

**ADDENDUM NO. 2**

**CITY OF ABERDEEN  
ZONE 3 ELEVATED WATER TANK  
CONTRACT NO. 22-05**

In accordance with the requirements of the “Instructions to Bidders,” this Addendum shall be attached to and become a part of the Contract Documents for the above-referenced project.

Concerning the Project Manual

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- A. Section 00300 – **DELETE** and **REPLACE** in its entirety; attached to this Addendum.
- B. Section 13211 – **DELETE** and **REPLACE** in its entirety; attached to this Addendum.

Concerning the Drawings

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None

Miscellaneous (Clarifications, Pre-Bid Meeting Minutes etc.)

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- A. Clarification Questions and Responses; attached to this Addendum.

**BIDDERS MUST ACKNOWLEDGE RECEIPT OF THIS ADDENDUM IN THE SPECIFIED PLACE ON THE BID FORM. THE ABSENCE OF THIS ACKNOWLEDGMENT WILL BE CAUSE FOR REJECTION OF THE BID.**

**DOCUMENT 00300**

**BID FORM**

BIDDER (Name and Address):

PROJECT IDENTIFICATION:

**ZONE 3 ELEVATED WATER TANK - CONTRACT NO. 22-05**

CONTRACT IDENTIFICATION:

General Construction

THIS BID IS SUBMITTED TO:

**CITY OF ABERDEEN**  
60 North Parke Street  
P.O. Box 70  
Aberdeen, MD 21001

1. 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 and furnish all Work as specified or indicated in the Bidding Documents for the Contract Price and within the Contract Time(s) and in accordance with the other terms and conditions of the Bidding Documents.
2. Bidder accepts all of the terms and conditions of the Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for a period of 60 days from the date of Bid opening unless award is delayed by a required approval from a governmental agency, the sale of bonds, or the award of a grant or grants, in which event the Bids shall remain open for a period of 120 days from the date of Bid opening. Thirty-day extensions of the date for the award may be made by the mutual written consent of the Owner and the apparent Successful Bidder. Bidder agrees, if required by Owner prior to and as a condition of Contract award, to execute and sign any documents related to financing of the Project. Bidder will sign and submit the Agreement with the Bonds and other documents required by the Bidding Documents within the number of days stated in the Owner's Notice of Intent to Award.
3. In submitting this Bid, Bidder represents, as more fully set forth in the Agreement, that:

3.1 Bidder has examined copies of all the Bidding Documents and of the following Addenda (receipt of all which is hereby acknowledged):

Date	Number
_____	_____
_____	_____
_____	_____
_____	_____

- 3.2 Bidder has visited the site and become familiar with and is satisfied as to the general, local, and site conditions that may affect cost, progress, performance, and furnishing of the Work;
- 3.3 Bidder is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, performance, and furnishing of the Work.
- 3.4 Bidder has carefully studied any available reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in Paragraph SC-4.02 of the Supplementary Conditions as provided in Paragraph 4.02 of the General Conditions. Bidder accepts the determination set forth in Paragraph SC-4.02 of the Supplementary Conditions of the extent of the "technical data" contained in such reports and drawings upon which Bidder is entitled to rely as provided in Paragraph 4.02 of the General Conditions. Bidder acknowledges that any such reports and drawings are not Bidding Documents or Contract Documents and may not be complete for Bidder's purposes. Bidder acknowledges that Owner and Engineer do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to Underground Facilities at or contiguous to the site. Bidder has obtained and carefully studied (or assumes responsibility for having done so) such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the site or otherwise which may affect cost progress, performance, or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder and safety precautions and programs incident thereto. Bidder does not consider that any additional examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price, and other terms and conditions of the Bidding Documents and Contract Documents.
- 3.5 Bidder is aware of the general nature of Work to be performed by Owner and others at the site that relates to Work for which this Bid is submitted as indicated in the Bidding Documents and Contract Documents.
- 3.6 Bidder has correlated the information known to Bidder, information and observations obtained from visits to the site, reports and drawings identified in the Bidding Documents and Contract Documents and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents and Contract Documents.
- 3.7 Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents and Contract Documents and the written resolution thereof by Engineer is acceptable to Bidder, and the Bidding Documents and Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.

- 3.8 This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.
4. Bidder shall complete the Work for the lump sum and/or unit price(s) shown on the attached PennBid document. Stipulated prices (including those for quantity adjustments) in the Bid Form shall be all-inclusive. They shall include furnishing all labor, superintendence, necessary equipment, utilities and facilities, furnishing and installing all Products described in the Drawings and Specifications, performing all work necessary for, or incidental to completing the Work, Contractor's overhead, profit and burden costs and performing all other obligations imposed by the Agreement. Refer to Section 01025 for description of pay items.

<b><u>Item</u></b>	<b><u>Description</u></b>	<b><u>Bid Lump Sum Price in Figures (\$)</u></b>
<b><u>No.</u></b>		
<b>Bid Option 1 – Steel Water Tank</b>		
1.	Steel Water Tank: All Construction Work described in the Drawings and Specifications.	\$ _____
<b>Bid Option 2 – Composite Elevated Water Tank</b>		
2.	Composite Elevated Water Tank: All Construction Work described in the Drawings and Specifications.	\$ _____

Quantity Adjustments

If the quantities of items covered by the lump sum price of Item 1 above are increased or decreased by Change Order, the Contingency unit prices for Items 3, 4, and 5 above shall also apply to such increased or decreased quantities.

<b><u>Item</u></b>	<b><u>Description</u></b>	<b><u>Unit</u></b>	<b><u>Estimated</u></b>	<b><u>Bid Unit</u></b>	<b><u>Extended</u></b>
<b><u>No.</u></b>			<b><u>Quantity</u></b>	<b><u>Price (\$)</u></b>	<b><u>Price In</u></b>
					<b><u>Figures (\$)</u></b>
3.	Miscellaneous Unclassified Excavation (Contingency Item).	CY	100	\$ _____	\$ _____
4.	Miscellaneous Aggregate Backfill (Contingency Item).	CY	100	\$ _____	\$ _____
5.	Miscellaneous Concrete (Contingency Item).	CY	50	\$ _____	\$ _____

**Bid Option 1 – Steel Water Tank**

Total of Items 1, 3, 4, and 5 BID PRICE (Figures): \_\_\_\_\_

Total of Items 1, 3, 4, and 5 BID PRICE (Words): \_\_\_\_\_

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**Bid Option 2 – Composite Elevated Water Tank**

Total of Items 2, 3, 4, and 5 BID PRICE (Figures): \_\_\_\_\_

Total of Items 2, 3, 4, and 5 BID PRICE (Words): \_\_\_\_\_

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Quantities given above under “Quantity Adjustments” are not guaranteed. Final payment will be based on actual quantities. Any difference between estimated and final quantities, increases in market value of Products and services, or complexity of work will not be considered reason for increase of unit prices. Payment will be made under "Quantity Adjustments" only if the scope of Work is changed during construction by Change Order. **Extended prices for "Quantity Adjustments" will be included in the total Bid Price used to evaluate Bids, but will not be included in the initial Contract Price.** Payment will be made under "Quantity Adjustments" items by Change Order at Final Completion of the Work

- 5. Bidder agrees that the Work will be substantially complete on or before the dates or within the number of calendar days indicated in the Agreement.

Bidder accepts the provisions of the Agreement as to liquidated and other damages in the event of failure to complete the Work on time.

- 6. The following documents are attached to and made a condition of this Bid:
  - 6.1 Required Bid Security in the form of \_\_\_\_\_.
  - 6.2 Experience Questionnaire; Document 00400.
  - 6.3 List of Proposed Subcontractors; Document 00450.
  - 6.4 Maryland Certificate of Registration may be submitted with the Bid, or prior to and as a condition of award of the Contract.
  - 6.5 Submit a preliminary sketch of the tank and its foundation.
- 7. Communications concerning this Bid will be addressed to (Bidder's Contact Person):

\_\_\_\_\_  
Phone: ( ) \_\_\_\_\_  
Fax: ( ) \_\_\_\_\_  
Company Email Address: \_\_\_\_\_

8. The terms used in this Bid are defined and have the meanings assigned to them in the General Conditions, as may be amended by the Supplementary Conditions, included as part of the Bidding Documents.

9. Bidder acknowledges that the Bid Price is based on Products and methods described and named in the Drawings and Specifications.

10. Bidder certifies that (s)he visited the site on \_\_\_\_\_, \_\_\_\_\_, 2023.

INTENDING TO BE LEGALLY BOUND, the undersigned submits the forgoing Bid this \_\_\_\_\_ day of \_\_\_\_\_, 2023.

**(If Bidder is an Individual)**

\_\_\_\_\_  
Signature of Witness

\_\_\_\_\_  
Signature of Individual

Trading and doing business as:

\_\_\_\_\_  
Name of Business

\_\_\_\_\_  
Address of Business

**(If Bidder is a Limited Liability Company – All Members Must Sign)**

	_____ Name of Company
	_____ Address of Company
_____ Signature of Witness	_____ Signature of Member
_____ Signature of Witness	_____ Signature of Member
_____ Signature of Witness	_____ Signature of Member

**(If Bidder is a Partnership - All General Partners Must Sign)**

	_____ Name of Partnership
	_____ Address of Partnership
_____ Signature of Witness	_____ Signature of Partner
_____ Signature of Witness	_____ Signature of Partner
_____ Signature of Witness	_____ Signature of Partner

**(If Bidder is a Corporation)**

Attest:

\_\_\_\_\_  
Name of Corporation

\_\_\_\_\_  
Signature of Secretary or  
Assistant Secretary

\_\_\_\_\_  
Address of Principal Office

(Corporate Seal)

\_\_\_\_\_  
State of Incorporation

\_\_\_\_\_  
Signature of  
President or Vice President

Type or print name below each signature.

State here the names and addresses of all partners, if a partnership, or of three principal officers, if a corporation.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**END OF BID FORM**



## SECTION 13211

### COMPOSITE ELEVATED POTABLE WATER TANK

#### PART 1 - GENERAL

##### 1.01 SCOPE OF WORK

- A. Furnish and erect an elevated composite water storage tank, including foundation, concrete support column, glass-coated, bolted-steel tank structure, and tank appurtenances as shown on the contract drawings and described herein.
- B. All required labor, materials, and equipment shall be included.

##### 1.02 RELATED SECTIONS

- A. Submittals: Section 01300.
- B. Structural Excavation, Backfill and Compaction: Section 02220.
- C. Water Mains: Section 02660.
- D. Aluminum Fabrication: Section 05600.
- E. Painting: Section 09900.
- F. Potable Water Tank Painting: Section 09901.
- G. Trihalomethane (THM) Removal System: Section 11375.
- H. Miscellaneous Piping Materials: Section 15370.
- I. Division 16 Electrical.

##### 1.03 QUALIFICATIONS OF TANK SUPPLIER

- A. The Engineer's selection of factory-applied glass-fused-to-steel bolt together tank construction for this facility has been predicated upon the design criteria, construction methods specified, and optimum coating for resistance to internal and external tank surface corrosion.
- B. Strict adherence to the standards of design; fabrication; erection; product quality; and long-term performance, established in this Specification will be required by the Owner and Engineer.
  - 1. Tank or Dome substitutions which cause engineering and contract changes - the tank installation as shown on the plans and specified herein, is based on the equipment furnished by one manufacturer. A tank which is offered as a substitute to the specific

requirements of these Specifications and which differs in detail and arrangement from that shown may require changes in design and construction. All costs which result from such changes in design and construction are to be borne entirely and unconditionally by the Contractor; said costs to included but not be limited to structural, piping, mechanical and electrical changes and all engineering costs incurred as a result of the substitution, in the revision of Plans and Specifications, review of design changes by others, preparation of change orders, and any other costs directly resulting from said substitution.

- C. Tank suppliers wishing to pre-qualify shall submit the following to the Engineer/Owner for consideration 14 days prior to bid date.
  - 1. Typical structure and foundation drawing(s).
  - 2. List of tank materials, appurtenances and tank coating specs.
  - 3. The tank provider/builder shall have built at least five (5) tanks of similar type that are equal or greater in size than the specified tank, operating satisfactorily for a minimum of five (5) years and shall provide with bid the reference name, location, application and year of supply/operation of the tank. Tank manufacturer and tank provider shall each provide with bid the reference name, address and telephone number of the responsible representative, application and year of supply/operation of the above referenced liquid tanks installed in the United States. List should indicate the specific application.
  - 4. Certification from tank manufacturer that the tank meets all of tank design standards listed in Section 2.0.
  
- D. The Engineer reserves the right to evaluate all bids based on long-term, 30-year minimum operation, coating and maintenance costs. Values to be used in this evaluation will be at the discretion of the Engineer, as detailed in this specification and bid tabulation form. The Engineer will add such costs, dependent upon the type of tank offered, to the bidder's bid price to determine the effective low bid for purposes of making the award.

#### 1.04 SUBMITTAL DRAWINGS AND SPECIFICATIONS

- A. Construction shall be governed by the Owner's drawings and specifications showing general dimensions and construction details, after written approval by the Engineer of detailed erection drawings prepared by the tank bidder. There shall be no deviation from the drawings and specifications, except upon written order from the Engineer.
- B. The bidder is required to furnish, for the approval of the Engineer and at no increase in contract price, three (3) sets of complete specifications and construction drawings for all work not shown in complete detail on the bidding drawings. A complete set of structural calculations shall be provided for the tank structure and foundation. All such submissions shall be stamped by a Registered Professional Engineer licensed in the state of project location.
- C. When approved, two sets of such prints and submittal information will be returned to the bidder marked "APPROVED FOR CONSTRUCTION" and these drawings will then govern for the work detailed thereon. The approval by the Engineer of the tank supplier's drawings shall be an approval relating only to their general conformity with the bidding drawings and

specifications and shall not guarantee detail dimensions and quantities, which remains the bidder's responsibility.

- D. The tank manufacturer's and installing contractor's standard published warranty shall be included with submittal information.

## PART 2 - PRODUCTS

### 2.01 DESIGN CRITERIA

- A. Tank Size:
  - 1. The factory coated glass-fused-to-steel, bolt together tank shall have a nominal diameter of 112 feet, with a nominal sidewall height (to roof eave) of 40 feet.
  - 2. The concrete support column shall be nominally 28 feet inside diameter nominal floor height 165 feet above finished grade elevation 305.00.
- B. Tank Capacity:
  - 1. Tank capacity shall be 400,000 gallons (nominal, U.S. gallons); at 39 liquid depth.

### 2.02 TANK DESIGN STANDARDS

- A. The materials, design, fabrication, and erection of the bolt together tank shall conform to the AWWA Standard for "Factory Coated Bolted Steel Tanks For Water Storage" - ANSI/AWWA D103.
- B. The tank coating system shall conform solely to Section 12.4 of ANSI/AWWA D103.
- C. The vitreous 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.
- D. The tank manufacturer shall be ISO-9001 certified to assure product quality.
- E. Design Loads:
  - 1. Specific Gravity: 1
  - 2. Wind velocity: 115 mph per AWWA D103/ACE 7-16
  - 3. Risk Category: II
  - 4. Allowable Soil Bearing: (refer to geotechnical report)
  - 5. Ground Snow Load: 25 psf
- F. Earthquake Seismic: IBC 2018/2021/D103-19
  - 1. Site Class D
  - 2. Importance factor 1.0
  - 3. Ss 0.163
  - 4. S1 0.045

### 2.03 MATERIALS

- A. Trihalomethane (THM) Removal System: As specified in Section 11375.
- B. Plates and Sheets Note: All steel shall be smelted and produced in the U.S.A.
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 A1011 Grade 50 with a maximum allowable tensile stress of 26,000 psi per AWWA D103.
  4. The annealing effect created from the glass-coated firing process shall be considered in determining ultimate steel strength detailed in AWWA D103, Sections 5.3.
  5. Multiple vertical bolt line sheets and plates of ASTM A1011 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 or plate.
    - a. Bolt seam design shall generally be in accordance with the requirements of AWWA D103 section 5.5.2; bolt spacing may be adjusted in the vertical bolt lines to increase the net section and improve joint efficiency to a maximum of 85%.
    - b. Double steel sheeting shall not be permitted to achieve structural requirements.
- C. Rolled Structural Shapes:
1. Material shall conform to minimum standards of ASTM A36 or ASTM A992.
- 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 1/2" - 13 UNC- 2A rolled thread, and shall meet the minimum requirements of AWWA D103, Section 4.2.
- F. Bolt Material:
1. SAE J429 (1" and 1-1/4" bolt length) heat treated to:
    - a. Tensile Strength - 120,000 psi Min.
    - b. Proof Load - 85,000 psi Min.
    - c. Allowable shear stress – 29,454 psi.
  2. SAE J429 (>1-1/4" bolt length) heat treated to:
    - a. Tensile Strength - 150,000 psi Min.
    - b. Proof Load - 120,000 psi Min.
    - c. Allowable shear stress - 36,818 psi.
- G. Bolt Finish - Zinc, mechanically deposited.
1. 2.0 mils minimum - under bolt head, on shank and threads
- H. Bolt Head Encapsulation:

1. High-impact polypropylene co-polymer encapsulation of entire bolt head up to the splines on the shank.
2. Natural resin with UV (ultraviolet) light inhibitor. Color to be black.
3. 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.
4. All lap joint bolts shall be properly selected such that threaded portions will not be exposed in the "shear plane" between tank sheets. Bolt lengths shall be sized as to achieve a neat and uniform appearance. Excessive threads extending beyond the nut after torquing will not be permitted.
5. 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 torquing.
6. All exterior nuts, washers, and bolt threads will be covered with a sealer-filled protective plastic cover. Color to match tank shell.

I. Sealants:

1. 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.
2. 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.
3. Sealant curing rate at 73°F and 50% RH
  - a. Tack-free time: 6 to 8 hours.
  - b. Final cure time: 10 to 12 days.
4. The sealant shall be ESPC Sealer No. 98.
5. Neoprene gaskets and tape type sealer shall not be used.

## 2.04 GLASS COATING SPECIFICATION

A. Surface Preparation:

1. Following the decoiling and shearing process, sheets shall be steel grit-blasted on both sides to the equivalent of SSPC-10. Sand blasting and chemical pickling of steel sheets is not acceptable.
2. The surface anchor pattern shall be not less than 1.0 mil.
3. These sheets shall be evenly oiled on both sides to protect them from corrosion during fabrication.

B. Cleaning:

1. Prior to initial preparation all four (4) exposed rectangular continuous sheet edges, including starter sheets, for each specific sheet radii shall be mechanically rounded in profile and adhere to The Porcelain Enameling Institute's Technical Manual PEI-101. All four (4) exposed sheet edges will then be coated with the same vitreous enamel as the glass coating of the sheets. Sheet edge encapsulation will have a minimum 5 mils thickness enamel coating. Rounded sheet edge encapsulation will have zero exposed uncoated steel. The process shall be equal to Edgecoat II by CST Storage.

2. After edgecoating and prior to application of the coating system, all sheets shall be thoroughly cleaned by a caustic wash and hot rinse process followed immediately by hot air drying.
3. Inspection of the sheets shall be made for traces of foreign matter or rust. Any such sheets shall be re-cleaned or grit-blasted to an acceptable level of quality.

C. Coating:

1. All sheets shall receive one coat of a catalytic nickel-oxide glass precoat to both sides and then air dried.
2. Another coat of milled cobalt blue glass shall be applied to both sides of the sheets and then dried.
3. A third coat of milled titanium dioxide white glass shall be applied to all wetted surfaces which must be an 18 to 22 percent titanium dioxide reinforced mixture. The specified coating shall be by manufacturer. An acceptable alternate three-coat two-fire system must be submitted for approval prior to the bid.
4. The sheets shall then be fired at a minimum temperature of 1500° F in strict accordance with the manufacturer's ISO 9001 quality process control procedures, including firing time, furnace humidity, temperature control, etc.
5. The dry film interior coating thickness shall be 10.0 to 18.0 mils minimum. The finished inside color shall be white.
6. The dry film exterior coating thickness shall be 7.0 to 15.0 mils minimum. The finished exterior color shall be selected by Owner.
7. The same glass coating as applied to the sheet surfaces shall be applied to the exposed edges.

D. Factory Inspection:

1. The manufacturer's quality system shall be ISO 9001 certified.
2. Chemical Resistance of Glass Coating
  - a. Every batch of component frits shall be individually tested in accordance with PEI Test T-21 (Citric Acid at Room Temperature).

E. Factory Holiday Test:

1. A dry volt test using a minimum of 1100 volts is required.
2. Frequency of the test shall be every sheet. Any sheet registering a discontinuity shall be rejected
3. All inside sheet surfaces shall be holiday free.

F. Measurement of Glass Thickness:

1. Glass thickness shall be measured using an electronic dry film thickness gage (magnetic induction type) approved by manufacturer. The thickness gage shall have a valid calibration record.
2. Frequency of the test shall be every tenth sheet. The thickness of the glass shall be between 10.0 and 18.0 mils.

G. Measurement of Color:

1. The exterior color of the sheets shall be measured using a colorimeter approved by manufacturer. The colorimeter shall have a valid calibration record.

2. Frequency of the test shall be every tenth sheet. The color must fall within the tolerance specified by manufacturer; else the panel shall be rejected.

H. Impact Adherence Test:

1. The adherence of the glass coating to the steel shall be tested in accordance with ASTM B916-01. Any sheet that has poor adherence shall be rejected.
2. Frequency of this test shall be one sheet per gage lot run minimum.

I. Fishscale Test:

1. The glass coating shall be tested for fishscale by placing the full size production sheets in an oven at 400° F for one hour. The sheets will then be examined for signs of fishscale. Any sheet exhibiting fishscale shall be rejected and all sheets from that gage lot will be similarly tested.
2. Frequency of this test shall be one sheet per gage lot run minimum.

## 2.05 PACKAGING

- A. All approved sheets shall be protected from damage prior to packing for shipment.
- B. Heavy paper or plastic foam sheets shall be placed between each panel to eliminate sheet-to-sheet abrasion during shipment.
- C. Individual stacks of panels will be wrapped in as recommended by manufacturer.
- D. Shipment from the factory to the job site will be by truck, hauling the tank components exclusively. No common carrier, drop, or transfer shipments.

## 2.06 CONCRETE SUPPORT COLUMN

- A. The support column for the water storage tank shall be of jump-form concrete construction in accordance with ACI standards 313-91 and ACI 371R-98.
- B. Concrete:
  1. Compressive Strength
    - a. As required by the manufacturer.
  2. Air Entrainment
    - a. Per ACI 318.
  3. Curing:
    - a. Conform to ACI 318 and ACI 308.
    - b. Curing compounds should be membrane forming or combination curing/surface hardening types conforming to ASTM C309
- C. Formwork:
  1. Formwork design, installation, and removal should conform to the requirements of ACI 318 and the recommendations of ACI 347R.
- D. Concrete Finish:

1. Per section 3.5 of ACI 371R-98
  2. A beveled-edge rectangular pattern (the size of the 4' tall jump forms) shall be formed into the outer column surface.
- E. An opening shall be made at the base of the column for a double insulated steel door (2 – 36" x 80").
- F. An opening shall be made near the top of the column for a double insulated steel door (1 – 36" x 80" personnel door).
- G. A 6" thick reinforced concrete floor poured over a 3" compacted layer of crushed #57 or 2A stone shall be installed inside at the base of the column.

### PART 3 - EXECUTION

#### 3.01 ERECTION

- A. Foundation and Support Column:
1. The tank column foundation is a part of this contract.
  2. The tank column foundation shall be designed by a Registered Professional Engineer retained by the tank contractor to safely sustain the structure and its live loads.
- B. Glass Coated Bolted Steel Floor:
1. The floor design is of glass-coated, bolted steel. Bolted steel panels shall be either placed over a three (3) inch compacted sand base contained by a steel or concrete ring wall, or a non-extruding and resilient bituminous type filler meeting the requirements of ASTM D1751 if set on a concrete slab.
  2. Polyethylene copolymer caps and sealant shall be used to cover the bolts, nuts, and washers exposed on the inside of the floor. A leveling plate assembly 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.
  3. 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 (10ft) feet of length.

#### 3.02 SIDEWALL STRUCTURE

- A. 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 the tank manufacturer, regularly engaged in erection of these tanks.
- B. Specialized erection jacks and building equipment developed and manufactured by the tank manufacturer shall be used to erect the tanks.



- C. 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.
- D. An electrical leak 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.
- E. 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.

### 3.03 ROOF OPTIONS

- A. Roofs for tanks greater than 31 ft. diameter shall be constructed of non-corrugated triangular aluminum panels forming a spherical dome structure.
  1. 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.
  2. 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 a compatible elastomeric gasket.
  3. 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.
  4. 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.
  5. 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
  6. Fasteners shall be designed with a factor of safety of 2.34 on ultimate strength and 1.65 on yield strength.

7. 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 similar size as the unit(s) specified herein.
  - b. The cover manufacturer must be ISO 9001 certified.
8. 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. Screws shall be aluminum or 300 series 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: .050"t 3003-H16 aluminum sheet.
  - c. Structural Shapes - Aluminum structural shapes shall be alloy 6061-T6. 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. Miscellaneous Penetration Seals- All other penetration seals shall be weatherproof rubber seals.
  - i. 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.
  - j. Dormers, doors, vents and hatches: 6061-T6, 5086-H34 or 3003-H16 aluminum.

B. Roof Vent

1. 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.
2. The overflow pipe shall not be considered to be a tank vent.
3. The vent shall be constructed of aluminum.
4. The vent shall be so 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.

### 3.04 APPURTENANCES (PER AWWA D103, SECTION 7)

#### A. Pipe Connections

1. Where pipe connections are shown to pass through tank panels, they shall be field located, saw cut, (acetylene torch cutting or welding is not permitted), and utilize an interior and exterior flange assembly. Sealer shall be applied on any cut panel edges or bolt connections as recommended by manufacturer.
2. Overflow piping shall be 12-inch diameter schedule 80 PVC and/or aluminum. The piping shall be installed on the exterior of the tank (as close to the tank wall as possible), pass thru the walkway, pass into and down the inside of the column, and exit the column near the base emptying onto a stone rip-rap trench.
3. Inlet and outlet piping shall extend thru the tank floor, column floor and down the inside wall of the column with standoff brackets every 20 ft. The piping shall extend thru the floor of the column and be encased in concrete as it extends out under the tank foundation below the applicable frost level where connections will be made to valves or other yard piping

#### B. Inside/Outside Tank Ladder

1. An inside/outside tank ladder shall be furnished and installed as required by the manufacturer.
2. Ladders shall be fabricated of aluminum and utilize grooved, skid-resistant rungs.
3. The ladders will be equipped w/ an OSHA-approved safety rail/cable.
  - a. Anti-Fall Safety Device: Complete system to be supplied shall consist of rail, connectors, braces, safety sleeve and safety belt. Supply one (1) extra sleeve and belt. Product shall be "Saf-T- Climb," or approved equal.

#### C. Perimeter Walkway

1. One 30" wide outside perimeter walkway shall be supplied and installed by the tank contractor as shown on the contract drawings.
2. Walkway materials
  - a. Extruded shapes & bars – Alloy 6061-T6
  - b. Bolts, nuts, washers – 304 Stainless Steel
  - c. Concrete anchors – 304 Stainless Steel (for support arms from walkway to column wall)
  - d. Grating – Aluminum serrated swage-locked grating
3. Handrail materials
  - a. Posts and horizontals – 1-1/2" 6061-T6 Aluminum pipe (Posts – Sch 80; Handrail – Sch 40)
  - b. Toe Plate – 4" where required
  - c. All hardware – 304 stainless steel
  - d. Post Base Flanges – 3/8 aluminum
  - e. Post Spacing – Not to exceed 5'-6"
4. Walkway Fabrication

- a. Brackets: will bolt directly to concrete column wall using stainless steel anchors & fasteners
    - b. Platform Sections
      - 1) Where indicated will be shop assembled in sections
  - 5. Finish: aluminum walkway framing and treads to be mill finish
  - 6. Standards:
    - a. Complies with OSHA codes
    - b. Designed to support a superimposed live load of 100 PSF
  - 7. Handrail Fabrication
    - a. Handrail shall be provided on both sides of platforms.
    - b. All joints to be machine coped and continuously tig welded and buffed to a smooth finish
    - c. Finish: Mill finish
    - d. Standards:
      - 1) Complies with OSHA codes
      - 2) Designed for 200-pound loads or 50 pounds per square foot
  - 8. Access Doors
    - a. A double 36" x 80" insulated steel mandoor shall be installed at the base of the column for entry of utility personnel.
    - b. A single 36" x 80" insulated steel mandoor shall be installed at the top of the column for entry to the exterior platform. The door shall include an 8" square (minimum) window and 6"H x 12"L louvered & screened vent.
- D. Tank Sidewall Access Manway
- 1. One tank sidewall access manway shall be provided as shown on the contract drawings in accordance with AWWA D-103.
  - 2. Such manway shall meet the minimum AWWA D-103 in diameter and shall include a properly designed reinforcing frame and cover plate. A davit to hold the cover plate is required.
- E. Identification Plate A manufacturer's nameplate shall list the tank serial number, tank diameter and height, and maximum design capacity. The nameplate shall be affixed to the tank exterior sidewall at a location approximately five (5') feet from tank floor elevation in a position of unobstructed view.
- F. Cathodic Protection
- 1. The Manufacturer will provide a cathodic protection system consisting of sacrificial magnesium anodes which provide corrosion protection for the portions of the structure immersed in liquid. The anodes are equally spaced (to the nearest vertical bolt line) around the structure, attached to the floor, and bolted through existing shell sheet bolt holes. In special cases where anodes may be spaced differently, a layout plan will be provided as part of the submittal package. Lead wires and buss bars are used to ensure continuity between anodes and structure shell sheets.
  - 2. Electrical continuity between all tank sidewall panels shall be the responsibility of the tank manufacturer.
  - 3. The design life shall be calculated at 10 years. The cathodic protection system shall be designed for protection of uncoated steel surfaces in the product zone, including rebar within an uncoated concrete tank floor.

### 3.05 FIELD TESTING

#### A. Hydrostatic

1. Following completion of erection and cleaning of the tank, the structure shall be tested for liquid tightness by filling tank to its overflow elevation.
2. Any leaks disclosed by this test shall be corrected by the erector in accordance with the manufacturer's recommendations.
3. Water required for testing shall be furnished by the owner at the time of tank erection completion, and at no charge to the tank erector. Disposal of test water shall be the responsibility of the Contractor.
4. Labor and equipment necessary for tank testing is to be included in the price of the tank.

### 3.06 DISINFECTION

#### A. Standards

1. The tank structure shall be disinfected at the time of testing by chlorination in accordance with AWWA Specification C652 "Disinfection of Water Storage Facilities" as modified by the tank manufacturer.
2. Disinfection shall not take place until tank sealant is fully cured (10 to 12 days at 73° F/50% relative humidity).
3. Acceptable forms of chlorine for disinfection shall be:
  - a. Liquid chlorine as specified in AWWA C652.
  - b. Sodium hypochlorite as specified in AWWA C652.
  - c. Calcium hypochlorite (HTH) is not acceptable.

- B. Section 4.2 is not acceptable.

**END OF SECTION**

**Questions received on 09/11/2023:**

**1. Question:**

Can you confirm that the Owner currently owns the property (or properties) where work is to be performed? If not, can you provide information on the timing in which ownership will be obtained?

*No response required, for project timing refer to Note 21 in the Prebid Meeting minutes submitted in Addenda No. 1.*

**2. Question:**

Can you confirm that the Owner currently owns and/or otherwise possess all required easements or permissions to work on or access the property (or properties) where the work is to be performed? If not, can you provide information on the timing in which these easement or permissions will be obtained?

*No response required, for project timing refer to Note 21 in the Prebid Meeting minutes submitted in Addenda No. 1.*

**3. Question:**

Can you confirm that the Owner has obtained the necessary approvals and permits required to start construction?

*The Owner will have approval and permits in hand before construction begins.*

**4. Question:**

Can you confirm funding is in place for this project?

*Project is funded by the City of Aberdeen.*

**5. Question:**

Can you confirm the budget amount for this project?

*No response required.*

**6. Question:**

Can you describe the process or events (i.e. approval by council, board of directors, etc.) that must occur and anticipated dates and durations that must occur in order to award this project?

*The Contract will be awarded by City Counsel. Refer to Note 21 in the Prebid Meeting Minutes submitted in Addenda No. 1.*

**7. Question:**

What is planned Notice of Award date for the project?

*Refer to Note 21 in the Prebid Meeting Minutes submitted in Addenda No. 1.*

**8. Question:**

What is the planned Notice to Proceed date for the project?

*Refer to Note 21 in the Prebid Meeting Minutes submitted in Addenda No. 1.*

**9. Question:**

Please confirm work on Saturday will not be restricted.

*Refer to Bid Documents and Prebid Meeting Minutes submitted in Addenda No. 1.*

**10. Question:**

Please confirm work on Sunday will not be restricted.

*Refer to Bid Documents and Prebid Meeting Minutes submitted in Addenda No. 1.*

**11. Question:**

Please confirm this project is sales tax exempt for incorporated materials and sales tax is NOT to be included in the bid prices.

*Refer to Question No.9 in Addenda No.1.*

**12. Question:**

Bid Form Addenda #1 - currently the Bid Form has an area to enter the Total of Items 1 through 5 as the total Bid Price.

This would result in an incorrect bid price as this would include the costs for both tank styles in the total price.

Can the Bid Form be revised as follows, this would result in have a correct overall total price and would provide the bidder with the ability to quote both tank styles. Total of Items 1, 3 through 5 BID PRICE.

And

Total of Items 2 through 5 BID PRICE.

*New Bid Form will be provided.*

**13. Question:**

Section 13211 Item 1.02.C - please confirm tank supplier prequalification is not required as long as Bidders have the minimum experience requirements per Prebid Meeting Minutes Note 5.

*Refer to Prebid Meeting Note No.6 and Specification Section 00010-2 in the Invitation to Bid.*

**14. Question:**

Section 13211 Item 2.01.A.1 describes a tank diameter that is from a previous project. Tank Diameter is derived by the specified volume and the specified operating range and is determined by the individual tank manufacturer, we will most likely be 42' nominal. Please confirm this is acceptable.

*The volume of water, elevation of low water level, and elevation of high water level are hard requirements. If the diameter needs to change or to provide the minimum volume at the required elevations a revised diameter will be considered.*

**15. Question:**

Section 13211 Item 3.04. - describes PVC or aluminum piping.

We suggest the following clarification:

Inlet/Outlet piping within the pedestal can be 304L 10S for the Inlet/outlet riser and 304L 11ga for the overflow piping.

*Noted: no response required.*

**16. Question:**

Section 13211 Item 3.04. - The concrete support column interior ladders are not described.

We suggest the following clarification:

Ladders

Ladders located in the concrete support structure shall be galvanized steel.

Ladder side rails shall be a minimum 3/8 in. by 2 in. with a 16 in. clear spacing. Rungs shall be minimum 3/4 in. diameter, spaced at 12 in. centers and plug welded into holes drilled in the side rails.

Ladder shall be secured to the adjacent structure by brackets located at intervals not exceeding 7 ft.

Ladder brackets shall provide a minimum distance of 7 in. from the center of rung to the nearest permanent object behind the ladder.

Ladders shall be straight run and aluminum swing out rest seats shall be provided on support wall ladders at maximum of 50 ft. intervals. Rest seats shall be operable without removing fall prevention equipment.

Fall Protection

High strength aluminum, rigid rail safe climbing devices shall be provided on all ladders. Rails shall be center mounted and extend from 3 ft. above the ladder bottom to the top of the ladder section.

Install mounting brackets, fasteners and splice bars required for a rigid installation.

Provide two trolleys with snap hooks designed to be operated with the aluminum rail.

Provide a safety body harness with front and side rings for each trolley.

*Noted: no response required in reference to ladders. A revised Specification Section 13211 Composite Elevated Potable Water Tank will be provided which includes an anti-fall safety device.*



**17. Question:**

Section 13211 Item 3.04.C specifies an exterior perimeter balcony comprised of aluminum materials. Typically, the exterior balcony and handrail is constructed of galvanized carbon steel, which is more robust and less expensive. Please confirm the exterior perimeter balcony can be either aluminum or galvanized steel.

*Noted: follow the specified and use aluminum materials.*

**18. Question:**

Section 13211, Item 3.04.D specifies both a single 3 x 7 personnel door and a 12 x 12 vehicle door.

A pedestal of this small diameter does not warrant a vehicle door and would add significant costs to accommodate a 12'x12' opening. We suggest a single 6'x7' double door similar to the requirements of the Spheroid Tank option. Please confirm this is acceptable.

*One set of double insulated doors is required at the base of the column. A revised Specification Section 13211 Composite Elevated Potable Water Tank will be provided.*

**19. Question:**

Section 13211, Item 2.07.C refers back to Section 03300 with respect to formwork requirements and the concrete finish requirements for the Composite Elevated Tank support column.

Section 03300 does not provide the required level of detail for the requirements of the Composite Elevated Tank support column.

We suggest the following clarification:

**Concrete Support Column**

Architectural Concrete Construction

The exposed exterior surface of the concrete support wall is designated architectural concrete.

Concrete and formwork requirements of this section shall be strictly enforced to ensure concrete of the highest practicable architectural standard.

Formwork design, installation and removal shall comply with the minimum requirements of ACI318, ACI117 and the applicable requirements of ACI 347, except as modified by this Section.

Support Wall - Concrete Mix Design

Use the same concrete design mix throughout the support wall.

Proportion, type and source of cement and aggregates shall not be changed.

Maintain uniform moisture content and placing consistency.

Provide concrete with 3.5% to 6.5% air content.

Support Wall - Reinforcement

Support wall reinforcement shall be installed with plastic supports.

Provide supports for welded wire fabric at 5 ft. centers, horizontal and vertically.

Support Wall - Concrete Placement

Support wall concreting shall incorporate segmented placement procedures.

Temporary vertical bulkheads shall divide the wall pour into segments corresponding to a single truckload of concrete.

Bulkheads shall be located at rustications, braced rigid and tight to maintain vertical alignment under concrete load.

Wall segment concrete shall be placed vertically and continuously to full form height from a single truckload of concrete. Placement from multiple loads is not permitted. Vertical pour rate shall be a minimum of 15 feet per hour.

Temporary bulkheads shall not be removed until adjacent concrete is placed.

Wall concrete shall be placed directly inside the reinforcement cage with drop chutes to prevent form splatter and the resulting surface finish variations.

#### Support Wall - Formwork

Support wall shall be constructed with a jump form process using form segments prefabricated to match the wall curvature.

Forming system shall be fully engineered and detailed with procedures to meet the increased demands of architectural concrete.

Concrete placement height shall be a minimum of 6 ft. and a maximum of 10 ft.

Form panels shall be designed for lateral pressures associated with full height plastic concrete head and eccentric loads resulting from the segmented wall placement procedure.

Form panels shall extend the full height of the concrete pour using only vertical panel joints. Form system shall be designed to lap and be secured to the previous wall lift. The space between the form and the previous lift shall be sealed to prevent grout leakage.

Incorporate a positive means of adjustment to maintain dimensional tolerances specified. Lock forms into position with through wall form ties prior to concrete placement.

Form surfaces shall be steel, plastic or fiberglass coated material.

Form surfaces shall be thoroughly cleaned of concrete residue and coated with a release agent prior to placement.

Steel forms shall be coated with a non-staining, rust preventative form oil or otherwise protected. Steel formwork with rust stains and damaged surfaces shall not be used.

#### Support Wall - Form Movements

Wall forms shall not be disturbed or removed until concrete has attained enough strength to prevent forming operations or environmental loads from causing surface damage or excessive stress.

The minimum concrete strength for form removal shall be established by the Contractor, based on an analysis of stress during form removal, installation and concrete operations.

Concrete operations shall occur a maximum of once per day. Multiple form movements and concrete placements within a day are not permitted.

Inspect wall finish prior to subsequent wall placement.

Form removal shall be based on early age concrete strength testing in accordance with ACI 228.1R-95.

Acceptable methods to determine early concrete strength: Pull Out testing (ASTM C 900-99), Maturity Method testing (ASTM C1074-93), or field cured cylinders compressive strength tested (ASTM C172)

#### Support Wall - Architectural Pattern

Form system shall incorporate a uniform pattern of vertical and horizontal rustications to provide architectural relief to the exterior wall surface.

Rustication strips shall be sealed to the form face to eliminate grout leakage that results in broken corners, color variations and rock pockets.

Locate construction joints and panel joints in rustications. Vertical panel joints shall be sealed using closures which combine with the form pattern to eliminate grout leakage and panel joint lines.

Proportion vertical and horizontal rustications and form ties to impart a symmetrical architectural pattern.

No architectural form treatment is required on the interior surface.

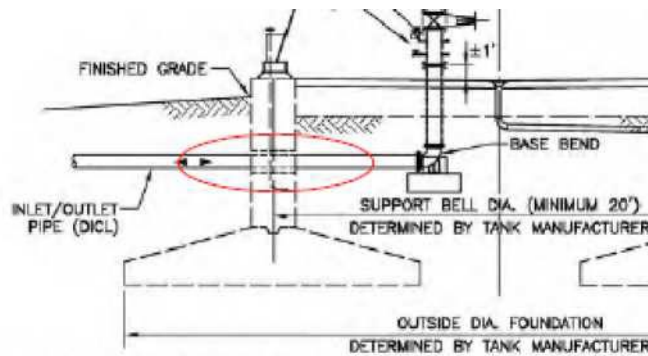
#### Support Wall - Finish

Provide a smooth form finish without rub for the interior and exterior support wall. *Tie holes shall be plugged using grout on the interior and manufactured plugs on the exterior which match the color of the cured concrete as closely as possible.*

*Noted: A revised Specification Section 13211 Composite Elevated Potable Water Tank will be provided, which includes design standards that were provided by the manufacturer.*

#### 20. Question:

Sheet 8 shows the incoming waterline passing over the foundation. Our design will incorporate the incoming waterline into the foundation. Please confirm this is acceptable and we are not required to place the foundation deeper than required by our design to allow the waterline to pass over the foundation.



*Detail above is shown as a reference only. Actual location of the inlet/outlet pipe with regard to the foundation will need to be considered as part of the engineering and design process as required by the Contract.*

#### 21. Question:

Drawing TS5 - can a detail for the transformer pad be provided?

*Design of the transformer pad will need to meet the standards and specifications of the electrical utility supplier which can provide the necessary information.*