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WO: 2014-0216

April 28, 2016

To: CWSRF AIS Waiver (Martin.Taylor@waterboards.ca.gov)

From: Western Municipal Water District
Albert A. Webb Associates

Subject: AIS Availability Waiver Request
WMWD Project No. C-06-7845-110
La Sierra Transmission Main
Engineer: Albert A. Webb Associates

Albert A. Webb Associates is in the final stages of design for the La Sierra Transmission Main located in the City and County of Riverside, California on behalf of Western Municipal Water District. The potable water pipeline will provide treated water to the District's customers. The pipeline will vary in pressures from approximately 450 psi to 100 psi. As part of the design, and considering the higher than typical pipeline operating pressures, triple offset butterfly valves are proposed to provide a drip tight shutoff. Unfortunately, no one manufacturers these valves in the United States. Therefore, on behalf of Western Municipal Water District, Albert A. Webb Associates respectfully requests a waiver from the American Iron and Steel Provisions for the triple offset valves specified in the attachment on the basis that they are not made in the USA. We have provided additional documentation including a letter from one supplier of triple offset valves.

If you have any questions or require clarifications please contact our office.

Sincerely,
ALBERT A. WEBB ASSOCIATES

Bradley Sackett, PE
Project Manager

Enclosures

cc: Jimmy Chen, WMWD

Southwest Valve & Equipment, Inc.
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3-25-16

To Dave Algranti
Webb and Associates

From Kelly Brians
Southwest Valve & Equipment

RE: AIS requirements and triple offset butterfly valves

Per our conversation, to our knowledge, there are no manufacturers of triple offset butterfly valves that can comply with the requirements of the American Iron and Steel act. Triple offset butterfly valves are only available from foreign companies, manufacturing plants and foundries.

Please contact me at 714-832-1090 if you have any questions regarding.

Cordially

Kelly Brians
Southwest Valve & Equipment
Manufacturers representative for DHC Valve Company

SECTION 15105
TRIPLE OFFSET BUTTERFLY VALVE

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SECTION 15105

TRIPLE OFFSET BUTTERFLY VALVE

PART 1 - GENERAL

1.01 DESCRIPTION

A. GENERAL: This section includes the manufacturing, furnishing and installation of zero-leakage, bi-directional metal seated triple-offset butterfly valves. Valves shall conform to AWWA Standard C504 except as modified herein.

1. Valves to be 150 lb. or 300 lb. rating with a water working pressure capability equal to or greater than as indicated on Bidding Sheet and/or plans.

2. Valves to be for buried or in-vault service as indicated on Bidding Sheet and/or plans.

B. ACTUATORS: Actuators to be manual except where specific electrically actuated valves are specified or indicated on the plans; and sized for the valve's full rated working pressure and velocity of 16 FPS bi-directionally.

C. VALVE DELIVERY: Valves shall be delivered within a timeframe compatible with the Contractor's Construction Schedule and the Contract Completion Schedule.

1.02 RELATED SECTIONS

A. SHOP DRAWINGS AND SUBMITTALS: Section 01340.

B. INSTALLATION OF STEEL CYLINDER WATER PIPE: Section 02618.

C. PAINTING AND PROTECTIVE COATINGS: Section 09000.

D. ELECTRIC VALVE ACTUATORS: Section 15951

1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. GENERAL: Except as modified by the requirements specified herein and/or the details on the drawings, all work included in this section shall conform to, and comply with, the applicable provisions of the latest edition of following codes and standards; which shall form a part of this specification to the extent indicated by the references thereto.

B. ANSI:

1. ANSI B16.34 Valves – Flanged, Threaded, and Welding End
2. ANSI B16.47 Large Diameter Steel Flanges
3. ANSI 6D Specification for Pipeline Valves (Seat Leakage)
4. ANSI B1.20.1 Pipe Threads, General Purpose (inch)
5. ANSI B16.1 Cast Iron Pipe Flanges and Flanged Fittings
6. ANSI B46.1 Surface Texture

C. API:

1. API 598 Valve Inspection and Testing
2. API 609 Butterfly Valves: Double-Flanged, Lug- and Wafer-Type

D. ASME:

1. ASME B16.5 Pipe Flanges and Flanged Fittings: Note: See also ASME B16.47 Series A (MSS-SP-44) or Series B (API 605)
2. ASME B16.10 Face-to-Face Dimensions
3. ASME B16.34 Valves – Flanged and Buttwelded End
4. ASME B16.47 Large Diameter Steel Flanges
5. ASME B31.1 Power Piping
6. ASME B31.3 Process Piping
7. ASME Standards Materials of Construction

E. ASTM:

1. ASTM A182 Stainless Steel Forgings
2. ASTM A216 Carbon Steel Castings

F. AWWA:

1. AWWA C207 Standard for Steel Pipe Flanges for Waterworks Service
2. AWWA C213 Fusion-Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines

1.04 REFERENCE ORGANIZATIONS

A. CDA: Copper Development Association

B. ISO:

1. ISO 5211/1 Part-Turn Valve Actuator Attachment

a. Part 1: Flange Dimension

b. Part 2: Flange and Coupling Performance Characteristics

2 ISO 5752 Face-to-Face Dimensions

a. Series 13 (Class 150)

b. Series 14 (Class 300/600)

C. MSS: MANUFACTURER'S STANDARDIZATION SOCIETY

1. MSS-SP-6 Standard Finishes for Contact Faces of Pipe Flanges and Connecting-End Flanges of Valves and Fittings
2. MSS-SP-25 Standard Marking System for Valves, Fitting, Flanges, and Unions
3. MSS-SP-55 Quality Standard for Steel Castings for Valves, Flanges, and Fittings, and Other Piping Components

D. NSF: NATIONAL SANITATION FOUNDATION

1. NSF-61 National Sanitation Foundation Standard 61–Drinking Water System Components – Health Effects

E. OSHA:

1. OSHA Occupational Safety and Health Act of 1970, as amended

F. SAE:

1. Society of Automotive Engineers

G. UL:

1. Underwriters Laboratories, Inc.

1.05 SUBMITTALS

A. GENERAL: Shop drawings and submittals shall be in accordance with Section 01340.

B. SHOP DRAWINGS

1. Indicate on each shop drawing submittal the name of the project, the name of the Vendor, and the names of any manufacturers and subcontractors. Provide on each shop drawing submittal the Certification Statement, per Section 01340.

2. Show valve dimensions including laying lengths. Show port sizes. Show dimensions and orientation of valve actuator, as installed on the valve. Show location of internal stops for gear actuators.

3. Show specific valve linings and coatings in accordance with Section 09900("Painting and Protective Coatings")

C. RELATED SUBMITTALS

1. Provide manufacturer's catalog data, calculations and detail construction sheets showing all valve parts and describing each part by material of construction, specification (such as ANSI, ASTM, SAE, or CDA) and manufacturer's part number. Identify each valve by tag number to which the catalog data and detail sheets pertain.

2. Submit manufacturer's catalog data and descriptive literature.

3. Provide coating data sheet and MSDS sheets for all valve coatings

4. Provide qualifications for company providing third-party shop inspection.

5. Submit a detailed report verifying that valve has passed shell and seat tests (bi-directional) and that the valve interior linings have passed the test for holidays and lining thickness. Describe test results and repair procedures for the valve.

D. MANUFACTURER'S WARRANTY

1. Submit manufacturer's warranty.

2. Submit warranty at least fifteen (15) days prior to project close-out.

E. O&M MANUAL: Submit valve manufacturer's O&M manual.

1.06 MANUFACTURERS WARRANTY:

The Contractor shall warranty all materials and workmanship of items furnished under these specifications to be free from defects for a period of thirty six (36) months after date of final project acceptance by Owner. The Contractor shall, at his own expense,

repair or replace all defective materials or workmanship supplied by him found to be deficient by the Owner with respect to any provisions of this specification.

Manufacturer's warranty is in addition to and not a limitation of, other rights the Owner may have under the Contract Documents.

1.07 VALVE MANUFACTURER:

A. GENERAL: The name of the manufacturer of the valves to be furnished by the bidder shall be stated on the bidding sheets. Inasmuch as valves require an in-service review over the extended period of time for evaluation for acceptance, it is necessary that proposed valves other than those specified must be submitted for evaluation well in advance of the bid opening, for acceptance prior to the award of the contract. Generally, the specified thirty five (35) day period following issuance of the Acceptance-of-Proposal will not result in approval of alternate valves.

B. APPROVED MANUFACTURERS:

1. Adams Valve (Adams Model MAK-B6)
2. Daehan Control (DHC)

1.08 QUALITY ASSURANCE

A. VALVE TESTING: Shop-test each valve body under a test pressure equal to twice its design water-working pressure. The hydrostatic seat test shall be made free of any lubricant. There shall be no visible leakage under all seat tests including API 598. Perform torque tests on actuators to ensure compliance with this specification.

B. CERTIFICATION: Prior to shipment, Vendor shall submit for valve and actuator, certified copies of all torque and hydrostatic factory tests, showing compliance with this specification and the applicable standards of AWWA, ANSI, ASTM, etc.

C. MANUFACTURER'S EXPERIENCES: Manufacturer shall be experienced in the manufacture of metal seated triple-offset butterfly valves for a minimum of ten (10) years. The valve manufacturer shall have, as a minimum, 10 projects with similar valves sizes and pressure classes installed in water facility/applications in the United States. References shall be included in the submittal package.

D. THIRD PARY SHOP INSPECTION: Valve manufacturer shall provide third party inspection as described below.

1. Mil test reports for valve body casting, disc casting, shaft, Duplex seat and keys
2. Blast to coating time as specified
3. Blast profile
4. Coating thickness
5. Coating adhesion to coating manufacturers specification
6. Holiday testing interior
7. Hydrostaic test
8. Seat leakage test
9. Actuator cycle test

PART 2 - MATERIALS

2.01 GENERAL

A. OPERATORS: Supply valve complete with operating handwheels, gear actuators, operating nuts, and wrenches required for operation.

B. MANUFACTURER: Valve shall have the name of the manufacturer and size and class of the valve cast or molded onto the valve body or bonnet shown on a permanently attached plate.

C. BI-DIRECTIONAL: Mainline valve shall be metal seat and bi-directional for full pressure rating of valve.

D. UNIT-DIRECTIONAL: Outlet valves for appurtenances shall be metal seat and unit directional for the full rating of valve.

2.02 BUTTERFLY VALVE

A. GENERAL: Butterfly valve shall be of high performance design, incorporating a triple-offset shaft design with an inclined conical seat and seal geometry which shall create a torque seating operation which shall provide a bi-directional zero leakage shut-off.

1. Design shall be in accordance with ASME B16.34 and B31.1 with the predetermined torque applied to the valve.
2. Valve shall be of the metal seat design which shall be capable of bi-directional seating against pressures up to those specified in Paragraph 2.02.B applied to one side of the disc, with zero pressure applied to the other side of the disc in the CLOSED position, with zero leakage, and without damage or permanent deformation to any part of the valve body, seat, disc, shaft, bearings, or actuator.
3. Valve seating design shall be laminates of S31803 duplex stainless steel and graphite seating to stellite overlay 2.5mm in the finished

condition if carbon steel disks are proposed. If 316 S.S. disks are provided no stellite overlay is required.

B. VALVE CLASSES AND PRESSURE RATINGS:

1. Class 150: 275 psi (Bi-directional)
2. Class 300: 625 psi (Bi-directional)

C. VALVE BODY AND DISC:

1. Valve body shall be cast from carbon steel per ASTM A216 Grade WBC. Valve discs shall be cast from Steel ASTM A216 Grade WCB or type 316 S.S. Fabricated bodies and discs shall not be permitted.
2. Valves to be fusion bonded epoxy lined and coated per specifications.
4. The valve searing edge shall be located within the valve body fully protected from the flow stream.
5. Valve shafts shall be one-piece 17-4PH or 431 stainless steel construction and shall be designed in accordance with the requirements of API 609. The shaft diameter shall be reduced at the actuator connections so as to put the weakest point outside the valve above the packing.
6. Disc attachment to the shaft shall be by means of parallel keys Type 316 stainless, type 17-4 stainless steel or monel.
7. Pins of any kind shall not be used for torque transmission.
8. Comply with applicable ASME B16.34 specifications.

D. FIELD REPLACEABLE SEAL RING: Valve shall have a field replaceable “laminated” seal ring retained in the body or on the disc. The seal ring shall be constructed of laminates of stainless steel and graphite. No elastomers shall be used in the sealing system. Seal ring design shall also include the following parameters:

1. The seal ring shall be accessible, e.g. replaceable, by positioning the disc in a proper orientation and removing an adjacent pipe spool piece without removing or disassembling the valve.
2. The seal ring shall be machined in an inclined conical shape to match the companion surface in the body or on the disc, as appropriate. The overall geometry of the seal ring shall be formed into an elliptical shape to provide resilient seating.
3. Each seal ring shall be identical and interchangeable for valves of the same size.

4. The seal ring shall be held securely in place by a stainless steel retaining ring bolted in place.
5. A spiral wound gasket shall be provided to prevent leakage around the seal ring. Flat static gaskets shall not be used.
6. The seal ring shall be indexed and keyed to ensure exact and proper installation or reinstallation without shims.
7. No special tools shall be required to install the seal ring.

E. VALVE PACKING:

Packing shall be graphite and shall be provided by a minimum of four studs for precision adjustment and compression of the packing. A minimum of five packing rings shall be provided. (The packing gland shall be self-adjusting for buried service applications only)

F. VALVE BEARINGS:

Valve bearings shall be No-Resist or Type 316 stainless steel baked PTFE, ASTM A-439 TPD2, or hard chrome plating. Bearings shall be sealed from the ingress of particulates. Wetted bronze parts shall be in conformance with ASTM B62, containing not more than: 5-percent zinc, 2-percent aluminum, 8-percent lead, and 83-percent copper plus nickel, plus silicon.

G. MISCELLANEOUS:

1. Operator mounting bracket will be centered with machined register and a minimum of two (2) dowel pins will be used in addition to bracket bolting the absorb torsional load from operator.
2. Valve shaft shall rotate clockwise to close.

2.03 VALVE ACTUATOR

A. MANUAL ACTUATORS: Manual actuator shall be provided for the valve and shall be sized in accordance with AWWA C504 and C540, and meet the following requirements:

1. Provide enclosed gear actuators which shall be of the worm and gear type. Worm gear actuators shall be Limitorque Model HBC, EIM Type WO, Auma GS 160.3 – GS 250.3 Series, SAMBO AWWA or approved equal.
2. Design gear actuators assuming the differential pressure across the disc is equal to the pressure rating of the valve:
   a. 275 psi for Class 150 valves

b. 500 psi for Class 300 valves. (Actuator Only)

3. Gear actuators shall be enclosed, lubricated with oil or grease, and provided with seals on shafts to prevent entry of dirt and water into the actuator. Gear actuators for valves located above ground or in vaults and structures shall have handwheels equipped with a standard 2-inch AWWA operating nut. Above ground actuators shall contain a dial indicating the position of the valve disc. Below ground actuators shall be provided with ground position indicators indicting the position of the valve.

4. Worm and gear actuators shall be of the totally enclosed design so proportioned as to permit operation of the valve under full differential pressure rating, or a differential pressure of 500 psig, whichever is greater, with a maximum pull of 80 pounds on the handwheel and a maximum input of 150 feet-pounds on the operating nut. Provide stop limiting devices in the actuators in the OPEN and CLOSED positions. Actuators shall be of the self-locking type to prevent the disc from creeping. Design actuator components between the input and the stop-limiting devices to withstand without damage a pull of 200-pounds for handwheel and an input torque of 300-pounds for operating nuts when operating against the stops.

5. Self-locking worm gear shall be a one-piece design of gear bronze material (ASTM B427), accurately machine cut. The worm shall be hardened alloy steel (ASTM A322, Grade G41500; or ASTM A148, Grade 105-85), with thread ground and polished. Helix angle of worm gear shall be designed and cut at 3.5 degrees or less to prevent creep, unless other means to prevent creep are employed and are approved by the Owner. The actuator shall prevent creeping of the valve under all flow conditions. Provide reduction gearing to meet maximum torque and pull design requirements. The reduction gearings shall run in a proper lubricant.

6. Manual gears shall be supplied with over-torque protection as supplied by Anspach or SAMBO.

7. Actuators shall open valve by turning counterclockwise.

2.04 RUBBER PARTS

Rubber parts exposed to water shall be made of a rubber compound that is resistant to free chlorine and monochloramine concentrations up to 10 mg/l in the fluid conveyed.

PART 3 - EXECUTION

3.01 PAINTING AND COATING

A. SURFACE PREPARATION: Surface preparation shall be SSPC-SP10 per Section 09900.

B. LINING AND COATING: Interior and exterior of the valve and exterior of valve actuator shall be coated with NSF-61 certified fusion bonded epoxy per Section 09900.

1. Minimum DFT shall be 10 mils.

2. Coating: Scotchkote 134 or approved equal.

C. APPLICATOR: Coating application shall be approved by Owner. Provide at least five (5) reference projects for fusion bonded epoxy coating of valves of similar type. Include user contact information.

3.02 MOUNTING GEAR ACTUATORS

A. The manufacturer shall select and mount the gear actuator and accessories on each valve and stroke the valve from fully open to fully closed prior to shipment.

3.03 VALVE TESTING

A. VALVE LINING

1. Test the valve interior linings at the place of application with a low-voltage (22.5 to 80 volts, with approximately 80,000-ohm resistance) holiday detector, using a sponge saturated with a 0.5-percent sodium chloride solution.

2. The lining shall be holiday free. A certification from a licensed coating specialist shall be provided prior to shipment.

B. VALVE COATING

1. Measure coating thickness with a calibrated magnetic- type or electronic dry-film thickness gauge. Provide dry-film thickness gauge as manufactured by Mikrotest or Elcometer.

2. Check each for the correct dry-film thickness. Do not measure within eight hours after application of the coating.

C. SHOP PRESSURE TEST: Pressure test the valve body and the valve seat according to the pressures and procedures described in this specification or in the AWWA Standard. Valve shall show zero leakage.

D. SHOP OPERATION: Operate manual valve through 10 full cycles of opening and closing. Valve shall operate from full open to full close without sticking or binding. If valve sticks or binds, repair or replace the valve and repeat the tests.

E. ACTUATORS: Actuators shall operate valve from full open to full close through 10 cycles without binding or sticking.

1. The pull required to operate a hand wheel under full design pressure shall not exceed 80 pounds.

2. The torque required to operate the valve having 2-inch AWWA nuts under full design pressure shall not exceed 150 foot-pounds.

3. If actuators stick or bind or if pulling forces and torques exceed the values stated previously, repair or replace the actuators and repeat the tests.

4. Fully lubricate actuators in accordance with the manufacturer's recommendations prior to operating.

5. Actuator stops shall withstand a pull of 200 pounds for handwheel or chainwheel actuators, and an input torque of 300 foot pounds for 2-inch AWWA nuts, without damage to any component.

6. Repair or replace any damaged component and repeat the test until the actuator passes the test without damage.

F. TEST RESULTS: Submit test results and documentation for <u>all</u> testing performed on each valve.

3.04 SHIPPING

Package the equipment adequately to prevent damage during shipping. Before shipping flanged valve, clean flanges by wire brushing and coat unpainted machined surfaces of the flange with strippable, rust-preventative compound. Fasten full-face flange protectors of waterproof plywood or weather-resistant pressboard, of a diameter at least that of the outside of the flange, to each flange to protect both the flange and the interior of the valve. Small valves may be fully packaged at the manufacturer's option. Bolt or otherwise fasten valves to skids or other supports so as to preclude damage in subsequent handling.

3.05 INSTALLATION

Valve to be installed in accordance with manufacturer's Operating and Maintenance Manual and written installation instructions.

END OF SECTION 15105