

16-inch Cast Iron Gate Valves, Quincy, MA – Product Availability Waiver Request

The Quincy Point Wastewater Pumping Station Renovation project, CWSRF-3974, includes nine (9) 16-inch diameter actuator operated iron-body gate valves (see the attached Plan Sheet No M-1). The pump station has been shut down for the renovation since May 3, 2016. The contractor has been operating a 7 MGD bypass pumping system (average flow 0.5 MGD) since that time. The original plan was for 90 days of bypassing at a cost of \$155,000. Over 90 days have passed since bypassing began, and the project is experiencing continuing significant delays due to problems obtaining the 16-inch gate valves. This request is being submitted in order to mitigate the potential for the bypassing costs to more than double and in order to meet AIS requirements.

The following supporting documents are included as an attachment to this email (with bookmarks included):

1. The email from the City of Quincy requesting the submittal of the Product Availability Waiver.
2. Plan Sheet showing the placement of the valves in the system.
3. The contract Specification Section 15110.
4. The letter from the Vendor proposing the current schedule for AIS – compliant Blackhall valves (expedited schedule).
5. The letter from the Contractor describing the problem obtaining AIS compliant valves.
6. The email from the Vendor describing the part failure and foundries and shops involved in the original and on-going 16-inch gate valve production.
7. The email from the Vendor describing the search process for AIS compliant valves.
8. A second Vendor's quote for non-AIS compliant valves with pricing and availability. These somewhat more expensive valves are certified to meet Buy American requirements, but not AIS.
9. A cut sheet for the selected backup plan alternative non-AIS-compliant valve to be purchased in the event of further delay.

The Vendor and Contractor believe that orders for large AIS compliant gate valves are backlogged because of the relatively recent implementation of AIS requirements. Based on their experience on this project, AIS compliant 16-inch valves are not readily available at this time. Therefore, Quincy is requesting a Product Availability Waiver for the nine (9) 16-inch valves as a backup plan. Quincy hopes that the waiver request can be reviewed in the same approximate time frame as the current valve order manufacture and delivery (by the end of July 2016). If the AIS compliant valves are manufactured and delivered in the stated time frame, they will be installed. Otherwise, it is hoped that a waiver granted by EPA can be used to achieve compliance for installing the alternative valve.

Please let us know if you need more information to process this waiver request.

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*NOTE: The referenced attachments with project diagrams, schedules, and supplier correspondence are in formats that do not meet the Federal accessibility requirements for publication on the Agency's website. Hence, these exhibits have been omitted from this waiver publication. They are available upon request by emailing SRF_AIS@epa.gov

SECTION 15110

VALVES AND APPURTENANCES
(FOR WASTEWATER PROCESSES)

PART 1 - GENERAL

1.01 WORK INCLUDED:

The Contractor shall furnish and install valves and appurtenances as indicated on the drawings and in the specifications and as herein specified, including all labor, material, equipment and incidentals required. All valves shall open counterclockwise unless otherwise indicated.

1.02 RELATED WORK:

- A. & Section 09900, PAINTING
- B. Section 15140, PROCESS PIPE AND FITTINGS

1.03 QUALITY ASSURANCE:

& Insofar as possible, gate, ball, butterfly, globe, angle and check valves shall be the product of one manufacturer who has had long experience in the design of valves and whose products have proven reliable in service in similar installations over a reasonable period of years. The valves shall be designed so that parts subjected to wear may be easily replaced and shall be constructed of wear-resistant materials.

1.04 REFERENCES:

- A. The following standards form a part of this specification, as referenced:

American National Standards Institute (ANSI)

- ANSI B16.1 Cast Iron Pipe Flanges and Flanged Fittings, Class 125.
- ANSI B16.10 Standard Face-to-Face and End-to- End Dimensions of Ferrous Valves.

American Water Works Associations (AWWA)

- AWWA C500 Gate Valves for Ordinary Water Works Service.

Federal Specifications (FS)

- FS WW-V-54C & Amendment 1, Type I or II, Class A for Valve Gate, Bronze (125, 150 and 200 lb., Screwed, Flanged Solder - End, for Land Use).

FS	WW-V-51D	Valve, Bronze, Angle, Check and Globe 125, 150 and 200 Pound Screwed, Flanged or Solder-End (For Land Use)
FS	WW-V-35C	Valve, Ball
FS &	TT-V-51F	Varnish, Asphalt

1.05 SUBMITTALS: IN ACCORDANCE WITH REQUIREMENTS OF GENERAL SPECIFICATIONS, SUBMIT THE FOLLOWING:

Submit to the Engineer for review, six (6) sets of complete shop drawings plus operating and maintenance instructions for each item furnished.

PART 2 - PRODUCTS

2.01 GENERAL:

- A. All hand wheels, operating nuts and key stops shall be turned counterclockwise to open the valves. Handwheels shall be of ample size and shall have an arrow and the word "open" cast thereon to indicate the direction of opening.
- B. Valves to be buried shall be designed for buried service and shall be provided with gate boxes and tee handle operating wrenches in the number and lengths necessary to permit operation of all valves by operator of average height, working in normal standing positions. At least two (2) of each type, size and length of wrench shall be provided, unless otherwise stated below. Operating nuts for use with tee handle operating wrenches shall be 2-inches square, and conform to the appropriate AWWA Standard.
- C. Where indicated on the drawings or necessary due to location, size, or inaccessibility, geared or chain wheel operators shall be furnished with the valves. Such operators shall be designed to have adequate strength for use with the valves with which they are supplied.
- D. As indicated on the drawings, certain valves or gates require floorstands and/or bench-stands.
- E. Unless otherwise specified in the specifications or on the drawings, all flanged valves shall conform to ASA Specification B16.1 and ANSI Specification B16.10.
- F. & It shall be the Contractor's responsibility to make the valve or gate manufacturer aware of the type of service to which the valve or gate will be subjected and the nature of the materials (i.e. sewage, sludge, chemicals, etc.) which it will handle, and to make sure that all materials used in the manufacture of the valve or gate are suitable for the use intended.
- G. All anchor bolts and embedded items for complete installation or mounting, holding down or supporting of equipment to be furnished under this section, including necessary

location drawings and templates required to install the items in concrete, masonry, etc., shall be furnished and delivered to the site by the manufacturer of the equipment furnished under this section, for installation under other sections of these specifications. Delivery of the items shall be as required by the overall construction schedule.

- H. These specifications direct attention to certain features but do not purport to cover all details entering into the design of the equipment. All parts shall be so designed and proportioned as to have liberal strength, stability, and stiffness, and to be especially adapted for the work done.

2.02 GATE VALVES LARGER THAN 3-INCHES:

- A. Unless otherwise specified or approved, all gate valves larger than 3-inches in diameter shall be iron body, bronze mounted, solid wedge gate valves, with mechanical joint or flanged ends, as indicated on the drawings or herein specified, and shall conform to applicable section of AWWA Standard C500. These valves shall be designed for a working water pressure of at least 175 psi for sizes up to 12-inches in diameter and at least 150 psi for sizes 14-inch and larger in diameter.
- B. Buried valves shall be inside screw, non-rising stem with mechanical joint ends. All exposed valves shall be O.S. and Y, except that where indicated on the drawings or where limited operating room requires, exposed valves shall be non-rising stem with handwheel or electric operator, as noted on the plans. All exposed valves 3-inches and larger shall be flanged unless otherwise shown on the drawings. Bronze gate rings shall be fitted into grooves of dovetail or similar shape in the gates. Bodyseat rings shall be threaded, bronze and screwed into the body.
- C. Stuffing box follower bolts shall be of steel and the nuts shall be of bronze.
- D. O-ring stuffing boxes may be used.
- E. The design and machining of the valves shall be such as to permit packing the valves without undue leakage while they are wide open and in service.
- F. Valves shall be made by The William Powell Co., Cincinnati, IL; Jenkins Bros., New York, NY; or approved equal.

2.03 GATE VALVES 3-INCHES AND SMALLER IN SIZE:

- A. Unless otherwise indicated on the drawings, specified or approved, gate valves 3-inches and smaller shall be standard, bronze body and bonnet with bronze solid wedge disc and trim, rising stem type gate valves with screwed ends for 125 lb. working steam pressure. Buried valves shall be inside screw, non-rising stem valves provided with operating nut and gate box. All valves 3-inches and smaller shall conform to Federal Specifications WW-V-54C, Amendment I, Type I or II, Class A for Valve, Gate, Bronze (125, 150 and 200 Pound, Screwed, Flanged, Solder-End, for Land Use). Valve stems shall be silicon-bronze.

- B. & Valves shall be made by the William Powell, Co, Cincinnati, Ohio;; Crane Co., Chicago, Illinois; Nibco, Inc., Elkhart, Indiana; or approved equal.

2.04 FLANGED RESILIENT SEATED FLEXIBLE DISC CHECK VALVE

- A. Valves shall provide drip-tight shutoff up to the full pressure rating.
- B. All valves shall be hydrostatically pressure tested at 175 psi by the manufacturer.
- C. Unless otherwise specified or approved, all resilient seated flexible disc check valves shall be manufactured from ductile iron meeting or exceeding ASTM A536 with bolted covers suitable for 250 psig cold working pressures.
- D. The valve disc shall be one-piece construction, alloy steel with nylon reinforcement disc fully encapsulated with EPDM or better.
- E. Rubber materials in contact with the process fluid shall be of a construction material compatible with the process fluid. For wastewater applications the rubber elastomers of the valve shall be EPDM or better.
- F. Non-slam closing characteristics shall be provided through a short 35 degree disc stroke.
- G. All resilient seated flexible disc check valves shall be equipped with a flow direction position indicator.
- H. Check valve disc shall be the only allowable moving part
- I. All manufacturers shall have a minimum of 5 years experience in the manufacturer of resilient seated flexible disc check valves. Manufacturer shall have available flow test data from an accredited hydraulics laboratory to confirm pressure drop data. Company name, plant location, valve size and serial number shall be bonded to the valve.
- J. Resilient seated flexible disc check valves shall be made by Val-Matic Valve and Manufacturing Corporation; American's Series 2100, Mueller CO. or approved equal.

2.05 SEWAGE SURGE RELIEF VALVES:

- A. & The sewage surge relief valve shall be of a 90 degree elbow body configuration, with cast iron body containing a securely fastened bronze or stainless steel ring. The valve disc shall have a resilient replaceable seat firmly held in place by a bronze or stainless steel ring fastened to the disc with screws. In the closed position with the line pressures below the spring setting, the valve shall provide droptight closure. The disc movement shall be guided for proper alignment, throughout its stroke and provide for full opening of the pipe line area when required. The valve, normally closed, shall open when the system pressure exceeds the spring adjustment setting. Its opening stroke shall be limited to that which is necessary to provide protection against surge exceeding the

spring setting. The valve shall close at a slow speed, consistent with adjustment of a self-contained oil cushion chamber that is provided with the valve. The cushioning device shall permit a range of adjustment for closing speeds to prevent hammer or banging.

- B. & External springs shall be enclosed in protective casings and shall be in compression. Springs that appear to be under extension are not permitted. The disc stem bushing shall be bronze capped with a lantern type gland vented to the atmosphere for revealing seal leakage.
- C. The sewage surge relief valve shall be a Series 3000 APCO Angle Surge Relief Valve, as manufactured by Valve Primer Corp., Schaumburg, IL; GA Sewage Surge Relief Valve, manufactured by Golden-Anderson Industries Inc., Cranberry Township, PA; or approved equal.

2.06 HANGERS AND SUPPORTS

- A. The Contractor shall furnish and install all supporting devices necessary or required to support all valves and appurtenances in a safe, firm and substantial manner at the locations indicated or as required in a manner to prevent the loads of valves and appurtenances from being carried on pumps, pipes or other equipment.
- B. Plug valves in horizontal pipelines shall be installed with shaft in horizontal position so that with valve in open position the plug is located in the upper part of the valve body. The valves shall be oriented so that with valve in closed position; the plug is at the upstream end of the valve.
- C. Install hangers and supporting devices necessary or required to hold all valves and appurtenances in a safe, firm and substantial manner at the positions indicated or as required and in a manner to prevent the loads of valves and appurtenances from being carried on pumps or other equipment.

2.07 ELECTRIC VALVE OPERATORS (ACTUATORS):

- A. Electric operator shall be self-contained and be designed to move the valve from fully open to fully closed when electrical power is applied and hold the valve in any intermediate position between fully open and closed without creeping or fluttering. Reducer, electric operator (actuator) or accessories shall be furnished complete, ready for installation, from a single manufacturer.
- B. Electric operators/actuators shall conform to AWWA C540.
- C. The actuator shall be suitable for use on a 480V, three phase, 60-Hertz power supply. The actuator shall be capable of functioning in an ambient temperature ranging from 40 degrees Fahrenheit through 120 degrees Fahrenheit and shall be capable of being mounted in any position.

- D. The actuator shall be sized to operate at a differential pressure of 150 psi. with an adequate margin of safety. Operating time shall be no more than 60 seconds.
- E. The entire actuator shall be NEMA 4X. All external fasteners shall be type 316 stainless steel. The motor shall be specifically designed for actuator service, with high starting torque, low stall torque and low inertia. The motor shall be totally enclosed, non-ventilated. Motor insulation shall be Class F, limited to a Class B temperature rise by thermal relays. Motor duty shall be 15 minutes. The motor shall be capable of operating in any position and shall be properly sealed. All motor gearings shall operate in a lubricant.
- F. Enclosed geared position/limit switch protection shall be provided. Limit switches shall be provided to de-energize the motor control circuit when the actuator reaches the limits of travel in the open or closed directions. Limit switches shall also be provided for remote indication at each end of travel (these shall be independent of the torque switches and position limiting switches.) Limit switches shall be rated 10 amps at 230 Volts AC.
- G. Torque switches shall be provided to de-energize the motor circuit if the valve encounters an obstruction during travel. Each actuator shall have independent open direction and close direction torque switches. The torque switch shall operate when the actuator is hand wheel operated to provide indication of a torque overload. Torque switches shall be rated 10 amps at 230 Volts AC.
- H. Each actuator shall be provided with a space heater in the limit switch compartment to aid in the prevention of damage to the switches and motor resulting from condensation.
- I. Gearing shall be of hardened steel or bronze and operate in a grease lubricant. Output gearing shall be of the worm shaft/worm gear configuration with the worm gear constructed of bronze.
- J. Manual operation shall be available by permanently mounted hand wheel requiring 80 lbs. or less while operating the valve during seating or unseating. The actuator shall be furnished with a side-mounted hand wheel located in a 90-degree plane from the actuator output drive. Handwheel shall operate in a counter-clockwise direction to open valve and shall have a cast arrow to indicate rotation direction. The hand wheel shall not rotate during power operation. A mechanical dial position indicator shall be provided as standard. Motor fault or inoperability shall not prevent the manual operation of the valve.
- K. The actuator shall include an electrically and mechanically interlocked reversing contactor, dual fused (primary and secondary winding protection) control power transformer, terminal strips with installed plated screws, local-off-remote selector switch, open-stop-close control and open and closed LED lights. Overload current sensing relays shall be provided in each of the 3-phases to protect the motor and are in

addition to the thermal relays in the motor windings '

- L.& Actuators shall be provided with a solid-state positioner board. All actuators shall be capable of accepting a 4-20mA control signal and providing a 4-20 mA position feedback. Position accuracy shall be +/-1%. Inputs and outputs shall be optically isolated.
- M.& Each actuator shall be tested and the test certificate shall be shipped with each actuator. As a minimum, the certificate shall include: no-load current, current at max torque setting, stall current, stall torque, test voltage, and actuator output speed.
- N. The manufacturer shall provide an employee to assist in field calibration and switch setting.
- O. The Contractor shall be responsible to insure that all motor operated valves and gates on the project are provided with compatible actuators.
- P.& Nameplates indicating manufacturer name, model number, serial number, motor horsepower, speed, input voltage, power and service factors shall be provided for each electric motor operator/actuator.
- Q.& Each electric motor operator/actuator assembly shall be provided with remote valve control station. The remote station shall be in a separate NEMA 4X enclosure that will be remotely mounted in the location as shown on the plans. Each remote station shall be provided with a "Open-Stop-Close" 3-way switch. The remote station shall also include LED indicating/pilot lights to indicate Open (Green Light), Close (Red Light), Power (White Light), and Fault (Amber Light).
- R.& Plastic nameplates shall be provided on the remote valve control stations for the valve name/designation and all switches and pilot/indicating lights. Manufacturer shall verify name/designation of valves before procuring the nameplates.
- S. Electric motor operators shall be manufactured by AUMA Actuators Inc., Canonsburg, PA; Rotork Controls, Rochester, NY; Limitorque, Lynchburg VA; or approved equal..
- T.& Manufacturer to provide one set of any special tools required for assembly, disassembly and/or maintenance activities. Manufacturer to also provide one set of bearings and one set of all O-rings and seals for each assembly provided.
- U. Unless otherwise specified or shown on the drawings, all valves larger than eight inches shall be provided with electric valve operators.

2.08 VALVE IDENTIFICATION:

- A. Provide stainless steel identification tags for each valve supplied. Markings on tags shall be stamped with letters at least ¼-inch high, spelled out in full.

B.& Provide a valve schedule that identifies all valves installed under this project. Schedule shall include valve size, type, location, and process stream. Valve schedule shall be submitted to Engineer for approval.

C.& The Contractor shall provide and hang in the operations office a typewritten, framed and glass covered valve chart indicating the number and location of the valves and the area served.

2.09 SHOP PAINTING COATINGS:

A. Before exposure to the weather and after thorough cleaning to remove all rust, dirt, grease and other foreign matter, the valves, floorstands, and appurtenances shall be painted in the shop as specified below.

B. Ferrous surfaces which will be submerged shall be cleaned by sandblasting to remove all foreign matter.

C. & The inside of valves shall have a coating of Protecto 401 Ceramic Epoxy Interior Coating in accordance with coating manufacturers recommendations and applied at a 40 mils nominal thickness to interior surfaces of the pipe; or a fusion bonded epoxy [FBE] primer at 5 mils thickness and a fusion bonded polyethylene [FRP] surface coating.

D. The outside of valves within structures shall not be coated with the bituminous coating, but shall be thoroughly cleaned as recommended by the coating manufacturer and given one shop coat of 69-1211 H.B. Epoxoline II primer made by Tnemec Company, Inc.; Multiprime made by Pittsburgh Plate Glass Co., Pittsburgh, PA; Recoatable Epoxy Primer B67H5/R5 made by Sherwin-Williams Company; or an approved equal product.

E. Ferrous surfaces obviously not to be painted shall be given a shop coat of grease or other suitable rust-resistant coating.

PART 3 - EXECUTION

3.01 & INSTALLATION:

All valves shall be carefully erected and supported in their respective positions free from all distortion and strain. Care shall be taken to prevent damage or injury to the valves or appurtenances during handling and installation. All material shall be carefully inspected for defects in workmanship and materials, all debris and foreign material cleaned out of valve openings and seats, all operating mechanisms operated to check their proper functioning, and all nuts and bolts checked for tightness. Valves and other equipment which do not operate easily or are otherwise defective shall be repaired or replaced at the Contractor's expense.

3.02 & FIELD PAINTING:

Field painting of valves shall be in accordance with Section 09900, PAINTING.

END OF SECTION

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