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ADDENDUM 1
Via E-Mail
DATE: July 7, 2023

Contract: 22-C-00046; Northwest Ground Storage Tank Improvements

Bidders on the above referenced project are hereby notified that the following addendum is made to the Contract Documents. BIDS TO BE SUBMITTED SHALL CONFORM TO THIS NOTICE.

Item 1: Bid Openings will be accessible through Microsoft Teams Meeting;
Join on your computer, mobile app or room device Click here to join the meeting
Meeting ID: 292 828 652 204 Passcode: hE5XMy
Download Teams | Join on the web **Or call in (audio only)** +1 941-263-1615,,135358761# United States, Sarasota
Phone Conference ID: 135 358 761# Find a local number | Reset PIN https://www.tampa.gov/

Item 2: Agreement ARTICLE 4.07 FINAL INSPECTION – Replace the second paragraph with the following: However, if such inspection reveals items of work still to be performed the Contractor shall provide for approval by the Engineer an estimate of the cost of each item and promptly perform them and then request a reinspection to be made within ten (10) days after receipt of such request. If, upon any reinspection, the Engineer determines that the work is complete, the date of final completion shall be deemed to be the last day of such reinspection.

Item 3: Instructions To Bidders – Add the following: The City of Tampa will not request documentation of or consider a bidder's (proposer's) social, political, or ideological interests when determining if the bidder (proposer) is a responsible vendor and will not give preference to a bidder (proposer) based on the bidder's (proposer's) social, political, or ideological interests.

Item 4 - Add attached Specifications Section 15100.

All other provisions of the Contract Documents and Specifications not in conflict with this Addendum shall remain in full force and effect. Questions are to be e-mailed to ContractAdministration@tampagov.net.

Jim Greiner

Jim Greiner, P.E., Contract Management Supervisor

SECTION 15100

VALVES AND PIPING APPURTENANCES

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and install, as shown on the Drawings, all valves and appurtenances as specified herein.

1.02 RELATED WORK

A. Division 1 – General Requirements

B. Section 09905 – Piping, Valve, and Equipment Identification System

C. Section 09910 – Utility System Painting

D. Section 15044 – Pressure Testing of Process Piping

E. Section 15045 – Disinfection of Process Piping

F. Section 15062 – Ductile Iron Pipe and Fittings

G. Section 15126 – Pipe Hangers and Supports

1.03 REFERENCES

A. American Water Works Association (AWWA)/American National Standards Institute (ANSI) Standards

B. American Society for Testing and Materials (ASTM) Standards

C. NSF/ANSI 61: Drinking Water System Components – Health Effects

D. NSF/ANSI 372: Drinking Water System Components – Lead Content

1.04 GENERAL DESIGN

A. The equipment and materials specified herein are intended to be standard types of valves and appurtenances for use in controlling the flow of potable water.

B. The equipment includes, but is not limited to the following:

1. Plug Valves
2. Butterfly Valves

3. Rigid Pipe Couplings
4. Dismantling Joints
5. Joint Restraints
6. Flange Adapters
7. Valve Boxes
8. Pipe and Valve Identification

1.05 QUALITY ASSURANCE

A. Qualifications: All of the valves and appurtenances shall be furnished by manufacturers who are fully experienced, reputable, and qualified in the manufacture of the materials to be furnished.

B. Standards:

1. All wetted surfaces and linings shall be NSF/ANSI 61 approved.

C. Quality Control:

1. The manufacturer shall establish the necessary quality control and inspection practice to ensure compliance with the referenced standards.
2. In addition to the manufacturer's quality control procedures, the Owner may select an independent testing laboratory to inspect the material at the manufacturer for compliance with these specifications. The cost of manufacturer inspection requested by the Owner will be paid for by the Owner.

1.06 SUBMITTALS

A. Shop Drawings: Refer to Section 01340 – Submittals. Provide the following:

1. Manufacturer’s literature, catalog cuts, and specifications showing dimensions and materials of construction.
2. Shop drawings shall include dimensioning, methods and locations of supports and all other pertinent technical specifications.

B. Operating Instructions: Submit Operation and Maintenance Manuals in accordance with Section 01730 – Operating and Maintenance Data.

C. Manufacturer’s Certification: Submit sworn certification of factory tests and their results.

1.07 DELIVERY, STORAGE AND HANDLING

A. Delivery and Storage: Delivery and storage of the materials shall be in accordance with the manufacturer's recommendations.

B. Handling: Care shall be taken in loading, transporting and unloading to prevent damage to the valves and their respective coatings.

1.08 WARRANTY AND GUARANTEES

A. Provide equipment warranties in accordance with Section 01740 – Warranties and Bonds.

PART 2 - PRODUCTS

2.01 GENERAL

A. Valves shall include the required accessories such as operators, operating nuts, valve boxes, hand wheels, chain wheels, extension stems, etc. necessary for proper operation.

B. All valves and appurtenances shall be of the size shown on the Drawings. All similar type valves shall be from the same manufacturer.

C. Direction of opening and the word “OPEN” to be cast in hand wheel or valve bonnet.

D. All valves and appurtenances shall have the name of the manufacturer and the working pressure for which they are rated cast in raised letters upon the body.

E. All bolts, washers and nuts shall be Type 316 stainless steel, unless specified otherwise.

F. Factory Finishing:

1. Epoxy Lining and Coating:

a. Linings and coatings shall be in accordance with AWWA C550, as applicable, unless otherwise specified.
b. Linings and coatings shall be either two-part liquid material or heat-activated (fusion) material. Only heat-activated material is acceptable if specified as “fusion” or “fusion bonded” epoxy.
c. Linings and coatings shall be a minimum of 7-mil dry film thickness except where limited by valve operating tolerances.
d. Lining and coatings shall be a specified in Section 09910 – Utility System Painting, unless specified otherwise herein.

G. Materials:

1. All wetted materials shall be NSF/ANSI 61 approved. Manufacturer’s shall submit an affidavit with the product literature indicating NSF/ANSI 61 approval, in accordance with Rule 62-555.320(3) Florida Administrative Code.

2.02 MATERIAL AND EQUIPMENT

A. Altitude Valves:

1. The altitude control valve shall be installed on the tank inlet line and open when the tank level drops to replenish the tank. The valve shall sense the tank head from a customer installed sensing line run back to the CDS6A pilot mounted on the valve. There shall also be a solenoid shutoff feature to electrically close the valve to stop filling at any time. This solenoid shall be energized to open the main valve and shall not be dependent on tank level. This solenoid can also be controlled through telemetry and close the main valve when power is lost. While filling the ground storage tank, the valve shall throttle to maintain a minimum back pressure on the system.

2. The main valve shall be a full ported, diaphragm actuated 16" 100-01 main valve. It consist of three major components. The body, with seat installed, the diaphragm assembly and the cover with cover bearing. The main valve shall be ductile iron and have SS anticavitation trim. This trim consist of a 316SS stationary seat with radial slots. There shall also be a disc guide that has radial, angular slots. This trim shall protect the main valve and downstream pipping from any cavitation damage. It shall also decrease the noise caused by the velocity change. The manufacturer shall be able to provide a decibel level chart based on valve size and differential pressure. The diaphragm assembly shall be fully guided throughout its entire stroke. The main valve shall have a fusion bonded epoxy coating on all ferrous metal surfaces. It shall be a packless valve with no o-rings or packing glands anywhere on the diaphragm assembly. No snap seat rings will be accepted.

3. The pilot control system shall have 3 different pilot controls. One is the CDS6A hydraulic altitude pilot that will shut the valve off at the high water level. This is completely hydraulic and will closed the 16" valve at high water level. There shall also be an electrical solenoid control for closing the main valve off to stop filling at any level and an emergency close solenoid valve. When the solenoids are de-energized it will close the main valve. This solenoid shall be 120VAC and shall have a manual operator feature. It shall be energized to open. This shall give the operator the ability to manually energize the solenoid and set/test the valve. The back pressure control shall have an adjustment range of 20-105psi. It shall be set to throttle the flow into the tank while maintaining a minimum back pressure on the system side of the valve. The pilot system shall have a closing speed control. The pilot control system shall also contain an X117D valve position transmitter. This is a low voltage valve position transmitter that will supply a 0-100% valve position output to SCADA. The electrical controls shall be powered and wired by others. All of the pilot control components shall be stainless steel with the exception of the CDS6A altitude pilot. It shall be bronze with SS trim.

4. The manufacturer shall provide a spare solenoid to the City for replacement if and when it may be needed.

5. The manufacturer shall warranty the valve for 3 years from date of shipment. The manufacturer shall also provide a direct factory employee for start up, training and adjustment.

6. The valve shall be a 16” 210-13BCPY KCO KX D.S. SSB X1117D as manufactured by Cla-Val Co. Newport Beach, Ca.

B. Plug Valves:

1. Eccentric plug valves shall be in conformance with AWWA C517, latest revision and shall meet or exceed the requirements of this specification and designed for a minimum of 150 psi.

2. Plug valves shall be a non-lubricated, eccentric type, resilient-faced plug valve and shall be furnished with end connections.

3. The plug shall be of one-piece construction and shall be capable of withstanding the full pressure rating of the valve in either direction without the use of structural ribs that extend beyond the profile of the plug. Valves shall be drip-tight with 150 psi versus 0 psi in either direction.

4. Valves shall be satisfactory for applications involving valve operation after long periods of inactivity.

5. Valve bodies shall be constructed of high-strength cast iron conforming to ASTM A126, Class B. Port area shall be 100% of standard pipe area. The body shall have minimal pooling designed with a flushing side port to provide complete flushing of the valve every time it cycles. Port of valve shall be rectangular and of one design through the entire size range.

6. Valve seats shall be rectangular ported, 1/8" thick welded overlay of not less than 95% pure nickel. Seat area shall be at least 1/2” wide and raised, with the raised surface completely covered with weld to ensure that the plug face contacts only nickel.

7. Plugs shall be solid one-piece castings of ASTM A536 ductile iron. The plug shall have a cylindrical seating surface eccentrically offset from the center of the plug shaft. The plug shall not contact the seat prior to 90% closed. The interference between the plug face and body seat, with the plug in the closed position, shall be externally adjustable in the field with the valve in the line under pressure.

8. Buried valves shall have integrally cast mechanical joint ends in accordance with ANSI/AWWA C111/A21.11, latest revision. Gaskets for mechanical joints shall be made of ethylene propylene diene (EPDM) rubber.

9. Valve plug shall rotate 90 degrees from the fully open position to the fully closed position.

10. Shaft seals shall be of the multiple V-ring type with a packing gland follower. Shaft seals shall be externally adjustable and repackable under pressure without removing the actuator or bonnet from the valve. All Flanged and mechanical joint plug valves shall have an air gap between shaft packing and

bottom of actuator for visual inspection, adjustment or complete replacement of packing without disturbing any portion of the valve or actuator except the packing gland follower. This valve shaft packing design must have been used successfully within the county for the past 10 years. Valves utilizing O-ring seals or non-adjustable packing shall not be acceptable.

11. Bearings shall be sleeve type and shall be made of sintered oil impregnated permanently lubricated ASTM A743 Grade CF8M. Non-metallic bearings shall not be acceptable.

12. Grit Excluders in the form of PTFE washers at the upper and lower journals shall be provided to prevent the entry of grit and foreign solids into the bearing areas.

13. All buried plug valves shall open left or counterclockwise when viewed from the stem and shall have a 2" operating nut which conforms to AWWA C517. All exposed plug valves shall open left or counterclockwise when viewed from the stem and shall have a hand wheel operator. Manual valve operators shall be of the worm gear or traveling nut type and shall be fully enclosed.

14. Manual valves located above ground shall be equipped with hand wheel operators and shall have a suitable indicator arrow to give valve position from fully open to fully close. Buried plug valves shall be furnished with 2-inch square AWWA nut operator with valve box and cover. Operator components shall, at the extreme operator positions, withstand without damage a pull of 200 lbs. for hand wheel operators or an input torque of 300 ft.-lbs. for operating nuts.

15. Interior of valve body and valve plug except for valve seat and stainless steel valve seat ring shall be coated with a fusion bonded or thermosetting epoxy coating in accordance with AWWA C550, latest revision. Coating shall be holiday-free with a minimum thickness of 10 mils. Surfaces shall be clean, dry, and free from rust and grease before coating.

16. All exterior surfaces of plug valves shall be clean, dry, and free from rust and grease before coating.

17. For buried service, the exterior ferrous parts of all valves shall be coated at the factory with coal tar epoxy with a minimum total finish dry film thickness of 20 mils. Prior to backfilling, all uncoated nuts, bolts, glands, rods, and other parts of joints shall be coated with two coats, 10 mils DFT per coat, of bituminous paint, Tnemec Series 46-465, Carboline Bitumastic 50, or equal.

18. Worm Gears shall be constructed in accordance AWWA C517 and shall be IP68 rated continuous duty to 50ft. Test certificates, signed by chief engineer of gear operator manufacturer, must be supplied showing full compliance to AWWA C504/C517.

    a. Worm gear operators shall be enclosed in a ductile iron housing with outboard seals to protect the bearings and other internal components. The actuator shaft and the quadrant shall be supported on permanently deep groove ball bearings.

b. Input shaft and fasteners shall be made of stainless steel. Gears shall be efficiency optimized 3 stage gear reduction type. Worm gear operators shall be sized at full bidirectional at the following pressures: 175 PSI up to 12” and 150PSI 14” and larger

19. Externally adjustable open and closed position stops shall be provided. The adjustable closed position stop shall be used to set closing torque and provide adjustment to compensate for change in pressure differential or flow direction.

20. Gears shall have a two-year warranty from date of shipment and shall have a metal tag containing a serial number, ratio; number of turns shall be riveted to the gear for future identification. Gears shall be Rotork Model IW.

21. Manual operators shall be provided with completely enclosed mounting brackets or adapters. The operators shall be equipped with adjustable stops to prevent over-travel in both the open and closed position with standard 2-inch square operating nuts with skirts as listed elsewhere herein, or with handwheel if for above ground service. All plug valves shall open by turning the operating nut counterclockwise. Orient operators with horizontal plug shafts such that the plug rotates upward upon opening.

22. Buried valves shall incorporate the use of an Aunspach Model D86 overtorq protector.

23. All operator components between the operating nut and the adjustable stops shall be designed to withstand, without damage, an input torque of 300 ft. lbs.

24. Prior to shipment from the factory, hydrostatic and leakage tests shall be conducted for each plug valve. Hydrostatic and leakage tests shall be conducted in strict accordance with ANSI/AWWA C517, latest revision, and results shall be submitted to the Engineer.

25. Eccentric plug valves shall have a two-year warranty from date of shipment. Manufacturers name shall be casted in body of valve and a metal tag containing a serial number shall be riveted to the valve for future parts identification.

26. Plug valve shall be manufactured by DeZurik or approved equal.

C. Butterfly Valves:

1. Butterfly valves shall be Class 150B in conformance with AWWA C504, latest revision, and designed for a minimum working pressure of 150 psi.

2. Butterfly valves shall be of the tight closing rubber-seat type. Valves shall be drip-tight with 150 psi versus 0 psi in either direction. The seat shall be made of ethylene propylene diene (EPDM) rubber.

3. Valves shall be satisfactory for applications involving valve operation after long periods of inactivity.

4. Valve bodies shall be constructed of high-strength cast iron conforming to ASTM A126, Class B. Valve body thickness shall be in accordance with AWWA C504, latest revision, for Class 150B valves.

5. Buried valves shall have integrally cast mechanical joint ends in accordance with ANSI/AWWA C111/A21.11, latest revision. Gaskets for mechanical joints shall be made of ethylene propylene diene (EPDM) rubber.

6. Above ground valves buried valves shall have cast iron flanges in accordance with ANSI/AWWA C110/A21.10 with bolt circle and bolt holes drilled to match ANSI B16.1, Class 125. All flange related bolts, nuts, and washers shall be Type 316 stainless steel.

7. Valve seats shall be of a corrosion and chloramine resistant synthetic rubber compound bonded to a high grade stainless steel retaining ring and secured to the valve disc by Type 304 stainless steel set screws or shall be molded in, vulcanized, and bonded to the body. The valve seat shall be adjustable and replaceable in the field without dismantling operator, disc, or shaft. Seats bonded to the body shall withstand a 75-pound pull tested in accordance with ASTM D429, Method B. Valve seat rings shall be constructed of Type 316 stainless steel. Seating edges of the seat ring shall be smooth and polished. The seat ring shall be capable of compensating for changes in direction of flow to assure a drip-tight seal in either direction.

8. Valve discs shall be either solid or hollow core. Discs shall be constructed of ductile iron ASTM A536, Grade 65-45-12. Valve disc shall be of the offset design to provide 360 degree uninterrupted seating. The valve disc shall be attached to the shaft by means of "O" ring sealed taper pins.

9. Valve discs shall rotate 90 degrees from the fully open position to the fully closed position.

10. Valve shafts may consist of a one piece unit extending completely through the valve disc bearings and into the operating mechanism or may be stub shaft construction. Shaft materials connection torque requirements shall conform to AWWA C504. No deviation will be accepted. Valve shafts shall be minimum Type 316 stainless steel.

11. The valve shaft seal shall consist of "O" rings in bronze cartridge or self-adjusting nitrile “V”-type ring seals. All shaft seals shall be replaceable without disassembly of the valve.

12. All buried butterfly valves shall open left or counterclockwise when viewed from the stem and shall have a 2” operating nut which conforms to AWWA C504. All exposed butterfly valves shall open left or counter-clockwise when viewed from the stem and shall have a hand wheel operator. Manual valve operators shall be of the worm gear or traveling nut type and shall be fully enclosed. All operators shall have adjustable mechanical stop limiting devices to prevent over travel of disc. Should an adjustment of the disc be required to maintain a bubble tight seal, this adjustment shall be made externally without removing the operator housing cover. The operator shall be designed such that

all adjustments can be made under pressure and without the possibility of dirt getting into the operator lubricant. Any adjustments through the lower shaft will not be acceptable. Units furnished for buried service shall be fully gasketed and grease packed. Manual valves located above ground shall be equipped with handwheel or chainwheel operators and shall have a suitable indicator arrow to give valve position from fully open to fully closed. Buried butterfly valves shall be furnished with 2-inch square AWWA nut operator with valve box and cover. Operator components shall, at the extreme operator positions, withstand without damage a pull of 200 lbs. for handwheel or chainwheel operators or an input torque of 450 ft.-lbs. for operating nuts.

13. Interior of valve body and valve disc except for valve seat and stainless steel valve seat ring shall be coated with a fusion bonded or thermosetting epoxy coating in accordance with AWWA C550, latest revision. Coating shall be holiday-free with a minimum thickness of 10 mils. Surfaces shall be clean, dry, and free from rust and grease before coating.

14. All exterior surfaces of butterfly valves shall be clean, dry, and free from rust and grease before coating.

    a. For buried service, the exterior ferrous parts of all valves shall be coated at the factory with coal tar epoxy with a minimum total finish dry film thickness of 20 mils. Prior to backfilling, all uncoated nuts, bolts, glands, rods, and other parts of joints shall be coated with two coats, 10 mils DFT per coat, of bituminous paint, Tnemec Series 46-465, Carboline Bitumastic 50, or equal.

    b. For valves installed above ground, the exterior ferrous parts of all valves shall be shop primed at the factory with one coat, minimum dry film thickness of 4 mils, of a rust inhibitive, universal epoxy primer. Primer shall be suitable for finish paint specified. Following installation above ground valves shall be finish painted in accordance with Section 09910 – Utility System Painting and Section 09905 – Piping, Valve, and Equipment Identification System.

15. Prior to shipment from the factory, hydrostatic and leakage tests shall be conducted for each butterfly valve. Hydrostatic and leakage tests shall be conducted in strict accordance with ANSI/AWWA C504, latest revision, and results shall be submitted to the Engineer.

16. Butterfly valve shall be manufactured by DeZurik or approved equal.

D. Rigid Pipe Couplings

1. Pipe couplings used to join two pieces of plain end pipe shall be sized to suit the outside diameter of the pipe ends to be joined. Transition couplings shall be used to join pipes of different outside diameters. Pipe couplings shall be bolted type with steel middle ring and end followers.

2. All carbon steel parts of the coupling shall be coated on the interior and exterior with a fusion bonded thermosetting epoxy coating with a 12-mil

nominal coating thickness. The coating shall be equal to AL-CLAD as manufactured by Dresser Industries, Inc.

3. Gaskets for the coupling shall be wedge type manufactured of ethylene propylene diene (EPDM) rubber.

4. Bolts shall be manufactured of high strength Type 316 stainless steel with Type 316 stainless steel hexagonal nuts. Bolts and nuts shall conform dimensionally to ANSI/AWWA C111/A21.11, latest revision.

5. Couplings shall be Style 38 as manufactured by Dresser Industries, Inc. or an equal approved by the Engineer.

E. Dismantling Joints

1. Dismantling joints shall be installed as shown on the Drawings and shall be constructed in accordance with ASTM A36 Carbon Steel.

2. All dismantling joints connection shall be a Class 125 flanged joint conforming to AWWA C207 Class D flanges.

3. Gaskets for the dismantling joint shall be wedge type manufactured of ethylene propylene diene (EPDM) rubber in accordance with ASTM D2000.

4. All tie-rods shall be high strength steel in accordance with ASTM A193.

5. Dismantling joints shall be Style 400 as manufactured by Romac Industries, Inc or approved equal.

F. Restrained Rigid Pipe Couplings

1. Restrained pipe coupling to prevent axial separation shall be incorporated into the design of the sleeve or coupling used to connect two plain pipe ends.

2. The restraint mechanism shall consist of a plurality of individually actuated gripping surfaces to maximize restraint capability. Torque limiting twist off nuts shall be used to insure proper actuating of the restraint devices.

3. Ductile Iron components shall be of a minimum of 65-45-12 ductile iron meeting the requirements of ASTM A536 of the latest revision and shall be tested in accordance with the stated standard.

4. The restrained joining system shall meet the applicable requirements of AWWA C219, ANSI/AWWA C111/A21.11, and ASTM D2000.

5. Restrained couplings shall be Series 3800 Mega-Coupling as manufactured by EBBA Iron or approved equal.

G. Joint Restraints

1. Mechanical Joints

a. Joint restraints for mechanical joint fittings shall be constructed of ductile iron conforming to ASTM A536 and shall have a working pressure rating of 250 PSI for 18-48 inch fittings.

b. Restraint shall be accomplished by multiple gripping wedges incorporated into a follower gland meeting the requirements of ANSI/AWWA C110/A21.10.

c. Restraints shall be Megalug Series 1100 restraints with Mega-Bond coating as manufactured by EBBA Iron.

2. Pipe Joints

a. Piping shall be supplied with all the joint accessories required to make the connection

b. Any below grade push on pipe joint(s) at other than valve or fitting connections shall be restrained with boltless restraining gaskets (i.e. locking or "gripper" gaskets consisting of EPDM rubber gasket with high-strength stainless steel locking elements vulcanized into the gastket, which when activated develop wedging action between the pairs of stainless steel elements spaced around the gasket and the pipe.) similar to US Pipe's Field-Lok 350 ®. Restrained gaskets shall be rated to 350 psi and tested in accordance with ANSI/AWWA C111/A21.11.

H. Flange Adapters

1. Adapters shall be suitable for joining plain-end pipe to flanged pipes and fittings.

2. Adapters shall be constructed of ductile iron conforming to ASTM A536 and shall have flange bolt hole circles that are compatible with ANSI/AWWA C110/A21.10.

3. Restraint for the adapters shall consist of individual actuated gripping wedges. Torque limiting actuating screws shall be used to insure proper set of the gripping wedges. The adapters shall be capable of deflection during assembly and allow at least 0.6" of gap between the end of the pipe and the mating flange without affecting the integrity of the seal.

4. Adapters shall be Series 2100 Megaflange restrained flange adapters with Mega-Bond coating as manufactured by EBBA Iron.

I. Valves Boxes

1. Place a valve box over the operating nut for each buried valve. The valve box shall be designed so as to prevent the transmission of surface loads directly to the valve or piping.

2. Valve boxes shall be of the adjustable slide-type of suitable length with an interior diameter of not less than 5 inches. The valve boxes shall be manufactured of cast iron and shall be of the two piece design including a bottom section and top section with cover. The cast iron cover shall be cast with the applicable service, "WATER", "SEWER," etc., markings. The top section shall be adjustable for elevation and shall be set to allow equal

movement above and below finished grade. The valve box shall as shown in the Drawing Details.

3. The castings shall be manufactured of clean, even grain, gray cast iron conforming to ASTM A48, Class 35 for Gray Iron Castings; and shall be smooth, true to pattern, free from blow holes, sand holes, projections, and other harmful defects. The seating surfaces of both the cover and the top section shall be machined so that the cover will not rock after it has been seated.

4. The valve boxes shall be coated inside and outside with an asphaltic coating prior to machining, so that the machined seating surfaces will be free of any coating.

5. Valve extension stems shall be provided for all buried valves when operating nut is deeper than 3 feet below final grade.

6. Cast iron valve box assemblies shall be manufactured by Union/Tyler, Pipeline Components, Inc., or approved equal.

J. Pipe and Valve Identification

1. Identification systems for above ground piping and below-ground valves shall be as specified in Section 09905 – Piping, Valve, and Equipment Identification System.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General:

1. All valves and appurtenances shall be installed in the locations shown, true to alignment and rigidly supported. Valves shall be installed in accordance with manufacturer's installation instructions and with the details shown on the Drawings. Any damage to the above items shall be repaired to the satisfaction of the Engineer before they are installed.

2. Valves shall be installed such that they are supported properly in their respective positions, free from distortion and strain. Valves shall be installed such that their weight is not borne by pumps and equipment that are not designed to support the weight of the valve.

3. Valves shall be carefully inspected during installation; they shall be opened wide and then tightly closed and the various nuts and bolts shall be tested for tightness. Special care shall be taken to prevent any foreign matter from becoming lodged in the valve seat: Check and adjust all valves for smooth operation.

4. Install all floor boxes, brackets, extension rods, guides, the various types of operators and appurtenances as shown on the drawings that are in masonry

floors or walls, and install concrete inserts for hangers and supports as soon as forms are erected and before concrete is poured. Before setting these items, the contractor shall check all plans and figures which have a direct bearing on their location and he shall be responsible for the proper location of these valves and appurtenances during the construction of these structures. In addition, install hangers or supports at all changes in direction at the spacing requirements stated in Section 15126 – Pipe Hangers and Supports.

5. Pipe for use with flexible couplings shall have plain ends as specified in the respective pipe sections in Division 15.
6. Flanged joints shall be made with 316 stainless steel bolts, nuts and washers, unless otherwise noted. All exposed bolts (excluding stainless steel) shall be painted the same color as the pipe. Clean iron flanges by wire brushing before installing flanged valves.
7. Buried flange joints shall be coated in prior to polyethylene encasement, including all nuts, bolts, and other parts of the valve joints with two coats, 10 mils DFT per coat, of bituminous paint, Tnemec Series 46-465, Carboline Bitumastic 50, or equal.
8. Clean threaded joints by wire brushing or swabbing. Apply Teflon joint compound or Teflon tape to pipe threads before installing threaded valves. Joints shall be watertight.
9. Pressure gauges shall not be installed until after the substantial completion date unless otherwise requested by the Engineer.
10. Valve Orientation:
    a. Install operating stem vertical when valve is installed in horizontal runs of pipe having centerline elevations 4 feet 6 inches or less above finished floor, unless otherwise shown.
    b. Install operating stem horizontal in horizontal runs of pipe having centerline elevations between 4 feet 6 inches and 6 feet 9 inches above finished floor, unless otherwise shown.
11. Locate valve to provide accessibility for control and maintenance. Install access doors in finished walls or plaster ceilings for valve access.
12. Following installation, all above ground valves shall be painted in accordance with the painting system specified in Section 09910 – Utility System Painting. Following installation of valves installed in valve vaults, repair any scratches, marks and other types of surface damage, etc., with a coating equal to the original coating supplied by the manufacturer.
13. Expansion and Contraction Provisions
    a. Rigidly support all piping with adequate provisions for expansion and contraction.
    b. Firmly anchor horizontal runs over 50 feet in length at the midpoint of the runs to force expansion equally toward the ends.

14. Support valves in accordance with Section 15126 – Pipe Hangers and Supports.

15. Pipe couplings shall be installed in strict accordance with the manufacturer's published instructions and recommendations.

3.02 PAINTING

A. Identification systems for the valves shall be as specified in Section 09905 – Piping, Valve, and Equipment Identification System.

B. Stainless steel components shall not be painted.

3.03 FIELD TESTING, PERFORMANCE, AND FINAL CLEARANCE

A. Pressure Testing: Valves shall be tested hydrostatically, concurrently with the pipeline in which they are installed as specified in Section 15044 – Pressure Testing of Process Piping. Protect or isolate any parts of valves, operators, or control and instrumentation systems whose pressure rating is less than the pressure used for the pressure test(s). If valve joints leak during pressure testing, loosen or remove the nuts and bolts, reseat or replace the gasket, reinstall or retighten the bolts and nuts, and hydrostatically retest the joints. If any joint proves to be defective, it shall be repaired to the satisfaction of the Engineer.

B. Any excessive noise or vibration shall be resolved by the manufacturer including possible replacement of the valve at the manufacturer’s expense.

C. Disinfection: The Contractor shall disinfect all new equipment as per Section 15045 – Disinfection of Process Piping.

END OF SECTION