SECTION 22 14 29
SLUDGE DECANT PUMP

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Section includes pump and control for discharge of stored sludge supernatant

B. Drawings and General Provisions of Contract, including General and Special Conditions, apply to this section.

1.2 RELATED SECTIONS

A. Section 33 30 00 – Sanitary Sewerage

1.3 SUBMITTALS

A. Manufacturer's specifications, catalog data, dimensional drawing and performance curves listing for pump; Manufacturer's specifications and catalog data for connections and discharge piping, controls and related appurtenances.

B. Such other information as the Owner's Representative may request

1.4 JOB CONDITIONS

A. Scheduling

1. Decant pump installation shall not be done until the decant manhole, baffle and return piping to the headworks are completed.

PART 2 - PRODUCTS

2.1 SLUDGE DECANT PUMP

A. The Sludge Decant Pump shall be a submersible centrifugal pump designed to discharge 25 gpm against a Total Dynamic Head (TDH) of 12.5 feet. The pump shall include a screened intake to prevent debris from entering the impeller. Discharge size shall be 1-1/2". The pump shall rest on the chamber bottom and shall include a bail or pad eye attachment at the top of the motor housing for attachment of a retrieval cable.

B. The pump motor shall be a 1/3 Horsepower, single phase 120 V AC oil filled unit designed for submerged service. The motor shall include thermal overload shutoff.

C. Power cord shall be of sufficient length to extend from the pump in its normal operating position at the sump bottom to a watertight junction box mounted to the Decant Structure Access Walkway, with 2 feet of slack remaining.

D. Manufacturers shall be Wayne, Zoeller or approved equal.

2.2 LEVEL CONTROL

A. Level control shall be accomplished by an integrally mounted float switch, attached to the pump and providing minimum operating range of 5" between shutoff level and pump on level. Shutoff level shall be not less than 4" above the sump chamber bottom, or as specified by the pump manufacturer.

2.3 DISCHARGE LINE

A. The discharge line for the decant pump shall be a 1-1/2" diameter flexible hose with quick-connect fittings for ease of maintenance. Hose material shall be PVC with rigid PVC helix reinforcing, capable of a minimum bend diameter of 6". Quick-connect

Fittings shall be OPW Camlok series 633 or similar product. A PVC transition fitting with 1/2" female NPT on one end and 1 1/2" PVC female solvent weld on the other shall be provided at the discharge end of the hose. Hose length shall be sufficient to allow removal of the pump from the chamber from the surface without disconnecting the discharge fitting.

B. Discharge line from the chamber interior to the headworks shall be 2" Schedule 40 PVC pipe.

C. A 2" PVC flap type check valve shall be furnished and installed on the discharge line that exits the chamber. The valve shall be positioned to allow flow from the sump pump to pass but to prevent backflow from the storm sewer line.

2.4 LIFT CABLE

A. A 1/ 4" 1x19 stainless steel lift cable shall be provided, with stainless steel thimbles and cable clamps on each end to attach to a securing ring at the top of the chamber and to the lift bail on the pump. Cable length, assembled and attached, shall be 2 feet greater than the overall chamber depth.

B. A stainless steel lanyard shall be provided to connect the flexible hose quick-connect fitting to the lower and of the main lift cable.

2.5 CHAMBER

A. The decant chamber shall be a 4 foot diameter precast structure meeting the requirements of ASTM C478.

B. The chamber bottom shall be cast integrally with the bottom section.

C. The chamber top shall be open.

E. Wall penetration for the 2" sump pump discharge shall be made with A-lok gasket or equal product cast into the opening.

PART 3 - EXECUTION

3.1 CHAMBER PLACEMENT

A. Place a minimum of 6" of ½" clean stone base within the existing lagoon to prepare for placement.

B. Fully assemble all chamber sections before placement and grout all exposed joints with 5-star non-shrink structural grout, striking the grout surface flush with the outer chamber surface. Fully grout any pick holes in chamber sides. Coat exterior vertical chamber surfaces with two coats of coal tar epoxy.

C. Use slings or other non-intrusive attachments to lift and place the chamber on the prepared base with the 2" discharge aligned to match the line to the headworks. Level the chamber and install the baffle system.

3.2 PIPING INSTALLATION

A. Place the 2" PVC line from the headworks through the A-lok gasket and secure in accordance with A-lok manufacturer's instructions.

B. Install the 2" in-line check valve the 2" x 1-1/2" transition fitting and the 1-1/2" quick-connect fitting on the on the 2" discharge line.

C. Connect the 1-1/2” flexible discharge hose to the quick-connect fitting at the inner end of the main 2” discharge line.

3.3 PUMP INSTALLATION

A. Install the conduit and conductors for pump power from the control panel to the chamber.

B. Install junction box with GFI outlet on the chamber using Unistrut or similar supports, with the bottom of the junction box not less than 24” above the chamber top. Alternatively install junction box on bridge walkway beam.

C. Connect the pump power conductor to the GFI outlet in the junction box.

D. Install the 1-1/2” quick connect fitting in the pump discharge. Connect the 1-1/2” flexible discharge to the pump using the quick-connect fitting.

E. Attach the stainless steel lift cable to the attachment ring at the chamber top and to the pump lifting bail. Attach the stainless steel lanyard from the lower end of the lift cable to the quick connect fitting on the 1-1/2” flexible discharge.

F. Lower the pump until it rests in a level position on the chamber base.

3.4 TESTING

A. With the pump in place, fill the chamber to the top of the pump motor body.

B. Energize the pump by placing the breaker in on position, and observe the Chamber drawdown. Observe discharge piping for any leaks and correct as necessary.

C. When the pump shuts off, leave the breaker in on position. Slowly fill the chamber until the pump activates. The pump should activate after approximately 5” of water is re-introduced. Stop chamber filling and observe the pump cycle, assuring that it shuts off as intended with approximately 4” of water remaining in the chamber.

D. Correct float setting and repeat testing if necessary until the proper cycle is observed.

END OF SECTION 22 14 29

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