SECTION 2310

METER VAULT

1.00 GENERAL

1.01 Scope. Work to be included under this section shall include furnishing a meter vault together will all appurtenances as specified herein or as required for proper operation of the meter. The work includes providing the vault and all of the necessary piping, valves and fittings, placement of all equipment in the vault, delivery to the job site, start-up services, and providing operation/maintenance instructions.

Work not a part of this section includes all site work, excavation and backfill, foundation preparation, connection of inlet and outlet piping to the vault, and removal of the vaults from the delivery vehicle.

1.02 Submittals. Each bidder shall submit sufficient information with his proposal so the Owner can determine that there will be compliance with the vault plans and these specifications.

2.00 MATERIALS

2.01 Valve Vault. The valve vaults shall be rolled, vertical cylinder capsules sized as shown on the plans and meeting the following requirements:

A. Material reference standard: Structural steel meeting ASTM A-36.

B. Minimum wall thickness: ¼"

C. Member design: Manual of Steel Construction, 6th Edition.

D. Fabrication: Welding in accordance with AISC Specifications, Section 24 and 25, and the American Welding Society.

E. Top and bottom plate: Welded air-tight to sidewall, ¼"minimum thickness.

F. Bottom Reinforcement: Minimum of two 8" channels in parallel with two 6" channels placed perpendicular to the main channels. Actual design by manufacturer.

G. Top reinforcement: Minimum of two (2) 4" x 4" x ¼" angles. Actual design by manufacturer.

H. Lifting plates: Four (4) required at perimeter and located to ensure proper balance during setting.

I. Manway: Bilco Type S, 2'-6" x 3'-0" with Neoprene Draft Seal. All vaults shall be keyed alike to match existing Town vaults.

J. Sump: 12" diameter, 8" depth, ¼" plate.

K. Corrosion Protection:

i) Sandblast to bright metal after fabrication.

ii) One coat minimum 2 mil dry thickness of AWWA Type Vinyl System Primer.

iii) Two coats, minimum 2 mil each coat dry thickness of finishing enamel formulated of vinyl copolymer plastic resins reinforced with acrylic.

iv) Provide one quart primer and finish coatings to Owner for touch-up.

v) Provide two (2) seventeen-pound packaged magnesium anodes for cathodic protection.

vi) Interior piping shall also be painted as specified above, except the interior of the pipe shall be coated with coal tar epoxy meeting AWWA C-210-78.

L. Manufacturer's reference: Engineered Fluid Process, Centralia, Illinois.

2.02 Meter. Shall be a 6-inch, 150-pound flanged turbo meter with a straight through flow design and integral straightened valves. The meter shall have a flow range of from 40 gpm to 2000 gpm. Accuracy of the meter shall be maintained within ± 1% over the meter's entire flow range.

Pressure drop through the meter shall be no greater than 4.5 psi at the maximum flow of 2000 gpm. The meter housing shall be of cast iron material. The rotor bearing spindle and end stone shall all be of ceramic material and the internal straightening valves of 316 stainless steel manufacturer's reference Badger meter.

2.03 Meter Transmitter/Register. Mounted on the flow meter shall be a magnetically driven flow transmitter/register not requiring the use of a stuffing box. The transmitter shall consist of a hermetically sealed switch, explosive-proof enclosure, 6-digit totalizer with ¼" high digits, and a center sweep test circle. The register shall have a capacity of 10 million gallons.

The transmitter switch shall be rated for 10 watts DC, one amp, 250-volt DC maximum.

2.04 Flow Recorder, Totalizer. The flow recorder shall be a large case, servo (?) type circular chart recorder suitable for wall mounting. The recorder shall receive a 4-20 mA signal from the flow meter signal converter. The recorder shall have an integral totalizer visible through a window in the door of the case. The scale and chart shall be engraved in flow units of from 40 to 2000 gpm. The chart shall be of 12" diameter with a 7-day rotation. The totalizer shall be a 7-digit non-reset counter, and shall have a multiplier of 1000.

The case and door shall be constructed of cast aluminum. The door shall have a shatter-proof glass window. The overall construction shall provide environmental protection meeting the requirements of NEMA-12.

The accuracy of the recorder shall be ± 1% of actual over the full range.

The power supply to the recorder shall be 120V/1/60Hz. A one-year supply of charts and ink shall be provided.

2.05 Pulse to Current Signal Converter. The flow transmitter signal converter shall accept the

pulse rate input from the meter and provide a 4-20 mA output proportional to flow rate. the converter shall have an accuracy of ± 0.05% of span.

2.06 Strainer. The strainer shall be a single basket type capable of handling potable raw water at a flow rate of 2000 gpm with an approximate pressure 10 psig. The strainer body shall be of fabricated steel construction with 6" flanged inlet and outlet connections and shall have a bolted access cover.

The strainer access cover shall be provided with a lifting eye. The basket shall be of side entry construction to minimize pressure drop.

The strainer basket shall be of 304 structural steel construction with 3/16-inch diameter perforated openings.

2.07 Butterfly Valve. Butterfly valves shall be Centerline AAM Series wafer type valves.

2.08 Gate Valves. Not Applicable.

2.09 Piping and Fittings. All internal piping and fittings shall be Schedule 40, black, seamless steel pipe meeting AWWA C-200 or ASTM A-106 for steel pipe and butt welding fittings.

2.10 Compression Coupling. A dresser coupling, straight line or flanged adapter type, shall be used in each major pipe run to prevent binding of the pipe and also facilitate removal of the major valve located in that pipe run.

2.11 Dehumidifier. The dehumidifier shall be EBCO Model D-1500-1 capable of 15 pints per day water removal.

2.12 Lights. The lights shall be Guth Model 10621 fluorescent lights.

2.13 Convenience Outlet. On the side of the control panel, a weather-proof duplex convenience outlet shall be installed.

2.14 Light and Power Panel. All circuit breakers shall be incorporated to a NEMA 12 control panel. The electric service provided for this station will be 240-volt, single-phase, 60-cycle, three-wire. There shall be provided dead front thermal magnetic circuit breakers for one main 60-amp breaker, additional breakers for the above specified items and one spare 20-amp breaker.

3.00 METHODS AND PROCEDURES

3.01 Start-Up. The vault manufacturer shall furnish a factory representative to put the vault into automatic operation and demonstrate the vault function to the Owner's representative. The Owner shall determine when the factory representation shall provide these start-up services.

3.02 Operation & Maintenance Instructions. The manufacturer shall provide two bound sets of complete O & M instructions.

4.00 QUALITY CONTROL

4.01 Testing. Prior to shipment, the vaults shall be operated, at the manufacturer's facility, to check for faulty equipment, leaking pipe joints, and leak-proof welds. The meter shall be factory calibrated. The vaults shall be put into operation at the manufacturer's facility under conditions which simulate job site. The manufacturer shall provide the Owner a certification of this test prior to

delivery.

4.02 Quality Guarantee. The manufacturer shall provide the Owner a written guarantee which guarantees that, if work or materials are found to be defective or substandard within one year after installation of the vault, the manufacturer will, without cost to the Owner, correct such defective or substandard work or materials.

End of Section