Nampa Wastewater Division

340 W. Railroad Street, Nampa, Idaho 83687-1741
(208) 468-5840, FAX 467-9194

July 20, 2020

Gary Carrol
Idaho Department of Environmental Quality
Boise Regional Office
1445 N. Orchard Street
Boise, ID 83706

RE: Nampa Wastewater Treatment Plant Phase II Group D (Loan Number WW1903) AIS Waiver

Dear Mr. Carroll,

The City of Nampa (City) is in the process of Phase II Upgrades construction at the Nampa Wastewater Treatment Plant (WWTP), which includes the addition of a fifth primary digester (Primary Digester No. 5) and modifications to the existing process piping in the Digester Control Building. A three-way converging valve is required to control the hot water used as part of the heating system. The valve design was based on the same criteria and valve technology of the two existing valves for Primary Digesters No. 3 and No. 4. Using the same criteria was critical to ensure compatibility in the system controls as all three valves must work in parallel. The manufacturer of the existing valves does not meet AIS requirements. Prior to the bid, the design team was able to identify one alternative valve manufacturer that could meet the AIS requirements. During the construction phase, the submittal review determined the valve technology did not meet the design requirements. The only valve they were able to find that meets the design requirements is not AIS compliant. As such, we are requesting a waiver to be able to use a three-way converging valve that is not AIS compliant.

Description of the foreign and domestic construction materials	Foreign materials: All
Unit of Measure	Lump Sum
Quantity	1
Price	[redacted]
Time of Delivery/Availability	12-14 weeks form order
Location of Construction	Nampa, ID
Name and Address of Proposed Supplier	[redacted]
Detailed Justification	See above

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Please contact me with any questions or concerns related to this notification at johnsons@cityofnampa.us or (208) 468-5850.

Sincerely,

Shannon M. Johnson, P.E.
City of Nampa Wastewater Division

Enclosure

Cc: Nate Runyan, P.E., City of Nampa Deputy Public Works Director
Matt Gregg, P.E., Program Manager
Noah Nordhoff, P.E., Construction Manager

SECTION 43 30 51 – THREE-WAY CONVERGING VALVES

PART 1 -- GENERAL

1.1 THE SUMMARY

A. The CONTRACTOR shall provide three-way converging valves and appurtenances, complete and operable, in accordance with the Contract Documents for the Digester Heating System. The three-way converging valve shall be furnished by a single manufacturer, complete with electric motor actuator with positioner to ensure coordination and compatibility of equipment.

B. The requirements of Section 43 30 00 - Valves, General apply to this Section.

C. The requirements of Section 43 30 12 - Valves and Gate Actuators apply to this Section.

D. Three-way converging valves shall have undergone a proof-of-design test to demonstrate that the valve components operate at the service flow, pressure, temperature, and fluid conditions, free from binding, excessive noise, and premature failures. Proof-of-design test results shall be available to the ENGINEER on request.

1.2 CONTRACTOR SUBMITTALS

A. Furnish submittals in accordance with Section 43 30 00 - Valves, General, and Section 01 33 00 – Contractor Submittals.

B. Show drawing information shall include the following:

1. Catalog information

2. Complete fabrication, assembly, foundation, and installation drawings including dimensions, weights, specifications, data, and materials of construction of the valve assembly and appurtenances.

3. Head loss/pressure drop characteristics

4. List any exceptions or deviations from the Contract Documents

PART 2 -- PRODUCTS

2.1 DESIGN REQUIREMENTS

A. General: The three way converging valves shall be designed to converge water from the hot water supply loop (Port A open to Port AB) into the hot water return loop and to converge water from the heat exchanger (Port B open to Port AB), for heating the recirculated contents of the anaerobic digesters (CSL). The hot water return loop provides hot water to the spiral heat exchangers specified under Section 41 55 70 – Sludge Heat Exchangers. Reference the Process and Instrumentation Drawings, Mechanical Drawings, and Process Narratives presented in Division 40 for further information on the three-way valve installation. The valve shall be suitable for installation in the orientations shown in the Contract Drawings.

B. Principles of Operation: Three-way converging valves shall be furnished complete with electric positioner and electric motor actuator. The electric actuator control unit shall receive a 4-20 mA signal from the PLC and shall convert the signal to an electric output

to operate the valve motor actuator. The PLC provides temperature control logic based on CSL temperature and process setpoint requirements. A 4 mA signal shall indicate no demand for heat (100 percent recirculation through hot water return loop, no supply from hot water supply loop). A 20 mA signal shall indicate full demand for heat (100 percent water from hot water supply loop).

C. Construction: Three-way converging valve shall be 3 port design for converging service. Valve operation shall utilize cage guided plug that slides between ports. Provide valve with cast iron body conforming to ASTM A 126 – Gray Iron Castings for Valves, Flanges, and Pipe Fittings, with ANSI 125 lb. flanged ends. The bonnet shall be of cast iron and shall be bolted to the valve body. Provide stainless steel plug, stem and valve trim. The valve seat ring shall be of Type 416 stainless steel. The maximum shut-off differential shall be 50 psi. The maximum operating temperature shall be 230 deg F.

D. Manufacturers, or Equal

1. **Forbes Marshall**

2.2 ELECTRIC MOTOR MODULATING ACTUATORS

A. Valve actuators shall be in accordance with Section 43 30 12 - Valves and Gate Actuators.

B. An electric motor modulating linear actuator shall be provided and installed by the CONTRACTOR with the three-way valve as a complete and operational package.

C. The actuator for the three-way valve shall consist of a drive motor and controls, reduction gearing, limit switches, torque switches, declutching device, a padlockable disconnect switch; local/remote selector switch, and auxiliary handwheel.

D. Electric motor actuators shall be specifically designed for modulating service with solid-state reversing contactors rated for 200 starts per hour duty and shall be a self-contained unit rated NEMA 4.

E. All bearings shall be prelubricated, antifriction type. Electric characteristics shall be 480 volt, 3 phase, 60 Hz. Motor shall comply with Section 26 05 10 – Electric Motors.

F. Actuators shall be capable of providing not less than 1-1/2 times the required torque for opening and closing of the valve.

G. Actuators shall receive a 4-20 mA DC input and output signal and adjust the valve position proportionally in % closing of Port A. The output signal shall be isolated and suitable for an external load of not less than 500 ohms.

H. Cycle time for full open to close, or the reverse shall be approximately 60 seconds.

I. Reduction gearing shall be double reduction with a self-locking worm gear drive. The worm shall be hardened steel and the gear shall be alloy bronze. All gearing shall be grease lubricated. Nonmetallic gearing is unacceptable. The actuator shall positively maintain valve position in the event of a power failure.

J. Adjustable torque switches shall be provided to de-energize the actuator motor in the event excessive torque is developed during either direction of travel. The torque switches shall operate during the complete valve cycle without the use of auxiliary relays, linkages, latches or other devices.

K. Provide (4) configurable limit switches with dry contacts that can be selected to indicate any position of the valve with each contact externally selectable as normally open or normally closed. The contacts shall be rated at 5A, 120VAC, 30VDC. Contacts shall be configured as follows:

1. S1 - Valve Fully Closed

2. S2 - Valve Fully Open

3. S3 - Remote Selected

4. S4 – Spare

L. Controls shall include unit mounted “Local-Remote” selector, “Open-Stop-Close” selector, and local valve position indication in 0-100 percent open of Port A.

M. Provide a monitor (availability) relay with a volt-free changeover contact for monitoring electrical availability. Contact rating 5mA to 5A, 120VAC, 30VDC. The relay shall de-energize on loss of power supply phases, loss of control circuit supply, local control selected, motor thermostat tripped.

N. Provide handwheel for manual operation. Handwheel shall not rotate during motor operation. Provide positive declutching device, which shall disengage the motor and motor gearing mechanically but not electrically. The declutching device selector lever should be padlockable in both “Local” and “Remote” positions. Hand operation shall not require more than 80 pounds of rim effort.

O. The terminal compartment of the actuator shall be provided with a minimum of three threaded cable entries, 1-1/2”, and 2-1” NPT.

P. Manufacturers, or Equal

1. **Rotork**

2. **EIM**

PART 3 -- EXECUTION

3.1 INSTALLATION

A. The three-way converging valve and appurtenances shall be installed in strict accordance with the manufacturer's published recommendations and the applicable provisions of Section 43 30 00 - Valves, General.

B. The three-way converging valve shall be installed to allow access to the manual handwheel operators provided with the actuators.

3.2 SERVICES OF MANUFACTURER

A. The three-way converging valve manufacturer shall furnish services of a qualified factory-trained technician to provide a minimum of 8-hours of onsite training of OWNER’s personnel in the operation and maintenance of the equipment.

B. During the on-Site training visit, the factory technician shall inspect the installation, observe valve operation over a range of operating conditions (may require simulation of

4-20 mA control signal), make any required adjustments and certify that the installation complies with the manufacturer's requirements.

3.3 PROTECTIVE COATINGS

A. All equipment shall be coated by manufacturer as indicated in Section 09 96 00 – Protective Coating.

END OF SECTION