MOUNTAIN TOP PUBLIC SERVICE DISTRICT
GRANT COUNTY, WEST VIRGINIA

WATER SYSTEM IMPROVEMENTS
CONTRACT #2 – WATER TREATMENT PLANT IMPROVEMENTS

ADDENDUM #1

AUGUST 17, 2023

THRASHER PROJECT #010-10103

TO WHOM IT MAY CONCERN:

A Pre-Bid Conference was held on Thursday, August 3, 2023, on the above-referenced project, a copy of the sign in sheet is included in this Addendum. The following are clarifications and responses to questions posed by contractors for the above reference project.

A. GENERAL

1. All Bids for this project shall be due at 2:00 PM LPT on Wednesday, August 23, 2023 at the Mount Storm Fire Department, located at 16521 George Washington Highway, Mount Storm, Grant County, WV 26739. **ALL BIDS MUST BE RECEIVED BY 2:00 PM FOR BOTH CONTRACTS.**

2. **THE BID FORM HAS BEEN REVISED. YOU MUST USE THE REVISED BID FORM WHEN PREPARING YOUR BID PACKAGE FOR THIS PROJECT.**

3. A schematic of the existing water treatment process has been attached as part of this addendum.

B. SPECIFICATIONS

C410 Bid Form – REPLACE this section with the revised section attached to this addendum.

Specification Section 012000 Price and Payment Procedures – REPLACE this section with the revised section attached to this addendum.

Specification Section 012100 Allowances – REPLACE this section with the revised section attached to this addendum.

Specification Section 331116.00 Site Water Utility Distribution Piping – REPLACE this section with the revised section attached to this addendum.

Specification Section 400519.00 Ductile Iron Process Piping – REPLACE this section with the revised section attached to this addendum.

Specification Section 40567.00 Specialized Pressure and Flow-Control Valves – REPLACE this section with the revised section attached to this addendum.

Specification Section 407213.00 Ultrasonic Level Meters – REPLACE this section with the revised section attached to this addendum.

Specification Section 432520.15 Intermediate Water Pumps – REPLACE this section with the revised section attached to this addendum.

Specification Section 500000 Temporary Potable Water Pre-Treatment Unit Performance – REPLACE this section with the revised section attached to this addendum.

C. DRAWINGS

Plan Sheet 8 – REPLACE this sheet with the revised sheet attached to this addendum.

Plan Sheet 10 – REPLACE this sheet with the revised sheet attached to this addendum.

Plan Sheet 12 – REPLACE this sheet with the revised sheet attached to this addendum.

D. QUESTIONS AND RESPONSES

QUESTION

1. What is the Engineer's Estimate for this Contract?

RESPONSE

Contract #2: $750,000.

QUESTION

2. Do Davis Bacon Wages apply to this Contract?

RESPONSE

No.

QUESTION

3. Are B&O taxes applicable for this Contract?

RESPONSE

No.

QUESTION

4. Does this project require American Iron and Steel Act Compliance?

RESPONSE

No.

QUESTION

5. Does this project require Build America, Buy America Compliance?

RESPONSE

No.

QUESTION

6. What are the funding sources for this project?

RESPONSE

West Virginia Infrastructure and Jobs Development Council, West Virginia Water Development Authority EEGF and County ARPA.

QUESTION

7. Do Bid Items 8, 9 and 10 have stated allowances?

RESPONSE

Yes. See revised bid form.

QUESTION

8. What is the length of the proposed clear well vertical piping?

RESPONSE

See revised Sheet 8. The 8" Schedule 80 PVC pipe is 10'-0". A 90-degree fitting is to be installed on top of pipe and holes are to be drilled facing the same way the 90 degree fitting is installed.

QUESTION

9. What is the clear well tank disinfection method?

RESPONSE

Upon completion, Contractor shall clean any visible dirt and debris from tank and remove after hosing inside wall area and drain through tank drain line. Fill tank to 5% of its volume with 50ppm chlorine and let set for 6 hours. Then fill tank completely. Operator shall take samples until acceptable ppm content is reached.

QUESTION

10. Who is the contact person at MidAtlantic Storage Systems, Inc.?

RESPONSE

Ryan Lynch. 1551 Robinson Rd., Washington C.H., OH 43160. 740-604-2850. ryan@midatlanticstorage.com.

QUESTION

11. Who is responsible for providing the chemicals for the temporary pre-treatment facility?

RESPONSE

The Owner, Mountain Top PSD, shall provide all chemicals necessary for water treatment in the pre-treatment unit.

QUESTION

12. Who is the contact person at the water treatment plant?

RESPONSE

Joe Harvey, 304-693-7667.

QUESTION

13. What power service is available at the water treatment plant?

RESPONSE

240 Volt, 3-phase.

QUESTION

19. If the piping in the clearwell needs to be replaced through the clearwell wall, will this be handled via change order?

RESPONSE

Yes. Bid Item 5 is to be bid for the work as shown on revised plan sheet 10. If the existing pipe through the clearwell wall needs replaced a change order may be considered.

QUESTION

20. Does the new window require cutting and framing in a new opening in the building?

RESPONSE

Yes. Contractor shall install this window to allow for plumbing in temporary treatment unit.

QUESTION

21. Are the intermediate raw water pumps and motors to be replaced?

RESPONSE

No. The existing raw water pumps and motors are to be completely rebuilt with all new parts and made ready to accept VFD's.

QUESTION

22. How long is the bid hold period for this project?

RESPONSE

90 Days.

QUESTION

23. Are there separate bid forms and bonding for each Contract?

RESPONSE

Yes. The specifications for each Contract contain separate bid form and separate bonding.

QUESTION

24. What is the PSD's mailing address?

RESPONSE

4150 Bismarck Road, Mount Storm, WV 26739. This is NOT the location of the bid opening. If a bid is mailed, it is the Contractor's responsibility to ensure it is delivered in a manner timely enough to ensure receipt of the bid at the bid opening meeting.

QUESTION

25. Is an office trailer required for this Contract?

RESPONSE

Yes.

QUESTION

26. What is the address where bids should be submitted in person?

RESPONSE

16521 George Washington Highway, Mount Storm, Grant County, WV 26739. This is the fire department at the intersection of US Route 50 and WV State Route 42 across the street from the Dollar General.

QUESTION

27. When is the bid opening date for this project?

RESPONSE

All Bids for this project shall be due at 2:00 PM LPT on Wednesday, August 23, 2023.

QUESTION

28. Can Contract Times be adjusted to accommodate material/equipment procurement delays?

RESPONSE

If valid documentation is provided from a manufacturer that material/equipment has been delayed during the procurement process, the Owner may consider adjusting the Contract Times via Change Order.

E. CLARIFICATIONS

1. The bidding process is a two (2) envelope system. Envelope No. 1 must have the following information presented on the front:

   Name and address of Bidder
   Bid on Contract – Water System Improvements
   Contract #1 – Water Distribution System Improvements
   Contract #2 – Water Treatment Plant Improvements
   Received by the Mountain Top Public Service District

   Envelope No. 1 will be opened first, and the Bid Opening Requirement items checked for compliance as outlined on the Bid Opening Checklist on page BOR - 1 of these contract documents. If such documents are found to be in order, Envelope No. 2 "Bid Proposal", will then be opened and will be publicly read aloud. If the documents required to be contained in Envelope No. 1 **are not in order**, Envelope No. 2 "Bid Proposal" **will not be opened**, and the Bid will be considered non-responsive and will be returned to the Bidder.

   Envelope No. 2 labeled "Bid Proposal" shall also be placed inside of Envelope #1.

2. All Bids for this project shall be due at 2:00 PM LPT on Wednesday, August 23, 2023, at Mount Storm Fire Department located at 16521 George Washington Highway, Mount Storm, Grant County, WV 26739. At that time the Bids received will be publicly opened and read.

3. MBE/WBE/DBE documentation shall be provided to the Engineer within seven (7) calendar days after the bid opening. If this documentation is not submitted within seven (7) calendar days, or if submitted incomplete, the contractor will be declared non-responsive at that time.

If you have any questions or comments, please feel free to contact me at your earliest convenience. As a reminder, bids will be received until 2:00 p.m. on Wednesday, August 23, 2023, at Mount Storm Fire Department located at 16521 George Washington Highway, Mount Storm, Grant County, WV 26739. Good luck to everyone and thank you for your interest in the project.

Sincerely,

THE THRASHER GROUP, INC.

DANIEL E. FERRELL, P.E.
Project Manager

Enclosures: Pre-Bid Sign-In Sheet
C-410 Bid Form
Specification Sections:
- 012000 – Price and Payment Procedures
- 012100 – Allowances
- 331116 – Site Water Utility Distribution Piping
- 400519 – Ductile Iron Process Pipe
- 407213 – Ultrasonic Level Meters
- 432520.15 – Intermediate Water Pumps
- 500000 – Temporary Potable Water Pre-Treatment Unit Performance

Plan Sheets 8, 10, & 12
Treatment Schematic

MOUNTAIN TOP PUBLIC SERVICE DISTRICT
GRANT COUNTY, WEST VIRGINIA
WATER SYSTEM IMPROVEMENTS

CONTRACT #1 – WATER DISTRIBUTION SYSTEM IMPROVEMENTS
CONTRACT #2 – WATER TREATMENT PLANT IMPROVEMENTS

PRE-BID CONFERENCE
Thursday, August 3, 2023

Thrasher Project #010-10103

Name	Representing	Phone #	Email Address
STEVE SZABO	A.L.L. CONSTRUCTION INC	304 693-7131 EXT 102	STEVE@ALLCONSTRUCTIONWV.COM
RYAN HOLCOMB	TTG	304-624-4108	RHOLCOMB@THETHRASHERGROUP.COM
Carley Shingleton	Thrasher	304-677-4983	cshingleton@thethrashergroup.com
Randy Watson	THRASHER	304-626-0703	RWATSON@THETHRASHERGROUP.COM
Dustin Doer	Blackstar TC	304-940	ddoer@blackstartc.com
DAVE BOMBAY	PCM	434 546 6205	dbombay@PCMIS.CO
William Ufland	Olders Construction	304-261-5404	william@olderscon truction.com
Joe Harvey	MT TOP PSD		

Name	Representing	Phone #	Email Address
Sean Phares	RDR Utility Services Group	304-476-5280	sphares@rdrusg.com
Rob Hoover	AJ Burk	304-614-3166	rhoover@ajburk.com
Tim Lynch	Ferri CCI	412 551 8896	Bids@ferricci.com
Clem Ferri	" "	724 222 2297	" "
Bill Minerd	" /NexGen	724 531 7294	bminerd@nexgenindustrial.com
Trent Shepherd	Wolfe's Excavating	304-771-7906	tshepherd@wolfesexcavating.com
Avery Castilow	Carl Belt	301 729 8900	~~jwilson~~ awilson@thecbeltgroup.com
Diane Junkins	MT TOP PSD	304-693-7667	office@mountaintoppsd.com
Tonya Lough	MT Top PSD	304-693-7667	office@mountaintoppsd.com

BID FORM FOR CONSTRUCTION CONTRACT

The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 1—OWNER AND BIDDER

1.01 This Bid is submitted to:

Mountain Top Public Service District
4150 Bismarck Road
P.O. Box 236
Mt Storm, WV 26739

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2—ATTACHMENTS TO THIS BID

2.01 The following documents are submitted with and made a condition of this Bid:

A. Bid Opening Requirements

ARTICLE 3—BASIS OF BID—LUMP SUM BID AND UNIT PRICES

GENERAL

The Bidder shall take notice of and shall be responsible for any local or state taxes levied and applicable, and the cost for the same shall be included as part of the submitted Bid.

The total Bid cost stated includes a complete operating installation including furnishing and installation of any and all changes or additions in plans, piping, mechanical work, additional electrical work, accessories, controls, etc. necessary to accommodate alternative equipment systems or materials used in construction.

BID PROPOSAL

The Bidder agrees to perform all required Work described in the detailed Specifications and as shown on the Plans for the complete construction and placing in satisfactory operation the Contract #2 – Water Treatment Plant Improvements. The Project "Sequence of Construction" has been detailed in the Drawings

and Specification Division 1, Project Summary, Section 011000. The Bidder agrees to perform all the Work proposed for the total of the following Bid prices.

3.01 *Lump Sum Bids*

A. Bidder will complete the Work in accordance with the Contract Documents for the lump sum (stipulated) price(s), together with any Unit Prices indicated in Paragraph 3.02 and shown in the bid schedule.

B. Lump Sum Bids may be one of the following:

1. Lump Sum Price (Single Lump Sum)

2. Lump Sum Price (Base Bid and Alternates)

3. Lump Sum Price (Sectional Lump Sum Bids)

C. All specified cash allowance(s) are included in the price(s) set forth in the bid schedule, and have been computed in accordance with Paragraph 13.02 of the General Conditions.

D. All specified contingency allowances are included in the price(s) set forth in the bid schedule, and have been computed in accordance with Paragraph 13.02 of the General Conditions.

3.02 *Unit Price Bids*

A. Bidder will perform the following Work at the indicated unit prices as shown in the Bid Schedule.

B. Bidder acknowledges that:

1. each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and

2. estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Work will be based on actual quantities, determined as provided in the Contract Documents.

3.03 *Total Bid Price (Lump Sum and Unit Prices)*

BID SCHEDULE

PROPOSED
WATER SYSTEM IMPROVEMENTS
CONTRACT #2 – WATER TREATMENT PLANT IMPROVEMENTS

FOR THE

MOUNTAIN TOP PUBLIC SERVICE DISTRICT
GRANT COUNTY, WEST VIRGINIA

NOTE: Bid PRICE amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words will govern. Bids shall include sales tax and all other applicable taxes and fees.

Item #	Qty.	UNIT	DESCRIPTION	UNIT PRICE	UNIT PRICE WRITTEN IN WORDS	TOTAL PRICE
1	1	LS	Mobilization/Demobilization			
2	1	LS	Pre Construction Video			
3	1	LS	Temporary Raw Water Pre-Treatment Setup and Removal Upon Completion of Work			

Item #	Qty.	UNIT	DESCRIPTION	UNIT PRICE	UNIT PRICE WRITTEN IN WORDS	TOTAL PRICE
4	1	LS	Temporary Raw Water Pre-Treatment Rental			
5	1	LS	Clearwell Piping Replacement as shown on Sheet 10.			
6	2	EA	Raw Water Pump and Motor, Piping, Fitting, and 4" Turbo Meter as shown on Sheets 2, 4 and 5.			
7	2	EA	Raw Water Pump VFD Controls, Panels, Disconnect, Mounting, Conduit and Wiring as shown on Sheets 2, 5 and E1.			
8	1	LS	Existing Clearwell Tank Piping Improvements as shown on Sheets 1 and 8.			
9	1	Allowance	Flocculation Tank Pressure Washing, Weld Repairs, Spot Blast, Spot Prime and Complete Overcoat of Paint Inside and Out as shown on Sheets 2 and 11.	$50,000	Fifty Thousand Dollars and Zero Cents	$50,000
10	1	Allowance	Lamella Plate Settler Pressure Washing, Mechanical Repairs, Weld Repairs, Spot Blast, Spot Prime and Complete Overcoat of Paint, if applicable Inside and Out as shown on Sheets 2 and 11.	$45,000	Forty-Five Thousand Dollars And Zero Cents	$45,000

Item #	Qty.	UNIT	DESCRIPTION	UNIT PRICE	UNIT PRICE WRITTEN IN WORDS	TOTAL PRICE
11	1	Allowance	Flash Mixer Tank Pressure Washing, Weld Repair, Spot Blast, Spot Prime, and Complete Overcoat of Paint Inside and Out as shown on Sheets 2 and 11.	$25,000	Twenty-Five Thousand Dollars And Zero Cents	$25,000
12	1	LS	Clearwell Level Control Valve Replacement including Detaching and Reattaching Existing Plumbing Lines as shown on Sheets 2 and 7.			
13	2	EA	VFD for High Service Pumps, VFD Controls, Ultra Sonic Flow Meter, Mounting, Conduits, and Wiring as shown on Sheets 2, 9 and E1.			
14	2	EA	VFD for Route 50 Booster Pump VFD Controls, Mounting, Conduit and Wiring as Shown on Sheet 1, 12 and E2, including Removal of Existing 4" Flow Control Valve and Replacing with a 4" 90 degrees Flanged Fitting.			
15	1	LS	Raw Water Piping changes including adding valves, raising piping, Rebuilding Existing Pumps, Relocating Meter, Removing flow Control Valve all as shown on Sheet 5.			
16	1	LS	Bypass Piping Installation, Including All Fittings, Valves, Piping, Couplers, etc. as shown on Sheet 3.			
17	1	LS	Install New 24" X 24" Sliding Vinyl or Aluminum Window In Existing Wall As Shown On Sheet 5 Including All Trim, Insulation And Touch Up Carpentry.			

Item #	Qty.	UNIT	DESCRIPTION	UNIT PRICE	UNIT PRICE WRITTEN IN WORDS	TOTAL PRICE
18	2	EA	Remove Existing 4″ Flanged Gate Valve and Replace with New 4″ RW Flanged Gate Valve as shown on Sheet 6.			
19	2	EA	Remove and replace existing 4″ butterfly valve with new 4″ lug style butterfly valve as shown on Sheet 6.			

TOTAL BID: _____
(Words)

_____ ($_____)
(Words) (Figures)

(Amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.)

3.04 *Method of Award*

If at the time this contract is to be awarded, the lowest total bid submitted by a qualified, responsive, responsible Bidder does not exceed the amount of funds then estimated by the Owner, as available to finance the contract, the construction contract will be awarded. If such bids exceeds such amount, the owner may reject all bids.

~~**ARTICLE 4 – BASIS OF BID – COST-PLUS FEE**~~

4.01 ~~The Contract Price will be the Cost of the Work, determined as provided in Paragraph 13.01 of the General Conditions, together with the following fee, and subject to the Guaranteed Maximum Price.~~

4.02 ~~*Contractor's Fee*~~

~~A. Contractor's fee will be **[number]** percent of the Cost of the Work. No fee will be payable on the basis of costs itemized as excluded in Paragraph 13.01.C of the General Conditions.~~

~~1. The maximum amount payable by Owner as a percentage fee (Guaranteed Maximum Fee) will not exceed $**[insert cap amount]**, subject to increases or decreases for changes in the Work.~~

~~B. Contractor's fee will be determined by applying the following percentages to the various portions of the Cost of the Work as defined in Article 13 of the General Conditions. No fee will be payable on the basis of costs itemized as excluded in Paragraph 13.01.C of the General Conditions:~~

~~**Costs**~~	~~**Percent**~~
~~Payroll costs (See Paragraph 13.01.B.1, General Conditions)~~	
~~Materials and Installed Equipment cost (GC-13.01.B.2)~~	
~~Amounts to be paid to Subcontractors (GC-13.01.B.3)~~	
~~Amount to be paid to special consultants (GC-13.01.B.4)~~	
~~Other costs (GC-13.01.B.5)~~	

~~1. The maximum amount payable by Owner as a percentage fee (Guaranteed Maximum Fee) will not exceed $**[insert cap amount]**, subject to increases or decreases for changes in the Work.~~

~~C. Contractor's fee will be the fixed sum of $**[number]**.~~

4.03 ~~*Guaranteed Maximum Price*~~

~~A. The Guaranteed Maximum Price to Owner of the Cost of the Work including Contractor's Fee will not exceed $**[Bidder fill in GMP]**.~~

Deleted

~~**ARTICLE 5 – PRICE-PLUS-TIME BID**~~

5.01 ~~*Price-Plus-Time Contract Award (Stipulated Price Contract)*~~

~~A. The Bidder to which an award of the Contract will be made will be determined in part on the basis of the Total Bid Price and the total number of calendar days to substantially complete the Work, in accordance with the following:~~

	Description		Amount
A	1. Total Bid Price		$[number]
	2. Total number of calendar days to substantially complete the Work	[number] days	
	3. Liquidated Damages Rate (from Agreement)	$[number]/day	
B	4. Adjustment Amount (2 x 3)		$[number]
A+B	5. Amount for Comparison of Bids		$[number]

B. The purpose of the process in the table above is only to calculate the lowest price-plus-time (A+B) bid amount for bid comparison purposes. The price for completion of the Work (the Contract Price) is the Total Bid Price.

C. Bonds required under Paragraph 6.01 of the General Conditions will be based on the Contract Price.

5.02 *Price-Plus-Time Contract Award (Cost Plus Fee with Guaranteed Maximum Price Contract)*

A. The Bidder to which an award of Contract will be made will be determined in part on the basis of the Guaranteed Maximum Price and the total number of calendar days to substantially complete the Work, in accordance with the following:

	Description		Amount
A	1. Guaranteed Maximum Price		$[number]
	2. Total number of calendar days to substantially complete the Work	[number] days	
	3. Liquidated Damages Rate (from Agreement)	$[number]/day	
B	4. Adjustment Amount (2 x 3)		$[number]
A+B	5. Amount for Comparison of Bids		$[number]

B. The purpose of the process in the table above is only to calculate the lowest price-plus-time (A+B) bid amount for bid comparison purposes. The price for completion of the Work (the Contract Price) is based on the cost of the Work, plus a fee, subject to a guaranteed maximum price, as set forth in the Agreement.

C. Bonds required under Paragraph 6.01 of the General Conditions will be based on the Contract Price.

Deleted

ARTICLE 6—TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder agrees that the Work will be substantially complete on or before **[Bidder inserts date]**, and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before **[Bidder inserts date]**.

Deleted

6.03 Bidder agrees that the Work will be substantially complete within **[Bidder inserts number]** calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and will be completed and ready for final payment in

~~accordance with Paragraph 15.06 of the General Conditions within **[Bidder inserts number]** calendar days after the date when the Contract Times commence to run.~~

Deleted

6.04 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7—BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

7.01 *Bid Acceptance Period*

A. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

7.02 *Instructions to Bidders*

A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

7.03 *Receipt of Addenda*

A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 8—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

8.01 *Bidder's Representations*

A. In submitting this Bid, Bidder represents the following:

1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and

performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

8.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
3. Bidder has not solicited or induced any individual or entity to refrain from bidding.
4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:
    a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
    b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
    c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.
    d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

BIDDER hereby submits this Bid as set forth above:

Bidder:

_____
(typed or printed name of organization)

By: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(typed or printed)

If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.

Attest: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(typed or printed)

Address for giving notices:

_____

_____

Bidder's Contact:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Phone: _____

Email: _____

Address:

_____

_____

_____

Bidder's Contractor License No.: (if applicable) _____

SECTION 012000 - PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions, and all related Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Cash allowances.

B. Schedule of Values.

C. Application for Payment.

D. Measurement and Payment

1.3 CASH ALLOWANCES (If provided in the Bid Form)

A. Costs Included in Cash Allowances: Cost of product to Contractor or Subcontractor, less applicable trade discounts; delivery to Site and applicable taxes unless stated otherwise in Allowance Schedule.

B. Costs Not Included in Cash Allowances but Included in Contract Sum/Price: Product handling at Site including unloading, uncrating, and storage; protection of products from elements and from damage; and labor for installation and finishing unless stated otherwise in Allowance Schedule.

C. Engineer Responsibilities:

1. Consult with Contractor for consideration and selection of products suppliers and installers.
2. Select products in consultation with Owner and transmit decision to Contractor.
3. Prepare Change Order.

D. Contractor Responsibilities:

1. Assist Engineer in selection of products, suppliers, and installers.
2. Obtain proposals from suppliers and installers and offer recommendations.
3. Upon notification of selection by Engineer, execute purchase agreement with designated supplier and installer.
4. Arrange for and process Shop Drawings, Product Data, and Samples. Arrange for delivery.

5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.

E. Differences in costs will be adjusted by Change Order.

F. Allowance Schedule: If provided in and as per the Bid Form

G. Differences in cost between allowance(s) and actual cost(s) will be adjusted by Change Order.

1.4 SCHEDULE OF VALUES (As required for Lump Sum Project or Bid Item Breakdown on Unit Price Project)

A. Submit printed schedule on Progress Estimate schedule on EJCDC C-620.

B. Submit Schedule of Values within 20 days after date established in Notice to Proceed.

C. Format for Lump Sum Project: Use Table of Contents of this Project Manual. Identify each line item with number and title of major Specification Section.

D. Revise schedule to list approved Change Orders with each Application for Payment.

1.5 APPLICATION FOR PAYMENT

A. Submit six (6) executed copies of each Application for Payment on EJCDC C-620 - Contractor's Application for Payment.

B. Submit six (6) copies of executed copies of Abnormal Weather Conditions forms regardless if any days are claimed or not and Affidavit of Payment.

C. Submit six (6) American Iron and Steel Qualifying and De Minimus Materials List (if required by the Contract Documents).

D. Payment Period: Submit at intervals stipulated in the Agreement.

1.6 MEASUREMENT AND PAYMENT

A. Take measurements and compute quantities. Engineer will verify measurements and quantities.

B. Unit Quantities: Quantities and measurements indicated on Bid Form are for Contract purposes only. Actual quantities provided shall determine payment.

C. Payment Includes: Full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services and incidentals; erection, application, or installation of item of the Work; overhead and profit.

D. Final payment for Work governed by unit prices will be made on basis of actual measurements and quantities accepted by Engineer multiplied by unit sum/price for Work incorporated in or made necessary by the Work.

E. Measurement of Quantities:

1. Weigh Scales: Inspected, tested, and certified by state in which work is being performed or state of origin of materials within past year.
2. Platform Scales: Of sufficient size and capacity to accommodate conveying vehicle.
3. Metering Devices: Inspected, tested, and certified by state in which work is being performed or state of origin of materials within past year.
4. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel, or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
5. Measurement by Volume: Measured by cubic dimension using mean length, width, and height or thickness.
6. Measurement by Area: Measured by square dimension using mean length and width or radius.
7. Linear Measurement: Measured by linear dimension, at item centerline or mean chord.
8. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as completed item or unit of the Work.

F. Payment

1. Bid Item 1 – Mobilization/Demobilization – Spec Sections 015000 and 015700

Lump Sum

A. This item shall include payment of all bonding and insurance costs incurred by the Contractor, the performance of construction preparatory operations including the movement of equipment and personnel to and from the Project Site, establishment and decommissioning of Contractor's Field Office, storage buildings, traffic control and other facilities necessary to conduct Work under this Contract.

B. Partial Payments of the lump sum Bid amount for mobilization/demobilization shall be as follows:

a. One-fourth of the amount Bid for Mobilization/Demobilization will be released to the Contractor as the first estimate payable, not less than fifteen (15) days after the start of Work at the Project Site.
b. The second one-fourth of the amount Bid for Mobilization/Demobilization shall be released with the estimate payable thirty (30) days after the first estimate.
c. The third one-fourth of the amount Bid for Mobilization/Demobilization shall be released with the estimate payable thirty (30) days later than the estimate in which the second one-fourth has been paid.
d. The final one-fourth of the amount Bid for Mobilization/Demobilization shall be released with the final payment.
e. No reduction will be made, nor any increase be made, in the lump sum mobilization item amount regardless of decreased or increases in the final total Contract amount or for any other cause.

C. In no case shall the lump sum bid price for Mobilization/Demobilization exceed five percent (5%) of the total bid.

2. **Bid Item 2 – Pre-Construction Video – Spec Section 024010**

   Lump Sum

   A. Videotaping shall include the entire construction area affected, including any Contractor secured waste site and material storage or staging areas.
   B. The measurement for this bid item shall be based on a complete video recording of the entire project area, processed and delivered to the owner and engineer on a USB flash drive.

3. **Bid Item 3 – Temporary Raw Water Pre-Treatment Setup and Removal Upon Completion of Work – Spec Section 500000**

   Lump Sum

   A. The cost of this work shall include all costs to install and uninstall the temporary raw water pre-treatment unit for daily operations of the water treatment plant while items in the water treatment plant are taken out of service for rehabilitation.
   B. The measurement for this bid item shall be lump sum.

4. **Bid Item 4 – Temporary Raw Water Pre-Treatment Rental**

   Lump Sum

   A. The cost of this work shall include all costs to rent, maintain, and train the Owner on using a temporary raw water pre-treatment unit for daily operations of the water treatment plant while items in the water treatment plant are taken out of service for rehabilitation.
   B. The measurement for this bid item shall be lump sum. The Contractor will be responsible for renting the equipment long enough to make necessary repairs, while limiting the impedance on normal operating conditions of the water treatment plant as much as possible.

5. **Bid Item 5 – Clearwell Piping Replacement as shown on Sheet 10**

   Lump Sum

   A. The scope of work for this bid item is described on revised Sheet 10 of the plans.
   B. The measurement for this bid item shall be based on completion of work.

6. **Bid Item 6 – Raw Water Pump and Motor, Piping, Fitting, and 4" Turbo Meter as shown on Sheets 2, 4 and 5**

   Per Each

   A. This Bid Item includes the rebuilding of the existing pumps and motors to replace those shown on Sheet 5.
   B. The measurement for this bid item shall be based on the rebuilding of equipment.
      a. Measurement for the installation of this equipment is included in Bid Item 14.

7. **Bid Item 7 – Raw Water Pump VFD Controls, Panels, Disconnect, Mounting, Conduit and Wiring as shown on Sheets 2, 5 and E1**

   Per Each

   A. The scope of work related to this bid item is described on Sheet 5 of the plans.
   B. This Bid Item includes the purchase and installation of new VFDs as shown on Sheet 5.
   C. The measurement for this bid item shall be based on each new VFD placed into service.

8. **Bid Item 8 – Existing Clearwell Tank Piping Improvements as shown on Sheets 1 and 8**

   Lump Sum

   A. The scope of work for this bid item is described on Sheet 8 of the plans.
   B. The measurement for this bid item shall be based on completion of work.

9. **Bid Item 9 – Flocculation Tank Pressure Washing, Weld Repairs, Spot Blast, Spot Prime and Complete Overcoat of Paint Inside and Out as shown on Sheets 2 and 11**

   Allowance

   A. The scope of work related to this bid item is described on Sheets 2 and 11 of the plans.
   B. The measurement for this bid item shall be based on the extent of work necessary when the equipment is taken out of service.
   C. The final amount will be adjusted by change order negotiated after the actual amount of necessary work is determined.

10. **Bid Item 10 – Lamella Plate Settler Pressure Washing, Mechanical Repairs, Weld Repairs, Spot Blast, Spot Prime and Complete Overcoat of Paint, if applicable Inside and Out as shown on Sheets 2 and 11**

    Allowance

    A. The scope of work related to this bid item is described on Sheets 2 and 11 of the plans.
    B. The measurement for this bid item shall be based on the extent of work necessary when the equipment is taken out of service.
    C. The final amount will be adjusted by change order negotiated after the actual amount of necessary work is determined.

11. **Bid Item 11 – Flash Mixer Tank Pressure Washing, Weld Repair, Spot Blast, Spot Prime, and Complete Overcoat of Paint Inside and Out as shown on Sheets 2 and 11**

    Allowance

    A. The scope of work related to this bid item is described on Sheets 2 and 11 of the plans.
    B. The measurement for this bid item shall be based on the extent of work necessary when the equipment is taken out of service.
    C. The final amount will be adjusted by change order negotiated after the actual amount of necessary work is determined.

12. **Bid Item 12 – Clearwell Level Control Valve Replacement including Detaching and Reattaching Existing Plumbing Lines as shown on Sheets 2 and 7**

    Lump Sum

    A. The scope of work related to this bid item is described on Sheets 2 and 7 of the plans.
    B. The measurement for this bid item shall be based on completion of work.

13. **Bid Item 13 – VFD for High Service Pumps, VFD Controls, Ultra Sonic Flow Meter, Mounting, Conduits, and Wiring as shown on Sheets 2, 9 and E1**

    Per Each

    A. The scope of work related to this bid item is described on Sheet 9 of the plans.
    B. This Bid Item includes the new VFDs as shown on Sheet 9.
    C. The measurement for this bid item shall be based on each new VFD placed into service.

14. **Bid Item 14 – VFD for Route 50 Booster Pump VFD Controls, Mounting, Conduit and Wiring as Shown on Sheet 1, 12 and E2, including Removal of Existing 4" Flow Control Valve and Replacing with a 4" 90 degree Flanged Fitting**

    Per Each

    A. The scope of work related to this bid includes installing two new VFDs at the Rt. 50 booster station at the locations depicted on revised Sheet 12 of the plans.
    B. The measurement for this bid item shall be based on each new VFD placed into service.

15. **Bid Item 15 – Raw Water Piping changes including adding valves, raising piping, Rebuilding Existing Pumps, Relocating Meter, Removing flow Control Valve all as shown on Sheet 5**

    Lump Sum

    A. The scope of work related to this bid item is described on Sheet 5 of the plans.
    B. This Bid Item includes the labor costs for installing all items as shown on Sheet 5 aside from the VFDs.
    C. The measurement for this bid item shall be based on completion of work.

16. **Bid Item 16 – Bypass Piping Installation, Including All Fittings, Valves, Piping, Couplers, etc. as shown on Sheet 3**

    Lump Sum

    A. The scope of work related to this bid item is described on Sheet 3 of the plans.
    B. This Bid Item includes installation and removal of bypass piping for the unit described in Bid Item 3.

C. The measurement for this bid item shall be based on completion of work.

17. **Bid Item 17 – Install New 24" X 24" Sliding Vinyl or Aluminum Window In Existing Wall As Shown On Sheet 5 Including All Trim, Insulation And Touch Up Carpentry**

Lump Sum

A. The scope of work related to this bid item is described on Sheet 5 of the plans.
B. This Bid Item includes the installation of a new window to be kept as a permanent fixture and temporarily used for a path for bypass piping related to Bid Item 15.
C. The measurement for this bid item shall be based on completion of work.

18. **Bid Item 18 – Remove Existing 4" Flanged Gate Valve and Replace with New 4" RW Flanged Gate Valve as shown on Sheet 6**

Per Each

A. The scope of work related to this bid item is described on Sheet 6 of the plans.
B. This Bid Item includes valve replacements shown on Sheet 6.
C. The measurement for this bid item shall be based on installation of each valve.

19. **Bid Item 19 – Remove and replace existing 4" butterfly valve with new 4" lug style butterfly valve as shown on Sheet 6**

Per Each

A. The scope of work related to this bid item is described on Sheet 6 of the plans.
B. This Bid Item includes valve changes as shown on Sheet 6.
C. The measurement for this bid item shall be based on installation of each valve.

G. General Specifications

The contract Specifications references provided attempt to outline the Contract Bid Item payment methodology for work to be performed. In the event of variation between the Bid Form and the preceding specification section measure and payment descriptions, the Contractor shall contact the Engineer before making any assumptions and proceeding with the Bid Item work or part thereof in question.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 012000

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions, and all related Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

B. Types of allowances include the following:

1. Lump-sum allowances.
2. Unit-cost allowances.
3. Quantity allowances.
4. Contingency allowances.

1.3 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Engineer of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the Owner to avoid delaying the Work.

B. At Engineer's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Engineer from the designated supplier.

1.4 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

1.5 INFORMATIONAL SUBMITTALS

A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.6 LUMP-SUM ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Engineer under allowance and shall include taxes, freight, labor, installation, overhead, profit and delivery to Project site for all materials and equipment necessary for Engineer's authorized work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

END OF SECTION 012100

SECTION 331116 - SITE WATER UTILITY DISTRIBUTION PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions, and all related Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Pipe and fittings for Site water lines.
2. Tapping sleeves and valves.
3. Valves: Gate, ball, swing check, and butterfly.
4. Hydrants and yard hydrants.
5. Positive displacement meters.
6. Reduced-pressure backflow preventers.
7. Underground pipe markers.
8. Precast concrete vaults.
9. Valve boxes.
10. Bedding and cover materials.

B. Related Requirements:

1. Section 033000 - Cast-in-Place Concrete: Concrete for thrust restraints.
2. Section 310513 - Soils for Earthwork: Soils for backfill in trenches.
3. Section 310516 - Aggregates for Earthwork: Aggregate for backfill in trenches.
4. Section 312316 - Excavation: Product and execution requirements for excavation and backfill.
5. Section 312316.13 - Trenching: Execution requirements for trenching.
6. Section 331300 - Disinfecting of Water Utility Distribution: Disinfection of Site service utility water piping.

1.3 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:

1. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:

1. ASTM A48 - Standard Specification for Gray Iron Castings.
2. ASTM B88 - Standard Specification for Seamless Copper Water Tube.

3. ASTM C858 - Standard Specification for Underground Precast Concrete Utility Structures.
4. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort.
5. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort.
6. ASTM D2241 - Standard Specification for Polyvinyl Chloride (PVC) Pressure-Rated Pipe (SDR Series).
7. ASTM D2466 - Standard Specification for Polyvinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 40.
8. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Polyvinyl Chloride (PVC) Pipe and Fittings.
9. ASTM D3035 - Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter.
10. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
11. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

C. American Water Works Association:

1. AWWA C104 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.
2. AWWA C105 - Polyethylene Encasement for Ductile-Iron Pipe Systems.
3. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
4. AWWA C151 - Ductile-Iron Pipe, Centrifugally Cast.
5. AWWA C500 - Metal-Seated Gate Valves for Water Supply Service.
6. AWWA C502 - Dry-Barrel Fire Hydrants.
7. AWWA C504 - Rubber-Seated Butterfly Valves, 3 In. (75 mm) Through 72 In. (1,800 mm).
8. AWWA C508 - Swing-Check Valves for Waterworks Service, 2-In. Through 24-In. (50-mm Through 600-mm) NPS.
9. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service.
10. AWWA C600 - Installation of Ductile-Iron Mains and Their Appurtenances.
11. AWWA C606 - Grooved and Shouldered Joints.
12. AWWA C700 - Cold-Water Meters - Displacement Type, Bronze Main Case.
13. AWWA C701 - Cold-Water Meters - Turbine Type, for Customer Service.
14. AWWA C702 - Cold-Water Meters - Compound Type.
15. AWWA C706 - Direct-Reading, Remote-Registration Systems for Cold-Water Meters.
16. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 12 In., for Water Transmission and Distribution.
17. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In. Through 3 In. for Water Service.
18. AWWA C906 - Polyethylene (PE) Pressure Pipe and Fittings, 4 In. Through 63 In., for Water Distribution and Transmission.
19. AWWA M6 - Water Meters - Selection, Installation, Testing, and Maintenance.

D. American Welding Society:

1. AWS A5.8 - Specification for Filler Metals for Brazing and Braze Welding.

E. Manufacturers Standardization Society of the Valve and Fittings Industry:

1. MSS SP-60 - Connecting Flange Joints between Tapping Sleeves and Tapping Valves.

F. UL:

1. UL 246 - Hydrants for Fire-Protection Service.

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data on pipe materials, pipe fittings, valves, and accessories.

1. Include AIS Certification for iron and steel products.

C. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

1.5 CLOSEOUT SUBMITTALS

A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations.

C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

PART 2 - PRODUCTS

2.1 WATER PIPING

A. Ductile Iron Pipe:

1. Comply with AWWA C151.
2. Fittings:

a. Material: Ductile iron.
b. Thickness: Standard.

3. Joints:

a. Comply with AWWA C111.
b. Provide rubber gasket with rods.

B. PVC Pipe:

1. Comply with AWWA C900, Class 235.
2. Fittings:

    a. Material: Cast iron.
    b. Comply with AWWA C111.

3. Joints:

    a. Comply with ASTM D3139.
    b. Provide compression gasket ring.

2.2 TAPPING SLEEVES AND VALVES

A. Description:

1. Material: Ductile or cast iron.
2. Type: Dual compression.
3. Outlet Flange Dimensions and Drilling: Comply with ASME B16.1, Class 125 and MSS SP-60.

B. Tapping Valves:

1. Comply with AWWA C500.
2. Type: Double disc with non-rising stem.
3. Inlet Flanges: Comply with ASME B16.1, Class 125, and MSS SP-60.
4. Mechanical Joint Outlets: Comply with AWWA C111.
5. Mark manufacturer's name and pressure rating on valve body.

2.3 WATER METERS

A. Manufacturers:
1. Neptune Technology Group
2. Sensus
3. Badger Meter Inc.

B. Description:
1. Comply with AWWA C700, AWWA C701, AWWA C702.
2. Type: Turbine type, Class II
3. Case Material: Copper Alloy, Cast Iron, or Stainless Steel
4. Register: Hermetically sealed.
5. Remote Reading: Comply with AWWA C706.

C. Meter:
1. Service: Cold water, approximately 80 degrees F maximum.
2. Nominal Flow Rate: 8-435 gpm.
3. Pressure Drop at Nominal Flow: 7 psi.
4. Maximum Flow Rate: 435 gpm.
5. Maximum Operating Pressure: 175 psig.
6. Accuracy: 98.5%-101.5% at temperature less than 80 degrees F.

7. Maximum Counter Reading: 100 or 100 M gal.

D. Size: 3 inches, with flange mounted strainers directly upstream of the flow meter bodies.

E. The turbine meter shall be flanged and shall conform to ANSI Class 125.

F. The maincase and cover shall be cast of water works bronze containing not less than 75% copper. The cover shall contain a stainless-steel calibration vane for the purpose of calibrating the turbine measuring element while in-line and under pressure. The calibration vane shall contain no gear reduction and shall be covered by a protective cap that is attached in a tamper-resistant manner.

G. The external casing bolts shall be made of type 316 stainless steel.

H. The register shall be permanently roll-sealed, straight reading, indicating in gallons. The register shall include a center-sweep test hand, a low flow indicator, and a glass lens. The register shall be serviceable without interruption of the meter's operation. Register boxes and covers shall be of bronze composition.

I. The register box shall be affixed to the top cover by means of a plastic tamperproof seal pin that must be destroyed in order to remove the register. The meter serial number shall be imprinted on the meter maincase as well as the register box cover.

J. The turbine measuring chamber shall be a self-contained unit attached to the cover for easy removal. The turbine rotor spindle shall be stainless steel. The bearings shall be graphite or ryton-coated graphite. The intermediate gear train shall be directly-coupled to the turbine rotor spindle and magnetically coupled to the register through the meter cover. The gear train shall be enclosed in the turbine rotor outlet and shall be capillary sealed. All moving parts of the gear train shall be made of a self-lubricating polymer or stainless steel for operation in water.

K. The meter/strainer register assembly shall include a Tricon E register to provide a flow proportional 4-20 ma output signal to the PLC system.

L. Registration accuracy over the normal operating range shall be 98.5% to 101.5%. The turbine meter assembly shall be complete with a like size, top clean-out strainer immediately upstream and flanged to the inlet of the turbine meter.

2.4 GATE VALVES

A. AWWA C509, iron body, bronze trim, non-rising stem with square nut, single wedge, resilient seat, mechanical joint ends, control rod, post indicator, valve box, and valve key.

B. Mark manufacturer's name and pressure rating on valve body.

2.5 YARD HYDRANTS

A. Description:

1. Automatic-draining, non-freezing yard hydrant for hose connection.

2. Inlet:

   a. Size: 1 inch NPT.
   b. Fitting: Female.

3. Nozzle:

   a. Size: 3/4 inch.
   b. Material: Brass.
   c. Fitting: Male.
   d. Removable.

4. Casing:

   a. Description: Galvanized steel pipe.
   b. Size: 1-1/4 inch.

5. Drain Hole: Tapped, 1/8 inch NPT.
6. Operating Rod:

   a. Description: Galvanized steel pipe.
   b. Size: 3/8 inch.

7. Working Pressure: 125 psig

2.6 UNDERGROUND PIPE MARKERS

A. Plastic Ribbon Tape:

1. Brightly colored, continuously printed.
2. Minimum 6 inches wide by 4 mil thick.
3. Manufactured for direct burial service.

B. Trace Wire:

1. Electronic detection materials for nonconductive piping products.
2. Unshielded, 10 gage, THWN-insulated copper wire.
3. Conductive tape.

2.7 VALVE BOXES

A. Description:

1. Valve boxes and covers, including position indicators and valve extensions, and as indicated on Drawings.
2. Material: Cast iron.
3. Type: Extension, with slide adjustment.
4. Covers marked WATER SERVICE.

2.8 MATERIALS

A. Bedding and Cover:

1. Bedding: Fill Type as specified in Section 310516 - Aggregates for Earthwork.
2. Cover: Fill Type as specified in Section 310516 - Aggregates for Earthwork.
3. Soil Backfill from Above Pipe to Finish Grade:

a. Soil Type as specified in Section 310513 - Soils for Earthwork.
b. Subsoil with no rocks over 6 inches in diameter, frozen earth, or foreign matter.]

2.9 ACCESSORIES

A. Concrete for Thrust Restraints: Concrete type as specified in Section 033000 - Cast-in-Place Concrete.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify that building service connections and municipal utility water main sizes, locations, and elevations are as indicated on Drawings.

3.2 PREPARATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.

B. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, and remove burrs.

C. Remove scale and dirt on inside and outside before assembly.

D. Prepare pipe connections to equipment with flanges or unions.

E. Protect and support existing distribution piping and appurtenances as Work progresses.

3.3 INSTALLATION

A. Bedding:

1. Excavate pipe trench as specified in Section 312317 - Trenching.
2. Place bedding material at trench bottom.
3. Level fill materials in continuous layers not exceeding 8 inches compacted depth.

4. Compact to [**95**] percent of maximum density.
5. Backfill around sides and to top of pipe with cover fill, tamp in place, and compact to [**95**] percent of maximum density.

B. Piping:

1. Maintain minimum ten (10) feet separation of water main from sewer piping.
2. Group piping with other Site piping work whenever practical.
3. Install pipe to elevations indicated on Drawings.
4. Install ductile iron piping and fittings according to AWWA C600.
5. Route pipe in straight line.
6. Install access fittings to permit disinfection of water system performed under Section 331300 - Disinfecting of Water Utility Distribution.
7. Thrust Restraints:

    a. Form and place concrete for pipe thrust restraints at each elbow or change of pipe direction.
    b. Place concrete to permit full access to pipe and pipe accessories.
    c. Provide bearing area as indicated on Drawings.

8. Establish elevations of buried piping with not less than three (3) feet of cover.
9. Pipe Markers:

    a. Coordinate with trench Work as specified in Section 312316.13 - Trenching.

3.4 FIELD QUALITY CONTROL

A. Section 017000 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.

B. Pressure test system according to AWWA C600 and following:

1. Test Pressure: Not less than 200 psig or 50 psi in excess of maximum static pressure, whichever is greater.
2. Conduct hydrostatic test for at least two hours.
3. Slowly fill with water section to be tested and expel air from piping by installing corporation cocks at high points.
4. Close air vents and corporation cocks after air is expelled and raise pressure to specified test pressure.
5. Observe joints, fittings, and valves under test. Remove and renew cracked pipes, joints, fittings, and valves showing visible leakage and retest.
6. Correct visible deficiencies and continue testing at same test pressure for additional two hours to determine leakage rate.
7. Maintain pressure within plus or minus 5 psi of test pressure.
8. Leakage is defined as quantity of water supplied to piping necessary to maintain test pressure during period of test.
9. Compute maximum allowable leakage using following formula:

    a. $L = SD \times \text{sqrt}(P)/C$.

1) L = testing allowance, gph.
2) S = length of pipe tested, feet.
3) D = nominal diameter of pipe, inches.
4) P = average test pressure during hydrostatic test, psig.
5) C = 148,000.

b. If pipe under test contains sections of various diameters, calculate allowable leakage from sum of computed leakage for each size.

10. If test of pipe indicates leakage greater than that allowed, locate source of leakage, make corrections, and retest until leakage is within allowable limits.
11. Correct visible leaks regardless of quantity of leakage.

C. When tests indicate Work does not meet specified requirements, remove Work, replace, and retest.

END OF SECTION 331116

SECTION 400519 - DUCTILE IRON PROCESS PIPE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions, and all related Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Ductile iron pipe and fittings.
2. Accessories.

1.3 REFERENCE STANDARDS

A. American Society of Mechanical Engineers:

1. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings.
2. ASME B31.3 - Process Piping Design.

B. ASTM International:

1. ASTM A48 - Standard Specification for Gray Iron Castings.

C. American Water Works Association:

1. AWWA C104/A21.4 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.
2. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems.
3. AWWA C110/A21.10 - Ductile-Iron and Gray-Iron Fittings.
4. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
5. AWWA C150/A21.50 - Thickness Design of Ductile-Iron Pipe.
6. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast.
7. AWWA C153/A21.53 - Ductile-Iron Compact Fittings.
8. AWWA C600 - Installation of Ductile-Iron Mains and Their Appurtenances.

D. The Society for Protective Coatings:

1. SSPC-SP 6/NACE No. 3 - Commercial Blast Cleaning.

1.4 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate Work of this Section with piping and equipment connections specified in other Sections and indicated on Drawings.

1.5 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit manufacturer's catalog information on pipe materials and fittings.

C. Shop Drawings: Indicate layout of piping systems, including equipment, critical dimensions, sizes, and materials lists. Submit Shop Drawings sealed by registered professional engineer.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Delegated Design Submittals: Submit signed and sealed Shop Drawings with design calculations and assumptions for pipe sizing methods and calculations used.

F. Qualifications Statements:

1. Submit qualifications for manufacturer, installer, and licensed professional.
2. Submit manufacturer's approval of installer.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Section 017000 - Execution and Closeout Requirements: Requirements for maintenance materials.

B. Tools: Furnish special tools and other devices required for Owner to maintain fittings and appurtenances.

1.7 QUALITY ASSURANCE

A. Perform Work according to specified standards.

1.8 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' documented experience.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Deliver materials in manufacturer's packaging, including handling instructions.

C. Inspection: Accept piping and appurtenances on-Site. Inspect for damage.

D. Store piping and appurtenances according to manufacturer's instructions.

E. Protect piping and appurtenances from oxidation by storing off the ground.

1.10 EXISTING CONDITIONS

A. Field Measurements: Verify field measurements prior to fabrication. Indicate field measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 DUCTILE IRON PIPE AND FITTINGS

A. Piping:

1. Standard. Conform to American National Standards Institute/American Water Works Association (ANSI/AWWA) C151/A21.51 and the chemical constiuents shall meet the physical property recommendations of American Society for Testing and Materials (ASTM) A536 to ensure suitability for drilling and cutting.

2. Thickness. Pipe barrel thickness shall be a minimum of Class 53 unless otherwise noted.

B. Joints:

1. Flange or groove all joints in accordance with Industry Standards, unless otherwise shown.

2. Pressure Rating: Same as that of connected piping.
3. Mechanical Joints:

a. AWWA C110 and AWWA C111.
b. Glands: Ductile iron with asphaltic coating.

4. Push-on Joints:

a. AWWA C111.

5. Restrained Joints:

a. AWWA C111.

6. Flanged Joints:

a. AWWA C110.

C. Fittings:

1. AWWA C110, ductile iron AWWA C153, ductile iron.
2. Cement-mortar lining, AWWA C104; double thickness.
3. Outside Coating:

    a. Buried Service: Asphaltic; 0.04 in thick.
    b. Exposed Service: As specified in Section 099010 - Coating Systems for Water Treatment Plants.

4. Pressure Rating, Pipes 12 in and Smaller: 250 psig.
5. Gray Iron Fittings:

    a. Cement-mortar lining; double thickness.

6. Flanged Fittings:

    a. AWWA C110 ASME B16.1.
    b. Pressure Rating: 250 psig.

2.2 FINISHES

A. Cement-mortar lining, AWWA C104; double thickness.

B. Outside Coating:

1. Buried: Asphaltic; 0.04 in thick.
2. Exposed: As specified in Section 099010 - Coating Systems for Water Treatment Plants.

2.3 ACCESSORIES

A. Jackets:

1. AWWA C105, polyethylene jacket.

B. Gaskets: Rubber.

C. Dielectric Fittings: Provide between dissimilar metals.

2.4 SOURCE QUALITY CONTROL

A. Section 014000 - Quality Requirements: Requirements for testing, inspection, and analysis.

B. Certificate of Compliance: When fabricator is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.

1. Specified shop tests are not required for Work performed by approved fabricator.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify that field dimensions are as indicated on Drawings.

C. Inspect existing flanges for nonstandard bolt hole configurations or design, and verify that new pipe and flange mate properly.

3.2 PREPARATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.

B. Thoroughly clean pipe and fittings before installation.

C. Surface Preparation:

1. Touch up shop-primed surfaces with primer as specified in Section 099010 - Coating Systems for Water Treatment Plants.
2. Solvent-clean surfaces that are not shop primed.
3. Clean surfaces to remove loose rust, mill scale, and other foreign substances by; prime surface as specified in Section 099010 - Coating Systems for Water Treatment Plants.

3.3 INSTALLATION

A. Install pipe as specified herein and indicated on the drawings.

B. Exposed Service:

1. Run piping straight along alignment indicated on Drawings with minimum number of joints.
2. Install according to ASME B31.3.
3. Fittings:

   a. Clean gasket seats thoroughly, and wipe gaskets clean prior to installation.
   b. Install fittings according to manufacturer's instructions.
   c. Tighten bolts progressively, drawing up bolts on opposite sides until bolts are uniformly tight; use torque wrench to tighten bolts to manufacturer's recommendations.

4. Provide required upstream and downstream clearances from devices as indicated.

C. Make taps to ductile iron piping only with service saddle, tapping boss of a fitting or valve body, or equipment casting.

D. Install piping with sufficient slopes for venting or drainage of liquids and condensate to low points.

E. Support piping as specified in Section 400507 - Hangers and Supports for Process Piping.

F. Field Cuts: According to pipe manufacturer's recommendations.

G. Finish primed surfaces according to Section 099010 - Coating Systems for Wastewater Treatment Plants.

3.4 TOLERANCES

A. Section 014000 - Quality Requirements: Requirements for tolerances.

B. Laying Tolerances: As specified herein and indicated on the drawings.

3.5 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.

B. Inspect for damage to pipe lining or coating, or other defects that may be detrimental as determined by the Engineer/Engineer. Repair damaged piping, or provide new undamaged pipe.

C. Pressure Testing:

1. According to AWWA C600 and the following:

   a. Test Pressure: Not less than 200 psig or 50 psi in excess of maximum static pressure, whichever is greater.
   b. Conduct hydrostatic test for at least two hours.
   c. Fill section to be tested with water slowly; expel air from piping at high points. Install corporation cocks at high points. Close air vents and corporation cocks after air is expelled. Raise pressure to specified test pressure.
   d. Observe joints, fittings, and valves under test. Remove and renew cracked pipe, joints, fittings, and valves showing visible leakage. Retest.
   e. Correct visible deficiencies and continue testing at same test pressure for additional two hours to determine leakage rate. Maintain pressure within plus or minus 5 psi of test pressure. Leakage is defined as quantity of water supplied to piping necessary to maintain test pressure during period of test.
   f. Compute maximum allowable leakage by following formula:

      1) $L = SD \times \sqrt{P}/C$.
      2) L = testing allowance, in gallons per hour.
      3) S = length of pipe tested, in feet.
      4) D = nominal diameter of pipe, in inches.
      5) P = average test pressure during hydrostatic test, in psig.
      6) C = 148,000.

7) When pipe under test contains sections of various diameters, calculate allowable leakage from sum of computed leakage for each size.

g. When test of pipe indicates leakage greater than allowed, locate source of leakage, make corrections, and retest until leakage is within allowable limits. Correct visible leaks regardless of quantity of leakage.

D. After installation, inspect for proper supports and interferences.

3.6 CLEANING

A. Section 017000 - Execution and Closeout Requirements specifies requirements for cleaning.

B. Keep pipe interior clean as installation progresses.

C. Clean pipe interior of soil, grit, loose mortar, and other debris after pipe installation.

END OF SECTION 400519

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SECTION 400567 - SPECIALIZED PRESSURE AND FLOW-CONTROL VALVES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions, and all related Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Level Control Valve

1.3 REFERENCE STANDARDS

A. ASME International:

1. ASME B16.42 - Ductile Iron Pipe Flanges and Flanged Fittings: Classes 150 and 300.

B. ASTM International:

1. ASTM A536 - Standard Specification for Ductile Iron Castings.

1.4 QUALITY ASSURANCE

A. Perform Work according to applicable standards and in accordance with manufacturer's written instructions.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum ten (10) years' documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

B. Store materials according to manufacturer instructions.

C. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Provide additional protection according to manufacturer instructions.

1.7 EXISTING CONDITIONS

A. Field Measurements:

1. Verify field measurements prior to fabrication.
2. Indicate field measurements on Shop Drawings.

1.8 WARRANTY

A. Furnish three-year manufacturer's warranty.

PART 2 - PRODUCTS

2.1 Float Valve

A. Manufacturers:

1. ClaVal Model 428-01 or Engineer's approved equal.

B. Description:

1. Type: rotary disc.
2. Flow Area:
   a. Equal to connecting nominal pipe diameter.
3. Operation:
   1) As the liquid level changes, the float control proportionally opens or closes the main valve, keeping the liquid level nearly constant.
   b. Normally open.
   c. Type: Hydraulic.
   d. Actuation: Float.
   e. Control: Pilot.
4. Internal Access: Flanged cover piece.
5. End Connections:
   a. Flanged.
   b. Comply with ASME B16.42.

C. Materials:

1. Body:

   a. Ductile iron.
   b. Comply with ASTM A536.
2. Diaphragm: EPDM rubber.
3. Control Trim:

   a. Fittings: Type 303 stainless steel or Engineer's approved equal.
   b. Tubes: Type 316 stainless steel or Engineer's approved equal.

4. Valve Components: Bronze.
5. Seals: Buna-N.

D. Construction: Float Valve shall consist of a main valve assembly and a pilot system, completely assembled and tested as a unit and ready for field installation.

E. Main Valve:

1. Main valve body shall be diaphragm style, constructed of high-strength ductile iron conforming to above referenced standards with integral flanges, faced and drilled per above referenced standards. The valve shall have an integral bottom pad or feet permitting support directly under the valve body.

2. The main valve shall be serviceable in the line through a single flanged cover, which provides easy access to all internal components.

3. A flow cleaner strainer shall be included on the main valve.

F. Pilot System:

1. Provide a system of pilots and controls to enable the valve to perform the function listed below. All controls and control piping shall be noncorrosive and suitable for the working pressure.

2. Pilot system shall include a rotary disc type float, stainless steel valve, and a sensing diaphragm. Pilot shall be directly mounted to the valve cover by means of a gasketed connection.

3. Controls shall include isolation valve, closing flow control, check valves with isolation valve, opening speed control, and y-strainer.

2.2 SOURCE QUALITY CONTROL

A. Section 014000 - Quality Requirements: Requirements for testing, inspection, and analysis.

B. Testing Pressure-Reducing and Pressure-Sustaining Valves:

1. Leakage Testing:

    a. Test each assembled valve hydrostatically at 1-1/2 times rated working pressure for minimum five minutes.
    b. Test each valve for leakage at rated working pressure against closed valve.
    c. Permitted Leakage: None.

2. Functional Testing:

    a. Test each valve to verify specified performance.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install protective strainers upstream of solenoid valves, pressure-reducing valves, and pressure-sustaining valves where applicable.

3.2 MANUFACTURER FIELD SERVICE

A. Manufacturer's authorized representative shall be present at the jobsite for assistance during equipment start-up and to train owner's personnel in the operation, maintenance and troubleshooting of the provided equipment.

END OF SECTION 400567

SECTION 407213 - ULTRASONIC LEVEL METERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions, and all related Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Ultrasonic-level measurement devices.
2. Transmitters.

B. The manufacturer shall provide an ultrasonic level element capable of transmitting level readings from downstream of the weir plate to the controller and provide an output flow rate in units of GPD and GPM. The level element shall be installed in the location as shown on the drawings.

1.3 REFERENCE STANDARDS

A. National Electrical Manufacturers Association:

1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

B. NSF International:

1. NSF 61 - Drinking Water System Components - Health Effects.
2. NSF 372 - Drinking Water System Components - Lead Content.

1.4 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate Work of this Section with piping Work.

1.5 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit manufacturer information for system materials and component equipment, including connection requirements.

C. Shop Drawings:

1. Indicate system materials and component equipment.
2. Submit installation requirements and other details.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Source Quality-Control Submittals: Indicate results of factory tests and inspections.

F. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

G. Manufacturer Reports: Certify that equipment has been installed according to manufacturer instructions.

H. Qualifications Statement:

1. Submit qualifications for manufacturer.

1.6 CLOSEOUT SUBMITTALS

A. Section 017000 - Execution and Closeout Requirements: Requirements for closeout procedures.

B. Project Record Documents: Record actual locations and final orientation of equipment and accessories.

1.7 QUALITY ASSURANCE

A. Ensure that materials of construction of wetted parts are compatible with process liquid.

B. Materials in Contact with Potable Water: Certified to NSF 61 and NSF 372.

C. Perform Work according to specified standards.

1.8 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

C. Store materials according to manufacturer instructions.

D. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Provide additional protection according to manufacturer instructions.

1.10 WARRANTY

A. Section 017000 - Execution and Closeout Requirements: Requirements for warranties.

B. Furnish five-year manufacturer's warranty for ultrasonic-level measurement devices.

PART 2 - PRODUCTS

2.1 ULTRASONIC-LEVEL MEASUREMENT DEVICES

A. Manufacturers:

1. The Owner and Engineer believe the following manufacturers are capable of producing equipment and products, which will satisfy the requirements of this Section. This statement, however, shall not be construed as an endorsement of a particular manufacturer's product, nor shall it be construed that a named manufacturer's standard product will comply with the requirements of this Section. It shall be the responsibility of the contractor to coordinate with the "selected" equipment manufacturer by use of this specification and all related design drawings for any necessary adjustments, modifications or alterations to standard products to ensure that the product complies with all sections of this specification. Candidate manufacturers include ABB or Engineer's approved equal.

B. Description:

1. Measuring Range: Up to 15 feet.
2. Operating Temperature Range: Minus 40 to plus 170 degrees F.
3. Operating Pressure: 10 to 36 psig.

C. Operation: Menu guided.

D. Transmitters:

1. Selected by sensor manufacturer to match sensor.
2. Visual Display: Four digit.
3. Output Signal: 4- to 20-mA dc.

4. Location: As indicated on Drawings.
5. Control Power:

    a. Wiring: Field verify existing chart recorder power source is compatible. Include new power source wiring and installation per manufacturer recommendations otherwise.
    b. 120-V ac, single phase, 60 Hz.
    c. Furnish local transformers as required.

6. Enclosures: NEMA 250 Type 4X.
7. Mounting:
    a. As indicated in drawings.

8. Furnish cable, field preamplifiers, and signal conditioners as required to maintain accuracy from sensor to terminal device.

9. Controller or transmitter shall be connected to the new level sensor and existing flow meter at the influent pump station and shall provide and record instantaneous flow rates and totalized flow

E. HMI:

1. Touch-screen programming, functioning through enclosure window without opening enclosure.
2. Display:

    a. Size: Four lines by 16 characters.
    b. Type: Backlit digital display.
    c. User-selectable engineering units.
    d. Readout of diagnostic error messages.

2.2 SOURCE QUALITY CONTROL

A. Section 014000 - Quality Requirements: Requirements for testing, inspection, and analysis.

B. Provide shop inspection and testing of completed assembly.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify that items provided by other Sections of Work are ready to receive Work of this Section.

3.2 INSTALLATION

A. Coordinate location and orientation of level probe assemblies with final equipment installations.

B. Ensure that instruments are located to be easily accessible for maintenance.

3.3 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.

B. Manufacturer Services: Furnish services of manufacturer's representative experienced in installation of products furnished under this Section for not less than 1 day on Site for installation, inspection, field testing, and instructing Owner's personnel in maintenance of equipment.

C. Equipment Acceptance:

1. Adjust, repair, modify, or replace components failing to perform as specified and rerun tests.
2. Make final adjustments to equipment under direction of manufacturer's representative.

D. Furnish installation certificate from equipment manufacturer's representative attesting that equipment has been properly installed and is ready for startup and testing.

3.4 DEMONSTRATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for demonstration and training.

B. Demonstrate equipment startup, shutdown, routine maintenance, and emergency repair procedures to Owner's personnel.

END OF SECTION 407213

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SECTION 432520.15 – INTERMEDIATE WATER PUMPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions, and all related Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes information related to the intermediate water pumps, motors, and accessories which are to be removed and replaced with the same equipment as existing, or Engineer's approved equal.

1. Or equal qualifiers must fit within the parameters of the existing piping.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Wiring Diagrams: For power, signal, and control wiring.

C. Shop Drawings.

D. Performance Data

1. Based on actual tests of similar equipment and include sufficient data to demonstrate suitability of both the pump and driver for the conditions specified.

2. The data shall include the type and make of pump, size, capacity, motor horsepower, motor speed, and performance curve, with design duty points clearly indicated.

E. All pertinent MSDS Sheets for materials used shall be provided.

1.4 CLOSEOUT SUBMITTALS

A. Closeout Submittals must be received and accepted by Engineer and Owner before the Project can be considered Substantially Complete.

B. Operation and maintenance data.

C. Provide duplicate or photocopies of stamped nameplates of each pump and motor provided.

D. Start-up reports.

1.5 QUALITY ASSURANCE

A. Materials and Workmanship shall be in accordance with the following standards as referenced herein.
1. ANSI - American National Standards Institute.
2. ASTM - American Society for Testing and Materials.
3. AWS - American Welding Society.
4. HI - Hydraulic Institute.
5. IEEE - Institute of Electrical and Electronics Engineers.
6. NEMA - National Electrical Manufacturers Association.
7. AFBMA - Anti-Friction Bearing Manufacturers Association.
8. API - American Petroleum Institute.

B. Shop Pump Test

1. Submit performance test data based on testing of each pump furnished that is 30 HP and over, unless noted otherwise.

2. Perform performance tests in accordance with the Test Code of the HI except as modified herein and demonstrate compliance with the operating conditions specified.

3. Notify and afford the Engineer the opportunity to witness the test on pumps larger than 100 HP.

4. Base the pump test acceptance criteria on HI Level 11A11 performance.

1.6 DELIVERY, STORAGE, AND HADNLING

A. Delivery

1. Ship all units assembled as much as practical.
2. Label all units with all labeling intact and legible with item name, model number, size, and manufacturer's name.

B. Storage

1. Store all units, accessories, and components in the manufacturer's original package, under cover and protected from damage.
2. Maintain a grease coating on all bearings and shafts to prevent corrosion.
3. Turn pump shafts at intervals recommended by the pump manufacturer.

C. Handling

1. Handle all units and components in accordance with the manufacturer's instructions.
2. Use lifting rings and canvas harnesses for lifting to prevent scratching or abrading finished surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. The existing pumps were manufactured by Peerless Pumps, Incorporated.

2.2 PUMPS, MOTORS, AND ACCESSORIES

A. Close Coupled Vertical In-Line Water Pumps

1. Duty point: 400 GPM @ 95' TDH.

2. Complete rebuild water pump to an as new state.

a. All castings shall be free of warp, fins, gas and pit holes, and other defects that might impair strength or appearance.

3. Pump: Radially split cast-iron casing with suction and discharge flanges machined to ASME B16.1, Class 125 dimensions, unless otherwise indicated.

a. Impeller: Cast bronze of construction to match fire pump, statically and dynamically balanced, and keyed to shaft.

b. Wear Rings: Replaceable, bronze.

c. Shaft and Sleeve: Steel shaft with bronze sleeve.

1) Shaft Bearings: Grease-lubricated ball bearings in cast-iron housing.

d. Seals: Stuffing box with minimum of four rings of graphite-impregnated braided yarn and bronze packing gland.

B. Motor:

1. Motor Driver: 15 HP, 3600 RPM, 3-phase, 60 Hz, TEFC, 215JMV frame motor.

2. Shaft

a. Stainless steel with factory-sealed, grease-lubricated ball bearings

PART 3 - EXECUTION

3.1 EXAMINATION

A. Site Verification of Conditions. Before installation of equipment, verify that:

1. All clearances have been met.

2. Bases, anchors, supports, and openings are located correctly and are of the proper size and material.

B. Variations: Correct any variations from the requirements shown or required by the manufacturer at no additional cost to the Owner. Submit all methods of correction in writing.

3.2 PREPARATION

A. Protect all surface areas from damage. Protect all finished floors with a waterproof, oil-resistant cover to prevent staining from oil and/or grease.

3.3 INSTALLATION

A. General: The existing pumps shall be removed from service to be completely disassembled, cleaned, and inspected. Upon completion of the inspection of the pumps they will be rebuilt. The rebuild will consist of providing and installing all new Peerless OEM parts. The minimum parts required will consist of a new bronze impeller, bronze casing wear ring, mechanical seal, all gaskets' seals, and miscellaneous parts. If signs of wear were noted during the inspection stage the pump casing and/or stuffing box/adaptor they will need to be replaced.

B. Piping as shown is typical for the specified pump. Actual pump piping connections shall vary among pump manufacturers. Coordinate pump piping connections with pump supplier and piping supplier.

C. Set anchor rods in accordance with the approved manufacturer's conforming submittals.

D. Lubrication: Furnish and apply an initial supply of grease and oil as recommended by the manufacturer. Grease and oil the equipment throughout all testing until substantial completion.

E. Base: Anchor and grout the base in accordance with the manufacturer's recommendations. Connect base drain to nearest floor drain.

F. Interface with Other Products
1. Complete all electrical power and control connections under Division 26 – Electrical.
2. Install and connect all piping.
3. Perform field quality control as specified in this specification.

3.4 REPAIRS AND RESTORATION

A. Repair or replace any damage to the pump or motor or chips, dents, scratches, stains, or other disfiguring of surrounding floors, walls and/or accessories to the satisfaction of the Owner and/or Engineer at no additional cost to the Owner.

3.5 FIELD QUALITY CONTROL

A. Manufacturer's Field Service and Start-Up

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SECTION 500000 – TEMPORARY POTABLE WATER PRE-TREATMENT UNIT PERFORMANCE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions, and all related Specification Sections, apply to this Section.

1.2 SUMMARY

A. The Contractor shall furnish, install, and place into satisfactory operating condition a temporary potable water pre-treatment unit as described in these specifications which can meet conditions described in this specification. The equipment supplied under this specification shall be installed at locations shown on the drawings.

B. The equipment shall remain in operation while the existing Lamella Plate Settler, flocculator, and rapid mix chamber at the water treatment plant are drained, cleaned, inspected, and, if needed, repaired.

C. The Contractor may be responsible to provide an electrical transformer on site if the required electrical service is different than 240volt/3 phase.

1.3 EXISTING WATER TREATMENT PLANT CONDITIONS

A. The water treatment plant utilizes a surface water reservoir as its raw water source.

B. The water treatment plant typically operates at a flowrate of 400 GPM.

C. Available power at the site is 240v, 3-phase.

1.4 CONDITIONS FOR EQUIPMENT

A. The equipment must be capable of providing pre-treatment functions consisting of rapid mix, flocculation, and sedimentation ahead of existing pressure filters within the water treatment plant.

B. The equipment must be able to operate in an environment where freezing occurs.

C. If the equipment requires backflushing or backwashing to remove settled particles, the equipment can be plumbed to the existing sedimentation basin at the water treatment plant.

D. Outlet water quality from the equipment must be within the range of 2.5 – 3.0 NTUs

1. The typical flowrate of the water treatment plant can be lowered to approximately 250-300gpm if required, though it is not preferred.

1.5 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate installation and startup of Work of this Section with Engineer.

1.6 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit manufacturer's product data for system materials and component equipment.

C. Shop Drawings:

1. Indicate system materials and component equipment, including detailed wiring and control diagrams.
2. Indicate complete information concerning fabrication, installation, anchoring, fasteners, and other details.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1. Certify installation is completed according to manufacturer's instructions and that equipment is ready for startup, testing, and operation.
2. Submit manufacturer's affidavit certifying tank(s) have been designed to resist loading and attest to structural adequacy; calculations are not to be submitted.

E. Delegated Design Submittals: Submit signed and sealed Shop Drawings with design calculations and assumptions for tanks, railings, and other structural components.

F. Manufacturer's Instructions: Submit detail instructions on installation requirements, including storage and handling procedures, anchoring, and layout.

G. Source Quality-Control Submittals: Indicate results of factory tests and inspections.

H. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

I. Manufacturer Reports: Indicate results of manufacturer's inspections and instructions issued.

J. Qualifications Statements:

1. Submit qualifications for manufacturer, installer, and licensed professional.
2. Submit manufacturer's approval of installer.

K. A copy of this specification section, with addendum updates included, and all referenced and applicable sections, with addendum updates included, with each paragraph check-marked to

indicate specification compliance or marked to indicate requested deviations from specification requirements. Check marks (✓) shall denote full compliance with a paragraph as a whole. If deviations from the specifications are indicated, and therefore requested by the Contractor, each deviation shall be underlined and denoted by a number in the margin to the right of the identified paragraph, referenced to a detailed written explanation of the reasons for requesting the deviation. The Engineer shall be the final authority for determining acceptability of requested deviations. The remaining portions of the paragraph not underlined shall signify compliance on the part of the Contractor with the specifications. Failure to include a copy of the marked-up specification sections, along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration.

PART 2 – PRODUCTS - Not Used

3.1 INSTALLATION AND OPERATING INSTRUCTIONS

A. The contractor shall install the equipment in accordance with the manufacturer's requirements.

B. The tie-ins to and from the portable unit shall be made by the General Contractor, including all piping, valves, etc.

3.2 STARTUP AND COMMISSIONING

A. The Manufacturer or Supplier shall provide a trained technician on the project site for equipment start-up assistance and inspection of installed equipment for proper operation for a minimum of four (4) eight-hour days.

B. After the contractor has installed the equipment and it is capable of operation, the equipment manufacturer shall furnish a qualified representative for a minimum of four (4) days (up to 32 hours) to inspect the equipment and to supervise field testing and start-up for the Contractor and Owner.

C. The Contractor shall provide all required fluids including but not limited to fuel, grease, oils, lubricants, etc. for start-up and commissioning of the equipment. Following successful start-up, the Contractor shall fill all fluid tanks including but not limited to fuel, grease, oils, lubricants, etc.

D. The Owner will be responsible to pay for and provide the chemicals, electricity, labor for chemical injection, and monitoring of the operations of the pre-treatment unit while it is in operation.

3.3 TRAINING

A. The Manufacturer shall provide training for Owner's personnel once the system is placed into successful operation. Training shall last a total of four (4) eight-hour days.

B. Training shall be provided on-site to all appropriate personnel designated by Mountain Top

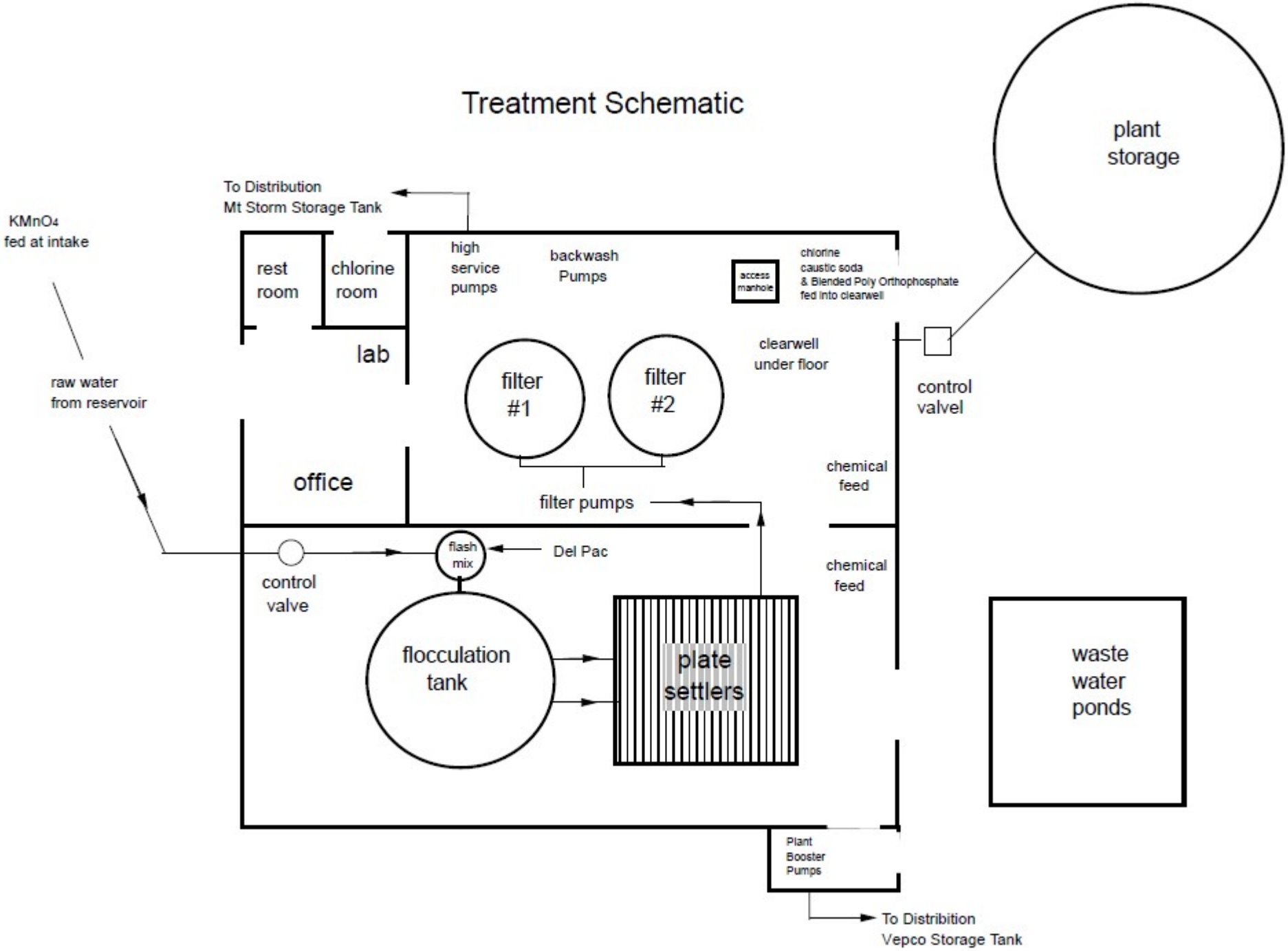
Public Service District. Training shall include instruction in the theory of system operation and hands-on demonstration of equipment functions and adjustment. Tuning, testing, and service procedures shall be included. Mountain Top Public Service District shall be given proper notice prior to training sessions, and the manufacturer shall verify acceptance of the training schedule by Mountain Top Public Service District.

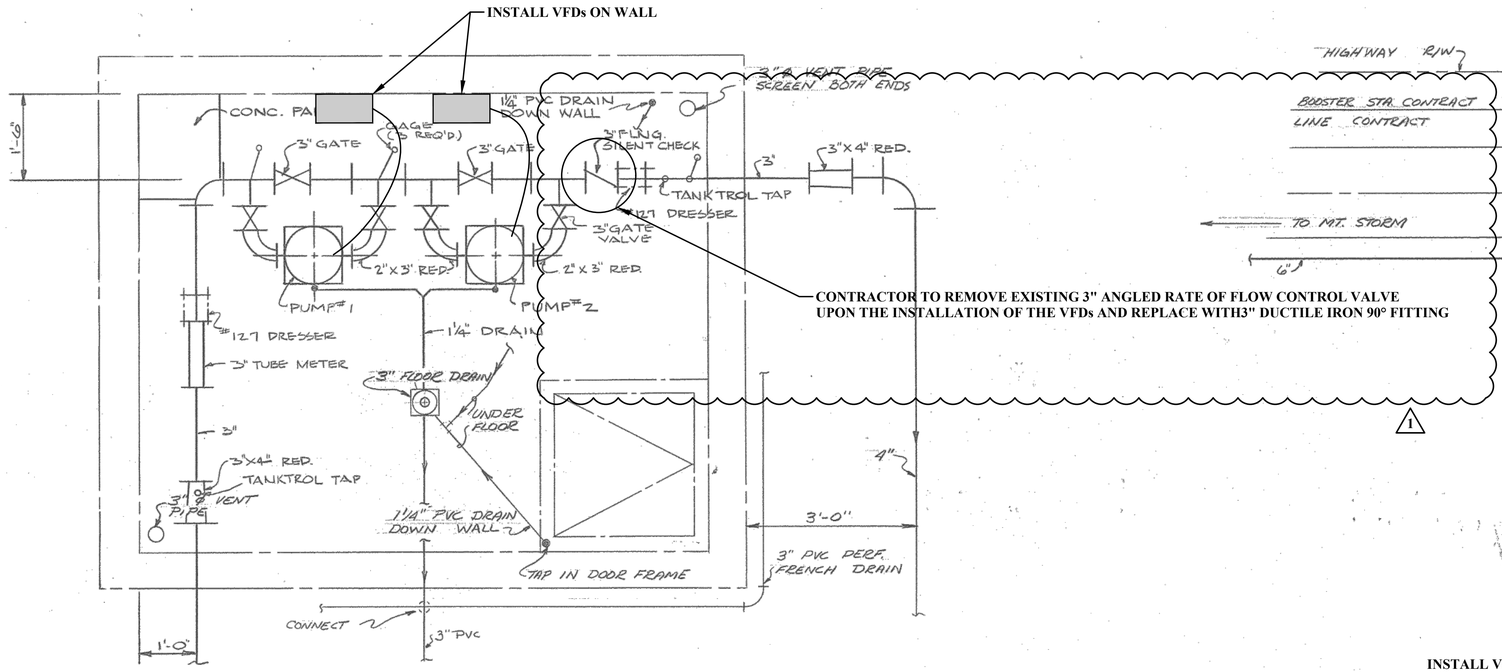
C. The duration of the training session shall be four (4) days at 8 hours per day and shall be subject to Mountain Top Public Service District's satisfaction.

D. Training shall not be performed until the entire system has been started-up, tested, and is fully functional. Travel time and expenses shall be included in the Contractor's lump sum bid price #3 for providing a temporary raw water pre-treatment setup and removal upon completion of work.

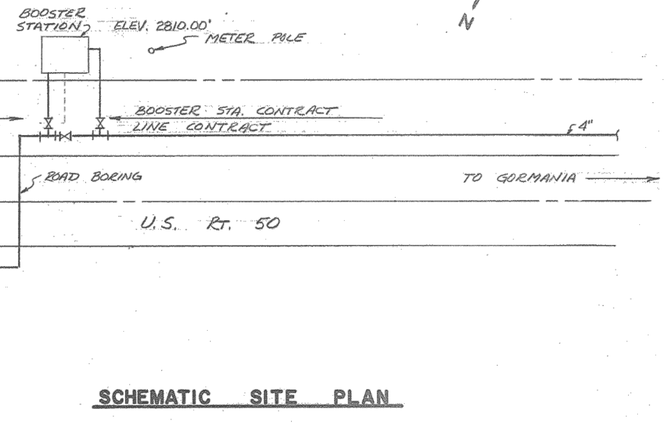
END OF SECTION 500000

Treatment Schematic



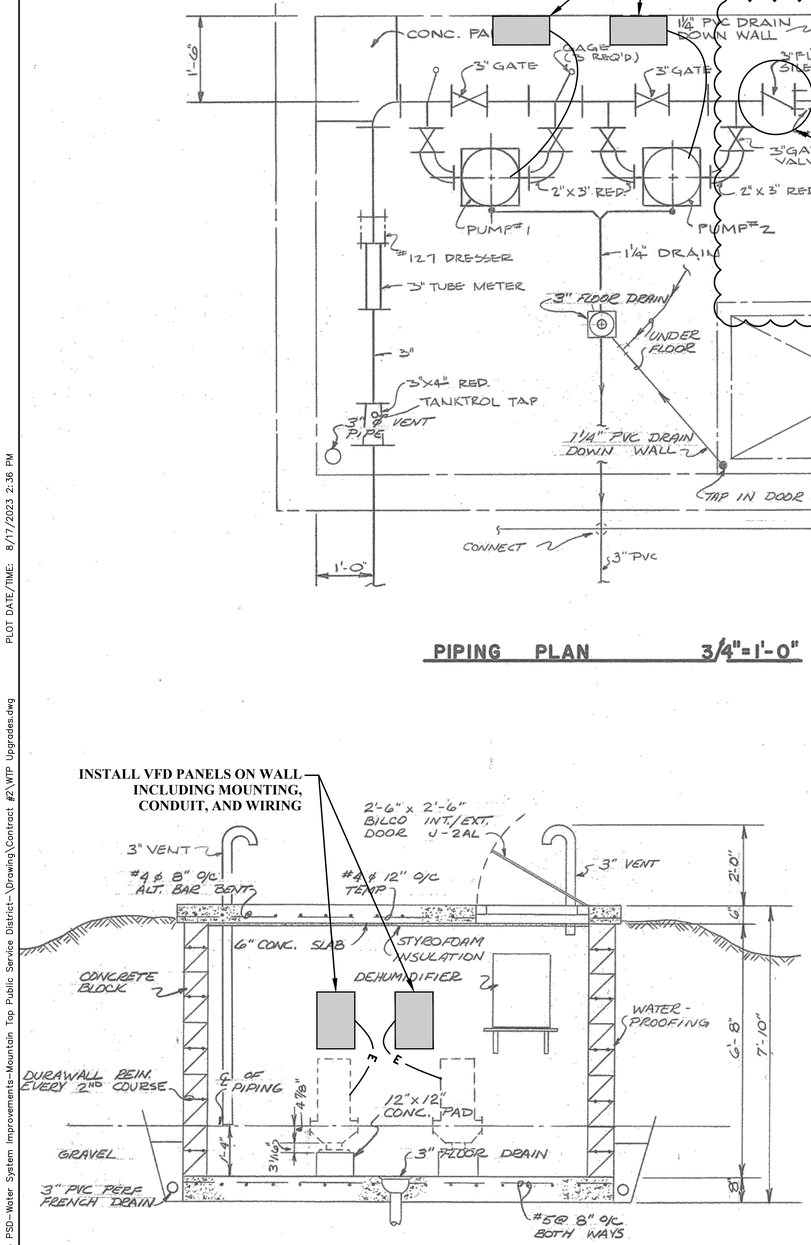


PIPING PLAN 3/4"=1'-0"



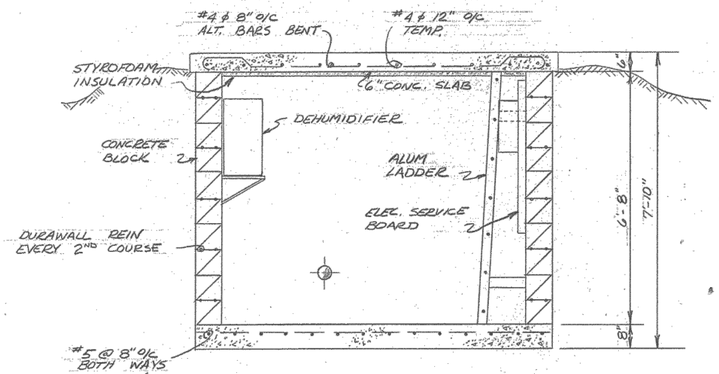
SCHEMATIC SITE PLAN

BASE DRAWING:
MT. TOP PSD
RECORD DRAWING
ENGINEER: CERRONE AND VAUGHN INC.
DATE: 12/19/1975

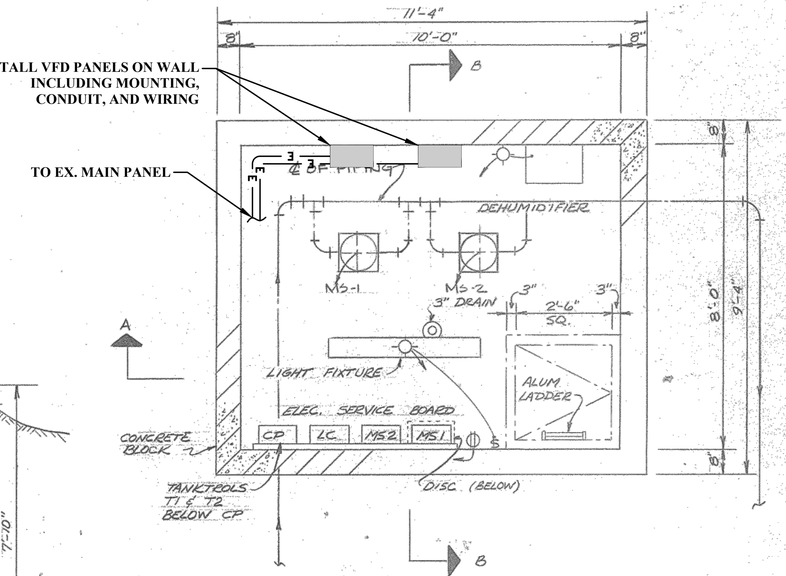


SECTION A-A 1/2"=1'-0"

NOTE:
SEE SHEET #E2 FOR ELECTRICAL DIAGRAM



SECTION B-B 1/2"=1'-0"



PLAN 1/2"=1'-0"

NO.	BY	DATE	DESCRIPTION
1	AS	8/17/23	ADDENDUM #1

WEST VIRGINIA 811

SCALE:	AS SHOWN
DRAWN:	A. SAYRE DATE: 6/2022
CHECKED:	R. WATSON DATE: 8/2022
APPROVED:	DATE:
SURVEY DATE:	
SURVEY BY:	
FIELD BOOK No.:	

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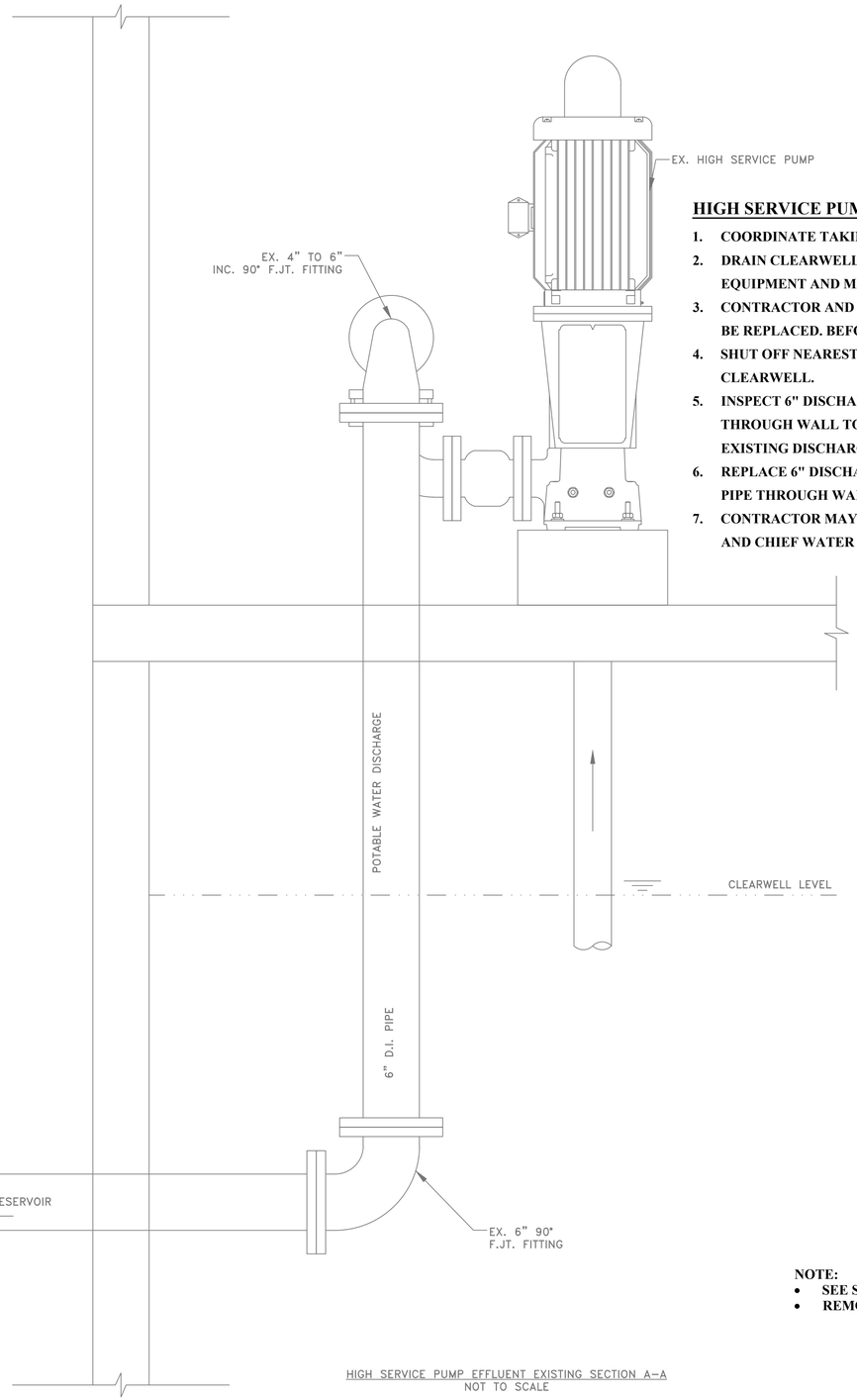
PHONE (304) 624-4108 • FAX (304) 624-7831

PHASE No.	
CONTRACT No.	2
PROJECT No.	101-010-10103

MOUNTAIN TOP PUBLIC SERVICE DISTRICT
WATER TREATMENT
PLANT IMPROVEMENTS
GRANT COUNTY, WEST VIRGINIA
ROUTE 50 BOOSTER STATION UPGRADES

SHEET No. 12

PLOT DATE/TIME: 8/17/2023 2:36 PM
LAYOUT TAB: 12-BPS
CAD FILE: R:\010\010-10103.00-Mt Top PSD-Water System Improvements-Mountain Top Public Service District-\Drawing\Contract #2\WTP Upgrades.dwg

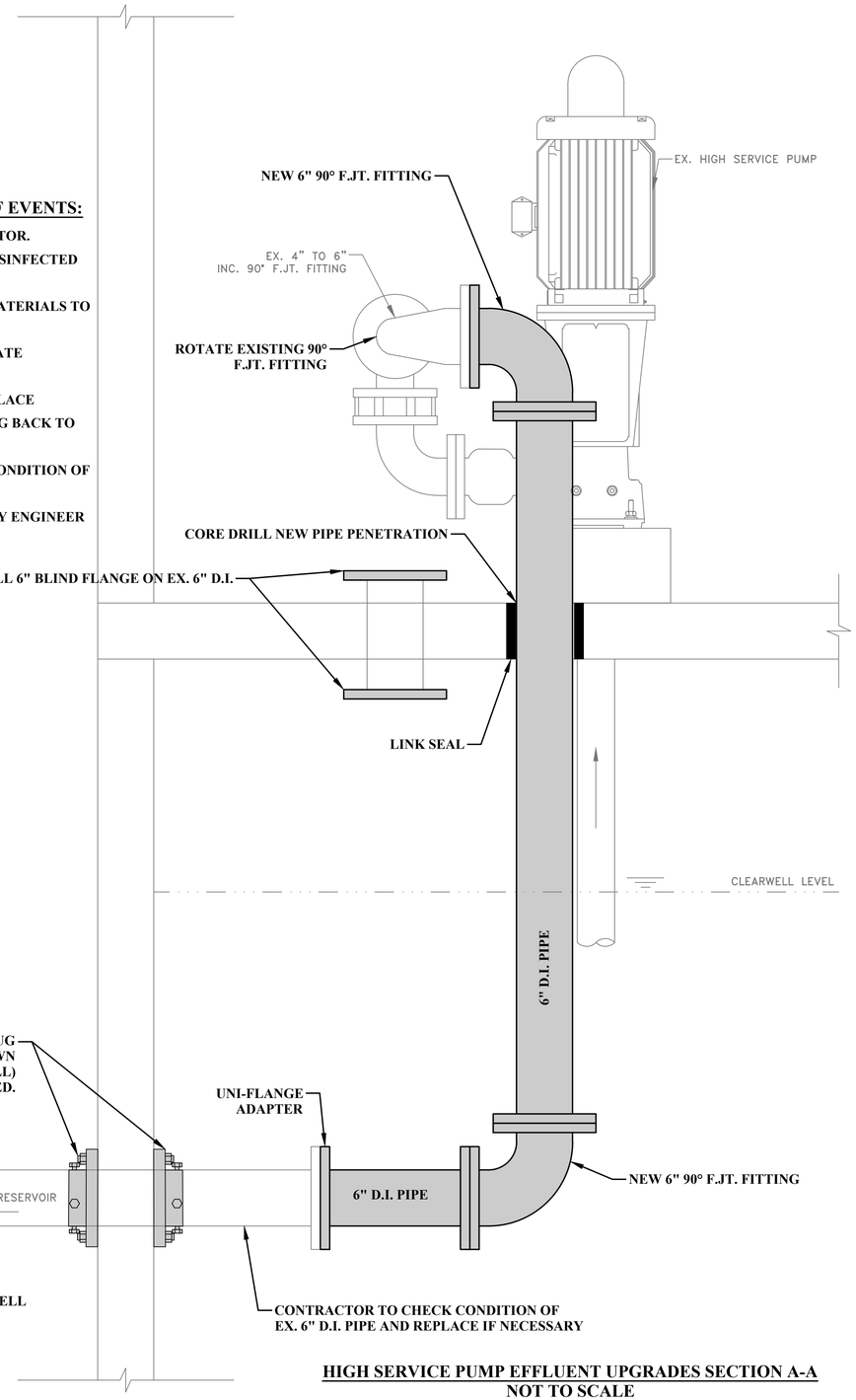


HIGH SERVICE PUMP EFFLUENT EXISTING SECTION A–A
NOT TO SCALE

HIGH SERVICE PUMP EFFLUENT UPGRADES CONSTRUCTION SEQUENCE OF EVENTS:

1. COORDINATE TAKING CLEARWELL OUT OF SERVICE WITH CHIEF WATER PLANT OPERATOR.
2. DRAIN CLEARWELL AS MUCH AS POSSIBLE AND PREP ALL WORKERS ENTERING WITH DISINFECTED EQUIPMENT AND MATERIAL.
3. CONTRACTOR AND ENGINEER TO FIRST VERIFY DIMENSIONS AND CONDITION OF ALL MATERIALS TO BE REPLACED. BEFORE INITIATING WORK, BE SURE ALL MATERIAL IS ON SITE.
4. SHUT OFF NEAREST GATE VALVE OUTSIDE IN DISTRIBUTION SYSTEM IN ORDER TO ISOLATE CLEARWELL.
5. INSPECT 6" DISCHARGE LINE THROUGH OUTSIDE WALL, IF OK, LEAVE AS IS. IF NOT, REPLACE THROUGH WALL TO OUTSIDE AND INSTALL NEW M.JT. SOLID SLEEVE OR HYMAX FITTING BACK TO EXISTING DISCHARGE LINE.
6. REPLACE 6" DISCHARGE THROUGH FLOOR TO AND INCLUDING 90° FITTING. BASED ON CONDITION OF PIPE THROUGH WALL WILL DETERMINE WHAT TO LEAVE IN PLACE.
7. CONTRACTOR MAY USE HDPE FUSED PIPE AS AN ALTERNATE AFTER BEING APPROVED BY ENGINEER AND CHIEF WATER PLANT OPERATOR.

NOTE:
- SEE SHEET #2 FOR LOCATION OF THESE FACILITIES
- REMOVE PORTION OF 6" D.I. PIPE AND EX. 6" 90° FITTING WITHIN CLEARWELL



HIGH SERVICE PUMP EFFLUENT UPGRADES SECTION A-A
NOT TO SCALE

ADDENDUM #1

NO.	BY	DATE	DESCRIPTION
1	AS	8/17/23	ADDENDUM #1

SCALE: AS SHOWN	
DRAWN: A. SAYRE	DATE: 6/2022
CHECKED:R. WATSON	DATE: 8/2022
APPROVED:	DATE:
SURVEY DATE:	
SURVEY BY:	
FIELD BOOK No.:	

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PHASE No.	
CONTRACT No.	2
PROJECT No.	101-010-10103

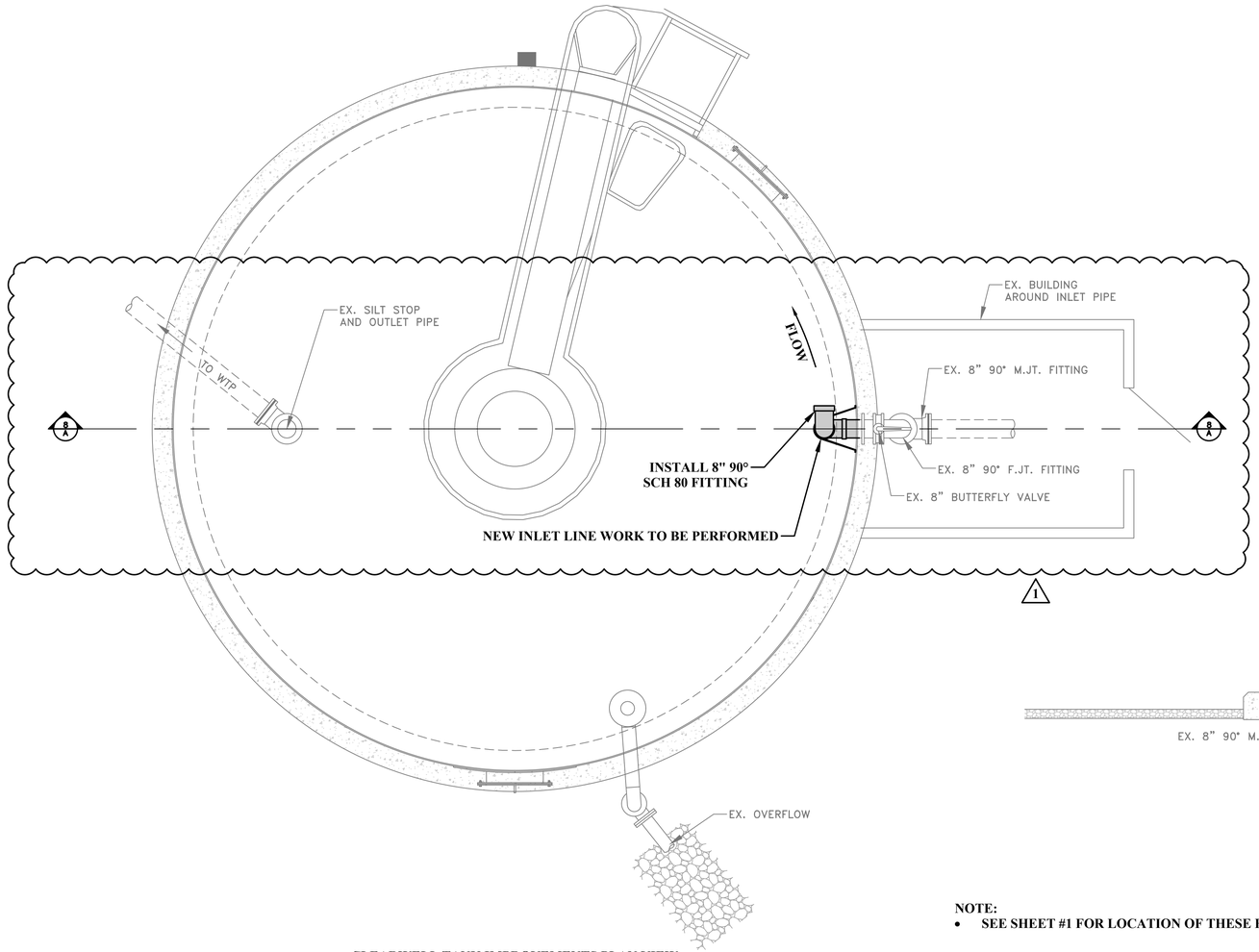
MOUNTAIN TOP PUBLIC SERVICE DISTRICT
WATER TREATMENT
PLANT IMPROVEMENTS
GRANT COUNTY, WEST VIRGINIA
HIGH SERVICE LINE UPGRADES

SHEET No. 10

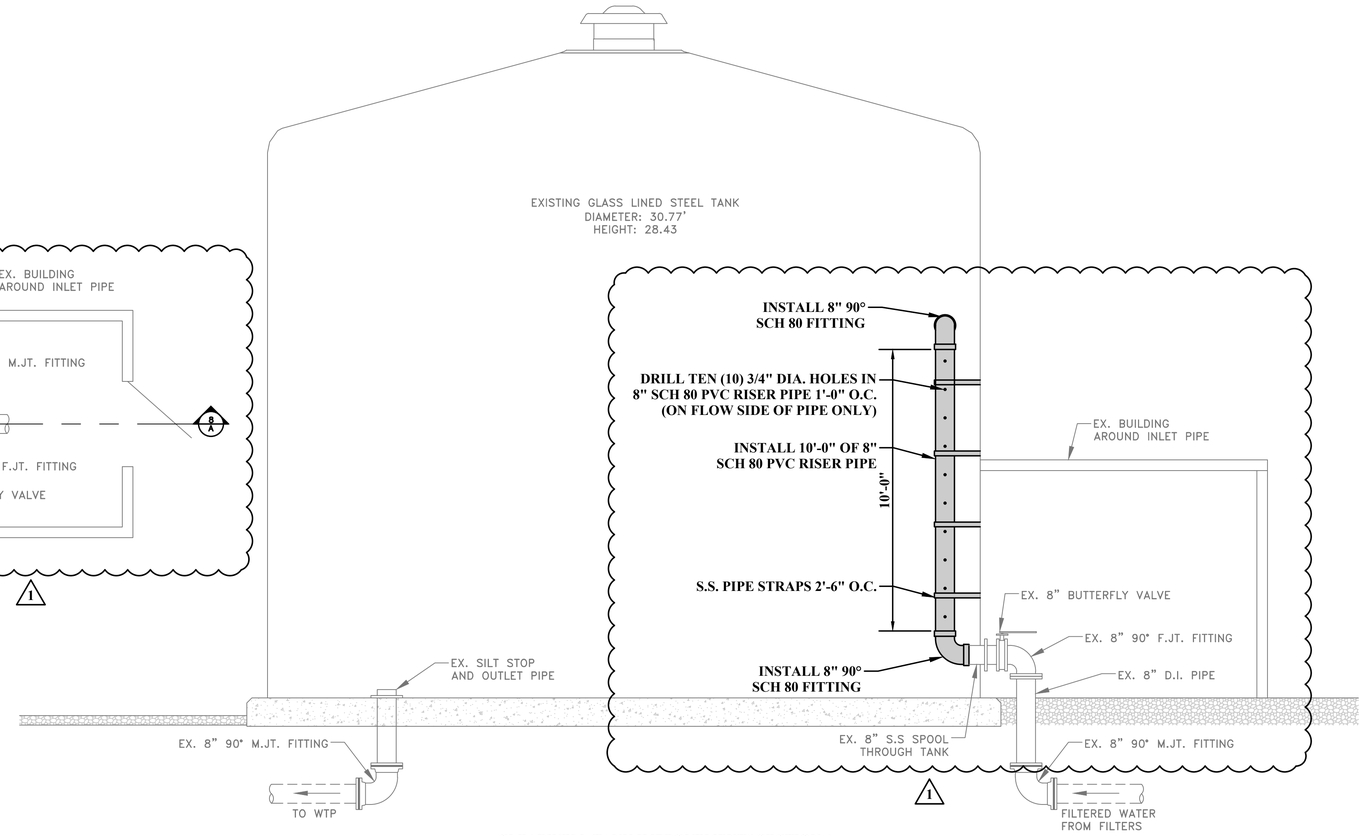
LAYOUT TAB: 10 HIGH SERVICE EFFLUENT
CAD FILE: R:\010\010-10103.00-Mt Top PSD-Water System Improvements-Mountain Top Public Service District-\Drawing\Contract #2\WTP Upgrades.dwg
PLOT DATE/TIME: 8/17/2023 2:38 PM

CLEARWELL TANK IMPROVEMENTS CONSTRUCTION SEQUENCE OF EVENTS:

1. CONTRACTOR MAY ONLY HAVE TANK OUT OF SERVICE FOR 6 HOURS MAXIMUM.
2. COORDINATE WITH CHIEF WATER PLANT OPERATOR IN TAKING TANK OUT OF SERVICE TO PERFORM WORK, INSPECT PRIOR TO WORK, OR TO DO THIS WORK IN CONJUNCTION WITH OTHER WORK IN ORDER TO MINIMIZE DOWN TIME.
3. MID ATLANTIC STORAGE SYSTEMS, INC., THIS PARTICULAR TANK CONSTRUCTOR, SHALL DO THE WORK INSIDE.
4. AFTER AN INSPECTION OF THE TANK INSIDE BY MEANS OF A DRONE OR ACTUALLY GOING INTO ENTRYWAY, ORDER ALL EQUIPMENT AND MATERIAL NECESSARY TO DO WORK.
5. CONTRACTOR'S WORK FORCE ENTERING THE TANK MUST BE CLEAN, CHLORINATED, AND DISINFECTED IN ORDER TO PUT TANK INTO SERVICE QUICKLY.
6. CHIEF WATER PLANT OPERATOR TO DRAIN TANK IN ORDER TO ALLOW CONTRACTOR ENTRY.
7. THIS WORK COULD BE DONE AT SAME TIME AS LEVEL CONTROL VALVE AND/OR CLEARWELL PIPING TO MINIMIZE DOWNTIME.
8. CLEAN INSIDE OF TANK WHILE WORK IS BEING DONE.
9. STERILIZE TANK AND COORDINATE WITH OPERATOR TO PUT BACK IN SERVICE IN ACCORDANCE WITH AWWA STANDARDS.



CLEARWELL TANK IMPROVEMENTS PLAN VIEW
NOT TO SCALE



CLEARWELL TANK IMPROVEMENTS SECTION A-A
NOT TO SCALE

NOTE:
- **SEE SHEET #1 FOR LOCATION OF THESE FACILITIES**

NO.	BY	DATE	DESCRIPTION
1	AS	8/17/23	ADDENDUM #1

WEST VIRGINIA 811

SCALE: AS SHOWN	
DRAWN: A. SAYRE	DATE: 6/2022
CHECKED:R. WATSON	DATE: 8/2022
APPROVED:	DATE:
SURVEY DATE:	
SURVEY BY:	
FIELD BOOK No.:	

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PHASE No.	
CONTRACT No.	2
PROJECT No.	101-010-10103

MOUNTAIN TOP PUBLIC SERVICE DISTRICT
WATER TREATMENT
PLANT IMPROVEMENTS
GRANT COUNTY, WEST VIRGINIA
CLEARWELL TANK IMPROVEMENTS

SHEET No.
8

PLOT DATE/TIME: 8/17/2023 12:06 PM
LAYOUT TAB: 8-TANK REPLACEMENT
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