



ENGINEERING
ARCHITECTURE
FIELD SERVICES

**CHESTNUT RIDGE PUBLIC SERVICE DISTRICT
BARBOUR COUNTY, WV**

CONTRACT #1 – WATER SYSTEM IMPROVEMENTS

ADDENDUM #1

NOVEMBER 4, 2022

THRASHER PROJECT #101-010-1052

TO WHOM IT MAY CONCERN:

A non-mandatory Pre-Bid Conference was held on Wednesday, October 26, 2022, for the above-referenced project. The Pre-Bid Conference notes are attached to and made part of this Addendum. A copy of the sign in sheet is included in this Addendum. The following are clarifications and responses to questions for the above reference project.

A. GENERAL

1. **THE BID FORM HAS BEEN REVISED. YOU MUST USE THE REVISED BID FORM WHEN PREPARING YOUR BID PACKAGE FOR THIS PROJECT.**
2. If you wish to perform a visit to any of the locations in the plans, please contact the Chestnut Ridge PSD Office at (304) 457-4935 or Contact Sonny Bolyard at (304) 677-0490 (Operator) between the hours of 8:00 am and 4:00 pm to coordinate a site visit.

B. SPECIFICATIONS

Specification Section 012000 – Price and Payment Procedures. Please discard the version previously provided and use the attached.

Specification Section 099050 – Repainting of Steel Water Storage Facility. Please discard the version previously provided and use the attached.

Specification Section 331213 – Water Service Connections. Please discard the version previously provided and use the attached.

Specification Section 331900 – Water Utility Metering Equipment. Please discard the version previously provided and use the attached.

Specification Section 434111 – Glass Lined Bolted Steel Tanks. Please discard the version previously provided and use the attached.

Specification Section 434113 – Welded Steel Tanks. Please discard the version previously provided and use the attached.

C. DRAWINGS

Plan Sheet T5B has been updated to correct the effective storage volume of the New Clemtown Water Storage Tank. Please discard the version previously provided and use the attached.

Plan Sheet T5D has been updated to correct the effective storage volume of the New Clemtown Water Storage Tank. Please discard the version previously provided and use the attached.

D. QUESTIONS AND RESPONSES

QUESTION

1. What are the Engineer's Estimates for each contract?

RESPONSE

The Engineer's Estimate for Contract #1 is \$3,100,000. The Engineer's Estimate for Contracts #2 is \$550,000. The Engineer's Estimate for Contract #3 is \$410,000.

QUESTION

2. Are AIS or BABA required?

RESPONSE

American Iron and Steel (AIS) requirements are applicable to this project.
Buy America Build America (BABA) requirements are applicable to for this project.

QUESTION

3. How quickly are you looking for this work to start?

RESPONSE

There is a 90-day bid hold for this project.

QUESTION

4. On the booster stations and keeping them in service, the Clemtown booster, due to space constraints, looks like it will have to have a pump set up outside the station?

RESPONSE

Keeping the Clemtown booster station in service will be left to the contractor's discretion. This can be accomplished by the following:

- Filling the existing 12,000-gallon Clemtown water storage tank and performing the necessary pump station upgrades while the existing 12,000-gallon water storage tank keeps all necessary customers in service. It is estimated by the Owner that the existing 12,000-gallon Clemtown water storage tank at full capacity can provide service to customers for approximately 6-8 hours before needing to be filled. It will be the contractor's responsibility to ensure pump station is re-plumbed and pumping operations are able to commence at the times when the existing Clemtown water storage tank will need filled to ensure customers continue to be served.
- Sequencing construction activities to first construct and put into operation the new 54,000-gallon Clemtown water storage tank and then filling the new water storage tank to keep all necessary customers in service while pump station upgrades are performed. Performing construction of the new 54,000-gallon Clemtown water storage tank prior to performing the Clemtown booster station rehabilitation would provide for a longer, allowable down time of the booster station while rehabilitation work is performed.
- Setting up a temporary bypass pumping operation to continue pumping water to the Clemtown water storage tank while pump station upgrades take place
- Contractor's decision

The above methods are suggestions of the Project Manager. This operation will be left up to the contractor's decision on how to keep the customers in service that are supplied water past the discharge point of the Clemtown pump station. Cost of maintaining water service shall be included in the cost of the booster station rehabilitation for all booster station rehabilitations.

QUESTION

5. Does the new Clemtown Water Storage Tank have a warranty on it?

RESPONSE

Specification Sections 434111 Glass Lined Bolted Steel Tanks and 434113 Welded Steel Tanks have been revised to indicate a 10-year manufacturer's warranty with a 5-year warranty bond. Section 1.12.B for each previously mentioned specification section have been revised to describe the requirements of the manufacturer's warranty.

QUESTION

6. What are the tank options that we have for the project?

RESPONSE

There are two options for tanks for the new Clemtown Water Storage Tank. These are Glass-Lined Bolted Steel or Welded-Steel. The options for the new Clemtown Water Storage Tank can be seen in the Contract #1 Water System Improvements Plan Sheets #T5 – T5F as well in specification sections Bolted Steel Tanks – 434111 and Welded Steel Tanks – 434113.

QUESTION

7. Is there a color requirement for the tanks or is cobalt blue color acceptable for the tanks?

RESPONSE

Cobalt Blue is acceptable for the color of the New Clemtown water storage tank. The Contractor for Contract #1 shall supply a color chart for Owner selection of the tanks to be repainted in Contract #1.

QUESTION

8. Can you provide values for the following items in regard to design of the New 54,000 Gallon Clemtown Water Storage Tank?

Specific Gravity:
Design Freeboard:
Risk Category:
Roof Snow Load:
Site Class:
Ss:
S1:

RESPONSE

Specific Gravity = 1
Design Freeboard = 12"
Risk Category = 3
Roof Snow Load = 30 psf
Site Class = D
Ss = 0.112
S1 = 0.057

QUESTION

9. Will the contractor be paid for aggregate on the tank roads under bid items 3" Clean, Road Base Stone and 1.5" Crusher Run Stone? Or does this work fall into the various tank items as "Access Road Improvements"?

RESPONSE

Aggregate on tank roads as well as areas around tanks, booster stations, and other areas noted as "Full Width Roadway Crushed Stone Repair" shall be paid for by the ton according to bid items 3" Clean, Road Base Stone and 1.5" Crusher Run Stone.

QUESTION

10. Where "Full Width Roadway Crushed Stone Repair" is shown on the plans, will this be paid under bid item 1.5" Crusher Run Stone?

RESPONSE

Yes, locations on the plans labeled as "Full Width Roadway Crushed Stone Repair" shall be paid under Bid Item 1.5" Crusher Run Stone.

QUESTION

11. In areas where there is an existing WVDOH rip-rap ditch will the contractor be paid under the corresponding item to replace it, or does the item only cover areas where it is to be newly installed?

RESPONSE

The contractor is required to reinstall existing WVDOH Rock Lined Ditch where shown in the plans. Reinstallation of WVDOH Rock Lined Ditch shall be paid under Bid Item WVDOH Rock Lined Ditch. It will be left to the contractor's discretion, subject to approval by the West Virginia Department of Highways, whether they choose to sort the material and reinstall existing aggregate for the rock lined ditch or install new WVDOH Rock Lined Ditch.

QUESTION

12. Are the VFDs to be provided as part of the contract?

RESPONSE

VFDs will be furnished and installed as a part of this contract. They shall be designed and sized accordingly by the electrical sub-contractor.

E. CLARIFICATIONS

1. The contract time for Contract #1 is being extended to 365 days to substantial completion, 395 days to final completion.
2. Contract #1 will not be responsible for the purchase of any residential water meters. Contract #1 will be responsible for removing the water meters located in the existing meter wells and installing the water meters (new water meters replaced as part of Contract #2 or the existing water meters) in the new meter wells as a part of the waterline work in Contract #1. Contract #1 will be responsible for the purchase and installation of all utility metering water meters in booster pumps stations as well as the New Bowmar Hill PRV and Solenoid Shut Off Valve as discussed in the Pre Bid Notes. The utility metering water meters shall be of the same manufacturer of residential water meters.
3. Federal Davis-Bacon Wage Rates are required for this Contract. Wage Rates were checked on November 4, 2022. No update to Wage Rates have been made since the Wage Rates provided in the Contract Documents and Specifications.

F. PRE-BID "APPROVED EQUAL" EQUIPMENT, MATERIALS, AND/OR PRODUCTS

1. Specification Section 333216 – Packaged Utility Water Pumping Stations

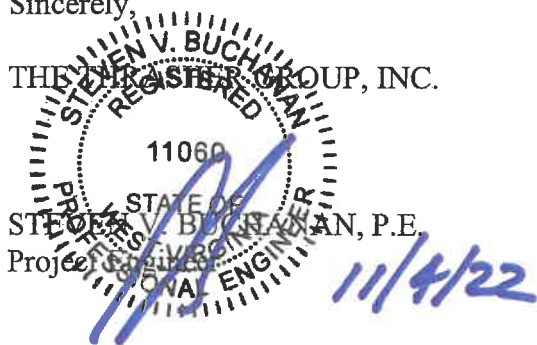
Engineered Fluid, Inc. as submitted Danny Lusk, dlusk@wcweil.com, Office Phone (304) 776-5665

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 1:00 pm local time on Wednesday, November 16, 2022, at 20 Columbia Street, Philippi, WV. After 1:00 pm local time on November 16, 2022, bids will be received until 2:00 pm local time at the Philippi City Building, City Council Chambers, 344 South Main Street, Philippi, WV. The bids will then be publicly opened and read aloud at 2:00 pm local time at the Philippi City Building, City Council Chambers. The Bid opening will take place at the same location and room where the Pre-Bid Conference was held. Good luck to everyone and thank you for your interest in the project.

Sincerely,

THE WALKER GROUP, INC.

STEVEN V. BUCHANAN, P.E.
Professional Engineer
Project Engineer



Enclosures: Pre-Bid Sign-In Sheet
Pre-Bid Meeting Notes
C-410 Bid Form
Specification Sections: 12000 – Price and Payment Procedures
99050 – Repainting of Steel Water Storage Facility
331213 – Water Service Connections
331900 – Water Utility Metering Equipment
434111 – Glass Lined Bolted Steel Tanks
434113 – Welded Steel Tanks
Plan Sheets T5B & T5D

**CHESTNUT STREET PUBLIC SERVICE DISTRICT
BARBOUR COUNTY, WEST VIRGINIA
CONTRACT #1 - WATER SYSTEM IMPROVEMENTS
CONTRACT #2 - WATER METER REPLACEMENT
CONTRACT #3 - TELEMETRY**

**PRE-BID CONFERENCE
WEDNESDAY, OCTOBER 26, 2022**

Thrasher Project #010-01052

Name	Representing	Phone #	Email Address
Pete Martin	Gonday Enterprises	304-537-1974	gonday138@gmail.com
JOE PUGLEY	MASSI	740 604-9479	joe@midatlanticstorage.com
Seremy Wincos	Brian Vandevender Contracting	304-413-3109	Seremy.W@BAllenCo.com
Tony Closson	JT Allen Company	304-460-7424	TClosson@JTAllenCo.com
Rob Hoover	AJ Burk	304-644-3166	rchoover@ajburk.com
R. RICHMOND	FAMCO, INC	304-529-3328	r.richmond.famco@gmail.com
Wes Crowe	Ward W. Excavating/Rising Sun	304-669-0915	Ward@rising.sun.com
DEREK SEARS	FOSTER SUPPLY	304-553-6565	dsears@fostersupply.com

Name	Representing	Phone #	Email Address
CARY SMITH	REGION VII P3DC	304-472-6564	csmith@regionvii.com
Bobby Tenney	Specialty Groups, Inc	304-677-2629	btenney@sgiuu.com
Eric Sprouse	Bear Contracting	304-326-0160	estimating@bear-contracting.com
Jeremy Haynes	Performance Power Solutions	304-410-1443	jhaynes@performance-ps.com
Mary M. Polini	CRPSD (Board)	304-477-5373	mary.polini46@gmail.com
Shawn Young	IBEW Local 596	304-622-0151 ext. 14	syoung@ibew596.com
Keith Smith	C2G Engineering	304-922-5022	KSmith@C2Geng.com
Patrick Conn	Jennings Excavating Inc	304-288-5333	pconn@jenningsexcavatinginc.com
Vince Huck	NRUSI	724-747-8664	vhuck@nrusi.com
Angela Jean	Dans marine service	304-265-0188	dmsgrafter@aol.com

**CHESTNUT RIDGE PUBLIC SERVICE DISTRICT
BARBOUR COUNTY, WEST VIRGINIA
PROPOSED
CONTRACT #1 – WATER SYSTEM IMPROVEMENTS
THRASHER PROJECT #010-01052**

BID FORM

ARTICLE 1 – BID RECIPIENT

- 1.01 This Bid is submitted to:
*Chestnut Ridge Public Service District
20 Columbia Street
Philippi, WV 26416*
- 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 – BIDDER'S ACKNOWLEDGEMENTS

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

ARTICLE 3 – BIDDER'S REPRESENTATIONS

- 3.01 In submitting this Bid, Bidder represents that:
- A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.

Addendum Date

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- B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous

Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

- E. 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 any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.
- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. 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.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

- A. 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;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
 - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;
 - 2. "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;
 - 3. "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; and
 - 4. "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.

ARTICLE 5 – BASIS OF BID

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 Sanitary Sewer Improvements Project. The Project "Sequence of Construction" has been detailed in the Drawings and Specification Division 1, Project Summary, Section 1010, Part-2 Execution. The Bidder agrees to perform all the Work proposed for the total of the following Bid prices.

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

**PROPOSED
CONTRACT #1 – WATER SYSTEM IMPROVEMENTS
FOR THE

CHESTNUT RIDGE PUBLIC SERVICE DISTRICT
BARBOUR COUNTY, WEST VIRGINIA**

BID SCHEDULE

NOTE: Bid Unit 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	Quantity	Description with Unit Price Written	Unit Price	Total Price
1	LS	Mobilization/Demobilization		
			Dollars	
			Cents	
2	LS	Erosion and Sediment Control		
			Dollars	
			Cents	

Item	Quantity	Description with Unit Price Written	Unit Price	Total Price
3	2200 LF	6" HDPE DR 9 Waterline	Dollars Cents	
4	2000 LF	6" HDPE DR 11 Waterline	Dollars Cents	
5	13000 LF	6" HDPE DR 13.5 Waterline	Dollars Cents	
6	1500 LF	2" HDPE DR 9.0 Waterline	Dollars Cents	
7	400 LF	2" HDPE DR 13.5 Waterline	Dollars Cents	
8	20 LF	8" Steel Casing (Bore and Jack)	Dollars Cents	
9	150 LF	12" Steel Casing (Open Cut)	Dollars Cents	
10	130 LF	12" Steel Casing (Bore & Jack)	Dollars Cents	
11	900 LF	3/4" Polyethylene Service Tubing (Open Cut)	Dollars Cents	
12	600 LF	3/4" Polyethylene Service Tubing (Bore & Jack)	Dollars Cents	

Item	Quantity	Description with Unit Price Written	Unit Price	Total Price
13	250 LF	1" Polyethylene Service Tubing (Open Cut) _____ Dollars _____ Cents	_____	_____
14	14 LF	5/8" x 3/4" Low Pressure Single Meter Setting _____ Dollars _____ Cents	_____	_____
15	34 EA	5/8" x 3/4" High Pressure Single Meter Setting _____ Dollars _____ Cents	_____	_____
16	2 EA	Cut and Cap Existing 2" Water Line _____ Dollars _____ Cents	_____	_____
17	6 EA	Cut and Cap Existing 4" Water Line _____ Dollars _____ Cents	_____	_____
18	1 EA	Cut and Cap Existing 6" Water Line _____ Dollars _____ Cents	_____	_____
19	2 EA	Tie new 2" Waterline into Existing 2" Waterline _____ Dollars _____ Cents	_____	_____
20	2 EA	6" Hot Tap on Existing 6" Water Line _____ Dollars _____ Cents	_____	_____
21	2 EA	Tie new 6" HDPE Water Line into Existing 4" PVC Water Line _____ Dollars _____ Cents	_____	_____
22	4000 LF	WVDOH Rock Lined Ditch _____ Dollars _____ Cents	_____	_____

Item	Quantity	Description with Unit Price Written	Unit Price	Total Price
23	250 LF	WVDOH Type "B" Trench Repair _____ Dollars _____ Cents	_____	_____
24	1500 LF	WVDOH Type "C" Trench Repair _____ Dollars _____ Cents	_____	_____
25	1 EA	Fire Hydrant Assembly _____ _____	_____	_____
26	1 EA	Demolish Existing Fire Hydrant _____ _____	_____	_____
27	1 EA	2" Hidden Flushing Hydrant _____ Dollars _____ Cents	_____	_____
28	10 EA	Demolish Existing Gate Valve _____ Dollars _____ Cents	_____	_____
29	12 EA	6" Gate Valve Installation _____ Dollars _____ Cents	_____	_____
30	225 LF	1.5" Asphalt Mill and Overlay _____ Dollars _____ Cents	_____	_____
31	1 EA	Air Release Valve Assembly _____ Dollars _____ Cents	_____	_____

Item	Quantity	Description with Unit Price Written	Unit Price	Total Price
32	1 LS	Structure Demolition (Existing Booster Pump Station #1)	Dollars Cents	
33	1 LS	Structure Demolition (Existing Booster Pump Station #2)	Dollars Cents	
34	1 LS	Package Booster Pump Station #1 with Site Work, Complete	Dollars Cents	
35	1 LS	Package Booster Pump Station #2 with Site Work, Complete	Dollars Cents	
36	1 LS	Clemtown Booster Pump Station Rehabilitation, Complete	Dollars Cents	
37	1 LS	Richman Booster Pump Station Rehabilitation, Complete	Dollars Cents	
38	1 LS	Hiram Booster Pump Station Rehabilitation, Complete	Dollars Cents	
39	1 LS	Moatsville Booster Pump Station Rehabilitation, Complete	Dollars Cents	
40	1 LS	New Bowmar Hill PRV and Solenoid Shut Off Valve, Complete	Dollars Cents	
41	1 LS	Abandonment and Demolition of Existing Bowmar Hill PRV	Dollars Cents	

Item	Quantity	Description with Unit Price Written	Unit Price	Total Price
42	1 LS	New Clemtown PRV, Complete	Dollars Cents	
43	1 LS	Existing Clemtown PRV Rehabilitation, Complete	Dollars Cents	
44	1 LS	Dantown Bridge PRV Rehabilitation, Complete	Dollars Cents	
45	1 LS	Sunrise Solenoid Control Valve Rehabilitation, Complete	Dollars Cents	
46	1 LS	Sunrise PRV Rehabilitation, Complete	Dollars Cents	
47	1 LS	Richman PRV Rehabilitation, Complete	Dollars Cents	
48	1 LS	Hiram PRV Rehabilitation, Complete	Dollars Cents	
49	1 LS	Moatsville PRV, Complete	Dollars Cents	
50	1 LS	Interior Surface Preparation of 100,000 Gallon Chestnut Ridge Water Storage Tank (Including Sand Blasting and Weld Repairs)	Dollars Cents	

Item	Quantity	Description with Unit Price Written	Unit Price	Total Price
51	1 LS	Interior Priming and Painting of 100,000 Gallon Chestnut Ridge Water Storage Tank	Dollars Cents	
52	1 LS	Exterior Surface Preparation of 100,000 Gallon Chestnut Ridge Water Storage Tank	Dollars Cents	
53	1 LS	Exterior Priming and Painting of 100,000 Gallon Chestnut Ridge Water Storage Tank	Dollars Cents	
54	1 LS	Tank, Vault, Site, and Access Road Improvements and Miscellaneous Repairs of Existing 100,000 Gallon Chestnut Ridge Tank	Dollars Cents	
55	1 LS	Interior Surface Preparation of 100,000 Gallon Olive Hill Water Storage Tank (Including Sand Blasting and Weld Repairs)	Dollars Cents	
56	1 LS	Interior Priming and Painting of 100,000 Gallon Olive Hill Water Storage Tank	Dollars Cents	
57	1 LS	Exterior Surface Preparation of 100,000 Gallon Olive Hill Water Storage Tank	Dollars Cents	
58	1 LS	Exterior Priming and Painting of 100,000 Gallon Olive Hill Water Storage Tank	Dollars Cents	
59	1 LS	Existing 100,000 Gallon Olive Hill Tank, Vault, Site, and Access Road Improvements	Dollars Cents	

Item	Quantity	Description with Unit Price Written	Unit Price	Total Price
60	1	Interior Surface Preparation of 50,000 Gallon Sunrise Water Storage Tank (Including Sand Blasting and Weld Repairs)		
	LS		Dollars	
			Cents	
61	1	Interior Priming and Painting of 50,000 Gallon Sunrise Water Storage Tank		
	LS		Dollars	
			Cents	
62	1	Exterior Surface Preparation of 50,000 Gallon Sunrise Water Storage Tank		
	LS		Dollars	
			Cents	
63	1	Exterior Priming and Painting of 50,000 Gallon Sunrise Water Storage Tank		
	LS		Dollars	
			Cents	
64	1	Existing 50,000 Gallon Sunrise Tank, Vault, Site, and Access Road Improvements		
	LS		Dollars	
			Cents	
65	1	Interior Surface Preparation of 30,000 Gallon Arden Water Storage Tank (Including Sand Blasting and Weld Repairs)		
	LS		Dollars	
			Cents	
66	1	Interior Priming and Painting of 30,000 Gallon Arden Water Storage Tank		
	LS		Dollars	
			Cents	
67	1	Exterior Surface Preparation of 30,000 Gallon Arden Water Storage Tank		
	LS		Dollars	
			Cents	
68	1	Exterior Priming and Painting of 30,000 Gallon Arden Water Storage Tank		
	LS		Dollars	
			Cents	

Item	Quantity	Description with Unit Price Written	Unit Price	Total Price
69	1 LS	Existing 30,000 Gallon Arden Tank, Vault, Site, and Access Road Improvements	Dollars Cents	
70	1 LS	New 54,000 Gallon Clemtown Water Storage Tank Access Road and Site Grading and Preparation	Dollars Cents	
71	1 LS	New 54,000 Gallon Clemtown Water Storage Tank Foundation	Dollars Cents	
72	1 LS	New 54,000 Gallon Clemtown Water Storage Tank	Dollars Cents	
73	1 LS	New 54,000 Gallon Clemtown Water Storage Tank Valve Vault (including piping, valves, drains, tie-ins, and yard piping)	Dollars Cents	
74	1 EA	New 54,000 Gallon Clemtown Water Storage Tank Access Road 12' Wide Swing Gate	Dollars Cents	
75	1 LS	Structure Demolition (Existing Clemtown Water Storage Tank)	Dollars Cents	
76	1 LS	Existing 53,000 Gallon Matlick Tank and Vault Improvements	Dollars Cents	
77	5 EA	New Hydrodynamic Mixing System	Dollars Cents	

Item	Quantity	Description with Unit Price Written	Unit Price	Total Price
78	600 TN	3" Clean, Road Base Stone	Dollars Cents	
79	1600 TN	1.5" Crusher Run Stone	Dollars Cents	
80	2250 SY	Fabric for Separation	Dollars Cents	
81	600 LF	6' High Chain-Link Fence with Barbed Wire and 6' Wide Double Swing Gates	Dollars Cents	
82	25 LF	12" Corrugated Plastic Culvert	Dollars Cents	
83	85 LF	15" Corrugated Plastic Culvert	Dollars Cents	
84	175 LF	15" HDPE Culvert	Dollars Cents	
85	80 LF	Rip Rap Outlet Protection	Dollars Cents	
86	5 EA	Install 2" Gate Valve on Existing 2" Water Line	Dollars Cents	
87	3 EA	Remove and Replace 2" Gate Valve	Dollars Cents	

Item	Quantity	Description with Unit Price Written	Unit Price	Total Price
88	4 EA	Remove and Replace 6" Gate Valve		
			Dollars	
			Cents	
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TOTAL BID:				
			(\$)	
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(Amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.)

NOTE: THE CONTRACTOR'S UNIT PRICES SHALL INCLUDE PURCHASE AND INSTALLATION, COMPLETE IN PLACE, PER BID ITEM IN ACCORDANCE WITH THE DETAILED SPECIFICATIONS.

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 Bid items will be based on actual quantities, determined as provided in the Contract Documents.

METHOD OF AWARD

If at the time this contract is to be awarded, the lowest total bid submitted by a qualified, 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 exceed such amount, the Owner may reject all bids.

The owner may award the contract on the Total Bid submitted by a qualified responsible Bidder less the amount(s) of the Deductive Alternate(s) subtracted in numerical order, as listed in the contract to produce the lowest bid within the funds available for financing.

- A. Unit prices have been computed in accordance with paragraph 13.03.A of the General Conditions.
- B. Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

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 accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

- 7.01 The following documents are submitted with and made a condition of this Bid:
- A. Bid Opening Requirements

ARTICLE 8 – DEFINED TERMS

- 8.01 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 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

By:
[Signature] _____

[Printed name] _____

(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

Bidder's License No.: _____
(where applicable)

NOTE TO USER: Use in those states or other jurisdictions where applicable or required.

CHESTNUT RIDGE PUBLIC SERVICE DISTRICT
20 COLUMBIA STREET
PHILIPPI, WV 26416
Phone: (304) 457-4935

THE THRASHER GROUP, INC.
PO Box 940
Bridgeport, WV 26330
Telephone # (304) 624-4108

CONTRACT #1 – WATER SYSTEM IMPROVEMENTS
CONTRACT #2 – WATER METER REPLACEMENT
CONTRACT #3 – TELEMETRY

PRE-BID CONFERENCE NOTES

PROJECT LOCATION:	Barbour County, West Virginia
ENGINEER'S PROJECT #:	010-01052
DATE OF CONFERENCE:	Wednesday, October 26, 2022, at 10:00 A.M., LPT
CONFERENCE LOCATION:	Philippi City Building, City Council Chambers 344 South Main Street Philippi, WV 26416

PRE-BID AGENDA

I. Introductions

The attached sign-in sheet documents all attendees.

II. General Project Description

The project was generally described as per the Advertisement for Bids.

a. Contract #1 – Water System Improvements

- i. Approx 19,000 LF of waterline installation
- ii. Two new prefabricated booster stations, demolish two existing
- iii. Rehabilitation work for four other pump stations:
 1. New Pumps
 2. Control Panel upgrades
 3. Re plumbing
 4. Etc.
- iv. Two New PRV stations, one as solenoid shut off valve also
- v. Six valve vault rehabilitations
- vi. Repaint four tanks with other rehabilitation work
- vii. Construct new Clemtown Tank and demo existing
- viii. Tank access road repairs, stone, ditching, etc.
- ix. Twelve new gate valves throughout the system

b. Contract #2 – Water Meter Replacement

- i. Approximately 1,150 Water Meter Replacements
- ii. Purchase 60 Water Meters

c. Contract #3 – Telemetry

- i. Sixteen Telemetry Units
 1. Seven Tanks
 2. Seven Booster Stations
 3. Bowmar Hill PRV and Sunrise Valve Vaults

III. General Bidding Information

- a. General – As per the Advertisement for Bids, bids will be received by the Chestnut Ridge Public Service District at their office location at 20 Columbia Street, Philippi, WV 26416 until 1:00 pm local time on November 16th, 2022. After 1:00 pm local time on November 16th, 2022, bids will be received until 2:00 pm local time by the Chestnut Ridge Public Service District at the Philippi City Building, City Council Chambers, 344 South Main Street, Philippi, WV 26416. The bids will be publicly opened and read aloud at 2:00 pm local time.
 - i. Two Envelope System – Described on page BOR-1 of Contract Documents and Specifications
 - ii. Envelope 1 shall contain Bid Opening Requirements and be labeled as such
 - 1. Name and address of Bidder on front of envelope
 - 2. Bid for Contract #
 - 3. Project Owner Name – Chestnut Ridge PSD
 - iii. Envelope 2 – Labeled Bid Proposal
 - 1. Placed within Envelope 1
- b. Bid Opening Requirements – Described as per the Contract Documents and Detailed Specifications. These are the blue sheets if you have purchased hard copies.
 - i. Checklist of requirements on page BOR-1
 - ii. Checklist must be completed for bid to be opened
- c. Bid Form – Described as per the yellow sheets in the Contract Documents and Detailed Specifications if hard copies were purchased.
 - i. If addendum changes the Bid Form, the new Bid Form that is included in the Addendum must be used when submitting bids. Prices must be given in written form and in numerical form. Written prices govern over numbers if different. Unit prices will be used to verify the lowest bidder.
- d. Method of Award – Contingent upon sufficient funding for the project, the Owner may elect to award the contract to the lowest qualified Bidder on the basis of the total bid. There are no Deductive Alternates for any of the three contracts.

IV. Details of Project

- a. Construction Sequence of Events – Described as per the Project Notes sheet in the Plans.
 - i. During construction of the New Clemtown Water Storage Tank, it is anticipated that the existing tank be left in operation until the new tank is constructed and ready to be put into operation.
 - ii. While the new package booster stations are constructed, it is anticipated that existing booster stations be left in operation until the new booster stations are constructed and ready to be put into operation.
 - iii. While the existing booster station rehabilitation takes place, it is the contractor's responsibility to maintain flow through the stations. It is understood that there may be some down time in the booster stations while making final connections. It is the contractor's responsibility to mitigate these down times as much as possible as well as make the PSD aware of when these down times will occur to ensure that the associated water storage tanks can be filled prior to these down times to keep customers in service.
 - iv. It will be the responsibility of the contractors for Contracts #1 and #3 to coordinate telemetry installation work associated with Contract #3 in regards to the other work to occur at the associated booster stations, water storage tanks, and valve vaults.
- b. Material and Equipment – A general description was provided as per the Bid Forms. Thrasher worked with Rob Trombold of TEPCO in regards to the package booster stations and telemetry equipment.

- c. In regard to water meter replacement in Contract #2, and coordination with the water line replacement work as a part of Contract #1. Contract #2 will be responsible for replacing every meter in the Chestnut Ridge System. Contract #2 can perform their work at any time in regard to Contract #1. If Contract #2 performs the water meter replacement work in the areas of Plan Sheets 3-24 of Contract #1 before Contract #1 has performed the water line replacement, and all necessary work to switch the customers over to the new waterline, then Contract #1 shall be responsible for switching the new meters from the existing meter wells to the new meter wells set as part of Contract #1. If Contract #2 has not performed the water meter replacement work in the areas of Plan Sheets 3-24 of Contract #1, Contract #1 will be responsible for switching the existing meter from the existing meter well to the new meter well. The existing meter will then be replaced as part of Contract #2.
- d. Contract #1 shall be responsible for providing water meters in booster stations and PRV vaults as noted in the plans. These water meters shall be of the same manufacturer as water meters used for replacement in Contract #2. For bidding purposes on Contract #1, use a value of \$3,500 for purchase of a 3" water meter and \$4,000 for purchase of a 4" water meter.
- e. As per Specification Section 331213 in Contract #2, the radio read water meter system must be approved for usage within the Green Bank Observatory Quiet Zone. Contact Sheldon Wasik at Green Bank Observatory to obtain approval:
- Sheldon Wasik
NRQZ Program Administrator
nrqz@nrao.edu
nrqz@gb.nrao.edu
304-456-2107
Reference the Chestnut Ridge Water System Improvements Project as well as **NRQZ ID 221020B**
- f. Prevailing Wages – Federal Davis-Bacon Wage Rates are required for this project.

- V. Submittals – Required for all materials used for the project as per Specification Section 013300. Electronic or hard copies of submittals will be accepted. If hard copies are submitted, provide six (6) copies of all submittals. Three will be returned to the contractor, and one copy each to the Owner, RPR, and Engineer.
- VI. Permits – All required permits have been applied for and received by the owner.
- VII. Land Acquisitions & ROWs – All lands have been acquired and the last ROW is in the condemnation process.
- VIII. B & O Taxes/Building Permits –
 - a. No Business and Occupation taxes are required
 - b. No Building Permits or City Licenses are required
 - c. All work for all Contracts is located outside of the Philippi City Limits
- IX. Addressing Questions – All questions shall be written and provided to Steve Haynes by email at shaynes@thethrashergroup.com. The close of questions shall be 12:00 noon on Wednesday, November 2nd, 2022. All answers shall be provided in writing via Addenda. **Questions will only be accepted via email to shaynes@thethrashergroup.com**
- X. Addendum – At least one (1) Addendum will be written and supplied to all plan holders. Any and all Addenda shall be acknowledged by the Contractor on Page BOR-4 as well as Article 3.01 on the Bid Form.
- XI. Funding Agency
 - a. West Virginia Infrastructure Jobs Development Council (WVIJDC)
 - b. Drinking Water Treatment Revolving Fund (DWTRF)
- XII. Project Administrator – Cary Smith, Region VII Planning & Development Council
- XIII. Owner – Chestnut Ridge Public Service District
 - a. Project area cleanup is extremely important. All disturbed area shall be restored to conditions equal to or better than before construction begins. Pre-Construction photo/video documentation will be made by the Engineer for Contract #1 and will be relied upon to establish pre-construction conditions. The contractor is encouraged to document the current conditions of yards, roads, etc. that will be used by the contractor outside of the proposed path of waterline.

- b. Be courteous and cautious to residents in the area. The contractor shall provide two days' notice of when streets/driveways will be closed so arrangements can be made to have vehicles moved prior to the start of work in that area.
- c. The contractor shall provide accurate, red-lined record/as-built drawings. These drawings shall be updated daily and shall be provided to the Owner as part of project close-out. Contract #2 shall provide completed customer list with meter information as noted in the Plan Set.

XIV. Question and Answer Session – These shall be included in the questions and answers in Addendum #1.

XV. Site Visit – No site visit was performed on this day. Contractors are encouraged to contact Chestnut Ridge PSD to coordinate visiting areas of the project at the contractor's discretion. Chestnut Ridge PSD can be contacted at the following phone numbers:
(304) 457-4935 – Chestnut Ridge PSD Office
(304) 677-0490 – Sonny Bolyard (Chestnut Ridge PSD Operator)

SECTION 012000 - PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Cash allowances.
- B. Schedule of Values.
- C. Application for Payment.
- D. Measurement and Payment

1.2 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.

1.3 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.

1.4 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. If required in the Contract Documents, submit six (6) American Iron and Steel Qualifying and De Minimis Materials List (if required by the Contract Documents).
- D. Payment Period: Submit at intervals stipulated in the Agreement.

1.5 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. Measurement and Payment

1. **General Conditions, Supplemental General Conditions, Specification Divisions 00 and 01 Except for General Conditions - Mobilization/Demobilization, Section 013233 - Photographic Documentation, and Section 015000 - Temporary Facilities and Controls.**

Incidental

- A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which it is required.
- B. No additional compensation shall be made.

2. **Section 013233 – Photographic Documentation**

Bid Item – Pre-Construction Video Recording – Lump Sum

or

By Others

- A. When a lump sum bid item for Pre-Construction Video Recording is provided in the Bid Form, this work shall be paid for at the lump sum bid price for all location(s) directly and/or indirectly affected by the project.
- B. When a bid item for Pre-Construction Video Recording is not provided in the Bid Form, this work will be completed by others and will not be part of the Contractor's work.

3. **General Conditions – Mobilization/Demobilization**

Bid Item – Mobilization/Demobilization – Lump Sum

or

Incidental

- A. When a lump sum bid item for Mobilization/Demobilization is provided in the Bid Form, this work shall be paid for at the lump sum bid price for construction preparatory operations including, but not limited to, the movement of personnel and equipment to the project site and the establishment of field office(s), building(s), and/or other facilities, and the installation of the project sign if a sign is required in the Supplemental General Conditions

Partial payment not exceeding three percent (3%) of the awarded total contract bid price shall be made as part of the first application for payment after mobilization is completed. The balance of this lump sum bid price shall be paid for as part of the first application for payment after substantial completion.

No deduction shall be made, nor shall any increase be made, in the lump sum bid price for Mobilization regardless of any decreases or increases in the final total contract price or for any other cause.

- B. When a bid item for Mobilization/Demobilization is not provided in the Bid Form, this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which mobilization/demobilization is required.

No additional compensation shall be made.

4. Section 015000 – Temporary Facilities and Controls

Bid Item – Field Office and Sheds – Lump Sum

or

Bid Item – Field Office and Sheds – Per Month

or

Incidental

- A. When a lump sum bid item for Field Office and Sheds is provided in the Bid Form, this work shall be paid for on a prorated basis over the contract length to final completion based on the lump sum bid price.
- B. When a per month bid item for Field Office and Sheds is provided in the Bid Form, this work shall be paid for at the per month bid price.
- C. When a lump sum bid item for Field Office and Sheds is not provided in the Bid Form and a lump sum bid item for Mobilization/Demobilization is provided in the Bid Form, this work shall be included in the lump sum bid price for Mobilization/Demobilization.
- D. When neither a lump sum bid item for Field Office and Sheds is provided in the Bid Form nor a lump sum bid item for Mobilization is provided in the Bid Form, the cost for Field Office and Sheds shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which the Field Office and Sheds are required. No additional compensation shall be made.

5. Section 024116 - Structure Demolition

Bid Item – Structure Demolition (Structure (X)) – Lump Sum

- A. This work shall be paid for at the lump sum bid price for each structure identified to be demolished and/or each type of abatement to be performed.
- B. The designation of (X) in the Bid Item is provided in the Bid Form.

6. Section 033000 – Cast-in-Place Concrete

Incidental

- A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which cast-in-place concrete is required.
- B. No additional compensation shall be made.

7. Section 036000 – Grouting

Incidental

- A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which grouting is required.
- B. No additional compensation shall be made.

8. Section 083500 – Access Hatches

Incidental

- A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which Access Hatches are required.
- B. No additional compensation shall be made.

9. Section 099050 – Repainting of Steel Water Storage Facility

Bid Item – Interior Surface Preparation of (Location (X)) (Including Sand Blasting and Weld Repairs) – Lump Sum

Bid Item – Interior Priming and Painting of (Location (X)) – Lump Sum

Bid Item – Exterior Surface Preparation of (Location (X)) – Lump Sum

Bid Item – Exterior Priming and Painting of (Location (X)) – Lump Sum

Bid Item – Tank, Vault, Site, and Access Road Improvements and Miscellaneous Repairs of Existing Water Storage Tank (Location (X)) – Lump Sum

- A. The cost for this work shall be paid for at the lump sum bid price(s) and/or unit bid price(s) as provided in the Bid Form.
- B. The designation of (X) is provided in the Bid Form.
- C. The lump sum bid price for Interior Surface Preparation of (Location (X)) (Including Sand Blasting and Weld Repairs) shall include all surface preparation of the interior of the tank as required in the Drawings and/or Specifications.
- D. The lump sum bid price for Interior Priming and Painting of (Location (X)) shall include all painting of the interior of the tank as required in the Drawings and/or Specifications.
- E. The lump sum bid price for Exterior Surface Preparation of (Location (X)) shall include all surface preparation of the exterior of the tank as required in the Drawings and/or Specifications.

- F. The lump sum bid price for Exterior Priming and Painting of (Location (X)) shall include all painting of the Exterior of the tank as required in the Drawings and/or Specifications.
- G. The lump sum bid price for Tank, Vault, Site, and Access Road Improvements and Miscellaneous Repairs of Existing Water Storage Tank (Location (X)) shall include all items of work required in the Drawings and/or Specifications.

10. Section 221123.13 – Booster Pump Station Rehabilitation

Bid Item – (Location (X)) Booster Pump Station Rehabilitation, Complete – Lump Sum

- A. The Cost for this work shall be paid for at the lump sum bid price(s) and/or unit bid price(s) as provided in the Bid Form.
- B. The designation of (X) is provided in the Bid Form.
- C. The lump sum bid price for (Location (X)) Booster Pump Station Rehabilitation, Complete shall include all work necessary to perform the sequence of construction as shown in the Drawings.
- D. No additional compensation shall be made.

11. Section 134713 - Cathodic Protection

Incidental

- A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which cathodic protection is required.
- B. No additional compensation shall be made.

12. Section 310513 – Soils for Earthwork

Incidental

- A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which soils for earthwork are required.
- B. No additional compensation shall be made.

13. Section 310516 – Aggregates for Earthwork

Incidental

- A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which aggregates for earthwork are required.
- B. No additional compensation shall be made.

14. Section 311100 – Clearing, Grubbing, and Restoration

Clearing, Grubbing, and Restoration - Incidental

- A. The cost for this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which clearing and/or grubbing are required.
- B. No additional compensation shall be made.
- C. All trees and vegetation within temporary construction easement limits shall be cleared (and grubbed is so specified) unless the property owner indicates in writing that certain trees are to remain and that the property owner will assume all responsibilities for removal of the trees in the future. Any such letter from the property owner shall be submitted to the Engineer for the record.
- D. All disturbed areas shall be restored to as good or better condition before disturbances took place.

15. Section 312316 – Excavation

Incidental

- A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which excavation is required. No additional compensation shall be made.
- B. Unless otherwise provided, all excavation shall be unclassified regardless of the material encountered. No additional compensation shall be made for rock or any soft or otherwise unsuitable material. No additional compensation shall be made for dewatering and/or sheet piling.

16. Section 312316.13 – Trenching

Incidental

- A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which trenching is required. No additional compensation shall be made.
- B. Unless otherwise provided, all excavation shall be unclassified regardless of the material encountered. No additional compensation shall be made for rock or any soft or otherwise unsuitable material. No additional compensation shall be made for dewatering and/or sheet piling.

17. Section 312319 – Dewatering

Incidental

- A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which dewatering is required.
- B. No additional compensation shall be made.

18. Section 312500 – Erosion and Sedimentation Controls

Bid Item – Erosion and Sedimentation Controls – Lump Sum
or
Incidental

- A. When a lump sum bid item of Erosion and Sedimentation Controls is provided in the Bid Form, this work shall be paid for at the lump sum bid price for all erosion and sedimentation controls at all locations directly and/or indirectly disturbed by the project.

All operation and maintenance costs as well as recordkeeping and reporting costs shall be included in the lump sum bid item.

- B. When a bid item for Erosion and Sediment Controls is not provided in the Bid Form, this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which Erosion and Sediment Controls are required.

All operation and maintenance costs as well as recordkeeping and reporting costs shall be included.

- C. No additional compensation shall be made.

19. Section 313716.13 – Rubble-Stone Riprap

Bid Item – WVDOH Rock Lined Ditch – Per Linear Foot

Bid Item – Rip Rap Outlet Protection – Per Linear Foot

- A. The unit bid price for WVDOH Rock Lined Ditch shall include all labor, materials, equipment, and all other costs associated with WVDOH Rock Lined Ditch being satisfactorily installed as according to the Drawings and Details.
- B. The unit bid price for Rip Rap Outlet Protection shall include all labor, materials, equipment, and all other costs associated with Rip Rap Outlet Protection being satisfactorily installed as according to the Drawings and Details.
- C. No additional compensation shall be made.

20. Section 321216 – Concrete Resurfacing, Crushed Stone Resurfacing, and Asphalt Paving

Bid Item – WVDOH Type “B” Trench Repair – Per Linear Foot

Bid Item – WVDOH Type “C” Trench Repair – Per Linear Foot

- A. Trench repairs, street, roadway, and driveway asphalt driveway repairs, bituminous concrete curb, and crushed stone repairs as required in the Drawings and/or Specifications shall be paid for at the linear foot unit bid price(s) for the type of repair and/or curb specified measured along the centerline of the utility pipe.
1. The designation of (Y”) and (X) in the Bid Item is provided in the Bid Form.
 2. Width shall not be considered.
 3. The cost shall include all work required in the Drawings and/or Specifications.
 4. The cost for temporary stone to maintain disturbed areas until repairs are made shall be included in the unit bid price(s) for the repair(s). No additional compensation shall be made.
 5. The cost for neatly saw cutting pavement prior to excavation shall be included in these Bid Items.

- B. Improved and unimproved areas disturbed by the Contractor in areas where utility pipe is not installed shall be repaired by the Contractor at his expense at no additional cost to the Owner. No additional compensation shall be made.
- C. When a square yard bid item for Milling and Overlay of Bituminous Concrete is provided in the Bid Form, the cost for milling and overlay of bituminous concrete pavement of Type (X) shall be paid for at the square yard unit bid price(s) for the depth (Y") of milling and overlay specified and/or shown in the Drawings.
 - 1. The designation of (Y") and (X) in the Bid Item is provided in the Bid Form.
 - 2. The cost for milling and overlay shall include pavement markings to match the existing pavement markings that are milled.
 - 3. The cost for milling and overlay shall include tack coat.
- D. When a per ton bid item for Milling and Overlay of Bituminous Concrete is provided in the Bid Form, the cost for milling and overlay of bituminous concrete pavement shall be paid for at the per ton unit bid price(s). Delivery records will serve to document the tonnage of bituminous concrete.
 - 1. The cost for milling and overlay shall include pavement markings to match the existing pavement markings that are milled.
 - 2. The cost for milling and overlay shall include tack coat.
- E. When a square yard bid item for Overlay of Bituminous Concrete is provided in the Bid Form, the cost for overlay of bituminous concrete pavement of Type (X) shall be paid for at the square yard unit bid price(s) for the depth (Y") of overlay specified and/or shown in the Drawings.
 - 1. The designation of (Y") and (X) in the Bid Item is provided in the Bid Form.
 - 2. The cost for overlay shall include pavement markings to match the existing pavement markings that are milled.
 - 3. The cost for overlay shall include milling required to construct the heel-in as required in the Drawings and/or Specifications.
 - 4. The cost for overlay shall include tack coat.
- F. When a per ton bid item for Overlay of Bituminous Concrete is provided in the Bid Form, the cost for overlay of bituminous concrete pavement shall be paid for at the per ton unit bid price(s). Delivery records will serve to document the tonnage of bituminous concrete.
 - 1. The cost for overlay shall include pavement markings to match the existing pavement markings that are milled.
 - 2. The cost for overlay shall include milling required to construct the heel-in as required in the Drawings and/or Specifications
 - 3. The cost for overlay shall include tack coat.
- G. Pavement, graveled areas, curb, and/or sidewalk and vegetated areas disturbed by the Contractor in areas where utility pipe is not installed shall be replaced by the Contractor at his expense at no additional cost to the Owner. No additional compensation will be made.

21. Section 323113 – Chain Link Fences and Gates

Bid Item – 6' High Chain-Link Fence with Barbed Wire and 6' Wide Double Swing Gates – Per Linear Foot

- A. The unit bid price for 6' High Chain-Link Fence with Barbed Wire and 6' Wide Double Swing Gates shall include all labor, materials, equipment, and all other costs associated with 6' High Chain-Link Fence with Barbed Wire and 6' Wide Double Swing Gates being satisfactorily installed as according to the Drawings and Details.
- B. No additional compensation shall be made.

22. Section 330517 – Precast Concrete Valve Vaults

Bid Item – New Bowmar Hill PRV and Solenoid Shut Off Valve, Complete – Lump Sum

Bid Item – New 54,000 Gallon Clemtown Water Storage Tank Valve Vault (Including piping, valves, drains, tie-ins, and yard piping) – Lump Sum

- A. The lump sum bid price for New Bowmar Hill PRV and Solenoid Shut Off Valve, Complete shall include all required labor, excavation, materials, equipment, and all other costs associated with the construction and successful operation of the New Bowmar Hill PRV and Solenoid Shut Off Valve, Complete as indicated in the drawings.
- B. The lump sum bid price for New 54,000 Gallon Clemtown Water Storage Tank Valve Vault (including piping, valves, drains, tie-ins, and yard piping) shall include all required labor, excavation, materials, equipment, and all other costs associated with the construction and successful operation of the New 54,000 Gallon Clemtown Water Storage Tank Valve Vault (including piping, valves, drains, tie-ins, and yard piping) as indicated in the drawings.
- C. No additional compensation shall be made.

23. Section 331113 – Water Distribution Piping

Polyethylene Service Tubing and/or Water Line, for nominal inside diameters of ¾" to 3"
Bid Item – (Open Cut)/(Bored and Jacked) (X") Polyethylene (Service Tubing)/(Water Line) (with)/(without) 2" PVC Casing - Per Linear Foot

High Density Polyethylene Water Line for nominal inside diameters of 4" through 60": Fitting(s) and Concrete Thrust Block(s) Not Shown in Plans:

Bid Item – Fitting(s) and Concrete Thrust Block(s) Not Shown in Plans - Per Pound of Fittings

Tie-In of New Water Line to Existing Water Line

Bid Item – Tie-In New (X") Water Line to Existing (X") Water Line Including One (1) Gate Valve – Per Each

Hot Tap Tie-In of New Water Line to Existing Water Line

Bid Item – Hot Tap Tie-In New (X") Water Line to Existing (X") Water Line Including One (1) Gate Valve – Per Each

Cut and Plug/Cap Existing Water Line

Bid Item – Cut and Plug/Cap Existing (X”) Water Line – Per Each

- A. The cost for water line work shall be paid for at the linear foot unit bid price(s) for the size, type, and classification of water line pipe as provided in the Bid Form.
- B. The designation of (X”), (XX), and/or (XXX) in the Bid Item(s) are provided in the Bid Form. Other designations including, but not limited to, (Open Cut), (Bored and Jacked), (with), (without), (Service Tubing), (Water Line), (Iron Pipe Size), and/or (Ductile Iron Pipe Size) may be used to further describe the various Bid Items.
- C. The cost for water line work shall include, but not be limited to, bedding (where required in the Drawings and/or Specifications), water line pipe, polyethylene encasement for ductile iron pipe (where required in the Drawings and/or Specifications) traceable wire and related appurtenances (where required in the Drawings and/or Specifications), detectable warning tape, all fittings and concrete thrust blocks, shown in the Drawings, mechanical joint retainer restraints at all fittings shown in the Drawings, and concrete thrust blocks for fittings shown in the Drawings.
- D. Restoration of Disturbed Area, Concrete Resurfacing, Crushed Stone Resurfacing, and Asphalt Paving shall be paid for under other Bid Items(s) specified elsewhere.
- E. The cost for all fitting(s) and concrete thrust block(s) shown in the plans shall be included in the linear foot unit bid price(s) of the water line pipe. All mechanical joint fittings shall include mechanical joint retainer restraints at all fittings. No additional compensation shall be made.
- F. Fitting adaptors for iron pipe size pipe to ductile iron pipe fittings shall be provided for all fittings. No additional compensation shall be made.
- G. The cost for fitting(s) and concrete thrust block(s) not shown in the plans shall be paid for at the per pound of fittings unit bid price. Concrete thrust blocks(s) shall be included in the cost of the fitting(s). All mechanical joint fittings shall include mechanical joint retainer restraints at all fittings. No additional compensation for concrete thrust block(s) shall be made.
- H. Fitting adaptors for iron pipe size pipe to ductile iron pipe fittings shall be provided for all fittings. No additional compensation shall be made.
- I. The cost for a tie-in of a new water line to an existing water line shall include, but not be limited to, all fitting(s), solid sleeve and/or couplings, a gate valve (including a valve box with lid, a concrete foundation, a valve box adaptor, and a concrete stabilizing block), traceable wire and related appurtenances (where required in the Drawings and/or Specifications), detectable warning tape, concrete thrust blocking, and all other appurtenances required in the Drawings and/or the Specifications.
- J. The cost for a hot tap tie-in of a new water line to an existing water line shall include, but not be limited to, a tapping sleeve and gate valve (including a valve box with lid, a concrete foundation, a valve box adaptor, and a concrete stabilizing block), fitting(s), traceable wire and related appurtenances (where required in the Drawings and/or Specifications), detectable warning tape, concrete thrust blocking, and all other appurtenances required in the Drawings and/or the Specifications.
- K. The cost for a cut and cap/plug of an existing water line shall include, but not be limited to, a mechanical joint cap or plug with mechanical joint retainer restraint, concrete thrust blocking, and all other appurtenances required in the Drawings and/or the Specifications.

24. Section 331213 – Water Service Connections

Bid Item – (X”) (Low Pressure)/(High Pressure) (Single)/(Dual) Meter Setting with (New Meter(s))/(Relocated Water Meter(s))– Per Each

- A. The cost for a new meter setting shall include, but not be limited to, a service saddle, a corporation stop, a new meter setting, five feet (5') of new service tubing on the customer side, the connection to the existing service line as required including pack joint coupling, and demolition of existing meter well as required, and all other appurtenances required in the Drawings and/or Specifications.
- B. The designation of (X”) in the Bid Item(s) are provided in the Bid Form. The meter settings pay items are also described as either low pressure or high pressure and either single or dual and either new meter or relocated meter. Two (2) meters are included in each “Per Each” dual meter.
- C. All other new service tubing will be paid for under other Bid Item(s) as specified in Section 331113 – Water Distribution Piping.
- D. The cost of special landscaping restoration shall include, but not be limited, all work necessary to restore the described landscaping to its original condition or better.
- E. Restoration of Disturbed Area, Concrete Resurfacing, Crushed Stone Resurfacing, and Asphalt Paving shall be paid for under other Bid Items(s) specified elsewhere.

25. Section 331216 – Water Utility Distribution Valves

Bid Item – (X”) Gate Valve Installation – Per Each

Bid Item – Install X” Gate Valve on Existing X” Water Line – Per Each

Bid Item – Remove and Replace X” Gate Valve – Per Each

- A. The cost for this work shall be paid for at the per each bid price for the size (X”) and type of valve specified.
- B. The cost of the valve shall include, but not be limited to, a valve, mechanical joint retainer restraints at mechanical joint connections, a valve box with lid, a concrete foundation, a valve box adaptor, a valve box plug, a concrete stabilizing block, traceable wire and related appurtenances (where required in the Drawings and/or Specifications), and detectable warning tape, and all other appurtenances required in the Drawings and/or Specifications.
- C. Restoration of Disturbed Area, Concrete Resurfacing, Crushed Stone Resurfacing, and Asphalt Paving shall be paid for under other Bid Items(s) specified elsewhere.

26. Section 331219 – Water Utility Distribution Fire Hydrants

Bid Item – Fire Hydrant Assembly – Per Each

- A. The cost for this work shall be paid for at the per each bid price for the fire hydrant assembly specified.
- B. The cost of a fire hydrant assembly shall include, but not be limited to, concrete thrust blocking, swivel hydrant tee, end of main line plug (as required), mechanical joint retainer restraints at mechanical joint connections, a gate valve (including a valve box with lid, a concrete foundation, a valve box adaptor, and a concrete stabilizing block), a fire hydrant (including plastic barrier, concrete thrust blocking, concrete foundations, and clean graded limestone), up to fifteen feet (15') of water line, all thread rods with coal tar coating, traceable wire and related appurtenances (where required in the Drawings and/or Specifications), detectable warning tape, and all other appurtenances required in the Drawings and/or Specifications.
- C. Restoration of Disturbed Area, Concrete Resurfacing, Crushed Stone Resurfacing, and Asphalt Paving shall be paid for under other Bid Items(s) specified elsewhere.

27. Section 331300 – Disinfecting of Water Utility Distribution

Incidental

- A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for which disinfection is required.
- B. No additional compensation shall be made.

Water for Flushing and Disinfection

The Owner will provide to the Contractor, at no cost, up to four (4) times the volume of the water stored in the water lines installed in this Contract for use by the Contractor in flushing and disinfecting. Costs for volumes in excess of these amounts will be paid for by the Contractor to the Owner at the Leak Adjustment Rate or Bulk Water Rate, whichever is greater, published in the Water Purveyor's Tariff.

28. Section 331313 – Water Storage Tank Disinfection

Incidental

- A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for which disinfection is required.
- B. No additional compensation shall be made.

Water for Flushing and Disinfection

The Owner will provide to the Contractor, at no cost, up to two (2) times the volume of the water stored in the water storage tank(s) installed in this Contract for use by the Contractor in flushing and disinfecting. Costs for volumes in excess of these amounts will be paid for by the Contractor

to the Owner at the Leak Adjustment Rate or Bulk Water Rate, whichever is greater, published in the Water Purveyor's Tariff.

29. Section 331400 – Boring and Jacking

Bid Item – (X'') (Bored and Jacked)/(Open Cut) Steel Casing Pipe with (Y'') (Description) Carrier Pipe- Per Linear Foot

- A. The cost for this work shall be paid for at the linear foot unit bid price(s) for the size of bored and jacked and/or open cut steel casing pipe as provided in the Bid Form.
- B. The designation of (X'') and (Y) in the Bid Item(s) is provided in the Bid Form.
- C. The (Description) of the carrier pipe as described in the Bid Item(s) is provided in the Bid Form.
- D. The cost of bored and jacked steel casing shall include, but not be limited to, steel casing, carrier pipe, casing spacers, end seals with bands, end restraints, and traceable wire and related appurtenances (where required in the Drawings and/or Specifications), and all other appurtenances required in the Drawings and/or Specifications.
- E. The cost of open cut steel casing shall include, but not be limited to, steel casing, carrier pipe, casing spacers, end seals with bands, end restraints, traceable wire and related appurtenances (where required in the Drawings and/or Specifications), and detectable warning tape, and all other appurtenances required in the Drawings and/or Specifications.
- F. Restoration of Disturbed Area, Concrete Resurfacing, Crushed Stone Resurfacing, and Asphalt Paving shall be paid for under other Bid Items(s) specified elsewhere.

30. Section 331900 – Water Utility Metering Equipment

Bid Item – Package Booster Pump Station #1 with Site Work, Complete – Lump Sum

Bid Item – Package Booster Pump Station #2 with Site Work, Complete – Lump Sum

Bid Item – Clemtown Booster Pump Station Rehabilitation, Complete – Lump Sum

Bid Item – Richman Booster Pump Station Rehabilitation, Complete – Lump Sum

Bid Item – Hiram Booster Pump Station Rehabilitation, Complete – Lump Sum

Bid Item – Moatsville Booster Pump Station, Complete – Lump Sum

Bid Item – New Bowmar Hill PRV and Solenoid Shut Off Valve, Complete – Lump Sum

- A. The lump sum bid price for above mentioned bid items shall include all required labor, materials, equipment, and all other costs associated with the purchase and successful installation of water utility metering equipment as indicated in the drawings and specifications.
- B. No additional compensation shall be made.

31. Section 333216.10 – Packaged Utility Water Pumping Stations

Bid Item – Package Booster Pump Station #1 with Site Work, Complete – Lump Sum

Bid Item – Package Booster Pump Station #2 with Site Work, Complete – Lump Sum

- A. The lump sum bid price for Package Booster Pump Station #1 with Site Work, Complete shall include all required labor, materials, equipment, and all other costs associated with the construction and successful operation of Package Booster Pump Station #1 with Site Work, Complete as shown in the drawings and specifications.
- B. The lump sum bid price for Package Booster Pump Station #2 with Site Work, Complete shall include all required labor, materials, equipment, and all other costs associated with the construction and successful operation of Package Booster Pump Station #2 with Site Work, Complete as shown in the drawings and specifications.
- C. No additional compensation shall be made.

32. Section 334213.13 – Public Pipe Culverts

Bid Item – 12” Corrugated Plastic Culvert – Per Linear Foot

Bid Item – 15” Corrugated Plastic Culvert – Per Linear Foot

Bid Item – 15” HDPE Culvert – Per Linear Foot

Or

Incidental

- A. The unit bid price for installation of 12” Corrugated Plastic Culvert shall include all labor, equipment, and materials necessary for the installation of 12” Corrugated Plastic Culvert as shown in the drawings, details, and specifications.
- B. The unit bid price for installation of 15” Corrugated Plastic Culvert shall include all labor, equipment, and materials necessary for the installation of 15” Corrugated Plastic Culvert as shown in the drawings, details, and specifications.
- C. The unit bid price for installation of 15” HDPE Culvert shall include all labor, equipment, and materials necessary for the installation of 15” HDPE Culvert as shown in the drawings, details, and specifications.
- D. No additional compensation shall be made.

33. Section 400565.23 – Swing Check Valves

Incidental

- A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for which Swing Check Valves are required as indicated in the drawings and specifications.
- B. No additional compensation shall be made.

34. Section 400567 – Specialized Pressure and Flow-Control Valves

Bid Item – New Bowmar Hill PRV and Solenoid Shut Off Valve – Lump Sum

Bid Item – New Clemtown PRV, Complete – Lump Sum

Bid Item – Sunrise Solenoid Control Valve Rehabilitation, Complete – Lump Sum

- A. The lump sum bid price for New Bowmar Hill PRV and Solenoid Shut Off Valve shall include all labor, materials, equipment, and all other necessary costs for the purchase, installation, and satisfactory operation of the New Bowmar Hill PRV and Solenoid Shut Off Valve as indicated in the drawings and specifications.
- B. The lump sum bid price for New Clemtown PRV shall include all labor, materials, equipment, and all other necessary costs for the purchase, installation, and satisfactory operation of the New Clemtown PRV as indicated in the drawings and specifications.
- C. The lump sum bid price for Sunrise Solenoid Control Valve Rehabilitation, Complete shall include all labor, materials, equipment, and all other necessary costs for the purchase, installation, and satisfactory operation of the new electronic control valve as indicated in the drawings and specifications.
- D. No additional compensation shall be made.

35. Section 434111 – Glass Lined Bolted Steel Tanks

Bid Item – New 54,000 Gallon Clemtown Water Storage Tank – Lump Sum

- A. The lump sum bid price for New 54,000 Gallon Clemtown Water Storage Tank shall include all labor, excavation, materials, equipment, and all other costs associated with the construction and successful operation of the New 54,000 Gallon Clemtown Water Storage Tank, including all other appurtenances as indicated in the drawings.
- B. No additional compensation shall be made.

36. Section 434113 – Welded Steel Tanks

Bid Item – New 54,000 Gallon Clemtown Water Storage Tank – Lump Sum

- A. The lump sum bid price for New 54,000 Gallon Clemtown Water Storage Tank shall include all labor, excavation, materials, equipment, and all other costs associated with the construction and successful operation of the New 54,000 Gallon Clemtown Water Storage Tank, including all other appurtenances as indicated in the drawings.
- B. No additional compensation shall be made.

37. Section 464128 – Hydrodynamic Mixing System

Bid Item – New Hydrodynamic Mixing System – Per Each

- A. The unit bid price for installation for New Hydrodynamic Mixing System shall include all labor, equipment, and materials necessary for the installation of New Hydrodynamic Mixing Systems as shown in the drawings, details, and specifications.
- B. No additional compensation shall be made.

38. Drawings and Contingency Items

Bid Item – Fire Hydrant Demolition Per Detail - Per Each

Bid Item – Gate Valve Demolition Per Detail - Per Each

- A. The cost for the removal, demolition, and repair per detail(s) work shall be paid for at the per each unit bid price(s) as provided in the Bid Form and shall include all work required in the Drawings and/or Specifications.
- B. The designation of (X”) in the Bid Item(s) is provided in the Bid Form.

39. All other Specification Divisions

Incidental

- A. Unless unit bid item(s) are provided in the Bid Form, the cost of this work shall be included in the unit bid item(s) for which the specific item(s) are required.
- B. No additional compensation shall be made.

G. Unit Price Schedule

1. Bid Item 1 – Mobilization/Demobilization

- A. The cost of this work shall be paid for at the contract lump sum bid price for all mobilization and demobilization activities required for the project.
- B. Partial payment not exceeding three percent (3%) of the original total contract bid price shall be made as part of the first application for payment. The balance of this contract lump sum bid price shall be considered as demobilization and shall be paid for upon substantial completion.
- C. No deduction shall be made, nor shall any increase be made, in the contract lump sum bid price for Mobilization/Demobilization regardless of any decreases or increases in the final total contract price or for any other cause.
- D. No additional compensation shall be made.

2. Bid Item 2 – Erosion and Sediment Control

- A. This work shall be paid for at the contract lump sum bid price.
- B. This Bid Item shall include all costs associated with erosion and sediment controls including, but not limited to, silt fence, water bars, erosion control matting, stream bank stabilization, and all materials and labor for installation, maintenance, and removal.
- C. The cost of this Work shall be paid for at the lump sum bid price for all erosion and sediment controls at all locations directly or indirectly disturbed by the Work.
- D. No additional compensation shall be made.

3. Bid Item 3 – 6” HDPE DR 9 Waterline

- A. This Bid Item shall include all labor, equipment, and materials necessary for, and incidental to, the installation of 6" HDPE DR 9 Waterline.
- B. Measurement and payment under this item shall be measured and paid for at the unit bid price per linear foot of the overall length of 6" HDPE DR 9 Waterline satisfactorily installed, as indicated in the Drawings or as directed by the Engineer.
- C. This Bid Item shall include excavation, bedding, backfill, materials, fittings, thrust blocking, tracer wire, marking tape, pipe tools, supplies, trench plugs, replacement of fences, surface repair if not covered under a separate bid item such as flowerbeds, walls, shrubs, testing, and incidentals.

4. Bid Item 4 – 6" HDPE DR 11 Waterline

- A. This Bid Item shall include all labor, equipment, and materials necessary for, and incidental to, the installation of 6" HDPE DR 11 Waterline.
- B. Measurement and payment under this item shall be measured and paid for at the unit bid price per linear foot of the overall length of 6" HDPE DR 11 Waterline satisfactorily installed, as indicated in the Drawings or as directed by the Engineer.
- C. This Bid Item shall include excavation, bedding, backfill, materials, fittings, thrust blocking, tracer wire, marking tape, pipe tools, supplies, trench plugs, replacement of fences, surface repair if not covered under a separate bid item such as flowerbeds, walls, shrubs, testing, and incidentals.

5. Bid Item 5 – 6" HDPE DR 13.5 Waterline

- A. This Bid Item shall include all labor, equipment, and materials necessary for, and incidental to, the installation of 6" HDPE DR 13.5 Waterline.
- B. Measurement and payment under this item shall be measured and paid for at the unit bid price per linear foot of the overall length of 6" HDPE DR 13.5 Waterline satisfactorily installed, as indicated in the Drawings or as directed by the Engineer.
- C. This Bid Item shall include excavation, bedding, backfill, materials, fittings, thrust blocking, tracer wire, marking tape, pipe tools, supplies, trench plugs, replacement of fences, surface repair if not covered under a separate bid item such as flowerbeds, walls, shrubs, testing, and incidentals.

6. Bid Item 6 – 2" HDPE DR 9.0 Waterline

- A. This Bid Item shall include all labor, equipment, and materials necessary for, and incidental to, the installation of 2" HDPE DR 9.0 Waterline.
- B. Measurement and payment under this item shall be measured and paid for at the unit bid price per linear foot of the overall length of 2" HDPE DR 9.0 Waterline satisfactorily installed, as indicated in the Drawings or as directed by the Engineer.
- C. This Bid Item shall include excavation, bedding, backfill, materials, fittings, thrust blocking, tracer wire, marking tape, pipe tools, supplies, trench plugs, replacement of fences, surface repair if not covered under a separate bid item such as flowerbeds, walls, shrubs, testing, and incidentals.

7. Bid Item 7 – 2" HDPE DR 13.5 Waterline

- A. This Bid Item shall include all labor, equipment, and materials necessary for, and incidental to, the installation of 2" HDPE DR 13.5 Waterline.
- B. Measurement and payment under this item shall be measured and paid for at the unit bid price per linear foot of the overall length of 2" HDPE DR 13.5 Waterline satisfactorily installed, as indicated in the Drawings or as directed by the Engineer.
- C. This Bid Item shall include excavation, bedding, backfill, materials, fittings, thrust blocking, tracer wire, marking tape, pipe tools, supplies, trench plugs, replacement of fences, surface repair if not covered under a separate bid item such as flowerbeds, walls, shrubs, testing, and incidentals.

8. Bid Item 8 – 8" Steel Casing (Bore & Jack)

- A. This Bid Item shall include all labor, equipment, and materials necessary for, and incidental to, the construction of the crossing, complete in place, including, but not limited to excavation, sheeting, bracing, backfilling, grouting, casing seal, and casing spacers.
- B. Measurement and payment under this item shall be measured and paid for at the unit bid price per linear foot of the overall length of the casing pipe satisfactorily installed.
- C. Payment shall be for casing pipe only; carrier pipe shall be paid by the unit bid price(s) per linear foot for size, type, and classification of waterline specified and satisfactorily installed.
- D. Compensation for unauthorized casing footage beyond that which is called for in the Drawings will not be made.

9. Bid Item 9 – 12" Steel Casing (Open Cut)

- A. This Bid Item shall include all labor, equipment, and materials necessary for, and incidental to, the construction of the crossing, complete in place, including, but not limited to excavation, sheeting, bracing, backfilling, grouting, casing seal, and casing spacers.
- B. Measurement and payment under this item shall be measured and paid for at the unit bid price per linear foot of the overall length of the casing pipe satisfactorily installed.
- C. Payment shall be for casing pipe only; carrier pipe shall be paid by the unit bid price(s) per linear foot for size, type, and classification of waterline specified and satisfactorily installed.
- D. Compensation for unauthorized casing footage beyond that which is called for in the Drawings will not be made.

10. Bid Item 10 – 12" Steel Casing (Bore & Jack)

- A. This Bid Item shall include all labor, equipment, and materials necessary for, and incidental to, the construction of the crossing, complete in place, including, but not limited to excavation, sheeting, bracing, backfilling, grouting, casing seal, and casing spacers.
- B. Measurement and payment under this item shall be measured and paid for at the unit bid price per linear foot of the overall length of the casing pipe satisfactorily installed.
- C. Payment shall be for casing pipe only; carrier pipe shall be paid by the unit bid price(s) per linear foot for size, type, and classification of waterline specified and satisfactorily installed.

- D. Compensation for unauthorized casing footage beyond that which is called for in the Drawings will not be made.

11. Bid Item 11 – ¾” Polyethylene Service Tubing (Open Cut)

- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the complete installation of service tubing including excavation, bedding, backfill, materials, fittings, pipe tubing, tools, supplies, marking tape, tracer wire, surface repair if another bid item does not cover repair such as flowerbeds, walls, shrubs, fencing, etc., testing, and incidentals. All fittings used shall be included in the linear foot price of the pipe.
- B. The waterline service tubing installed under this item shall be measured and paid for at the Unit Bid Price per linear feet of tubing of each type and size as specified in the Drawings or as directed by the Engineer and installed complete in place. The measurement under this item shall be the length of service line and fittings as installed in place and accepted and shall be measured in the horizontal plane along the centerline of each service line installed, measured from the corporation stop connection to the center of the customer water meter setting less the length of service tubing paid under Bid Item #9.

12. Bid Item 12 – ¾” Service Tubing (Bore & Jack)

- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the complete installation of service line tubing including saw cutting existing pavement, excavation, boring and jacking, bedding, backfill, materials, fittings, pipe tubing, tools, supplies, marking tape, tracer wire, surface repair, including temporary, if another bid item does not cover repair such as flowerbeds, walls, shrubs, fencing, etc., testing and incidentals. All fittings used shall be included in the linear foot price of the pipe.
- B. 2” PVC SDR-13.5 casing shall be included in the unit bid price, installed complete in place, as shown on the Drawings. This Bid Item shall include sealing the casing if determined necessary by the Engineer.
- C. The waterline service tubing installed under this item shall be measured and paid for at the Unit Bid Price per linear foot of tubing of each type and size as specified in the Drawings or as directed by the Engineer and installed complete in place. The measurement under this item shall be the length of service line with casing installed in place and accepted and shall be measured in the horizontal plane along the centerline of each service line installed, measured from the edge of pavement plus two feet.

13. Bid Item 13 – 1” Polyethylene Service Tubing (Open Cut)

- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the complete installation of service tubing including excavation, bedding, backfill, materials, fittings, pipe tubing, tools, supplies, marking tape, tracer wire, surface repair if another bid item does not cover repair such as flowerbeds, walls, shrubs, fencing, etc., testing, and incidentals. All fittings used shall be included in the linear foot price of the pipe.
- B. The waterline service tubing installed under this item shall be measured and paid for at the Unit Bid Price per linear feet of tubing of each type and size as specified in the Drawings or as directed by the Engineer and installed complete in place. The measurement under this item shall be the length of service line and fittings as installed in place and accepted

and shall be measured in the horizontal plane along the centerline of each service line installed, measured from the corporation stop connection to the center of the customer water meter setting less the length of service tubing paid under Bid Item #11.

14. Bid Item 14 – 5/8” x 3/4” Low Pressure Single Meter Setting

- A. This Bid Item shall include all required labor, excavation, materials, equipment, and all other costs associated with the installation of the Low-Pressure Meter Setting including all appurtenances as indicated in the Drawings and shall be paid at the contract unit price bid per each.
- B. This Bid Item shall include the purchase and installation of the well, lid, copper setter, corporation stop and saddle, and 5’ of ¾” SDR-9 polyethylene service tubing on the customer side of the meter. This Bid Item also includes the transfer of the water meter from the existing meter well into the new meter well, whether that is the existing water meter, or the new water meter as installed as part of Contract #2. Purchase and initial install of the new water meter will be the responsibility of Contract #2.
- C. This Bid Item shall include the tie-in to the customer’s existing service line with a dual compression brass coupling. Meter setting shall include twelve (12) inches of clean stone placed in the bottom of the meter well and one (1) cubic foot of clean stone placed around the corporation stop and saddle.
- D. This Bid Item shall include the removal of the existing meter well, lid, copper setter, and meter. These items shall be disposed of by the Contractor or delivered to the Owner, at the Owner’s request, to a pre-determined location. The area disturbed by removal of the existing customer meter setting shall be backfilled with clean stone within 12” from the existing grade and include topsoil to match the existing grade in grass areas. Existing meter settings removed in non-grass areas shall be paid for by the Unit Bid Price for the type of trench repair required to match the existing surface.
- E. The unit Bid Price shall be Per Each.

15. Bid Item 15 - 5/8” x 3/4” High Pressure Single Meter Setting

- A. This Bid Item shall include all required labor, excavation, materials, equipment, and all other costs associated with the installation of the High-Pressure Meter Setting including all appurtenances as indicated in the Drawings and shall be paid at the contract unit price bid per each.
- B. This Bid Item shall include the purchase and installation of the well, lid, copper setter, corporation stop and saddle, and 5’ of ¾” SDR-9 polyethylene service tubing on the customer side of the meter. This Bid Item also includes the transfer of the water meter from the existing meter well into the new meter well, whether that is the existing water meter, or the new water meter as installed as part of Contract #2. Purchase and initial install of the new water meter will be the responsibility of Contract #2.
- C. This Bid Item shall include the tie-in to the customer’s existing service line with a dual compression brass coupling. Meter setting shall include twelve (12) inches of clean stone placed in the bottom of the meter well and one (1) cubic foot of clean stone placed around the corporation stop and saddle.
- D. This Bid Item shall include the removal of the existing meter well, lid, copper setter, and meter. These items shall be disposed of by the Contractor or delivered to the Owner, at the Owner’s request, to a pre-determined location. The area disturbed by removal of the existing customer meter setting shall be backfilled with clean stone within 12” from the exist-

ing grade and include topsoil to match the existing grade in grass areas. Existing meter settings removed in non-grass areas shall be paid for by the Unit Bid Price for the type of trench repair required to match the existing surface.

E. The unit Bid Price shall be Per Each.

16. Bid Item 16 – Cut and Cap Existing 2” Waterline

- A. This Bid Item shall include all required labor, excavation, materials, dewatering equipment, locating existing waterline, and all other costs associated with performing the work of Cut and Cap Existing 2” Waterline.
- B. This Bid Item shall be performed once the new waterline is in service and all customer service lines have been reconnected.
- C. This Bid Item shall include mechanical joint caps, as required at each location, and poured concrete thrust block as shown in the plans.
- D. The unit Bid Price shall be Per Each.
- E. No additional compensation shall be made.

17. Bid Item 17 – Cut and Cap Existing 4” Waterline

- A. This Bid Item shall include all required labor, excavation, materials, dewatering equipment, locating existing waterline, and all other costs associated with performing the work of Cut and Cap Existing 4” Waterline.
- B. This Bid Item shall be performed once the new waterline is in service and all customer service lines have been reconnected.
- C. This Bid Item shall include mechanical joint caps, as required at each location, and poured concrete thrust block as shown in the plans.
- D. The unit Bid Price shall be Per Each.
- E. No additional compensation shall be made.

18. Bid Item 18 – Cut and Cap Existing 6” Waterline

- A. This Bid Item shall include all required labor, excavation, materials, dewatering equipment, locating existing waterline, and all other costs associated with performing the work of Cut and Cap Existing 6” Waterline.
- B. This Bid Item shall be performed once the new waterline is in service and all customer service lines have been reconnected.
- C. This Bid Item shall include mechanical joint caps, as required at each location, and poured concrete thrust block as shown in the plans.
- D. The unit Bid Price shall be Per Each.
- E. No additional compensation shall be made.

19. Bid Item 19 – Tie new 2” Waterline into Existing 2” Waterline

- A. This Bid Item shall include all required labor, excavation, materials, dewatering, equipment, and all other costs associated with performing the work of a Tie new 2” Waterline into Existing 2” Waterline.
- B. This Bid Item shall include a gate valve sized the same as the new waterline, the required ductile iron mechanical joint fittings as shown on the plans or detail drawings and a ductile iron solid sleeve or dresser coupling to make the tie in to the existing waterline

- C. The unit Bid Price shall be Per Each.
- D. No additional compensation shall be made.

20. Bid Item 20 – 6” Hot Tap on Existing 6” Waterline

- A. This Bid Item shall include all required labor, excavation, materials, dewatering, equipment, and all other costs associated with performing the work of a 6” Hot Tap on Existing 6” Waterline.
- B. This Bid Item shall include a gate valve sized the same as the new waterline with tapping sleeve, and any ductile iron fittings or couplings to make the tie in to the existing water line.
- C. The unit Bid Price shall be Per Each.
- D. No additional compensation shall be made.

21. Bid Item 21 – Tie new 6” HDPE Waterline into Existing 4” PVC Waterline

- A. This Bid Item shall include all required labor, excavation, materials, dewatering, equipment, and all other costs associated with performing the work of a Tie-In.
- B. This Bid Item shall include a gate valve sized the same as the new waterline, the required ductile iron mechanical joint fittings as shown in the Drawings or Details, and a ductile iron solid sleeve or dresser coupling to make the tie in to the existing water line.
- C. The unit Bid Price shall be Per Each.
- D. No additional compensation shall be made.

22. Bid Item 22 – WVDOH Rock Lined Ditch

- A. This Bid Item shall be measured and paid for at the unit Bid Price per linear foot as specified in the Drawings or as directed by the Engineer. Width of the rock lined ditch shall be as shown in the Drawings.
- B. No additional compensation shall be made.

23. Bid Item 23 – WVDOH Type “B” Trench Repair

- A. This Bid Item installed shall be measured and paid for at the unit Bid Price per linear foot measured along the centerline of the pipe without regard to width.
- B. This Bid Item shall include all required labor, materials as shown in the Drawings and Details, equipment, and all other costs associated with trench repair including but not limited to traffic control, milling as necessary in order to prevent an unacceptable drainage pattern, heal in joints, saw cutting existing pavement, and removal and proper disposal of existing pavement. Cleaning and remarking pavement if previously placed shall be included in the unit Bid Price.
- C. No compensation shall be made for temporary paving required during construction.

24. Bid Item 24 – WVDOH Type “C” Trench Repair

- A. This Bid Item installed shall be measured and paid for at the unit Bid Price per linear foot measured along the centerline of the pipe without regard to width.

- B. This Bid Item shall include all required labor, materials as shown in the Drawings and Details, equipment, and all other costs associated with trench repair including but not limited to traffic control.
- C. No compensation shall be made for temporary stone surfacing required during construction.

25. Bid Item 25 – Fire Hydrant Assembly

- A. The cost for this work shall be paid for at the contract unit Bid Price(s) for the size, type, and classification of fire hydrant assembly specified and all related appurtenances as shown in the Drawings and Details.
- B. This Bid Item shall include the purchase and installation of the fire hydrant, 6" gate valve, 6" hydrant tee, all thread rods, valve riser box, up to fifteen (15) linear feet of waterline, and all appurtenances as shown in the Drawings.
- C. The unit Bid Price shall be Per Each.
- D. No additional compensation shall be made.

26. Bid Item 26 – Demolish Existing Fire Hydrant

- A. This Bid Item shall include all required labor, excavation, materials, dewatering, equipment, and all other costs associated with performing the work of Demolish Existing Fire Hydrant as shown in the Drawings and Details. The Contractor shall remove hydrant valve lid and backfill. These items shall be disposed of by the Contractor or delivered to the Owner, at the Owner's request, to a pre-determined location, at no additional cost to the Owner.
- B. This Bid Item shall include reclamation of disturbed area(s) to match adjacent landscaping.
- C. The unit Bid Price shall be Per Each.
- D. No additional compensation shall be made.

27. 2" Hidden Flushing Hydrant

- A. The cost for this work shall be paid for at the contract unit Bid Price(s) for the size, type, and classification of 2" Hidden Flushing Hydrant specified, and all related appurtenances as shown in the Drawings and Details.
- B. This Bid Item shall include the purchase and installation of the 2" Hidden Flushing Hydrant, 2" Gate Valve, mechanical joint reducer (if needed) and up to 10' length of 2" waterline between the 2" gate valve and the flushing hydrant and all appurtenances as shown on the details of the contract drawings.
- C. The unit Bid Price shall be Per Each
- D. No additional compensation shall be made.

28. Bid Item 28 – Demolish Existing Gate Valve

- A. This Bid Item shall be paid for at the unit Bid Price per each Demolish Existing Gate Valve.
- B. This Bid Item shall include all labor, materials, equipment, and all other costs associated with the Gate Valve Demolition Detail Drawing.
- C. This Bid Item shall include all necessary compaction, backfill, and trench repair.

29. Bid Item 29 – 6” Gate Valve Installation

- A. The cost for this work shall be paid for at the contract unit Bid Price for the size, type, and classification of valve specified.
- B. The cost for all valve boxes, lids, valve marker, and other appurtenances shown in the detail(s) in the Drawings or specified shall be included in the unit bid price(s) of valve(s) specified.

30. Bid Item 30 – 1.5” Asphalt Mill and Overlay

- A. This Bid Item installed shall be measured and paid for at the unit price Bid per ton as shown on the plans. Width of repair shall be shown on the plans.
- B. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with HMA mill and overlay, as shown in the detail(s) in the plans, including but not limited to traffic control, saw cutting and milling existing asphalt, removal and proper disposal of existing asphalt, stone base, placement and rolling of HMA, milling as necessary to prevent an unacceptable drainage pattern, heal in joints, cleaning and remarking pavement as required.
- C. No payment will be made for temporary repairs required during construction for the maintenance of streets, driveways, or sidewalks. All HMA overlay shall be included in this per LF Bid Price.

31. Air Release Valve Assembly

- A. The cost for this work shall be paid for at the contract unit Bid Price(s) for the size, type, and classification of Air Release Valve Assembly specified and all related appurtenances as shown in the Drawings and Details.
- B. This Bid Item shall include the purchase and installation of the 3/4” air release valve, well, and lid, corporation stop, service saddle, curb stop ball valve, service tubing, clean graded limestone (AASHTO #57), and all other appurtenances as shown on the details of the contract drawings.
- C. The unit Bid Price shall be Per Each
- D. No additional compensation shall be made.

32. Bid Item 32 – Structure Demolition (Existing Booster Pump Station #1)

- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful abandonment and demolition of the existing Booster Pump Station #1. Compensation shall include the removal and disposal of demolition waste as well as reclamation of the site as described in the Demolition Sequence on Plan Sheet B1A of the Drawings.
- B. Seed and mulch of disturbed areas shall be to as good or better conditions.
- C. The Bid Price for Structure Demolition (Existing Booster Pump Station #1) shall be Lump Sum.
- D. Traffic Control must be maintained throughout the abandonment and demolition process and shall be part of the Lump Sum Bid Price for this item.
- E. Structure Demolition shall not begin work until Package Booster Pump Station #1, Package Booster Pump Station #2, and new waterline installation have been constructed. All

testing must be performed and approved as well as Package Booster Pump Station #1, Package Booster Pump Station #2, and new waterline installation being put into full operation.

33. Bid Item 33 – Structure Demolition (Existing Booster Pump Station #2)

- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful abandonment and demolition of the existing Booster Pump Station #2. Compensation shall include the removal and disposal of demolition waste as well as reclamation of the site as described in the Demolition Sequence on Plan Sheet B2A of the Drawings.
- B. Seed and mulch of disturbed areas shall be to as good or better conditions.
- C. The Bid Price for Structure Demolition (Existing Booster Pump Station #2) shall be Lump Sum.
- D. Traffic Control must be maintained throughout the abandonment and demolition process and shall be part of the Lump Sum Bid Price for this item.
- E. Structure Demolition shall not begin work until Package Booster Pump Station #1, Package Booster Pump Station #2, and new waterline installation have been constructed. All testing must be performed and approved as well as Package Booster Pump Station #1, Package Booster Pump Station #2, and new waterline installation being put into full operation.

34. Bid Item 34 – Package Booster Pump Station #1 with Site Work, Complete

- A. This Bid Item shall include all required labor, excavation, materials, dewatering, equipment, and all other costs associated with Package Booster Pump Station #1 with Site Work, Complete as described in the Contract Documents, Drawings, Details, and Technical Specifications.
- B. The costs for this Bid Item include, but are not limited to clearing and grubbing, site grading, seeding and mulching, lights, conduit, concrete foundation, package booster station, electric to the site, tying into new waterline, ductile iron piping, HDPE to ductile iron mechanical joint adapters, valves, and all appurtenances as shown in the Drawings and Details on Plan Sheets B1B – B1D. Work associated with the gravel parking area including but not limited to clearing and grubbing, and grading shall be included in this Bid Price.
- C. Work that is shown on Plan Sheet B1B to not be included with this bid item include 6” HDPE waterline to and from the Package Booster Station, 12” Steel Casing (open cut), and WVDOH Type “B” Trench Repair.
- D. The Bid Price for Package Booster Pump Station #1 with Site Work, Complete shall be Lump Sum.

35. Bid Item 35 – Package Booster Pump Station #2 with Site Work, Complete

- A. This Bid Item shall include all required labor, excavation, materials, dewatering, equipment, and all other costs associated with Package Booster Pump Station #2 with Site Work, Complete as described in the Contract Documents, Drawings, Details, and Technical Specifications.
- B. The costs for this Bid Item include, but are not limited to clearing and grubbing, site grading, seeding and mulching, lights, conduit, concrete foundation, package booster station, relocating existing power pole, electric to the site, tying into new waterline, ductile iron

pipings, HDPE to ductile iron mechanical joint adapters, valves, and all appurtenances as shown in the Drawings and Details on Plan Sheets B2B – B2D. Work associated with the gravel parking area including but not limited to clearing and grubbing, and grading, shall be included in this Bid Price.

- C. Work that is shown on Plan Sheet B2B to not be included with this bid item include 6" HDPE waterline to and from the Package Booster Station as well as 6" HDPE waterline to Chestnut Ridge Water Storage Tank, 12" Steel Casing (open cut), WVDOH Type "C" Trench Repair, and 6" gate valves on the 6" HDPE waterline.
- D. The Bid Price for Package Booster Pump Station #1 with Site Work, Complete shall be Lump Sum.

36. Bid Item 36 – Clemtown Booster Pump Station Rehabilitation, Complete

- A. This Bid Item shall include all required labor, excavation, materials, equipment, and all other costs associated with the rehabilitation of the Clemtown Booster Pump Station as described on Plan Sheet B3B-B3C in the Drawings.
- B. Telemetry work shall not be included as a part of this Bid Item.
- C. The Costs for this Bid Item include, but are not limited to, decommissioning the existing Clemtown Booster Pump Station set up and performing all Clemtown Booster Pump Station Rehabilitation work as shown in the Drawings on Plan Sheets B3B-B3C.
- D. The Bid Price for Clemtown Booster Pump Station Rehabilitation, Complete shall be Lump Sum.

37. Bid Item 37 – Richman Booster Pump Station Rehabilitation, Complete

- A. This Bid Item shall include, but is not limited to, all required labor, excavation, materials, equipment, and all other costs associated with the rehabilitation of the Richman Booster Pump Station as described in the Sequence of Construction on Plan Sheets B4B-B4C as well as the removal of tree next to electrical transformer as shown on Plan Sheet B4A in the Drawings.
- B. Telemetry work shall not be included as a part of this Bid Item.
- C. The Bid Price for Richman Booster Pump Station Rehabilitation, Complete shall be Lump Sum.

38. Bid Item 38 – Hiram Booster Pump Station Rehabilitation, Complete

- A. This Bid Item shall include, but is not limited to, all required labor, excavation, materials, equipment, and all other costs associated with the rehabilitation of the Hiram Booster Pump Station as described in the Sequence of Construction on Plan Sheet B6B in the Drawings.
- B. Telemetry work shall not be included as a part of this Bid Item.
- C. The Bid Price for Hiram Booster Pump Station Rehabilitation, Complete shall be Lump Sum.

39. Bid Item 39 – Moatsville Booster Pump Station Rehabilitation, Complete

- A. This Bid Item shall include, but is not limited to, all required labor, excavation, materials, equipment, and all other costs associated with the rehabilitation of the Moatsville Booster

Pump Station as described in the Sequence of Construction on Plan Sheets B7A-B7B in the Drawings.

- B. Telemetry work shall not be included as a part of this Bid Item.
- C. The Bid Price for Moatsville Booster Pump Station Rehabilitation, Complete shall be Lump Sum.

40. Bid Item 40 – New Bowmar Hill PRV and Solenoid Shut Off Valve, Complete

- A. This Bid Item shall include, but is not limited to, all required labor, excavation, materials, equipment, and all other costs associated with the Construction and satisfactory operation of the New Bowmar Hill PRV and Solenoid Shut Off Valve, Complete as described in the Sequence of Construction and shown on plan sheets on Plan Sheets P2-P2B in the Drawings and shown in the Details on Plan Sheet P2C.
- B. Abandonment and Demolition of Existing Bowmar Hill PRV shall be compensated for under a separate Bid Item.
- C. Full Width Roadway Crushed Stone Repair and WVDOH Type “C” Trench repair shall be compensated under separate bid items.
- D. Telemetry work shall not be included as a part of this Bid Item.
- E. The Bid Price for New Bowmar Hill PRV and Solenoid Shut Off Valve, Complete shall be Lump Sum.

41. Bid Item 41 – Abandonment and Demolition of Existing Bowmar Hill PRV

- A. This Bid Item shall include, but is not limited to, all required labor, excavation, materials, equipment, and all other costs associated with the Abandonment and Demolition of Existing Bowmar Hill PRV.
- B. Abandonment and Demolition of Existing Bowmar Hill PRV shall include removal of the PRV, tees, gate valve, and bypass line. The PRV, tees, and gate valve that are removed shall be replaced with 3” PVC waterline pressure rated the same as the existing 3” PVC waterline. The steel tub shall be removed and disposed of by the Contractor or delivered to the Owner, at the Owner’s request, to a pre-determined location, at no additional cost to the Owner.
- C. Abandonment and Demolition of Existing Bowmar Hill PRV shall take place after all work has been performed to construct and put into satisfactory operation of the New Bowmar Hill PRV and Solenoid Shut Off Valve, Complete.
- D. The Bid Price for Abandonment and Demolition of Existing Bowmar Hill PRV shall be Lump Sum.

42. Bid Item 42 – New Clemtown PRV, Complete

- A. This Bid Item shall include, but is not limited to, all required labor, excavation, materials, equipment, and all other costs associated with the Construction and satisfactory operation of the New Clemtown PRV, Complete as shown on Plan Sheet P3B in the Drawings and shown in the Detail on Plan Sheet P3B.
- B. The Bid Price for New Clemtown PRV, Complete shall be Lump Sum.

43. Bid Item 43 – Existing Clemtown PRV Rehabilitation, Complete

- A. This Bid Item shall include, but is not limited to, all required labor, excavation, materials, equipment, and all other costs associated with the Rehabilitation of the Existing Clemtown PRV, Complete as shown on Plan Sheet P3A in the Drawings and shown in the Detail on Plan Sheet P3A.
- B. The Bid Price for Existing Clemtown PRV Rehabilitation, Complete shall be Lump Sum.

44. Bid Item 44 – Dantown Bridge PRV Rehabilitation, Complete

- A. This Bid Item shall include, but is not limited to, all required labor, excavation, materials, equipment, and all other costs associated with the Dantown Bridge PRV Rehabilitation, Complete as described in the Sequence of Construction on Plan Sheet P4A in the Drawings.
- B. The Bid Price for Dantown Bridge PRV Rehabilitation, Complete shall be Lump Sum.

45. Bid Item 45 – Sunrise Solenoid Control Valve Rehabilitation, Complete

- A. This Bid Item shall include, but is not limited to, all required labor, excavation, materials, equipment, and all other costs associated with the Sunrise Solenoid Control Valve Rehabilitation, Complete as described in the Sequence of Construction on Plan Sheet P5A in the Drawings.
- B. Telemetry work shall not be included as a part of this Bid Item.
- C. The Bid Price for Sunrise Solenoid Control Valve Rehabilitation, Complete shall be Lump Sum.

46. Bid Item 46 – Sunrise PRV Rehabilitation, Complete

- A. This Bid Item shall include, but is not limited to, all required labor, excavation, materials, equipment, and all other costs associated with the Sunrise PRV Rehabilitation, Complete as described in the Sequence of Construction on Plan Sheet P5B in the Drawings.
- B. The Bid Price for Sunrise Rehabilitation, Complete shall be Lump Sum.

47. Bid Item 47 – Richman PRV Rehabilitation, Complete

- A. This Bid Item shall include, but is not limited to, all required labor, excavation, materials, equipment, and all other costs associated with the Richman PRV Rehabilitation, Complete as described in the Sequence of Construction on Plan Sheet P6A in the Drawings.
- B. The Bid Price for Richman Rehabilitation, Complete shall be Lump Sum.

48. Bid Item 48 – Hiram PRV Rehabilitation, Complete

- A. This Bid Item shall include, but is not limited to, all required labor, excavation, materials, equipment, and all other costs associated with the Hiram PRV Rehabilitation, Complete as described in the Sequence of Construction on Plan Sheet P8A in the Drawings and the Detail as shown on Plan Sheet P8A.
- B. The Bid Price for Hiram Rehabilitation, Complete shall be Lump Sum.

49. Bid Item 49 – Moatsville PRV, Complete

- A. This Bid Item shall include, but is not limited to, all required labor, excavation, materials, equipment, and all other costs associated with construction and satisfactory operation of the Moatsville PRV, Complete as shown on Plan Sheet P9A in the Drawings and the Details shown on Plan Sheet P9B.
 - B. All work shown adjacent to the Moatsville PRV, Complete including installation of new waterline, cut and cap existing waterline, and 2" tie into existing 2" waterline shall be paid for under separate bid items and not be apart of the Moatsville PRV, Complete Bid Item.
 - C. The Bid Price for Moatsville PRV, Complete shall be Lump Sum.
50. Bid Item 50 – Interior Surface Preparation of 100,000 Gallon Chestnut Ridge Water Storage Tank (Including Sand Blasting and Weld Repairs)
- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful completion of surface preparation of the interior of the existing 100,000 Gallon Chestnut Ridge Water Storage Tank in accordance with SSPC #10 (including sandblasting and weld repairs).
 - B. The Bid Price shall be Lump Sum.
 - C. No additional compensation shall be made.
51. Bid Item 51 – Interior Priming and Painting of 100,000 Gallon Chestnut Ridge Water Storage Tank
- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful completion of interior priming and painting of the existing 100,000 Gallon Chestnut Ridge Water Storage Tank.
 - B. The Bid Price shall be Lump Sum.
 - C. No additional compensation shall be made.
52. Bid Item 52 – Exterior Surface Preparation of 100,000 Gallon Chestnut Ridge Water Storage Tank
- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful completion of exterior surface preparation of the existing 100,000 Gallon Chestnut Ridge Water Storage Tank in accordance with SSPC #6.
 - B. The Bid Price shall be Lump Sum.
 - C. No additional compensation shall be made.
53. Bid Item 53 – Exterior Priming and Painting of 100,000 Gallon Chestnut Ridge Water Storage Tank
- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful completion of exterior priming and painting of the existing 100,000 Gallon Chestnut Ridge Water Storage Tank.
 - B. The Bid Price shall be Lump Sum.
 - C. No additional compensation shall be made.
54. Bid Item 54 – Tank, Vault, Site, and Access Road Improvements and Miscellaneous Repairs of Existing 100,000 Gallon Chestnut Ridge Tank

- A. This Bid Item shall include all required labor, excavation, materials, equipment, and all other costs associated with Tank, Vault, Site, and Access Road Improvements and Miscellaneous Repairs of Existing 100,000 Gallon Chestnut Ridge Tank as shown in the Drawings and defined in the Sequence of Construction on Plan Sheets T1-T1B that are not specifically stated under separate bid items. Stone surfacing, preparation and repainting of tank, drainage culverts, and rip rap outlet protection shall be paid for by separate Bid Items.
 - B. The Bid Price shall be Lump Sum.
 - C. No additional compensation shall be made.
55. Bid Item 55 – Interior Surface Preparation of 100,000 Gallon Olive Hill Water Storage Tank (Including Sand Blasting and Weld Repairs)
- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful completion of surface preparation of the interior of the existing 100,000 Gallon Olive Hill Water Storage Tank in accordance with SSPC #10 (including sandblasting and weld repairs).
 - B. The Bid Price shall be Lump Sum.
 - C. No additional compensation shall be made.
56. Bid Item 56 – Interior Priming and Painting of 100,000 Gallon Olive Hill Water Storage Tank
- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful completion of interior priming and painting of the existing 100,000 Gallon Olive Hill Water Storage Tank.
 - B. The Bid Price shall be Lump Sum.
 - C. No additional compensation shall be made.
57. Bid Item 57 – Exterior Surface Preparation of 100,000 Gallon Olive Hill Water Storage Tank
- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful completion of exterior surface preparation of the existing 100,000 Gallon Olive Hill Water Storage Tank in accordance with SSPC #6.
 - B. The Bid Price shall be Lump Sum.
 - C. No additional compensation shall be made.
58. Bid Item 58 – Exterior Priming and Painting of 100,000 Gallon Olive Hill Water Storage Tank
- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful completion of exterior priming and painting of the existing 100,000 Gallon Olive Hill Water Storage Tank.
 - B. The Bid Price shall be Lump Sum.
 - C. No additional compensation shall be made.

59. Bid Item 59 – Existing 100,000 Gallon Olive Hill Tank, Vault, Site, and Access Road Improvements

- A. This Bid Item shall include all required labor, excavation, materials, equipment, and all other costs associated with Tank, Vault, Site, and Access Road Improvements and Miscellaneous Repairs of Existing 100,000 Olive Hill Tank as shown in the Drawings and defined in the Sequence of Construction on Plan Sheets T2 and T2A that are not specifically stated under separate bid items. Stone surfacing, preparation and repainting of tank, and drainage culverts shall be paid for by separate Bid Items.
- B. The Bid Price shall be Lump Sum.
- C. No additional compensation shall be made.

60. Bid Item 60 – Interior Surface Preparation of 50,000 Gallon Sunrise Water Storage Tank (Including Sand Blasting and Weld Repairs)

- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful completion of surface preparation of the interior of the existing 50,000 Gallon Sunrise Water Storage Tank in accordance with SSPC #10 (including sandblasting and weld repairs).
- B. The Bid Price shall be Lump Sum.
- C. No additional compensation shall be made.

61. Bid Item 61 – Interior Priming and Painting of 50,000 Gallon Sunrise Water Storage Tank

- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful completion of interior priming and painting of the existing 50,000 Gallon Sunrise Water Storage Tank.
- B. The Bid Price shall be Lump Sum.
- C. No additional compensation shall be made.

62. Bid Item 62 – Exterior Surface Preparation of 50,000 Gallon Sunrise Water Storage Tank

- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful completion of exterior surface preparation of the existing 50,000 Gallon Sunrise Water Storage Tank in accordance with SSPC #6.
- B. The Bid Price shall be Lump Sum.
- C. No additional compensation shall be made.

63. Bid Item 63 – Exterior Priming and Painting of 50,000 Gallon Sunrise Water Storage Tank

- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful completion of exterior priming and painting of the existing 50,000 Gallon Sunrise Water Storage Tank.
- B. The Bid Price shall be Lump Sum.
- C. No additional compensation shall be made.

64. Bid Item 64 – Existing 50,000 Gallon Sunrise Tank, Vault, Site, and Access Road Improvements

- A. This Bid Item shall include all required labor, excavation, materials, equipment, and all other costs associated with Tank, Vault, Site, and Access Road Improvements and Miscellaneous Repairs of Existing 50,000 Sunrise Tank as shown in the Drawings and defined in the Sequence of Construction on Plan Sheets T3 and T3C that are not specifically stated under separate bid items. Stone surfacing, preparation and repainting of tank, and rip rap outlet protection shall be paid for by separate Bid Items.
- B. The Bid Price shall be Lump Sum.
- C. No additional compensation shall be made.

65. Bid Item 65 – Interior Surface Preparation of 30,000 Gallon Arden Water Storage Tank (Including Sand Blasting and Weld Repairs)

- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful completion of surface preparation of the interior of the existing 30,000 Gallon Arden Water Storage Tank in accordance with SSPC #10 (including sandblasting and weld repairs).
- B. The Bid Price shall be Lump Sum.
- C. No additional compensation shall be made.

66. Bid Item 66 – Interior Priming and Painting of 30,000 Gallon Arden Water Storage Tank

- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful completion of interior priming and painting of the existing 30,000 Gallon Arden Water Storage Tank.
- B. The Bid Price shall be Lump Sum.
- C. No additional compensation shall be made.

67. Bid Item 67 – Exterior Surface Preparation of 30,000 Gallon Arden Water Storage Tank

- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful completion of exterior surface preparation of the existing 30,000 Gallon Arden Water Storage Tank in accordance with SSPC #6.
- B. The Bid Price shall be Lump Sum.
- C. No additional compensation shall be made.

68. Bid Item 68 – Exterior Priming and Painting of 30,000 Gallon Arden Water Storage Tank

- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful completion of exterior priming and painting of the existing 30,000 Gallon Arden Water Storage Tank.
- B. The Bid Price shall be Lump Sum.
- C. No additional compensation shall be made.

69. Bid Item 69 – Existing 30,000 Gallon Arden Tank, Vault, Site, and Access Road Improvements

- A. This Bid Item shall include all required labor, excavation, materials, equipment, and all other costs associated with Tank, Vault, Site, and Access Road Improvements and Miscellaneous Repairs of Existing 30,000 Arden Tank as shown in the Drawings and defined in the Sequence of Construction on Plan Sheets T4 and T4C that are not specifically stated under separate bid items. Stone surfacing, preparation and repainting of tank, drainage culverts, and rip rap outlet protection shall be paid for by separate Bid Items.
- B. The Bid Price shall be Lump Sum.
- C. No additional compensation shall be made.

70. Bid Item 70 – New 54,000 Gallon Clemtown Water Storage Tank Access Road and Site Grading and Preparation

- A. This Bid Item shall include all labor, materials, equipment, and all other costs associated with New 54,000 Gallon Clemtown Water Storage Tank Access Road and Site Grading and Preparation as shown in the Drawings on Plans Sheets T5 and T5A.
- B. This Bid Item shall include all clearing, grubbing, excavation, fill, grading, reclamation, and any other necessary work not specifically stated in another Bid Item. Stone surfacing, fencing, drainage culverts, and access road swing gate shall be paid for by separate bid items. The Tank Access Road shall be constructed as shown in the Drawings.
- C. Construction stake out shall be performed by the Engineer, one time. Additional stake out shall be performed at the Contractor's expense and at no additional cost to the Owner.
- D. The Bid Price shall be Lump Sum.
- E. No additional compensation shall be made.

71. Bid Item 71 – New 54,000 Gallon Clemtown Water Storage Tank Foundation

- A. This Bid Item shall include all required labor, excavation, materials, equipment, and all other costs associated with the construction of the New 54,000 Gallon Water Storage Tank Foundation, and all other appurtenances as indicated in the Drawings and Details.
- B. The Bid Price shall be Lump Sum.
- C. No additional compensation shall be made.

72. Bid Item 72 – New 54,000 Gallon Clemtown Water Storage Tank

- A. This Bid Item shall include all required labor, excavation, materials, equipment, and all other costs associated with the construction and successful operation of the New 54,000 Gallon Water Storage Tank, including all other appurtenances as indicated in the Drawings and Details.
- B. The Bid Price be Lump Sum.
- C. No additional compensation shall be made.

73. Bid Item 73 – New 54,000 Gallon Clemtown Water Storage Tank Valve Vault (including piping, valves, drains, tie-ins, and yard piping)

- A. This Bid Item shall include all required labor, excavation, materials, equipment, and all other costs associated with the construction and successful operation of the New 54,000 Gallon Clemtown Water Storage Tank Valve Vault Including Piping, Valves, Drains, Tie-Ins, Yard Piping, and all other appurtenances as indicated in the Drawings.
- B. The Bid Price be Lump Sum.
- C. No additional compensation shall be made.

74. Bid Item 74 – New 54,000 Gallon Clemtown Water Storage Tank Access Road 12' Wide Swing Gate

- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful construction of the New 54,000 Gallon Clemtown Water Storage Tank Access Road 12' Wide Swing Gate.
- B. New Swing Gate shall be installed so that it is capable of swinging 90-degree up hill from the closed position. The Swing Gate shall be positioned as shown in the Drawings or as
- C. The Bid Price shall be per Each.
- D. No additional compensation shall be made.

75. Bid Item 75 – Structure Demolition (Existing Clemtown Water Storage Tank)

- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful abandonment and demolition of the Existing Clemtown Water Storage Tank. Payment shall include the removal and disposal of the demolition waste, reclamation of the Site, and traffic control if necessary.
- B. The Bid Price shall be Lump Sum
- C. No additional compensation shall be made.

76. Bid Item 76 – Existing 53,000 Gallon Matlick Tank and Vault Improvements

- A. This Bid Item shall include all required labor, materials, excavation, equipment, and all other costs associated with performing the Existing 53,000 Gallon Matlick Tank and Vault Improvements as described in the Sequence of Construction on Plan Sheet T6A.
- B. Telemetry work shall not be included as a part of this Bid Item.
- C. The Bid Price Shall be Lump Sum.
- D. No additional compensation shall be made.

77. Bid Item 77 – New Hydrodynamic Mixing System

- A. This Bid Item shall include all required labor, materials, equipment, and all other costs associated with the successful installation of New Hydrodynamic Mixing System on Water Storage Tanks where it is required in the corresponding Water Storage Tank Sequence of Construction.
- B. The Bid Price shall be Per Each.
- C. No additional compensation shall be made.

78. Bid Item 75 – 3" Clean, Road Base Stone

- A. This Bid Item shall be measured and paid for at the unit Bid Price per ton of stone material delivered and placed as shown in the Drawings and Details or as directed by the Engineer. The contractor shall provide the Engineer with one (1) copy of the certified weigh ticket daily for each load of stone for which payment is requested.
- B. This Bid Item shall include all labor, materials, equipment, and all other costs associated with 3" Clean, Road Base Stone placement satisfactorily installed.
- C. No additional compensation shall be made.

79. Bid Item 79 – 1.5" Crusher Run Stone

- A. This Bid Item shall be measured and paid for at the unit Bid Price per ton of stone material delivered and placed as shown in the Drawings and Details or as directed by the Engineer. The contractor shall provide the Engineer with one (1) copy of the certified weigh ticket daily for each load of stone for which payment is requested.
- B. This Bid Item shall include all labor, materials, equipment, and all other costs associated with 1.5" Crusher Run Stone placement satisfactorily installed.
- C. No additional compensation shall be made.

80. Bid Item 80 – Fabric for Separation

- A. This Bid Item shall be measured and paid for at the unit Bid Price per square yard of Fabric for Separation satisfactorily installed as indicated in the Drawings and Details or as directed by the Engineer.
- B. This Bid Item shall include all labor, materials, equipment, and all other costs associated with Fabric for Separation placement satisfactorily installed.

81. Bid Item 81 – 6' High Chain-Link Fence with Barbed Wire and 6' Wide Double Swing Gates

- A. This Bid Item shall be measured and paid for at the unit Bid Price per linear foot of 6' High Chain-Link Fence with Barbed Wire and 6' Wide Double Swing Gates, as shown in the Drawings and Details, shall be paid for by the unit Bid Price per linear foot satisfactorily installed.

- B. The Bid Item shall include all required labor, materials, equipment, and all other costs associated with 6' High Chain-Link Fence with Barbed Wire and 6' Wide Double Swing Gates installation as shown in the Drawings and Details.

82. Bid Item 82 – 12" Corrugated Plastic Culvert

- A. This Bid Item shall include all labor, equipment, and materials necessary for, and incidental to, the installation of 12" Corrugated Plastic Culvert Pipe.
- B. Measurement and payment under this item shall be measured and paid for at the unit Bid Price per linear foot of the overall length of the culvert pipe satisfactorily installed, as indicated in the Drawings, or as directed by the Engineer.
- C. Payment shall be for Corrugated Plastic culvert pipe only. Rock lined ditch and rip rap outlet protection shall be paid for by a separate Bid Item.
- D. Compensation for unauthorized culvert pipe footage beyond that which is called for in the Drawings will not be made.

83. Bid Item 83 – 15" Corrugated Plastic Culvert

- A. This Bid Item shall include all labor, equipment, and materials necessary for, and incidental to, the installation of 15" Corrugated Plastic Culvert Pipe.
- B. Measurement and payment under this item shall be measured and paid for at the unit Bid Price per linear foot of the overall length of the culvert pipe satisfactorily installed, as indicated in the Drawings, or as directed by the Engineer.
- C. Payment shall be for Corrugated Plastic culvert pipe only. Rock lined ditch and rip rap outlet protection shall be paid for by a separate Bid Item.
- D. Compensation for unauthorized culvert pipe footage beyond that which is called for in the Drawings will not be made.

84. Bid Item 84 – 15" HDPE Culvert

- A. This Bid Item shall include all labor, equipment, and materials necessary for, and incidental to, the installation of 15" HDPE Culvert Pipe.
- B. Measurement and payment under this item shall be measured and paid for at the unit Bid Price per linear foot of the overall length of the culvert pipe satisfactorily installed, as indicated in the Drawings, or as directed by the Engineer.
- C. Payment shall be for HDPE culvert pipe only. Rock lined ditch and rip rap outlet protection shall be paid for by a separate Bid Item.
- D. Compensation for unauthorized culvert pipe footage beyond that which is called for in the Drawings will not be made.

85. Bid Item 85 – Rip Rap Outlet Protection

- A. This Bid Item shall be measured and paid for at the unit Bid Price per linear foot as specified in the Drawings or as directed by the Engineer. Width of the Rip Rap Outlet Protection shall be as shown in the Drawings and Details.
- B. No additional compensation shall be made for unauthorized Rip Rap Outlet Protection.

86. Bid Item 86 – Install 2” Gate Valve on Existing 2” Waterline

- A. The cost for this work shall be paid for at the contract unit Bid Price for the size, type, and classification of valve specified.
- B. The cost for all valves, fittings, waterline, thrust blocking, valve boxes, lids, valve marker, and other appurtenances as shown in the Drawings and Details or specified shall be included in the unit Bid Price of Valve specified.
- C. This Bid Item shall include all work associated with cutting the existing waterline and installation of the Gate Valve as shown in the Details, locating existing waterline, traffic controls, water main isolation, and any dewatering required to complete the Work.
- D. Surface repair shall be paid for under a separate bid item.
- E. Coordinate valve installation with Owner to minimize disruption of water service.

87. Bid Item 87 – Remove and Replace 2” Gate Valve

- A. The cost for this work shall be paid for at the contract unit Bid Price for the size, type, and classification of valve specified.
- B. The cost for all valves, fittings, waterline, thrust blocking, valve boxes, lids, valve marker, and other appurtenances as shown in the Drawings and Details or specified shall be included in the unit Bid Price of Valve specified.
- C. This Bid Item shall include all work associated with the removal and replacement of the existing gate valve as shown in the Details, locating existing waterline, traffic controls, water main isolation, and any dewatering required to complete the Work.
- D. Surface repair shall be paid for under a separate bid item.
- E. Coordinate valve installation with Owner to minimize disruption of water service.

88. Bid Item 88 – Remove and Replace 6” Gate Valve

- A. The cost for this work shall be paid for at the contract unit Bid Price for the size, type, and classification of valve specified.
- B. The cost for all valves, fittings, waterline, thrust blocking, valve boxes, lids, valve marker, and other appurtenances as shown in the Drawings and Details or specified shall be included in the unit Bid Price of Valve specified.
- C. This Bid Item shall include all work associated with the removal and replacement of the existing gate valve as shown in the Details, locating existing waterline, traffic controls, water main isolation, and any dewatering required to complete the Work.
- D. Surface repair shall be paid for under a separate bid item.

E. Coordinate valve installation with Owner to minimize disruption of water service.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 012000

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SECTION 099050 - REPAINTING OF STEEL WATER STORAGE FACILITY

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 01, and all related Specification Sections, apply to this section.

1.2 DESCRIPTION

A. Scope:

- 1. This section of the specifications contains the detailed criteria for the selection of materials, surface preparation, and the furnishing of all paint, labor, equipment and appliances for field painting of steel water storage facilities specified herein: ANSI/AWWA D102 “AWWA Standard for Painting Steel Water Storage Tanks.”

B. Definitions:

- 1. Specific coating terminology used in this section is in accordance with definitions contained in ASTM D16, ASTM D3960, and the following definitions:
 - a. Dry Film Thickness (DFT): the thickness of one (1) fully cured continuous application of coating.
 - b. Field Coat: the application or the completion of application of the coating system after installation of the surface at the site of the work.
 - c. Shop Coat: One (1) or more coats applied in a shop or plant prior to shipment to the site of erection or fabrication, where the field or finishing coat is applied.
 - d. Tie Coat: An intermediate coat used to bond different types of paint coats. Coatings used to improve the adhesion of a succeeding coat.
 - e. Photochemically Reactive Organic Material: Any organic material that will react with oxygen, excited oxygen, ozone or other free radicals generated by the action of sunlight on components in the atmosphere giving rise to secondary contaminants and reaction intermediates in the atmosphere which can have detrimental effects.
 - f. Volatile Organic Compound (VOC) Content: The portion of the coating that is a compound of carbon, is photochemically reactive, and evaporates during drying or curing, expressed in grams per liter or pounds per gallon.
 - g. Touch-Up Painting: The application of paint on areas of painted surfaces to repair marks, scratches, and areas where the coating has deteriorated to restore the coating film to an unbroken condition.

1.3 PRE-JOB MEETING

- A. A pre-job meeting shall be held to discuss the technical aspects of the specified coatings and their application characteristics. All contractors bidding are highly encouraged to attend this meeting.

1.4 CONTRACTOR PRE-QUALIFICATION

- A. All contractors bidding shall provide documentation of having repainted five (5) potable water tanks within 12 months of the bid date.
- B. Access to the site can be obtained by contacting the Owner.

1.5 QUALITY ASSURANCE

A. References:

1. This section contains references to the following documents. They are a part of this section as specified and modified. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In the event of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.
2. Unless otherwise specified, references to documents shall mean the documents in effect at the time of Advertisement for Bids, Invitation to Bid, or on the effective date of the Agreement if there were no Bids. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization. Where document dates are given in the following listing, references to those documents shall mean the specific document version associated with that date, regardless of whether the document has been superseded by a version with a later date, discontinued or replaced.

Reference	Title
ASTM D16	Standard Terminology Relating to Paint, Varnish, Lacquer and Related Products
ASTM D2200 (SSPC-Vis1)	Pictorial Surface Preparation Standards for Painting Steel Surfaces
ASTM D3359A	Methods for Measuring Adhesion by Tape Test
ASTM D3960	Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings
ASTM D4417	Field Measurement of Surface Profile of Blast-Cleaned Steel
F 595 B	Federal Standard Colors
SSPC	SSPC Painting Manual – Systems and Specifications, Vol. 2

B. Standardization

1. Materials and supplies provided shall be the standard products of Manufacturers. Materials in each coating system shall be the products of a single Manufacturer.

2. The standard products of Manufacturers other than those specified will be accepted when it is demonstrated to the Engineer that they are equal in composition, durability, usefulness and convenience for the purpose intended. Requests for substitutions will be considered, provided the following minimum conditions are met:
 - a. The proposed coating system shall use an equal or greater number of separate coats to achieve the required dry film thickness.
 - b. The proposed coating system shall use coatings of the same generic type as that specified.
 - c. Requests for substitution shall have directions for application and descriptive literature which includes generic type, percent solids by volume, volatile organic content (grams per liter), and information confirming that the substitution is equal to the specified coating system.
 - d. The Contractor shall provide a list of references where paint of the same generic type has been applied. The reference list shall give the project name, city, state, owner, phone number of owner, coating system reference and number, and year paint was applied.

1.6 DELIVERY AND STORAGE

- A. Materials shall be delivered to the job site in their original, unopened containers. Each container shall bear the following:
 1. Manufacturer's name
 2. Coating type
 3. Batch number
 4. Date of manufacture
 5. Storage life
 6. Special directions
- B. Materials shall be stored in enclosed structures and shall be protected from weather and excessive heat or cold. Flammable materials shall be stored in accordance with state and local codes.
- C. Materials exceeding storage life recommended by the Manufacturer shall be removed from the site.

1.7 RESPONSIBILITY

- A. The Contractor shall provide all materials, scaffolding, and other equipment and services required to prepare all surfaces and coat all surfaces as set forth in the Contract Documents. The Contractor shall be responsible for the final finish on all surfaces.

1.8 SUBMITTALS

- A. Before materials are delivered to the job site, the Contractor shall provide the following information in accordance with Section 013000 – Administrative Requirements.
 - 1. For each primer and finish coating, the Contractor shall furnish a Safety Data Sheet (SDS).
 - 2. For each primer and finish coating, the Contractor shall provide the Manufacturer's application instructions, which shall include the following:
 - a. Surface preparation recommendations.
 - b. Primer type, where required.
 - c. Maximum dry and wet mil thickness per coat.
 - d. Minimum and maximum curing time between coats, including atmospheric conditions for each.
 - e. Curing time before submergence in liquid.
 - f. Thinner to be used with each paint.
 - g. Ventilation requirements.
 - h. Minimum atmospheric conditions during which the paint shall be applied.
 - i. Allowable application methods.
 - j. Maximum allowable moisture content.
 - k. Maximum storage life.
 - 3. List of materials proposed to be used under this section and Manufacturer's data for each material.
 - 4. Color charts.

PART 2 – PRODUCTS

2.1 MANUFACTURER(S)

- A. Tnemec Company, Inc.
- B. The Sherwin Williams Company
- C. Engineer's Approved Equal

2.2 MATERIALS SELECTION, COLORS, AND LABELING

- A. The Contractor shall furnish information to the Engineer by way of shop drawing submittal for the proposed materials to be used in execution of the work. The information shall include the following:
 - 1. Complete product specification sheets
 - 2. Manufacturer's instructions
 - 3. Color selection guides
- B. If requested by the Engineer, the Contractor shall also secure a written statement from the

painting manufacturer attesting to the compatibility of the proposed paint systems with the existing paint described hereinafter.

- C. The Engineer will prepare a color schedule based on the Owner's selections (except where colors are already specified herein) and return the same to the Contractor along with the reviewed shop drawings.
- D. All materials shall be delivered to the site in manufacturer's sealed containers. The manufacturer shall label each container. Labels shall give the following:
 - 1. Manufacturer's name
 - 2. Brand
 - 3. Type of paint
 - 4. Color of paint
 - 5. Instructions for reducing
- E. Thinning shall be done only in accordance with direction of the manufacturer and exclusively with the types of reducers recommended. Mixing or job tinting may be done when approved by the Engineer.

2.3 EXISTING PAINT SYSTEMS

- A. The existing interior coatings on the storage tank are to be completely removed in accordance with Steel Structures Painting Council Specifications SSPC-SP10 "Near White Blast". The exterior finish will be cleaned by using SSPC-SP6 "Commercial Blast Cleaning". After blast cleaning, all surfaces shall be thoroughly and completely cleaned of any residue or dust before applying primer. Primer must be applied within 24 hours after blast cleaning.
 - a. If holes in steel occur during sandblasting of existing water storage tanks, tanks shall be patched with steel plate before repainting is to occur.
- B. Protection of Grounds
 - 1. Contractor shall provide scaffolding and containment during sand blasting, priming and painting for protection of people and property, including all landscaping, driveways, roads, walks, buildings, utilities, etc. Any damage to such items shall be corrected by the Contractor at the Contractor's expense to the Owner's satisfaction.
- C. Abatement of Lead Based Paint
 - 1. The exterior paint system and interior paint have been tested and may contain lead paint. Lead based paint test results will be included at the end of this specification. The Contractor shall provide containment of all loose paint removed from the interior and exterior tank. The Contractor shall submit a lead paint abatement plan to the Engineer for approval prior to the start of any work performed on the tank.
 - 2. The Contractor shall comply with West Virginia State Code CFR16-35 cited as the West Virginia "Lead Abatement Act."

3. The Contractor shall perform the following duties as part of the lead paint abatement plan:
 - a. Ensure that each of his or her employees or agents who will come in contact with lead or who will be responsible for a lead abatement project is licensed. Employees will be required to take a blood test prior to beginning work on this project. The blood test results shall be submitted to the Owner. Should the test results be greater than 40 micrograms/dl, the employee will not be permitted to work on this project.
 - b. Ensure that the project is supervised by a licensed lead abatement supervisor.
 - c. Maintain sampling records for each contained work area of a lead abatement project until it meets the minimum clearance standards established by the West Virginia Department of Environmental Protection.
 - d. Keep a record of the project and make the record available to the division and the divisions of commerce, labor, and environmental protection upon request. Records required by this subsection shall be kept for at least three years and shall include at a minimum:
 1. The name, address and license number of the individual who supervised the lead abatement project and each employee or agent who worked on the project.
 2. The location and design of the project, if applicable, and the amount of lead-containing material that was removed.
 3. The starting and completion date of the project and a summary of the procedures that were used to comply with all federal and state standards.
 4. The name and address of each disposal site where lead-contaminated waste was deposited and the disposal site receipts.
 - e. Contractor will be responsible for proper disposal of all discarded paint, rust debris, and sandblasting material for each tank. The tank(s) may or may not contain lead-based paint. If lead-based paint is encountered, the Contractor shall be responsible for legally removing, storing and disposing of the discarded lead-contaminated material. One (1) paint sample was taken from the 300k (gallon) tank, one (1) sample was taken from the 500k (gallon) tank and one (1) sample was taken from the Booster tank. The results are included at the end of this section for information only.

2.4 SCHEDULE OF NEW PRODUCTS

- A. Products specified are as manufactured by Sherwin Williams or Tnemec Company, Inc.
 1. Products for each specified function and system shall be of a single manufacturer.
 2. All materials in contact with potable water must have been tested and approved by the ANSI/NSF Standard 61.

2.5 EXTERIOR REPAINT SYSTEM

- A. The exterior surfaces shall be painted using the following system:

	Tnemec	Sherwin Williams
Prime – Gray	Tnemec Series 135 Chembuild @ 3.0 – 5.0 mils DFT.	Macropoxy 646 Fast Cure Epoxy @ 3.0 – 5.0 mils DFT.
Intermediate – Contrast Prime and Finish	Tnemec Series 135 Chembuild @ 3.0-5.0 mils DFT. *	Macropoxy 646 Fast Cure Epoxy @ 3.0 – 5.0 mils DFT.*
Finish – Selected by Owner	Tnemec Series 30 Spra-Saf EN @ 2.0 – 3.0 mils DFT.	Acrolon 218 HS or Hi-Solids Polyurethane @ 2.0 – 3.0 mils DFT.*
Total DFT	8.0 – 12.0 mils	8.0 – 12.0 mils
*Notes:	Apply one (1) complete coat of each paint. Certain finish coat colors may require two (2) coats. Color shall be determined by Engineer/Owner	Apply one (1) complete coat of each paint. Certain finish coat colors may require two (2) coats. Color shall be determined by Engineer/Owner.

- B. The Contractor shall furnish to the Owner at least one (1) extra gallon to finish paint specified above for exterior paint for touch-up repairs due to vandalism.
- C. All materials shall be applied in accordance with manufacturer's directions and any thinning required shall be done in a manner and exclusively with the type of reduce recommended.
- D. Spray application may be used in conformance with applicable section of AWWA D102.
- E. All materials shall be applied under adequate illumination.

2.5 INTERIOR REPAINT SYSTEM

- A. The interior surfaces shall be painted using the following system:

	Tnemec	Sherwin Williams
Prime - Gray	Series 94-H20 Hydro Zinc Aromatic Zinc Rich Urethane @ 2.0 – 4.0 mils DFT.*	Corothane 1 Galvapak 1K Zinc Rich Primer @ 2.0 – 4.0 mils DFT.*
Weld Coat – Contrast Prime and Intermediate Coat	Series N140-15BL @ 2.0 – 3.0 mils DFT.	Macropoxy 5500 @ 2.0 – 3.0 mils DFT. *
Intermediate Coat – Contrast Weld Coat	Series N140-1255 Pota-Pox Plus Polyamidoamine Epoxy @ 4.0 – 6.0 mils DFT.	Macropoxy 5500 @ 4.0 – 6.0 mils DFT. *
Finish – Selected by Owner	Series N140-15BL Pota-Pox Plus Polyamidoamine Epoxy @ 5.0 – 6.0 mils DFT.	Macropoxy 5500 @ 5.0 – 6.0 mils DFT.
Total DFT	11.0 – 16.0 mils	11.0 – 16.0 mils
*Notes:	Apply one (1) complete coat of each paint. For the Weld Coat, apply by brush to all welds and sharp edges. Otherwise, apply by spray application.	Apply one (1) complete coat of each paint. For the Weld Coat, apply by brush to all welds and sharp edges. Otherwise, apply by spray application.

- B. All coatings shall be a “system” and shall be thoroughly compatible each with the other. Not coatings or primers of different manufacturers shall be applied upon each other. The contractor shall submit the coatings schedule to the Owner.
- C. Paint shall not be applied when the temperature of the steel or paint is below 40 degrees F. Paint shall not be applied when the surface temperature is expected to drop 32 degrees F before the paint has dried. With chemically cured coatings, (catalyzed epoxies, etc.) particular care shall be exercised to follow manufacturer’s special temperature requirements (usually 50 degrees F or above).
- D. Paint shall not be applied in rain, snow fog, mist or when the steel temperature is below the dew point, resulting in condensation.
- E. Each coat of paint shall be in proper state of cure or dryness before the application of the succeeding coat. A minimum of 24 hours shall be allowed between coats.
- F. All weld seams shall receive one (1) brush coat of the specified primer after the sandblasting and cleaning has been completed. The brush prime coat is in addition to the specified prime coat.
- G. All coats shall be smooth, free of brush marks, streaks, laps or pile up of paints, and skipped or missed area.

2.6 TOUCH-UP AND REPAIR

- A. At completion, all painted surfaces and coatings shall be inspected. All damaged spots, whether due to defective materials or workmanship or defects of surfaces covered shall be touched up and the finish restored. Additional coats of paint and coatings required to cover all spots or discoloration of every sort shall be applied at no additional costs to the Owner.
- B. The contractor shall furnish to the Owner at least one (1) extra gallon of finish paint specified above of exterior paint for touch-up repairs due to vandalism.

2.7 MISCELLANEOUS REPAIRS

- A. The Contractor shall perform the following miscellaneous repairs to the existing water storage tanks:
 - 1. Seal the bottom of the tank to the foundation using a polyurethane caulk approved by AWWA.
 - 2. Pressure wash the exterior of the tank, hand tool clean, spot prime, and repair the exterior of the tank. Weld pit repair as needed.
 - 3. Seal interior seams using Sikaflex 1a (or Engineer's approved equal) on all un-welded interior roof lap seams.
 - 4. Seal circumference roof to rim angle connection using Sikaflex 1a. (or Engineer's approved equal)
 - 5. Clean debris from the interior of the tank.
 - 6. Sand blast interior to an SSPC #10, stripe coat all seams and welds and repair interior of the tank.
 - 7. Perform all other repairs and upgrades shown in the drawings for each water storage tank.

PART 3 – EXECUTION

3.1 MANUFACTURER(S)

- A. Surfaces shall be clean, dry, and adequately protected from dampness. Surfaces shall be free of any material, which will adversely affect adhesion or appearance of painting and coating.
- B. Cleanliness shall be checked by wiping the prepared steel surface with a white cloth dampened with manufacturer's thinner for the particular paint system. If the surface is not

clean, the contractor shall take steps to clean the surface more thoroughly before applying paint.

- C. All surface preparation procedures should be done in conformance with local, state, and federal OSHA and EPA guidelines. Waste generation and removal should be in conformance with all OSHA and EPA guidelines.

3.2 INTERIOR SURFACES

- A. Interior surfaces shall have all existing paint removed with surface preparation SSPC –SP10 (near white metal blast). All rust pits, which penetrate 50% or more of the thickness of the steel, shall be repaired by welding. All welding shall be done in conformity with “ANSI/AWWA D100-96 Welded Steel Tanks for Water Storage”.

3.3 EXTERIOR SURFACES

- A. Exterior surfaces shall have existing paint removed with surface preparation SSPC-SP6 (Commercial Blast Cleaning).

3.4 WELDS

- A. Existing weld spatter or weld spatter introduced during repair or renovation procedures shall be removed by power tool cleaning.

3.5 APPLICATION

- A. All materials shall be applied in accordance with manufacturer’s directions and any thinning required shall be done in a manner and exclusively with the type of reducer recommended.
- B. All materials shall be applied under adequate illumination.
- C. Materials shall be thoroughly mixed and kept at a uniform consistency during application. Pot life limitations will be enforced.
- D. Finished work shall be uniform and of the approved color. Make edges of paint adjoining other materials or colors sharp and clean without overlapping.
- E. Total minimum dry film thickness of paint films specified herein will be measured with an Elcometer or similar instrument to determine acceptability. Special attention shall be given to weld seams.
- F. No painting or finishing shall be done under conditions, which are unsuitable for the production of good results. The surfaces to be painted shall be at least 5 feet above the dew point. Apply all paint consistent with temperature limitations as noted by the manufacturer. Do not apply finishes in spaces where dust is being generated.

3.6 FIRST ANNIVERSARY INSPECTION

- A. The Owner shall establish a time period for inspection of paint systems within the contract guarantee period in accordance with Section 9 of AWWA D102. The Contractor shall comply with said Section 9 at no additional cost to the Owner.

3.7 DISINFECTION AND STERILIZATION

- A. Sufficient cure, per the manufacturer's recommendations, of the final coat on the interior wet surface shall be allowed before the elevated tank is sterilized and filled with water.
- B. The tank shall be sterilized using Chlorination Method No. 2 or 3 per the requirements of AWWA C652.
- C. The Owner, free of charge to the Contractor, shall furnish and dispose of sufficient water for testing and sterilization. The water shall be at proper pressure to fill the tank to the maximum working level. Any leaks in the tank that are disclosed by this test shall be repaired by gouging out defective areas and re-welding. No repair work shall be done on any joint unless the water in the tank is at least two (2) feet below the joint being repaired. Any paint damaged by repairs shall be properly restored.
- D. Upon completion of the sterilization procedure, the Owner or his representative shall arrange and bear the cost of any bacteriological testing of water samples from the tank may be required. The tank shall not be placed in service until safe test results are obtained.

3.8 WORKMANSHIP AND CLEANUP

- A. The contractor shall keep the premises clean at all times and shall remove all rubbish as often as directed by the Engineer. All debris is to be removed from the grounds.

3.9 BASIS OF PAYMENT

- A. Measurement and payment for all work and materials described in these specifications shall be included in the Contractor's lump sum bid prices as shown in the Bid Schedule.

END OF SECTION 099050

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VICTORIA L. HOOPS, PRESIDENT

COMPANY: THE THRASHER GROUP

DATE TIME SAMPLED:* C

SAMPLE ID: CHESTNUT RIDGE TANK

DATE TIME RECEIVED: 10-27-22 1703

SAMPLED BY: C

LABORATORY ID: TG 221027-1

PARAMETER	TEST RESULTS	UNITS	METHOD	METHOD DETECTION LIMIT	MINIMUM REPORTING LIMIT	DATE TIME ANALYZED	ANALYST
LEAD	11.58	mg/kg	EPA SW 7010 2007	.5	.5	10-31-22 1152	RC

*Client Provided

**See Attached. The following results meet or exceed requirements and standards set forth by the certifying authority except where noted.

Data Qualifiers

- B Analyte found in reagent blank. Indicates possible reagent or background contamination
- E Estimated Reported value exceeded calibration range.
- J Reported value is an estimate because concentration is less than reporting limit.
- PND Precision not determined.
- R Sample results rejected because of gross deficiencies in QC or method performance. Re-sampling and or re-analysis is necessary.
- RND Recovery not determined.
- U Compound was analyzed for, but not detected.
- O Out of holding. Time does not meet 40 CFR 136.141 compliance.
- T This result is not supported by our certification ID.
- A Does not meet 40 CFR 136/141 compliance.
- C Does not meet 47 CSR 32 compliance.

Narrative:C: NO SAMPLER/SAMPLER SIGNATURE OR DATE TIME SAMPLED ON COC.

Approved



VICTORIA L. HOOPS, PRESIDENT

COMPANY: THE THRASHER GROUP

DATE/TIME SAMPLED:* C

SAMPLE ID: OLIVE HILL TANK

DATE/TIME RECEIVED: 10-27-22 1703

SAMPLED BY: C

LABORATORY ID: TG 221027-2

PARAMETER	TEST RESULTS	UNITS	METHOD	METHOD DETECTION LIMIT	MINIMUM REPORTING LIMIT	DATE/TIME ANALYZED	ANALYST
LEAD	20.70	mg/kg	EPA SW 7010.2007	.5	.5	10-31-22 1152	RC

*Client Provided

**See Attached. The following results meet or exceed requirements and standards set forth by the certifying authority except where noted

Data Qualifiers

- B Analyte found in reagent blank. Indicates possible reagent or background contamination.
- E Estimated Reported value exceeded calibration range.
- J Reported value is an estimate because concentration is less than reporting limit.
- PND Precision not determined.
- R Sample results rejected because of gross deficiencies in QC or method performance. Re-sampling and/or re-analysis is necessary.
- RND Recovery not determined.
- U Compound was analyzed for, but not detected.
- O Out of holding. Time does not meet 40 CFR 136.141 compliance.
- T This result is not supported by our certification ID.
- A Does not meet 40 CFR 136/141 compliance.
- C Does not meet 47 CSR 32 compliance.

Narrative: C: NO SAMPLER SIGNATURE OR DATE/TIME SAMPLED ON COC.

Approved



VICTORIA L. HOOPS, PRESIDENT

COMPANY: THE THRASHER GROUP

DATE/TIME SAMPLED: C

SAMPLE ID: ARDEN TANK

DATE/TIME RECEIVED: 10-27-22 1703

SAMPLED BY: C

LABORATORY ID: TG 221027-3

PARAMETER	TEST RESULTS	UNITS	METHOD	METHOD DETECTION LIMIT	MINIMUM REPORTING LIMIT	DATE/TIME ANALYZED	ANALYST
LEAD	129.71	mg/kg	EPA SW 7010.2007	.5	.5	10-31-22 1152	RC

*Client Provided

**See Attached. The following results meet or exceed requirements and standards set forth by the certifying authority except where noted.

Data Qualifiers

- B Analyte found in reagent blank. Indicates possible reagent or background contamination.
- E Estimated Reported value exceeded calibration range.
- J Reported value is an estimate because concentration is less than reporting limit.
- PND Precision not determined.
- R Sample results rejected because of gross deficiencies in QC or method performance. Re-sampling and/or re-analysis is necessary.
- RND Recovery not determined.
- U Compound was analyzed for, but not detected.
- O Out of holding. Time does not meet 40 CFR 136.141 compliance.
- T This result is not supported by our certification ID.
- A Does not meet 40 CFR 136/141 compliance.
- C Does not meet 47 CSR 32 compliance.

Narrative: C: NO SAMPLER/SAMPLER SIGNATURE OR DATE/TIME SAMPLED ON COC.

Approved



VICTORIA L. HOOPS, PRESIDENT

COMPANY: THE THRASHER GROUP

DATE TIME SAMPLED:* C

SAMPLE ID: SUNRIES TANK

DATE TIME RECEIVED: 10-27-22 1703

SAMPLED BY: C

LABORATORY ID: TG 221027-4

PARAMETER	TEST RESULTS	UNITS	METHOD	METHOD DETECTION LIMIT	MINIMUM REPORTING LIMIT	DATE TIME ANALYZED	ANALYST
LEAD	635.96	mg/kg	EPA SW 7010 2007	.5	.5	10-31-22 1152	RC

*Client Provided

**See Attached. The following results meet or exceed requirements and standards set forth by the certifying authority except where noted.

Data Qualifiers

- B Analyte found in reagent blank. Indicates possible reagent or background contamination.
- E Estimated Reported value exceeded calibration range.
- J Reported value is an estimate because concentration is less than reporting limit.
- PND Precision not determined.
- R Sample results rejected because of gross deficiencies in QC or method performance. Re-sampling and/or re-analysis is necessary.
- RND Recovery not determined.
- U Compound was analyzed for, but not detected.
- O Out of holding. Time does not meet 40 CFR 136.141 compliance.
- T This result is not supported by our certification ID.
- A Does not meet 40 CFR 136.141 compliance.
- C Does not meet 47 CSR 32 compliance.

Narrative:C: NO SAMPLER SIGNATURE OR DATE TIME SAMPLED ON COC.

Approved



VICTORIA L. HOOPS, PRESIDENT

COMPANY: THE THRASHER GROUP

DATE/TIME SAMPLED:* C

SAMPLE ID: CLEMTOWN TANK

DATE/TIME RECEIVED: 10-27-22 1703

SAMPLED BY: C

LABORATORY ID: TG 221027-5

PARAMETER	TEST RESULTS	UNITS	METHOD	METHOD DETECTION LIMIT	MINIMUM REPORTING LIMIT	DATE/TIME ANALYZED	ANALYST
LEAD	343.66	mg/kg	EPA SW 7010 2007	.5	.5	10-31-22 1152	RC

*Client Provided

**See Attached. The following results meet or exceed requirements and standards set forth by the certifying authority except where noted.

Data Qualifiers

- B Analyte found in reagent blank. Indicates possible reagent or background contamination.
- E Estimated Reported value exceeded calibration range.
- J Reported value is an estimate because concentration is less than reporting limit.
- PND Precision not determined.
- R Sample results rejected because of gross deficiencies in QC or method performance. Re-sampling and/or re-analysis is necessary.
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- C Does not meet 47 CSR 32 compliance.

Narrative: C: NO SAMPLER SAMPLER SIGNATURE OR DATE/TIME SAMPLED ON COC.

Approved

Need Results ASAP by Nov. 4 @ 12:00 pm

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The Thrasher Group

BILL TO: Client Name

Scanned with CamScanner

606 White Oaks Blvd

Address

Br:dlp/ort WV L6330

City/State/Zip

Cullen, Catherine

Contact Person

304-205-8804 fax

Telephone Number:

The Washington Column

Email Address

[illegible]

Purchase Order #

[Downloaded from ascelibrary.org by University of California - San Diego on 07/06/15](#)

TURN AROUND TIME

Figure 1

Enrol Results	Final Results

RUSH/ign-ar-ha-ni-lee? swa-ha-gers may ap-ah-yi, Please Check One

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367</		

[illegible]

Records retained for 5 years

Laboratory Comments.
Temperature Upon Receipt
Positive Result: _____
Negative Result: _____

3061D

Donnie Presbury Temp upon Record

This non-conformance sheet is being used for the following reasons:

Client *THE THRAASER GROUP*

Date/Time Received: *10-27-22 1703*

☐ Chain of Custody does not meet one or more of the requirements of 47 CSR 32 5.1.1a-h.

☐

Explanation of any items checked:

- ☐ Sample(s) not properly preserved by 40 CFR 136.
- ☐ Temperature of sample(s) received is not $\leq 6^{\circ}\text{C}$.
- ☐ Temperature of biological sample(s) received are not $< 10^{\circ}\text{C}$.
- ☐ Sample(s) received frozen.
- ☐ Sample(s) received outside of EPA maximum holding time.
- ☐ Sample(s) not received in EPA approved container(s).
- ☒ Chain of Custody is missing one or more; sampling location, date and time of collection, collector's name, type(s) of preservation, number of containers per sample, type of sample (grab or composite) and any remarks.
- ☐ Sample ID's not labeled on container(s) and/or chain of custody.
- ☐ Chain of Custody not signed by client during one or more transfers.
- ☐ No Chain of Custody form received with sample(s)
- ☐ See Narrative

☐ Chain of Custody marked indicating one or more samples were improperly preserved.

☐ Analytical data resulting from samples improperly preserved will not be accepted as being in compliance.

Receiving Technician Signature: *L L*

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SECTION 331213 - WATER SERVICE CONNECTIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipe and fittings for 2- inch and smaller water service connections.
2. Corporation stops and service saddles.
3. Curb stops.
4. Copper setters.
5. Water meters.
6. Meter wells and frames and lids.
7. Underground pipe markers.
8. Bedding and cover materials.

B. Related Requirements:

1. Section 312316.13 - Trenching
2. Section 331300 - Disinfecting of Water Utility Distribution

1.2 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. American Society of Mechanical Engineers:

1. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.
2. ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.

C. American Society of Sanitary Engineering:

1. ASSE 1012 - Performance Requirements for Backflow Preventers with an Intermediate Atmospheric Vent.
2. ASSE 1013 - Performance Requirements for Reduced Pressure Principle Backflow Preventers and Reduced Pressure Principle Fire Protection Backflow Preventers.

D. ASTM International:

1. ASTM A48 - Standard Specification for Gray Iron Castings.
2. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings.
3. ASTM B88 - Standard Specification for Seamless Copper Water Tube.
4. ASTM C858 - Standard Specification for Underground Precast Concrete Utility Structures.

5. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³).
6. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³).
7. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
8. ASTM D2241 - Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).
9. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
10. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
11. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

E. American Welding Society:

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

F. American Water Works Association:

1. AWWA C600 - Installation of Ductile-Iron Mains and Their Appurtenances.
2. AWWA C700 - Cold-Water Meters - Displacement Type, Bronze Main Case.
3. AWWA C701 - Cold-Water Meters - Turbine Type, for Customer Service.
4. AWWA C702 - Cold-Water Meters - Compound Type.
5. AWWA C706 - Direct-Reading, Remote-Registration Systems for Cold-Water Meters.
6. AWWA C800 - Underground Service Line Valves and Fittings.
7. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In. Through 3 In., for Water Service.
8. AWWA M6 - Water Meters - Selection, Installation, Testing, and Maintenance.

1.3 SUBMITTALS

- A. Section 013330 – Submittal Procedures.
- B. Product Data: Submit data on all materials and equipment.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

- A. Section 017000 – Execution and Close Requirements
- B. Project Record Documents: Record actual locations of installed materials and equipment.
- C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.5 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 products and materials off ground and under protective coverings and away from walls.
- D. Exercise care in handling precast concrete products to avoid chipping, cracking, and breakage.

PART 2 - PRODUCTS

2.1 WATER PIPING AND FITTINGS

- A. Polyethylene Pipe – Service Lines (As shown in the Drawings and/or described in the Pay Item(s)):
 - 1. Comply with AWWA C901, ASTM D2737, PE 4710 HDPE material, DR 9 for 250 psig pressure rating, Copper Tube Sized (CTS).
 - 2. Fittings:
 - a. Comply with AWWA C901 and ASTM D2737.
 - b. Type: Molded or fabricated.
 - 3. Joints: Butt fusion or compression.
 - 4. At connections, furnish and install solid 304 tubular stainless steel insert stiffeners, dimpled, and flanged to retain placement in service line, and two (2) key locks to maintain solid structural integrity.
- B. Copper Tubing – Service Lines (As shown in the Drawings and/or described in the Pay Item(s)):
 - 1. Comply with ASTM B88.
 - 2. Type K, annealed.
 - 3. Fittings: Conform to ASME B16.18, cast copper or ASME B16.22, wrought copper.
 - 4. Joints: Compression connection.

2.2 CORPORATION STOPS AND SERVICE SADDLES

- A. Manufacturers:
 - 1. Ford Meter Box Co., Inc.
 - 2. Substitutions: As approved by the Engineer.
- B. Corporation Stops:

1. Comply with ASTM B62.
2. Body: Brass or red brass alloy, ball corporation with a working pressure of 300 PSI.
3. Inlet End: Threaded for tapping according to AWWA C800.
4. Outlet End: Compression for Copper Tube Sized (CTS) polyethene pipe service tubing and copper service tubing.

C. Service Saddles:

1. Type: Fused Saddles. Made of same material as mainline.
2. Designed to hold pressures in excess of pipe working pressure.

2.3 CURB STOPS

A. Manufacturers:

1. Ford Meter Box Co., Inc.
2. Substitutions: As approved by the Engineer.

B. Curb stop shall be water works, angle meter valve consistent with IPS sizes and polyethylene tubing with proper connection fittings. All brass shall confirm to AWWA C800.

C. Curb Stops:

1. Body: Brass or red brass alloy.
2. Comply with ASTM B62.
3. Valve Type: Plug.
4. Sealing: Positive pressure.

D. Curb Boxes and Covers:

1. Body: Cast iron.
2. Type: Extension or Buffalo.
3. Base: Minneapolis or arch pattern.
4. Lid:
 - a. Inscription: WATER.
 - b. Plug: Pentagonal.

2.4 COPPER SETTERS

A. Manufacturers:

1. Ford Meter Box Co., Inc.
2. Substitutions: As approved by the Engineer.

B. Outside Meter Setting for Meters 1" or Less:

1. Copper setters:

- a. Service tubing sizing: Use ¾" Copper Tube Sized (CTS) for all meters less than or equal to ¾". Use 1" CTS for 1" meters.
- b. Material: Copper and brass components. Lead-free requirements shall be met for all surfaces in contact with potable water. "No-lead" alloy shall be used for all copper setters.
- c. For high pressure meter settings, regulators (PRV's) shall be Wilkins Model 600 LUSC or Honeywell Braukman DS05 "Dial Set," or approved equal. Each high pressure meter setting shall include a cross-over copper S-tube with saddle nuts to facilitate installation of the regulator at a position prior to the water meter. A pair of regulator meter adaptors and gaskets shall be provided at each meter setting.
- d. Inlet shall include pack joint inlet (grip nut compression fitting for ¾" and 1") for CTS service tubing and an angle ball valve with saddle nut (meter nut) with padlock wings.
- e. Outlet shall include a saddle nut (meter nut) and ASSE-approved cartridge style dual angle check valve. Outlet shall include a saddle nut (meter nut) and pack joint outlet (grip nut compression fitting for ¾" and 1") for CTS service tubing.
- f. One (1) brace pipe eye and one (1) PVC or galvanized brace pipe shall be furnished for each meter setting.
- g. The height shall be 12 inches for low pressure meter settings.
- h. The height shall be 12 inches for 5/8" and 5/8" x ¾" high pressure meter settings (9" minimum is manufacturer's requirements).
- i. The height shall be 15 inches for 3/4" and 1" high pressure meter settings (15" minimum is manufacturer's requirements).
- j. Furnish tie bar for 18 inch or taller copper setter heights.
- k. Copper setters shall be the following or approved equal:

Manufacturer: Ford Meter Box, Co., Model VBHC71-12W-44-33-NL for 5/8" water meter setting, low pressure.

Manufacturer: Ford Meter Box, Co., Model VBHC72-12W-44-33-NL for 5/8" x ¾" water meter setting, low pressure.

Manufacturer: Ford Meter Box, Co., Model VBHC73-12W-44-33-NL for ¾" water meter setting, low pressure.

Manufacturer: Ford Meter Box, Co., Model VBHC74-12W-44-44-NL for 1" water meter setting, low pressure.

Manufacturer: Ford Meter Box, Co., Model TVBHC71-12W-44-33-NL for 5/8" water meter setting, high pressure.

Manufacturer: Ford Meter Box, Co., Model TVBHC72-12W-44-33-NL for 5/8" x ¾" water meter setting, high pressure.

Manufacturer: Ford Meter Box, Co., Model TVBHC73-15W-44-33-NL for ¾" water meter setting, high pressure.

Manufacturer: Ford Meter Box, Co., Model TVBHC74-15W-44-44-NL for 1" water meter setting, high pressure.

C. Outside Meter Setting for 1-1/2" and 2" Flanged Meters:

1. Copper setters:

- a. Service tubing sizing: Use the same size Copper Tube Sized (CTS) service tubing as the size of the meter setting.

- b. Material: Copper and brass components. Lead-free requirements shall be met for all surfaces in contact with potable water. "No-lead" alloy shall be used for all copper setters.
- c. Inlet shall include pack joint inlet (grip nut compression fitting) for CTS service tubing and an angle ball valve with saddle nut (meter nut) with padlock wings.
- d. Outlet shall include a saddle nut (meter nut) and ASSE-approved angle check valve. Outlet shall include a saddle nut (meter nut) and pack joint outlet (grip nut compression fitting) for CTS service tubing.
- e. A by-pass with ball valve and pad lock wings at the base of the copper setter shall be included with each copper setter. A high by-pass option shall not be included.
- f. Two (2) brace pipe eyes and two (2) PVC or galvanized brace pipes shall be furnished for each meter setting.
- g. The height shall be 15 inches for low pressure meter settings.
- h. Copper setters shall be the following or approved equal:

Manufacturer: Ford Meter Box, Co., Model VBHC76-15B-44-66-G-NL for 1-1/2" water meter setting, low pressure.

Manufacturer: Ford Meter Box, Co., Model VBHC77-15B-44-77-G-NL for 2" water meter setting, low pressure.

2.5 WATER METERS

- A. Manufacturers/Models
 - 1. Neptune
 - 2. Or Engineer's Approved equal.
- B. For new meter setting locations, new meters shall be radio-read and shall include all related appurtenances to allow for reading and billing based on the specified method of reading.
- C. For transferred meter setting locations, transfer the existing meter from the existing meter setting to the new meter setting.
- D. Manufacturer/Model of new meters shall be provided by and initially installed as part of Contract #2. Contract #1 shall be responsible for transferring the water meter located in the existing meter well to the new meter well, whether this is the existing water meter or new water meter installed in Contract #2. Furnish materials that will seamlessly interface with existing reading and billing hardware and software.
- E. For new systems or total replacement of all meters in an existing system, furnish materials that will seamlessly interface with new reading and billing hardware and software.

2.6 METER WELLS AND FRAMES AND LIDS

- A. Manufacturers:
 - 1. Meter Wells: ADS, Ford Meter Box Company, Inc., Mid-States Plastic, Raven Products.
 - 2. Frames and Lids: Ford Meter Box Co., Inc.
 - 3. Or approved equals.

- B. Meter Wells: Minimum inside diameter shall be 18" nominal. Provide larger inside diameters as required to accommodate copper setters and allow for installation and removal of the meters and related appurtenances to be housed in the meter well.

Provide 18" inside diameter for single low pressure meter settings of 3/4" or less and for air release valve assemblies.

Provide 20" inside diameter for single low pressure meter settings of 1" and single high pressure meter settings of 1" or less.

Depth shall be as required, that in combination with the frame and lid depth, so that the approximate cover over the service tubing will be provided as required in the Trench Detail(s) provided in the Drawings.

For 3' of required cover, the meter well depth shall be 30".

For 3'-6" of required cover, the meter well depth shall be 36".

Construction shall be polyvinylchloride (PVC) or high density polyethylene (HDPE), supplied with pre-cut notches for inlet and outlet service tubing.

- C. Frames and lids for 18" and 20" diameter meter wells: Cast iron frame with single, cast iron, locking overlapping-style lids with a minimum of 11.5" opening and sized to fit the meter well diameters. All lids shall include holes. These holes shall accommodate touch read pads where required or shall include plastic automatic reading (AMR) plugs to accommodate radio read meters installed and/or transferred in this project or future meter upgrades. The pentagon bolts shall be the standard 27/32" unless otherwise required by the Owner.

2.7 UNDERGROUND PIPE MARKERS

- A. Magnetic Warning Tape:

Magnetic warning tape shall consist of a minimum thickness 0.35 mils solid aluminum coil core running a full length and width, encased in a protective, highly visible, color coded inert plastic that is impervious to all known alkalis, acids, chemical reagents, and solvents found in soil. Minimum overall thickness 5 mils. Tape shall a minimum of 6" wide, marked "water" in blue, and shall be magnetically detectable.

- B. Tracer Wire (where shown in the Trench Detail(s) in the Drawings)

1. Electronic detection materials for nonconductive piping products.
2. Tracer wire shall be #12 AWG solid copper or high strength copper clad steel with 30 mil high molecular weight polyethylene (HMWPE) insulation or high density polyethylene (HDPE) insulation. Color shall be blue.
3. Splices shall be avoided to the maximum extent possible. Where splices are required, use 3M DBR (direct bury splice kit), copperhead snake bite connectors, or approved equal.

2.8 BEDDING AND COVER MATERIALS

- A. Bedding: As shown in Trench Detail(s) in the Drawings.
- B. Cover: As shown in the Trench Detail(s) in the Drawings and as specified in Section 312316.13 – Trenching.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that trench excavation is ready to receive work.

3.2 PREPARATION

- A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, and remove burrs.
- B. Remove scale and dirt from inside and outside of piping before assembly.
- C. Prepare pipe connections to equipment with flanges or unions.

3.3 INSTALLATION

- A. Corporation Stops and Service Saddles:
 - 1. Location:
 - a. Provide full support for service saddle for full circumference of pipe, with minimum 2 inches width of bearing area. Attach corporation stops at 10 and 2 o'clock positions along the water main's circumference.
 - b. Locate and stagger corporation stops at least 12 inches apart longitudinally.
 - 2. Do not backfill and cover service connections until installations are approved by Engineer.
- B. Bedding:
 - 1. Excavation:
 - a. Excavate pipe trench as specified in Section 312316.13 – Trenching for Work of this Section.
 - 2. Dewater excavations to maintain dry conditions and to preserve final grades at bottom of excavation.
 - 3. Provide sheeting and shoring if required and as specified in Section 312316.13 - Trenching.
 - 4. Place bedding material as shown in the Trench Detail(s) in the Drawings and compact to 95 percent of maximum dry density as per ASTM D698 or 100 percent of the surrounding ground density.

C. Pipe and Fittings:

1. Maintain minimum separation of water lines from sewer piping of 18" vertical and 10' horizontal.
2. Install pipe to depths indicated in the Trench Detail(s) in the Drawings and as specified in Section 312316.15 – Trenching.
3. Install access fittings to permit disinfection of water system performed under Section 331300 - Disinfecting of Water Utility Distribution.
4. Form and place concrete for thrust restraints at each elbow or change of direction of pipe.
5. Cover:
 - a. Establish elevations of buried piping with not less than the cover shown in the Trench Details(s) in the Drawings.
 - b. Measure depth of cover from final surface grade to top of pipe barrel.
6. Pipe Markers:
 - a. Install plastic ribbon tape continuous buried 18 inches below finish grade. Install tracer wire above piping where shown in the Trench Detail(s) in the Drawings.
 - b. Coordinate with trench Work as specified in Section 312316.13 – Trenching

D. Curb Stops:

1. Set curb stops on solid bearing.
2. Boxes:
 - a. Center and plumb curb boxes over curb stops.
 - b. Set box cover flush with finished grade.

E. Water Meters:

1. Install water meters in accordance with the Detail(s) included in the Drawings.

F. Backfilling:

Furnish and place bedding as shown in the Trench Detail(s) in the Drawings. Place backfill over bedding in maximum lifts of eight inches (8") unless otherwise required by Authorities having jurisdiction. Tamp in place. Compact to 95 percent of maximum dry density as per ASTM D698 or 100 percent of the surrounding ground density. Maintain optimum moisture content of backfill material to attain required compaction density. Backfill around sides and to top of pipe as specified in Section 312316.13 – Trenching and as shown in the Trench Detail(s) in the Drawings.

G. Disinfection of Water Piping System:

1. Flush and disinfect system as specified in Section 331300 - Disinfecting of Water Utility Distribution.

3.4 FIELD QUALITY CONTROL

- A. Request Inspection by Engineer prior to backfilling trench.
- B. Pressure test water distribution system according to AWWA C600.
 - 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; expel air from piping at high points.
 - 4. Install corporation cocks at high points.
 - 5. Close air vents and corporation cocks after air is expelled.
 - 6. Raise pressure to specified test pressure.
 - 7. Observe joints, fittings, and valves under test.
 - 8. Remove and replace cracked pipes, joints, fittings, and valves that show visible leakage and retest.
 - 9. Correct visible deficiencies and continue testing at same test pressure for additional two hours to determine leakage rate, maintaining test pressure within plus or minus 5.0 psi.
 - 10. Leakage is defined as quantity of water supplied to piping as necessary to maintain test pressure during testing period.
 - 11. Compute maximum allowable leakage using following formula:
 - a. $L = SD \times \sqrt{P}/C$.
 - 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.
 - 12. If test of pipe indicates leakage greater than that allowed, locate source of leakage, make corrections, and retest until leakage is within allowable limits.
 - 13. Correct visible leaks regardless of quantity of leakage.
- C. If tests indicate Work does not meet specified requirements, remove and/or repair Work and retest.

END OF SECTION 331213

SECTION 331900 - WATER UTILITY METERING EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Ultrasonic flow meters.
2. Transmitters.

B. Related Requirements:

1. Section 221123.13 – Booster Pump Station Rehabilitation
2. Section 333216.10 – Packaged Utility Water Pumping Stations

1.2 DEFINITIONS

- A. FRP: Fiberglass-reinforced plastic.

1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Section 012000 - Price and Payment Procedures: Contract Sum/Price modification procedures.

B. Meters:

1. Basis of Measurement: By unit.
2. Basis of Payment: Includes meter, fittings, accessories, meter box, and installation.

1.4 REFERENCE STANDARDS

A. American Society of Mechanical Engineers:

1. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.
2. ASME PTC 19.5 - Flow Measurement.

B. American Water Works Association:

1. AWWA C700 - Cold-Water Meters - Displacement Type, Metal Alloy Main Case.
2. AWWA C701 - Cold-Water Meters - Turbine Type, for Customer Service.
3. AWWA C702 - Cold-Water Meters - Compound Type.
4. AWWA C704 - Propeller-Type Meters for Waterworks Applications.
5. AWWA C707 - Encoder-Type Remote-Registration Systems for Cold-Water Meters.
6. AWWA M6 - Water Meters - Selection, Installation, Testing, and Maintenance.

C. ASTM International:

1. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
2. ASTM B61 - Standard Specification for Steam or Valve Bronze Castings.

D. National Electrical Manufacturers Association:

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

E. NSF International:

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

1.5 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit manufacturer information for water meters and accessories.
- C. Manufacturer's Certificate: Certify that water meters meet or exceed specified requirements.
- D. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.
- E. Source Quality-Control Submittals: Indicate results of shop tests and inspections.
- F. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
- G. Manufacturer Reports:
 1. Certify that equipment has been installed according to manufacturer's instructions.
 2. Indicate activities on Site, adverse findings, and recommendations.
- H. Qualifications Statements:
 1. Submit qualifications for manufacturer and installer.
 2. Submit manufacturer's approval of installer.

1.6 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of water meters.

1.7 QUALITY ASSURANCE

- A. Materials in Contact with Potable Water: Certified to NSF 61 and NSF 372.
- B. Perform Work according to AWWA C715 standards.
- C. Maintain one copy of each document on Site.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.
- B. Installer: Company specializing in performing Work of 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 EXISTING CONDITIONS

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

1.11 WARRANTY

- A. Section 017000 - Execution and Closeout Requirements: Requirements for warranties.
- B. Furnish five-year manufacturer's warranty for water meters.

PART 2 - PRODUCTS

2.1 ULTRASONIC FLOW METERS

A. Manufacturers:

1. Neptune
2. Substitutions: Engineer's Approved Equal
3. Pump Station and PRV water meters will be of the same manufacturer as residential water meters used in Contract #2.

B. Description:

1. Clamp separate and nonintrusive transmitting and receiving transducers to outside of process pipe.
2. Flow Rate Range:
 - a. For 3-inch Flow Meter: 0.75 to 500 gpm.
 - b. For 4-inch Flow Meter: 1.5 to 1250 gpm.
3. Ambient Operating Temperature Range:
 - a. Indoors: 70 degrees F.
 - b. Outdoors: 20 degrees F

C. Output Signal:

1. 4 to 20 mA dc.
2. Linear with flow rate.
3. Linearity: Plus or minus 0.5 percent.
4. Repeatability: 0.1 percent under simulated flow.
5. Long-Term Drift: Less than 0.1 percent.

2.2 TRANSMITTERS:

A. Description:

1. Output:
 - a. Meeting FCC Part 15.247
 - b. 4 to 20 mA dc analog signal.
 - c. Channel Frequency 910 to 920 MHz
 - d. Number of Channels: 50
 - e. Accuracy: Plus or minus 1.5 percent of full scale.
2. Transmitter Communication Interface: PROFIBUS.
3. Communication Firmware and Software: Compatible with common SCADA Telemetry systems and allowable with Green Bank Observatory Quiet Zone.
4. Housing Material: Cast aluminum.

B. Human-Machine Interface:

1. Touch-screen programming, functioning through enclosure window without opening enclosure.
2. Display:
 - a. Size: 3 lines by 9 characters.
 - b. Type: Backlit LCD.
 - c. User-selectable engineering units.
 - d. Readout of diagnostic error messages.

C. Mounting:

1. Permanently potted and sealed watertight as part of the meter.

D. Accessories:

1. Current signal output simulation.
2. Leak detection.
3. Reverse and forward flow measurements.
4. High flow warning.
5. Empty pipe detection.
6. Battery Status.
7. Self-diagnostics.
8. Automatic zero adjustment.

2.3 SOURCE QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Requirements for testing, inspection, and analysis requirements.
- B. Provide shop inspection and testing of meters.
- C. Test meters according to AWWA M6.
- D. Certificate of Compliance:
 1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.
 2. Specified shop tests are not required for Work performed by approved manufacturer.

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 Shop Drawings.

3.2 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Before attaching meter, ensure that pipe ends are deburred, square, and plumb and that scale and dirt on inside and outside of piping has been removed.
- C. Prepare pipe connections to equipment with flanges or unions, as appropriate.
- D. Protect and support existing distribution piping as Work progresses.

3.3 INSTALLATION

- A. Meters:
 - 1. Install meters according to AWWA M6, with isolating valves on inlet and outlet.

3.4 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.
- B. Section 017000 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- C. Testing:
 - 1. Test and calibrate flow meter to demonstrate specified accuracy requirements.
 - 2. Test meters according to AWWA M6.
- D. Manufacturer Services: Furnish services of manufacturer's representative experienced in installation of products furnished under this Section for not less than 5 days on Site for installation, inspection, startup, field testing, and instructing Owner's personnel in maintenance of equipment.
- E. 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.
- F. Furnish installation certificate from equipment manufacturer's representative attesting that equipment has been properly installed and is ready for startup and testing.

3.5 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 331900

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SECTION 434111 – GLASS LINED BOLTED STEEL TANKS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Ground-mounted flat-bottom glass lined bolted steel water storage tank(s) of the size and dimensions indicated in the Water Storage Tank Schedule at the end of this Specification Section. The tank will store potable water.

B. Scope of Work

1. The work required under this Specification Section shall consist of all necessary materials, tools, equipment, and labor for the construction and successful operation of a ground-mounted flat-bottom glass lined bolted steel water storage tank with tank foundation and all appurtenances shown in the Drawings. All tanks furnished and installed under this Section shall meet or exceed the minimum requirements of AWWA Standard D103, latest revision (AWWA D103), all requirements of this Specification Section, and any and all of the requirements of any and all federal, state, and local agencies having jurisdiction.

C. Related Requirements:

1. Section 012000 – Price and Procedures
2. Section 033000 – Cast-In-Place Concrete
3. Section 323113 – Chain Link Fences and Gates
4. Section 331113 – Water Distribution Piping
5. Section 331300 – Disinfecting of Water Utility Distribution
6. Section 331313 – Water Storage Tank Disinfection
7. Section 330517 – Precast Concrete Valve Vaults

1.2 DEFINITIONS

- A. Purchaser: Owner, as used in AWWA D103.
- B. Tank Low Level: Level when emptied through specified discharge fittings unless otherwise indicated on Drawings.

1.3 REFERENCE STANDARDS

- A. ASTM International:

1. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

B. American Water Works Association:

1. AWWA D103 - Factory-Coated Bolted Carbon Steel Tanks for Water Storage.

C. NSF International:

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

D. Occupational Safety and Health Administration:

1. OSHA 29 CFR 1910 - Occupational Safety and Health Standards.

1.4 COORDINATION

- A. Coordinate Work with Owner and other Contractor(s) for other contract(s).

1.5 SCHEDULING

- A. Provide and update schedule on a regular basis. Coordinate schedule with Owner and Contractor(s) for other Contract(s).

1.6 SUBMITTALS

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

B. Product Data:

1. Submit data for expansion joint fittings and other pipe specialty fittings.
2. Submit data for ladder and ladder safety devices.
3. Submit information concerning materials of construction, fabrication, and coatings.

C. Shop Drawings:

1. Signed and sealed by professional engineer.
2. Tank Shop Drawings shall include, but not be limited to, the following:
 - a. Complete plan, elevation, and sectional Drawings showing critical dimensions.
 - b. Tank foundation details.
 - c. Inlet and outlet piping,
 - d. Structural plate thickness.
 - e. Details of all weld types and sizes.
 - f. Inlet pipe with removable silt stop, outlet pipe with removable silt stop, and overflow piping details, including fittings, expansion joints, pipe support methods..

- g. Ladder and ladder safety device details.
- h. Handrail details.
- i. Shell access hatch details.
- j. Roof hatch details.
- k. Pressure-vacuum vent details.
- l. Water level indicator.
- m. Valve pit details.
- n. Tank manufacturer identification details.
- o. Cathodic protection.

D. Manufacturer's Certificate:

- 1. Certify that products meet or exceed specified requirements.
- 2. Submit certified list of glass lined bolted steel water tank installations storing potable water, in service for period of not less than five years. Provide Owner name and contact information for each. A minimum of five successful installations is required. Successful installations are those in service longer than five years with minimal maintenance issues as described by the Owners of those installations and/or as observed by the Engineer.

E. Delegated Design Submittals: Submit signed and sealed Shop Drawings with design calculations and assumptions for tank, tank foundation, and cathodic protection.

F. Test and Evaluation Reports:

- 1. Submit mill test reports.
- 2. Written Report Certifying Work: Prepare and submit as indicated in AWWA D103.
- 3. Submit Installation Certificate from equipment manufacturer's representative as described in PART 3.

G. Manufacturer Instructions: Submit detailed instructions on installation requirements, including tank component handling procedures, anchoring, and layout.

H. Source Quality-Control Submittals: Indicate results of shop and/or factory tests and inspections.

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

J. Manufacturer Reports: Submit certification that tank has been installed according to manufacturer instructions.

K. Qualifications Statements:

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

1.7 MAINTENANCE MATERIAL SUBMITTALS

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

1.8 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual location and orientation of tank and appurtenances.
- C. Operations and Maintenance Data: Submit maintenance instructions for tanks and accessories.

1.9 QUALITY ASSURANCE

- A. Perform Work according to AWWA D103.
- B. Materials in Contact with Potable Water: Certified to NSF Standards 61 and 372.

1.10 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' documented experience.
- B. Fabricator: Company specializing in fabricating products specified in this Section with minimum five years' documented experience.
- C. Erector: Company specializing in performing Work of this Section with minimum five years' documented experience and approved by manufacturer.
- D. Licensed Professional: Professional engineer experienced in design of specified Work and actively licensed in the state where the tank is located. The licensed professional shall furnish a copy of the Certificate of Authorization (or equivalent) for his/her company to practice engineering in the state of licensure.

1.11 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. Storage:
 - 1. Store materials in areas protected from weather and moisture and according to manufacturer instructions.
 - 2. Do not store products directly on ground.
- D. Handling: Handle materials in a manner to prevent damage to interior or exterior surfaces.

E. 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.

1.12 WARRANTY

- A. Section 017000 - Execution and Closeout Requirements: Requirements for warranties.
- B. The Tank Manufacturer shall include a warranty on tank materials and workmanship for a specified period. As a minimum, the warranty shall provide assurance against defects in material, coatings, workmanship, and tank interior lining for a period of ten (10) years, starting at the date of Substantial Completion. A 5-year warranty bond must be supplied. The warranty bond must be for the full amount listed in the bid section. Tank inspections, including interior, shall be performed every other year throughout the warranty period at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 TANKS

- A. Steel: All steel shall be meet the minimum requirements of AWWA Standard D103, latest revision.
- B. Substitutions:
 1. Substitutions: Substitute and "or-equal" products will be considered in accordance with Article 11 – Substitute and "Or-Equal" Items of the Instructions to Bidders. The minimal required information for consideration shall include the following:
 - a. Typical structure and foundation drawings.
 - b. List of tank materials and appurtenances
 - c. Tank coating specifications.
 - d. Certification from tank manufacturer that the proposed substitute meets all of the design standards of this Specification and AWWA D103.
 - e. Acceptance as a substitute or "or-equal" does not constitute approval of submittals required in this and other Specification Sections.
- C. Description:
 1. Design, fabricate, and erect ground-level, glass lined bolted steel water storage tank and accessories.
- D. Performance and Design Criteria:
 1. Design in conformance with requirements listed in AWWA D103, unless supplemented or modified in this Section:

- a. The tank coating shall conform solely to Section 12.4 of AWWA D103.
 - b. The glass coating on the tank, bolt head encapsulation material, and joint sealant shall have been approved for listing under ANSI/NSF Standard 61 for Indirect Additives.
 - c. The tank manufacturer shall be ISO-9001 certified to assure product quality.
 - d. The tank manufacturer shall undergo an annual FM (Factory Mutual) inspection of their glass-coated, bolted-steel tank factory & provide written proof thereof to assure quality.
 - e. Roof Design shall conform to ANSI/AWWA Standard D108-10, effective June 2010.
 - f. Bottom capacity level (BCL) and top capacity level (TCL) above top of foundation: As indicated on Drawings as Base Elevation and Overflow Elevation or other terms describing the same.
 - g. Specific Gravity: 1.00 for Water
 - h. Roof: As indicated on Drawings.
-
- 1) Tanks with diameters of 14 to 31 feet shall include a radially sectioned roof fabricated from glass coated, bolted steel panels, as produced by the tank manufacturer, and shall be assembled in a similar manner as the sidewall panels utilizing the same sealant and bolting techniques, so as to assure a water/air tight assembly. The roof shall be clear span and self-supporting. Both live and dead loads shall be carried by the tank walls. The exterior coating finish shall be cobalt blue glass. The manufacturer shall furnish a roof opening which shall be placed near the outside tank ladder and which shall be provided with a hinged cover and a hasp for locking. The opening shall have a clear dimension of at least twenty four (24") inches in one direction and eighteen (18") inches in the other direction. The opening shall have a gasketed weather tight cover.
 - 2) Roofs for tanks greater than 31 ft. diameter shall be constructed of a non-corrugated triangular aluminum panels which are sealed and firmly clamped in an interlocking manner to a fully triangulated aluminum space truss system of wide flange extrusions, thus forming a spherical dome structure.
 - 3) The dome shall be clear span and designed to be self-supporting from the periphery structure with primary horizontal thrust contained by an integral tension ring. The dome dead weight shall not exceed 3 pounds per square foot of surface area.
 - 4) The dome and tank shall be designed to act as an integral unit. The tank shall be designed to support an aluminum dome roof including all specified live loads.
 - 5) Materials:
 - a) Triangulated space truss: 6061-T6 aluminum struts and gussets.
 - b) Triangular closure panels: 050"t 3003-H16 aluminum sheet.
 - c) Tension ring: 6061-T6 aluminum
 - d) Fasteners: 7075-T73 anodized aluminum or series 300 stainless steel.
 - e) Sealant and gaskets: silicone rubber.
 - f) Dormers, door, vents and hatches: 6061-T6, 5086-H34 or 3003-H16 aluminum.

- i. Snow Loading: Minimum 30 psf or as required in the latest edition of the International Building Code, whichever is greater. No corrections for roof slopes or lowest one-day mean temperature shall be made.
- j. Minimum Roof Design Live Load: 15 psf or as specified in AWWA D100, whichever is greater.
- k. Wind Load Requirements: Basic wind speed of 100 mph or as required in AWWA D103, whichever is greater
- l. Allowable Soil Bearing: Capacity: 3000 psf or as indicated in the Geotechnical Report, whichever is less.
- m. Earthquake Design: As specified in AWWA D103 Section 5.2.5. In the absence of 100 vertical foot geological profile, use Site Class D.

2.2 TANK CONSTRUCTION

A. Comply with requirements listed in AWWA D103, unless supplemented or modified below:

- 1. Pipe and Fittings for Fluid Conductors: Modify to indicate only welded joints for conductors are acceptable.
- 2. Roof Support: According to AWWA D103, self-supporting, only, and as indicated on Drawings.
- 3. Corrosion Allowance: According to AWWA D103.
- 4. Balcony: As indicated on Drawings.
- 5. Pipe and Pipe Connections:
 - a. Silt Stop: Provide removable stainless-steel silt stop and mechanical joint gland.
 - b. Provide other accessories as indicated on Drawings.
- 6. Overflow:
 - a. Provide external welded joint steel overflow pipe as indicated on Drawings, suitably supported and extending to grade level.
 - b. Diameter of overflow as indicated on Drawings.
 - c. Terminate overflow pipe at 3 feet above finished grade to provide air break.
 - d. Provide aluminum or bronze mesh insect screen and screen holder over air break opening.
- 7. Roof Ladder: As indicated on Drawings.
- 8. Safety Devices:
 - a. Furnish safety rail along entire ladder length and extending 42 inches above tank roof.
 - b. Comply with OSHA standards.
- 9. Provide frost-proof aluminum, fiberglass, or bronze insect screen.
- 10. Pile-Supported Foundation: When required according to fabricator's/manufacture's design.
- 11. Concrete: ACI 318
- 12. Reinforcing Steel: Use only Grade 60.

13. Vertical Distance from Finished Ground Level to Crown of Inlet and Outlet Pipes (Earth Cover) at Tank Foundation: As indicated on Drawings.
14. Specification Sheet for Seismic Data: According to AWWA D103.

2.3 INLET AND OUTLET PIPE

- A. Inlet and Outlet Pipe: ANSI/AWWA C151/A21.5 Ductile Iron Pipe, Pressure Class 350 unless otherwise indicated on Drawings and ASTM A53, Grade B, Schedule 40, steel pipe, welded joints as indicated on Drawings.

2.4 OVERFLOW PIPE

- A. Description: ASTM A53, Grade B, Schedule 40, steel pipe, welded joints.

2.5 MATERIALS

- A. Furnish materials complying with this Section, as indicated on Drawings, and according to AWWA D103.
- B. Plates and Sheets
 1. Plates and sheets used in the construction of the tank shell, tank floor (optional) or tank roof (optional), shall comply with the minimum standards of AWWA D103, Section 4.4.
 2. Design requirements for mild strength steel shall be ASTM A1011 Grade 30 with a maximum allowable tensile stress of 14,566 psi per AWWA D103.
 3. Design requirements for high strength steel shall be ASTM A607 Grade 50 with a maximum allowable tensile stress of 25,400 psi per AWWA D103.
 4. The annealing effect created from the glass coated firing process shall be considered in determining ultimate steel strength. In no event shall a yield strength greater than 50,000 psi be utilized for calculations detailed in AWWA D103, Section 5.4 and 5.5.
 5. Multiple vertical bolt line sheets and plates of ASTM A607 Grade 50 only shall be manufactured such that holes are staggered in the vertical bolt lines and that no two adjoining holes are in-line horizontally, except at the center of the sheet of plate.
 6. Bolt seam design shall generally be in accordance with the requirements of AWWA D103 Section 5.5; bolt spacing may be adjusted in the vertical bolt lines to increase the net and improve joint efficiency to a maximum of 85%.
 7. Double sheeting of tank panels shall not be permitted to achieve structural sidewall thickness requirements.
- C. Rolled Structural Shapes
 1. The material shall conform to minimum standards of ASTM A36 or AISI 1010.
- D. Horizontal Wind Stiffeners
 1. Design requirements for intermediate horizontal wind stiffeners shall be of the "web truss" design with extended tail to create multiple layers of stiffener, permitting wind load to transfer around tank.
 2. Web truss stiffeners shall be of steel with hot dipped galvanized coating.

3. Rolled steel angle stiffeners are not permitted for intermediate stiffeners.

E. Bolt Fasteners:

1. Bolts used in tank lap joints shall be ½" – 13 UNC – 2A rolled thread, and shall meet the minimum requirements of AWWA D103, Section 4.2.
2. Bolt Material
 - a. SAE J429 Grade 2 (1" bolt length)
 - 1) Tensile Strength – 74,000 psi min.
 - 2) Proof Load – 55,000 psi min.
 - 3) Allowable shear stress – 18,164 psi (AWWA D103)
 - b. SAE J429 Grade 8/ASTM A325 (>1 " bolt length) heat treated to:
 - 1) Tensile Strength – 150,000 psi min.
 - 2) Proof Load – 120,000 psi min.
 - 3) Allowable shear stress – 36,818 psi (AWWA D103)
 - c. Bolt Finish – Zinc, mechanically deposited.
 - 1) 2.0 miles minimum – under bolt head, on shank and threads OR JS1000 electro—plated.
 - d. Bolt Head Encapsulation
 - 1) High impact polypropylene co-polymer encapsulation of entire bolt head up to the splines of the shank.
 - 2) Natural resin with UV (ultraviolet) light inhibitor. Color to be black.
 - e. All tank shell bolts shall be installed such that the head portion is located inside the tank, and the washer and nut are on the exterior.
 - f. All lap joint bolts shall be properly selected such that threaded portions will not be exposed in the "shear plane" between tank sheets. Also, bolt lengths shall be sized as to achieve a neat and uniform appearance. Excessive threads extending beyond the nut after torqueing will not be permitted.
 - g. All lap joint bolts shall include a minimum of four (4) splines on the underside of the bolt head at the shank in order to resist rotation during torqueing.
 - h. All exterior nuts, washers, and bolt threads will be covered with sealer-filled protective plastic cover. Color to match tank shell.
3. Sealant
 - a. The lap joint sealant shall be a one component, moisture cured, polyurethane compound. The sealant shall be suitable for contact with potable water and meet applicable FDA Title 21 regulations, as well as, ANSI/NSF Additives Standard 61.
 - b. The sealant shall be used to seal lap joints, bolt connections and sheet edges. The sealant shall cure to a rubber like consistency, have excellent adhesion to the glass coating, have low shrinkage, and be suitable for interior and exterior exposure.
 - c. Sealant curing rate of 73° F and 50% RH.
 - 1) Tack-free time: 6 to 8 hours.

2) Final cure time: 10 to 12 days.

- d. Neoprene gaskets and tape type sealer shall not be used in liquid contacting surfaces.

2.6 GLASS COATING SPECIFICATION

A. Color

1. The finished exterior color shall be dark blue and approved by owner.

B. Inspection

1. All coated sheets shall be inspected for 10 mil minimum glass thickness (Mikrotest or equal).
2. All coated sheets shall be checked for color uniformity by an electronic colorimeter.
3. An electrical "holiday" detection test shall be performed on the inside surface after fabrication of the sheet. Sheets with excessive "holidays" shall be rejected so as to minimize field touch up (See Section 3.1.C of this Specification).

C. Packaging

1. All approved sheets shall be protected from damage prior to packing for shipment.
2. Heavy paper or plastic foam sheets shall be placed between each panel to eliminate sheet-to-sheet abrasion during shipment.
3. Individual stacks of panels will be wrapped in heavy mil black plastic and steel banded to special wood pallets built to the roll-radius of the tank panels. This procedure eliminates contact or movement of finished panels during shipment.
4. Shipment from the factory to the job site will be by truck, hauling the tank components exclusively. No common carrier, drop, or transfer shipments.

2.7 FABRICATION

- A. Materials, Design, and Fabrication: According to AWWA D103.

2.8 SOURCE QUALITY CONTROL

- A. Provide shop inspection and testing of component parts.

B. Certificate of Compliance:

1. If fabricator is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.
2. Specified shop tests are not required for Work performed by approved fabricator.

PART 3 - ERECTION

3.1 Foundation

1. A tank foundation is a part of this contract.
2. The tank foundation shall be designed by the manufacturer to safely sustain the structure and its live loads.
3. Tank footing design shall be based on the allowable soil bearing capacity indication in Section 2.1 of this Specification.

B. Tank Floor

1. Concrete Floor

- a. The floor design is of reinforced concrete with an embedded glass coated steel starter sheet per AWWA D103 Section 13.4.1.6 and the manufacturer's design, and is an integral element of the tank assembly: therefore the tank foundation and floor slab (performed in two separate pours) with embedded starter sheet shall be constructed by the tank supplier using manufacturer trained personnel regularly engaged in this type of tank construction.
- b. Leveling of the starter ring shall be required and the maximum differential elevation within the ring shall not exceed one-eighth (1/8) inch, nor exceed one-sixteenth (1/16) inch within any ten (10) feet of length.
- c. A leveling plate assembly consisting of two 18" anchor rods (3/4" diameter) and a slotted plate (3 1/2" X 11" X 3/8" thick) shall be used to secure the starter ring, prior to encasement in concrete. Installation of the starter ring on concrete blocks or bricks, using shims for adjustment, is not permitted. The foundation with anchor bolts/leveling plates shall be a separate pour from the concrete floor.
- d. Two water stop seals made of butyl rubber elastomer special for this application shall be placed on the inside surface of the starter ring below the concrete floor line. These materials shall be installed as specified by the tank manufacturer.

C. Sidewall Structure

1. Field erection of the glass-coated, bolted-steel tank shall be in strict accordance with the procedures outlined in the manufacturer's erection manual, and performed by an authorized dealer of tank manufacturer, regularly engaged in erection of these tanks.
2. Particular care shall be taken in handling and bolting of the tank panels and members to avoid abrasion of the coating system. Prior to liquid test, all surface areas shall be visually inspected by the Engineer.
3. An electrical holiday test shall be performed during erection using a nine (9) volt leak detection device. All electrical leak points found on the inside surface shall be repaired in accordance with manufacturer's published touch up procedure using urethane sealer.
4. The placement of sealant on each panel may be inspected prior to placement of adjacent panels. However, the Engineer's inspection shall not relieve the bidder from his responsibility for liquid tightness.

5. No backfill shall be placed against the tank sidewall without prior written approval and design review of the tank manufacturer. Any backfill shall be placed according to the strict instructions of the tank manufacturer.

D. Roof Options

1. Tanks with diameters of 14 to 31 ft. shall include a radially sectioned roof fabricated from glass-coated, bolted steel panels, as produced by the tank manufacturer, and shall be assembled in a similar manner as the sidewall panels utilizing the same sealant and bolting techniques, so as to assure a water/air tight assembly. The roof shall be clear span and self-supporting. Both live and dead loads shall be carried by the tank walls. The manufacturer shall furnish a roof opening which shall be placed near the outside tank ladder and which shall be provided with a hinged cover and a hasp for locking. The opening shall have a clear dimension of at least twenty-four (24") inches in one direction and eighteen (18") inches in the other direction. The opening shall have a gasketed weather-tight cover.
2. Roofs for tanks greater than 31 ft. diameter shall be constructed of non-corrugated triangular aluminum panels which are sealed and firmly clamped in an interlocking manner to a fully triangulated aluminum space truss system of wide flange extrusions, thus forming a spherical dome structure.
 - a. Primary horizontal forces into the tank shell shall be contained by an integral aluminum tension ring (unless otherwise specified). The frame shall consist of aluminum structural members with the joints arrayed on the surface of a sphere. The arrangement of members shall result in a pattern of triangular spaces. These spaces shall be closed with light gauge aluminum panels. The members shall be joined by means of bolting their flanges to aluminum gusset plates.
 - b. All metal components of the aluminum dome structure shall be aluminum or 300 series stainless steel. No galvanized, aluminized, painted, or plated steel shall be used anywhere in the dome above the mounting bracket base plates. Dissimilar materials in the supporting structure shall be isolated from the aluminum dome by means of compatible elastomeric gasket.
 - c. The entire structure shall be designed as a watertight system under all design load and temperature conditions. The design shall include sealant to be completely encapsulated by applying it to the gusset covers' inner circumferences, beneath the gusset covers' top closure plates.
 - d. The aluminum closure panels shall be attached continuously along their edges to the structural members by means of batten bars, which engage the panels in an interlocking joint. Designs that incorporate raised battens, overlapping panels and/or designs that incorporate fasteners which penetrate panels and attach to structural members are expressly prohibited. The roof panels shall be fabricated from continuous 3003-H16 aluminum sheeting.
 - e. Connection forces shall be transferred through gusset plates connected to the top and bottom flanges of the beam struts. The connections shall be designed as moment connections; a minimum of four bolts shall be used to connect the gusset plate to each strut flange. The structural analysis shall be performed using non-linear, second order, stiffness analysis models in accordance with ADM 2010 Chapter C. Stability shall be provided for the structure as a whole and for each of its components. The available strengths of members and connections determined in

- accordance with Section C.3 shall equal or exceed the required strengths determined in accordance with Section C.2.
- f. Fasteners shall be designed with a factor of safety of 2.34 on ultimate strength and 1.65 on yield strength.
3. Experience and Qualifications:
- a. No equipment shall be supplied by any manufacturer not regularly engaged in the manufacturing and production of domes in the size and character herein specified. The manufacturer must have designed, manufactured and installed at least one (1) dome of the same size as the unit(s) specified herein. This dome must be in satisfactory use for a period not else than ten (10) years.
- b. The cover manufacturer must own and operate its own US-based manufacturing facility, and the use of a fabrication facility that is not US-based and/or owned and operated by the cover manufacturer is expressly prohibited. Manufacturers that do not meet these qualifications will not be considered.
- c. The cover manufacturer must be ISO 9001 certified.
4. Materials:
- a. Bolts and Fasteners – Threaded fasteners shall be 300 series stainless steel per ASTM F593, Alloy Group 1. Lockbolts shall be 7075-T73 aluminum, 304 or 305 stainless steel. Triangulated space truss: 6061-T6 aluminum struts and gussets.
- b. Plates and Sheets – Plate and sheet material shall be aluminum alloy 3003-H16, 3105-H154, 6061-T6, 5052-H32, or +5052-H36; mill finish AA – M10 as fabricated. Minimum thickness for gussets shall be 5/16". Sheet materials shall be 0.05" minimum thickness. Triangular closure panels: 0.050"t 3003-H16 aluminum sheet.
- c. Structural Shapes – Aluminum structural shapes shall be alloy 6061-T6 aluminum. The aluminum structural members shall be a minimum of 6 inches deep. To improve torsional stability, the dome's structural members must incorporate a double web. The use of I-beams with only a single web is expressly prohibited.
- d. Tension Ring – Tension ring structural shapes shall be 6061-T6 aluminum. Design of the tension ring shall be based on the net cross section of the members and shall not include top flange protrusions used for panel attachment, bolt holes, or outstanding legs that are not connected through the joints.
- e. Miscellaneous Shapes – Miscellaneous aluminum shapes shall be alloy 6061-T6 or 6063-T5.
- f. Gaskets – All gaskets shall be ozone resistant Silicone only. The gaskets must have a 1/8 minimum thickness.
- g. Sealant – All sealants shall be silicone and resistant to ozone and ultraviolet light and conform to Federal Specification TT-S-00230C.
- h. Support Bearings – Acceptable bearing surfaces for sliding bearing are Teflon to stainless steel only. In order to avoid damage to the Teflon and to reduce the coefficient of bearing friction, Teflon shall not bear on aluminum surfaces. Dome supports shall utilize only bolted connections. The use of aluminum structural welding at the dome supports is expressly prohibited.
- i. Dormers, doors, vents and hatches: 6061-T6, 5086-H34 or 3003-H16 aluminum.
5. Roof Vent

- a. A properly sized vent assembly in accordance with AWWA D103 shall be furnished and installed above the maximum water level of sufficient capacity so that at maximum possible rate of water fill or withdrawal, the resulting interior pressure or vacuum will not exceed 0.5" water column.
- b. The overflow pipe shall not be considered to be a tank vent.
- c. The vent shall be constructed of aluminum.
- d. The vent shall be designed in construction as to prevent the entrance of birds and/or animals by including an expanded aluminum screen (1/2 inch) opening. An insect screen of 23 to 25 mesh polyester monofilament shall be provided and designed to open should the screen become plugged by ice formation.

PART 4 - EXECUTION

4.1 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for erection examination.
- B. Verify layout and orientation of tank accessories and piping connections.

4.2 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for erection preparation.
- B. Support Pad:
 - 1. Thoroughly clean tank pad, removing loose concrete, dust, and other debris.
 - 2. Place building paper on pad according to tank manufacturer's recommendations prior to placing tank.

4.3 INSTALLATION

- A. According to AWWA D103, as indicated on Drawings, and according to manufacturer instructions.
- B. Connect piping to tank.
- C. To complete installation, install tank accessories not factory mounted.
- D. Touch-up Painting and Coating: According to manufacturer instructions and according to AWWA D103.

4.4 FIELD QUALITY CONTROL

- A. Section 014000 and Section 017000

B. Inspection and Testing:

1. Hydrostatic Testing:

- a. Test completed and cleaned tank for liquid tightness by filling tank to its overflow elevation with water provided by Owner.
- b. Correct leaks disclosed by this test.
- c. Drain and legally dispose of test water off Site.

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

4.5 ATTACHMENTS

A. Water Storage Tank Schedule:

1. Clemtown Tank:

- a. Minimum Storage Capacity: 54,000 Gallons
- b. Nominal Diameter: 17'-00"
- c. Base Elevation or Bottom Capacity Level: As per Drawings.
- d. Overflow Elevation or Top Capacity Level: As per Drawings.
- e. Minimum Free Board Above Overflow Elevation or Top Capacity Elevation: 12 Inches
- f. Exterior Color: Dark Blue (Selected by Owner).

END OF SECTION 434111

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SECTION 434113 - WELDED STEEL WATER STORAGE TANK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Ground-mounted flat-bottom welded steel water storage tank(s) of the size and dimensions indicated in the Water Storage Tank Schedule at the end of this Specification Section. The tank will store potable water.

B. Scope of Work

1. The work required under this Specification Section shall consist of all necessary materials, tools, equipment, and labor for the construction and successful operation of a ground-mounted flat-bottom welded steel water storage tank with tank foundation and all appurtenances shown in the Drawings. All tanks furnished and installed under this Section shall meet or exceed the minimum requirements of AWWA Standard D100, latest revision (AWWA D100), all requirements of this Specification Section, and any and all of the requirements of any and all federal, state, and local agencies having jurisdiction.

C. Related Requirements:

1. Section 012000 – Price and Procedures
2. Section 033000 – Cast-In-Place Concrete
3. Section 323113 – Chain Link Fences and Gates
4. Section 331113 – Water Distribution Piping
5. Section 331300 – Disinfecting of Water Utility Distribution
6. Section 331313 – Water Storage Tank Disinfection
7. Section 330517 – Precast Concrete Valve Vaults

1.2 DEFINITIONS

- A. Purchaser: As used in AWWA D100, refers to Owner.

1.3 REFERENCE STANDARDS

A. ASTM International:

1. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

B. American Water Works Association:

1. AWWA D100 - Welded Carbon Steel Tanks for Water Storage.
2. AWWA D106 – Sacrificial Anode Cathodic Protection Systems for the Interior Submerged Surfaces of Steel Water Storage Tanks.

C. American Welding Society:

1. AWS QC1 - Standard for AWS Certification of Welding Inspectors.

D. Occupational Safety and Health Administration (OSHA).

E. NSF/ANSI 61, Drinking Water System Components – Health Effects

1.4 COORDINATION

- A. Coordinate Work with Owner and other Contractor(s) for other Contract(s).

1.5 SCHEDULING

- A. Provide and update schedule on a regular basis. Coordinate schedule with Owner and Contractor(s) for other Contract(s).

1.6 SUBMITTALS

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

B. Product Data:

1. Submit data for expansion joint fittings and other pipe specialty fittings.
2. Submit data for ladder and ladder safety devices.
3. Submit information concerning materials of construction, fabrication, and protective coatings.

C. Shop Drawings:

1. Signed and sealed by professional engineer.
2. Tank Shop Drawings shall include, but not be limited to, the following:
 - a. Complete plan, elevation, and sectional Drawings showing critical dimensions.
 - b. Tank foundation details.
 - c. Inlet and outlet piping,
 - d. Structural plate thickness.
 - e. Details of all weld types and sizes.
 - f. Inlet pipe with removable silt stop, outlet pipe with removable silt stop, and overflow piping details, including fittings, expansion joints, pipe support methods.
 - g. Ladder and ladder safety device details.
 - h. Handrail details.
 - i. Shell access hatch details.
 - j. Roof hatch details.
 - k. Pressure-vacuum vent details.

- l. Water level indicator.
 - m. Valve pit details.
 - n. Tank manufacturer identification details.
 - o. Cathodic protection.
- D. Manufacturer's Certificate:
 1. Certify that products meet or exceed specified requirements.
 2. Submit certified list of welded steel water tank installations storing potable water, in service for period of not less than five years. Provide Owner name and contact information for each. A minimum of five successful installations is required. Successful installations are those in service longer than five years with minimal maintenance issues as described by the Owners of those installations and/or as observed by the Engineer.
- E. Details of Welded Joints: Submit according to AWWA D100.
- F. Delegated Design Submittals: Submit signed and sealed design calculations and assumptions for structural calculations for tank, tank foundation, and cathodic protection
- G. Test and Evaluation Reports:
 1. Submit mill test reports.
 2. Submit certified factory test results.
 3. Written Report Certifying Work: Prepare and submit as indicated in AWWA D100.
 4. Submit radiographic film and test segments, identified to shell plate diagrams, at completion of Work.
 5. Submit Installation Certificate from equipment manufacturer's representative, as described in PART 3 of this Section.
- H. Manufacturer's Instructions: Submit detailed instructions on installation requirements, including tank handling procedures, anchoring, and layout.
- I. Source Quality-Control Submittals: Indicate results of shop and/or factory tests and inspections.
- J. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
- K. Manufacturer Reports: Submit certification that tank has been installed according to manufacturer's instructions.
- L. Qualifications Statements:
 1. Submit qualifications for manufacturer, fabricator, erector, and licensed professional.
 2. Submit manufacturer's approval of erector.
 3. Submit names and qualifications of welders, welding operators, and tackers before performing welding.
 4. Submit qualifications of certified welding inspector.

1.7 MAINTENANCE MATERIAL SUBMITTALS

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

1.8 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for closeout procedures.
- B. Project Record Documents: Record actual locations and final orientation of tank and accessories.
- C. Operation and Maintenance Data: Submit maintenance instructions for tank and accessories.

1.9 QUALITY ASSURANCE

- A. Perform Work according to AWWA D100.

1.10 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' documented experience.
- B. Fabricator: Company specializing in fabricating products specified in this Section with minimum five years' documented experience.
- C. Erector: Company specializing in performing Work of this Section with minimum five years' documented experience and approved by manufacturer.
- D. Licensed Professional: Professional engineer experienced in design of specified Work and actively licensed in the state where the tank is located. The licensed professional shall furnish a copy of the Certificate of Authorization (or equivalent) for his/her company to practice engineering in the state of licensure.
- E. Welders, Welding Operators, and Tackers: ASME Section IX qualified within previous 12 months.
- F. Certified Welding Inspector: Certified according to requirements of AWS QC1.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Inspection: Accept tanks on-Site. Inspect tanks for damage.

- C. Store products in areas protected from weather, moisture, or possible damage; do not store products directly on ground; handle products to prevent damage to interior or exterior surfaces.

1.12 WARRANTY

- A. Section 017000 - Execution and Closeout Requirements: Requirements for warranties.
- B. The Tank Manufacturer shall include a warranty on tank materials and workmanship for a specified period. As a minimum, the warranty shall provide assurance against defects in material, coatings, workmanship, and tank interior lining for a period of ten (10) years, starting at the date of Substantial Completion. A 5-year warranty bond must be supplied. The warranty bond must be for the full amount listed in the bid section. Tank inspections, including interior, shall be performed every other year throughout the warranty period at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 TANK

- A. Steel: All steel shall be American Made.
- B. Substitutions:
 - 1. Substitutions: Substitute and "or-equal: products will be considered in accordance with Article 11 – Substitute and "Or-Equal" Items of the Instructions to Bidders. The minimal required information for consideration shall include the following:
 - a. Typical structure and foundation drawings.
 - b. List of tank materials and appurtenances
 - c. Tank coating specifications.
 - d. Certification from tank manufacturer that the proposed substitute meets all of the design standards of this Specification and AWWA C100.
 - e. Acceptance as a substitute or "or-equal" does not constitute approval of submittals required in this and other Specification Sections.
- C. Description:
 - 1. Design, fabricate, and erect ground-level, flat-bottom, welded steel water storage tank and accessories.
- D. Performance and Design Criteria:
 - 1. Design in conformance with requirements listed in AWWA D100, unless supplemented or modified in this Section:
 - a. Bottom capacity level (BCL) and top capacity level (TCL) above top of foundation: As indicated on Drawings as Base Elevation and Overflow Elevation or other terms describing the same.
 - b. Specific Gravity: 1.00 for Water

- c. Roof: As indicated on Drawings. Tanks up to 75 feet diameter shall be a self-supporting all butt-welded umbrella dome roof or an elliptical steel dome roof. Column supported roofs or roofs requiring any type of rafter/bracing will not be accepted.
- d. Snow Loading: Minimum 30 psf or as required in the latest edition of the International Building Code, whichever is greater. No corrections for roof slopes or lowest one-day mean temperature shall be made.
- e. Minimum Roof Design Live Load: 15 psf or as specified in AWWA D100, whichever is greater.
- f. Wind Load Requirements: Basic wind speed of 100 mph or as required in AWWA D100, whichever is greater
- g. Allowable Soil Bearing: Capacity: 3000 psf or as indicated in the Geotechnical Report, whichever is less.
- h. Earthquake Design: As specified in AWWA D100. In the absence of 100 vertical foot geological profile, use Site Class D.
- i. A minimum of 1/16" corrosion allowance shall be provided on the inside and on the outside of all tank shells, floors, and roofs.

2.2 TANK CONSTRUCTION

- A. In conformance with requirements listed in AWWA D100, unless supplemented or modified below:
 - 1. Pipe and Fittings for Fluid Conductors: Modify to indicate only welded joints for conductors are acceptable.
 - 2. Roof Support: According to AWWA D100, self-supporting, only, and as indicated on Drawings.
 - 3. Corrosion Allowance: A minimum of 1/16" corrosion allowance shall be provided on the inside and on the outside of all tank shells, floors, and roofs.
 - 4. Balcony: As indicated on Drawings.
 - 5. Pipe and Pipe Connections:
 - a. Provide removable stainless-steel silt stop and mechanical joint gland.
 - b. Provide other accessories as indicated on Drawings.
 - 6. Overflow:
 - a. Provide external welded joint steel overflow pipe as indicated on Drawings, suitably supported and extending to grade level.
 - b. Diameter of overflow as indicated on Drawings.
 - c. Terminate overflow pipe a maximum of 6 feet above finished grade to provide air break.
 - d. Provide stainless steel mesh insect screen and screen holder over air break opening.
 - 7. Roof Ladder: As indicated on Drawings.
 - 8. Safety Devices: Provide safety rail, complying with OSHA Standards, along entire ladder length and extending 42 inches above tank roof.

9. Welded-Shell Butt Joints: Required at joints in base metals of thicknesses greater than 3/8 inch; complete joint penetration.
10. Butt Joint Welds: Lap welds tack welded on one side are not permitted. Seal welding is required.
11. Seal Welding: Provide seal welds for lap joints in wet areas, including interior roof surfaces.
12. Pile-Supported Foundation: When required, according to fabricator's/manufacture's design.
13. Concrete: ACI 318.
14. Vertical Distance from Finished Ground Level to Crown of Inlet and Outlet Pipes (Earth Cover) at Tank Foundation: As indicated on Drawings.
15. Specification Sheet for Seismic Data: According to AWWA D100.
16. Reinforcing Steel: Use only Grade 60.

2.3 INLET AND OUTLET PIPE

- A. Inlet and Outlet Pipe: ANSI/AWWA C151/A21.5 Ductile Iron Pipe, Pressure Class 350 unless otherwise indicated on Drawings and ASTM A53, Grade B, Schedule 40, steel pipe, welded joints as indicated on Drawings.

2.4 OVERFLOW PIPE

- A. Overflow Pipe: ASTM A53, Grade B, Schedule 40, steel pipe, welded joints.

2.5 MATERIALS

- A. Furnish materials complying with this Section, as indicated on Drawings, and according to standards specified in AWWA D100.

2.6 FABRICATION

- A. Materials, Design, and Fabrication: According to AWWA D100.

2.7 SOURCE QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Requirements for testing, inspection, and analysis.
- B. Inspection and Testing of Welds:
 1. Examine weld joints according to AWWA D100.
 2. Comply with procedure requirements of AWWA D100 prior to proceeding with radiographic Work.
 3. Immediately notify Architect/Engineer of weld locations failing to meet standards of AWWA D100.
 4. Repair and re-inspect defective welds until acceptable.

C. Certificate of Compliance:

1. When fabricator is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents
2. 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 layout and orientation of tank accessories and piping connections.

3.2 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Thoroughly clean chemical storage tank pad, removing loose concrete, dust, and other debris. Place building paper on pad according to tank manufacturer's recommendations prior to placing tank.

3.3 INSTALLATION

- A. According to AWWA D100, as indicated on Drawings, and according to manufacturer's instructions.
- B. Connect piping to tank.
- C. Install tank accessories not factory mounted to complete installation.
- D. Field Painting:
 1. All steel surfaces shall be prepared by the fabricator as specified in Steel Structures Painting Council Specification SSPC-SP10 "Near-White Blast Cleaning" for interior surfaces; SSPC-SP6 for exterior surfaces. After blast cleaning, all surfaces shall be thoroughly and completely cleaned of any residue or dust before applying primer. Primer must be applied within 24 hours after blast cleaning.
 2. After the structure is erected and welded, the welded seams and adjacent unprimed areas shall be cleaned by using SSPC-SP 10/NACE #2 for the interior and SSPC-SP 6/NACE #3 for the exterior. The shop primed surfaces shall be cleaned of all dirt and foreign matter. Dust that has settled on any part of the structure as a result of the blast cleaning must be removed before spot priming.

3. Exterior System:

Tnemec Company, Inc.:

- a. (Spot where overcoating and full on the blast cleaned roof) Primer Coat – Tnemec Series 135-1243 Chembuild at 3.0 – 5.0 Mils DFT (Color – Gray 1N05)
- b. (full) Primer Coat – Tnemec Series 27 Typoxy applied at 2.0 – 3.0 Mils DFT. Color of this coat of paint shall be slightly darker than the finish coat.
- c. (full) Finish Coat – Tnemec Series 1075 Endura Shield II (semi-gloss) applied at 2.0 – 3.0 Mils DFT. (Color to be selected by owner).

Total DFT = 7.0 – 11.0 Mils

Sherwin Williams Corporation:

- a. (Spot where overcoating and full on the blast cleaned roof) Primer Coat – Macropoxy 646, B58 Series, applied at 3.0-5.0 Mils DFT.
- b. (full) Primer Coat – Macropoxy 646, B58 Series, applied at 2.0-3.0 Mils DFT. Color of this coat of paint shall be slightly darker than the finish coat.
- c. (full) Finish Coat – Hi-Solids Polyurethane SG, B65 Series, applied at 2.0-3.0 Mils DFT. (Color to be selected by owner).

Total DFT = 7.0 – 11.0 Mils

The contractor shall furnish to the Owner at least one (1) extra gallon to finish paint specified above for exterior paint for touch-up repairs due to vandalism.

All materials shall be applied in accordance with manufacturer's directions and any thinning required shall be done in a manner and exclusively with the type of reducer recommended.
Spray application may be used in conformance with applicable section of AWWA D102.

All materials shall be applied under adequate illumination.

4. Interior System:

Three-coat high-build zinc-epoxy-epoxy system manufactured by Tnemec Company, Inc.

- a. (full) Primer Coat – Tnemec Series 91-H20 or 94-h20 Hydro-Zinc applied at 2.5-3.5 Mils DFT.
- b. Stripe Coat – All vertical/horizontal seams, ceiling overlapping plate edge, ceiling support beams, support columns, ceiling to shall joint, nuts, bolts, ladders, pits, and all other irregular surfaces shall receive one (1) coat of Tnemec Series N140-1255 (Beige) applied to a dry film thickness of 2.0 – 3.0 Mils DFT. Application shall be spray and back brush and/or rolled. Applied coating shall not be recoated until minimum recoating time has been satisfied as per manufacturer's recommendations.

- c. (full) Intermediate Coat – Tnemec Series N140-1255 (Beige) Pota-Pox applied at 4.0 – 6.0 Mils DFT.
- d. (full) Finish Coat – Tnemec Series N140-15BL (Selected by Owner) applied at 4.0 – 6.0 Mils DFT.

Total DFT = 10.5 – 15.5 Mils

Three-coat high-build zinc-epoxy-epoxy system manufactured by Sherwin Williams Corporation.

- a. (full) Primer Coat – Corothane I Galvapak Two-Pack Zinc-rich Primer B65 Series applied at 2.5 – 3.5 Mils DFT.
- b. Stripe Coat – All vertical/horizontal seams, ceiling overlapping plate edge, ceiling support beams, support columns, ceiling to shall joint, nuts, bolts, ladders, pits, and all other irregular surfaces shall receive one (1) coat of Macropoxy **5500LT** (Beige) applied to a dry film thickness of 2.0 – 3.0 Mils DFT. Application shall be spray and back brush and/or rolled. Applied coating shall not be recoated until minimum recoating time has been satisfied as per manufacturer's recommendations.
- c. (full) Intermediate Coat – **Macropoxy 5500LT** (Beige) applied at of 4.0 – 6.0 Mils DFT.
- d. (full) Finish Coat – **Macropoxy 5500LT** (Selected by Owner) applied to a dry film thickness of 4.0 – 6.0 Mils DFT.

Total DFT = 10.5 – 15.5 Mils

- M. All coatings shall be a “system” and shall be thoroughly compatible each with the other. No coatings or primers of different manufacturers shall be applied one upon the other. The Contractor shall submit the coatings schedule to the Owner.
- N. Paint shall not be applied when the temperature of the steel or paint is below 40 degrees F. Paint shall not be applied when the surface temperature is expected to drop to 32 degrees F before the paint has dried. With chemically cured coatings, (catalyzed epoxies, etc.) particular care shall be exercised to follow manufacturer's special temperature requirements (usually 50 degrees F or above).
- O. Paint shall not be applied in rain, snow, fog, mist or when the steel temperature is below the dew point, resulting in condensation.
- P. Each coat of paint shall be in proper state of cure or dryness before the application of the succeeding coat. A minimum of twenty-four hours shall be allowed between coats.
- Q. All weld seams shall receive one brush coat of the specified primer after the sandblasting and cleaning has been completed. This brush prime coat is in addition to the specified prime coat.
- R. All coats shall be smooth, free of brush marks, streaks, laps or pile up of paints, and skipped or missed areas.

3.4 FIELD QUALITY CONTROL

- A. Section 014000 and/or Section 017000.

B. Inspection and Testing:

1. Hydrostatic Testing:

- a. Test completed and cleaned tank for liquid tightness by filling tank to its overflow elevation with water provided by Owner.
- b. Correct leaks disclosed by this test.
- c. Drain and legally dispose test water off-Site.

2. Field Welds: Tested and inspected according to AWWA D100.

C. Furnish a certified welding inspector responsible for all weld inspections, as indicated in AWWA D100.

D. Manufacturer Services:

1. Furnish field representative experienced in installation of tank to supervise installation.
2. Furnish Installation Certificate from equipment manufacturer's representative attesting equipment has been properly installed and is ready for startup and testing.

3.5 ATTACHMENTS

A. Water Storage Tank Schedule:

1. Clemtown Tank:

- a. Minimum Storage Capacity: 54,000 Gallons
- b. Nominal Diameter: 17'-00"
- c. Base Elevation or Bottom Capacity Level: As per Drawings.
- d. Overflow Elevation or Top Capacity Level: As per Drawings.
- e. Minimum Free Board Above Overflow Elevation or Top Capacity Elevation: 12 Inches
- f. Exterior Color: Dark Blue (To be Selected by Owner).

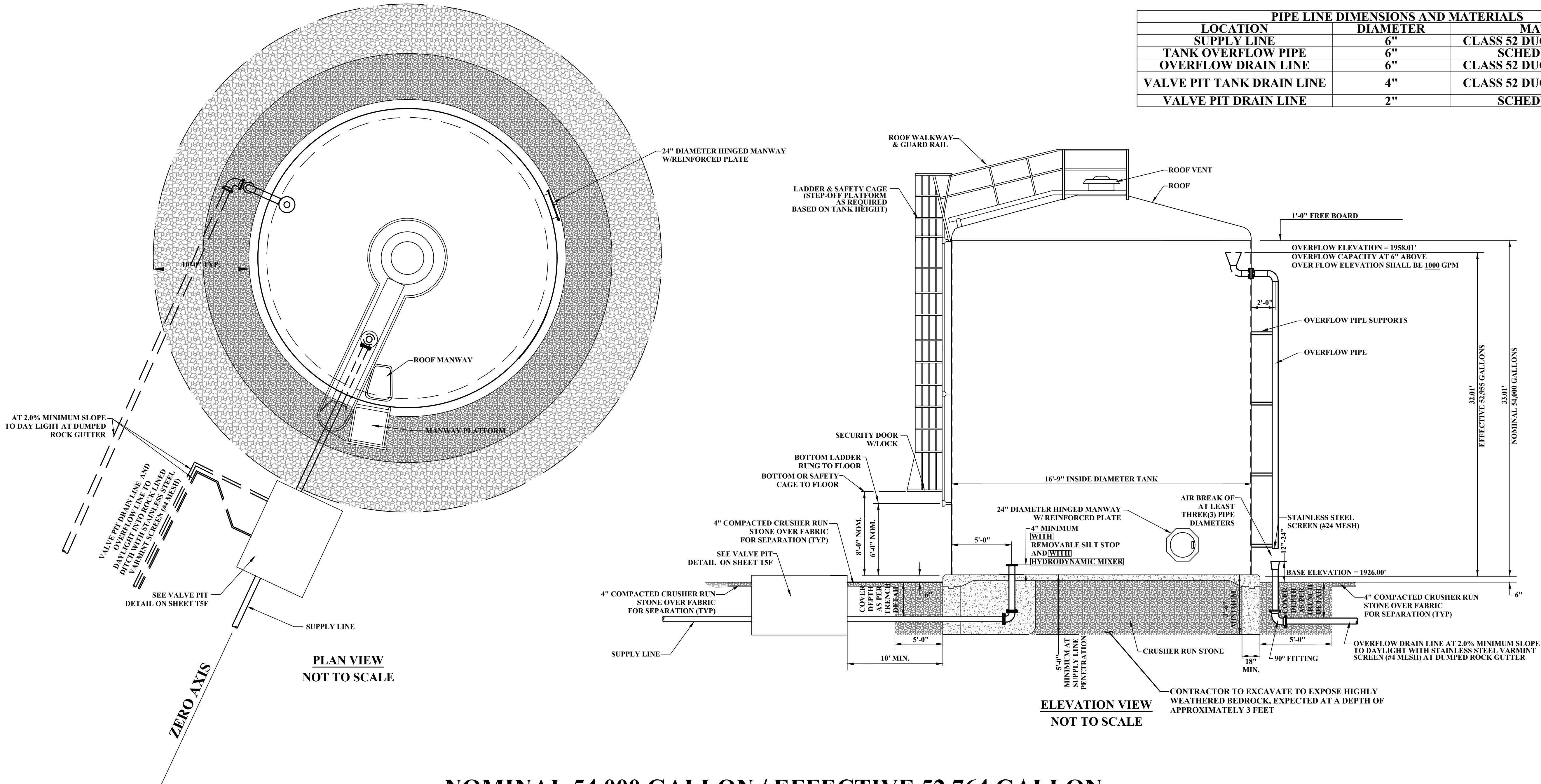
END OF SECTION 434113

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LAYOUT TAB: T5D
CAD FILE: R:\010\010-1052-WATER SYSTEM IMPROVEMENTS-CHESTNUT RIDGE PSD-Drawing\CI-25-z-CLEMTOWN-TANK Details.dwg
PLOT DATE/TIME: 11/14/2022 8:59 AM
USER: ashlan a. hurney

LINE OR FEATURE LAYOUT TABLE	
LINE OR FEATURE	CLOCKWISE ANGLE RELATIVE TO ZERO AXIS ALONG SUPPLY LINE
SUPPLY LINE	0°
OVERFLOW LINE	270°
HINGED MANWAY	135°
LADDER AND SAFETY CAGE	0°
WATER LEVEL INDICATION	N/A
	X°

PIPE LINE DIMENSIONS AND MATERIALS		
LOCATION	DIAMETER	MATERIAL
SUPPLY LINE	6"	CLASS 52 DUCTILE IRON PIPE
TANK OVERFLOW PIPE	6"	SCHEDULE 80 PVC
OVERFLOW DRAIN LINE	6"	CLASS 52 DUCTILE IRON PIPE
VALVE PIT TANK DRAIN LINE	4"	CLASS 52 DUCTILE IRON PIPE
VALVE PIT DRAIN LINE	2"	SCHEDULE 80 PVC



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DRAWN: A. NEWLON	DATE: 11/2022
CHECKED: S. HAYNES	DATE: 11/2022
APPROVED: S. BUCHANAN	DATE: 11/2022
SURVEY DATE:	
SURVEY BY:	
FIELD BOOK No.:	

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PHASE No.	1
CONTRACT No.	1
PROJECT No.	101-010-1052

CHESTNUT RIDGE PUBLIC SERVICE DISTRICT
WATER SYSTEM IMPROVEMENTS
BARBOUR COUNTY, WEST VIRGINIA
CLEMTOWN GLASS LINED BOLTED STEEL TANK DETAILS

SHEET No.	T5D
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