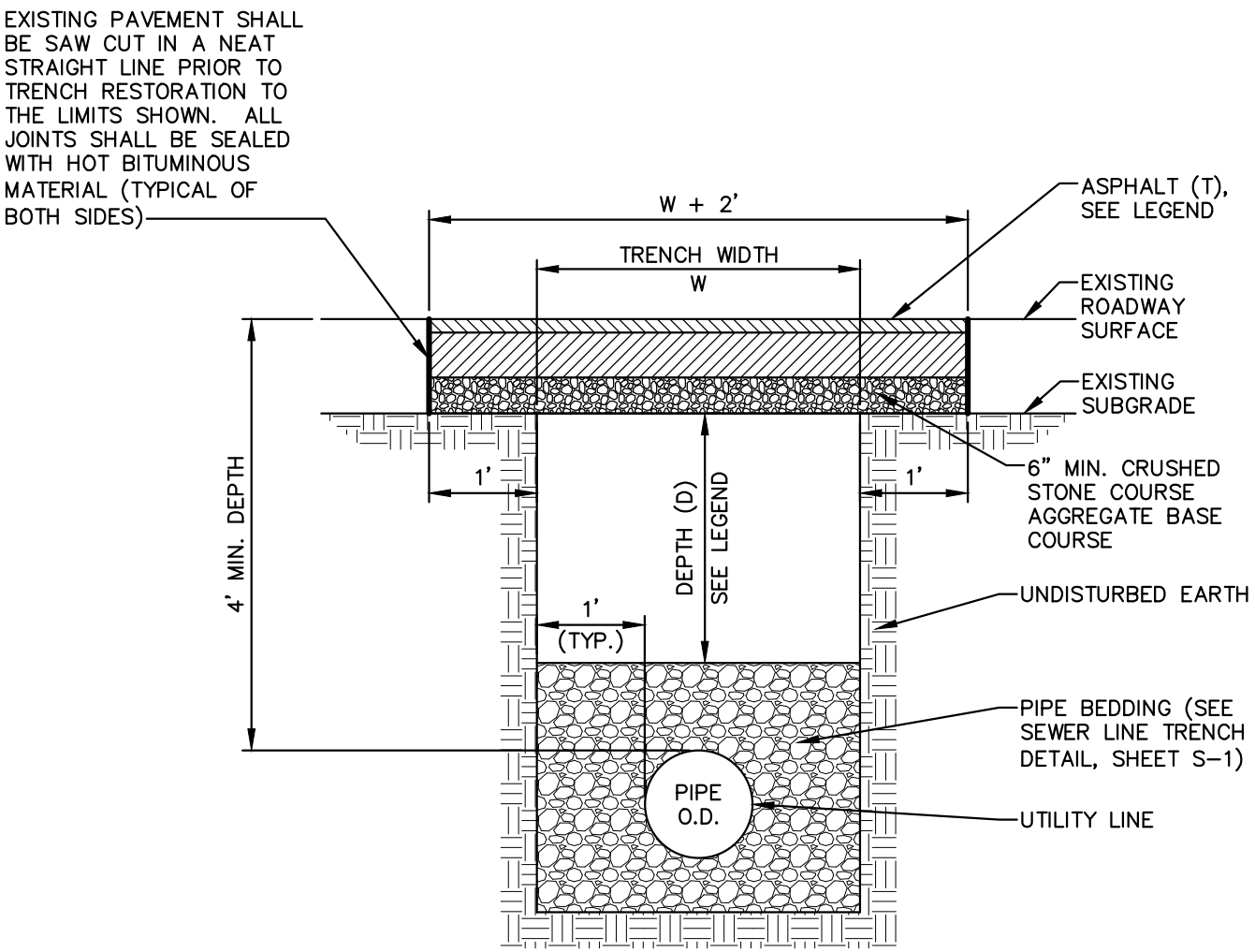

TYPE C
TRENCH REPAIR ASPHALT PAVEMENT

LEGEND:

(T) ASPHALT
6" STATE HIGHWAY – 4" BASE, 2" WEARING
4.5" CITY STREETS AND ALLEYS – 3" BASE, 1.5" WEARING
3" DRIVEWAY – 2" BASE, 1" WEARING

(D) DEPTH
PAVED STATE HIGHWAY – 6" LIFTS OF #8 AGGREGATE REQUIRED ABOVE BEDDING ZONE, OR FLOWABLE FILL IF REQUIRED BY WVDOH.
PAVED CITY STREETS, ALLEYS AND DRIVEWAYS – 6" LIFTS OF #8 AGGREGATE REQUIRED ABOVE BEDDING ZONE.

NOTE: IF MORE STRINGENT, PERMIT REQUIREMENTS SUPERCEDE ABOVE DEPTHS.

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TYPE C TRENCH REPAIR ASPHALT PAVEMENT DETAIL

STANDARD DETAIL NO.
S-3

NOT TO SCALE

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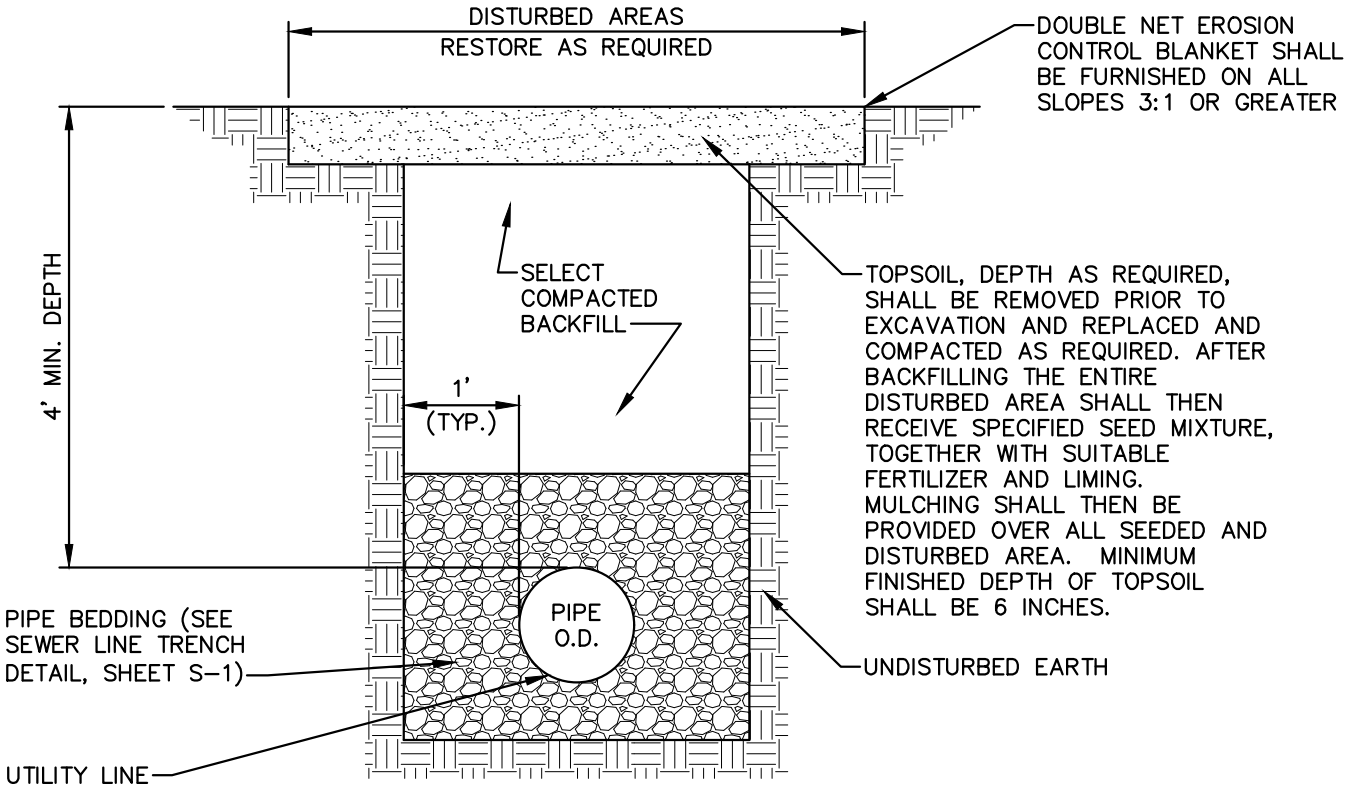

TYPE D
TRENCH REPAIR UNPAVED, GRASS, LAWN AND OTHER NON-STABILIZED SURFACES

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TYPE D TRENCH REPAIR DETAIL

STANDARD DETAIL NO.
S-4

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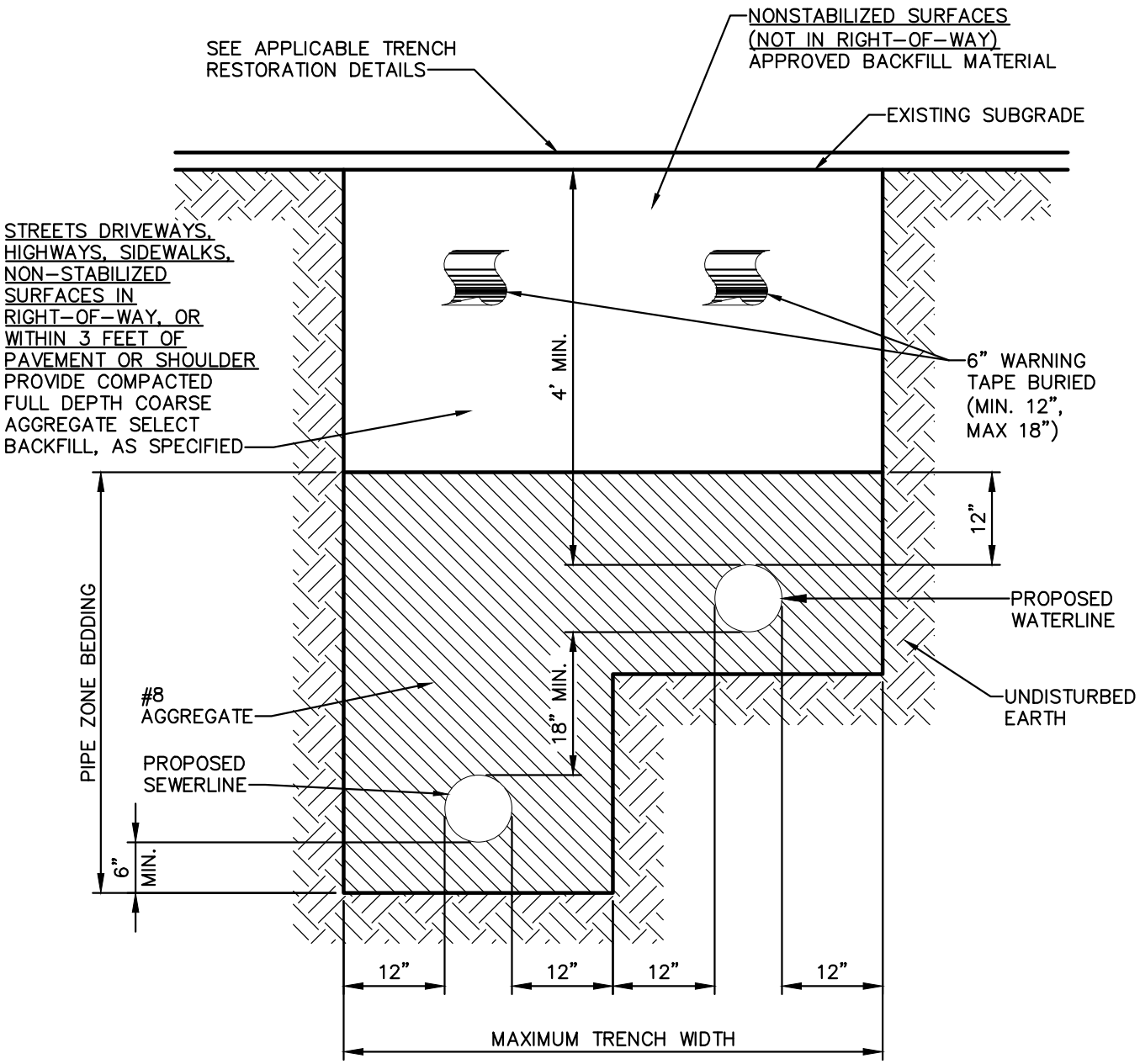

TYPE E
TRENCH REPAIR STEPPED
BACKFILLING AND PIPE BEDDING

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TYPE E TRENCH REPAIR DETAIL

STANDARD DETAIL NO.
S-5

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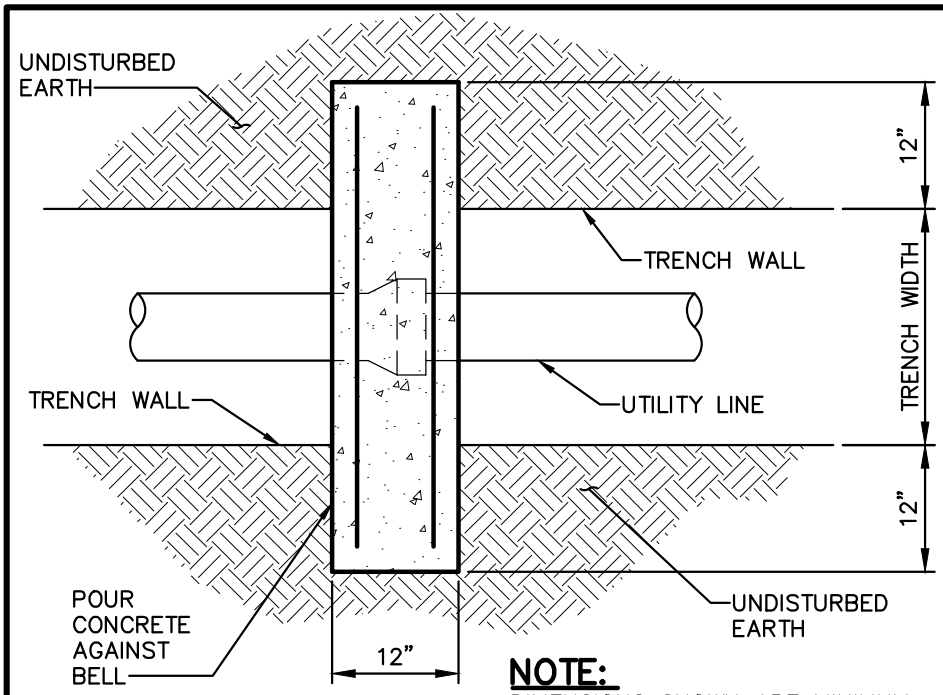
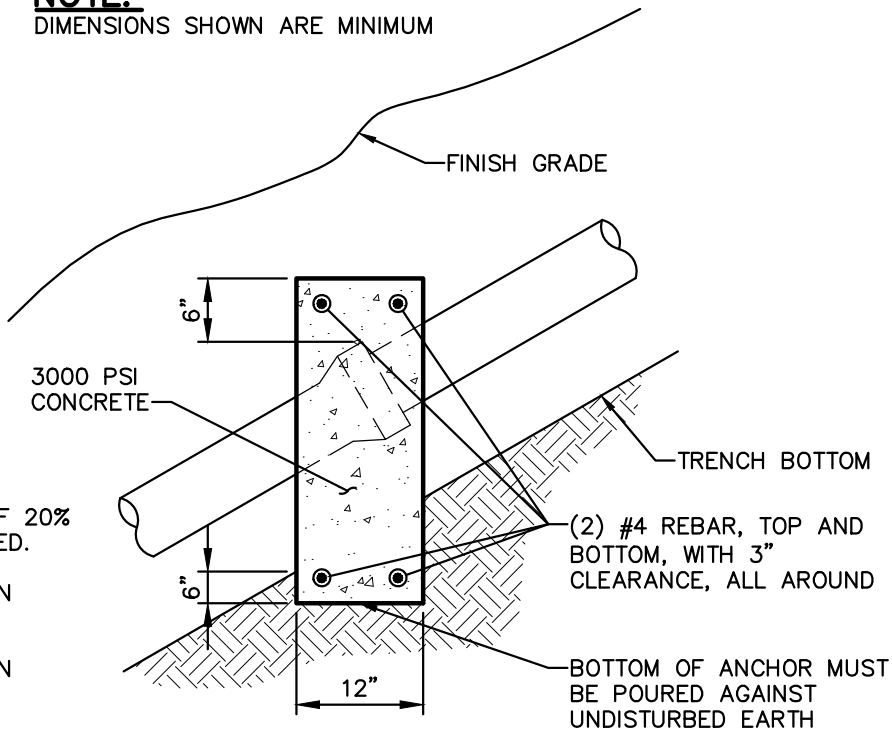


NOTE:
DIMENSIONS SHOWN ARE MINIMUM

PLAN



SECTION

NOTES:

1. PROVIDE ANCHORS ON GRADES OF 20% AND GREATER OR WHERE SPECIFIED.
2. PROVIDE ANCHORS 36 FT. O.C. ON GRADES BETWEEN 20% AND 34%.
3. PROVIDE ANCHORS 24 FT. O.C. ON GRADES BETWEEN 34% AND 50%.
4. PROVIDE ANCHORS 16 FT. O.C. ON GRADES 50% OR GREATER.
5. WHEN NECESSARY, EXTEND ANCHOR TO 12" BELOW FINISH GRADE TO PREVENT WASHOUT OF BACKFILL BY SURFACE WATER.
6. ANCHORS SHALL BE PLACED AT JOINTS NOT TO EXCEED O.C. DISTANCES.
7. CONCRETE ANCHORS TO BE PLACED AGAINST DOWNGRADE SIDE OF PIPE JOINTS.

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CONCRETE SLOPE ANCHOR DETAIL

STANDARD DETAIL NO.
S-6

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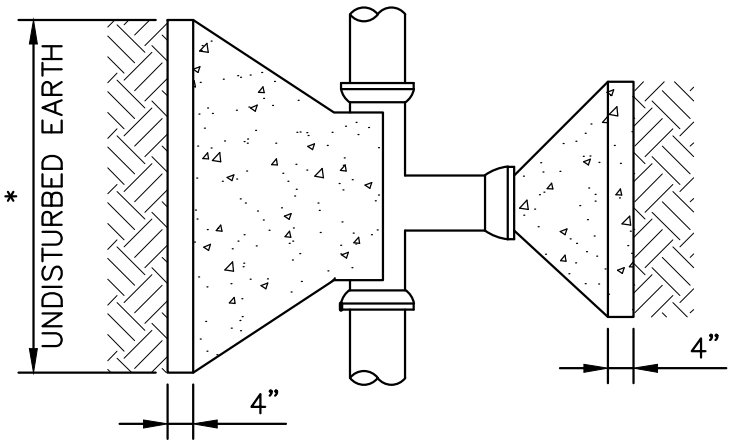
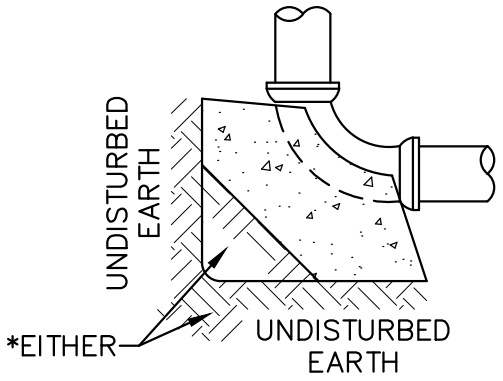
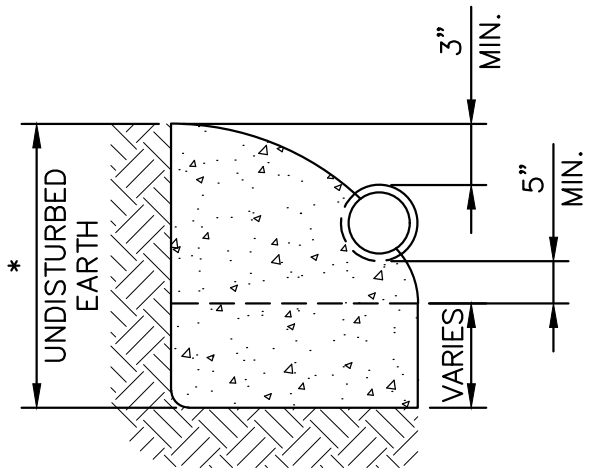


PLAN–TEES, WYES AND PLUGS



PLAN–BENDS



ELEVATION–TEES, WYES AND PLUGS

NOTES:

1. ALL CONCRETE SHALL BE MINIMUM 3,000 P.S.I.
2. THRUST BLOCKS SHALL BE IMBEDDED IN UNDISTURBED SOIL.
3. SOIL BEARING CAPACITY IS ASSUMED AT 3000 LB. SQ. FT. FOR WEAKER SOILS THRUST BLOCK AREAS SHALL BE INCREASED AS REQUIRED.
4. WRAP PIPE WITH POLYETHYLENE TO PREVENT CONTACT BETWEEN PIPE AND CONCRETE.
5. WITH APPROVAL OF ENGINEER, MEGA–LUG JOINT RESTRAINTS MAY BE SUBSTITUTED FOR THRUST BLOCKS PER MANUFACTURER'S RECOMMENDATION (TO BE FURNISHED BY CONTRACTOR). FOR DUCTILE IRON, USE UNIFLANGE 1400 OR EBBA 1100 AND FOR C900 PVC, USE UNIFLANGE 1500 OR EBBA 2000PV.
6. THRUST BLOCKING GENERALLY ONLY APPLIES TO PIPE FITTINGS 4" IN DIAMETER OR LESS.

PIPE SIZE (IN.)	AREA (SQ IN.)	TOTAL FORCE (LBS.)	AREA OF BLOCK IN SQ. FT.				
			TEES & PLUGS	90° BENDS	45° BENDS	22 1/2° BENDS	11 1/4° BENDS
4	12.57	2,827	1.0	1.0	1.0	1.0	1.0
6	28.27	6,361	1.6	2.3	1.2	1.0	1.0
8	50.26	11,308	2.8	4.0	2.2	1.1	1.0
10	75.54	17,672	4.4	6.3	3.4	1.7	1.0
12	113.16	25,461	6.4	9.0	4.9	3.0	1.3
14	153.94	34,637	8.7	12.3	6.6	3.4	1.7
16	201.06	45,239	11.3	16.0	8.7	4.4	2.2
18	254.47	57,256	14.3	20.3	11.0	5.6	2.8
20	314.16	70,686	17.7	25.0	13.5	6.9	3.5
24	452.39	101,788	25.4	36.0	19.5	9.9	5.0

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PIPE BUTTRESS DETAIL

STANDARD DETAIL NO.
S-7

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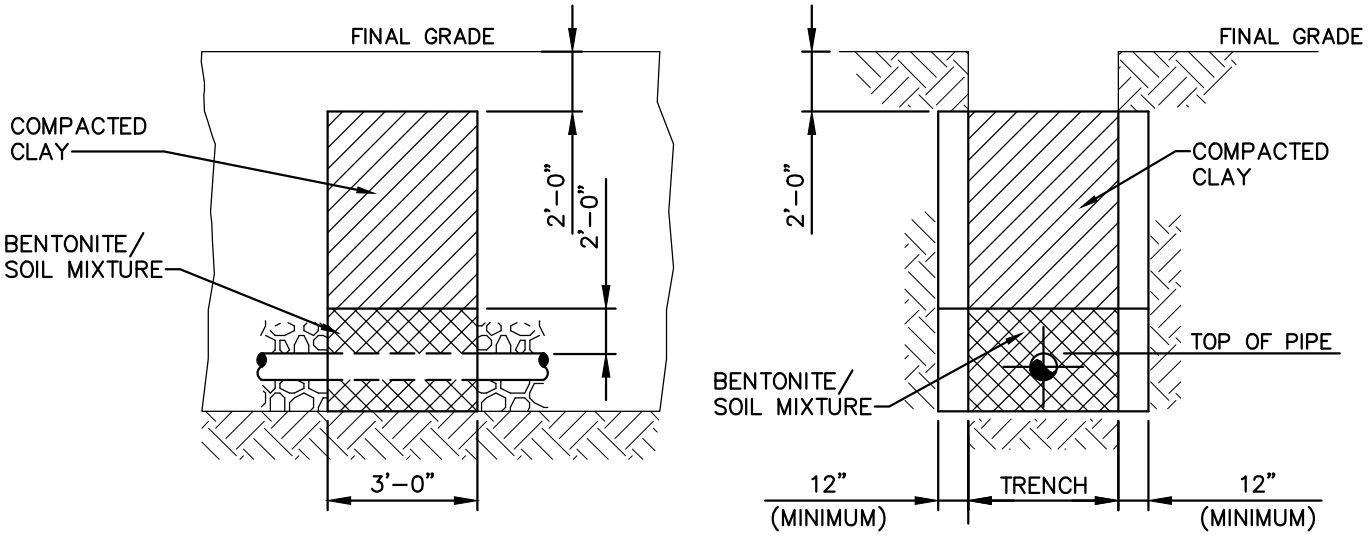

NOTE:

1. COMPACTED TRENCH PLUGS SHALL EXTEND VERTICALLY FROM UNDISTURBED GROUND AT BOTTOM OF TRENCH TO WITHIN TWO (2') FEET OF FINAL GRADE, AND FROM UNDISTURBED GROUND ON TRENCH SIDES FOR WIDTH OF TRENCH AND 12" BEYOND EACH SIDE OF TRENCH.
2. CLAY BACKFILL TO A POINT TWO (2') FEET OVER THE PIPE SHALL CONSIST OF A BENTONITE/SOIL MIXTURE AT A 5:1 MIX.
3. REMAINING BACKFILL SHALL CONSIST OF CLAY CONTAINING NO MORE THAN 15% (BY VOLUME) STONE NOT LARGER THAN TWO (2") INCHES IN DIAMETER. CLAY SHALL BE PLACED IN SIX (6") INCH LIFTS AND COMPACTED BY MECHANICAL TAMPER TO NOT LESS THAN 95% OF MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT.
4. TRENCH PLUGS SHALL BE USED WHEN/WHERE GROUNDWATER IS ENCOUNTERED IN TRENCH, WHICH IS AT A 5% SLOPE OR GREATER.

REQUIRED SPACING AND MATERIAL FOR TRENCH PLUGS

TRENCH SLOPE (%)	SPACING (FEET)	PLUG MATERIAL
0–5	----	NONE
5–15	500	EARTH FILLED SACKS
15–25	300	EARTH FILLED SACKS
25–30	200	EARTH FILLED SACKS
35–100	100	EARTH FILLED SACKS
OVER 100	50	CEMENT FILLED BAGS (WETTED) OR MORTARED STONE

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TRENCH PLUG DETAIL

STANDARD DETAIL NO.
S-8

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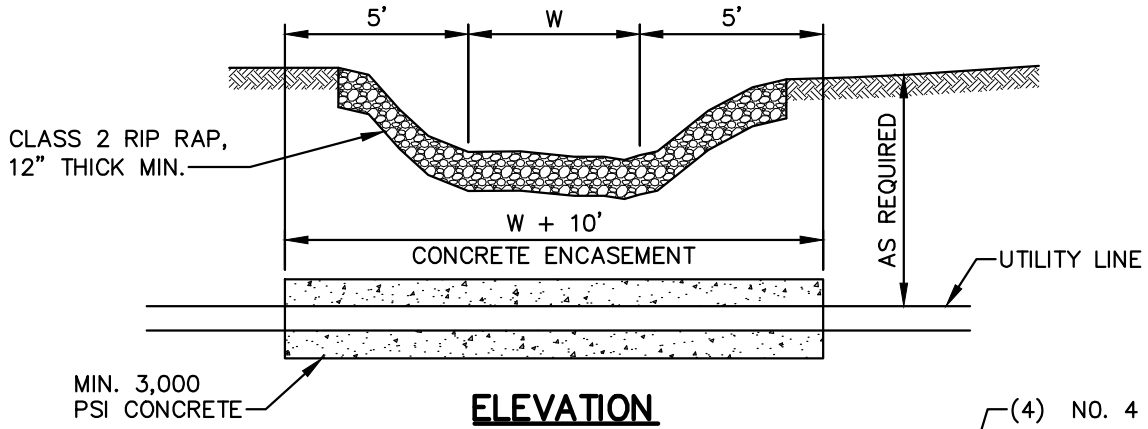
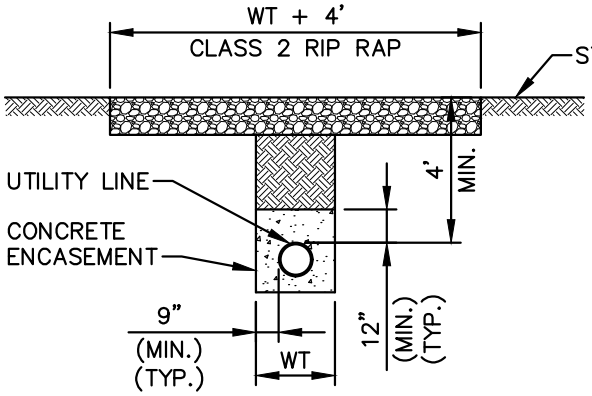
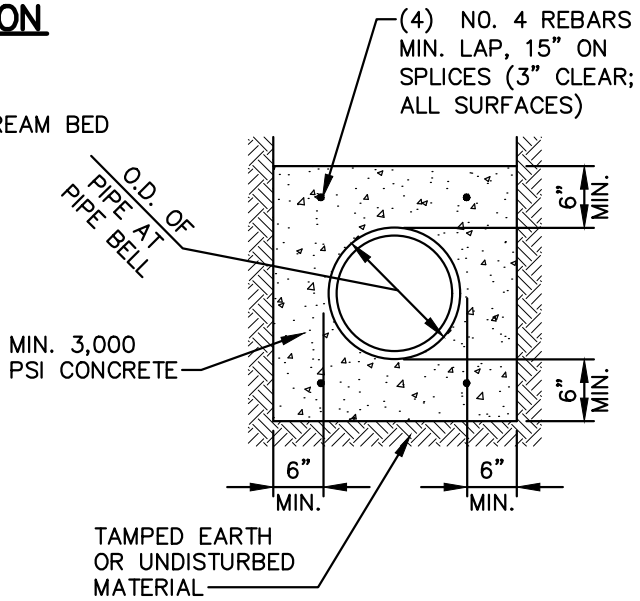
NOTE:
STREAMS TO BE DIVERTED DURING CONSTRUCTION TO PREVENT CONCRETE GETTING INTO WATER.



ELEVATION





NOTES:
WT = MAXIMUM PERMISSIBLE TRENCH WIDTH BASED UPON WT = O.D.+24", UNLESS OTHERWISE APPROVED BY ENGINEER.

DO NOT BACKFILL TRENCH UNTIL CONCRETE HAS SET SUFFICIENTLY TO SUPPORT WEIGHT OF BACKFILL OR AS DIRECTED BY THE ENGINEER.

TYPICAL SECTION

NOTE:
FOR STREAM CROSSING, PLACE 12" MINIMUM CONCRETE OVER PIPE

SECTIONAL ELEVATION

NOTES:
STREAMS TO BE DIVERTED DURING CONSTRUCTION TO PREVENT GREEN CONCRETE FROM GETTING INTO WATER.

ALL STREAM CROSSINGS REQUIRE PERMIT FROM THE STATE AND ARMY CORP OF ENGINEERS. PERMIT REQUIREMENTS SUPERCEDE REQUIREMENTS SHOWN ON PLANS.

NOTE:
ROCK RIP RAP AND GABION STONE SHALL BE NON-ACIDIC AND OF ADEQUATE HARDNESS WITH SIZES AS FOLLOWS:

CLASS 0 (GABION)	4" TO 7"
CLASS I	3" TO 12"
CLASS II	6" TO 24"
CLASS III	36" TO 42"

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STREAM CROSSING AND PIPE ENCASEMENT DETAIL

STANDARD DETAIL NO.
S-9

NOT TO SCALE

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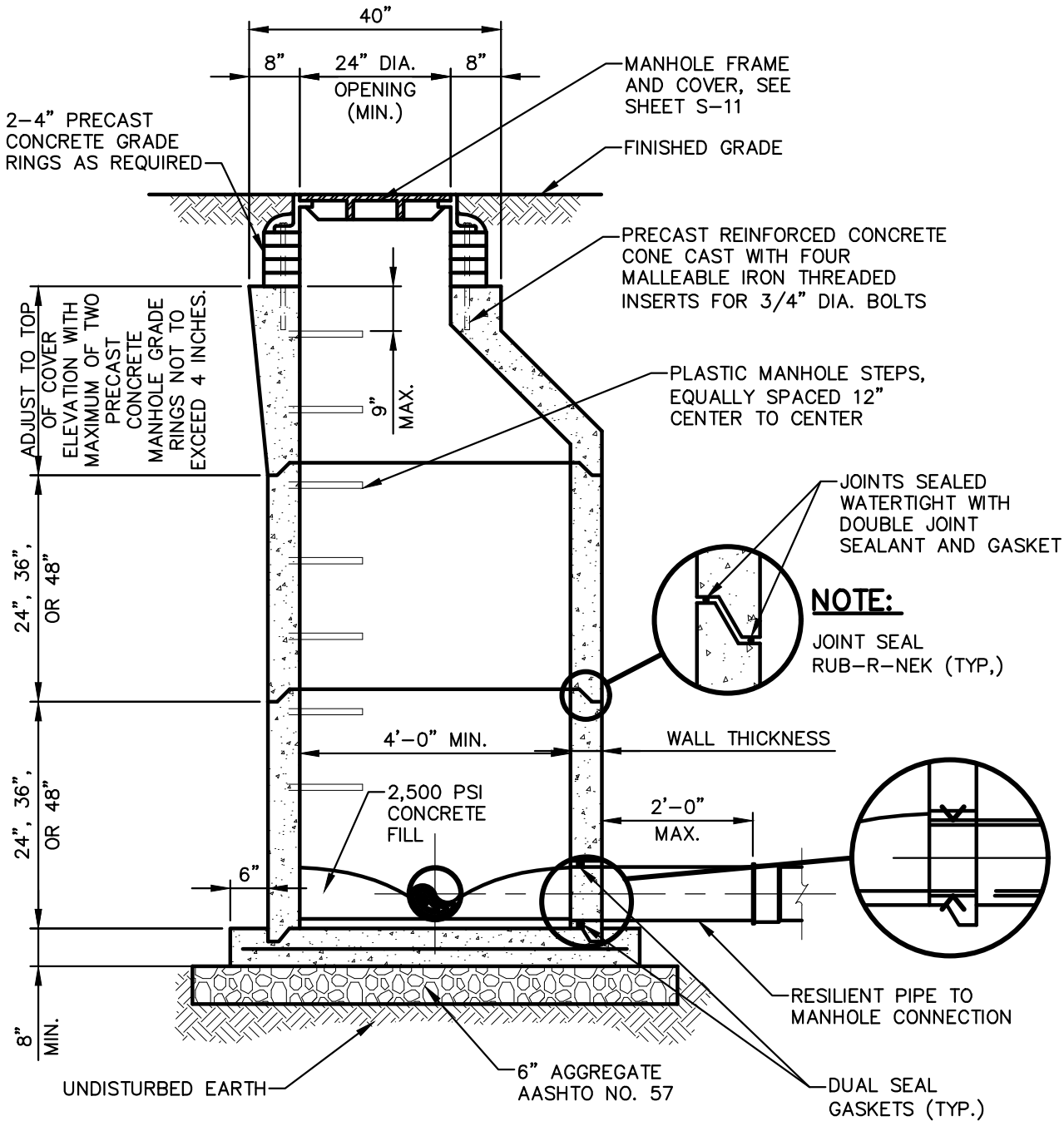

NOTE:
SEE SHEET S-10A FOR MANHOLE NOTES

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PRECAST MANHOLE WITH ECCENTRIC TOP DETAIL

STANDARD DETAIL NO.
S-10

NOT TO SCALE

JULY 2025

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GENERAL NOTES:

1. CONCRETE MANHOLES AND BASES SHALL CONFORM TO ASTM C–478.
2. REINFORCING STEEL SHALL CONFORM TO ASTM A–185.
3. FOR MANHOLES IN FLOODPLAINS AND/OR WHERE GROUNDWATER IS PRESENT, THE EXTERIOR SURFACE OF THE MANHOLE SHALL BE COATED WITH (2) TWO COATS OF A BITUMASTIC COATING SYSTEM, 8 MILS DFT PER COAT OF CARBOLINE 300M OR EQUAL.
4. FOR FORCE MAIN DISCHARGES AND TWO (2) DOWNSTREAM MANHOLES, THE ENTIRE INTERIOR SURFACE OF THE MANHOLE SHALL BE COATED WITH A MINIMUM 50 MIL DFT AROMATIC POLYUREA COATING SYSTEM, OBIC 1000 OR EQUAL.
5. ALL MANHOLE CONCRETE SHALL CONTAIN A 1% BY WEIGHT OF CEMENT CONCRETE WATERPROOFING ADMIXTURE, XYPEX C–1000 OR EQUAL.
6. MANHOLES FOR SEWER PIPE 24"–36" SHALL HAVE A 5'–0" MIN. INSIDE DIAMETER, AND POTENTIALLY SHALL BE USED IF ANGLE OF DEFLECTION DOES NOT PERMIT USE WITH A 4' MANHOLE.
7. FLOW CHANNELS SHALL PRECISELY ALIGN WITH THE ORIENTATION OF THE INCOMING/OUTGOING DISCHARGE SEWERS, FLOW CHANNEL RADIUS SHALL NOT EXCEED 90°. ALL LEDGES SHALL BE POSITIVELY SLOPED FROM MANHOLE WALL TO THE FLOW CHANNELS.

MANHOLE STEPS NOTES:

1. DISTANCE FROM RIM OF MANHOLE TO TOP OF STEP SHALL NOT EXCEED 30".
2. DISTANCE FROM BOTTOM STEP TO FLOOR OF MANHOLE SHALL NOT BE GREATER THAN 2 FEET.
3. DO NOT LOCATE STEPS OVER CHANNELS.

DROP CONNECTION NOTE:

AN INSIDE DROP CONNECTION SHALL BE INSTALLED WHEN THE PIPE INVERTS INTO THE MANHOLE ARE 2'–0" OR MORE ABOVE INVERT OUT OF THE MANHOLE. THE ENTIRE OUTER SURFACE AND CONCRETE ENCASEMENT AROUND THE MANHOLE AND THE CONNECTIONS SHALL BE COATED WITH TWO COATS OF BITUMASTIC.

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PRECAST MANHOLE NOTES

STANDARD DETAIL NO.
S-10A

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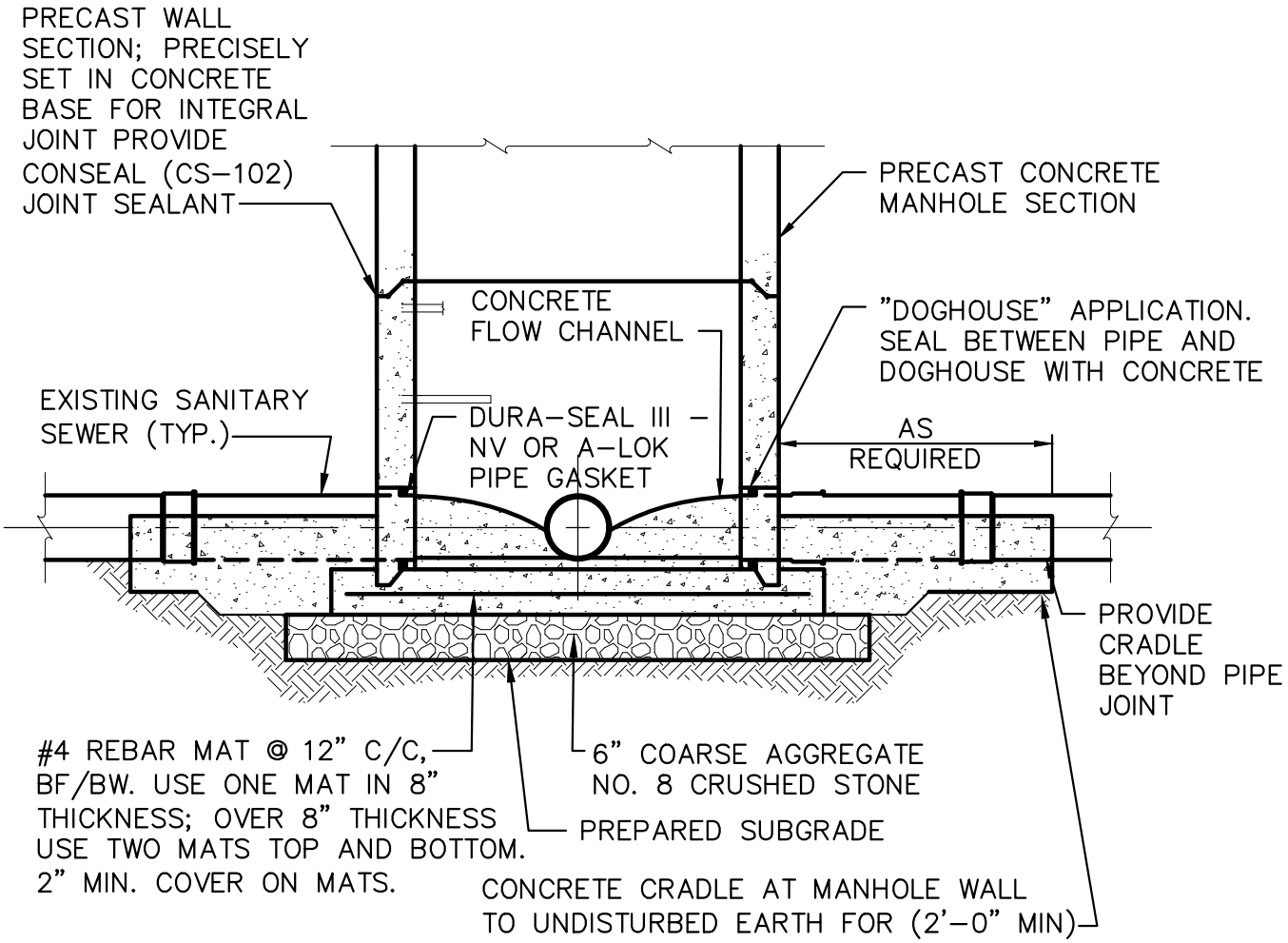

NOTES:

1. "DOGHOUSE" OPENINGS IN PRECAST CONCRETE MANHOLE SECTION SHALL BE SEALED WITH WATER PROOFING CEMENT MIXTURE ANNULAR SPACE TO BE COMPLETELY FILLED AND INTERIOR FINISH TO BE HAND TROWELED FLUSH AND SMOOTH.

2. WHERE CONDITIONS DICTATE AND AS DIRECTED BY THE BOARD, MANUAL "BREAK-IN" OF EXISTING MANHOLE WALL SHALL REQUIRE A FULL-CIRCUMFERENCE RUBBER GASKET SEAL FOR PROPOSED PIPE CONNECTION.

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DOGHOUSE MANHOLE FOR EXISTING SEWER CONNECTIONS

STANDARD DETAIL NO.
S-10B

NOT TO SCALE

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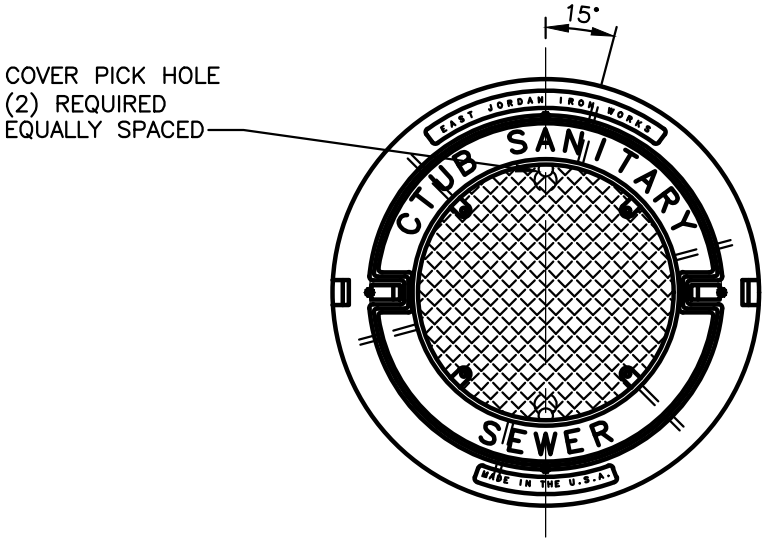

PLAN

COVER NOTES:

1. LETTERING ON COVERS SHALL DENOTE CTUB SANITARY SEWER AS APPLICABLE.
2. BOTTOM RIBS MAY BE DELETED FROM MANHOLE COVER CASTINGS.
3. SHOP DRAWINGS SHALL BE SUBMITTED IF DETAILS/DIMENSIONS VARY.
4. FRAME BOLT NOTE: DRILL FOUR 1" DIA. HOLES ON A 33" DIA. BOLT CIRCLE.
5. COVER BOLT NOTE: WATERTIGHT ONLY (2) REQUIRED MIN. (4) REQUIRED MAX. EQUALLY SPACED.

NOTES:

1. MANHOLE COVERS SHALL NOT HAVE VENT HOLES, UNLESS AIR RELEASE VALVE IS PRESENT.
2. DIMENSIONS ABOVE ARE FOR EAST JORDAN IRONWORKS PRODUCTS.
3. APPROVED SUPPLIERS:

   EAST JORDAN IRON WORKS
   - HIGHWAY: FRAME – PROD. NO. 1045Z UNDIPPED
     COVER – PROD. NO. 1040AGS UNDIPPED, SELF SEALING
   - WATERTIGHT: FRAME AND COVER – PROD. NO. 1045ZPT/1010APT, UNDIPPED

   NEENAH
   - HIGHWAY: FRAME AND COVER R–1642, UNDIPPED, SELF SEALING
   - WATERTIGHT: FRAME AND COVER R–1916, UNDIPPED

4. FRAME AND COVER TO COMPLY WITH ASTM A48, CLASS 30 TENSILE STRENGTH.
5. USE THREADED STAINLESS STEEL STANDARD HEXAGON HEAD BOLTS TO ANCHOR FRAME AND COVER TO MANHOLE.
6. PROVIDE WATERPROOF MORTAR EXTENDED OVER FRAME.
7. PROVIDE FOUR MALLEABLE IRON THREADED INSERTS FOR 3/4" DIA. BOLTS ON 33" DIA. BOLT CIRCLE INSTALLED IN PRECAST CONC. MANHOLE CONE SECTIONS BY MANHOLE MANUFACTURER.

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MANHOLE FRAME AND COVER DETAIL

STANDARD DETAIL NO.
S-11

NOT TO SCALE

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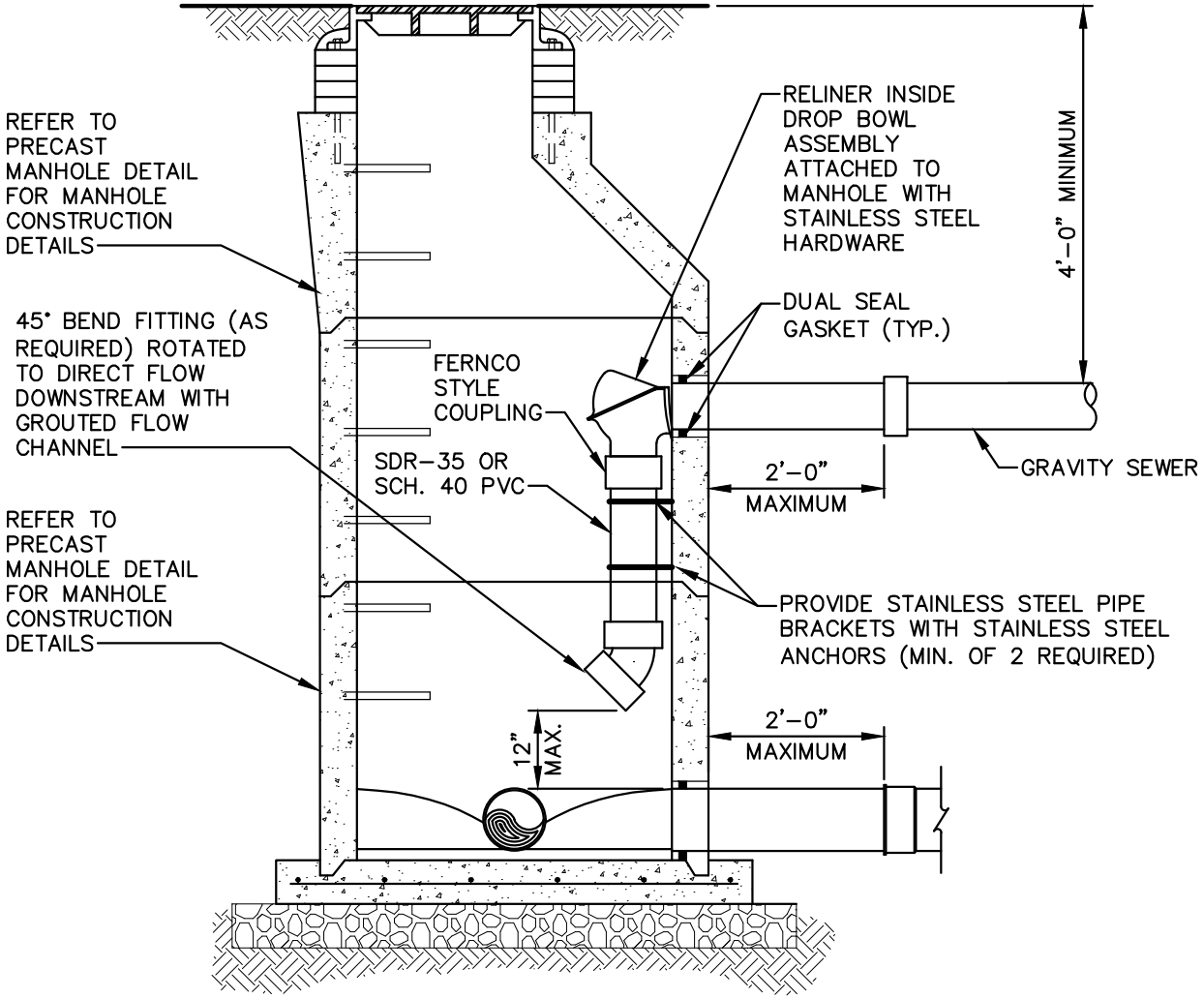

NOTE:

1. OUTSIDE DROP MANHOLES ARE PROHIBITED.

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INSIDE DROP MANHOLE DETAIL

STANDARD DETAIL NO.
S-12

NOT TO SCALE

JULY 2025

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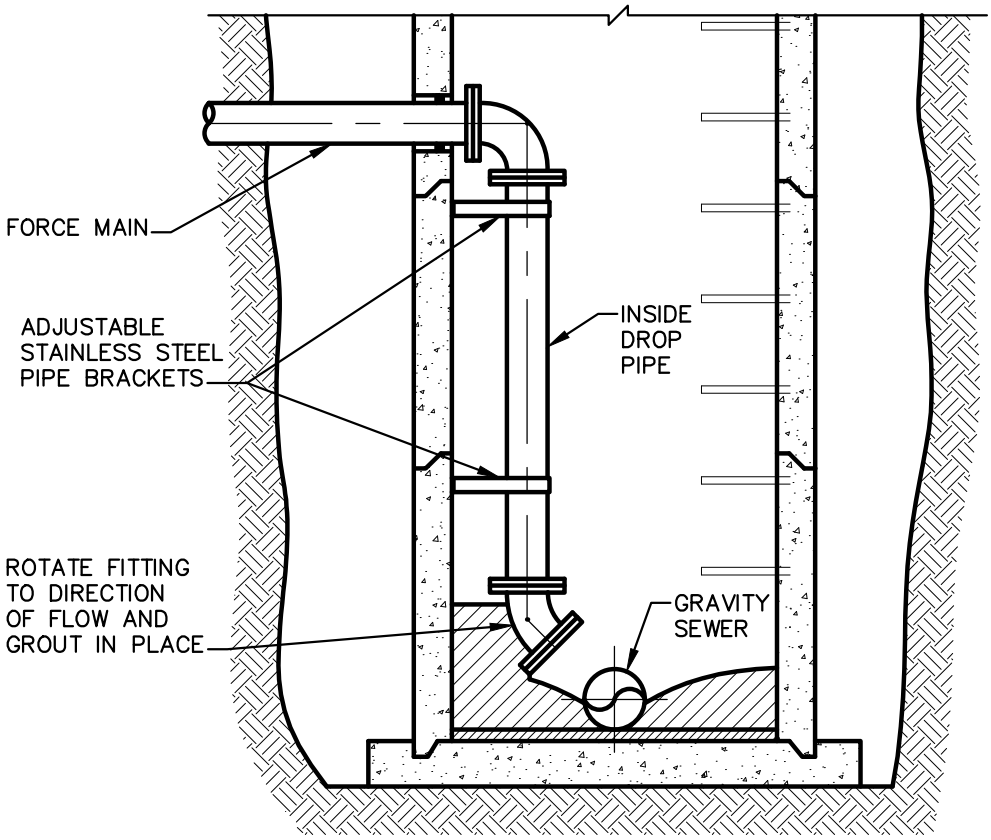
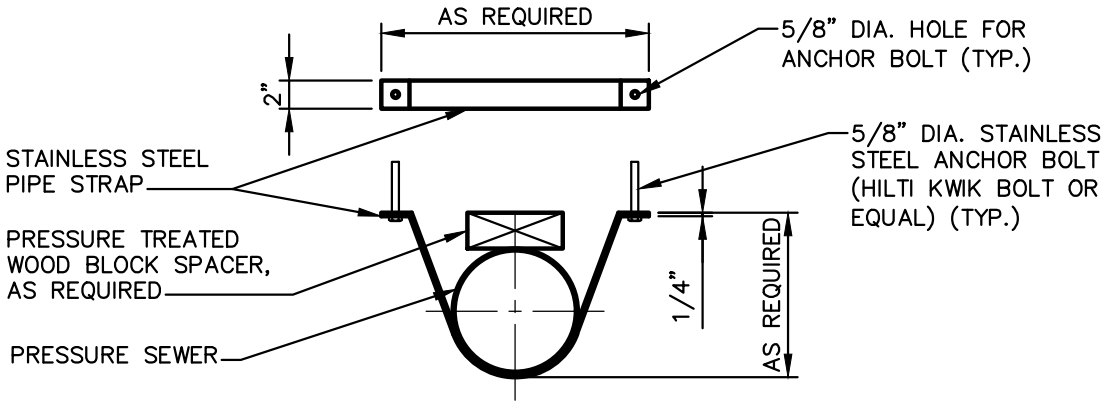


FORCE MAIN MANHOLE

NOTES:

1. FORCE MAIN CONNECTIONS WITHIN MANHOLE SHALL BE RESTRAINED.
2. ANCHOR FORCE MAIN TO MANHOLE USING ADJUSTABLE STAINLESS STEEL PIPE BRACKETS. (2) BRACKETS MINIMUM AND 3' MAX. SPACING.
3. FOR IRREGULAR HOLES, SEAL PIPE ON BOTH SIDES WITH HYDRAULIC CEMENT.
4. ALL FORCE MAIN INLET MANHOLES SHALL RECEIVE SPECIAL COATING SYSTEM.



FORCE MAIN ANCHOR STRAP DETAIL

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FORCE MAIN MANHOLE
FORCE MAIN ANCHOR STRAP DETAIL

STANDARD DETAIL NO.
S-13

NOT TO SCALE

JULY 2025

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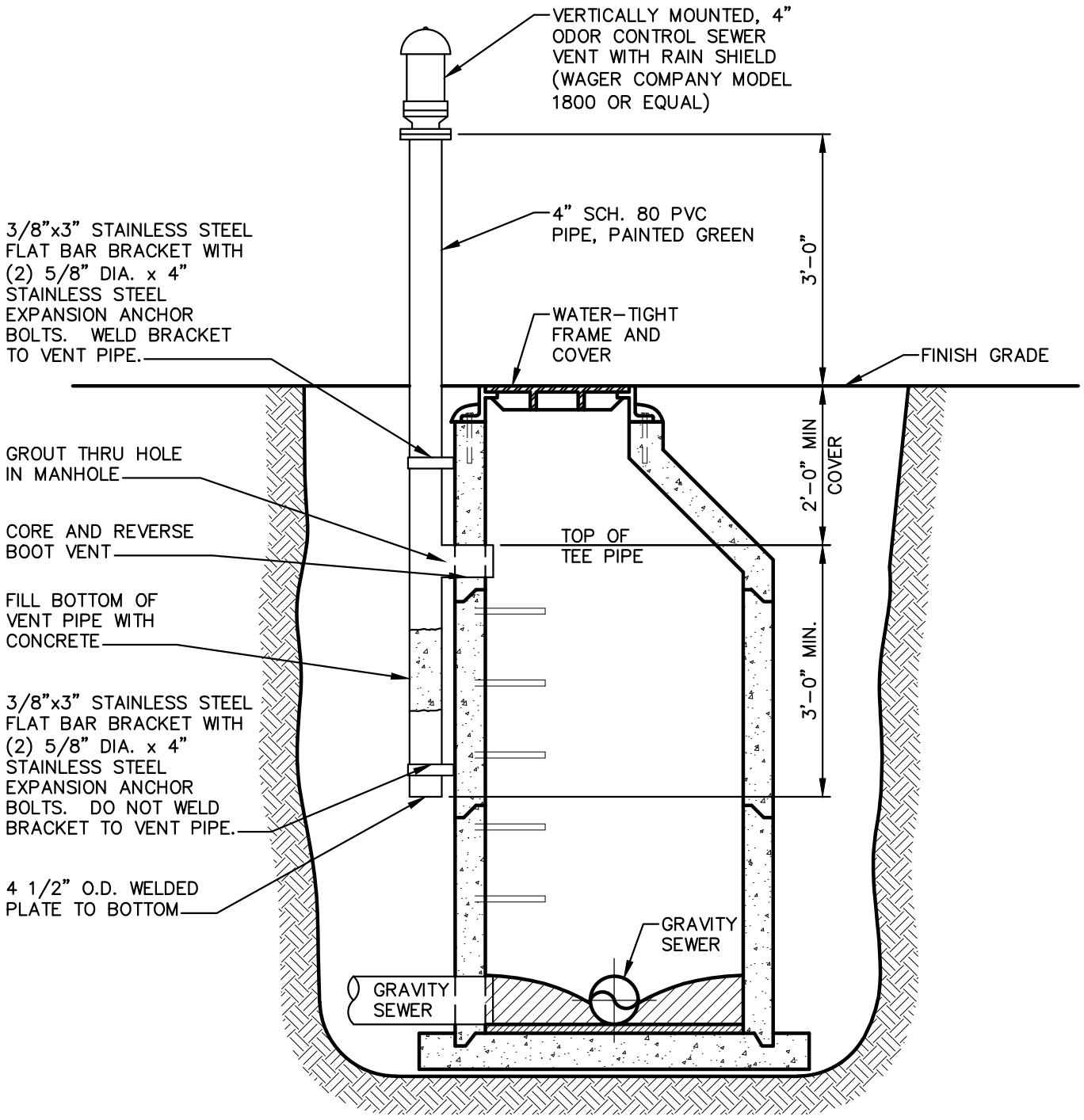

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MANHOLE ODOR CONTROL VENT ASSEMBLY DETAIL

STANDARD DETAIL NO.
S-14

NOT TO SCALE

JULY 2025

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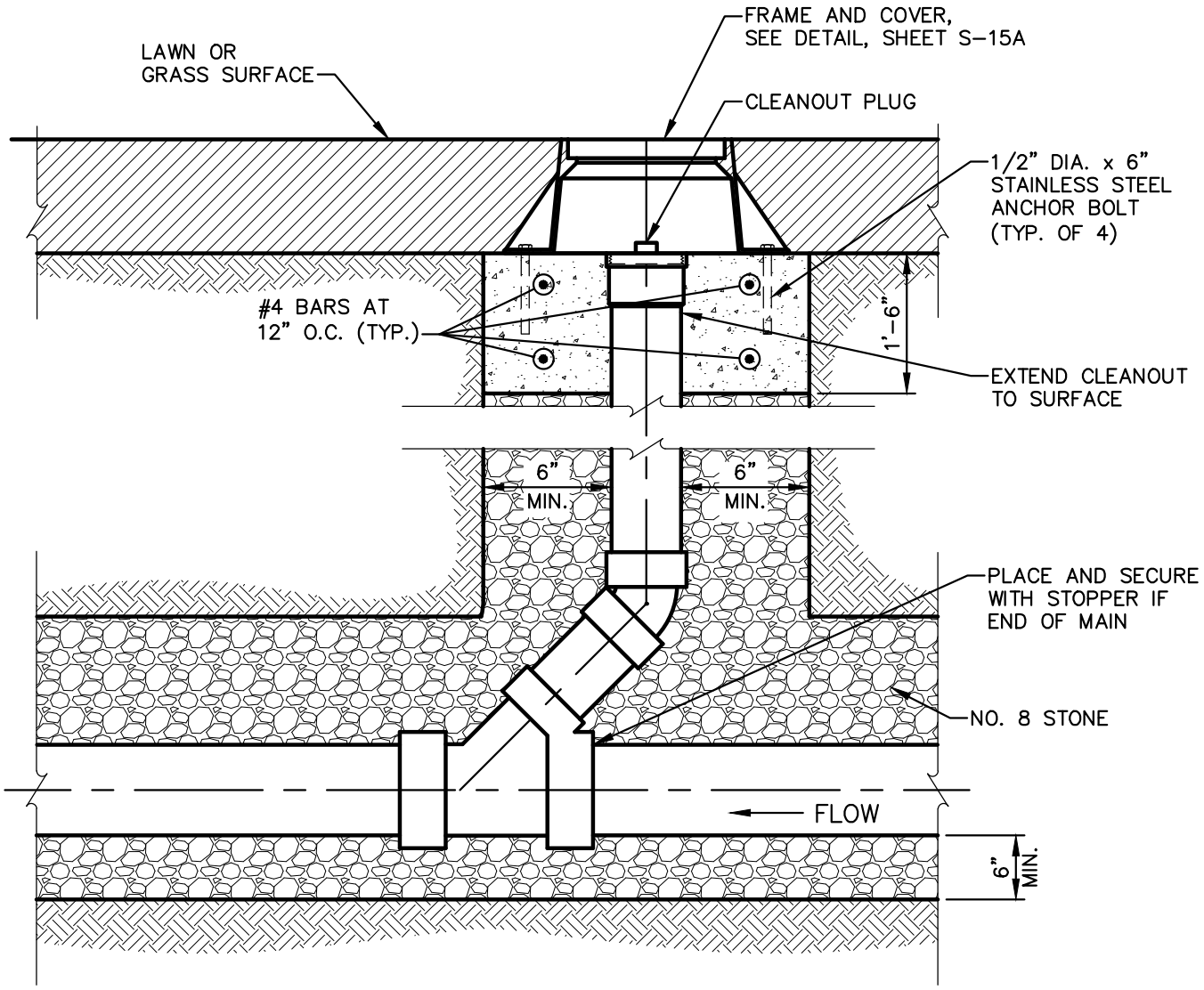

NOTES:

1. CLEANOUT FRAME AND COVER SHALL BE INSTALLED SUCH THAT IT IS LEVEL TO 2" BELOW SURROUNDING SURFACE. CLEANOUTS PROJECTING ABOVE SURFACE ARE UNACCEPTABLE.
2. THIS DETAIL APPLIES TO NON-VEHICULAR TRAFFIC AREAS.
3. USE WYE AND PLUG FOR CLEANOUT AT END OF LINE.
4. FOR MAINLINE DIAMETER OF 8" OR GREATER, USE A MANHOLE.
5. FOR PIPE DIA. ≤ 6"

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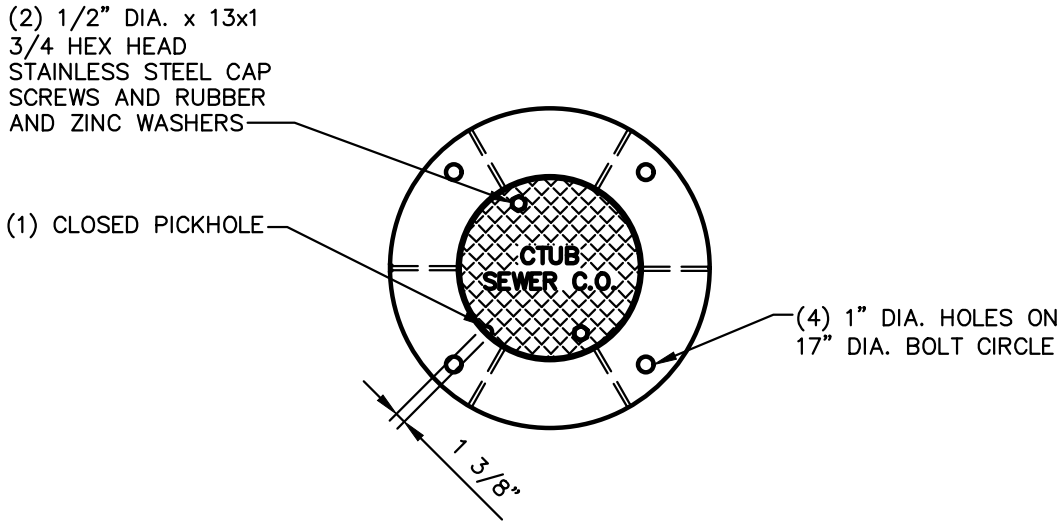
MAINLINE GRAVITY CLEANOUT DETAIL

STANDARD DETAIL NO.
S-15

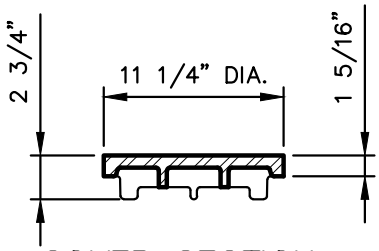
NOT TO SCALE

JULY 2025

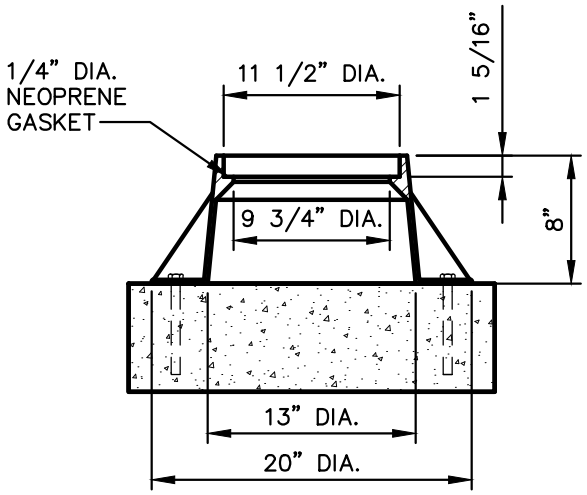
FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-15.DWG



COVER PLAN



COVER SECTION



NOTES:

1. DIMENSIONS ABOVE ARE FOR EAST JORDAN IRONWORKS PRODUCTS
   APPROVED SUPPLIERS:
   EAST JORDAN IRON WORKS
   FRAME AND COVER – PROD. NO. 157807, UNDIPPED

FRAME

Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
PHONE: (304) 725-2316 FAX: (304) 725-4313

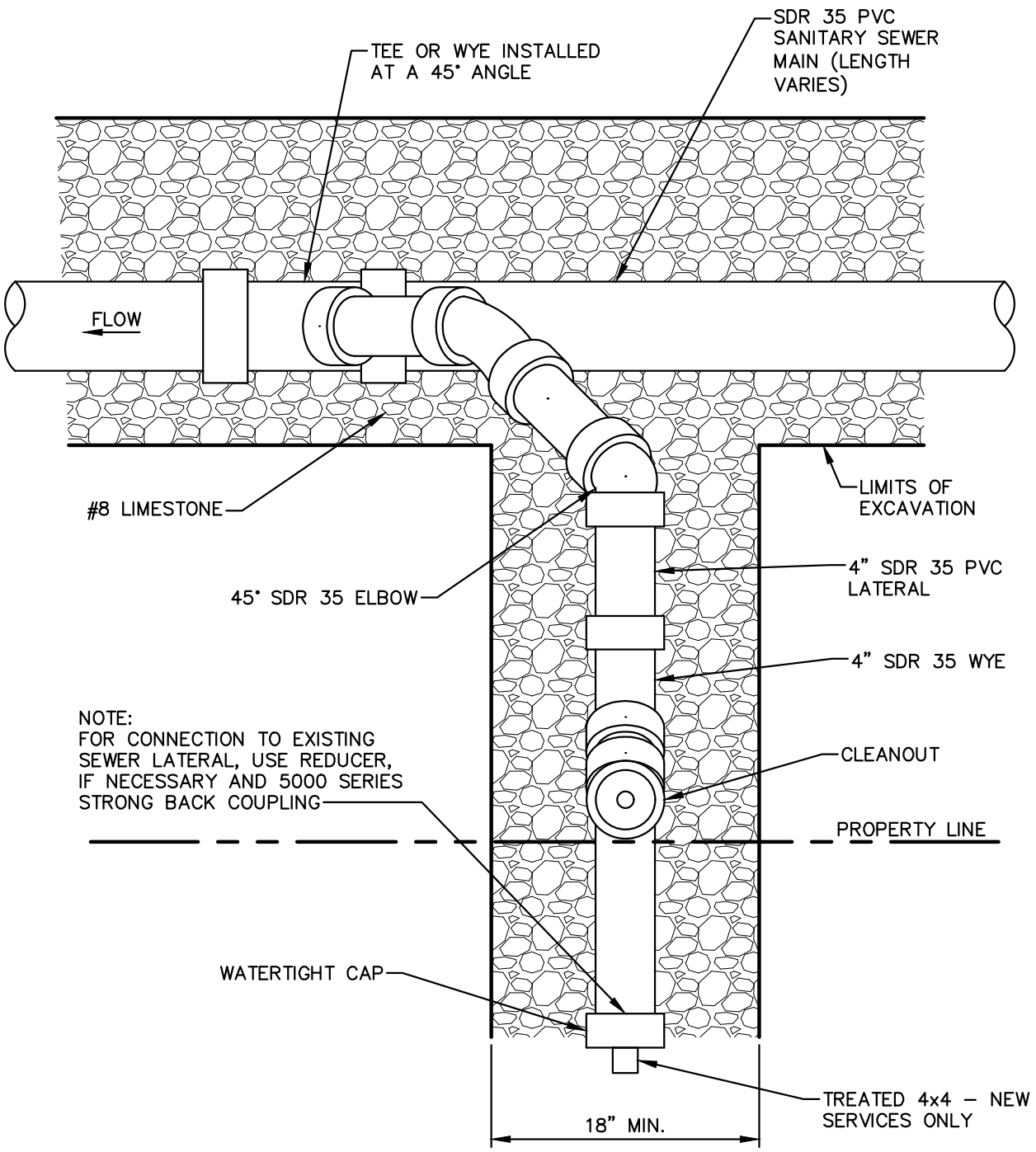
CLEANOUT FRAME AND COVER DETAIL

STANDARD DETAIL NO.
S-15A

NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-15A.DWG



PLAN

Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
PHONE: (304) 725-2316 FAX: (304) 725-4313

NEW SINGLE LATERAL CONNECTION DETAIL (PLAN)

STANDARD DETAIL NO.
S-16

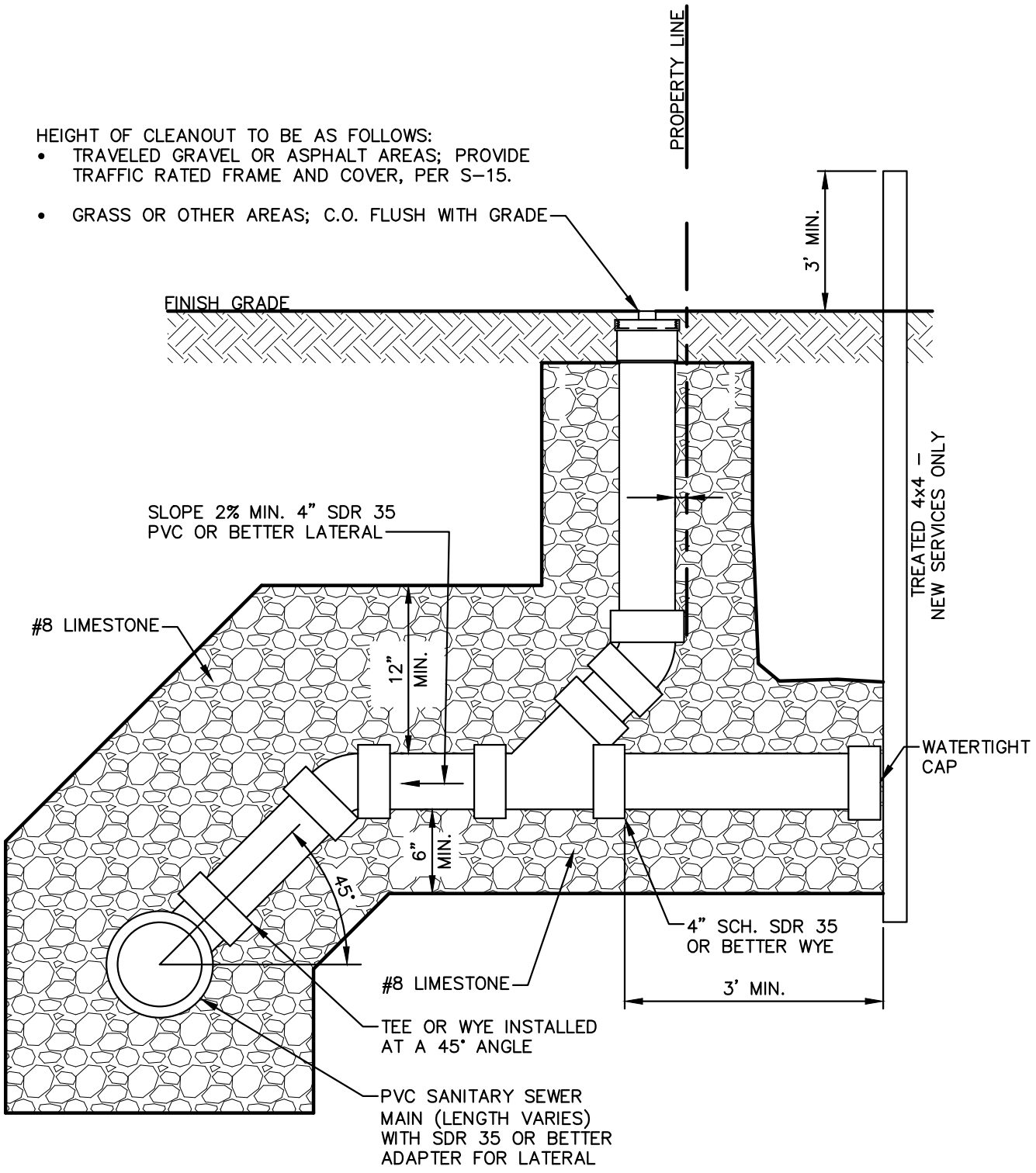
NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-16.DWG

HEIGHT OF CLEANOUT TO BE AS FOLLOWS:

- TRAVELED GRAVEL OR ASPHALT AREAS; PROVIDE TRAFFIC RATED FRAME AND COVER, PER S–15.
- GRASS OR OTHER AREAS; C.O. FLUSH WITH GRADE



ELEVATION

Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
PHONE: (304) 725–2316 FAX: (304) 725–4313

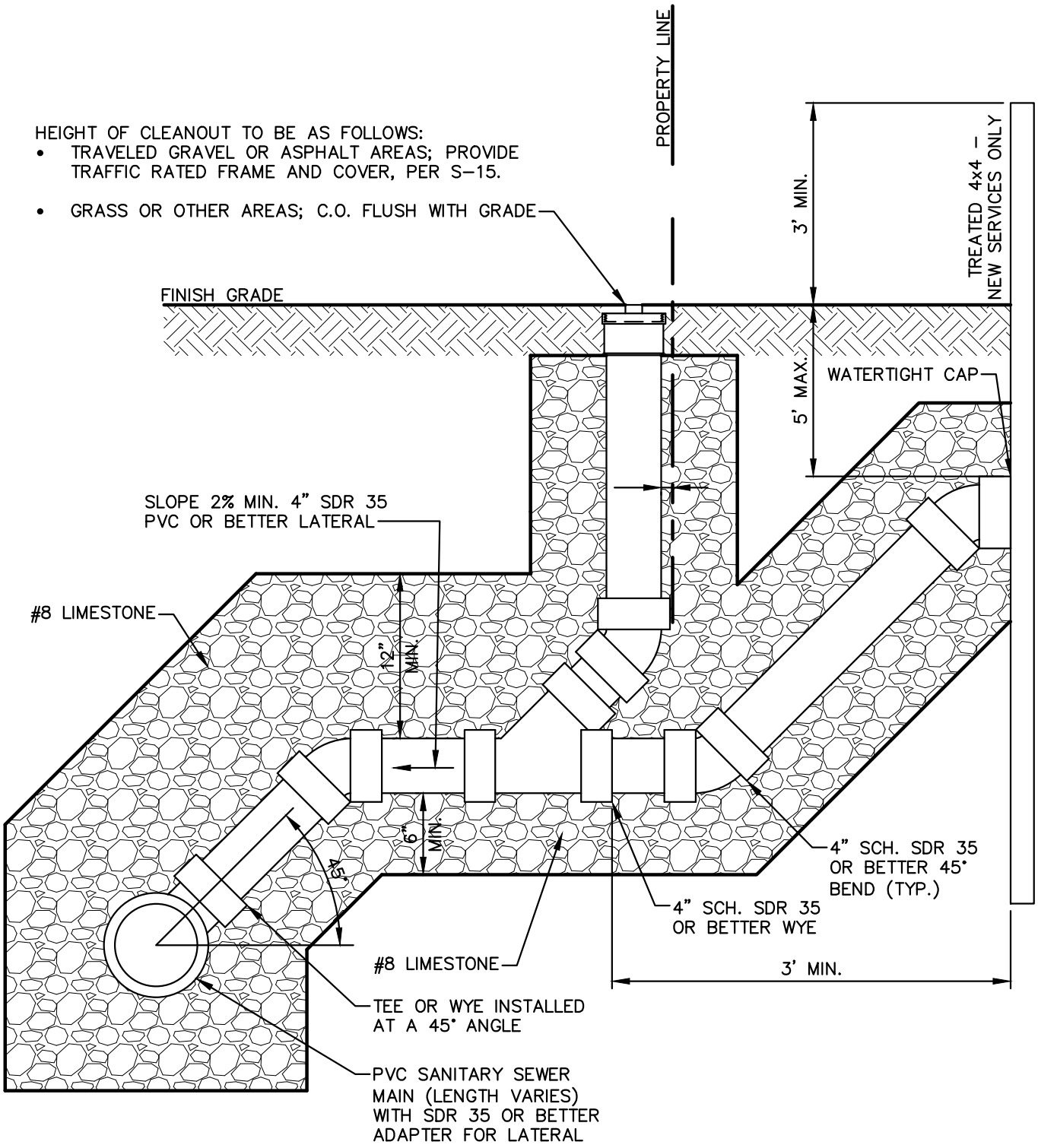
NEW SINGLE LATERAL CONNECTION DETAIL (ELEVATION)

STANDARD DETAIL NO.
S-16A

NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-16A.DWG



ELEVATION

Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
PHONE: (304) 725-2316 FAX: (304) 725-4313

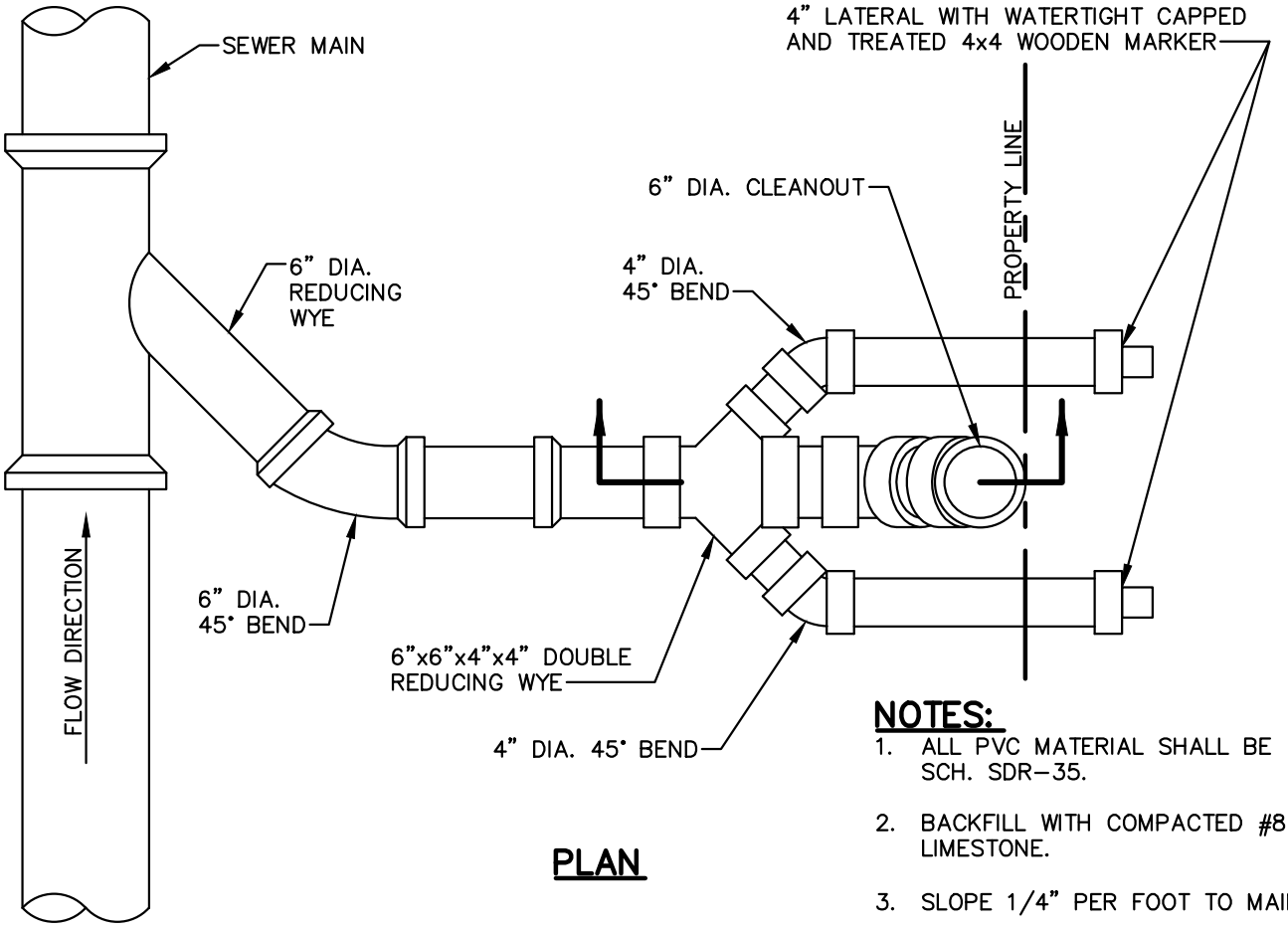
NEW DEEP SINGLE LATERAL CONNECTION DETAIL (ELEVATION)

STANDARD DETAIL NO.
S-16B

NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-16B.DWG



PLAN

NOTES:

1. ALL PVC MATERIAL SHALL BE SCH. SDR-35.
2. BACKFILL WITH COMPACTED #8 LIMESTONE.
3. SLOPE 1/4" PER FOOT TO MAIN.

Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
PHONE: (304) 725-2316 FAX: (304) 725-4313

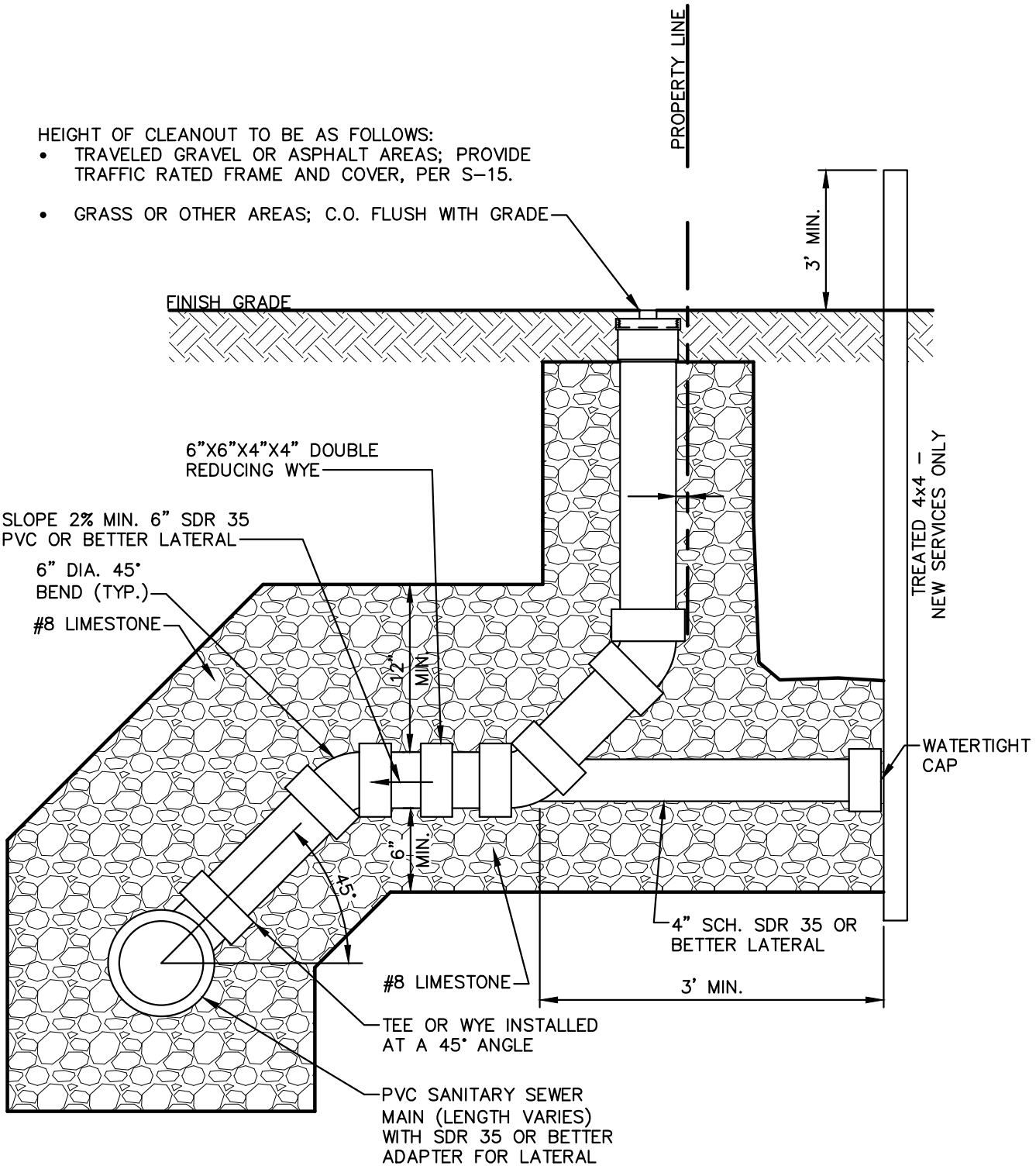
NEW DOUBLE LATERAL CONNECTION DETAIL (PLAN)

STANDARD DETAIL NO.
S-17

NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-17.DWG



ELEVATION

Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
PHONE: (304) 725–2316 FAX: (304) 725–4313

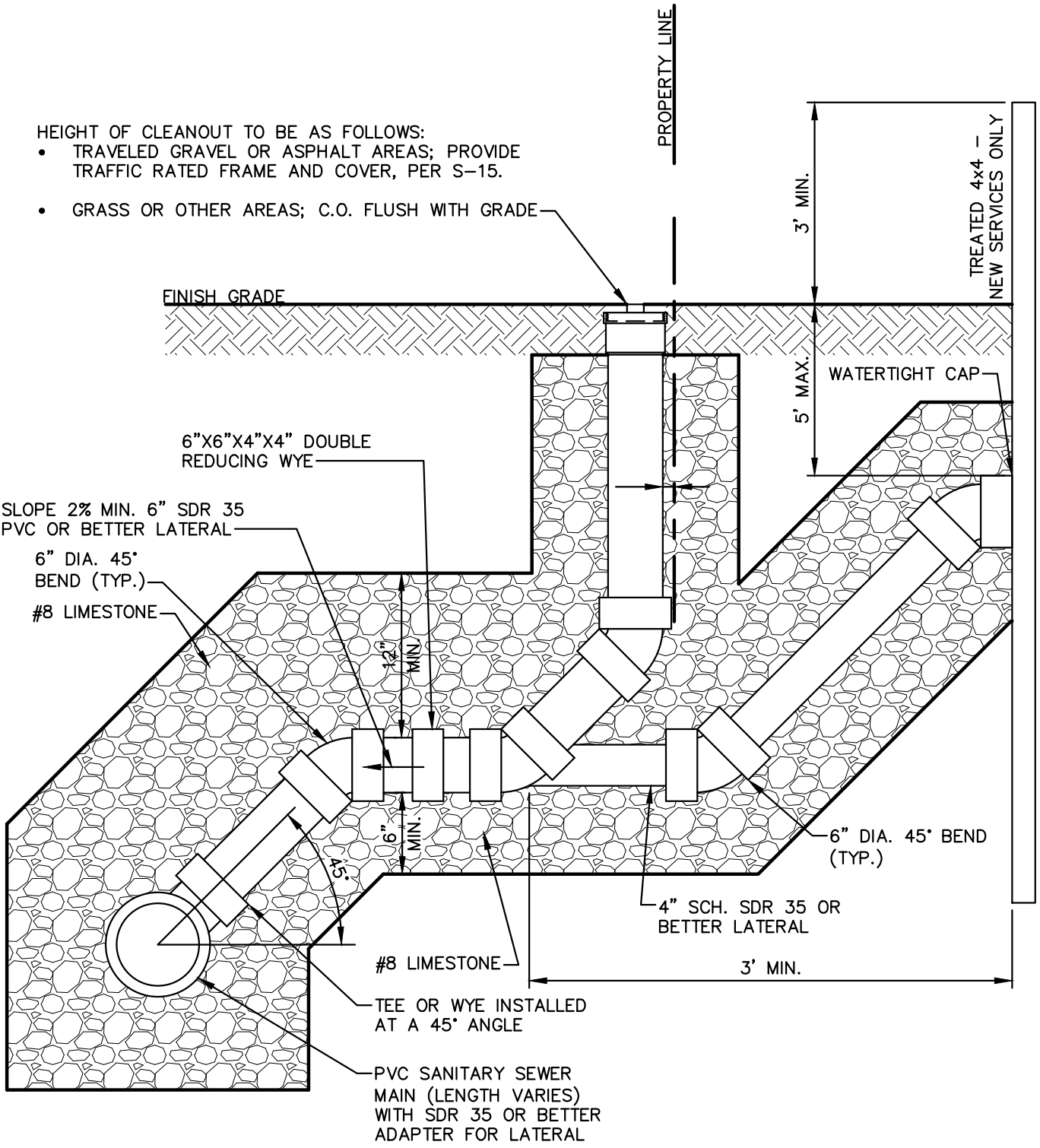
NEW DOUBLE LATERAL CONNECTION DETAIL (ELEVATION)

STANDARD DETAIL NO.
S-17A

NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-17A.DWG



ELEVATION

Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
PHONE: (304) 725–2316 FAX: (304) 725–4313

NEW DEEP DOUBLE LATERAL CONNECTION DETAIL (ELEVATION)

STANDARD DETAIL NO.
S-17B

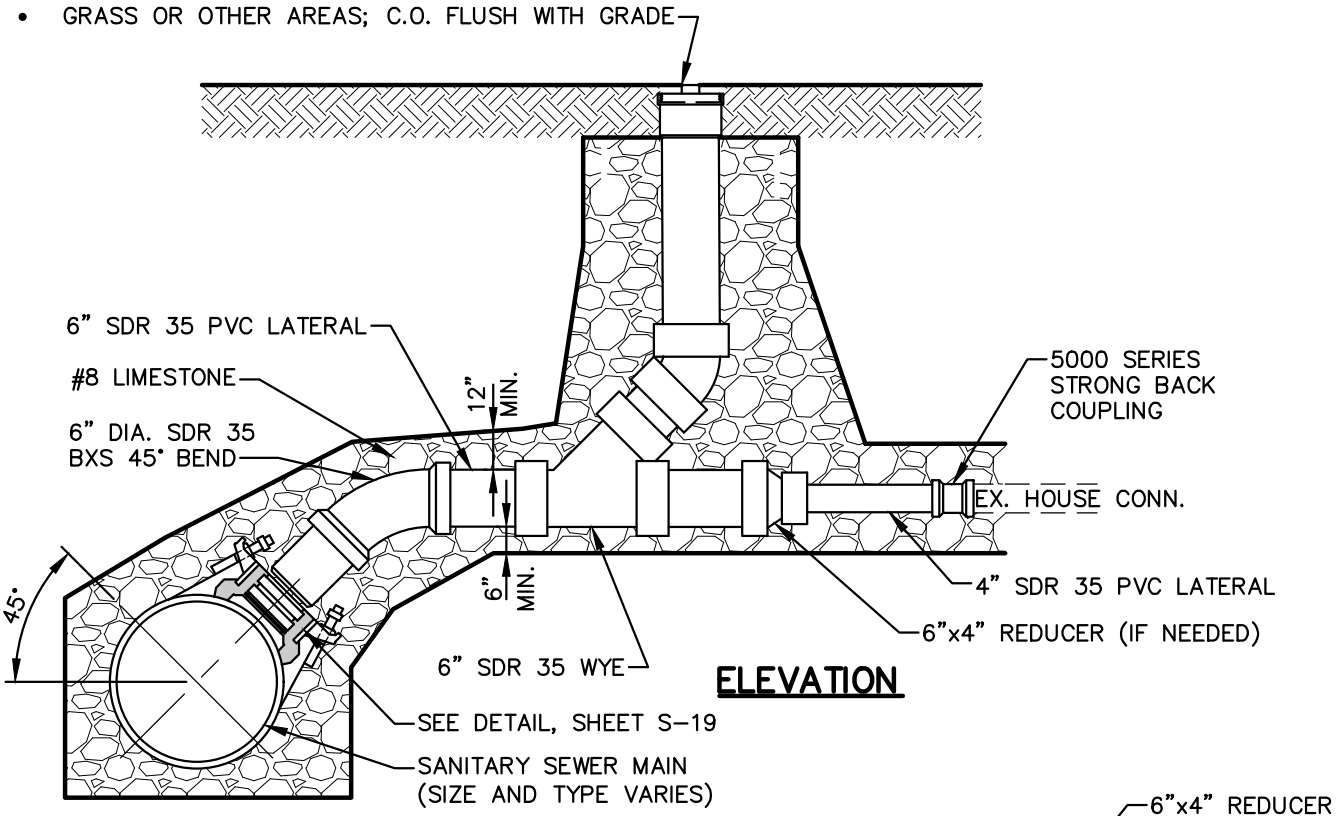
NOT TO SCALE

JULY 2025

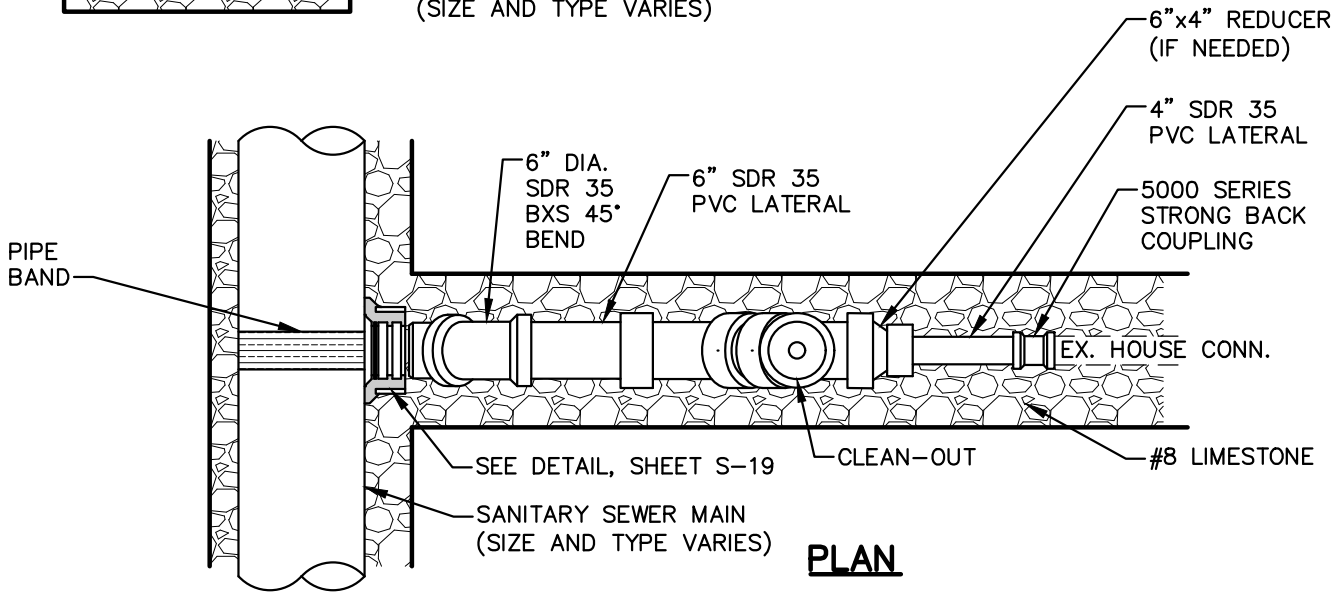
FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-17B.DWG

HEIGHT OF CLEANOUT TO BE AS FOLLOWS:

- TRAVELED GRAVEL OR ASPHALT AREAS; PROVIDE TRAFFIC RATED FRAME AND COVER, PER S–15.
- GRASS OR OTHER AREAS; C.O. FLUSH WITH GRADE



ELEVATION



PLAN

NOTES:

1. SLOPE LATERAL 1/4" PER FOOT TO MAIN.
2. SCHEDULE 40 PVC MAY BE USED INSTEAD OF SDR 35 FOR LATERAL PIPE WITH SDR 35 x SCH. 40 ADAPTER.
3. USE 6" SEWER SADDLE FOR REPLACEMENT OF EXISTING LATERAL CONNECTIONS.
4. USE 4" SEWER SADDLE FOR NEW 4" LATERAL CONNECTIONS ON EXISTING LINES.

Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
PHONE: (304) 725–2316 FAX: (304) 725–4313

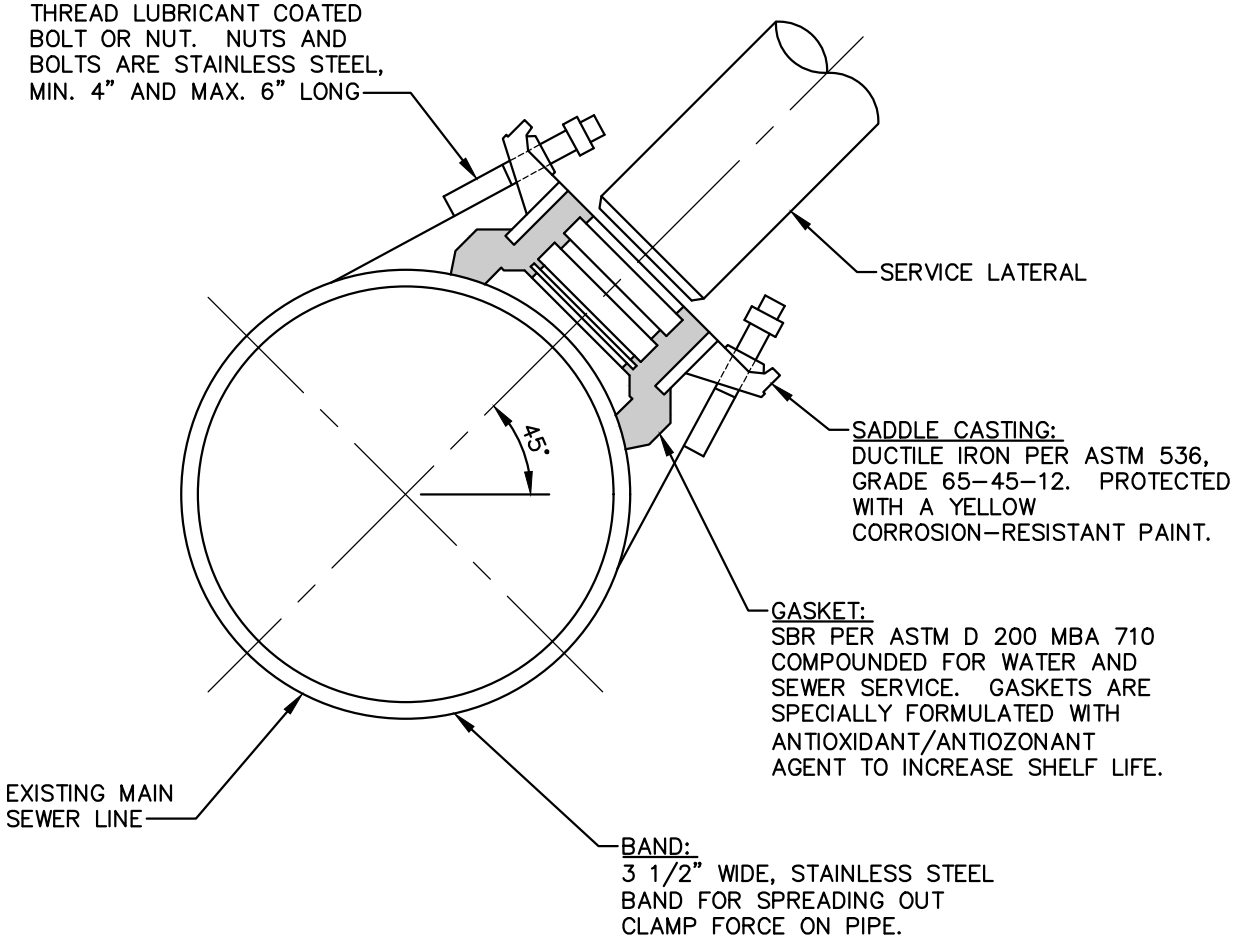
REPLACEMENT LATERAL CONNECTION DETAIL

STANDARD DETAIL NO.
S-18

NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S–18.DWG



NOTES:

1. SADDLE SHALL BE CAPABLE OF ATTACHING TO VARIOUS SIZES AND MATERIALS OF GRAVITY SEWER MAIN LINES. SADDLE SHALL BE INSTALLED SO SEWER LATERAL IS AT 45° FROM VERTICAL AT MAINLINE.
2. ROMAC ORIGINAL, STYLE "CB" SEWER SADDLE.
3. PIPE STOP CAPABLE OF WITHSTANDING 1000 POUNDS OF THRUST IS MOLDED INTO THE CB SADDLE GASKET. CARE MUST BE TAKEN DURING SYSTEM DESIGN AND INSTALLATION TO ASSURE THAT THIS THRUST LIMIT IS NOT EXCEEDED.
4. NEW LATERAL CONNECTIONS USE 4" SADDLE OR SIZE OF LATERAL IF LARGER.
5. FOR SEWER LATERAL REPLACEMENTS, USE 6" SADDLE AND USE PIPE REDUCER TO CONNECT TO LATERAL.
6. A PVC REDUCER IS REQUIRED FOR LOW PRESSURE SEWER MAINS.

Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
PHONE: (304) 725-2316 FAX: (304) 725-4313

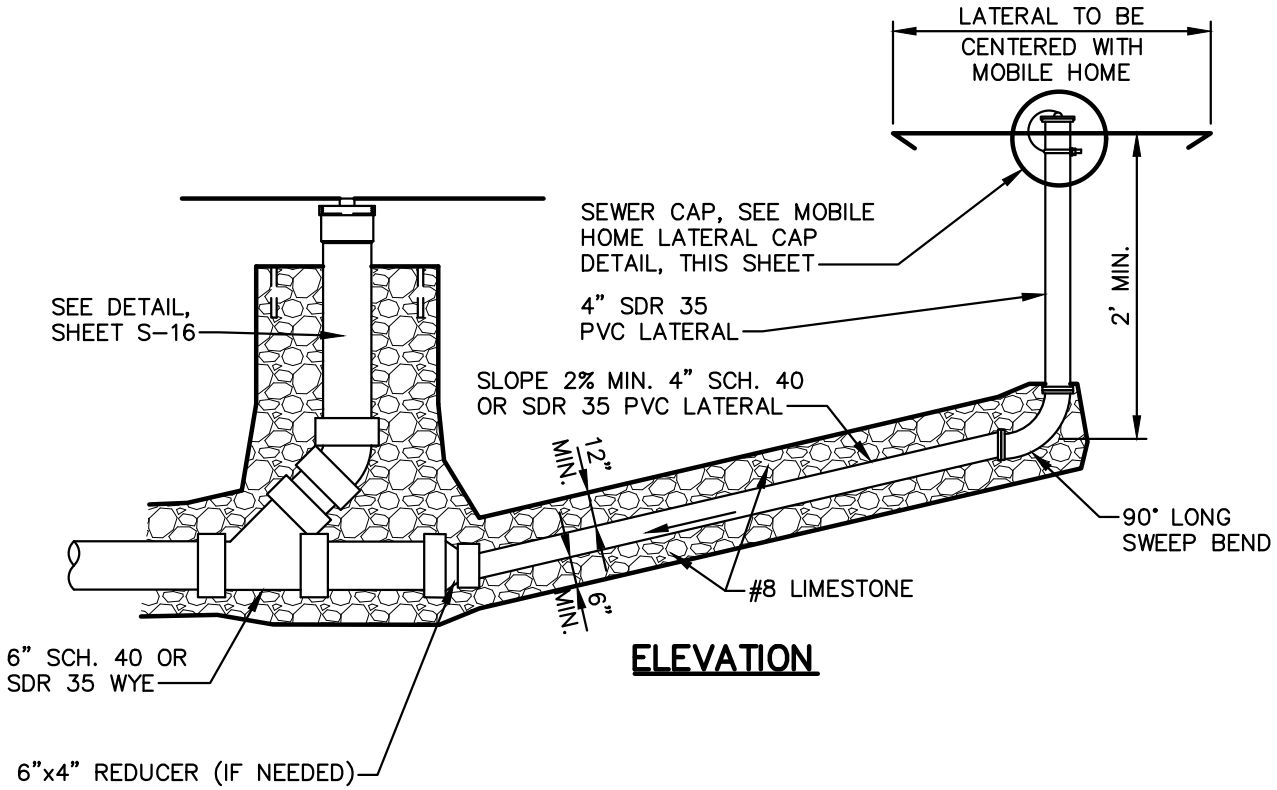
SEWER SADDLE DETAIL

STANDARD DETAIL NO.
S-19

NOT TO SCALE

JULY 2025

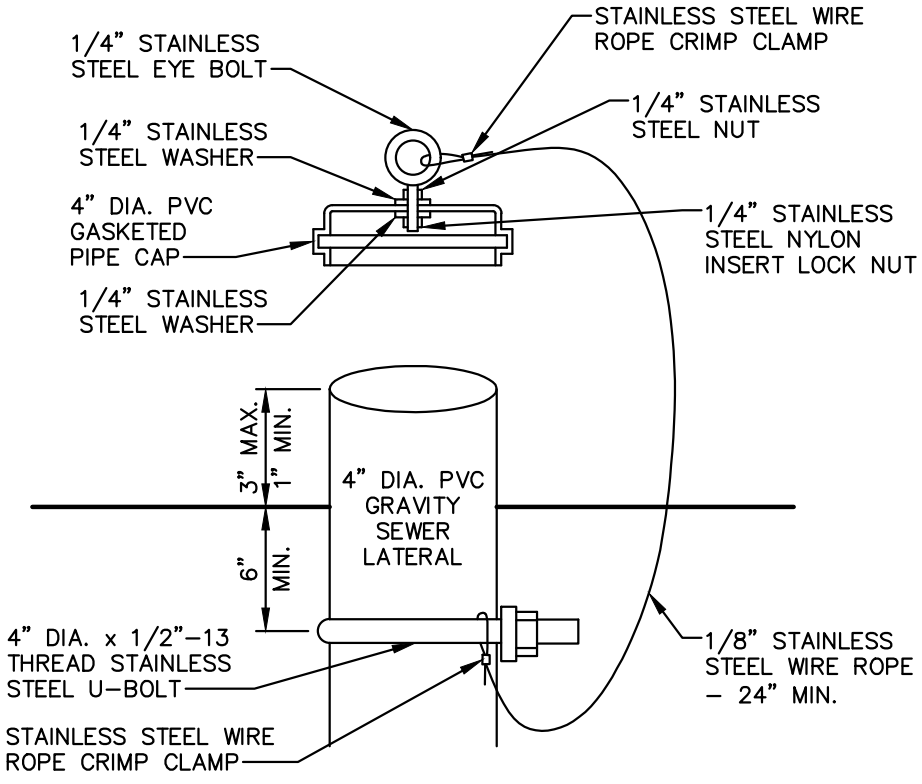
FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-19.DWG



ELEVATION

NOTES:

1. ALL METAL HARDWARE TO BE 304 STAINLESS STEEL.
2. SCHEDULE 40 PVC MAY BE USED INSTEAD OF SDR 35 FOR LATERAL PIPE WITH SDR 35 X SCH. 40 ADAPTER.



NOTE:

SCHEDULE 40 PVC MAY BE USED INSTEAD OF SDR 35 FOR LATERAL PIPE WITH SDR 35 x SCH. 40 ADAPTER.

MOBILE HOME LATERAL CAP DETAIL

Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
PHONE: (304) 725-2316 FAX: (304) 725-4313

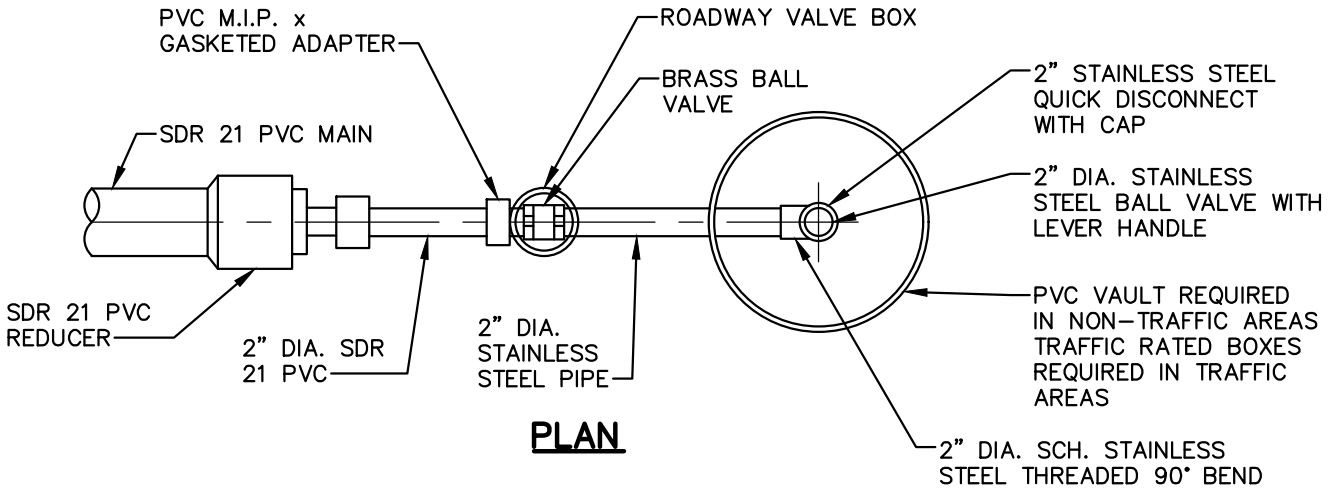
MOBILE HOME CONNECTION DETAIL

STANDARD DETAIL NO.
S-20

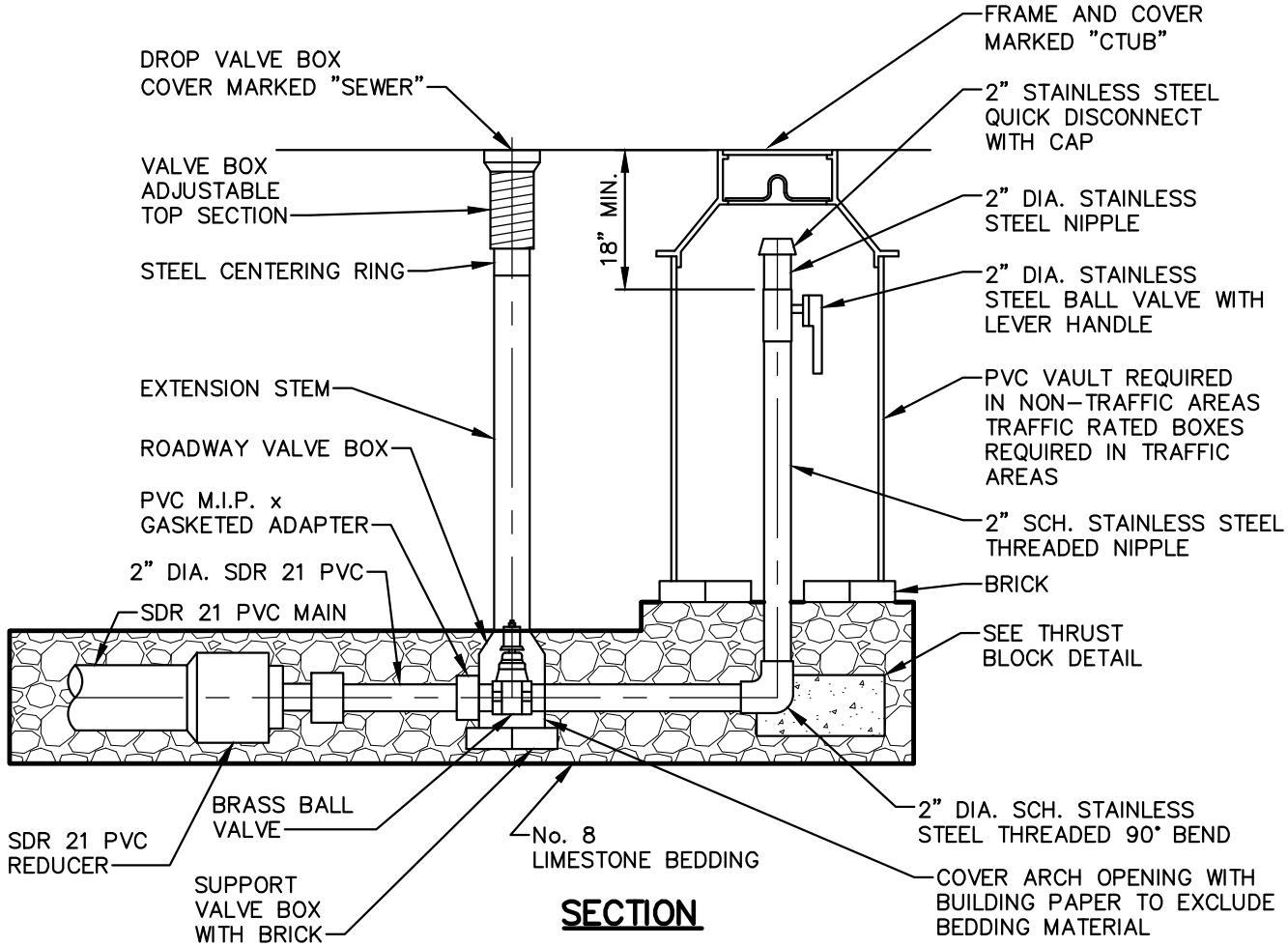
NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-20.DWG



PLAN



SECTION

Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
PHONE: (304) 725-2316 FAX: (304) 725-4313

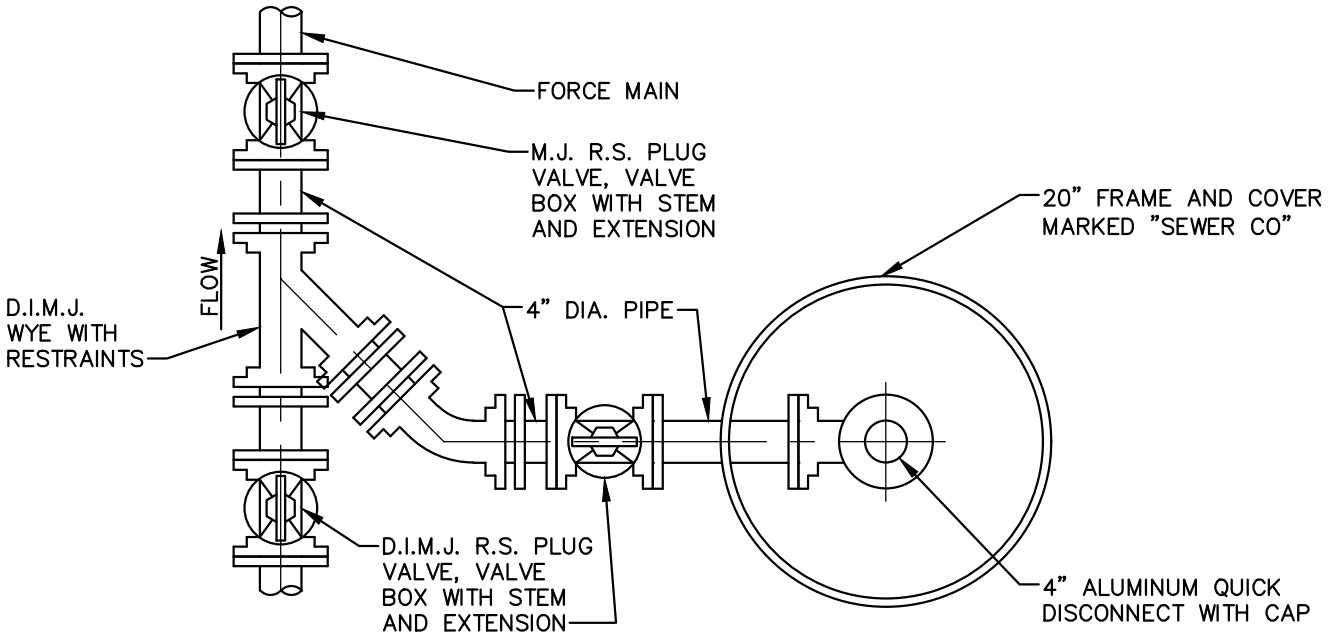
FORCE MAIN 3" DIA. OR LESS FLUSHING DETAIL

STANDARD DETAIL NO.
S-21

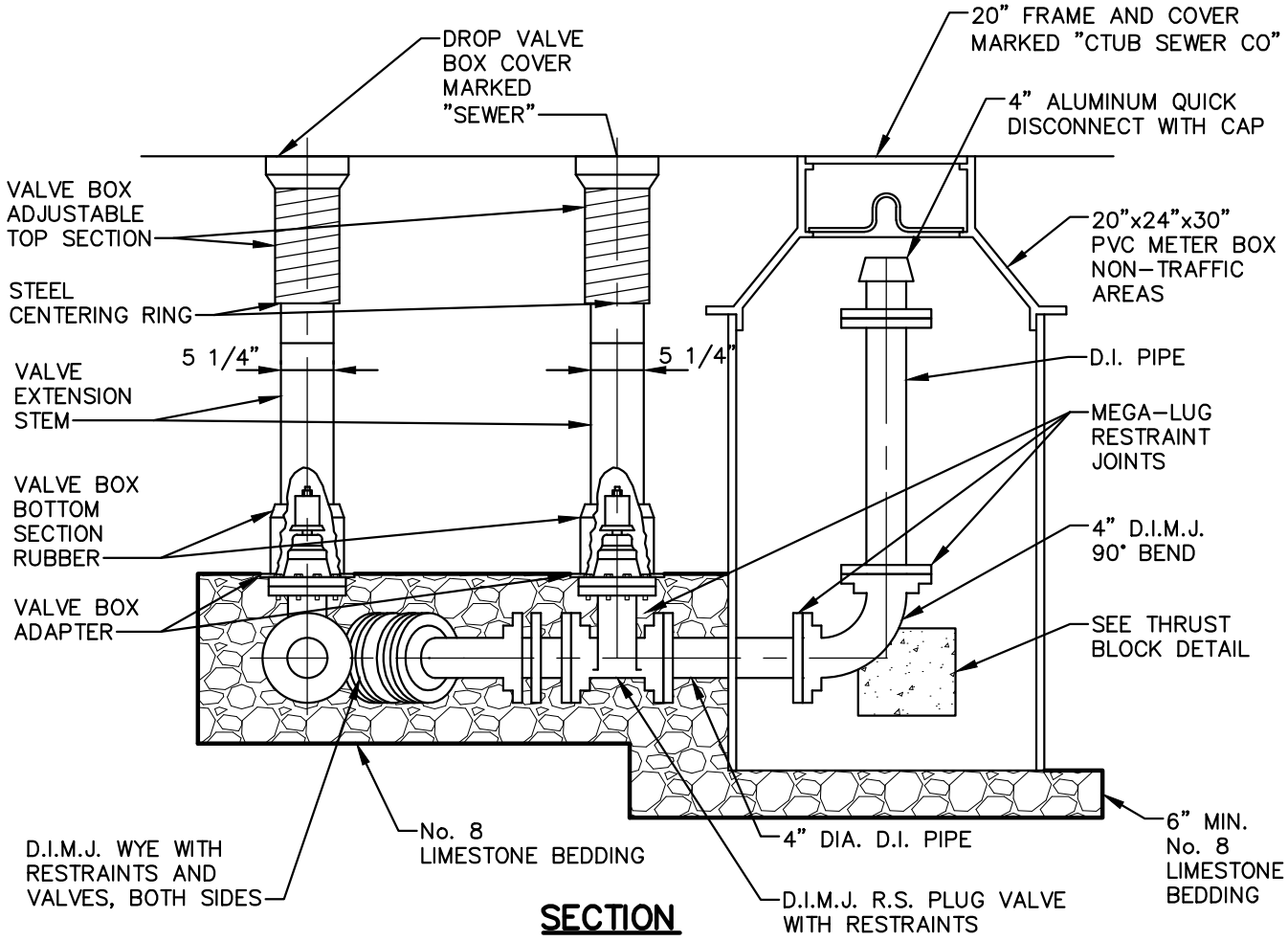
NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-21.DWG



PLAN



SECTION

Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
PHONE: (304) 725-2316 FAX: (304) 725-4313

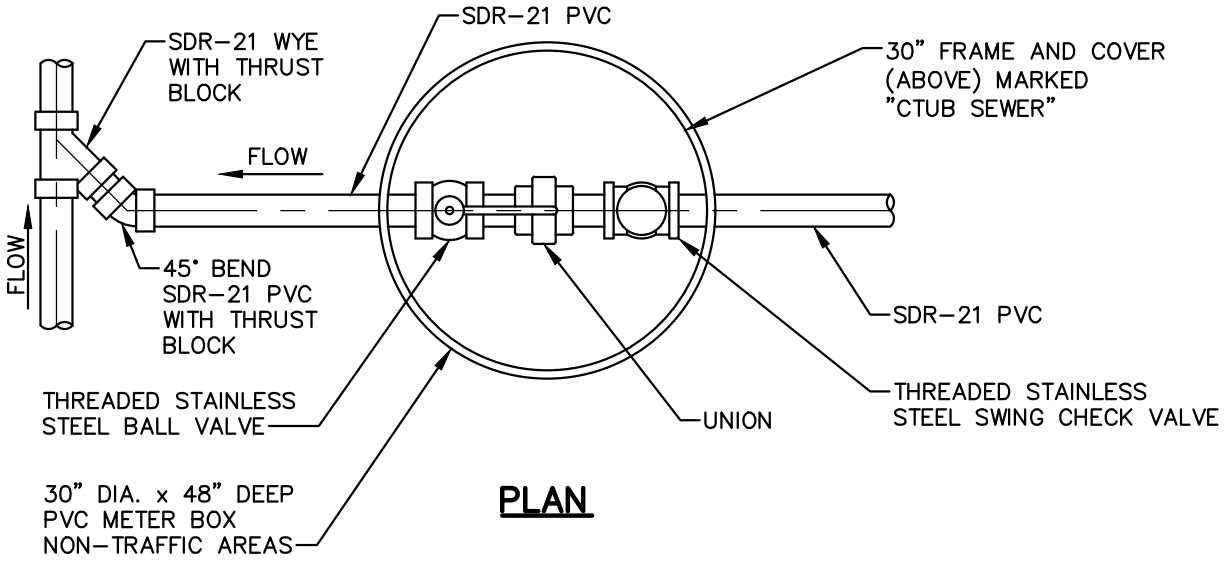
FORCE MAIN FLUSHING 4"-16" LINE DETAIL

STANDARD DETAIL NO.
S-22

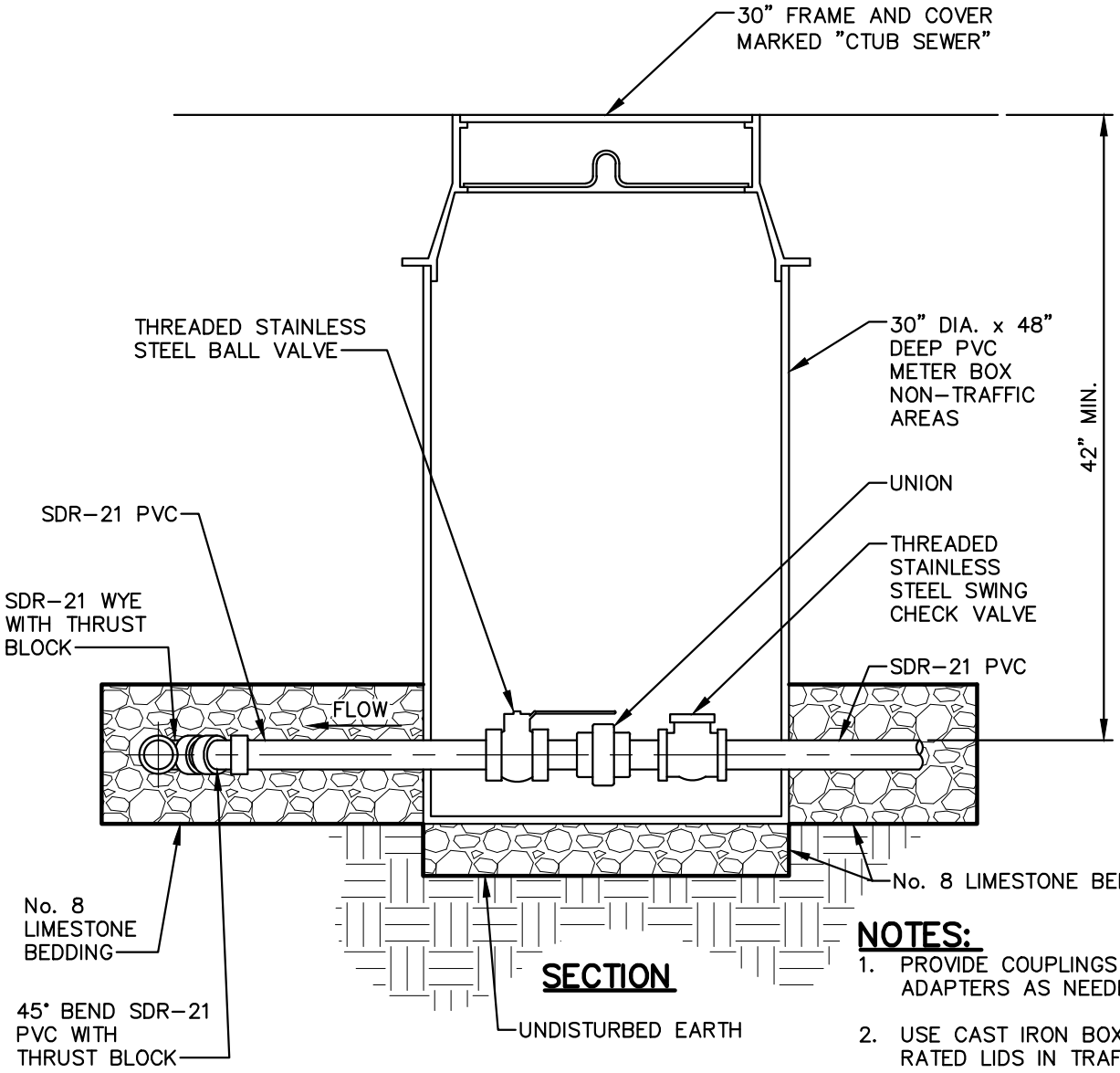
NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-22.DWG



PLAN



SECTION

NOTES:

1. PROVIDE COUPLINGS AND ADAPTERS AS NEEDED.
2. USE CAST IRON BOXES WITH RATED LIDS IN TRAFFIC AREAS.

Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
PHONE: (304) 725-2316 FAX: (304) 725-4313

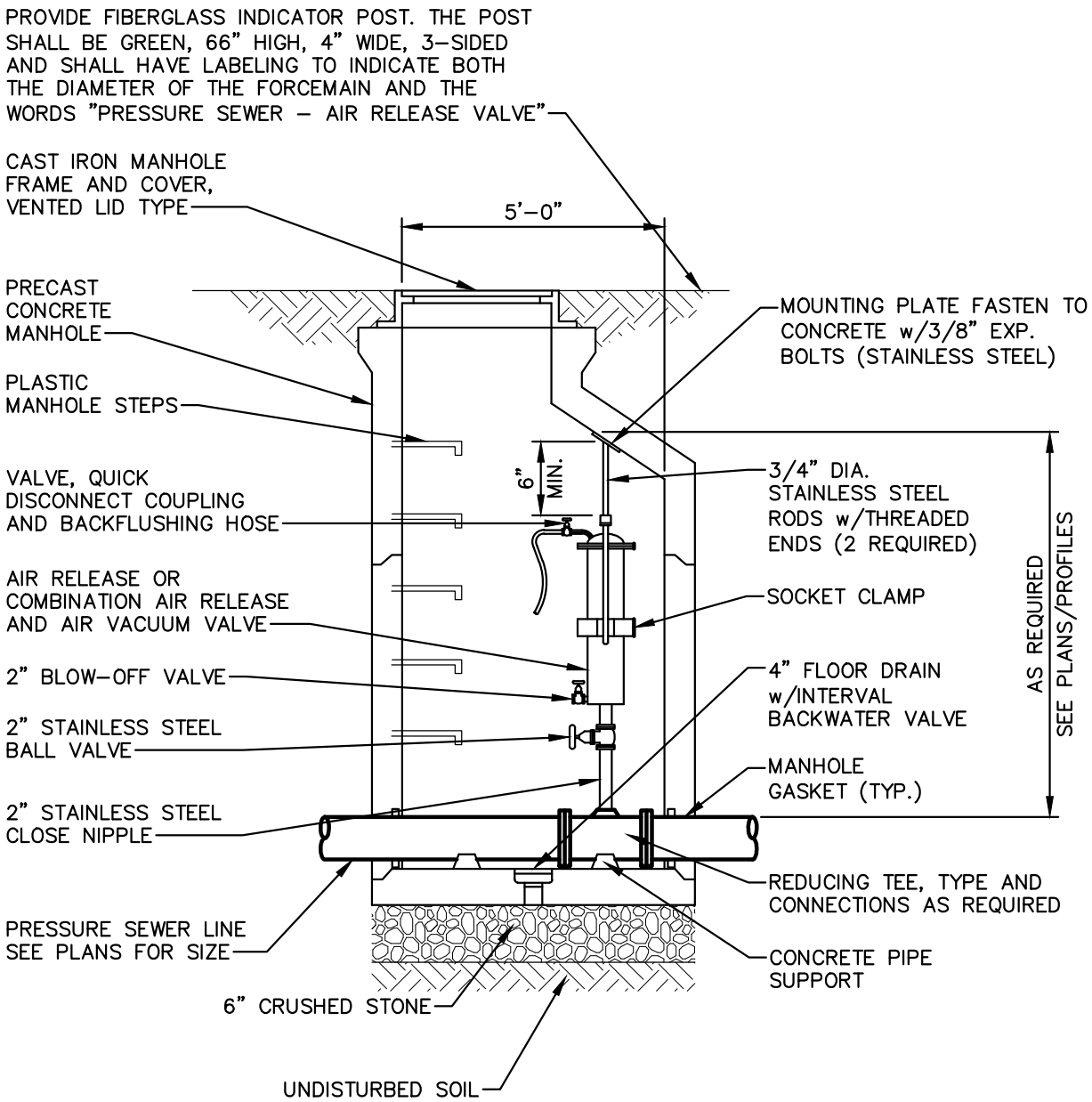
FORCE MAIN LATERAL CONNECTION DETAIL

STANDARD DETAIL NO.
S-23

NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-23.DWG



NOTE:

1. VALVE SHALL BE VAL-MATIC SERIES 800 OR 48A/300 WITH ALL OPTIONS AS SHOWN. PROVIDE LOW DUROMETER SEAT IN LOW PRESSURE APPLICATIONS.

Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
PHONE: (304) 725-2316 FAX: (304) 725-4313

AIR RELEASE AND VACUUM RELIEF VALVE DETAIL

STANDARD DETAIL NO.
S-24

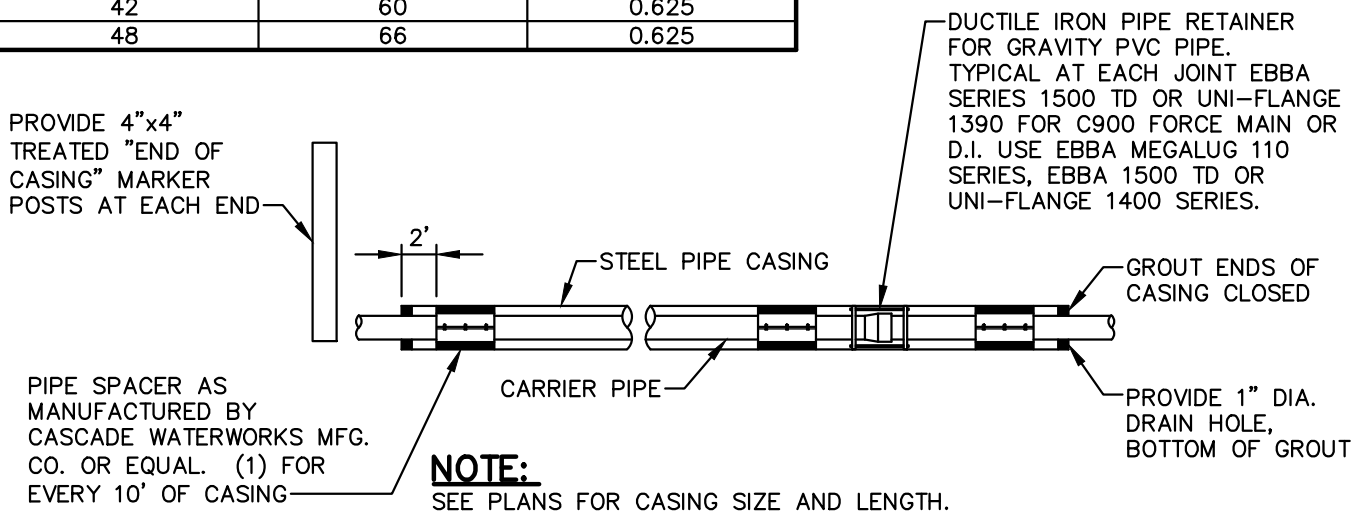
NOT TO SCALE

JULY 2025

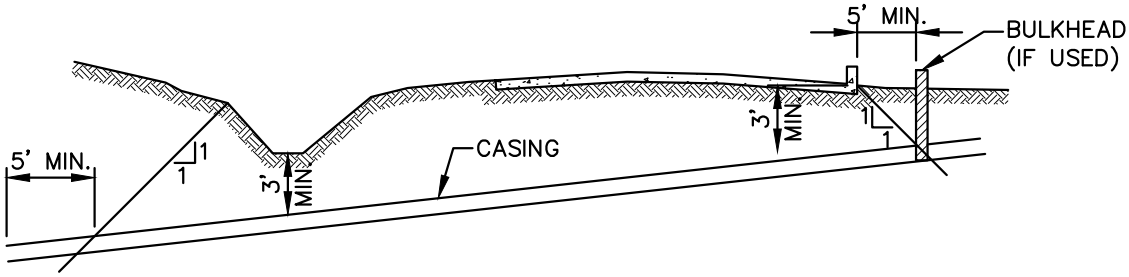
FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-24.DWG

CASING SCHEDULE

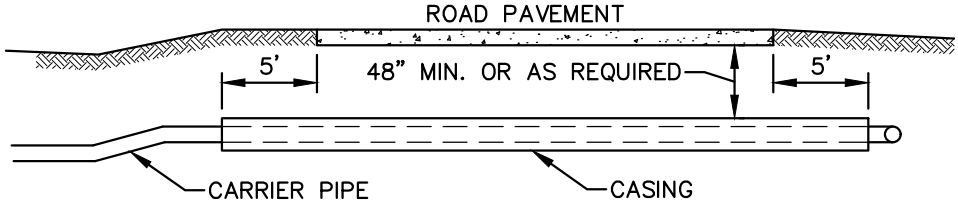
CARRIER PIPE DIA. (IN.)	CASING PIPE DIA. (IN.)	NOM. WALL THICKNESS
4	10	0.313
6	12	0.313
8	16	0.313
10	24	0.375
12	24	0.375
16	30	0.500
20	36	0.500
24	42	0.500
30	48	0.500
36	54	0.625
42	60	0.625
48	66	0.625



NOTE:
SEE PLANS FOR CASING SIZE AND LENGTH.



NOTE:
PERMIT REQUIRED FROM WV DEPARTMENT OF HIGHWAYS IF CROSSING UNDER STATE ROAD. WVDOH PERMIT REQUIREMENTS SUPERCEDE WHAT IS SHOWN ON THIS DETAIL.



Charles Town Utility Board
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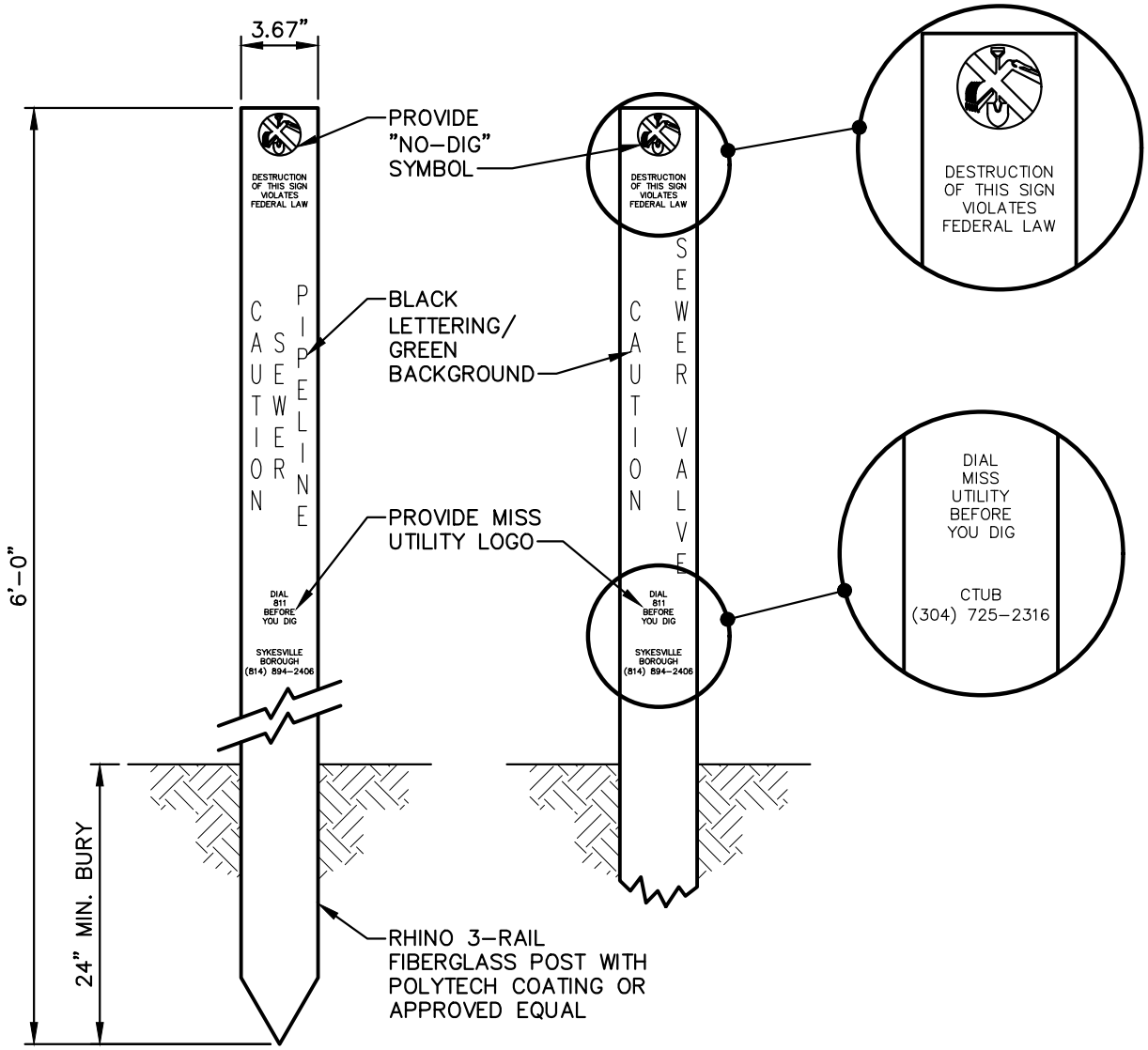
PIPE CASING DETAIL

STANDARD DETAIL NO.
S-25
NOT TO SCALE
JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-25.DWG



NOTES:

1. ALL MARKER POSTS MUST BE SET TRUE (FACING THE FACILITY) AND PLUMB.
2. DO NOT SET MARKER POSTS IN TRAVELED WAY.
3. DO NOT SET MARKER POSTS ON PRIVATE PROPERTY.
4. IN SANDY LOOSE SOILS, PROVIDE AND INSTALL ANCHOR BARB KIT CONTAINING ONE METAL ANCHOR BARB AND TWO RIVETS AS REQUIRED.
5. WHEN PLACING "CAUTION SEWER PIPELINE" MARKERS IN RIGHT-OF-WAY TO IDENTIFY PIPE LOCATIONS, PLACE THE MARKERS EVERY 400 FT TO 500 FT OR WITHIN LINE OF SIGHT, AND PLACE AT SIGNIFICANT PIPE ALIGNMENT ANGLE POINTS AS NEEDED.

PROVIDE AND AFFIX THE APPROPRIATE UTILITY MARKER DECAL TO IDENTIFY THE FACILITY BEING INSTALLED, REPLACED OR INSPECTED AS NEEDED.

CAUTION SEWER PIPELINE

CAUTION SEWER VALVE

Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
PHONE: (304) 725-2316 FAX: (304) 725-4313

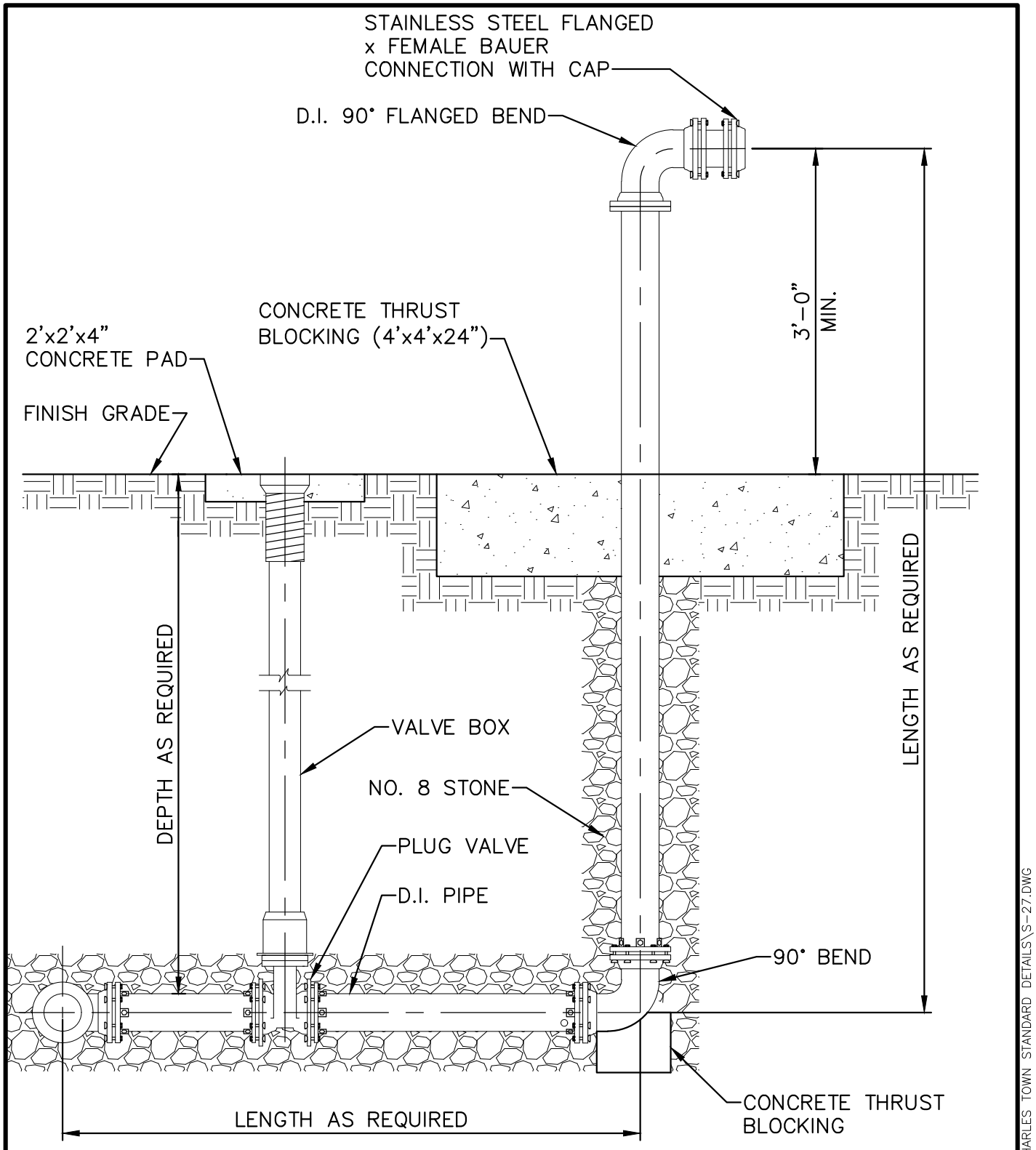
PIPELINE MARKER POST DETAIL

STANDARD DETAIL NO.
S-26

NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-26.DWG



Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
PHONE: (304) 725-2316 FAX: (304) 725-4313

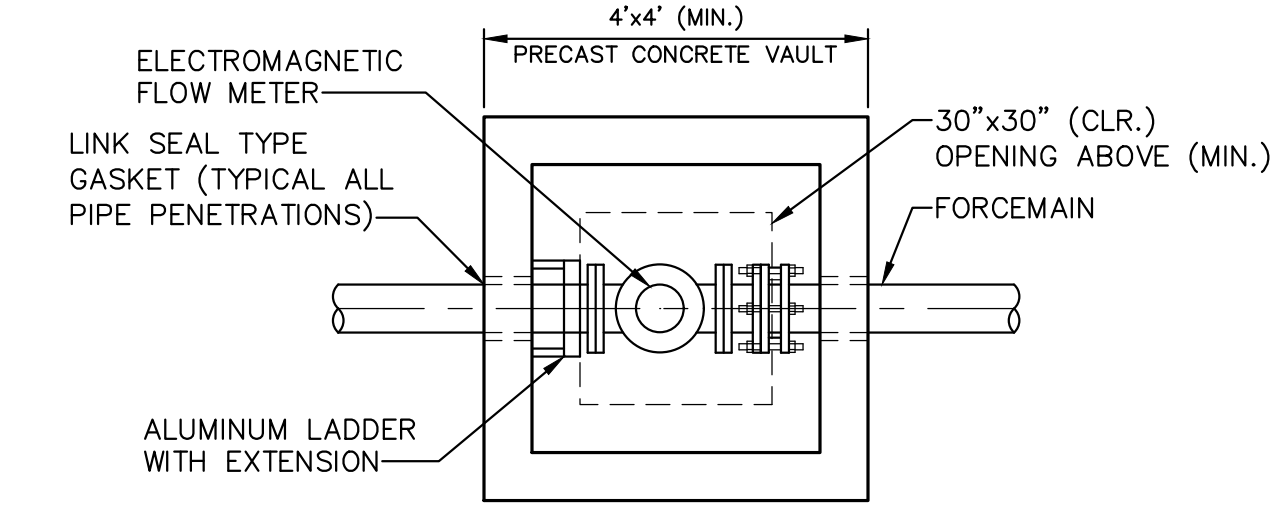
EMERGENCY BYPASS CONNECTION DETAIL

STANDARD DETAIL NO.
S-27

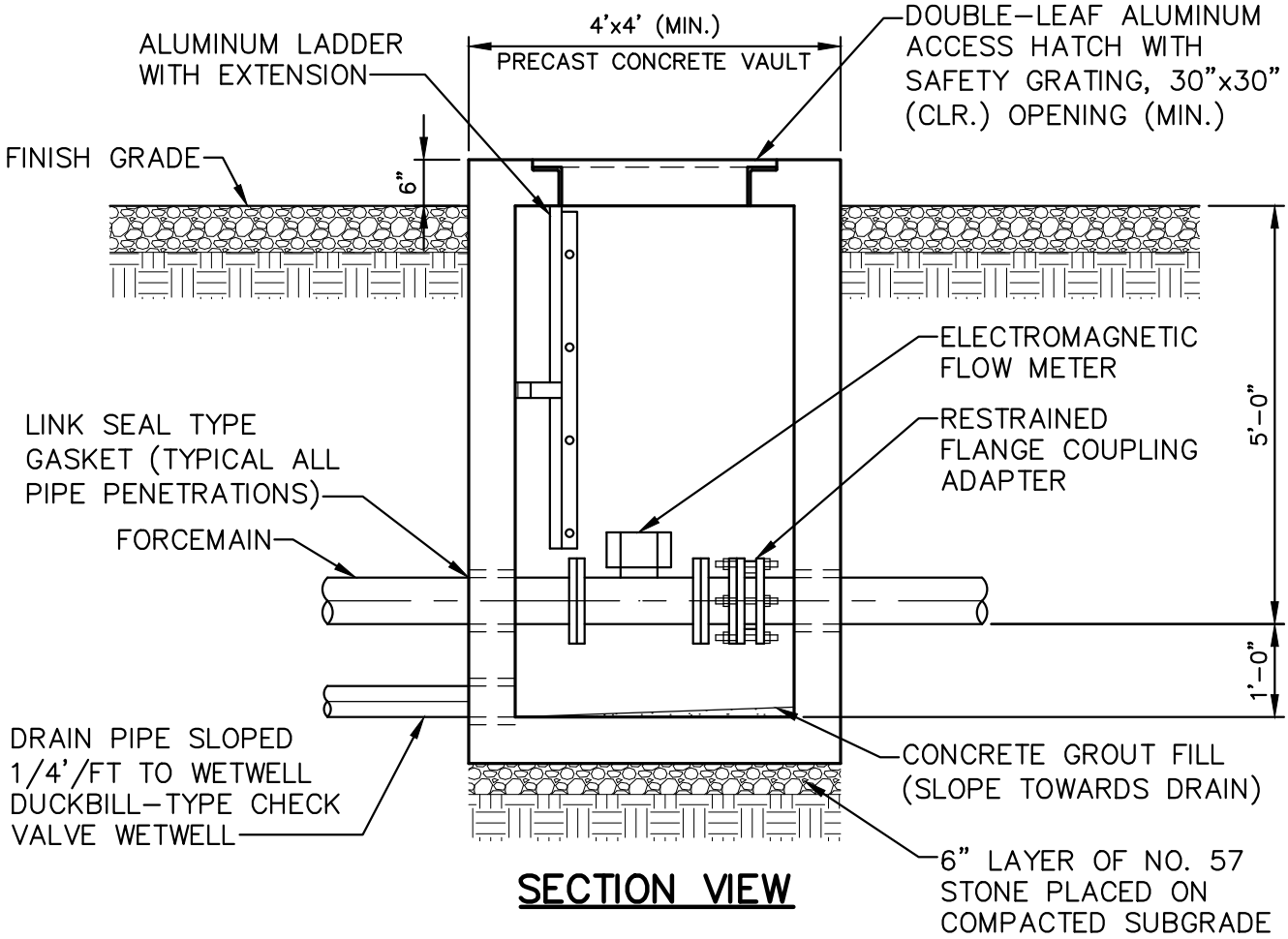
NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-27.DWG



PLAN VIEW



SECTION VIEW

Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
PHONE: (304) 725-2316 FAX: (304) 725-4313

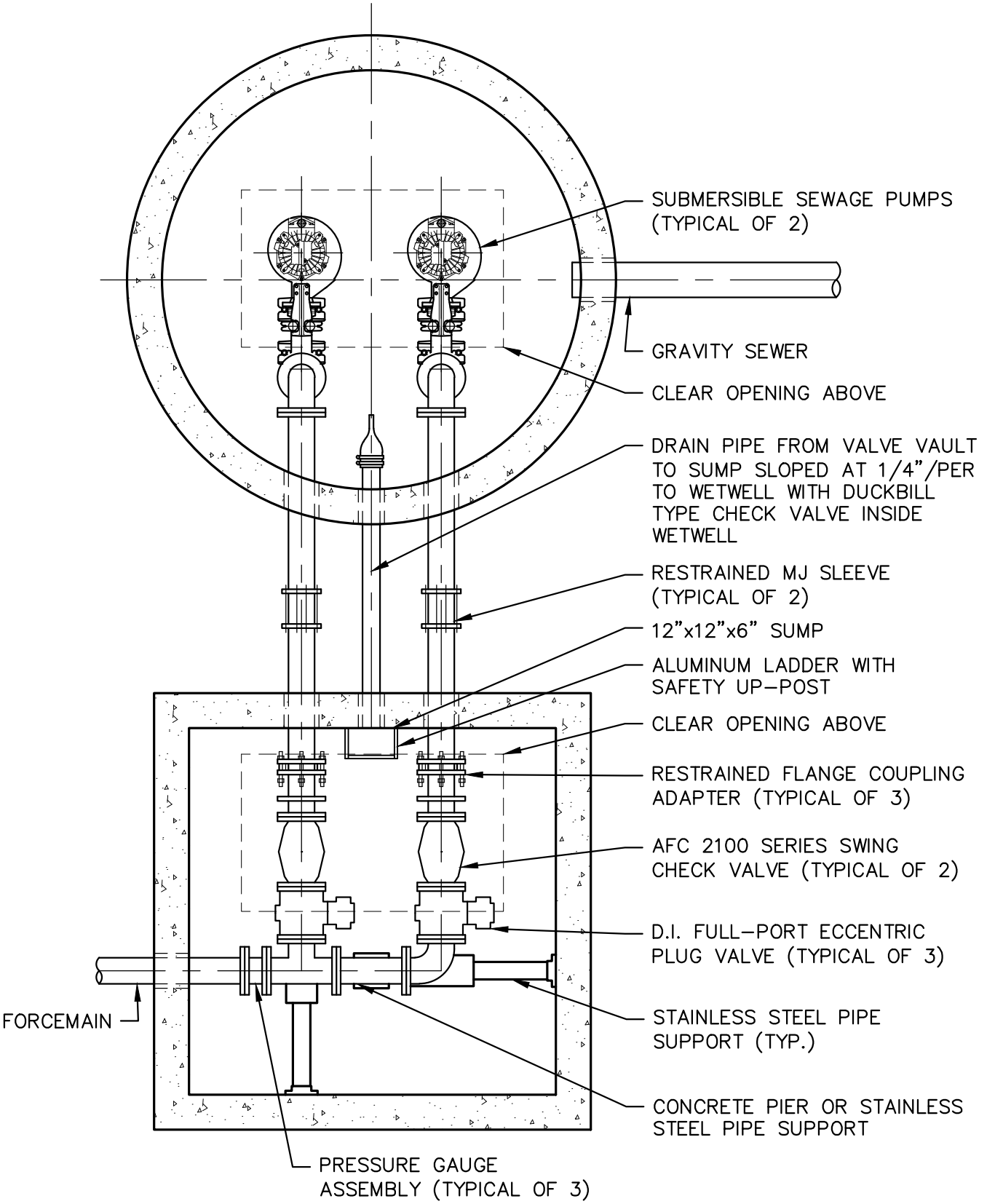
FLOW METER VAULT PLAN AND SECTION VIEW

STANDARD DETAIL NO.
S-28

NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-28.DWG



Charles Town Utility Board
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PHONE: (304) 725-2316 FAX: (304) 725-4313

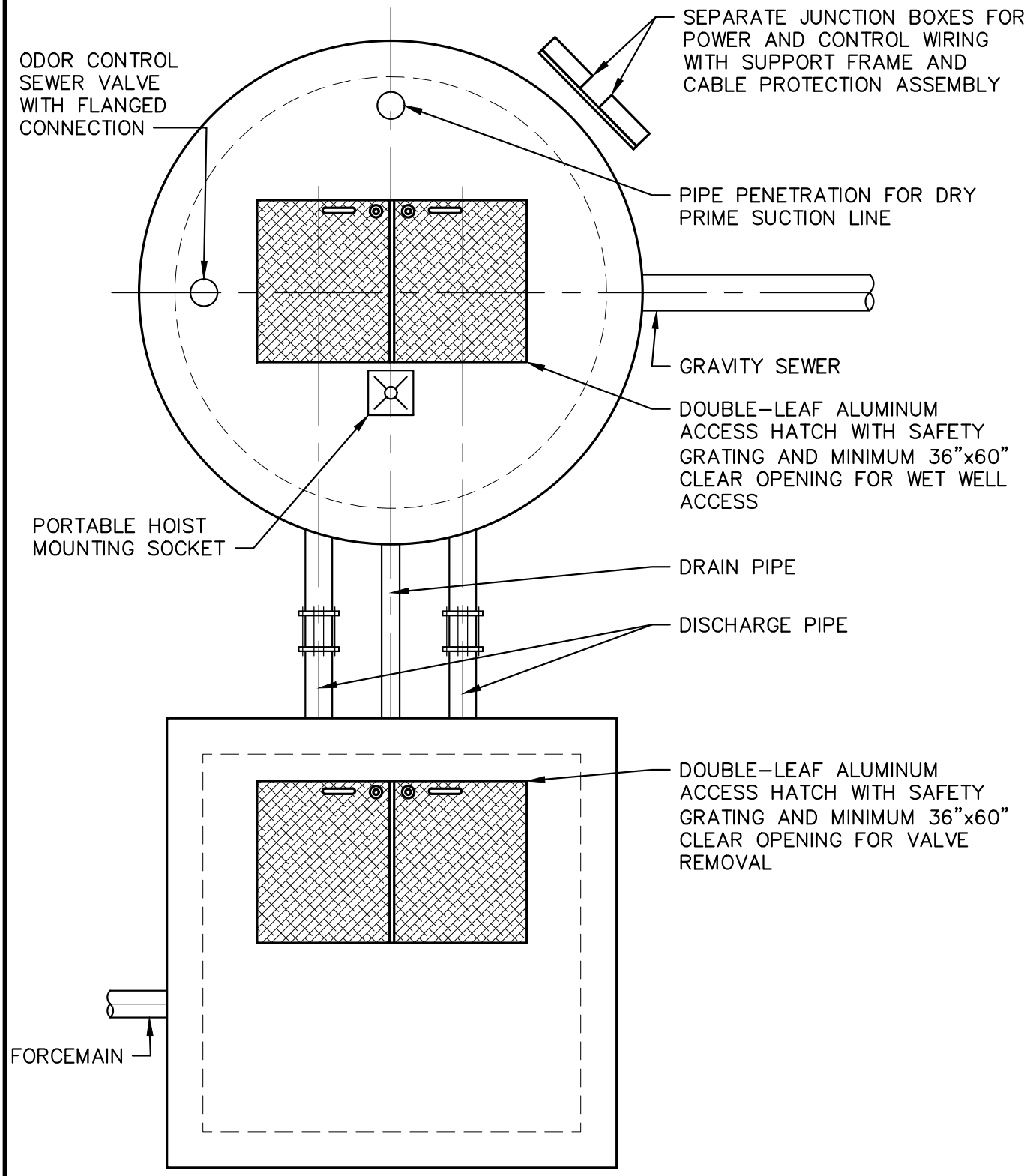
PUMP STATION PLAN VIEW (BELOW SLAB)

STANDARD DETAIL NO.
S-29

NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-29.DWG



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PHONE: (304) 725-2316 FAX: (304) 725-4313

PUMP STATION PLAN VIEW (TOP OF SLAB)

STANDARD DETAIL NO.
S-30

NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-30.DWG

PUMP STATION NOTES:

1. CONTRACTOR SHALL COORDINATE PUMP STATION ACCESS COVER LOCATION AND INSTALLATION WITH PUMP MANUFACTURER AND PRECAST CONCRETE MANUFACTURER/SUPPLIER.

2. WALL AND SLAB THICKNESS FOR THE PUMP STATION AND VALVE VAULT TO BE DETERMINED BY PRECAST CONCRETE MANUFACTURER/SUPPLIER.

3. CONTRACTOR SHALL COORDINATE VALVE VAULT ACCESS COVER SIZE AND INSTALLATION WITH PRECAST CONCRETE MANUFACTURER/SUPPLIER.

4. EXCAVATE AREA TO AN ELEVATION AT LEAST 6" BELOW THE BOTTOM OF NEW FOUNDATION MAT, THICKNESS TO BE DESIGNED BY THE PRECAST CONCRETE PUMP STATION MANUFACTURER, SUPPLIER OR CONTRACTOR.

5. STRUCTURAL DESIGN OF ENTIRE PUMP STATION AND VALVE VAULT SHALL BE BY THE MANUFACTURER, INCLUDING PRECAST TOP SLAB AND CONCRETE BASE MAT. UPLIFT RESISTANCE DUE TO POSSIBILITY OF HIGH GROUNDWATER AND EMPTY TANK SHALL BE ACCOUNTED FOR. USE 2,000 PSF ALLOWABLE SOIL BEARING PRESSURE.

6. PRECAST STRUCTURES SHALL BE MANUFACTURED PER ASTM C-478, 5000 PSI AT 28 DAYS.

7. ALL HARDWARE FOR PUMP STATION AND VALVE VAULT INCLUDING, BUT NOT LIMITED TO, BOLTS, NUTS, WASHERS, ETC., SHALL BE TYPE 304 OR 316 STAINLESS STEEL.

8. ALL PIPE PENETRATIONS SHALL HAVE STAINLESS STEEL SLEEVE WITH INTEGRAL WATERSTOP AND MODULAR ELASTOMER SEAL (LINK-SEAL).

Charles Town Utility Board
661 S. GEORGE STREET, SUITE 101, CHARLES TOWN, WV 25414
PHONE: (304) 725-2316 FAX: (304) 725-4313

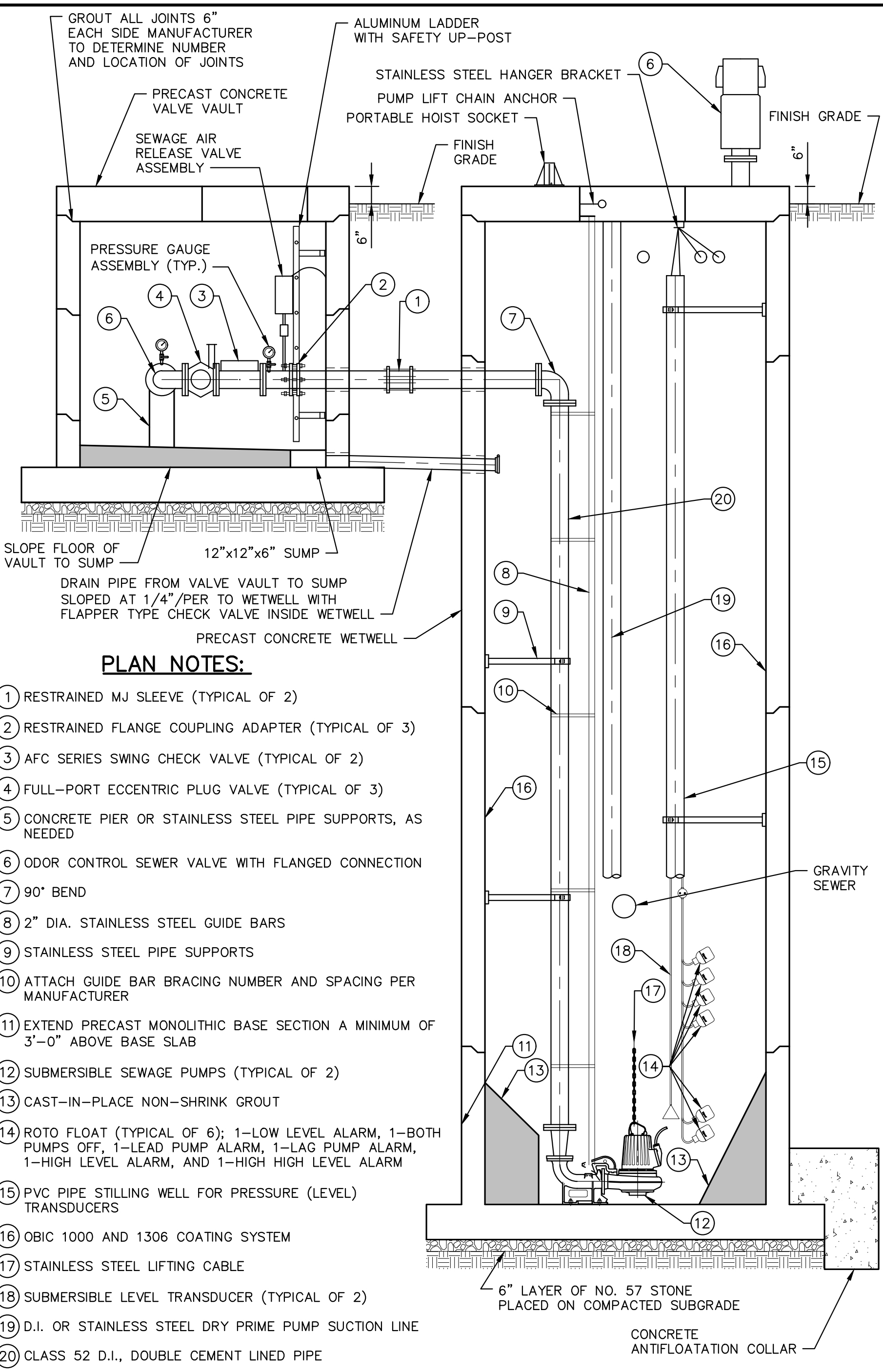
PUMP STATION NOTES

STANDARD DETAIL NO.
S-31

NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-31.DWG



PLAN NOTES:

1. RESTRAINED MJ SLEEVE (TYPICAL OF 2)
2. RESTRAINED FLANGE COUPLING ADAPTER (TYPICAL OF 3)
3. AFC SERIES SWING CHECK VALVE (TYPICAL OF 2)
4. FULL-PORT ECCENTRIC PLUG VALVE (TYPICAL OF 3)
5. CONCRETE PIER OR STAINLESS STEEL PIPE SUPPORTS, AS NEEDED
6. ODOR CONTROL SEWER VALVE WITH FLANGED CONNECTION
7. 90° BEND
8. 2" DIA. STAINLESS STEEL GUIDE BARS
9. STAINLESS STEEL PIPE SUPPORTS
10. ATTACH GUIDE BAR BRACING NUMBER AND SPACING PER MANUFACTURER
11. EXTEND PRECAST MONOLITHIC BASE SECTION A MINIMUM OF 3'-0" ABOVE BASE SLAB
12. SUBMERSIBLE SEWAGE PUMPS (TYPICAL OF 2)
13. CAST-IN-PLACE NON-SHRINK GROUT
14. ROTO FLOAT (TYPICAL OF 6); 1-LOW LEVEL ALARM, 1-BOTH PUMPS OFF, 1-LEAD PUMP ALARM, 1-LAG PUMP ALARM, 1-HIGH LEVEL ALARM, AND 1-HIGH HIGH LEVEL ALARM
15. PVC PIPE STILLING WELL FOR PRESSURE (LEVEL) TRANSDUCERS
16. OBIC 1000 AND 1306 COATING SYSTEM
17. STAINLESS STEEL LIFTING CABLE
18. SUBMERSIBLE LEVEL TRANSDUCER (TYPICAL OF 2)
19. D.I. OR STAINLESS STEEL DRY PRIME PUMP SUCTION LINE
20. CLASS 52 D.I., DOUBLE CEMENT LINED PIPE

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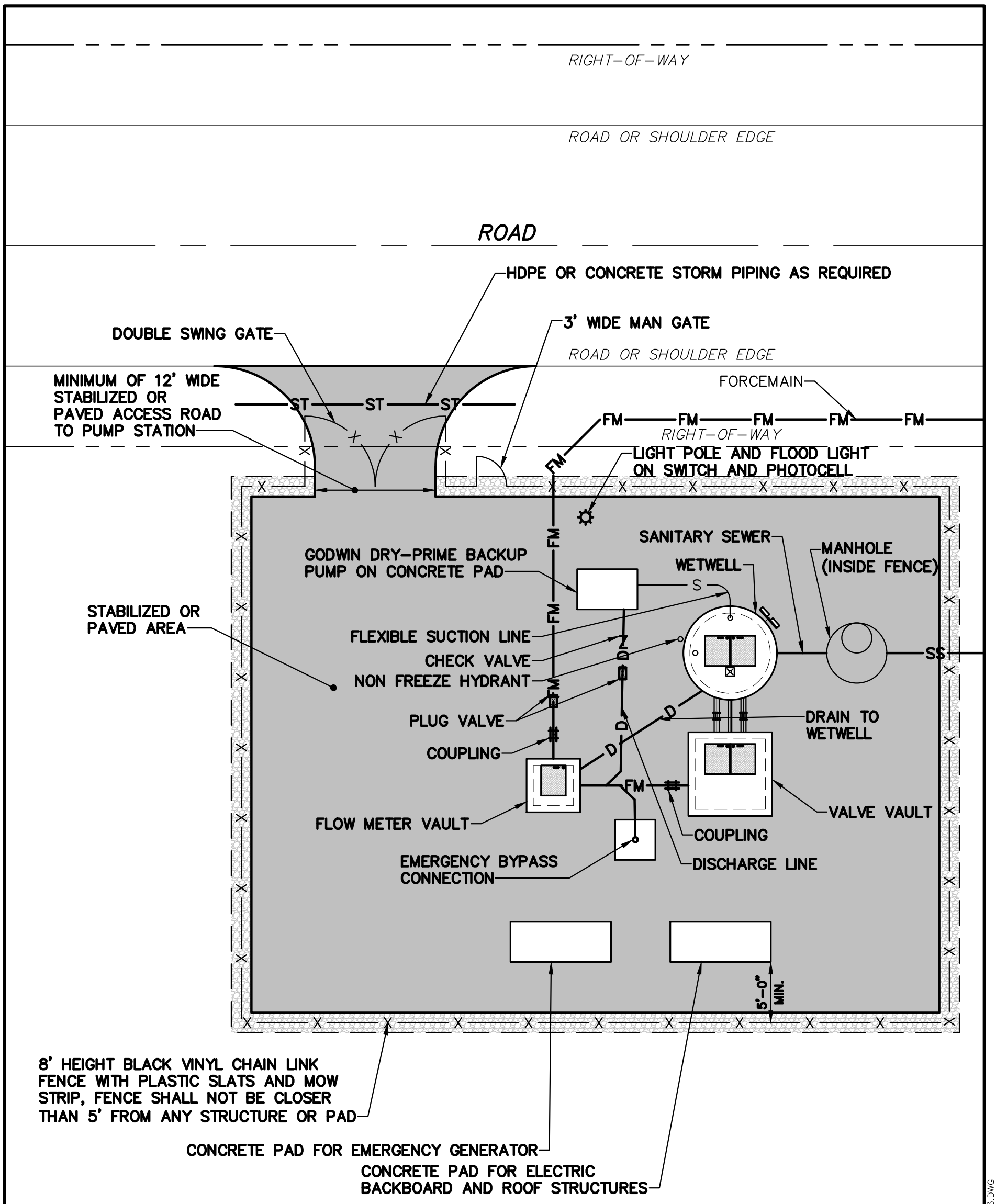
PUMP STATION ELEVATION VIEW

STANDARD DETAIL NO.
S-32
NOT TO SCALE
JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-32.DWG



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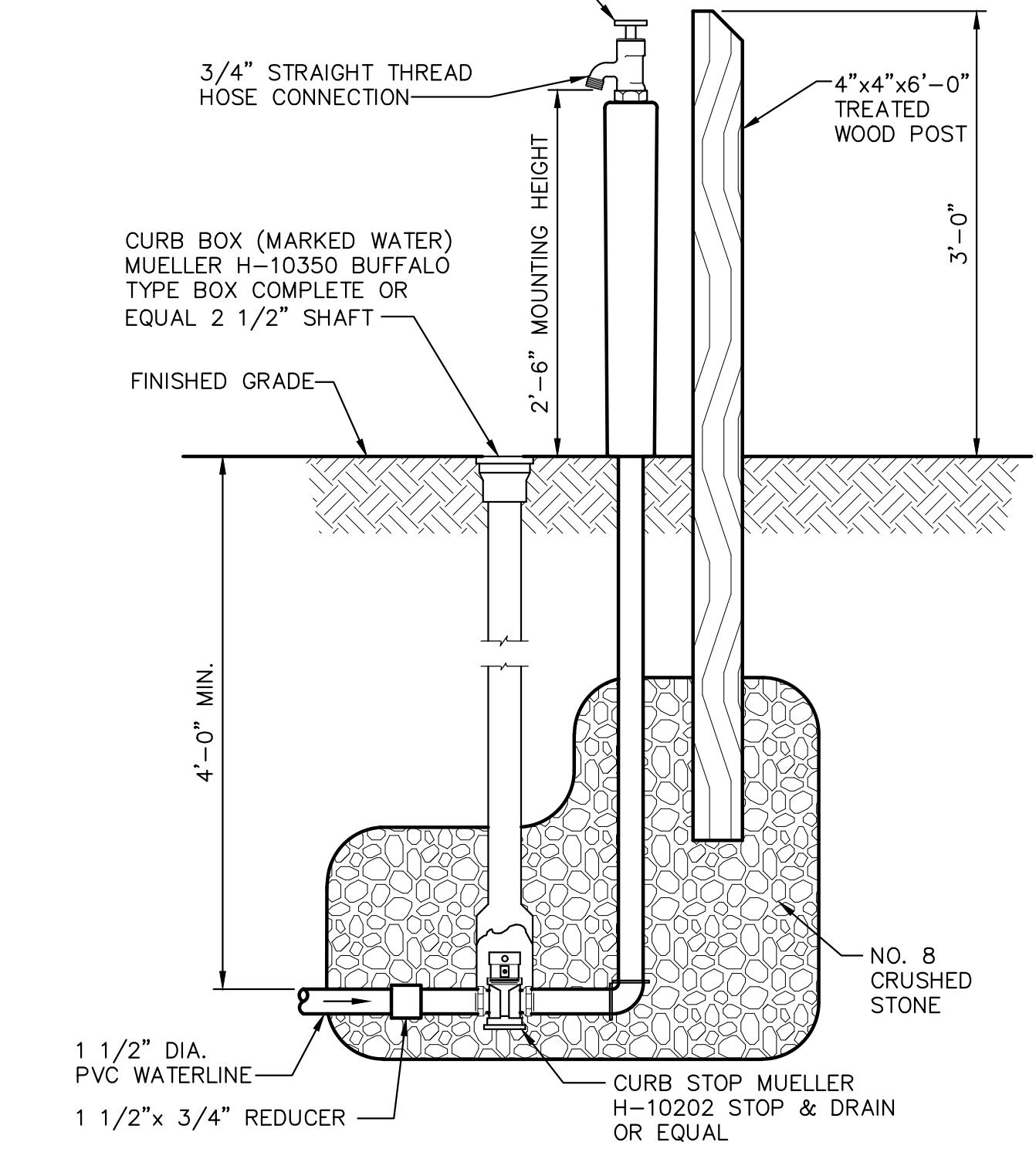
PUMP STATION SITE PLAN

STANDARD DETAIL NO.
S-33

NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-33.DWG



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NON-FREEZE YARD (POST) HYDRANT DETAIL

STANDARD DETAIL NO.
S-34

NOT TO SCALE

JULY 2025

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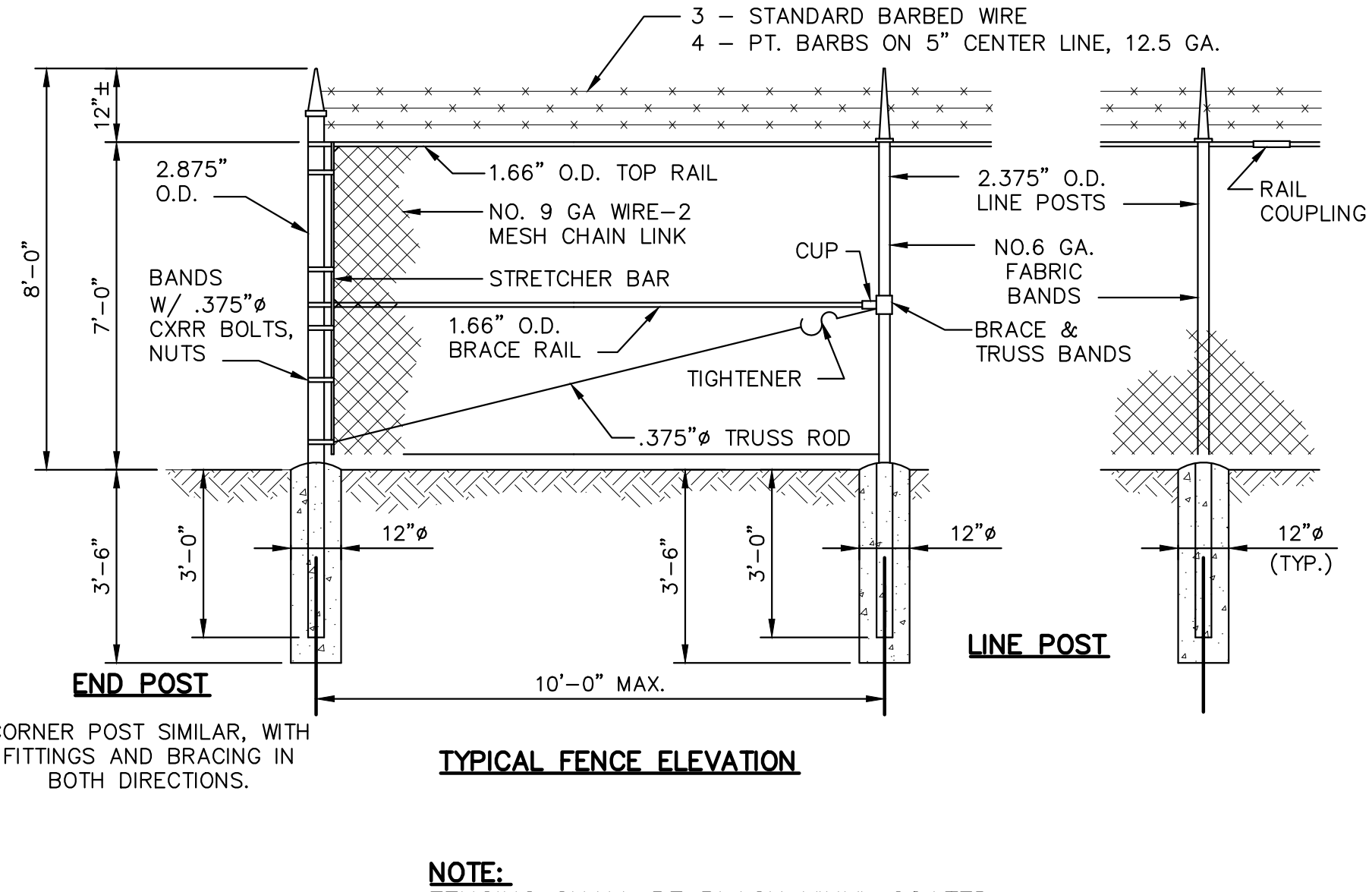
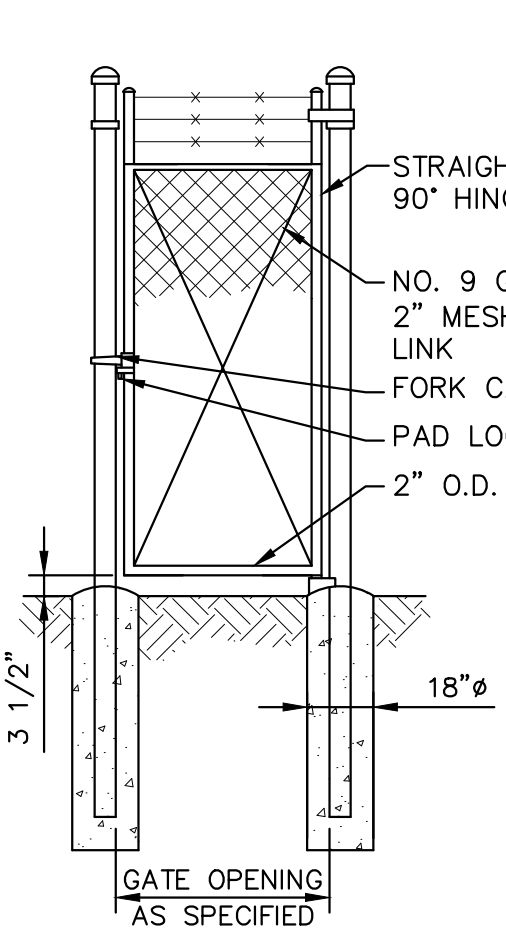
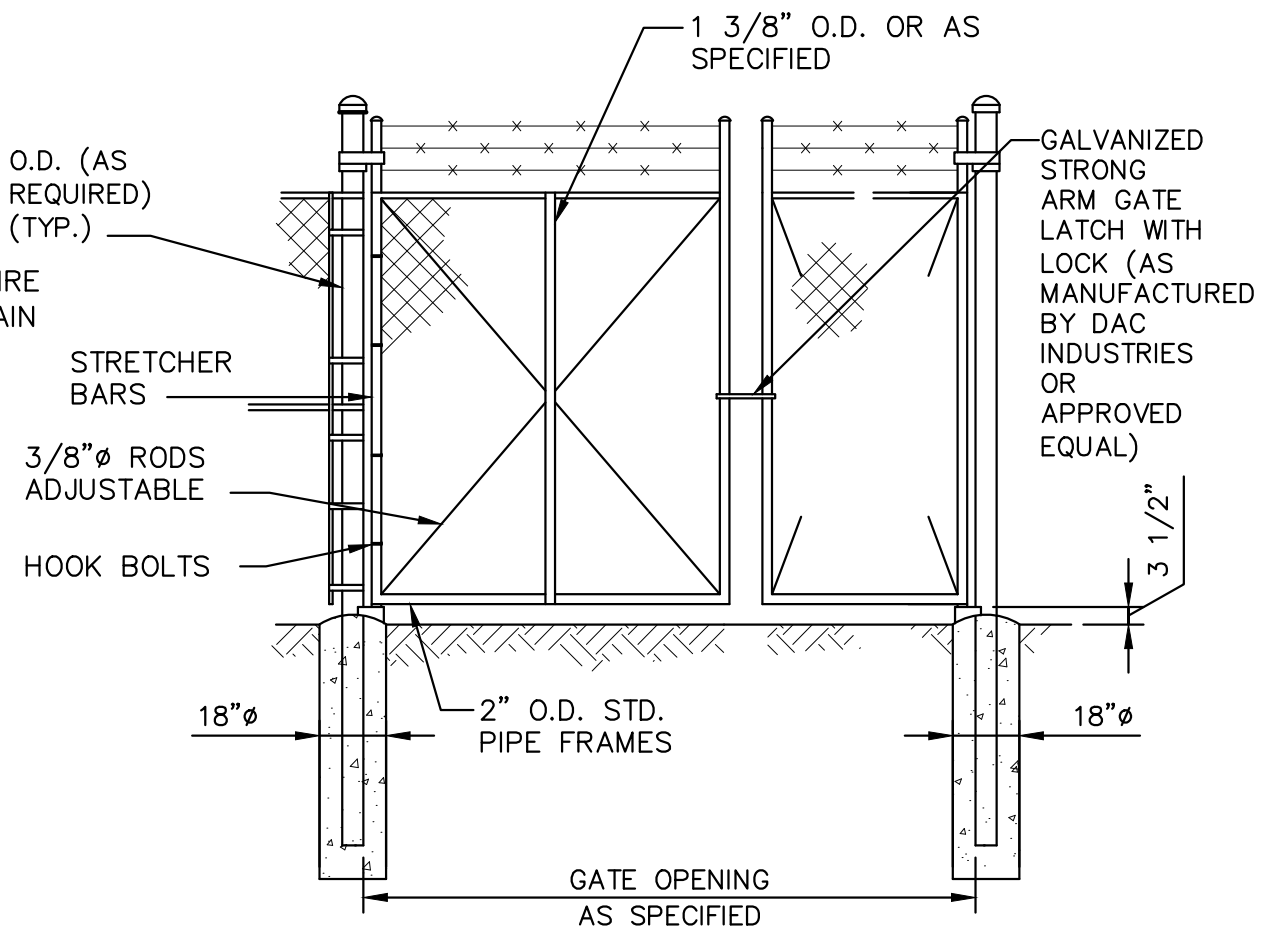


TYPICAL FENCE ELEVATION

NOTE:
FENCING SHALL BE BLACK VINYL COATED WITH VINYL SLATS FOR 80% OPACITY



TYPICAL SINGLE SWING GATE ELEVATION



TYPICAL DOUBLE SWING GATE ELEVATION

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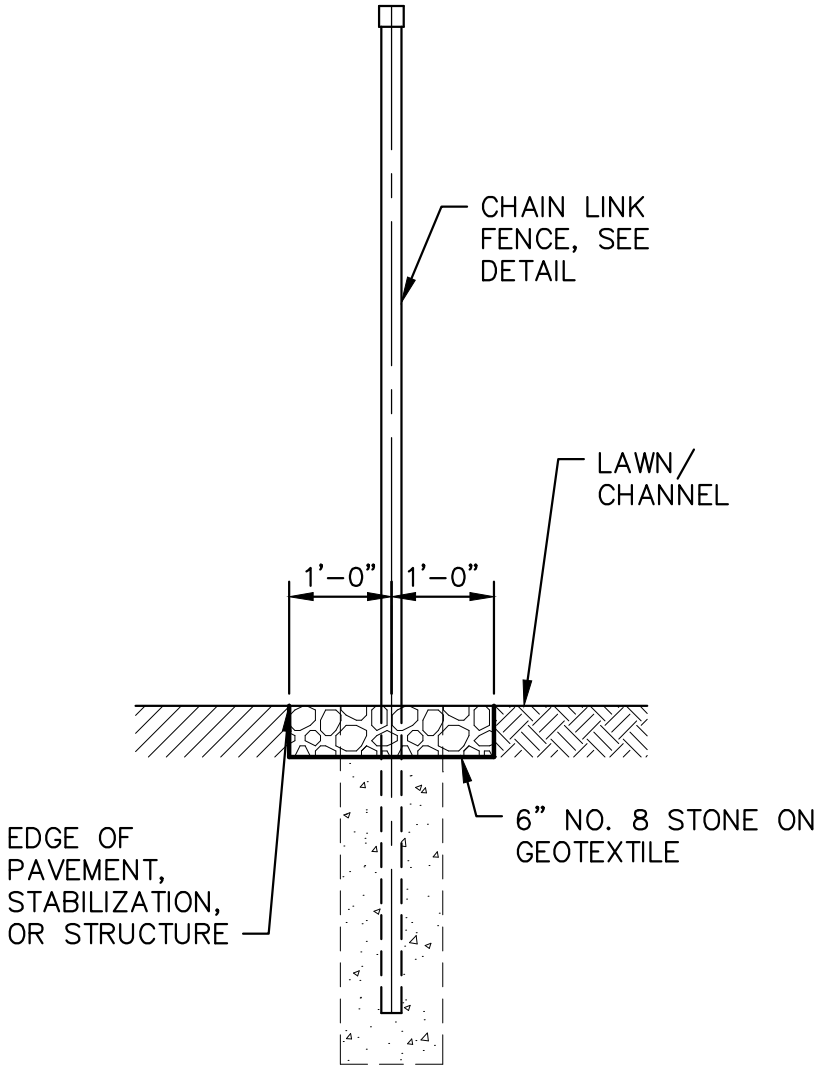
TYPICAL CHAIN-LINK FENCE DETAILS

STANDARD DETAIL NO.
S-35
NOT TO SCALE
JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-35.DWG



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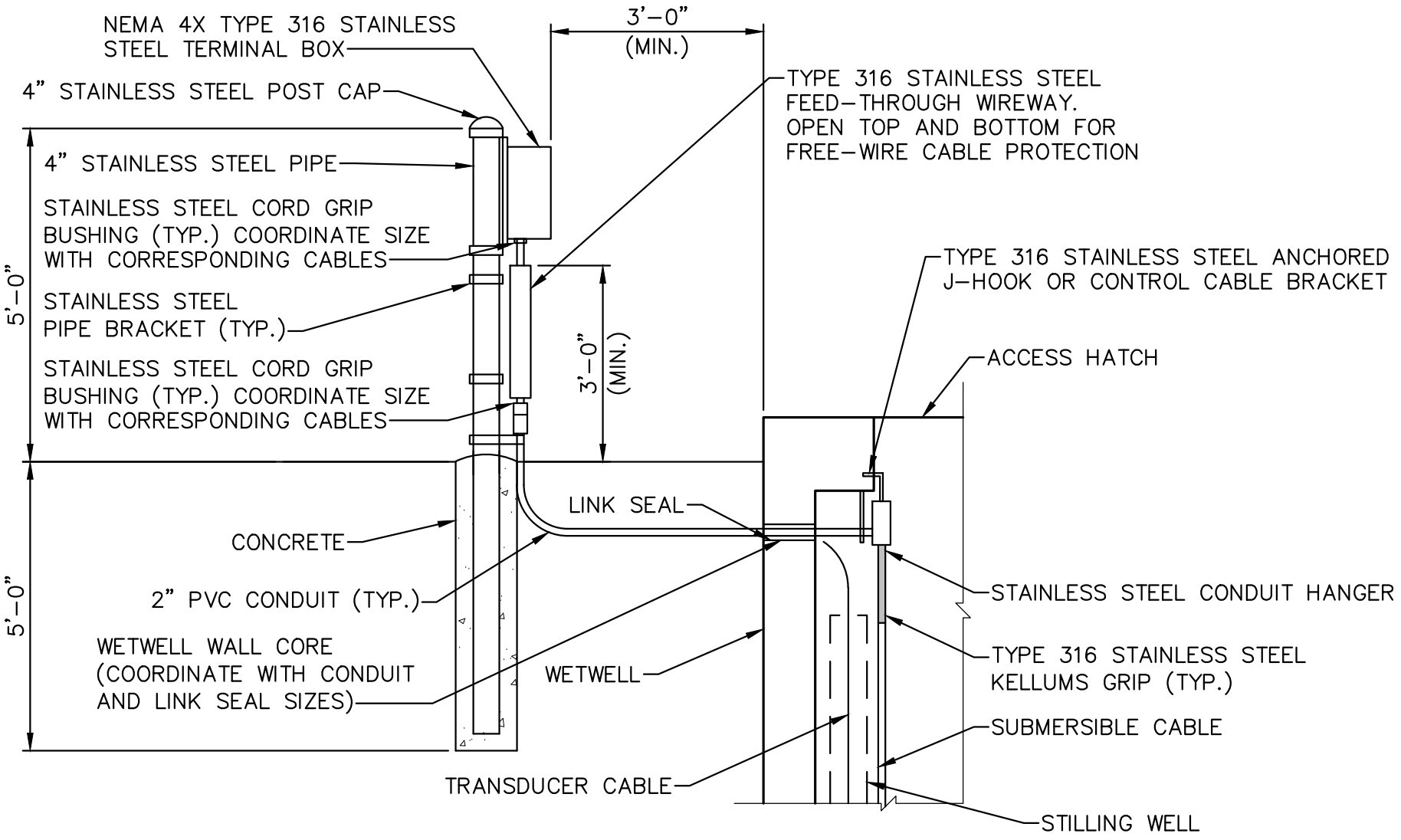
FENCE MOW STRIP

STANDARD DETAIL NO.
S-36

NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-36.DWG



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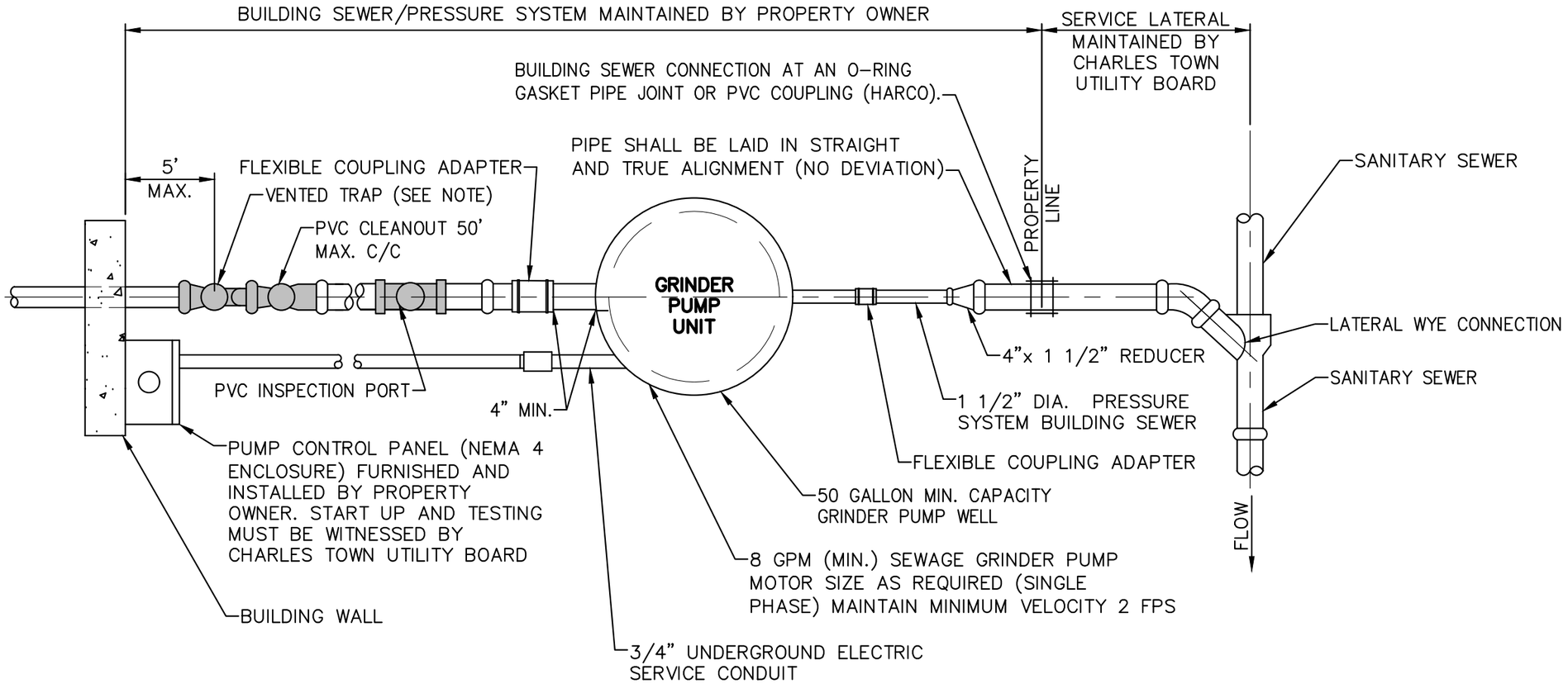
WETWELL JUNCTION/TERMINAL BOX DETAIL

STANDARD DETAIL NO.
S-37

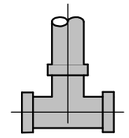
NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-37.DWG



LEGEND



ALL VERTICAL PIPE SECTIONS INCLUDING FITTINGS MUST BE SOLVENT-WELD SDR35 PVC.

Charles Town Utility Board
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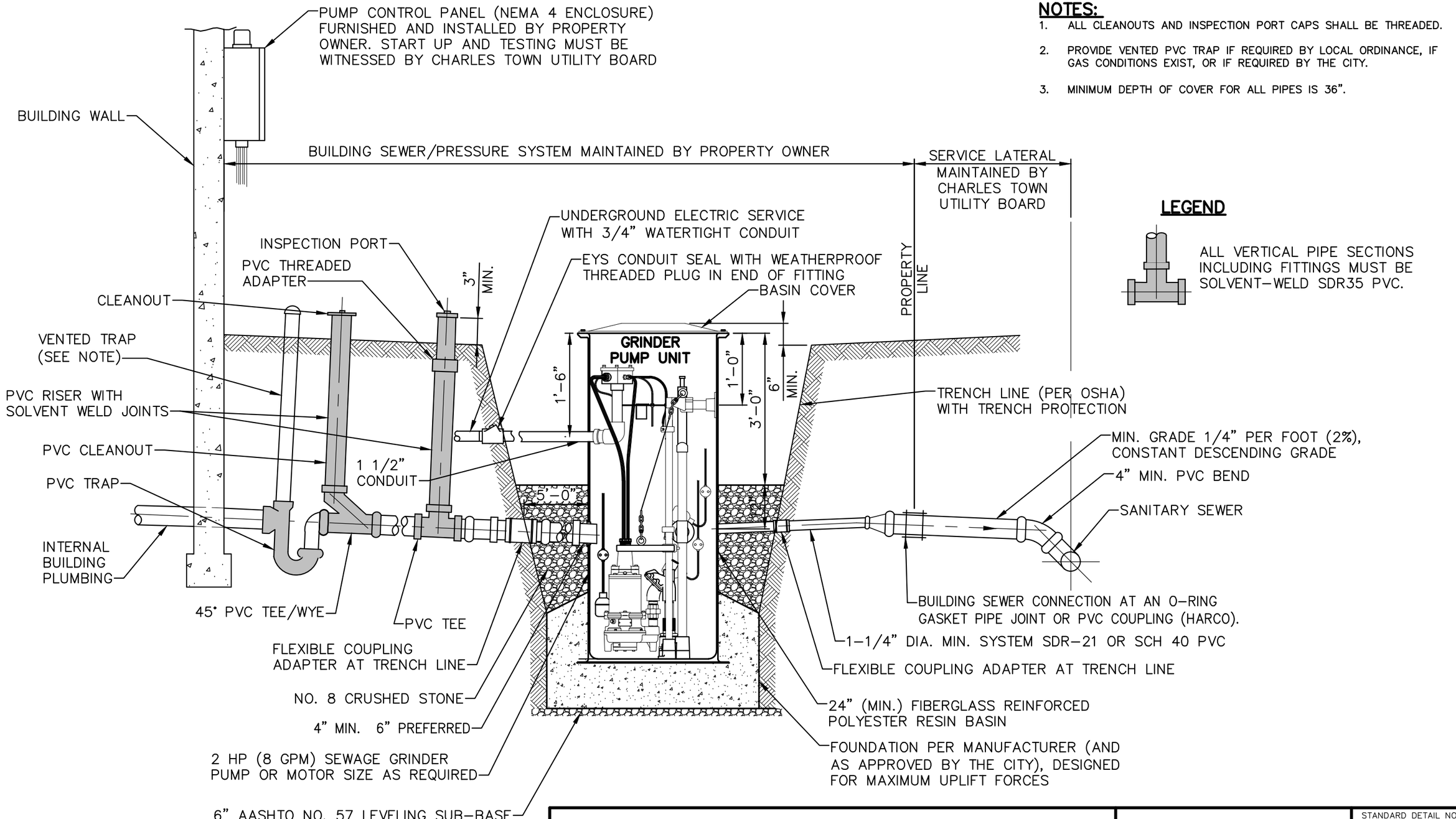
PRESSURE SYSTEM BUILDING SEWER PLAN

STANDARD DETAIL NO.
S-38
NOT TO SCALE
JULY 2025



NOTES:

1. ALL CLEANOUTS AND INSPECTION PORT CAPS SHALL BE THREADED.
2. PROVIDE VENTED PVC TRAP IF REQUIRED BY LOCAL ORDINANCE, IF GAS CONDITIONS EXIST, OR IF REQUIRED BY THE CITY.
3. MINIMUM DEPTH OF COVER FOR ALL PIPES IS 36".

LEGEND

ALL VERTICAL PIPE SECTIONS INCLUDING FITTINGS MUST BE SOLVENT-WELD SDR35 PVC.

Charles Town Utility Board
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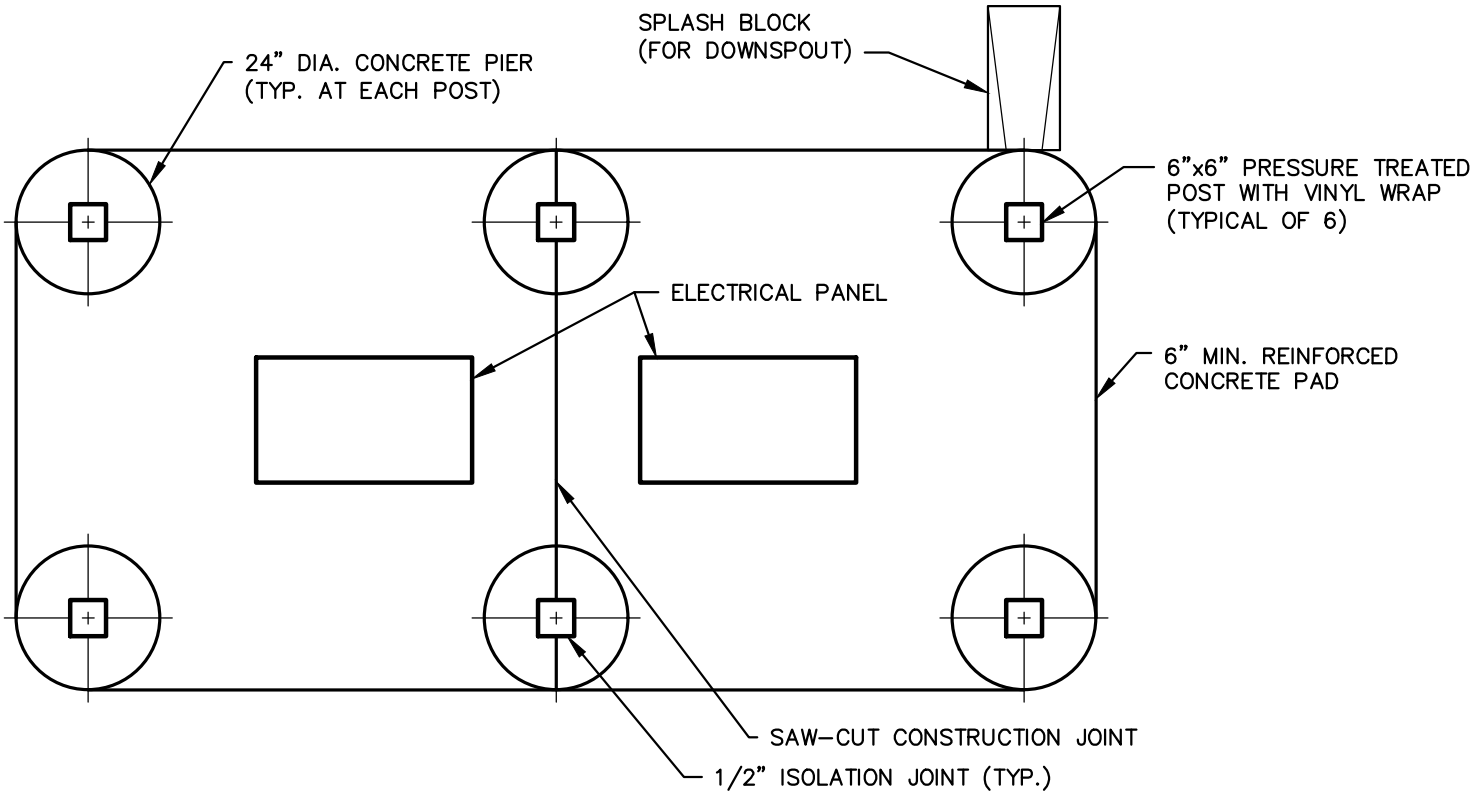
PHONE: (304) 725-2316 FAX: (304) 725-4313

PRESSURE SYSTEM BUILDING SEWER PROFILE

STANDARD DETAIL NO.
S-39

NOT TO SCALE

JULY 2025



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PHONE: (304) 725-2316 FAX: (304) 725-4313

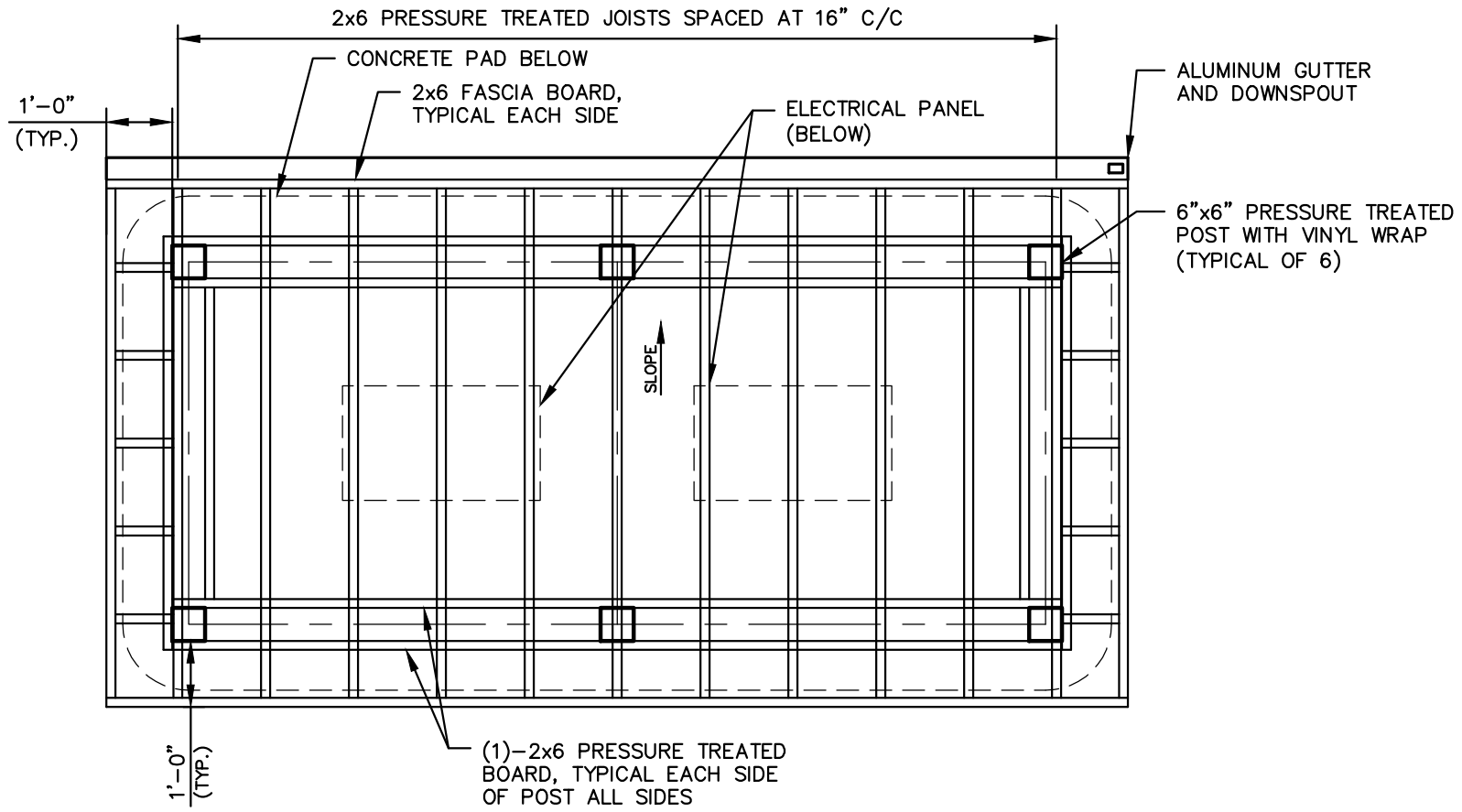
CONTROL PANEL SHELTER STRUCTURAL FLOOR PLAN

STANDARD DETAIL NO.
S-40

NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-40.DWG



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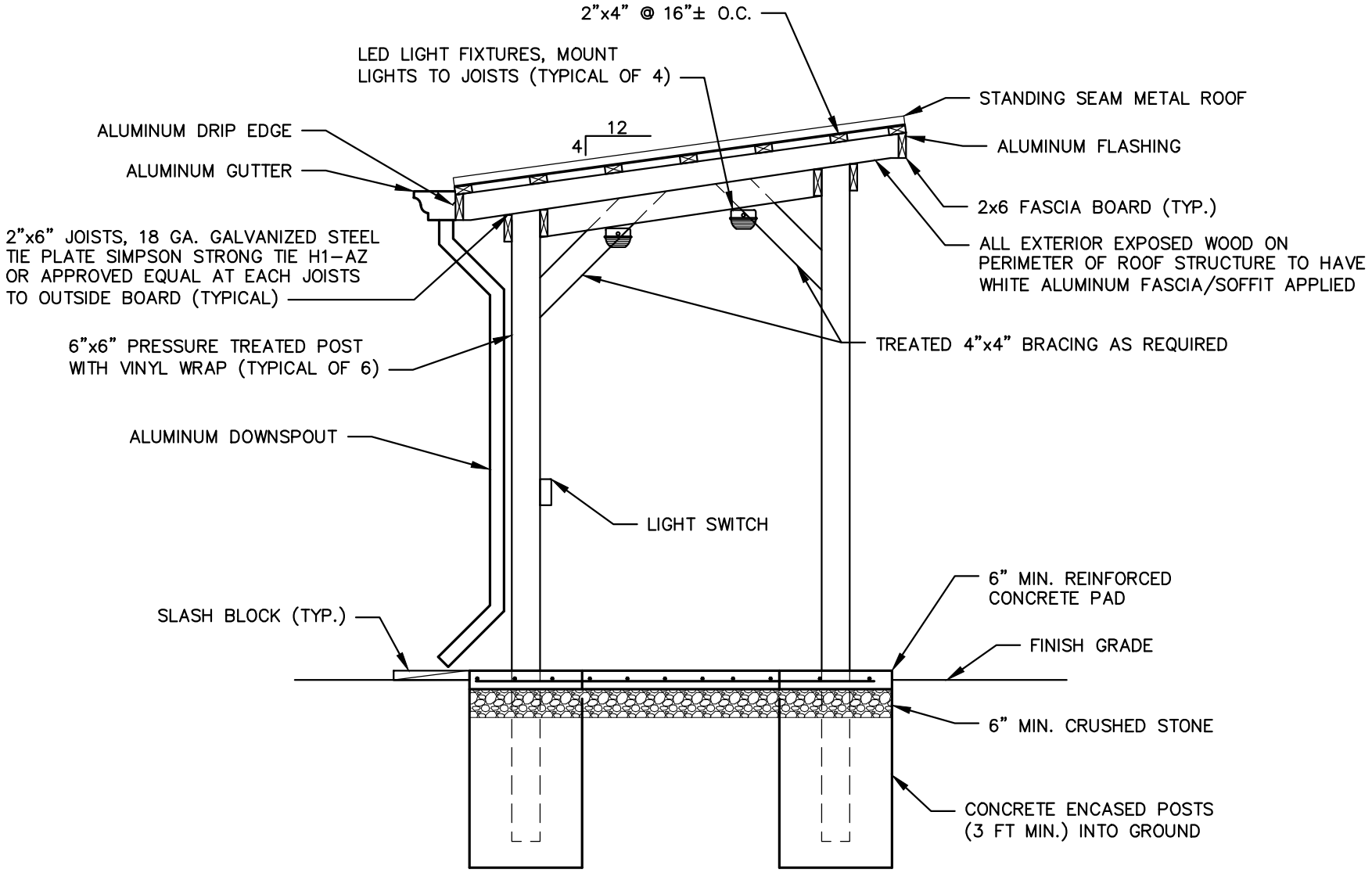
CONTROL PANEL SHELTER ROOF FRAMING PLAN

STANDARD DETAIL NO.
S-41

NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-41.DWG



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CONTROL PANEL SHELTER SECTION

STANDARD DETAIL NO.
S-42

NOT TO SCALE

JULY 2025

FILENAME: G:\GD&F\STANDARD DETAILS_CHARLES TOWN STANDARD DETAILS\S-42.DWG

CHARLES TOWN UTILITY BOARD

Wednesday, July 9, 2025

Regular Meeting

661 South George Street
Charles Town, WV 25414

Raw Water Intake By-pass Quotes

Attachments:

Raw Water Intake By-pass Quotes.pdf

SNYDER ENVIRONMENTAL SERVICES INC

270 INDUSTRIAL BLVD
KEARNEYSVILLE, WV 25430
Contact: **LISA L. MILLER**
Phone: **304.886.5773**
E-Mail: **LMILLER@SNYDERENV.COM**

Quote To: CHRIS E.
Attn:

Job Name: CTUB EMERGENCY PUMP AROUND
Date of Plans:
Proposal Date:
Revision Date:

Phone:
Fax:
E-Mail:

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
100100	MOBILIZATION	1.00	LS	2,900.00	2,900.00
100200	EXCAVATE 16" LINE	1.00	LS	4,400.00	4,400.00
100300	ASSEMBLE VALVES & FITTINGS AT SHOP	1.00	LS	2,800.00	2,800.00
100400	CUT LINE & INSTALL PUMP AROUND & BACKFILL	1.00	LS	5,450.00	5,450.00
100500	RESTORATION	1.00	LS	2,600.00	2,600.00
100600	MATERIAL	1.00	LS	50,950.00	50,950.00
GRAND TOTAL					**$69,100.00**

NOTES:

THIS PROPOSAL IS VALID FOR FIFTEEN (15) DAYS FORM DATE OF PROPOSAL

EXCLUSIONS:

-ROCK
-EXPORT MATERIALS OFF SITE
-PAINT
-UNFORSEEN UTILITIES

SPECIAL PROVISIONS

1. Pricing Structure: Unless a lump-sum price is explicitly stated for the work described herein, it is mutually understood and agreed that the unit price item quantities mentioned above are provided as estimates. Payment shall be based on the actual quantities of work performed by SES at the specified unit prices.

TERMS AND CONDITIONS

1. Payment Terms: Payment in full for all work carried out under this agreement for any given month shall be remitted no later than the tenth day of the subsequent month. Final and complete payment for all work performed under this agreement must be completed within fifteen (15) days after the work's conclusion. Interest will be applied on all unpaid balances from the due date to the date of payment at the higher of the highest legal rate in the jurisdiction of the Contract's execution or one and one-half percent (1 1/2%) per month, whichever is lower. You agree to cover all costs and expenses incurred by SES in the process of collecting amounts owed under this Agreement, including court costs and attorney's fees. Payments received will be allocated to open items on unpaid invoices in an order and sequence determined by SES at its sole discretion. All funds paid to you for our work will be held in trust for our benefit. Credit card payments may be subject to additional fees.
2. Credit Approval: SES is not obligated to commence work as outlined in this Contract until your credit has been verified and

approved by our Credit Department. This Proposal and Contract shall become null and void if your credit is not approved. If credit conditions become unsatisfactory at any time prior to the completion of the work, you shall provide adequate security upon our request. In the event that you fail to provide adequate security, we reserve the right to suspend the work.

3. Entire Agreement: This document constitutes the entire agreement between the parties, regardless of any prior proposals or communications. Any deviations from the specifications or modifications to the terms of this Contract, as well as any extra or incidental work or reductions in work, must be documented in writing and signed by both parties before such changes are implemented. Any adjustments to the Contract price resulting from such changes shall be included in the written agreement.

4. Insurance Obligations: SES will provide and pay for Worker's Compensation Insurance covering its employees, as well as General Liability and Property Damage Insurance. You are required to maintain General Liability and Property Damage Insurance adequate to safeguard against any and all claims and liabilities arising from the performance of the work, including those arising under your agreement to indemnify and hold SES harmless under this Contract. SES will also be responsible for the collection and payment of Social Security and State Unemployment Taxes applicable to its employees.

5. Access to Work Area: Suitable access to the work area shall be provided by you. If our work is dependent upon or must be coordinated with the work of others, their work must be executed in a manner that enables SES to carry out its work without interruptions.

6. Force Majeure: SES shall not be liable for any failure to undertake or complete the work due to causes beyond its control. SES may suspend the work for such causes, including, but not limited to, fire, flood, utility presence, labor disputes, accidents, and other unforeseen events.

7. Indemnification: You agree to indemnify and hold SES harmless from any suit, claim, liability, cost, or expense related to certain aspects of the work, including, but not limited to, sidewalks, driveways, subsurface conditions, and alleged damages to persons or property. SES shall not be responsible for damage or deterioration resulting from causes beyond its control.

8. Jurisdiction and Venue: The proper jurisdiction and venue for adjudication concerning this Contract is Jefferson County, West Virginia, and you waive any right to jurisdiction and venue in any other place.

If you accept the terms and conditions outlined above, please acknowledge your acceptance by signing in the space provided and return all copies for signatures. Upon receipt and execution by SES, this document will constitute the full and complete agreement between the parties.

AGREED AND ACCEPTED:

_____ Snyder Environmental Services, Inc.
(Firm Name)

By _____ By _____
Brandon Duriez, Vice President

_____
(Printed / Typed Name & Title)

IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT WILLIAM LANDSAW AT 304.725.9140 X204

Attn: Estimating May 29, 2025
Ref: Proposal- Site Package
Project: Water Treatment Facility Intake Emergency Bypass – Jefferson County, West Virginia

We are pleased to submit our proposal for Raw Water Line Emergency Bypass Installation.

We propose to furnish labor, equipment, and materials to complete the above-mentioned items as shown on the approved plans. Our scope will be limited to the work indicated by the approved drawings titled:

"Charles Town Water Treatment Facility Intake Emergency – Jefferson County, West Virginia"

Re-pricing of modified drawings, future design and/or owner changes will be warranted.

Project Schedule of Values

1	Mobilization	1	LS	$2,015.00
2	Water	1	LS	$51,290.00
Project Total				**$53,305.00**

Contingent Items

1	Select Fill Import and place	CY	$55.00
2	Trench Rock Excavation	CY	$275.00

Greenridge Contractors Incorporated
17163 Lappans Road
Hagerstown, MD 21740

www.greenridgeinc.com
240-446-1298

CHARLES TOWN UTILITY BOARD

Wednesday, July 9, 2025

Regular Meeting **661 South George Street**
Charles Town, WV 25414

Summit Point Raceway Source Water Grant Report

Attachments:

Water & Sewer Feasibility Study June 2025.pdf

SANITARY SURVEY AND FUTURE WATER/SEWER SERVICE FEASIBILITY STUDY

FOR

CHARLES TOWN UTILITY BOARD
SUMMIT POINT MOTORSPORTS PARK

JUNE 2025

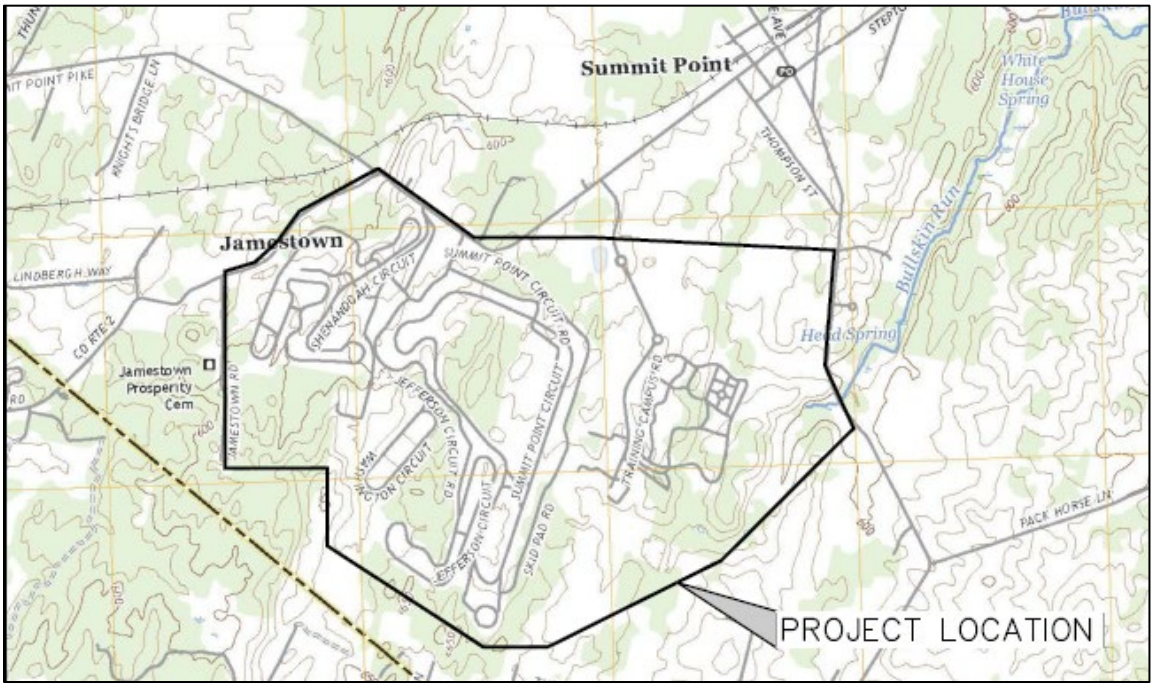
GD&F
GWIN DOBSON & FOREMAN ENGINEERS

TABLE OF CONTENTS

A. BACKGROUND

Gwin, Dobson & Foreman, Inc. (GD&F) has been retained by the Charles Town Utility Board (CTUB), in collaboration with Summit Point Motorsports Park (SPMP), to prepare this Sanitary Survey and evaluate future utility service for the area. Summit Point Motorsports Park and the Summit Point Training Facility (SPTF) operate jointly on the same campus and serve a dual-purpose mission - supporting both commercial motorsports and U.S. Government national security programs.

The primary purpose of this study is to establish the number, type, and current condition of on-lot disposal systems and to identify potential sources of contamination to existing and proposed drinking water systems throughout the campus. The findings will also support the feasibility assessment for developing new centralized water and wastewater treatment systems to serve current and future needs reliably.



This survey was initiated due to concerns regarding the reliability and sustainability of the existing individual well and septic systems supporting a diverse set of facilities across the property. These facilities include racetrack amenities, administrative buildings, and secure training environments. SPMP/SPTF management has emphasized the strategic importance of ensuring long-term dependable utility infrastructure - not only for public-facing motorsports operations but also for the many government contractor tenants who occupy the site to conduct training, research, testing, and national security mission support activities.

B. HISTORY AND DESCRIPTION OF SUMMIT POINT MOTOR SPORTS

The Summit Point facility originally opened in October 1969 as Summit Point Raceway and has since evolved into a nationally recognized campus integrating motorsports with critical U.S. Government training and testing functions. In 2018, the site was acquired by Xator Corporation, which maintained its motorsports legacy while expanding national security-focused operations.

In 2022, following Xator's acquisition by a U.S. Government organization, Summit Point Raceway Associates Inc. was divested and retained by Xator's two founding members as an independent small business. Today, the property operates under two synergistic divisions—Summit Point Motorsports Park (SPMP) and Summit Point Training Facility (SPTF) - from the same location.

The 785-acre campus supports a dual-purpose mission: delivering premier motorsports events and serving as a secure site for U.S. Government and contractor-led research, development, testing, evaluation (RDT&E), and mission readiness training. The facility averages 600 to 1,000 personnel on-site daily - including employees, customers, and government staff - making it a vital place of performance for national security and commercial operations alike.

In addition to its operational role, the site serves as a major economic hub for Jefferson County, generating local employment, tourism revenue, and contracting opportunities tied to motorsports, logistics, and federal programming.

Currently, all activity is supported by decentralized well and septic systems. Given the growing demands and strategic nature of the work conducted on-site, there is a critical need to transition to a centralized, modern utility infrastructure that ensures reliability, environmental protection, and support for continued economic and mission growth.

C. EXISTING WATER/SEWER SYSTEM CONFIGURATION & ASSESSMENT

1. Inventory of Existing Wells & Septic Systems

Based on information provided by SPMP management there are approximately 25 identified wells on the property. These wells vary significantly in terms of depth, reported yield, age and the specific facilities they serve. A summary of the existing wells and the sanitary systems they serve is included in Appendix A. Reported well depths range from approximately 100 feet to over 1,400 feet and approximate yields vary from a few gallons per minute (gpm) to as high as 50 gpm for individual wells. The age of these wells also varies, with some in operation for over 30 years and others being more recent installations. Several wells are not used for drinking water and as such, receive no treatment.

Sanitary Systems appear to have been installed as the enterprise continued to expand throughout the years. The sizes of septic tanks are generally adequate for typical occupancies for the individual buildings; however, several systems appear to have been expanded after the septic system installation as the maximum tank size is 1,500 gallons. Based on the *EPA Onsite Wastewater Treatment Systems Manual*, tanks of this size are acceptable for approximately 500 gallons per day, translating to an occupancy of approximately thirty-five (35) persons. Peak occupancies in excess of this are listed in Appendix A; however, these peaks are based on events when temporary sanitary facilities are brought on-site.

Maps of both water and sewer facilities have been included in Appendix B.

2. Water Quality Assessment

A sampling program was developed to identify failing septic systems that threaten the existing water systems. The program consisted of a general inspection of each well source, running the system at approximate maximum (running sinks, toilets, etc.) for an extended period of time to simulate drawdown condition, injecting tracer dye into the drainage system, and sampling the water for Fecal Coliform, E. coli, Nitrate and Nitrite. The subsurface infiltration areas were then inspected for any signs of pooling or other failures of the system.

The results of this sampling program showed that of the twenty-one (21) sources sampled, only two (2) show bacterial contamination. Some sources contain noticeable levels of Nitrate/Nitrite, but all were below the drinking water standards. The analytical results are summarized in Table 1 and included in Appendix C.

Table 1: Water Source Analytical Sampling Summary

Location	Total Coliform, MPN/100 mL	E. Coli., MPN/100 mL	Nitrate, mg/L	Nitrite, mg/L
Classroom	<1	<1	0.47	<0.20
Concession	15	7.5	2.59	<0.20
Maintenance	<1	<1	4.8	<0.20
EMS	<1	<1	4.82	<0.20
Range K	<1	<1	4.86	<0.20
Range B	<1	<1	1.01	<0.20
Washington	<1	<1	1.23	<0.20
Jefferson	<1	<1	7.27	<0.20
Main Office	<1	<1	6.21	<0.20
SBR 565	4.2	<1	3.1	<0.20
Bldg 55	<1	<1	2.59	<0.20
Bldg 53	<1	<1	2.58	<0.20
Bldg 73	<1	<1	2.58	<0.20
Bldg 65	<1	<1	2.49	<0.20
Bldg 45	<1	<1	2.51	<0.20
Bldg 60	<1	<1	2.5	<0.20
Bldg 860	<1	<1	2.5	<0.20
Bldg 785	<1	<1	2.5	<0.20
Bldg 73	<1	<1	2.5	<0.20
Bldg 53	<1	<1	2.5	<0.20
SCCA	<1	<1	0.41	<0.20

Similarly, the above ground inspection of each infiltration area during the high-flow sampling period did not indicate any failures in septic systems (i.e. no dye or pooling was observed).

3. Hydrogeological Assessment

A Stage 1 Hydrogeologic Study was undertaken to better understand the underlying geological conditions and how they may factor into contamination sources and source water quality. The study notes karst terrain which has the potential to rapidly transmit contamination throughout aquifers. The study additionally identified the known wells and compiled additional information. The full report may be found in Appendix D.

D. SANITARY SURVEY AND ALTERNATIVES EVALUATION

1. Summary of Sanitary Survey

While the Sanitary Survey identified some sources of contamination, most existing facilities operate as intended and within reasonable design standards. The nature of the facility demands a very wide range of potential occupancy demands. In the past, SPMS has addressed these swings with temporary facilities during high-occupancy events (race days, etc.). Despite the additional facilities, management has observed major stresses on the existing systems. Additionally, the decentralized nature of the individual systems creates difficulties in general upkeep and maintenance to ensure water quality.

The results of the sampling and inspection program show the majority of on-lot systems in acceptable working order. However, two (2) of the drinking water sources sampled were positive for bacteria. Almost all of the sources sampled had measurable levels of Nitrate, but none above drinking water standards. A malfunctioning on-lot septic system is more likely the source of the bacteria. However, an outside contamination source is possible due to the Karst geology in the area. The geology is also likely the cause of the elevated Nitrate levels, which can pose safety risks. The surrounding area served by on-lot systems is likely to have similar water quality regardless of individual well construction.

2. Future Alternatives for Source Water Protection

To ensure high quality source water in the SPMS, three (3) main alternatives exist:

- Alternative 1: Improvement of Existing Individual Systems (Water & Sewer),
- Alternative 2: Connection to Existing Regional Systems
- Alternative 3: Development of Centralized Facilities

2.a. Alternative 1: Improvement of Existing Individual Systems

Further investigation and improvement of the existing individual systems is a technically feasible option. A more thorough inspection of each septic system could be performed through camera inspection, test pitting, air testing, etc. to identify malfunctioning systems. This approach would be extremely cost prohibitive and would leave complexity in operations, maintenance. It would also do little to address the current reliability concerns in a timely manner. Further, the SPMS Facility would be unable to continue to expand using the current system of individual systems. SPMS has received multiple inquires to develop in areas currently used by the septic drain fields. Assuming the space to continue to build

on-lot systems existed, development of them would continue to pose a threat to th source water quality of the surround areas. For these reasons, this Alternative was not considered further.

2.b. Alternative 2: Connection to Existing Regional Systems

Connection of the SPMP to existing regional public water and wastewater utility systems was considered as a potential alternative. However, based on current information, the area immediately surrounding SPMP does not presently have access to such regional public utilities. Based on the WVIJDC GIS System, the nearest water system connection would be to CTUB's existing system on Summit Point Road. The waterline would be approximately 5 miles long and be an estimated $6.6-million to construct. Even if connection of this line were feasible, the overall length would drastically increase water age and lead to degraded water quality over time. Connection to a sewerage system would be similar and require a substantial pumping system. The total estimated cost to connect to exiting utilities is $13-million.

2.c. Alternative 3: Development of Centralized Facilities

Development of centralized facilities would provide great benefits for the water and sewerage systems in this area. This approach would provide a reliable, high-quality water supply and an environmentally sound wastewater management solution, capable of meeting both current operational demands and future growth. Centralized systems would also provide the potential for future service expansion to the surrounding areas.

Based on the Stage 1 Hydrogeologic Study, the potential for developing high-yield wells on the property is likely, with some already existing. Wells #17 and #18 specifically hold promise to initially support the entire SPMS demands. These wells along with any additional wells developed based on proposed need would provide water to a treatment facility and storage tank located centrally to the Facility. If this alternative is pursued, further testing would inform the treatment requirements and subsequent capability. A water distribution system could be easily implemented throughout the existing system with minimal disruptions, as the existing systems could continue to operate until final connections are made to each building.

Similarly, a wastewater collection system could be relatively easily implemented. Conceptually, the site could be divided into two (2) main gravity systems with pump stations to convey all flow to a wastewater treatment facility discharging to Bullskin Run. GD&F has developed a conceptual design layout for the distribution and collection system, included in Appendix E.

A centralized system would not only be able to handle the existing demands of the SPMS Facility, but also be easily expanded to meet its future demands and those of the surrounding area. More than fifty (50) acres are currently undeveloped on the existing site. These areas are zoned for General Commercial, at an estimated usage of 2,000-gallons/acre day, there is the potential to require

an additional 100,000-gallons per day of water supply and an equal amount of generated waste. Without construction of an easily expandable system, any proposed development of reasonable scale would be unreasonably hindered from becoming reality.

Of the three (3) alternatives presented here, only Alternative 3 addresses all the current issues identified by SPMS and this Sanitary Survey. A blend of Alternative 1 and 3 could be further identified in the future in order to bridge the time to initiate a full-scale centralized system project.

E. CONCLUSIONS

The SPMS Facility consists of numerous on-lot systems spread over the area. These systems are in various states of use and condition which makes operation and maintenance difficult. Additionally, the increased demands on the systems have compounded other issues. Several alternatives exist to address the long-term needs of the facility and surrounding areas, but the most cost effective and reliable option is to begin the process to develop centralized facilities for both Water and Wastewater. A planning level cost estimate for these facilities is shown in Table 2 and an implementation schedule is shown in Table 3. As time progresses, these estimates should be revisited for accuracy and inclusion of additional requirements.

Table 2: Centralized Facility Construction Cost Estimates

Water Treatment Facility/Storage Tank	$2,500,000
Well Development/Rehab	$200,000
Wastewater Treatment Facility/Pump Stations	$1,750,000
Distribution/Collection System	$2,750,000
Site Work/Miscellaneous	$500,000
Potential Expansion	$2,000,000-$3,000,000
Total Budgetary Construction Cost	**$7,700,000-$10,700,000**

Table 3: Preliminary Implementation Schedule

Hydrogeological Investigations	1 Year
Design/Permitting	2 Years
Funding Acquisition/Legal	6 months - 1 Year
Bidding/Construction	3 Years

The majority of the implementation schedule will be dependent on where funding is obtained, who the end operator/customers are to be, and permitting requirements throughout. Of particular note is the preliminary location for a Wastewater Treatment Facility.

The final recommendation of this report is to further consider local sources of contamination to the existing drinking water system. As time goes on, the condition of the existing facilities will continue to degrade unless given significant attention at high costs compared to constructing centralized facilities to replace them. Continuation of the existing on-lot generation and disposal method holds the very real potential to impact regional water quality die to the karst topography. To address the long-term solution of water supply and treatment, planning efforts should be undertaken to begin implementation of centralized facilities.

APPENDIX A

EXISTING WELLS AND SANITARY SYSTEMS

Existing Water and Sanitary Systems Summary

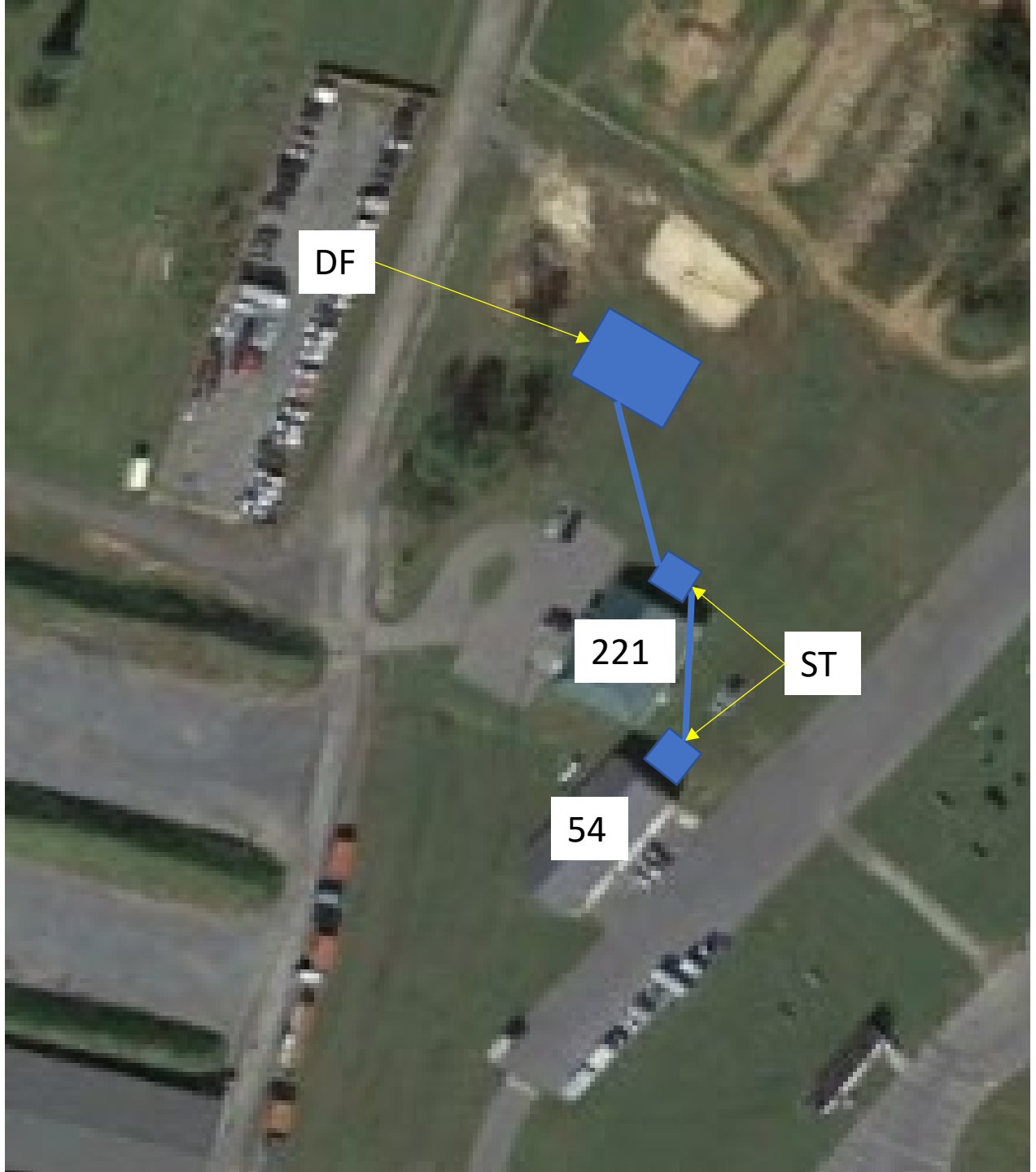
System	Building Served	Peak Occupancy	Typical Occupancy	Sanitary	Well						
				Septic Tank Size	Wells Serving	Storage	Well Depth	Years in Operation	Aprox. Flow	Water Quality	Pipe Diameter
1	Security Office	40	20	1000	1		260	20	20	U/V	6"
2	Admin HQ	100	30	1000	2,3	500	150	30	24	PWS Cl2	6"
3	Circuit Paddock SPC	3000	80	1500	6		290	20	20	Cl2	6"
4	Circuit Paddock 2 S.C	3000	80	1000	7,8	400	1200	1	6	Non Potable	6"
5	Facility Maint.	30	30	1500	22,23	400	1200	1	6	Non Potable	6"
6	Range K	30	20	1000	10		256	25	50	U/V	6"
7	Stone House	10	10	1000	11						
8	Range B	40	20	1500	12		396	23	15		6"
9	Washington Circuit Paddock	40	30	1000	12		396	23	15		6"
10	Fairfax Restroom	60	60	1000	2	500	150	30	24	PWS Cl2	6"
11	Gasoline Alley	70	50	1500	1		260	20	20	U/V	6"
12	SCCA Reg Bldg	40	30	1000	3	500	150	30	24	PWS Cl2	6"
13	Jefferson Co. Circuit Paddock	500	40	1000	14		200	30	25	U/V	6"
14	Summit Point Circuit Paddock	3000	30	1500	19,20			50	30	PWS Cl2	6"
15					5						
16	Shenandoah pump house				4				22		6"
17	Race Control & Obs Tower	20	5	1000	20				25		6"
18	Orchard Building		30	1000	22,23	11000		20			
19	Bldg 50	40	30	1500	22,23			20			
20	Bldg 93	40	40	1500	22,23			20			
21	Bldg 73	40	40	1500	22,23			20			
22	Bldg 53	40	40	1500	22,23			20			
23	Bldg 33	30	30	1500	22,23			20			
24	Bldg 55	40	40	1500	22,23			20			
25	Bldg 80	40	40	1500	22,23			20			
26	Bldg 90	40	40	1500	22,23			20			
27	Bldg 860	60	40	1500	22,23			20			
28	Bldg 65	40	40	1500	22,23			20			
29	Bldg 60	60	40	1500	22,23			20			
30	Bldg 45	60	40	1500	22,23			20			
31	Bldg 785	50	50	1500	22,23			20			

APPENDIX B

SUMMIT POINT MOTOR SPORTS MAPPING

Shenandoah Circuit
Range K
Administration Buildings

- ST = Septic Tank
- DF = Drain Field
- IP = Influent Pump

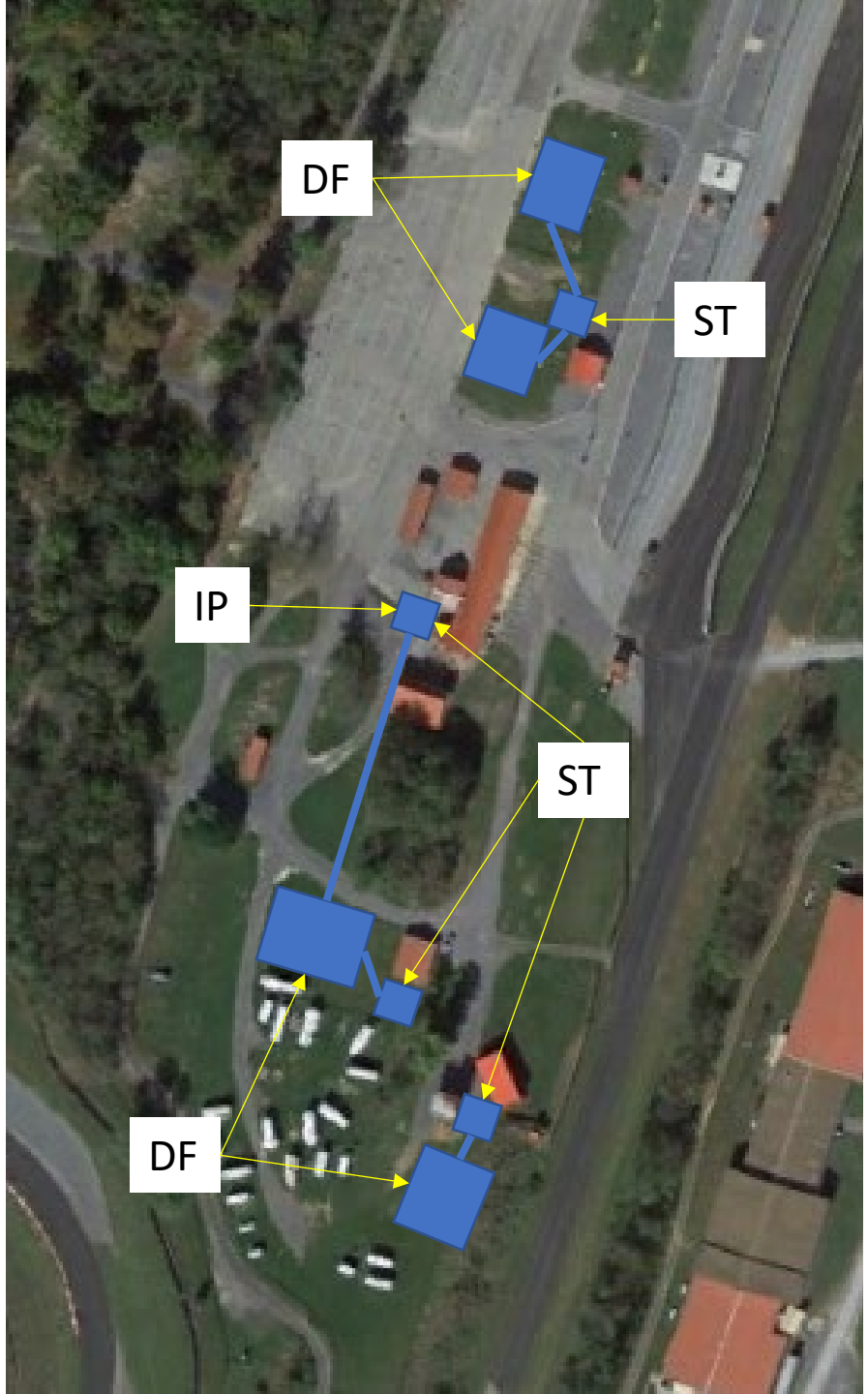


221 Kackley Range Road
54 Washington Circuit Road

- ST = Septic Tank
- DF = Drain Field

99 Summit Point Circuit Road

- ST = Septic Tank
- DF = Drain Field

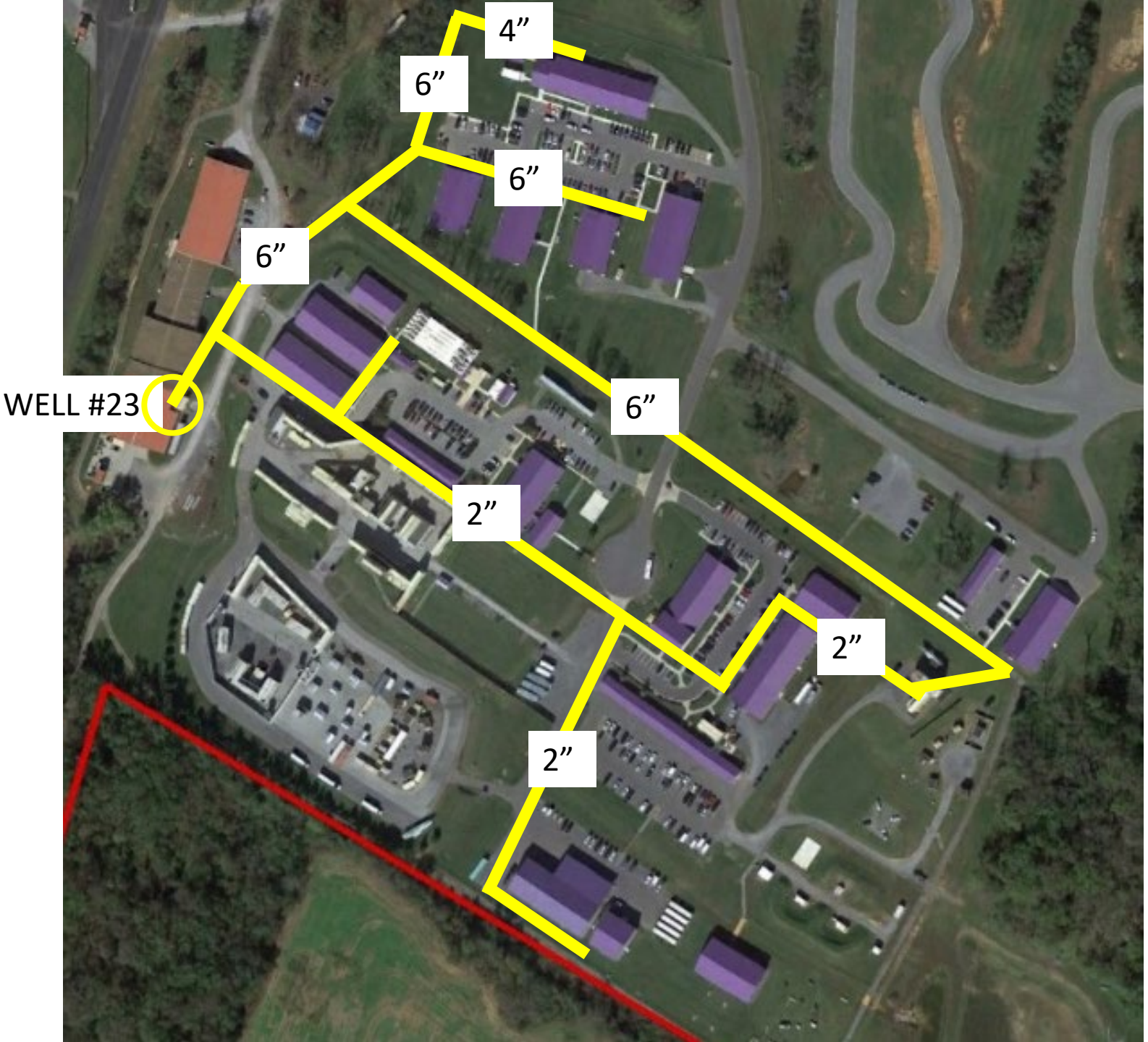


Summit Point Circuit

- ST = Septic Tank
- DF = Drain Field
- IP = Influent Pump

Training Campus

- ST = Septic Tank
- DF = Drain Field
- IP = Influent Pump



Training Campus

- 6” = Pipe Diameter
- 4” = Pipe Diameter
- 2” = Pipe Diameter

APPENDIX C

SAMPLING PROGRAM RESULTS

3020 VENTRIE COURT
MYERSVILLE, MD 21773

FREDERICKTOWNE LABS ENVIRONMENTAL TESTING

(301) 293-3340
INFO@FTLLAB.COM

Certificate of Analysis

Work order: **FZB0623**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

1 - Classroom

FZB0623-01 (Drinking Water)(Grab) **Date Collected: 02/19/25 11:20**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	0.47	mg/L	0.20	10	2/19/25 19:09	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 19:09	NM		EPA 300.0

Sara E. Randall, President

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West Virginia Cert. 415 MDOT WBE Cert. No.: 91-158

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MYERSVILLE, MD 21773

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INFO@FTLLAB.COM

Certificate of Analysis

Work order: **FZB0623**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

2 - Concession

FZB0623-02 (Drinking Water)(Grab) **Date Collected: 02/19/25 11:25**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	**15**	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	**7.5**	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is unsafe for human consumption. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.59	mg/L	0.20	10	2/19/25 23:35	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 23:35	NM		EPA 300.0

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Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

3 - Maintenance

FZB0623-03 (Drinking Water)(Grab) **Date Collected: 02/19/25 11:35**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	4.80	mg/L	0.20	10	2/19/25 23:18	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 23:18	NM		EPA 300.0

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Work order: **FZB0623**

Client:
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3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

4 - EMS

FZB0623-04 (Drinking Water)(Grab) **Date Collected: 02/19/25 11:40**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	4.82	mg/L	0.20	10	2/19/25 22:28	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 22:28	NM		EPA 300.0

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Work order: **FZB0623**

Client:
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3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

5 - Range K

FZB0623-05 (Drinking Water)(Grab) **Date Collected: 02/19/25 11:45**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD	M2	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD	M2	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	4.86	mg/L	0.20	10	2/19/25 22:45	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 22:45	NM		EPA 300.0

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Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

6 - Range B

FZB0623-06 (Drinking Water)(Grab) **Date Collected: 02/19/25 12:45**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	1.01	mg/L	0.20	10	2/19/25 21:55	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 21:55	NM		EPA 300.0

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Work order: **FZB0623**

Client:
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3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

7 - Washington

FZB0623-07 (Drinking Water)(Grab) **Date Collected: 02/19/25 12:50**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	1.23	mg/L	0.20	10	2/19/25 22:12	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 22:12	NM		EPA 300.0

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Certificate of Analysis

Work order: **FZB0623**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

8 - Jefferson

FZB0623-08 (Drinking Water)(Grab) **Date Collected: 02/19/25 12:55**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	7.27	mg/L	0.20	10	2/19/25 17:29	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 17:29	NM		EPA 300.0

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Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

9 - Main Office

FZB0623-09 (Drinking Water)(Grab) **Date Collected: 02/19/25 13:05**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	6.21	mg/L	0.20	10	2/19/25 17:46	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 17:46	NM		EPA 300.0

Sara E. Randall, President

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Maryland Cert. No. 116 Virginia Cert. No. 00444
West Virginia Cert. 415 MDOT WBE Cert. No.: 91-158

3020 VENTRIE COURT
MYERSVILLE, MD 21773

FTL LABS
FREDERICKTOWNE LABS ENVIRONMENTAL TESTING

(301) 293-3340
INFO@FTLLAB.COM

Certificate of Analysis

Work order: **FZB0623**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

10 - SBR 565

FZB0623-10 (Drinking Water)(Grab) **Date Collected: 02/19/25 13:35**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	**4.2**	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is unsafe for human consumption. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	3.10	mg/L	0.20	10	2/19/25 18:02	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 18:02	NM		EPA 300.0

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Certificate of Analysis

Work order: **FZB0623**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

11 - 55
FZB0623-11 (Drinking Water)(Grab)

Date Collected: 02/19/25 13:40

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD	M2	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD	M2	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.59	mg/L	0.20	10	2/19/25 18:19	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 18:19	NM		EPA 300.0

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Certificate of Analysis

Work order: **FZB0623**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

12 - 53
FZB0623-12 (Drinking Water)(Grab)

Date Collected: 02/19/25 13:45

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.58	mg/L	0.20	10	2/19/25 18:36	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 18:36	NM		EPA 300.0

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(301) 293-3340
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Certificate of Analysis

Work order: **FZB0623**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/19/25 14:45
Temp: 13.80 deg. C
Reported: 2/21/25 8:29

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

13 - 73
FZB0623-13 (Drinking Water)(Grab)

Date Collected: 02/19/25 13:45

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B
Bacteria - E coli	<1	MPN/100 mL	1	1	2/19/25 16:03	2/20/25 16:40	JD		SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.58	mg/L	0.20	10	2/19/25 18:52	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/19/25 18:52	NM		EPA 300.0

Notes and Definitions

Item	Definition
M2	Sample volume < 100 mL

Sara E. Randall, President

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CHAIN OF CUSTODY

FREDERICKTOWNE LABS, INC.
3020 VENTRIE CT., PO BOX 245, MYERSVILLE, MD 21773
301-293-3340 OR FAX 301-293-2366

Phone Number: 814-943-5214
Email: dsantelli@gdfengineers.com
dpedersen@gdfengineers.com

FZB0623

FTL Acct. No.:

Project: Name & Address
24080

Collected By: (Please Print)
Dave Santelli

Affiliation: Gwin, Dobson + Foreman, Inc.

Analyses To Be Performed

Field Sample ID	Site Description	Collection Date	Collection Time	Matrix DW/WW	pH	Res. Cl	DO	Temp	Grab/Comp	Fecal Coliform	Nitrate / Nitrite					Preservation
1	Classroom	2/19/25	11:20							X	X					
2	Concession		11:25													
3	Maintenance		11:35													
4	EMS		11:40													
5	Range K		11:45													
6	Range B		12:45													
7	Washington		12:50													
8	Jefferson		12:55													
9	Main Office		13:05													
10	SBR 565		13:35													

Relinquished By: (Print): Dave Santelli (Signature): [signature] Date/Time: 2/19/25 14:45

Received By: (Print): Cassie Jinks (Signature): Date/Time: 2.19.25 1445

Relinquished By: (Print): (Signature): Date/Time:

Received By: (Print): (Signature): Date/Time:

Relinquished By: (Print): (Signature): Date/Time:

Received By: (Print): (Signature): Date/Time:

Treatment Devices Present: Yes ☐ No ☐

DescribeTreatment Device(s):

Lead & Copper Samples - Water Last Used:
Date: Time:

Method of Shipment: **Iced:** Yes ☒ No ☐

Condition of Sample(s) upon Receipt:
13.8 (T2)

CHAIN OF CUSTODY

FREDERICKTOWNE LABS, INC.
3020 VENTRIE CT., PO BOX 245, MYERSVILLE, MD 21773
301-293-3340 OR FAX 301-293-2366

Phone Number: 814-943-5214

Email: dsantelli@gdfengineers.com
dpedersen@gdfengineers.com

139

FZB0623

FTL Acct. No.:

Project: Name & Address 24080

Collected By: (Please Print)
Dave Santelli

Affiliation:
Gwin, Dobson & Foreman, Inc.

Analyses To Be Performed

Field Sample ID	Site Description	Collection Date	Collection Time	Matrix DW/ WW	pH	Res. Cl	DO	Temp	Grab/ Comp	Fecal coliform	Nitrate/Nitrite					Preservation
11	55	2/19/25	13:40							X	X					
12	53	↓	13:45													
13	73	↓	13:45													

Relinquished By:	Date/Time	Received By:	Date/Time
(Print): Dave Santelli	2/19/25 14:45	(Print): Cassie Fiery	2.19.25 1445
(Signature):		(Signature):	
Relinquished By:	Date/Time	Received By:	Date/Time
(Print):		(Print):	
(Signature):		(Signature):	
Relinquished By:	Date/Time	Received By:	Date/Time
(Print):		(Print):	
(Signature):		(Signature):	

Treatment Devices Present: Yes ☐ No ☐

DescribeTreatment Device(s):

Lead & Copper Samples - Water Last Used:

Date: Time:

Method of Shipment: **Iced:** Yes ☒ No ☐

Condition of Sample(s) upon Receipt:

3020 VENTRIE COURT
MYERSVILLE, MD 21773

FREDERICKTOWNE LABS ENVIRONMENTAL TESTING

(301) 293-3340
INFO@FTLLAB.COM

Certificate of Analysis

Work order: **FZB0754**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/26/25 13:36
Temp: 9.20 deg. C
Reported: 2/28/25 8:59

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

1 - 65
FZB0754-01 (Drinking Water)(Grab) **Date Collected: 02/26/25 10:15**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.49	mg/L	0.20	10	2/26/25 14:10	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/26/25 14:10	NM		EPA 300.0

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(301) 293-3340
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Certificate of Analysis

Work order: **FZB0754**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/26/25 13:36
Temp: 9.20 deg. C
Reported: 2/28/25 8:59

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

2 - 45

FZB0754-02 (Drinking Water)(Grab) **Date Collected: 02/26/25 10:20**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.51	mg/L	0.20	10	2/26/25 14:26	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/26/25 14:26	NM		EPA 300.0

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Certificate of Analysis

Work order: **FZB0754**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/26/25 13:36
Temp: 9.20 deg. C
Reported: 2/28/25 8:59

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

3 - 60

FZB0754-03 (Drinking Water)(Grab) **Date Collected: 02/26/25 10:30**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.50	mg/L	0.20	10	2/26/25 14:43	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/26/25 14:43	NM		EPA 300.0

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Certificate of Analysis

Work order: **FZB0754**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/26/25 13:36
Temp: 9.20 deg. C
Reported: 2/28/25 8:59

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

4 - 860
FZB0754-04 (Drinking Water)(Grab)

Date Collected: 02/26/25 10:35

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.50	mg/L	0.20	10	2/26/25 15:00	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/26/25 15:00	NM		EPA 300.0

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Certificate of Analysis

Work order: **FZB0754**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/26/25 13:36
Temp: 9.20 deg. C
Reported: 2/28/25 8:59

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

5 - 785
FZB0754-05 (Drinking Water)(Grab) **Date Collected: 02/26/25 10:40**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.50	mg/L	0.20	10	2/26/25 15:16	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/26/25 15:16	NM		EPA 300.0

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Work order: **FZB0754**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/26/25 13:36
Temp: 9.20 deg. C
Reported: 2/28/25 8:59

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

6 - 73
FZB0754-06 (Drinking Water)(Grab)

Date Collected: 02/26/25 10:45

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.50	mg/L	0.20	10	2/26/25 15:33	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/26/25 15:33	NM		EPA 300.0

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Certificate of Analysis

Work order: **FZB0754**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/26/25 13:36
Temp: 9.20 deg. C
Reported: 2/28/25 8:59

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

7 - 53
FZB0754-07 (Drinking Water)(Grab) **Date Collected: 02/26/25 10:50**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	2.50	mg/L	0.20	10	2/26/25 15:50	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/26/25 15:50	NM		EPA 300.0

Sara E. Randall, President

Fredericktowne Labs, Inc. is a State Certified Water Quality Laboratory
Maryland Cert. No. 116 Virginia Cert. No. 00444
West Virginia Cert. 415 MDOT WBE Cert. No.: 91-158

3020 VENTRIE COURT
MYERSVILLE, MD 21773

FTL LABS
FREDERICKTOWNE LABS ENVIRONMENTAL TESTING

(301) 293-3340
INFO@FTLLAB.COM

Certificate of Analysis

Work order: **FZB0754**

Client:
Gwin, Dobson & Foreman, Inc.
3121 Fairway Drive
Altoona, PA 16602

Project: Drinking Water Sampling
24080

Received at lab: 2/26/25 13:36
Temp: 9.20 deg. C
Reported: 2/28/25 8:59

PWSID:
Treatment: N/A
Collected by: Dave Santelli
Well Tag: N/A

8 - SCCA

FZB0754-08 (Drinking Water)(Grab) **Date Collected: 02/26/25 11:45**

Field Results

	Result	Units
Temperature	N/A	deg. C
pH	N/A	
Res. Chlorine	N/A	mg/L
Chlorine, Total	N/A	mg/L

Microbiology

	Result	Units	MRL	MCL	Date Prepared	Date Analyzed	Analyst	Qual	Method
Bacteria - Total Coliform	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B
Bacteria - E coli	<1 [1]	MPN/100 mL	1	1	2/26/25 15:05	2/27/25 9:40	JD	18	SM9223-B

Bacteriological analysis of this sample indicates the water is safe for human consumption and meets federal, state and local requirements. Analysis was performed according to the 23rd edition of Standard Methods

Inorganic

	Result	Units	MRL	MCL	Date Analyzed	Analyst	Qual	Method
Nitrate	0.41	mg/L	0.20	10	2/26/25 16:56	NM		EPA 300.0
Nitrite	<0.20	mg/L	0.20	1	2/26/25 16:56	NM		EPA 300.0

Notes and Definitions

Item	Definition
18	Sample started using 18 hour media.

Sara E. Randall
Sara E. Randall, President

Fredericktowne Labs, Inc. is a State Certified Water Quality Laboratory
Maryland Cert. No. 116 Virginia Cert. No. 00444
West Virginia Cert. 415 MDOT WBE Cert. No.: 91-158

CHAIN OF CUSTODY

FREDERICKTOWNE LABS, INC.
3020 VENTRIE CT., PO BOX 245, MYERSVILLE, MD 21773
301-293-3340 OR FAX 301-293-2366

Phone Number: 814-943-5214
dsantelli@gdfengineers.com
Email: dpedersen@gdfengineers.com

148

FZB0754

FTL Acct. No.:

Project: Name & Address
24080

Collected By: (Please Print)
Dave Santelli

Affiliation:
Gwin, Dobson + Foreman, Inc.

Field Sample ID	Site Description	Collection Date	Collection Time	Matrix DW/ WW	pH	Res. Cl	DO	Temp	Grab/ Comp	Analyses To Be Performed: Fecal Coliform	Nitrate/Nitrite					Preservation
	65	2/26/25	10:15							X	X					
	45		10:20													
	60		10:30													
	860		10:35													
	785		10:40													
	73		10:45													
	53		10:50													
	[redacted]		—													
	SCCA		11:45													

Relinquished By:	Date/Time	Received By:	Date/Time
(Print): Dave Santelli	2/26/25 1336	(Print): Cassie Jones	2.26.25 1336
(Signature):		(Signature):	
Relinquished By:	Date/Time	Received By:	Date/Time
(Print):		(Print):	
(Signature):		(Signature):	
Relinquished By:	Date/Time	Received By:	Date/Time
(Print):		(Print):	
(Signature):		(Signature):	

Treatment Devices Present: Yes ☐ No ☐

DescribeTreatment Device(s):

Lead & Copper Samples - Water Last Used:

Date: Time:

Method of Shipment: **Iced:** Yes ☒ No ☐

Condition of Sample(s) upon Receipt:

9.2 T2

APPENDIX D

PHASE 1 HYDROGEOLOGIC STUDY

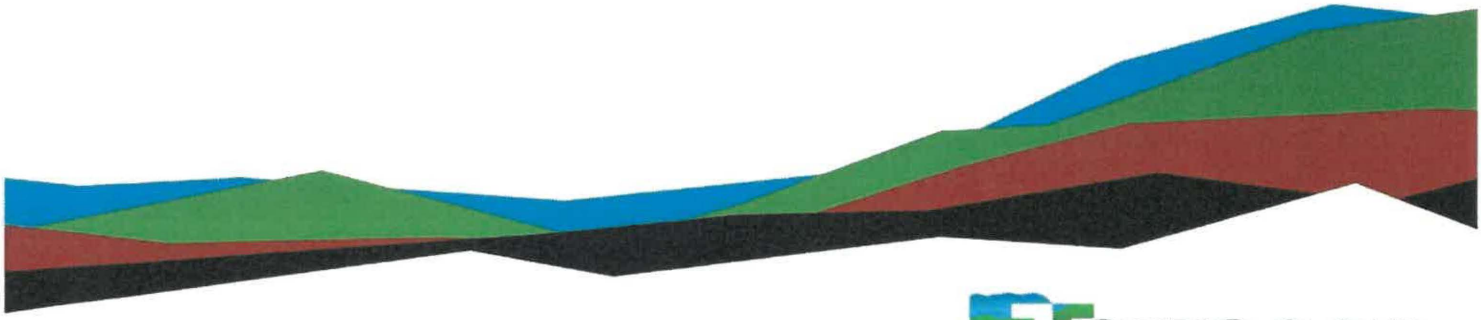
Summit Point Motor Sports Facility Water System

Stage 1 Hydrogeologic Study

April 16, 2025 | Terracon Project No. JD245325

Prepared for:

Gwin, Dobson and Foreman, Inc.
3121 Fairway Drive
Altoona, Pennsylvania 16602



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April 16, 2025

Gwin, Dobson and Foreman, Inc.
3121 Fairway Drive
Altoona, Pennsylvania 16602

Attn: David Santelli
P: 412-289-6875
E: dsantelli@gdfengineers.com

Re: Stage 1 Hydrogeologic Study
Summit Point Motor Sports Facility Water System
201 Motorsports Park Circle
Summit Point, West Virginia
Terracon Project No. JD245325

Dear Mr. Santelli:

We have completed the scope of Stage 1 Hydrogeologic Study for the above-referenced project in general accordance with Terracon Proposal No. PJD245325 dated March 10, 2025. This Stage 1 Hydrogeologic Study has been prepared for the proposed Summit Point Motor Sports Facility Water System in Summit Point, West Virginia.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,

Terracon

Robert K. Denton Jr., CPG, LPSS, LRS
Senior Geologist

For
Rebecca-Smith Zakowicz, PG, PE
Senior Principal

Table of Contents

ATTACHMENTS

Note: Refer to each individual Attachment for a listing of contents.

1.0 Project Information

This project assessed the feasibility of developing two water wells to supply the water system at the Summit Point Motorsports Facility and Training Campus (SPMF), located in Summit Point, Jefferson County, WV.

2.0 Scope of Services

The scope of services for the project were as follows:

- Terracon performed a desktop hydrogeological study in compliance with accepted and standard practices for developing two water wells with a combined capacity of 100 gallons per minute (gpm) yield,
- Terracon compiled this summary report which combines the results of the desktop hydrogeological study.

2.1 Methods and Procedures

Desktop Hydrogeologic Study

A desktop hydrogeological study was performed for possible well sites within the boundaries of the SPMF. The data review included the following:

1. United States Geological Survey (USGS) and Jefferson County geologic and topographic information, including fracture trace analysis and well testing data available from the USGS,
2. Property plats and aerial photographs,
3. Existing Jefferson County Health Department well data or descriptive statistical summary of the same (e.g., minimum, maximum, and mean of well data, etc.) if available,
4. Geologic maps and data reports (well logs, water quality analysis, geologic information including karst features, bedrock outcrops, etc.).

The results of the desktop hydrogeologic study were incorporated into the final report.

Summary Report

This summary report contains the results of the desktop hydrogeological study. The report includes potential locations of proposed wells and the hydrogeological rationale for their placement. It also includes the possibility of repurposing existing wells that

were tested by the USGS and may have transmissivity and specific capacity levels which could satisfy the client's requirements. Proposed locations and any pertinent mapping data for existing or new test wells have also been transmitted to the client as a GIS dataset.

3.0 Geology and Terrain

3.1 Physiography

The proposed well location sites occur primarily within the Valley and Ridge Physiographic Province of West Virginia.

The Valley and Ridge consists of alternating ridges and valleys which form from the differential weathering of sedimentary rock from the Paleozoic Geologic Era. The Valley and Ridge Province is bordered on the east by the Blue Ridge Physiographic Province and on the west by the Appalachian Plateau Physiographic Province.

There are many bedrock types present in the Valley and Ridge, but in general, less resistant limestone, dolostone, and shale bedrock underlie the valleys while the more resistant sandstone and conglomerate bedrock underlie the ridges. The Valley and Ridge can be naturally divided into two sub-provinces: an eastern Great Valley and western Valley and Ridge. The project site falls within the eastern portion of the province (i.e., the Great Valley subprovince). This area is underlain predominantly by carbonate rock units (limestone and dolomite), and clastic rocks (sandstone, siltstone, and shale) dating to the Cambrian, Ordovician, and Silurian Geologic Periods. The western Valley and Ridge and Ridge subprovince consists of alternating linear mountain ridges that are supported by sandstone and conglomerate bedrock, separated by valleys underlain by limestone, dolostone, or shale bedrock. These units are generally younger than the bedrock units in the Great Valley, and date primarily to the Ordovician through Mississippian Geologic Periods.

3.2 Topography

Referencing the USGS 7.5-minute topographic quadrangle (Berryville, VA, 1968, photo-revised 1979, the entire site is located in the northwestern corner of the quadrangle. The site is a gently rolling upland, with elevations ranging from EL590 to EL650. There are no perennial surface water bodies located within the site boundaries. The closest significant perennial water body is Bullskin Run, the headspring of which is located 0.7 miles east of the facility. Opequon Creek is located 3.24 miles to the west of the site, forming the boundary between Jefferson County and Berkeley County. There are a few excavated farm ponds in the area surrounding the site, but none within the site itself.

Based on the historic topographic maps, much of the southern part of what is now the SPMF was originally occupied by an orchard which encompassed approximately 142 acres in Jefferson County, WV, and extended into Clarke County, VA to the south. The WV portion encompassed 70.4 acres, roughly half of the original orchard. The orchard was still present in 1990 based on historic aerial photographs but was in the process of being removed by 2003 and was completely removed by 2005. Subsequent construction of the SPMF was completed between 2006 and 2009, with the southeastern portion of the facility occupying the northern section of the former orchard.

Areas of forested land have been preserved within the northeastern, southeastern, and western parts of the site, essentially unchanged from prior to the current development of the SPMF.

(A map showing the general topography and location of the SPMF is included as Exhibit 1, Appendix A.)

3.3 Geological Setting

The geology of the Berryville, VA, WV Quadrangle has been revised several times since it was first mapped. In general, the properties comprising the survey area have undergone a significant amount of faulting and deformation has occurred. The bedrock underlying the survey area is mapped as having been folded, faulted, and overturned yet the strike of the bedrock trends generally northeast, similar to the regional trend. It is of note that all of the geological units in the study area date to the Ordovician Geologic Period of the Paleozoic Era, and range in age from approximately 485.4 to 443.8 million years before the present. (A map showing the geological units and structural features underlying the survey area is included as Exhibit 2, Appendix A).

The following bedrock units are mapped (Edmundson and Nunan, 1973; Dean, et al, 1990) within the survey area.

Conococheague Formation (OCc) – The Conococheague Formation is the oldest of the geological units underlying the site. Overall, it is present as a light to medium gray algal limestone with interbedded aphanitic (extremely fine-grained) and dolomite. Siliceous and dolomitic laminations and sandy beds are common throughout the unit. The lower part contains oolites, intraformational conglomerates and algal structures (stromatolites). The unit is approximately 2,400 feet thick in the site area. The lower part of the Conococheague is dated to the Late Cambrian Geological Period, and the upper part dated to the Early Ordovician Period on the basis of fossil content. This unit only underlies a small area of the easternmost part of the Training Campus area of the site.

Stonehenge Limestone (Os) – The Stonehenge Limestone of the Beekmantown Group directly overlies the Conococheague Formation and is dated to the Early Ordovician Geologic Period. Its lower part is mainly light gray algal limestone with algal structures

(stromatolites). The upper part is algal limestone with abundant trilobite fossil fragments. The unit is silty and argillaceous (clayey) in the upper part. The Stonehenge Limestone is approximately 625 feet thick in the project area. This unit underlies the eastern part of the Training Campus and the central part of the Motor Sports Facility.

Pinesburg Station Dolomite and Rockdale Run Formation undivided (Opr) – This unit overlies the Stonehenge Formation and is also dated to the Early to Middle Ordovician Geologic Period. It is comprised of approximately 2,200 feet of light gray, buff, and bluish dolostone and limestone, but the thickness ranges from 2,100 to 2,400 feet.

Structural Features – Significant structural features (faults and folds) have been mapped across the project area. Two thrust faults run from northeast to southwest across the site, and are shown (labeled "T") on the geological map included as Exhibit 2, Attachment A. The eastern fault marks the contact between the Conococheague Formation and the Stonehenge Formation at the area of the Training Campus track. The second fault is located near the center of the main SPMF and marks the contact between the Stonehenge Limestone and the Rockdale Run Formation to its west. These are both "reverse faults", where the hanging wall to the west has moved up relative to the footwall to the east. Both of these faults occurred during the Alleghenian Orogeny (mountain building event) between 325 and 260 million years ago. They are not considered active.

Significant folds have also been mapped across the project area. These include anticlines (upward folds) and synclines (downward folds), the majority of which have been overturned as a result of the aforementioned thrust faulting. The overturned folds, and their possible association with high-yielding wells in Jefferson County (McCoy et al, 2005) will be discussed in greater detail later in this report. A map of folds, faults, and fractures are included as Exhibit 3.

3.4 Hydrogeology

The entire SPMF project site is mapped as underlain by soluble carbonate bedrock forming a regional karst terrain (i.e. a landscape characterized by the presence of sinkholes, caves, sinking and losing streams, and a highly irregular "pinnacled" overburden/bedrock interface). The geological units vary in their karst feature development, however within the study area the greatest number of surface karst features (sinkholes) are found within the Pinesburg Station Dolomite and Rockdale Run Formation undivided due to it having the greatest areal coverage of all the geological units. The highest concentration of features lies west of the SPMF. Nevertheless, there is no direct correlation between the number or concentration of surface karst features and the extent or potential productivity of the karst aquifer within these units.

In general, the karst-forming units in the study area possess no primary porosity (i.e., void space within the grain structure), so all water is stored in primary fractures, solution-enlarged fractures, and conduits. The distribution of these water-bearing subsurface features is extremely heterogeneous and non-uniform, and varies by depth.

The karst aquifer is essentially divided into two units: a shallow "epikarst" aquifer, which contains air and sediment-filled fractures and conduits that can fill with water during times of high precipitation and can be nearly dry during droughty periods. The epikarst connects with a perennially water-filled deep "phreatic" aquifer below (Figure 1).

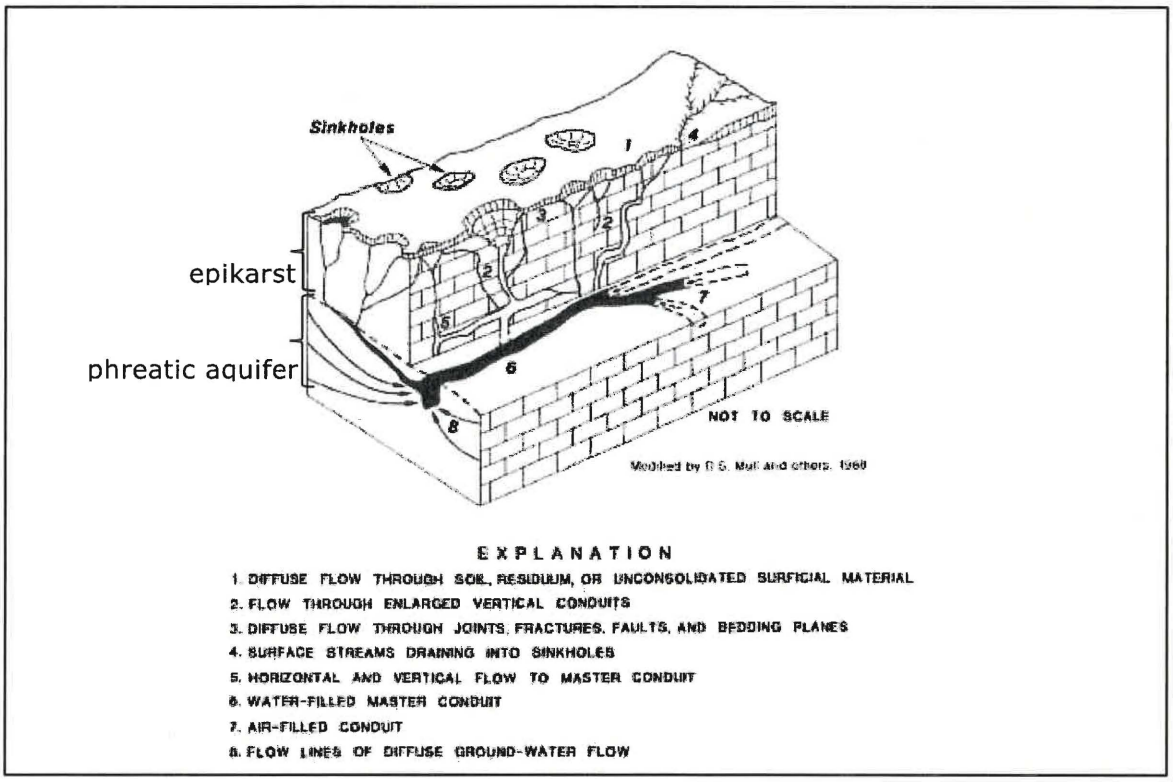


Figure 1. Components of ground-water flow through a cavernous carbonate aquifer (*from* Kozar, et al, 1991)

Unlike fractured bedrock systems in clastic rocks, where the fractures tend to decrease in size and extent with increasing depth, in karst systems, the fractures often remain consistent or can increase in size and relative storage with depth. A study by the United State Geological Survey (USGS) suggested that the phreatic aquifer in the Shenandoah Valley could reach depths of at least four kilometers (2.48 miles) below the surface (Figure 2), in particular where the bedding of the regional carbonate formations is steeply inclined along the western edge of the Blue Ridge Front (Yager, et al., 2008). It is of note that some of the highest yield wells in the Great Valley region are extremely deep (>1,000 feet below the surface), however, the cost of drilling wells to this depth is typically prohibitive for most jurisdictions.

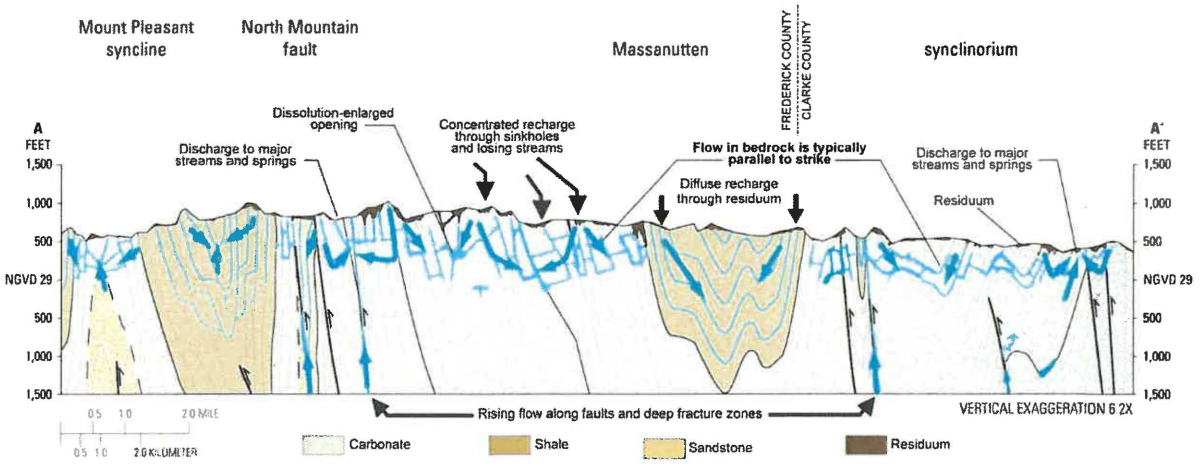


Figure 2. Model of deep circulation in the Shenandoah Valley (courtesy of Daniel Doctor, USGS)

4.0 Data Review and Desktop Analysis

4.1 Prior Well and Groundwater Studies

There have been a series of hydrological studies concerning the project area which included summaries of existing well data. The first of these was conducted by William Hobba for the West Virginia Geological Survey (WVGES) in 1978 and published in 1981. In his study, Hobba collected data on 218 wells and springs across Jefferson County, and using the data for static water level in the wells, was able to derive a groundwater contour map. His study also documented the locations of fracture traces from aerial photographs, lineaments from satellite data, geologic faults, cavernous zones, and areas of "losing" streams (i.e., streams that lose water along their channels into the subsurface). Within the current study area, Hobba's investigation suggested that the average groundwater elevation was approximately located at EL575 (an average of 25 feet below the surface in the central part of the site), with the highest groundwater elevation contour at EL600 in the eastern area of the site and dropping to EL550 in the western area.

A subsequent study conducted by the USGS (McCoy et al, 2005) documented fracture traces, structural geology, and transmissivity values for a series of wells and springs, in an attempt to show patterns of relationships between the structural geology and groundwater yield. The most interesting results of this study were the findings of a correlation between "cross-strike" fractures (i.e., fractures running perpendicular to the general southwest to northeast strike of the regional bedrock) and overturned folds, with

high-yield wells and springs. This study was followed in 2007 by a base flow[1] study by the USGS (Evaldi et al., 2007), which documented the measured base flow yields of watersheds based on stream and spring data across Jefferson County. This study suggested that the base-flow yield in the eastern part project area was approximately 160 gallons per day per acre (gpd/acre). Unfortunately, the base flow was not determined in the western part. It is of note that in the area northwest of the project site marked by the increase in number of sinkholes, the base flow was considered 0 gpd/acre.

4.2 Current Study

Fracture Trace Analysis - Based on the review of prior studies summarized in section 4.1, Terracon's geologists decided to locate potential high-yield well areas by analysis of the structural geology, specifically using prior fracture trace and fault analyses, and correlating the fracture trends with data on existing wells.

Methodology - Terracon completed a fracture trace within 2 miles of the SPMF. For this report, the fracture and lineament orientations are reported as strike, which is an azimuthal measurement (0° – 360°) where 0° is north (e.g., 45° = Northeast and 315° = Northwest). The fracture trace utilized existing geologic and geographic data sets, including:

- The USGS Fracture Trace Study for Jefferson County, WV (McCoy, et al., 2005);
- Two-foot and 4-foot contour interval maps derived from county level digital terrain models (DTMs), and 1- and 3-meter contour maps derived from state level digital elevation models (DEMs);
- Aerial photographs (both recent and historical);
- USGS Topographic 7.5-minute topographic quadrangles;
- Sinkhole and depression locations available from the USDA-NRCS soil survey of Jefferson County, and prior studies (and)
- LIDAR data.

Results – The analysis of identified fractures within 2 miles of the SPMF resulted in the identification of two major lineament families trending in the north-northeast (NNE), and west-southwest (WSW) directions. The longest lineaments follow the NNE direction

[1]Base Flow is typically defined as the portion of the streamflow that is sustained between precipitation events, fed to streams by delayed pathways.

which is parallel with the regional geologic strike and the second most common fracture were the WSW "cross fractures".

A map showing the current fracture trace analysis, fault locations, and rose diagram is included as Exhibit 3, Appendix A. The fractures were parsed into "major" and "minor" based on the topographic prominence of the lineament and whether it crosscut major geologic structures and contacts.

Analysis of Onsite Well Data – There are currently 25 wells located within the SPMF, which serve both the motorsports area and the training facility. Data on the wells was provided by John Wells, Director of Maintenance for the SPMF. Approximate well locations were sent as image files, and then mapped using GIS. The data provided by Mr. Wells included the well location, depth (feet), yield (gpm), status (in use/not in use), and comments on potability, decontamination method (e.g., UV, chlorination, etc.) and odor (if noted). These data are summarized in Table 1, Appendix B.

USGS Well Testing – The USGS undertook testing of wells across Jefferson County over a 6-month period starting in the Spring of 2004 (McCoy, et al, 2005). This testing included 5 of the wells located at the SPMF site. The USGS conducted short-term aquifer tests (30 minutes) at relatively low flow (2 to 15 gpm) at each site to determine specific capacity and transmissivity. At most sites, recovery data was recorded for 100 minutes following the pumping period. Data from the test wells were analyzed by the Theis (1935) curve matching method.

Our study attempted to correlate the USGS test wells with the locations of the existing onsite wells by comparing the USGS map locations with the location provided by Mr. Wells. Well depths (i.e., depth to bottom) were also used to correlate the tested wells, but in two cases, they did not compare well, with the USGS depths being significantly shallower than the data provided by Mr. Wells. It should be noted that Mr. Wells did inform us that much of the well data he provided us with was anecdotal and might not be accurate, especially for the older onsite wells. A comparison of the wells tested by the USGS and the correlative onsite wells is shown on Table 1, Appendix B. Locations of the onsite wells and the wells which were tested by USGS are shown on Exhibit 4, Appendix A.

5.0 Proposed Wells

Proposed well areas were identified for this study based on the following factors:

- Location within the SPMF boundaries,
- Presence of significant fractures and faults,
- Presence of the intersection of cross-strike fractures and strike parallel fractures,
- Transmissivity and Specific Capacity Date derived from the USGS study,

- Correlations of Jefferson County well data compiled by the USGS, including well depths, distance to nearest fracture, fold types, distance to thrust faults, and geological map units in which the wells were drilled.

The USGS study data suggested that the highest yielding wells in Jefferson County were all up to 300 feet in depth, with wells >300 feet having the lowest transmissivity values. The distance to the nearest fracture, thrust faults and geological units present within the study area was equivocal, with no significant difference noted. Interestingly, the structural geology of the well sites did seem to show a trend correlative with higher transmissivity, with the highest values in overturned anticlines, overturned synclines, and synclines. The lowest transmissivity was observed in wells located on or near anticlines.

Based on this data, two existing onsite wells (SPMF wells numbers 6 and 17) were measured by the USGS with extraordinarily high transmissivity values of 30,000 ft^2/day, and specific capacity values of 41 and 242 gpm/foot for wells 6 and 17, respectively. Wells 6 and 17 were identified as wells number 27 and 23 in the USGS study. These wells did not seem to correlate with any apparent structural geology features identified in our study (e.g., fractures, folds, or faults), but interestingly a line drawn from SPMF well 6 (USGS well 27) to SPMF well 17 (USGS well 23) was exactly parallel with the fracture trend WSW fractures identified in the fracture trace study. Several other SPMF wells (2,3,4, and 5) along this inferred cross-strike fracture had reported yield values ranging from 20 gpm to 40 gpm. This inferred well fracture can be found in Exhibit 4.

It is of note that two wells (SPMF well numbers 22 and 24) had reported yields of 50 gpm each. Both of these wells are located on or very near an overturned syncline mapped by the USGS, but they were not tested by the USGS for aquifer parameters. There also seemed to be no correlation between high yields of wells located along the thrust fault running from NNE to SSW near the center of the facility, which reflected the USGS observation that wells located on or near thrust faults did not have high yields.

6.0 Recommendations

In conformance with the project scope and to address various concerns of the client, Terracon would like to make the following recommendations.

Well Testing – The USGS data suggest that two of the existing site wells (SPMF 6 and 17) potentially have high transmissivity and are currently being underused. It would be extremely helpful to subject these wells to a formal aquifer parameter test involving a step-drawdown and long-term (24 to 48 hours) constant rate pumping test. Well Number 6 is currently in use as a source of potable water, but well 17 is classified as non-potable, so the latter may be the best well for testing. In addition, pump testing on the wells located on or near the overturned syncline (SPMF wells 22 and 24) would also be good candidates for analysis, as they were not tested by the USGS, and may have

high transmissivity values as well. These tests would be used to determine if any of the existing onsite wells can be used to obtain the desired 100 gpm combined capacity, without negatively impacting the other SPMF wells which are currently in use. It is important to understand that these tests would necessitate temporarily removing the existing submersible pumps in the wells designated for testing, and installing a high-capacity submersible pump, with a discharge pipe equipped with a gate valve to increase or decrease the flow rate, particularly for performing the step-drawdown test, which consists of pumping at three different, successively increasing rates to determine a safe rate for the 24 to 48 hours constant rate testing. Water levels in nearby wells can be used to determine if the increased pumping rate of the selected wells would impact nearby wells.

New Well Locations – Alternately, if the pump testing described above is not acceptable, or may be limited to only one or two wells, then we recommend a study using geophysics to identify possible locations for the drilling of new test wells. The geophysics method we recommend would be electrical resistivity tomography ERT, which is a method involving the measurement of the apparent electrical resistivity of subsurface materials. During an ERT survey, the electrical current is injected into the earth through a pair of current electrodes, and the potential difference is measured between a pair of potential electrodes. The current and potential electrodes are generally arranged in straight line arrays. Since the electrical resistivity of subsurface materials varies with their compositions (e.g., soil types, hard and soft bedrock, etc.) and water contents, the resistivity contour maps can be used to get a general background of the subsurface condition. ERT is also used to identify significant water-bearing fractures that have been identified in well studies using this method.

If the ERT survey identifies significant water-bearing fractures or zones, then test wells should be advanced in the identified locations. These test wells should be drilled using an air rotary drill rig. The boreholes should be equipped with a temporary casing to prevent caving, and a 6-inch borehole is recommended to allow satisfactory aquifer measurements. These aquifer measurements should include step drawdown and constant rate pumping tests to determine the well's specific capacity and transmissivity as described above. If any of the test wells are determined to be high yield, then they can be bored out to a 10-inch production well.

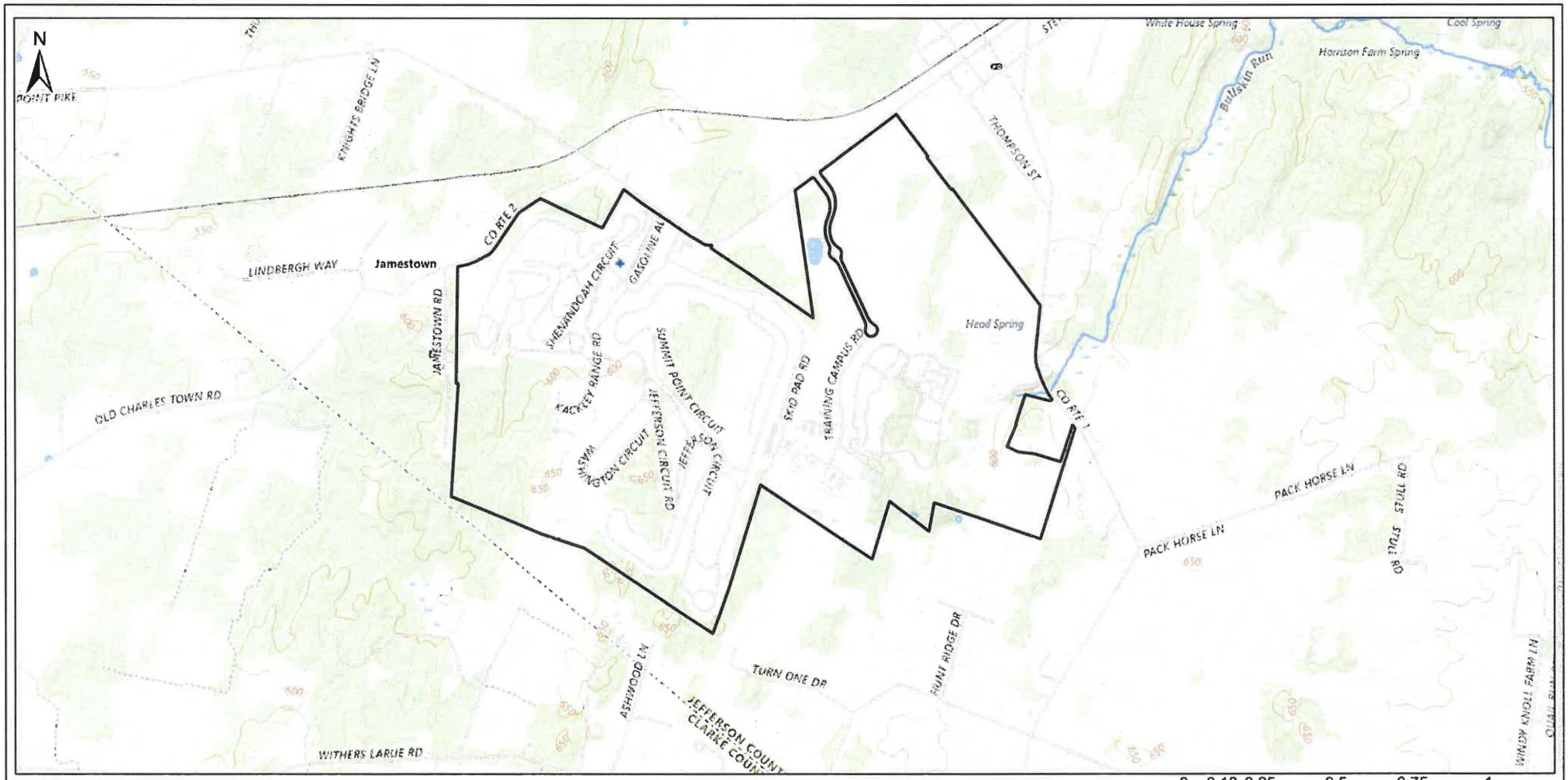
7.0 Limitations and Closure

The information presented herein has been based on the review of both proprietary and publicly available geologic information. Accordingly, Terracon should be engaged during the site characterization, pump testing of existing wells, and potential test well drilling phases of this project in order to confirm subsurface conditions are as indicated herein, and to verify the intent of the recommendations in this report are implemented.

Terracon has conducted these services in accordance with generally accepted geologic practices. No warranties, either expressed or implied, are made as to the professional services and recommendations presented herein.

Appendix A

Maps



Legend

Study Area

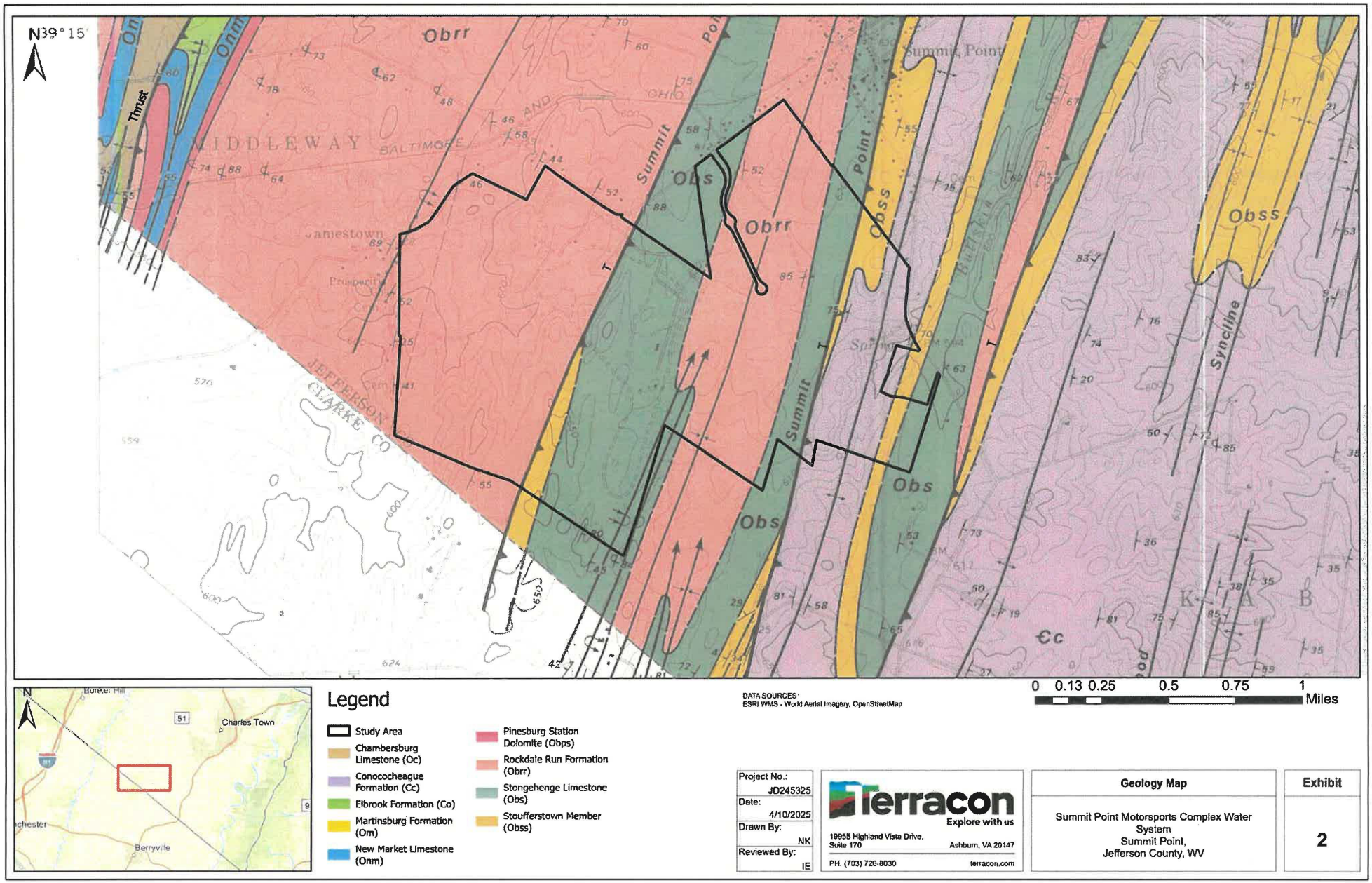
DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

0 0.13 0.25 0.5 0.75 1 Miles

Project No.:	JD245325
Date:	4/10/2025
Drawn By:	NK
Reviewed By:	IE

terracon Explore with us
19955 Highland Vista Drive, Suite 170
Ashburn, VA 20147
PH. (703) 726-8030
terracon.com

Site Location and Topography Map	Exhibit
Summit Point Motorsports Complex Water System Summit Point, Jefferson County, WV	1



Project No.:	JD245325
Date:	4/10/2025
Drawn By:	NK
Reviewed By:	IE

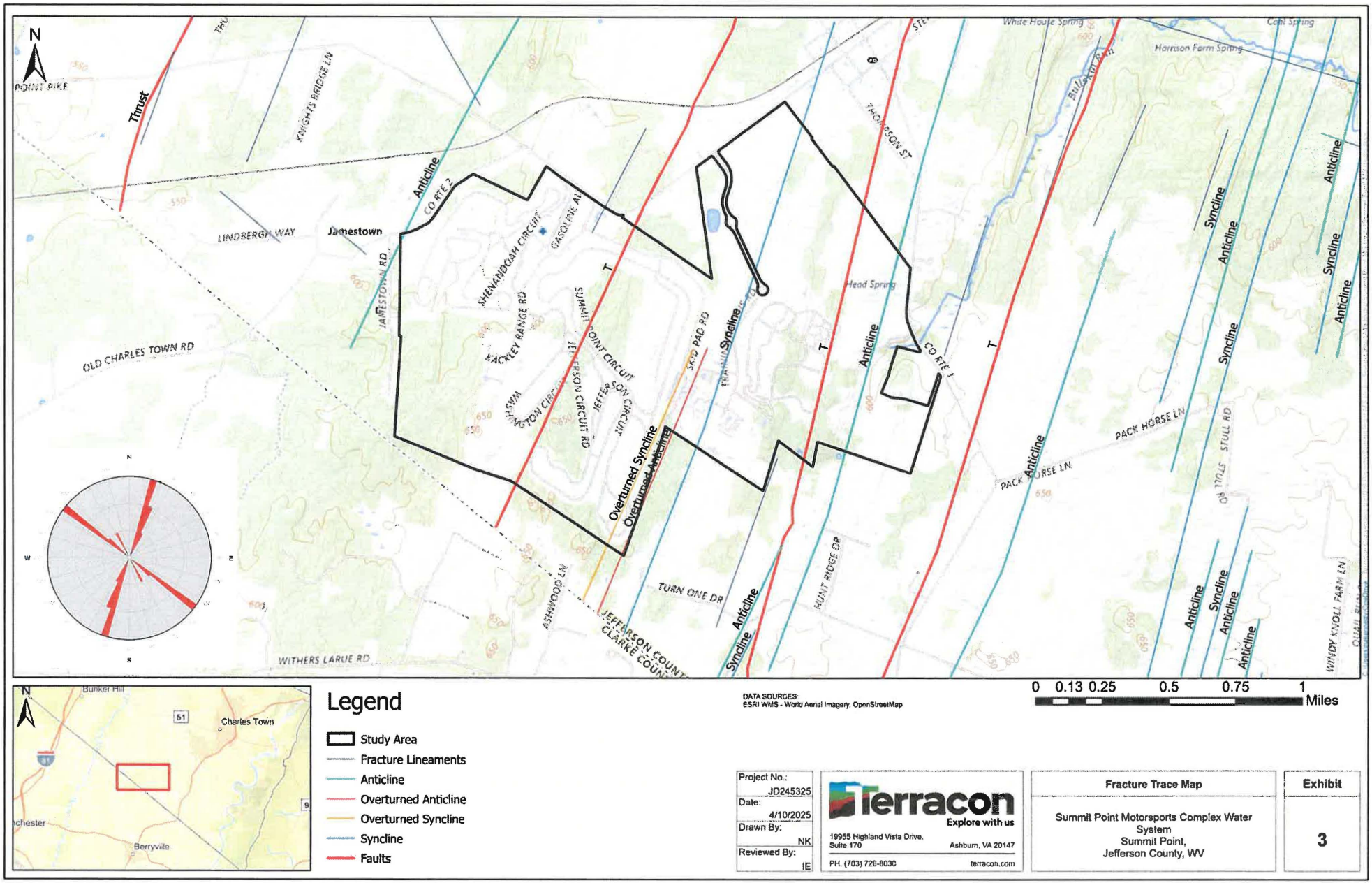
Terracon
Explore with us
19955 Highland Vista Drive, Suite 170
Ashburn, VA 20147
PH. (703) 726-8030
terracon.com

Geology Map

Summit Point Motorsports Complex Water System
Summit Point,
Jefferson County, WV

Exhibit

2



Project No.:	JD245325
Date:	4/10/2025
Drawn By:	NK
Reviewed By:	IE

Terracon
Explore with us
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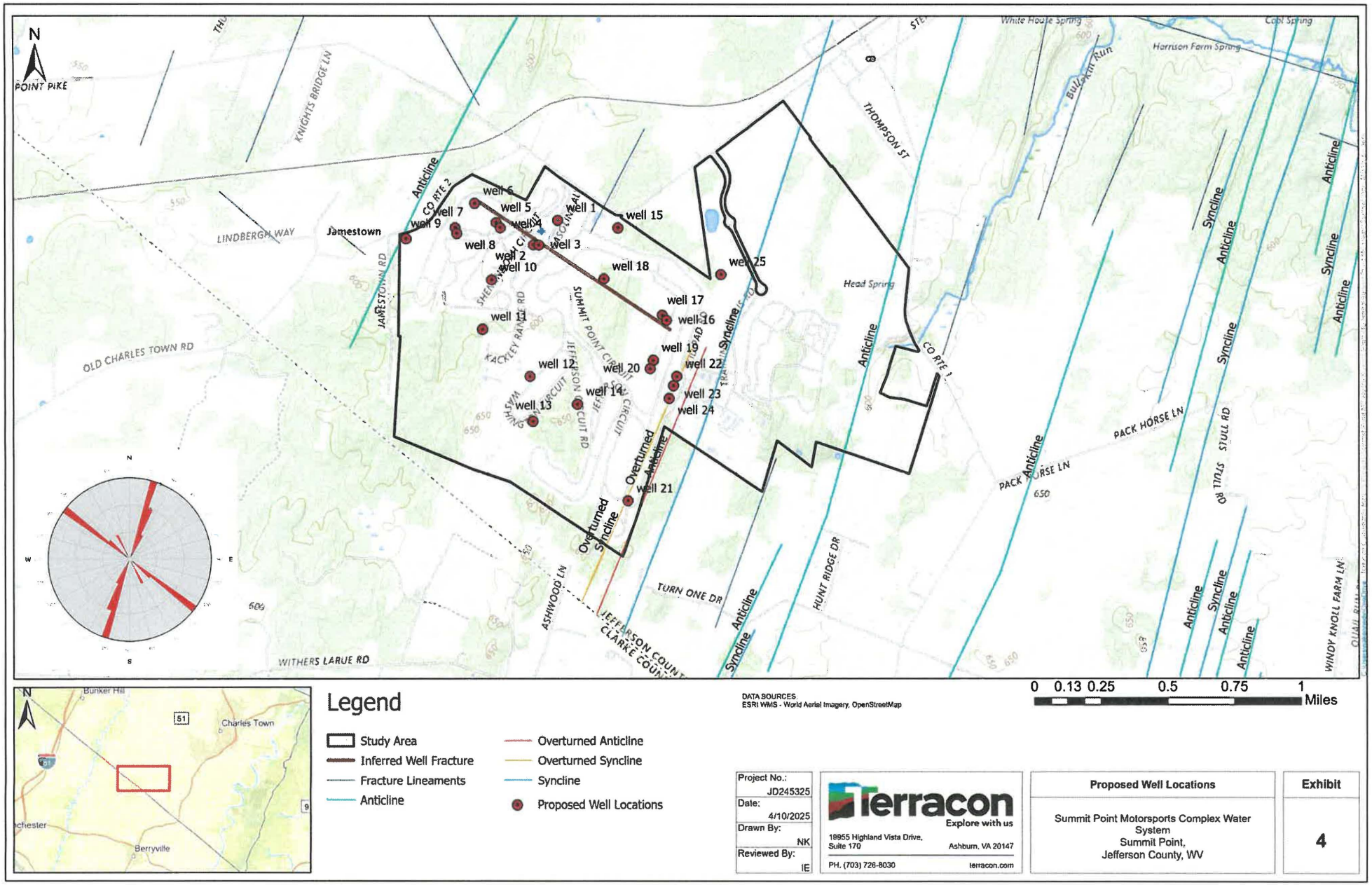
PH. (703) 726-8030 terracon.com

Fracture Trace Map

Summit Point Motorsports Complex Water System
Summit Point,
Jefferson County, WV

Exhibit

3



Legend

- Study Area
- Inferred Well Fracture
- Fracture Lineaments
- Anticline
- Overturned Anticline
- Overturned Syncline
- Syncline
- Proposed Well Locations

DATA SOURCES
ESRI WMS - World Aerial Imagery, OpenStreetMap

Project No.:	JD245325
Date:	4/10/2025
Drawn By:	NK
Reviewed By:	IE

Terracon
Explore with us
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Ashburn, VA 20147
PH. (703) 726-8030
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Proposed Well Locations	Exhibit
Summit Point Motorsports Complex Water System Summit Point, Jefferson County, WV	4

Appendix B

Well Data Table

Table 1. Well Data Summary

Well ID	Location	Depth*	Yield*	Status	Comments	USGS Well	DTB	SpCap	Trans	Duration	SWL	Discharge	Drawdown
		(ft)	(gpm)				(ft)	(gpm/ft)	(ft²/day)	(min)	(ft)	(gpm)	(ft)
1	security office	260	20	in use	UV sanitized								
2	Shenandoah circuit paddock	290	20	in use	chlorinated, light odor								
3	main office	150	24	in use	chlorinated								
4	Shenandoah circuit pump house	400	26	in use	non-potable								
5	Shenandoah circuit pump house	140	40	not in use									
6	Shenandoah circuit paddock	290	20	in use	chlorinated, light odor	27	150	41	30000	31	11.5	12	0
7	Shenandoah suites/classrooms	1400	6	in use	non-potable, light odor								
8	Shenandoah suites/classrooms	300	20	in use	non-potable								
9	Hardesty Road well	ND	ND	ND	no power to location								
10	range K	256	50	in use	odor	25	240	5.8	1000	26	8.8	4	1
11	stone house	ND	ND	not in use	none								
12	Washington circuit paddock	396	15	in use	UV sanitized, strong smell								
13	Jefferson circuit skid pad	800	8	in use	non-potable, skid pad use only								
14	Jefferson circuit paddock	499	20	in use	UV sanitized, good water quality	20	325	2.58	400	30	22.59	11	4
15	SCCA registration building	305	15	in use	UV sanitized, good water quality	26	305	0.35	10	30	14.16	8	23
16	summit point circuit paddock	ND	ND	not in use	well went dry								
17	summit point circuit paddock	385	6	in use	non-potable	23	385	242	30000	30	8.07	12	0
18	summit point circuit infield	ND	ND	not in use	old hand pump well								
19	summit point circuit	396	16	in use	chlorinated								
20	summit point circuit race control	100	30	in use	non-potable								
21	summit point circuit skid pad	800	50	in use	non-potable								
22	orchard building	300	50	in use	chlorinated								
23	orchard building	ND	ND	in use	chlorinated								
24	storage shed	100	50	not in use	groundwater under the influence								
25	Potomac skid pad	400	26	in use	non-potable								

Notes: *Depth and Yield data as reported by SPMF; correlative well data as measured and reported by the USGS: DTB=depth to bottom, SpCap=specific capacity, Trans=transmissivity, SWL=static water level

Appendix C

References Cited

REFERENCES CITED

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Edmundson, R. S., and Nunan, W. E., 1973, Geology of the Berryville, Stephenson, and Boyce quadrangles, Virginia: Virginia Division of Mineral Resources Rept. Inv. 34, 112 p.

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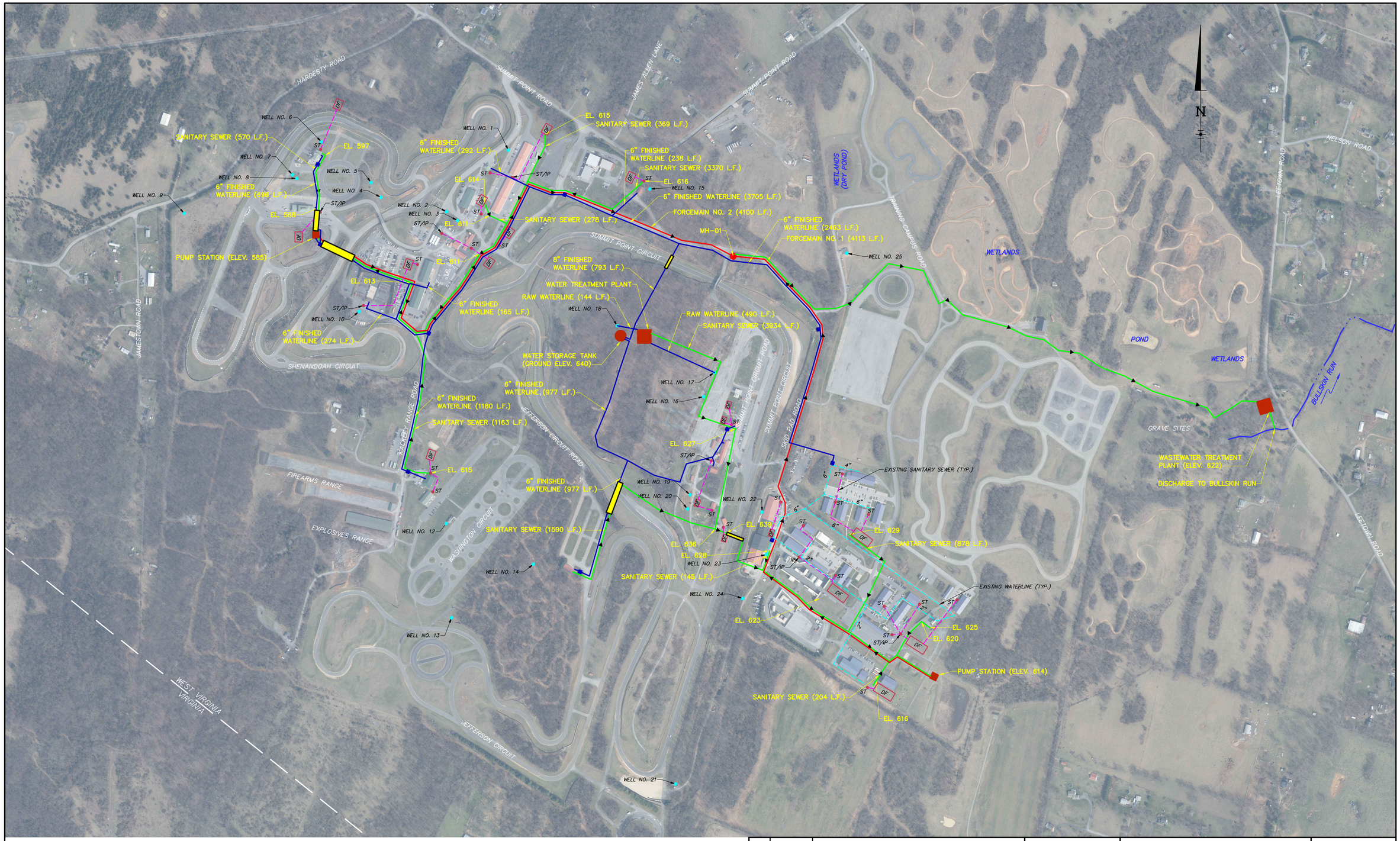
Yager, Richard M., Scott Southworth, and Clifford I. Voss. Simulation of Ground-Water Flow in the Shenandoah Valley, Virginia and West Virginia, Using Variable-Direction Anisotropy in Hydraulic Conductivity to Represent Bedrock Structure. USGS Scientific Investigations Report 2008–5002. 2008.

APPENDIX E

CONCEPTUAL SITE LAYOUT FOR PLANNING PURPOSES



LEGEND (EXISTING)

- STREAM
- SANITARY SEWER LINE
- WATERLINE
- ST — SEPTIC TANK
- IP — INFLUENT PUMP
- DF — DRAIN FIELD
- WELL

LEGEND (PROPOSED)

- SANITARY SEWER LINE
- FORCEMAIN
- WATERLINE
- HORIZONTAL BORING
- MANHOLE
- STRUCTURE/BUILDING
- FLOW DIRECTION
- FIRE HYDRANT

GRAPHIC SCALE

300 0 150 300 600 1200

1 inch = 300 ft.

NO.	DATE	DESCRIPTION

REVISIONS

SEAL

FEASIBILITY STUDY

CHARLES TOWN UTILITY BOARD

SUMMIT POINT RACEWAY SANITARY SEWER AND WATERLINE FEASIBILITY STUDY

CHARLES TOWN
JEFFERSON COUNTY, WEST VIRGINIA

DATE:	JOB: 24080	SCALE: AS SHOWN
FILE:24080 – AERIAL	DRAWN BY: AJL	CHECKED BY:

GD&F
GWIN DOBSON & FOREMAN ENGINEERS
3121 Fairway Drive
Altoona, PA 16602
814.943.5214
gdfengineers.com

SHEET NO: 1

PLOT CREATED: 6/5/2025 8:30 AM

G:\24080\24080 – AERIAL

3121 Fairway Drive, Altoona, PA 16602
gdfengineers.com

CHARLES TOWN UTILITY BOARD

Wednesday, July 9, 2025

Regular Meeting **661 South George Street**
Charles Town, WV 25414

Riverpointe (formerly Ranson Heights) Pump Station Operation and Maintenance Agreement

Attachments:

Riverpointe Pump Station Operation & Maintenance Agreement.pdf

OPERATION AND MAINTENANCE AGREEMENT

THIS OPERATION AND MAINTENANCE AGREEMENT (the "Agreement")_ is made and effective this _____ day of _____, 2025, by and between the **CITY OF CHARLES TOWN, by and through the CHARLES TOWN UTILITY BOARD**, (hereinafter, "CTUB") and **FORESTAR (USA) REAL ESTATE GROUP INC.** (hereinafter, "THE DEVELOPER"), collectively ("the "Parties").

WHEREAS, CTUB has been authorized by City Ordinance Chapter 13, Article II to develop sewage collection and treatment facilities throughout its service area and vicinity to residents and businesses, with public sewer service; and

WHEREAS, CTUB has an Alternate Mainline Extension Agreement (AMEA) with the DEVELOPER that has been approved by the Public Service Commission of West Virginia (PSC) and intend to serve the DEVELOPER'S Ranson Heights Development ("Development") with public sewer service; and

WHEREAS, the DEVELOPER is working to complete the construction of the on-site and off-site infrastructure to serve the Development as part of the AMEA which includes an on-site sewage pump station ("Pump Station") which is expected to be completed in advance of other improvements; and

WHEREAS, the Parties believe it would be mutually beneficial to have CTUB operate and maintain the Pump Station and to have the DEVELOPER pay CTUB for the cost to operate and maintain said Pump Station.

THEREFORE, the Parties, for and in consideration of the mutual covenants and conditions herein contained, hereto agree as follows:

A. CTUB AGREES:

1. To provide routine operation and maintenance of the Pump Station located within the Ranson Heights Development on a monthly basis on an actual time and expense basis for such work. A flat monthly charge will initially be $1,500.00 per month for the first four months of operation, after which the parties will review the actual time and expenses spent and will thereafter use good faith efforts to establish a monthly charge to be charged by

CTUB to the DEVELOPER which charge will be used until the infrastructure is accepted into the CTUB system. During the four-month trial period CTUB personnel will complete and maintain a log of all maintenance activities including date, time, and costs of all work performed pursuant to this Agreement.

2. By January 1st of each year beginning on January 1, 2027, CTUB shall provide to the DEVELOPER its financial analysis of the cost of operating the Pump Station in its preceding fiscal year ended June 30, 2025 or 2026 and CTUB's proposed flat monthly routine pre-treatment service charge for the next upcoming fiscal year beginning July 1, 2026. The DEVELOPER shall have 60 days from receipt of CTUB'S proposed charge to accept or counter-offer CTUB'S proposed change in the flat monthly charge. In the event the Parties are unable to reach agreement on a flat monthly charge to apply to an upcoming fiscal year by June 1, either Party may terminate this Agreement with 30 days advance written notice to the other Party or alternatively the Parties may continue to pay the flat monthly charge which was previously in effect and submit the amount of the charge to a CPA with public utility experience for resolution of the flat monthly charge to be used for the new fiscal year by binding arbitration. These services under this agreement shall include *routine* operation, inspection, and preventive maintenance of the pretreatment facility. Any successor operator of the Pump Station must have personnel who possess at a minimum a Class C license.

3. The following non-routine items costing less than $2,500 per item related to providing service for the Pump Station will be billed to the DEVELOPER at actual cost incurred by CTUB with invoices provided each month for the expenses: material and equipment; charges for capital telemetry expenses; charges incurred by CTUB, if any, related to discharges from the Pump Station directly caused by DEVELOPER; and similar non-routine costs related to the operation of the Pump Station. The performance of these duties shall be in accordance with sound utility business practice and relevant federal, state, and local statutes, regulations, and ordinances.

4. To provide bills to the DEVELOPER for charges set forth in paragraph A.1. by the 15th of

the month following the month in which the services were provided. Bills for electric service to the Pump Station will be billed to and paid by the DEVELOPER until such time that the Pump Station is accepted into the CTUB system.

5. In addition to routine operation and maintenance provided under paragraph A.1., from time to time there may also be needed emergency and non-emergency repair services estimated to cost more than $2,500.00. An emergency repair is the replacement or repair of any component or system in the Pump Station that has failed or is expected to fail within 60 days in the reasonable judgement of CTUB and such failure interferes with the ordinary operation and performance of the Pump Station or the delivery of wastewater to CTUB's wastewater collection system. CTUB may perform emergency repairs without obtaining approval from the DEVELOPER in advance of undertaking such repair. CTUB will notify the DEVELOPER of such emergency repairs within 48 hours of initiation of such repairs. CTUB will include the cost of emergency repairs on its monthly invoice on a pass-through basis supported by vendor invoices. For any non-emergency repair costing more than $2,500, CTUB shall present to the DEVELOPER its estimate for such repair in writing. The DEVELOPER may elect to have CTUB perform the non-emergency repair or the DEVELOPER may retain others to do so. The DEVELOPER will make such election timely to avoid an issue becoming an emergency repair. CTUB shall provide to the DEVELOPER a monthly detailed invoice of charges made for internal and contract labor, materials, and equipment used in these repair services, including overtime costs for work performed outside of Monday through Friday, 8 am to 5 pm ("Normal Work Week") or on a state holiday. The rates will be based on actual labor rates or at actual rental fees incurred, plus fuel cost, if rental equipment is used. CTUB will include the cost of non-emergency repairs on its monthly invoice on a pass-through basis supported by vendor invoices. The performance of these duties shall be in accordance with sound utility business practice and relevant federal, state, and local statutes, regulations, and ordinances.

6. Extraordinary maintenance shall include replacement of any capital asset and/or other tasks that require support and/or resources that must be obtained in whole or in part from a third party and such work is estimated to cost $2,500.00 or more. CTUB shall provide to the

DEVELOPER written quotes or estimates for the cost of such work. Overtime costs for Town employees shall only apply to work performed outside of Normal Work Week hours or on a state holiday. Extraordinary maintenance tasks, except to the extent reasonably necessary to address an emergency situation, shall be subject to prior approval of the DEVELOPER and included in the DEVELOPER'S budget. CTUB shall pay such expenses to vendors and submit electronic invoices to the DEVELOPER for prompt reimbursement. CTUB will include the cost of extraordinary maintenance on its monthly invoice on a pass-through basis supported by vendor invoices. The performance of these duties shall be in accordance with sound utility business practice and relevant federal, state, and local statutes, regulations, and ordinances.

7. To be responsible for making any necessary report of violations occurring at or near the pretreatment facility to the West Virginia Department of Environmental Protection.

B. THE DEVELOPER AGREES:

1. To compensate CTUB for services rendered under Section A. above for any undisputed invoices within thirty (30) days of the invoice date if CTUB participates in the DEVELOPER'S electronic payment system.

2. To provide to CTUB copies of any/all operations and maintenance manuals, as built drawings, and any other records regarding the pretreatment facility reasonably needed by the CTUB in furtherance of the duties herein. CTUB shall maintain these documents and any other documents pertinent to the Pump Station for the term of this Agreement.

3. To arrange in its name for an annual contract to have a pumper truck be reasonably available and to pay directly to the vendor for proving said pumper truck services.

4. To allow CTUB reasonable access and control of the operation and maintenance of the Pump Station.

5. In the event that the Pump Station is operated on a temporary power source after the Pump Station start-up that the DEVELOPER will extend the warranty period of the pumps and equipment to CTUB for the duration that is required to establish permanent power. Assets will not be accepted into the CTUB system until permanent power is established, however, the manufacturer's warranty period begins at start-up even if done so utilizing a temporary power source. CTUB will require a full warranty period by the DEVELOPER equal to the duration provided by the manufacturer while on permanent power.

C. THE PARTIES AGREE THAT:

1. This Agreement is the complete agreement between the Parties.

2. The Parties agree that any fines or penalties, as a result of discharge violations imposed by a regulatory body shall be borne by the Parties according to their proportionate share of fault, if such fault is proven. CTUB shall be responsible for any fine and/or penalty incurred as a result of discharge violations under CTUB'S permits except for those fines and/or penalties that are a direct result of discharge violations that are a result of:
   a. the introduction by the DEVELOPER of prohibited materials into CTUB's sewer system;
   b. the DEVELOPER not following a recommendation of CTUB for non-emergency or extraordinary maintenance referred to in paragraphs A 5. and A 6. above; or
   c. a result of the DEVELOPER sending a volume of sewer flow that exceeds the permitted capacity of CTUB'S wastewater treatment plant.

3. This Agreement may be amended only by written modification, executed by both Parties.

4. The term of this Agreement shall be for two (2) years from the date first written above, subject to the right of termination as stated herein and in State Code. The Parties will confer regarding renewal or modification of this Agreement by _____ and prepare

an appropriate renewal or modification prior to the expiration of the initial term for timely review and approval by the respective governing bodies of the Parties. If a party chooses not to extend this Agreement for an additional term, said party must notify the other party of its intent not to extend this Agreement not less than sixty (60) days prior to the expiration of the term of the Agreement.

5. Either party has the right to terminate the Agreement at any time if the other party has breached this Agreement. The Parties agree to provide sixty (60) days' notice prior to termination for breach by the other party to enable the party in breach an opportunity to cure the breach. Should the breach be cured within the sixty (60) days, the non-breaching party may grant a greater period of time for the cure at its sole discretion. This provision does not modify the DEVELOPER'S right under state law to terminate any contract upon thirty days advance notice without cause.

6. This Agreement shall be binding upon the successors and assigns of the respective Parties.

7. Any notice, demand, or request given regarding this agreement shall be effective if sent by first class mail, postage pre-paid, to:

   CHARLES TOWN UTILITY BOARD,
   Attention UTILITY MANAGER,
   661 South George Street,
   Charles Town, West Virginia 25414;

   FORESTAR (USA) REAL ESTATE GROUP INC.
   Attn: David Giovannacci
   7021 Columbia Gateway Drive, Suite 320
   Columbia, MD 21046

8. This Agreement is governed by the laws of the State of West Virginia.

9. CTUB represents and warrants to the DEVELOPER that the execution, delivery, and performance of this Agreement by CTUB has been duly authorized, and this Agreement constitutes a valid and binding obligation of CTUB enforceable in accordance with its terms, and the execution and performance of this Agreement by CTUB will not violate the law or violate any instruments relating to the operation of its sewerage system.

10. The DEVELOPER represents and warrants to CTUB that the execution, delivery, and performance of this Agreement by the DEVELOPER has been duly authorized, and this Agreement constitutes a valid and binding obligation of the DEVELOPER enforceable in accordance with its terms, and the execution of and performance of this Agreement by the DEVELOPER will not violate any provision of the law.

[Signatures Appear on Following Page]

IN WITNESS WHEREOF, The City of Charles Town, by and through the Charles Town Utility Board and Forestar (USA) Real Estate Group Inc. have caused this Agreement to be signed by their proper and duly authorized officers and effective as of the ____day of _____, 2025.

CITY OF CHARLES TOWN, by and through the CHARLES TOWN UTILITY BOARD

by: _____

_____, Chairman

FORESTAR (USA) REAL ESTATE GROUP INC.

by: _____

DAVID GIOVANNACCI

Print name and title Director - Investments and Development

STATE OF WEST VIRGINIA,

COUNTY OF JEFFERSON, to wit:

The foregoing instrument was acknowledged before me this ____day of _____, 2025, by _____, duly authorized to act for and on behalf of the City of Charles Town, by and through the Charles Town Utility Board.

My commission expires:_____

[seal]

_____

Notary Public in and for the State of West Virginia

STATE OF MARYLAND,

COUNTY OF ANNE ARUNDEL, to wit:

The foregoing instrument was acknowledged before me this 23rd day of JUNE, 2025, by DAVID GIOVANNACCI, duly authorized to act for and on behalf of Forestar (USA) Real Estate Group, Inc.

My commission expires: 8/21/2027

[seal]

KAREN A. PESKO-GILL NOTARY PUBLIC ANNE ARUNDEL COUNTY, MD EXPIRES 8-21-2027

Karen A. Pesko-Gill

Notary Public in and for the State of MARYLAND

CHARLES TOWN UTILITY BOARD

Wednesday, July 9, 2025

Regular Meeting

661 South George Street
Charles Town, WV 25414

Collection System Project - Authorized Representative Resolution

Attachments:

Authorized Resolution.pdf

AUTHORIZING RESOLUTION

At the _____ meeting of the _____ held on
regularly scheduled or special | Government Entity

_____, 20___, _____, has been duly authorized to act
Newly Authorized Person

on and sign on behalf of the _____ any and all federal and state actions
Government Entity

as they relate to planning, design, and/or construction of _____

_____.
description of project

This motion being duly presented and seconded, has been adopted by a _____
quorum or majority

vote and therefore _____ may sign all such documents relative to
Newly Authorized Person

wastewater facilities on behalf of _____ .
Government Entity

Newly Authorized Representative _____
Signature Date

_____
Title

ATTESTED BY:

[Seal] _____ Clerk/Recorder/Secretary
Signature Date

(Attach copy of minutes from meeting.)

CHARLES TOWN UTILITY BOARD

Wednesday, July 9, 2025

Regular Meeting

661 South George Street
Charles Town, WV 25414

Utility Manager Report

Attachments:

UM Report July 2025.pdf

Charles Town Utility Board

661 S. George Street, Suite 101 Charles Town, WV 25414
Phone: (304) 725-2316 ♦ Fax: (304) 725-7150 ♦ Web: www.ctubwv.com

MEMORANDUM TO THE BOARD OF DIRECTORS

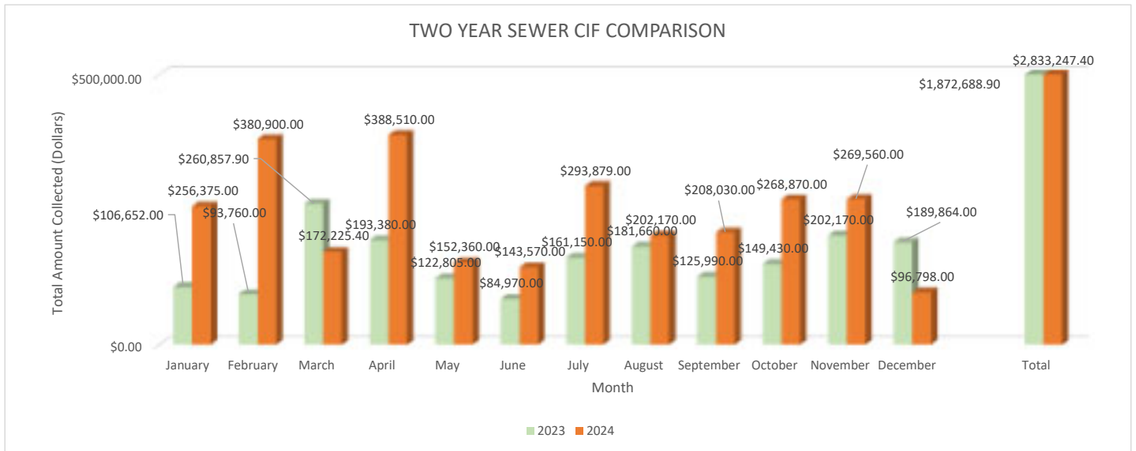
FROM: Kristen Stolipher, Utility General Manager
SUBJECT: Utility General Manager's Report
DATE: July 9, 2025

- **Customer Counts**
  - Sewer 10,051
  - Water 7,445

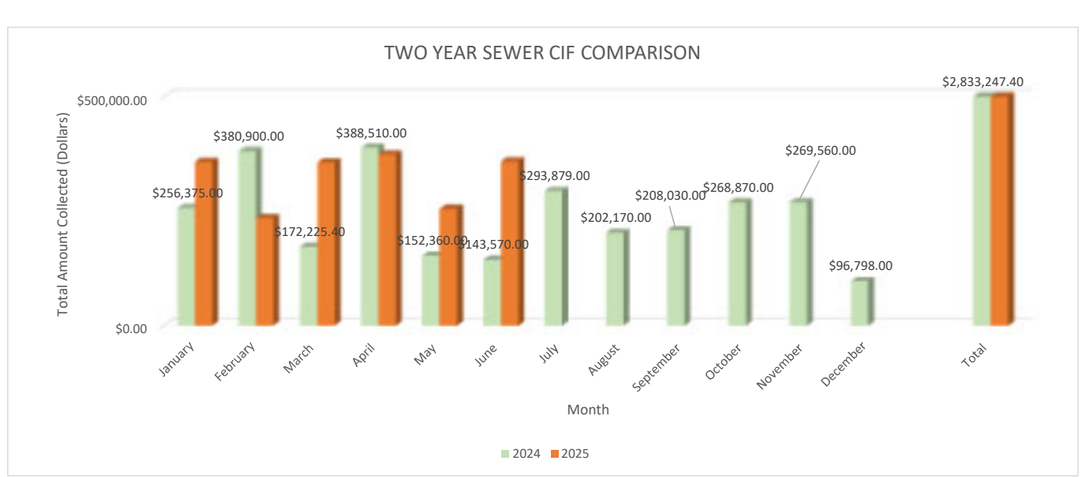
- **Water**
  - ALJ Hearing set in WVAW Complaint case for July 30th at 9:30 a.m. in County Meeting Room in Library Building
    - County Commission briefing – July 8th

- **Sewer**
  - Renewal and Replacement Project final completion end of July
  - Collection System Project
  - Greenfield Forcemain – Bidding anticipated in August

Charles Town Utility Board 2024 Capacity Improvement Fee Collections/EDU for Sewer						
Month	**Commercial**	**Residential**	**Total Number of EDU's**	**Total Sewer CIF Collected**	**CIF Paid to Ranson**	**Total**
Jan-24	1.5	86	87.5	$ 289,687.50	$ 33,312.50	$ 256,375.00
Feb-24		130	130	$ 458,900.00	$ 78,000.00	$ 380,900.00
Mar-24	6.78	52	58.78	$ 181,975.40	$ 9,750.00	$ 172,225.40
Apr-24	25	107	132	$ 438,885.00	$ 50,375.00	$ 388,510.00
May-24		52	52	$ 175,110.00	$ 22,750.00	$ 152,360.00
Jun-24		49	49	$ 182,570.00	$ 39,000.00	$ 143,570.00
Jul-24		100.3	100.3	$ 345,879.00	$ 52,000.00	$ 293,879.00
Aug-24		69	69	$ 226,545.00	$ 24,375.00	$ 202,170.00
Sep-24		71	71	$ 234,030.00	$ 26,000.00	$ 208,030.00
Oct-24	14	70	84	$ 278,620.00	$ 9,750.00	$ 268,870.00
Nov-24		92	92	$ 295,560.00	$ 26,000.00	$ 269,560.00
Dec-24	2.6	26	28.6	$ 96,798.00		$ 96,798.00
Total 2024	**49.88**	**764.3**	**954.18**	**$ 3,204,559.90**	**$ 371,312.50**	**$ 2,833,247.40**



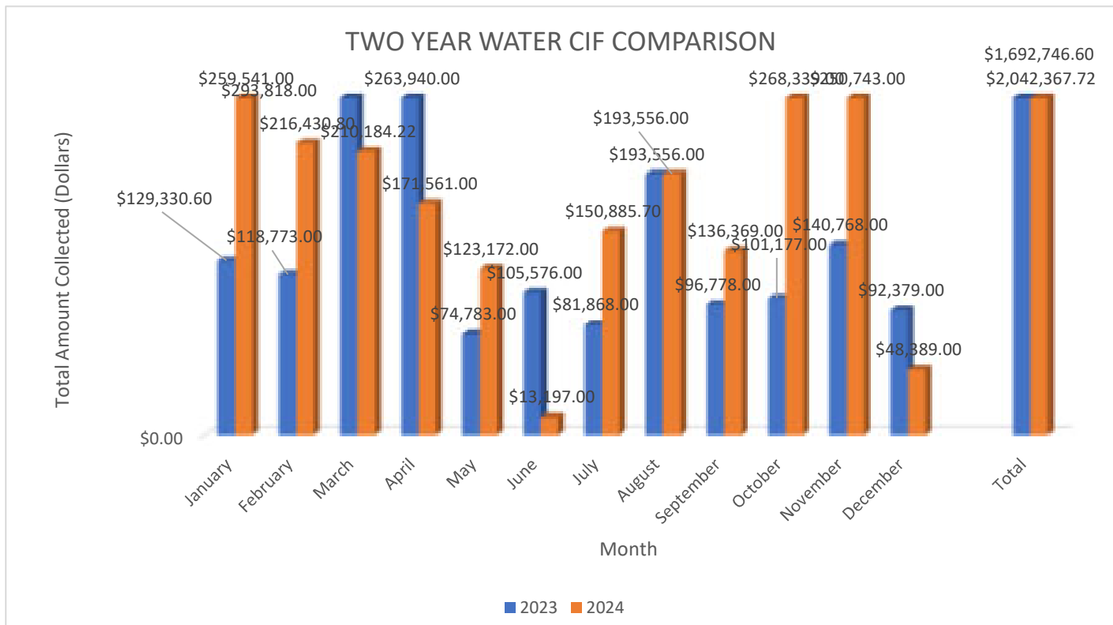
Charles Town Utility Board 2025 Capacity Improvement Fee Collections/EDU for Sewer						
Month	**Commercial**	**Residential**	**Total Number of EDU's**	**Total Sewer CIF Collected**	**CIF Paid to Ranson**	**Total**
Jan-25	1	121	122	$ 402,960.00	$ 45,500.00	$ 357,460.00
Feb-25		80	80	$ 289,650.00	$ 55,250.00	$ 234,400.00
Mar-25	0.5	121	121.5	$ 419,370.00	$ 63,375.00	$ 355,995.00
Apr-25	0.44	127	127.44	$ 514,774.20	$ 141,375.00	$ 373,399.20
May-25		87	87	$ 313,410.00	$ 58,500.00	$ 254,910.00
Jun-25		114	114	$ 368,145.00	$ 9,750.00	$ 358,395.00
Jul-25						
Aug-25						
Sep-25						
Oct-25						
Nov-25						
Dec-25						
Total 2025	**1.94**	**650**	**651.94**	**$ 2,308,309.20**	**$ 373,750.00**	**$ 1,934,559.20**

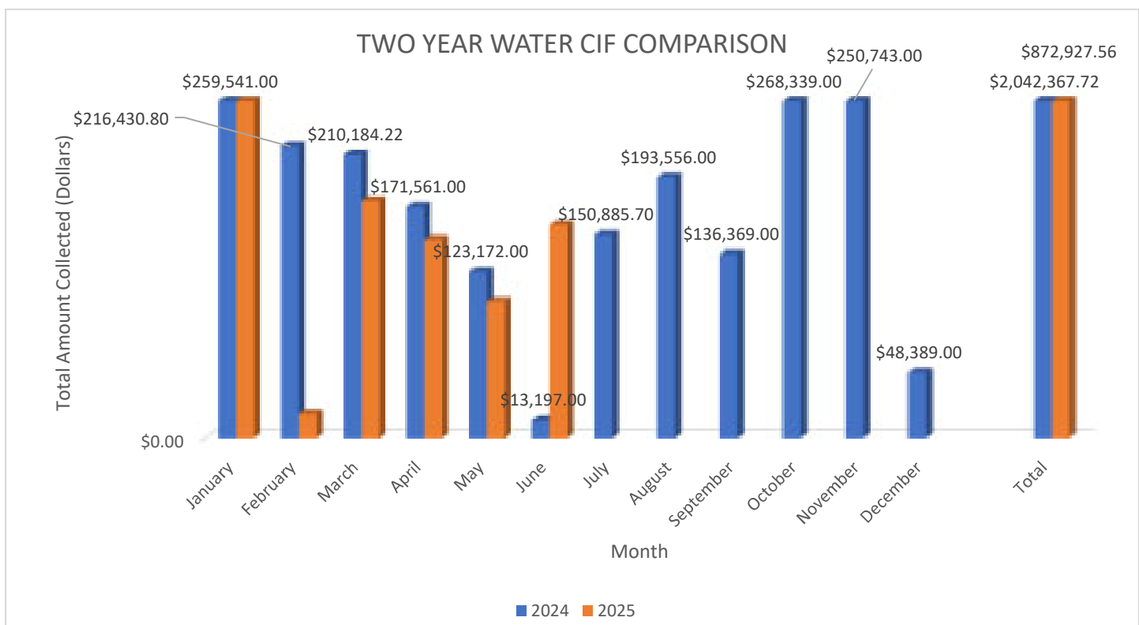


Water CIF Tracking as of July 2, 2025

2024 Capacity Improvement Fee Collections/EDU for Water				
Month	**Commercial**	**Residential**	**Total Number of EDU's**	**Total Water CIF**
Jan-24		59	59	$ 259,541.00
Feb-24		49.2	49.2	$ 216,430.80
Mar-24	6.78	41	47.78	$ 210,184.22
Apr-24		39	39	$ 171,561.00
May-24		28	28	$ 123,172.00
Jun-24		3	3	$ 13,197.00
Jul-24		34.3	34.3	$ 150,885.70
Aug-24		44	44	$ 193,556.00
Sep-24		31	31	$ 136,369.00
Oct-24		61	61	$ 268,339.00
Nov-24		57	57	$ 250,743.00
Dec-24		11	11	$ 48,389.00
Total 2024	**6.78**	**396.5**	**464.28**	**$ 2,042,367.72**

2025 Capacity Improvement Fee Collections/EDU for Water				
Month	**Commercial**	**Residential**	**Total Number of EDU's**	**Total Water CIF**
Jan-24		62	62	$ 272,738.00
Feb-24		4	4	$ 17,596.00
Mar-24		40	40	$ 175,960.00
Apr-24	0.44	33	33.44	$ 147,102.56
May-24		23	23	$ 101,177.00
Jun-24		36	36	$ 158,354.00
Jul-24				
Aug-24				
Sep-24				
Oct-24				
Nov-24				
Dec-24				
Total 2025	**0.44**	**198**	**198.44**	**$ 872,927.56**





CHARLES TOWN UTILITY BOARD
WASTEWATER TREATMENT PLANT FLOW DATA

CHARLES TOWN WASTEWATER PLANT FLOW DATA						
YEAR	Total Design (MGD)	TOTAL ANNUAL FLOW (MG)	AVERAGE DAILY (MGD)	Total Design minus Average Daily (MGD)	Total Available (gpd)	Total Available (EDU's)
2015	1.75	384	1.05	0.7	700,000	4,667
2016	1.75	419	1.14	0.61	610,000	4,067
2017	1.75	393	1.08	0.67	670,000	4,467
2018	1.75	491	1.34	0.41	410,000	2,733
2019	1.75	459	1.26	0.49	490,000	3,267
2020	1.75	419.7	1.15	0.60	603,333	4,022
2021	1.75	401.61	1.11	0.64	637,500	4,250
2022	1.75	387.15	1.06	0.69	687,500	4,583
2023	1.75	382.28	1.06	0.69	694,167	4,628
2024	1.75	431.85	1.30	0.45	453,333	3,022

TUSCAWILLA WASTEWATER PLANT FLOW DATA						
YEAR	Total Design (MGD)	TOTAL ANNUAL FLOW (MG)	AVERAGE DAILY (MGD)	Total Design minus Average Daily (MGD)	Total Available (gpd)	Total Available (EDU's)
2015	0.5	48	0.13	0.37	370,000	2,467
2016	0.5	49	0.13	0.37	370,000	2,467
2017	0.5	48	0.14	0.36	360,000	2,400
2018	0.5	78	0.21	0.29	290,000	1,933
2019	0.5	55.24	0.15	0.35	350,000	2,333
2020	0.5	1.09	0.16	0.34	340,000	2,267
2021	0.5	32.55	0.10	0.40	400,833	2,672
2022	0.5	62.8	0.17	0.33	328,333	2,189
2023	0.5	83.78	0.23	0.27	270,000	1,800
2024	0.5	66.68	0.18	0.32	316,667	2,111
2025	0.5	0	0.00	0.50	500,000	3,333

Total EDU's available between CT and Tuscawilla	
2015	7,133
2016	6,533
2017	6,867
2018	4,667
2019	5,600
2020	6,289
2021	6,922
2022	6,772
2023	6,428
2024	5,133
2025	3,333

Legend:
MGD= Million gallons per day
MG=million gallons
gpd= gallons per day
EDU= Equivalent Dwelling Unit (150 gpd)

2022		
	Total (MG)	AVERAGE (MG)
JANUARY	37.25	1.20
FEBRUARY	33.8	1.21
MARCH	33.28	1.07
APRIL	32.98	1.1
MAY	35.86	1.16
JUNE	29.9	1.00
JULY	29.78	0.96
AUGUST	30.19	1.01
SEPTEMBER	29.62	0.96
OCTOBER	29.02	0.94
NOVEMBER	30.09	1.00
DECEMBER	35.38	1.14
Annual Total	387.15	1.06

2023		
	Total (MG)	AVERAGE (MG)
JANUARY	36.55	1.21
FEBRUARY	28.96	1.03
MARCH	30.46	1.02
APRIL	29.52	0.98
MAY	30.78	0.99
JUNE	29.64	0.99
JULY	31.2	1.01
AUGUST	29.96	1.00
SEPTEMBER	33.38	1.11
OCTOBER	33.02	1.07
NOVEMBER	33.61	1.12
DECEMBER	35.2	1.14
Annual Total	382.28	1.06

2024		
	Total (MG)	AVERAGE (MG)
JANUARY	36.06	1.16
FEBRUARY	34.43	1.19
MARCH	38.99	1.26
APRIL	38.08	1.27
MAY	37.15	1.2
JUNE	32.9	1.1
JULY	34.51	1.11
AUGUST	41.05	2.63
SEPTEMBER	35.37	1.18
OCTOBER	35.46	1.14
NOVEMBER	35.48	1.22
DECEMBER	32.37	1.1
Annual Total	431.85	1.30

2025		
	Total (MG)	AVERAGE (MG)
JANUARY	38.98	1.26
FEBRUARY	34.73	1.24
MARCH	33.84	1.09
APRIL	32.05	1.07
MAY	37.34	1.2
JUNE	38.01	1.2
JULY		
AUGUST		
SEPTEMBER		
OCTOBER		
NOVEMBER		
DECEMBER		
Annual Total	214.95	1.18

2022		
	Total (MG)	AVERAGE (MG)
JANUARY	0	0
FEBRUARY	0	0
MARCH	4.34	0.14
APRIL	4.68	0.16
MAY	6.03	0.19
JUNE	6.21	0.21
JULY	6.48	0.21
AUGUST	7.01	0.23
SEPTEMBER	7.11	0.24
OCTOBER	7.27	0.23
NOVEMBER	6.94	0.23
DECEMBER	6.73	0.22
Annual Total	62.8	0.17

2023		
	Total (MG)	AVERAGE (MG)
JANUARY	7.3	0.24
FEBRUARY	6.38	0.23
MARCH	6.41	0.21
APRIL	6.13	0.20
MAY	6.30	0.20
JUNE	6.89	0.23
JULY	7.31	0.24
AUGUST	7.7	0.25
SEPTEMBER	6.98	0.23
OCTOBER	6.92	0.22
NOVEMBER	7.22	0.24
DECEMBER	8.24	0.27
Annual Total	83.78	0.230

2024		
	Total (MG)	AVERAGE (MG)
JANUARY	8.61	0.28
FEBRUARY	8.25	0.28
MARCH	6.28	0.2
APRIL	5.05	0.17
MAY	4.64	0.15
JUNE	5.25	0.18
JULY	4.91	0.16
AUGUST	5.42	0.18
SEPTEMBER	4.87	0.16
OCTOBER	4.5	0.15
NOVEMBER	4.41	0.15
DECEMBER	4.49	0.14
Annual Total	66.68	0.183

2025		
	Total (MG)	AVERAGE (MG)
JANUARY	4.9	0.16
FEBRUARY	4.5	0.17
MARCH	6.19	0.2
APRIL	6.84	0.23
MAY	6.76	0.22
JUNE	6.84	0.23
JULY		
AUGUST		
SEPTEMBER		
OCTOBER		
NOVEMBER		
DECEMBER		
Annual Total	36.03	0.202

CHARLES TOWN UTILITY BOARD
WATER TREATMENT PLANT FLOW DATA

CHARLES TOWN WATER PLANT FLOW DATA						
YEAR	Total Design (MGD)	TOTAL ANNUAL FLOW (MG)	AVERAGE DAILY (MGD)	Total Design minus Average Daily (MGD)	Total Available (gpd)	Total Available (EDU's)
2019	2.8	644.32	1.77	1.03	1,034,980	6,900
2020	2.8	615.64	1.68	1.12	1,117,946	7,453
2021	2.8	601.87	1.64	1.16	1,164,627	7,764
2022	2.8	588.97	1.60	1.20	1,204,163	8,028
2023	2.8	602.24	1.63	1.17	1,168,256	7,788
2024	2.8	579.85	1.57	1.23	1,228,525	8,190
2025	2.8	290.36	1.60	1.20	1,204,038	8,027

2022		
	Total (MG)	AVERAGE (MG)
JANUARY	47,918,736	1,545,766
FEBRUARY	43,703,896	1,560,853
MARCH	48,063,482	1,550,435
APRIL	47,294,978	1,525,644
MAY	49,834,352	1,607,560
JUNE	49,111,936	1,584,256
JULY	51,919,787	1,674,832
AUGUST	51,872,384	1,673,303
SEPTEMBER	50,844,952	1,640,160
OCTOBER	50,572,280	1,631,364
NOVEMBER	47,643,899	1,536,900
DECEMBER	50,188,260	1,618,976
Annual Total	588,968,942	1,595,837

2023		
	Total (MG)	AVERAGE (MG)
JANUARY	50,324,969	1,623,386
FEBRUARY	44,512,256	1,589,723
MARCH	51,243,776	1,653,025
APRIL	49,507,092	1,597,003
MAY	51,882,496	1,673,629
JUNE	51,245,216	1,653,071
JULY	53,546,017	1,727,291
AUGUST	53,866,467	1,737,628
SEPTEMBER	51,067,174	1,647,328
OCTOBER	49,781,275	1,605,848
NOVEMBER	47,073,432	1,518,498
DECEMBER	48,189,312	1,554,494
Annual Total	602,239,482	1,631,744

2024		
	Total (MG)	AVERAGE (MG)
JANUARY	48,027,207	1,549,265
FEBRUARY	44,217,320	1,579,190
MARCH	46,432,344	1,497,818
APRIL	44,552,042	1,437,163
MAY	46,432,344	1,497,818
JUNE	52,695,168	1,699,844
JULY	55,816,216	1,800,523
AUGUST	51,158,016	1,650,259
SEPTEMBER	48,673,792	1,570,122
OCTOBER	48,580,272	1,567,106
NOVEMBER	46,786,184	1,509,232
DECEMBER	46,480,137	1,499,359
Annual Total	579,851,042	1,571,475

2025		
	Total (MG)	AVERAGE (MG)
JANUARY	49,081,856	1,583,286
FEBRUARY	45,138,739	1,612,098
MARCH	48,289,664	1,557,731
APRIL	48,088,035	1,551,227
MAY	50,221,867	1,620,060
JUNE	49,541,120	1,651,371
JULY		
AUGUST		
SEPTEMBER		
OCTOBER		
NOVEMBER		
DECEMBER		
Annual Total	290,361,281	1,595,962

GLEN HAVEN WATER PLANT FLOW DATA						
YEAR	Total Design (MGD)	TOTAL ANNUAL FLOW (MG)	AVERAGE DAILY (MGD)	Total Design minus Average Daily (MGD)	Total Available (gpd)	
2020	0.0216	1.04	0.01	0.01	13,120	
2021	0.0216	3.06	0.01	0.01	13,213	-
2022	0.0216	2.70	0.01	0.01	14,335	-
2023	0.0216	2.99	0.01	0.01	13,573	-
2024	0.0216	2.68	0.01	0.01	14,441	-
2025	0.0216	0.00	0.00	0.02	21,600	-

2022		
	Total (MG)	AVERAGE (MG)
JANUARY	204,300	6,590
FEBRUARY	178,600	5,761
MARCH	191,200	6,168
APRIL	222,000	7,161
MAY	237,300	7,655
JUNE	286,600	9,245
JULY	301,600	9,729
AUGUST	262,800	8,477
SEPTEMBER	221,600	7,148
OCTOBER	236,700	7,635
NOVEMBER	215,200	6,942
DECEMBER	144,500	4,661
Annual Total	2,702,400	7,265

2023		
	Total (MG)	AVERAGE (MG)
JANUARY	233,300	7,526
FEBRUARY	184,300	5,945
MARCH	218,200	7,039
APRIL	234,800	7,574
MAY	264,800	8,542
JUNE	268,900	8,674
JULY	325,100	10,487
AUGUST	281,300	9,074
SEPTEMBER	265,600	8,568
OCTOBER	233,900	7,545
NOVEMBER	242,500	7,823
DECEMBER	233,500	7,532
Annual Total	2,986,200	8,027

2024		
	Total (MG)	AVERAGE (MG)
JANUARY	234,900	7,577
FEBRUARY	182,100	5,874
MARCH	206,200	6,250
APRIL	224,200	7,232
MAY	210,000	6,774
JUNE	257,889	8,319
JULY	306,700	9,894
AUGUST	217,900	7,029
SEPTEMBER	203,900	6,577
OCTOBER	215,000	6,935
NOVEMBER	211,300	6,816
DECEMBER	205,400	6,626
Annual Total	2,675,489	7,159

2025		
	Total (MG)	AVERAGE (MG)
JANUARY	229,800	7,413
FEBRUARY	191,300	6,832
MARCH	213,100	6,874
APRIL	248,300	8,010
MAY	275,900	8,900
JUNE	281,500	9,383
JULY		
AUGUST		
SEPTEMBER		
OCTOBER		
NOVEMBER		
DECEMBER		
Annual Total	1,439,900	7,902

CAVALAND WATER PLANT FLOW DATA						
YEAR	Total Design (MGD)	TOTAL ANNUAL FLOW (MG)	AVERAGE DAILY (MGD)	Total Design minus Average Daily (MGD)	Total Available (gpd)	
2020	0.036	0.59	0.005	0.03	31,210	
2021	0.036	1.91	0.01	0.03	30,766	
2022	0.036	1.84	0.005	0.03	31,041	
2023	0.036	1.79	0.005	0.03	31,186	
2024	0.036	0.00	0.00	0.03	31,006	
2025	0.036	0.00	0.00	0.04	36,000	

2022		
	Total (MG)	AVERAGE (MG)
JANUARY	150,100	4,842
FEBRUARY	127,200	4,103
MARCH	130,300	4,203
APRIL	141,600	4,568
MAY	145,000	4,677
JUNE	155,500	5,016
JULY	173,500	5,597
AUGUST	167,200	5,394
SEPTEMBER	138,500	4,468
OCTOBER	144,300	4,655
NOVEMBER	145,300	4,687
DECEMBER	226,300	7,300
Annual Total	1,844,800	4,959

2023		
	Total (MG)	AVERAGE (MG)
JANUARY	134,900	4,352
FEBRUARY	122,700	3,958
MARCH	140,000	4,516
APRIL	143,100	4,616
MAY	153,400	4,948
JUNE	166,200	5,361
JULY	166,400	5,368
AUGUST	170,400	5,497
SEPTEMBER	163,600	5,277
OCTOBER	140,600	4,535
NOVEMBER	143,200	4,619
DECEMBER	146,400	4,723
Annual Total	1,790,900	4,814

2024		
	Total (MG)	AVERAGE (MG)
JANUARY	155,600	5,019
FEBRUARY	135,000	4,355
MARCH	148,800	4,750
APRIL	155,700	5,023
MAY	153,600	4,955
JUNE	164,300	5,300
JULY	178,100	5,745
AUGUST	177,200	5,716
SEPTEMBER	151,800	4,897
OCTOBER	144,000	4,645
NOVEMBER	134,900	4,352
DECEMBER	160,300	5,171
Annual Total	1,859,300	4,994

2025		
	Total (MG)	AVERAGE (MG)
JANUARY	137,900	4,448
FEBRUARY	125,700	4,489
MARCH	133,100	4,294
APRIL	135,700	4,377
MAY	169,600	5,471
JUNE	140,600	4,687
JULY		
AUGUST		
SEPTEMBER		
OCTOBER		
NOVEMBER		
DECEMBER		
Annual Total	842,600	4,628

Legend:
MGD= Million gallons per day
MG=million gallons
gpd= gallons per day
EDU= Equivalent Dwelling Unit (150 gpd)

CHARLES TOWN UTILITY BOARD

Wednesday, July 9, 2025

Regular Meeting

661 South George Street
Charles Town, WV 25414

Chairman Report

CHARLES TOWN UTILITY BOARD

Wednesday, July 9, 2025

Regular Meeting

661 South George Street
Charles Town, WV 25414

July 9, 2025

Attachments:

Board Report 6.30.25.pdf

VENDOR SORT KEY	DESCRIPTION	FUND	DEPARTMENT	AMOUNT

========== FUND TOTALS ==========		
50	WATER FUND	25,494.42
60	SEWER FUND	34,072.31
	GRAND TOTAL:	59,566.73

TOTAL PAGES: 3

APPROVED BY: _____

APPROVED BY: _____

VENDOR SORT KEY	DESCRIPTION	FUND	DEPARTMENT	AMOUNT
ROBERT LYNN KERSHNER	NEW LUG CNTR & FUSES TWWTP	SEWER FUND	SEWER	2,579.95
			TOTAL:	2,579.95
MCKINNEY'S AUTO REPAIR	REPAIRS MAINT VECHICLE	WATER FUND	WATER	408.76
	REPAIRS SEWER VECHICLE	SEWER FUND	SEWER	4,539.95
			TOTAL:	4,948.71
SECURITY DEPOSIT REFUNDS	502-000081	WATER FUND	NON-DEPARTMENTAL	100.12
	702-000430	WATER FUND	NON-DEPARTMENTAL	2,305.39
			TOTAL:	2,405.51
PREMIER CONTRACTING LLC	70 BRADDOCK ST SEWER REPAI	SEWER FUND	SEWER	3,850.00
	73 COLONIAL DR SEWER REPAI	SEWER FUND	SEWER	4,580.00
	208 CHADWICK DR SEWER REPA	SEWER FUND	SEWER	4,580.00
			TOTAL:	13,010.00
SHENANDOAH SALES & SERVICE, INC.	SEWER VEHICLE MAINT	SEWER FUND	SEWER	189.74
			TOTAL:	189.74
DIW GROUP, INC	KINGS XING	WATER FUND	NON-DEPARTMENTAL	253.50
	NORBORNE GLEBE	WATER FUND	NON-DEPARTMENTAL	1,225.25
	CTUB GNRL	WATER FUND	WATER	217.50
	HNTFLD PHS 3B	WATER FUND	WATER	644.32
	HNTFLD PHS 5B	WATER FUND	WATER	3,802.50
	KINGS XING	SEWER FUND	NON-DEPARTMENTAL	253.50
	NORBORNE GLEBE	SEWER FUND	NON-DEPARTMENTAL	1,225.25
	CTUB GNRL	SEWER FUND	SEWER	217.50
	HNTFLD PHS 3B	SEWER FUND	SEWER	644.31
	HNTFLD PHS 5B	SEWER FUND	SEWER	3,802.50
			TOTAL:	12,286.13
T-MOBILE	MONTHLY CELL SERVICE	WATER FUND	WATER	32.40
	MONTHLY CELL SERVICE	WATER FUND	WATER	84.74
	MONTHLY CELL SERVICE	WATER FUND	WATER	16.20
	MONTHLY CELL SERVICE	SEWER FUND	SEWER	86.14
	MONTHLY CELL SERVICE	SEWER FUND	SEWER	71.92
	MONTHLY CELL SERVICE	SEWER FUND	SEWER	48.60
			TOTAL:	340.00
GERALD TAYLOR CO., INC.	PUMP / TRANSPORT	WATER FUND	WATER	1,085.84
			TOTAL:	1,085.84
TEAMVIEWER GERMANY GMBH	SUBSCRIPTION:6/25/25 - 6/2	WATER FUND	WATER	771.34
	SUBSCRIPTION:6/25/25 - 6/2	WATER FUND	WATER	771.34
	SUBSCRIPTION:6/25/25 - 6/2	SEWER FUND	SEWER	771.35
	SUBSCRIPTION:6/25/25 - 6/2	SEWER FUND	SEWER	771.34
			TOTAL:	3,085.37
THE CI THORNBURG CO, INC.	OMNI	WATER FUND	WATER	1,929.34
			TOTAL:	1,929.34
HD SUPPLY INC	TUBING, CHEMKEY, SOLUTION	WATER FUND	WATER	2,252.28
			TOTAL:	2,252.28
VITAL SIGNS	INPSCTN STCKRS, BSNSS CRDS	SEWER FUND	SEWER	369.95
			TOTAL:	369.95

VENDOR SORT KEY	DESCRIPTION	FUND	DEPARTMENT		AMOUNT
AMERIGAS PROPANE LP	TANK RENTAL: JOB CORPS	SEWER FUND	SEWER		139.80
				TOTAL:	139.80
AUTOZONE	MISC FOR MAINT VEHICLES	WATER FUND	WATER		197.52
	MAINT VEHICLE SUPPLIES	WATER FUND	WATER		33.44
				TOTAL:	230.96
BIEDLER'S ELECTRIC MOTOR REPAIR, INC.	HYDRAULIC HOSES 4 ROCK HAM	WATER FUND	WATER		1,469.46
				TOTAL:	1,469.46
CITY OF CHARLES TOWN	APR UTILITIES@ 661 S GEORG	WATER FUND	WATER		682.28
	MAY UTILITIES@ 661 S GEORG	WATER FUND	WATER		618.13
	APR UTILITIES@ 661 S GEORG	SEWER FUND	SEWER		682.28
	MAY UTILITIES@ 661 S GEORG	SEWER FUND	SEWER		618.13
				TOTAL:	2,600.82
CORE & MAIN	METER COUPLING PACK W/GASK	WATER FUND	WATER		524.00
	BRS 90 PJ	WATER FUND	WATER		363.28
	BALL CURB STOP	WATER FUND	WATER		461.70
	PVC SDR35 SWR	SEWER FUND	SEWER		87.96
	INCREASER	SEWER FUND	SEWER		297.44
				TOTAL:	1,734.38
COYNE CHEMICAL	AMMONIUM SULFATE 40% NSF	WATER FUND	WATER		3,061.91
				TOTAL:	3,061.91
EMILIA AUTRY	5/07/25 CLEANING WWTP	SEWER FUND	SEWER		1,000.00
				TOTAL:	1,000.00
DEWBERRY ENGINEERS INC	TO7 CTUB ONCALL SUPPORT	WATER FUND	WATER		287.50
				TOTAL:	287.50
WV DEPT OF HEALTH & HUMAN SERVICES	FLOURIDE TEST	WATER FUND	WATER		20.00
	BACTERIOLOGICAL TEST	WATER FUND	WATER		115.00
	BACTERIOLOGICAL TEST	WATER FUND	WATER		138.00
				TOTAL:	273.00
FASTENAL	HCS, YLLW ZINC FIN	WATER FUND	WATER		129.84
				TOTAL:	129.84
GUTTMAN ENERGY	W/E 6/22/25	WATER FUND	WATER		541.63
	W/E 6/22/25	SEWER FUND	SEWER		730.04
	W/E 6/22/25	SEWER FUND	SEWER		110.11
				TOTAL:	1,381.78
JASON HARRIS	TWWTP TREE TRIMMING	SEWER FUND	SEWER		1,500.00
				TOTAL:	1,500.00
INWOOD QUARRY, INC.	C2 & I10 & I8 PICKUPS: 6/2	WATER FUND	WATER		460.46
	C2 & I10 & I8 PICKUPS: 6/2	WATER FUND	WATER		460.46
	C2 & I10 & I8 PICKUPS: 6/2	SEWER FUND	SEWER		324.55
				TOTAL:	1,245.47
JEFFERSON RENTALS	REPAIR TO TRIMMER	WATER FUND	WATER		28.99
				TOTAL:	28.99

CHARLES TOWN UTILITY BOARD

Wednesday, July 9, 2025

Regular Meeting

661 South George Street
Charles Town, WV 25414

Next Meeting - July 23, 2025 at 4:00P.M.