

SECTION 334513 – STORMWATER UTILITY PUMPING STATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to this section.

1.2 SUMMARY

- A. This Section includes the furnishing and installation of the major items listed below:
 - 1. A submersible pump station package complete with piping and related accessories.
 - 2. Necessary utility connections.
- B. Related sections include those in Division 26 – Electrical.

1.3 DESIGN AND PERFORMANCE REQUIREMENTS

- A. Design:
 - 1. Station shall be designed as a duplex 2-inch pumping station (with 4-inch discharge piping).
 - 2. Pumps shall be non-clog submersible pumps complete with motors, bases, rails, lifting chain, piping, pump control panel, motor wiring, level controls and related appurtenances.
 - 3. Station shall come completely assembled in fiberglass enclosure or assembled onsite utilizing a precast concrete manhole.
 - 4. Provide intrinsically safe control circuits.
 - 5. Equipment shall be UL listed and approved for use in hazardous locations.
- B. Performance:
 - 1. Pump capacity - 20 gpm at a total dynamic head of 22 feet operating at 1750 rpm.
 - 2. Efficiency - 55%.

1.4 SUBMITTALS

- A. Shop Drawings:
 - 1. Pump Station: Dimensions and details of construction.
 - 2. Details of each pump station component.
 - 3. Project specific wiring diagrams for pumps on pump control panels.
- B. Manufacturer's Instructions: Installation for submersible pump, valves and accessories.

C. Operation and Maintenance Manuals:

1. Submersible pump.
2. Motor.
3. Pump control panel.

D. Design Data: Provide performance curves and power requirement data for the pump.

1.5 QUALITY ASSURANCE

A. Fabrication and Installation Personnel Qualifications:

1. Trained and experienced in the fabrication and installation of the materials and equipment.
2. Knowledgeable of the design and the reviewed Shop Drawings.

B. Manufacturer's Services:

1. Submit manufacturer's sworn statement that the equipment furnished complies with this Specification.
2. Provide manufacturer's field service.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. The submersible pump and accessories shall be the product of Myers Engineered Products. The unit shall be engineered for a complete installation using the SX50-43 model pumps.

2.2 MATERIALS

A. Pump:

1. Sealed submersible type with non-clogging dynamically balanced cast iron impeller.
2. Provide the pump with a tandem double mechanical seal running in an oil reservoir.
3. The lower seal faces shall be tungsten carbide; the upper seal faces shall be carbon.
4. Each pair of seal faces shall be held in contact by separate spring systems.
5. Pump shall have attached rail guides and discharge elbow.
6. All metal parts of seal including spring, all external fasteners, and the shaft shall be stainless steel.

B. Motor:

1. Pump motor shall be a 1/2 HP, 3-phase, 480 volt sealed submersible motor.

2. Continuous duty.
3. Capable of at least 10 starts per hour.
4. Capable of operating in a non-submerged condition.
5. Complete with cable to connect to control panel without splicing.

C. Couplings:

1. All fiberglass wet well penetrations (piping and electrical) shall be stainless steel water tight bolt on couplings as manufactured by Topp Industries Incorporated, designed for the appropriate penetration diameter.
2. All precast concrete wall penetrations (piping and electrical) shall be installed with a water tight Kor-N-Seal fitting for the appropriate penetration diameter.

D. Lift System:

1. Provide non-magnetic stainless steel pipe rails to guide the pump to the base elbow discharge connection.
2. Provide a sealing flange to automatically seal pump to discharge connection when lowered into place.
3. Supply the pump with a non-magnetic steel lifting chain to permit raising the pump for inspection or removal.

E. Mounting Base:

1. The plate shall include adjustable guide rail supports and discharge elbow with flange to align with pump hydraulic sealing flange.
2. Discharge elbow shall have 125 pound standard flange 4-inch pipe size.
3. Plates and fittings shall be coated with tar base epoxy paint.

F. Access Frame and Cover:

1. Fabricated of aluminum.
2. Provide a hinged cover with lifting handle, locking hasps, and safety latch to hold cover in open position.

G. Controls:

1. Intrinsically Safe Relays:
 - a. Shall have 1 NO and 1 NC, 8A resistive contacts, direct or inverse actuation.
 - b. Input Power: 120 VAC primary voltage.
 - c. Output Power: 13 VAC secondary voltage, 4 mA maximum.
 - d. Sensitivity: Field adjustable from 0-470k Ohm.
 - e. Manufacturer: Warrick Controls Series 17; or equal.

2. Float Type (Mercury Free):
 - a. Direct acting.
 - b. Molded corrosion resistant, polypropylene or PVC body suitable for fluid application.
 - c. Cable shall be PVC Type STO with No. 18 AWG (minimum) conductors:
 - 1) Jacket for cable shall be factory molded to the float.
 - 2) Minimum cable length of 20 feet.
 - d. Level switches shall be a NEMA rated explosion-proof by use of an intrinsically safe relay.
 - e. Provide corrosion resistant hardware and mounting accessories.
 - f. Manufacturer and Model: Anchor Scientific "Eco-Float"; or equal.
 - g. Quantity: 4.

H. Wet Well:

1. Fiberglass unit as manufactured by pump manufacturer or precast concrete manhole.
2. Seal inlet and discharge pipes with "Link-Seal"; or equal.
3. All brackets, anchors, etc. shall be non-magnetic stainless steel.

I. Control Panel:

1. Stainless steel NEMA 4X enclosure. Mount with stainless steel brackets on wall of steam tunnel vault at location indicated on the Drawings.
2. Motor starter and capacitors.
3. Hand-Off-Auto selector switch.
4. UL 913.
5. Manufacturer: Myers CEX.

J. Motor Starters: Refer to Division 26.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install equipment in accordance with the Drawings, manufacturer's recommendations and Shop Drawings as approved by Engineer.

3.2 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Arrange and pay for manufacturer's engineer to provide the services indicated below for a minimum onsite time of one 8 hour day. Schedule the following as soon as practicable after installation, and at times approved by Engineer and Owner.
 - 1. Manufacturer's Engineer: Check work, assist in start-up, demonstrate operation and maintenance to Owner's personnel, and review operation and maintenance manual with Owner's personnel.
- B. Promptly make changes and additions required by manufacturer's engineer.
- C. Submit manufacturer's engineer's written approval of installation.

3.3 CLEANING

- A. Prior to acceptance of the work of this Section, thoroughly clean installed materials, equipment, and related areas in accordance with Division 01 requirements.

END OF SECTION 334513