



February 1, 2019

Kelly Taylor
MassDEP SRF Project Engineer

RE: Gloucester, MA – Babson WTP Raw Water System Improvements

Dear Kelly,

Waterline Industries would like to formally request an AIS waiver for the four (4) 16” motor operated gate valves and one (1) 16” motor operated flow control butterfly valve which are to be installed as a critical path item on the above referenced project. The request is imperative as the AIS requirements will result in a substantial delay and be prohibitive to the 9/1/19 completion date stipulated under this emergency project.

The AIS program has resulted in a severe back up in the limited number of foundries left in the United States. The valves at issue are noted to have a 2-week lead time for submittals and 26-week lead time for fabrication (once approved and released). Unfortunately, that timeline is not conducive to the completion dates required for this project.

Attempts were made to expedite the buy, submittal and fabrication timelines with little to no success. With an AIS Wavier, we are confident in bringing these valves well within our current schedule and meeting the expectations of The City of Gloucester.

Per our recent discussion on site 1/31/19 with The City of Gloucester, Stantec and DEP, please accept this as our formal request for AIS Waiver.

Thank you in advance!
Sincerely,

A handwritten signature in blue ink, appearing to read "Josh Duchesne", is written over a light blue horizontal line.

Josh Duchesne
Vice President of Business Development
Waterline Industries Corporation
603-365-6431

SECTION 15100

INTERIOR VALVES AND GATES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. The work to be done under this Section consists of furnishing all materials, labor, tools and equipment, and performing all operations necessary to complete all interior valves, jointing materials, hangers, supports, anchors and necessary appurtenances.
2. The work to be performed under this Section includes, but is not limited to, the following items:
 - a. Valves

1.02 RELATED WORK

- A. Electromagnetic flow meters and other metering and control equipment not specifically included in this section will be furnished under Section 13350.
- B. Pumps, motors and appurtenances will be furnished and installed under Sections 11302.
- C. Painting will be performed under Section 09900.
- D. Interior piping and appurtenances inside of building/structure limits will be furnished and installed under Section 15010.
- E. Electrical connections and controls not specifically included in this section and required for the proper operation of equipment specified in this Section will be furnished and installed under Section 16020.

1.03 REFERENCES

- A. Materials, equipment and installation shall conform to the following standards and codes and shall be so labeled, or listed:
 1. National Fire Protection Association.
 2. Underwriters Laboratories, Inc.
 3. National Electric Code.
 4. American Water Works Association.
 5. Boiler and Pressure Vessel Codes.
 6. Federal, State and/or Municipal Codes.
 7. Public Safety Codes.

8. U.S. Public Health Service.
9. American Gas Association.
10. National Electrical Manufacturers Association.
11. American National Standards Institute.
12. American Society for Testing and Materials.
13. American Society of Mechanical Engineers.
14. Commercial Standards.
15. Federal Specifications.
16. Cast Iron Soil Pipe Institute.
17. National Sanitation Foundation.
18. Manufacturer's Standardization Society of the Valve and Fitting Industry.
19. Occupational Safety and Health Regulations.

1.04 SYSTEM DESCRIPTION

- A. The Drawings are diagrammatic, and locations of connections approximate, but the Drawings shall be followed as closely as actual conditions will permit. The Contractor shall be responsible for field verifying dimensions. Where working drawings are required, they shall be prepared by the Contractor, submitted to the Engineer for review prior to installation.

1.05 SUBMITTALS

- A. Before ordering any materials, the Contractor shall submit to the Engineer for review a schedule, catalog cuts and piping layout drawings in accordance with Section 01300 showing makes, types, and trade designations of all equipment, valves, drains and appurtenances. Shop drawings shall be sufficient to verify compliance with specifications. All materials must be reviewed by the Engineer prior to installation.
- B. Operating and maintenance instructions for all equipment shall be furnished to the Engineer. Upon completion, the Contractor shall provide instruction of the Owner's personnel in the operation, adjustment and maintenance of each system and its components by manufacturer's representatives, as required by the Engineer in accordance with Section 01600.

1.06 QUALITY ASSURANCE

- A. The owner has the right to inspect all materials and review all procedures and records relating to the manufacture of the equipment.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Provide in accordance with Section 01600 – Materials and Equipment.

- B. All valves and equipment shall be handled, stored, and shipped in a manner that will prevent damage.

PART 2 PRODUCTS

2.01 GATE VALVES

A. General.

1. Interior Gate valves shall open by turning left, (counter-clockwise). Cast word "open" and an arrow indicating direction to open on each valve body or operator.
2. All interior gate valves shall have handwheel operators with the word "OPEN" and an arrow indicating direction of rotation.
3. Valves shall be tagged with number of turns required to operate from fully closed to fully open position.
4. Provide position indication.
5. All ferrous parts of the valves, except finished or bearing surfaces and stainless steel components, shall be given two coats of epoxy coating conforming to AWWA C550. After the valves are assembled and tested, a finish coat of epoxy shall be applied to the exterior.

B. Gate valves shall be furnished and installed in accordance with the requirements of AWWA C515, and shall meet the specified requirements which follow:

1. Gate valves for vault or building installation shall have flanged joints, conforming to ANSI 16.1 Class 125 for flange diameter and drilling.
2. Gate valves shall be non-rising stem, manufacturer's standard pattern with "O" ring seals, inside screw, resilient seat-type. Gate valve shall conform to AWWA C515.
3. Gate valves shall be designed for vertical or horizontal settings and equipped with a hand wheel operator. Installed arrangements as indicated on the Contract Drawings.
 - a. Gate valves shall have a minimum rated for working water pressure of 200 psi.
4. The bonnet shall have a removable gland to permit removal and replacement of the valve stem and "O" ring seals while they are wide open and in service.
5. Stem Seals: All valves shall be provided with O-ring stem seals.
6. Materials:
 - a. Body and Bonnet: Ductile Iron, ASTM A536 Grades 65-45-12 or 70-50-5
 - b. Wedge: Ductile Iron, ASTM A536 Grades 65-45-12 or 70-50-5
 - c. Wedge Encapsulation: EPDM Rubber

- d. Stuffing Box Glands: Bronze with separate followers and Ductile Iron, ASTM A536 Grades 65-45-12 or 70-50-5 when gland and follower are combined into one piece.
 - e. Gland Followers: Ductile Iron, ASTM A536 Grades 65-45-12 or 70-50-5
 - f. Stem: Stainless Steel or Bronze, ASTM B584, C86700
 - g. Stem Nut: Bronze, ASTM B763, C99500
 - h. Thrust Washers: Delrin, Copper, or Stainless Steel
 - i. Gaskets and O-Rings: EPDM or Buna N, ASTM D2000
 - j. Fasteners and Hardware: AISI Type 304 or 316 stainless steel
- C. Manufacturers:
- a. American USA
 - b. J&S Valves
 - c. Kennedy Valve
 - d. Or Equal

2.02 BUTTERFLY VALVES

- A. Butterfly Valves. Butterfly valves shall be manufacturer's standard pattern, conforming to the latest AWWA Standard for "Rubber Seated Butterfly Valves", designation C504, Class 150B as manufactured by American Darling, Henry Pratt Co., Mueller Co., SPX/DeZurik, Sartell MN or approved equal. The valve shall have cast-iron body, standard flanged ends, ni-resist or high-strength carbon steel shaft, and neoprene or rubber seat. The valve shall be designed for operation in the position indicated by the contract drawings. With the exception of the valves designated below, all valves shall be furnished with an enclosed gearing and handwheel operator. The gearing shall be designed to open the valve when the handwheel is turned LEFT (counter-clockwise). The word "open" and an arrow indicating the direction for opening the valve shall be cast into the valve body or on the handwheel.
- 1. The valve body shall be ASTM-A48, Class 40 or A126, Class B cast iron. Body shall have integral hubs for housing shaft bearings and seals. Body ends shall be flanged ends designed for installation between ANSI B16 class 125 cast iron Flanges.
 - 2. The butterfly valve disc shall be of the "off-set" design to provide a full 360° seating surface uninterrupted by shaft holes. Disc shall be constructed of cast iron ASTM A-48 Class 40 or ductile iron ASTM A536. There shall be no external ribs transverse to the flow. Non-metallic discs are not acceptable to the Owner.

3. The resilient seat shall be Buna-N rubber designed to provide tight shut-off at the specified pressures. The rubber seat can be on the disc edge or in the valve body but in either case, must be retained by positive mechanical means with corrosion-resistant hardware. Seats must be capable of mechanical adjustment in either direction without the use of the special tools. They should also be capable of complete replacement in the field without chipping, grinding, or burning out of the old seat or its retaining substance. The rubber mating surface in all cases must be 316 stainless steel.
4. Valve shafts shall be of the two-piece "stub" type extending into the disc hubs for a distance of at least 1 1/2 shaft diameters or of the single piece "through" type. In either case shaft shall be of round 316 stainless steel.
5. Valve shafts shall be securely attached to the disc by means of bolts, dowel pins, taper pins, or any combination of the three. Attaching hardware shall be 316 stainless steel.
6. Shaft bearings shall be contained in the valve body integral hubs. Bearings shall be of the extended shafts self-lubricated, sleeve type.
7. The valve assembly shall be furnished with a single 2-way thrust bearing designed to center the disc in the body at all times and to absorb thrust forces.
8. The drive end shaft seal shall be of the cartridge type with O-rings to provide positive sealing.
9. Each valve shall be tested per AWWA C504, including hydrostatic, performance, and leakage tests.
10. All ferrous parts of the valves except for finished or bearing surface shall be given two coats of epoxy coating conforming to AWWA C550.
11. Valves, as indicated on the Drawings, shall be electrically actuated valves. Electric actuators will be furnished to the valve supplier by the Instrumentation and Control Sub-contractor at no cost to the valve supplier. Electric actuators shall be as specified in Section 13300 and shall be mounted and connected by valve supplier per manufacturer's recommendations.

2.03 MOTORIZED VALVE OPERATORS

- A. General: The actuators shall be for use on a 480V, 3-phase power supply. The actuator shall be capable of functioning in an ambient temperature ranging from -30°C to 70°C. The actuator shall be sized to guarantee valve closure at the specified differential pressure with an adequate safety margin. The valve operator shall be designed in accordance with the latest AWWA specification except as modified herein.

1. The actuators shall be sized to meet the following performance requirements:

ITEM:	Strainer Isolation:	Raw Water:
Valve Type	Gate	Butterfly
Valve Size	16"	16"
Valve Service	Isolation	Modulating
Differential Pressure	50 psi	50 psi
Maximum Flow	5 MGD	5 MGD

- B. **Motor:** The electric motor shall be totally enclosed non-ventilated with a minimum of class F insulation with a time rating of 15 minute as a minimum. Motor protection devices shall be incorporated by either an imbedded thermostat, or thermal overload relays. In addition, double torque switches are required. The motor shall be an independent sub-assembly.
- C. **Gearing:** All gearing throughout the actuator shall be metallic and run in a lubricant. Drains and filler holes shall be provided for checking the lubricant level. The drive shall incorporate a lost motion device so as to allow the motor to obtain full speed before engaging the load. The gearcase shall be made of cast iron. The actuator shall be capable of being mounted in any position.
- D. **Hand Operation:** An auxiliary handwheel shall be provided for emergency service, engaged by a positive declutch mechanism. The handwheel shall not rotate during power operation. The handwheel must be operable upon motor gearing or motor failure, and will operate in a clockwise to close manner.
- E. **Position Indication:** A mechanical dial position indicator shall be provided as standard. Also, two limit switches for remote indication (end of travel) will be provided. For modulating applications (where indicated) a continuous feedback shall be required.
- F. **Torque and Position Switches:** Each actuator shall have torque switch protection in each direction. In addition, position/limit switch protection shall be provided as required by the type of valve. Four extra limit switches convertible from normally open to normally closed shall be provided for customer use at each end of travel. These are independent of the torque switches, position indicating switches, and the position/limit protecting switches mentioned above.
- G. **Integral Controller:** Included in the actuator shall be a reversing contactor, control transformer, local -off- remote selector switch, and three button - two light pushbutton station. A monitor relay shall be provided so that the actuator is constantly monitored for functionality. An emergency shutdown override terminal shall be provided which will override any other signal in case of an emergency. Supply with an anti-condensation heater. All hardware shall be corrosion resistant stainless steel.
- H. **Wiring and Terminals:** Each actuator shall be provided such that only the power supply need be provided for functioning. The terminations should be brought out to a clearly marked terminal area, which is sealed from the environment. The actuator shall have a device, which will automatically correct the incoming three-phase power.
- I. **Enclosure:** The actuator shall be a totally enclosed unit, with all components described in adhering to the enclosure requirements. The use of external conduit connections will not be accepted. The enclosure shall be Factory Mutual approved to NEMA 6 as a minimum. Watertight conduit connectors shall be supplied with the operator to render the unit submersible.

- J. **Test Certificate:** Each actuator shall be tested, and shall include the test certificate with each actuator, upon shipment. As a minimum, this certificate will include:
1. **No. Load Current**
 2. **Current at max torque setting**
 3. **Stall Current**
 4. **Stall Torque**
 5. **Test Voltage**
 6. **Motor Flash Test**
 7. **Actuator Output Speed**
- K. **Actuator**
1. The actuator shall be as manufactured by Rotork Controls in Rochester, NY, Limatorque Corporation, or equal.
 2. For Quarter Turn valves such as Butterfly and plug valves, a quarter turn gear operator shall be included with the actuator. This will be a heavy-duty gear operator of cast iron construction, fully lubricated, and sealed. All gearing shall be metallic. If it is mounted on an AWWA valve, it shall conform to applicable AWWA C-504-80 specification. Operating time shall be 60-120 seconds unless otherwise noted.
 3. For multi turn valves and gates, a multi turn gear operator shall be included with the actuator. This will be a heavy duty gear operator of cast iron construction, fully lubricated, and sealed. All gearing shall be metallic. Operating time shall be 60-90 seconds unless otherwise noted.
- L. **Test Equipment:** Hand held test equipment shall be provided to facilitate testing field units. Field unit testers shall be able to communicate as well as evaluate status and diagnostic information. Test equipment shall consist of a front panel mounted LCD window and key pad or a hand held device which plugs into one of the host communication ports emulating a host control system.
- M. **Valve operators** for valves provided under another Section of this contract shall be shipped to the successful valve supplier for mounting to their valves at no cost to valve supplier. Valve operators supplied under this contract for installation on existing valves shall be field installed and with all necessary hardware to provide proper operation under this division of the specifications.
1. The actuator shall be sized to guarantee valve closure at the required differential pressure. The safety margin of motor power available for seating and unseating the valve shall be sufficient for torque switch trip at maximum valve torque with the supply voltage 10% below nominal. The operating speed shall be such as to give valve closing and opening at approximately 10 to 12 inches per minute unless otherwise stated in the job specification.
 2. The valve actuator manufacturer shall guarantee the operation of the valve actuator assembly. The valve manufacturer shall provide to the contractor the appropriate seating and maximum operating torques. The valve actuator manufacturer shall be responsible for coordinating the mating of the valve and

actuator. All necessary hardware, bolts, plates, etc. shall be included with the valve actuator. The valve actuator manufacturer shall provide test certificates that the output torques will safely operate the valves.

N. Manufacturer's Services:

1. A manufacturer's technical representative, specifically trained on the equipment herein specified, shall be furnished by the Sub-contractor and shall be present at the job site or classroom, as designated by the Owner, for a minimum of eight (8) days, travel time excluded, for assistance during construction, start up, and training of the Owner's personnel. The services shall include, but not be limited to, the following:
 - a. Three (3) days for job site and/or valve factory inspection.
 - b. Two (2) days for field calibration.
 - c. One (1) day for classroom instruction.
2. The manufacturer shall provide whatever service is required to place the equipment in service and train the operators on the operation and maintenance of the equipment herein specified.
3. Installation assistance, functional and performance testing shall be at such times as requested by the Owner.
4. Training services for the Owner's personnel shall be at such times as requested by the Owner.
5. The technician shall work closely with the valve manufacturer's representative and the contractor to check the final installation of the equipment, place the equipment in operation, train the operators during testing and certify that the installation meets the requirements of the specifications and the manufacturer's performance guarantee.

2.04 STRAINERS

A. Provide strainers where indicated on the contract drawings.

B. Materials:

1. Body: Fiberglass Reinforced Plastic (FRP) or Poly Vinyl Chloride (PVC) Plastic
2. Cover: Fiberglass Reinforced Plastic (FRP) or Poly Vinyl Chloride (PVC) Plastic
3. Flanges: Poly Vinyl Chloride (PVC)
4. Basket: 316 Stainless Steel
5. Gaskets and O-Rings: EPDM
6. Fasteners: Stainless Steel

- B. Provide drains and vents.
 - 1. Provide 1 inch drain at vessel invert.
 - 2. Provide 1 inch vent at vessel covert.
 - 3. Vents and drains shall be fitted with isolation valves.
 - 4. Provide pipe and fittings on vent connections to direct contents towards floor.
- C. Pressure Rating: No less than 75 psi with a maximum temperature of 140 degree.
 - 1. Maximum allowable suction pressure is 14 psi Vacuum.
- D. Perforations shall be ½ inch round to provide no less than 40% open area in the basket.
- E. Differential Pressure:
 - 1. With 2500 GPM across a 0% / 50% blinded basket shall be no greater than 0.3 psi / 1.47 psi.
 - 2. With 3500 GPM across a 0% / 50% blinded basket shall be no greater than 0.59 psi / 2.80 psi.
- F. Contractor to provide differential pressure indicating transmitter (dpit) for each strainer to measure, display, and output the differential pressure across the strainer to which is mounted.
 - 1. Provide as indicated on the contract drawings and as specified.
 - 2. Provide as specified in and in accordance with Section 13350 – Field Instruments.
 - 3. Unit shall output to SCADA where it shall be displayed.
 - 4. Tapped and Threaded Connections shall be provided in the piping immediately upstream and downstream of the strainers.
 - 5. Provide Type 304 stainless steel ball valves, 304 stainless steel threaded pipe nipples, and type 304 screwed fittings to connect between piping and dpit.
 - 6. Provide ¼ inch connections pipe and fittings.
- G. Cover shall require no tools to remove and install the lid and secure in place. Cover attachment shall be with tee handles and swing bolts.
- H. Spare Parts
 - 1. Provide two (2) spare baskets.

2.05 PORTABLE HOIST *Per Δ , Delete and replace w/ Attached*

- A. ~~The portable hoist for the sewage grinders shall be constructed from Type 316 stainless steel materials and sized to fit top of the wetwell channel wall and allow for the complete removal of the grinders from the influent channel. The mast and attached boom shall be a minimum 3-1/2 inch schedule 40 pipe and shall be capable of pivoting within its floorstand. The boom length shall be adjustable. The hoist shall be supplied with a zinc plated winch with disc brake, stainless steel cable (30 ft. min.), swage clamps, and a Type 316 stainless steel latching eye hook.~~
- B. The minimum capacity of the portable hoist shall be 1,000 pounds.

2.06 PRESSURE GAUGES

- A. Provide Pressure Gauges upstream and downstream of each strainer and each control valve.
- B. Each pressure gauge shall be liquid filled with solid front safety case design and shall be suitable for bottom stem mounting. Bourdon tube design of Type 316L Stainless Steel with Type 316L Stainless Steel socket. Connection size shall be 1/4-inch male NPT. Each gauge shall be 4-1/2-inches in diameter, shall have a stainless steel, polypropylene or nylon gauge case with acrylic, shatter proof glass. Graduated markings for every 1 psi. Gauge accuracy shall be +/- 0.5% of span, ANSI B40.100, Grade 2A.
- C. Dial and gauge scale shall be aluminum. Dial and scale range markings shall be black with the background of white.
- D. Each gauge shall be furnished and installed with a diaphragm seal. The seal's diaphragm and bottom section shall be constructed from Type 316L stainless steel. Each diaphragm seal shall have a 1/4-inch NPT flushing connection with stainless steel ball valve. Connection sizes shall be 1/2-inch female NPT on the process fluid side and the gauge side connection shall be 1/4-inch male NPT. The diaphragm attachment shall allow for cleaning of the lower diaphragm assembly without breaking the gauge seal or requiring refilling or recalibration of the gauge.
- E. Each gauge and its diaphragm seal shall be filled with silicone oil.
- F. Provide valves, fittings, and piping as indicated on the contract drawings.
- G. Each gauge shall have a piston type pressure snubber between it and its diaphragm seal.
- H. Gauges shall have the following ranges:
1. 0 to 30 psig
- I. Manufacturers:
1. Ashcroft
 2. WIKA Instruments
 3. 3D Instruments
 4. Or equal

ADDENDUM No. 2

**CITY OF GLOUCESTER
Babson WTP Raw Water System Improvements
CITYCONTRACT #19070, DEP CWSRF No. 4460**

This Addendum amends and/or supplements the Bid Documents as indicated below. Only these items alter the Bid Documents; any verbal discussions or responses are hereby declared null and void. The Bidder shall indicate the receipt of all issued Addenda on the Bid Form. Each holder of the Bid Documents registered with the OWNER shall receive a copy of the Addendum.

ITEM 2-1 Section 15100

Per 

On page 10, **DELETE** paragraph 2.05.A. in its entirety and **REPLACE** with:

- “A. The removable davit for the strainers shall be constructed from Type 316 stainless steel materials and sized to fit on top of the strainer vault slab and allow for the complete removal of the strainers from the strainer vault. The mast and attached boom shall be a minimum 3-1/2 inch schedule 40 pipe and shall be capable of pivoting within its floorstand. The boom length shall be adjustable. The hoist shall be supplied with a zinc plated winch with disc brake, stainless steel cable (30 ft. min.), swage clamps, and a Type 316 stainless steel latching eye hook.”

