

Construction Specification

533. PUMPING PLANT

1. SCOPE

The work shall consist of furnishing materials and installing all components of the pumping facility, as outlined in this specification and the drawings.

2. MATERIALS

All materials used shall conform to the size, type, etc. noted on the plans, set forth in Section 6, or as otherwise listed below:

a. PUMP:

The pump shall meet the required capacity, pressure, and head requirements, as specified in Section 6 or on the drawings. Pumps shall be compatible and resistant to the type of water or manure being conveyed. The contractor shall be responsible for assessing the consistency, nature, quality and quantity of the substance to be pumped, and provide the appropriate equipment.

The contractor shall provide in writing, or by performance tables provided by the manufacturer, the pumps performance characteristics (discharge, head, and pressure) and the relationship to or requirements of the following;

- a) Operating power requirements
- b) Efficiency
- c) Maintenance requirements
- d) Estimated service life

b. PIPE:

Suction and Discharge pipe shall be chosen so that the type and class of pipe exceeds the systems pressure requirement. The operating pressure shall be specified in Section 6 or on the drawings, or as determined by the pump manufacturer. If the pipe is an integral part of another related planned practice or distribution system, the pipe type and class shall meet or exceed the

requirements of the pipe installed in that planned system.

Fittings shall be rated equal to the pipe being specified.

The pipe and fittings, where applicable, shall be marked by the manufacturer as described in the applicable ASTM specification.

Used pipe or seconds shall not be used. Pipe shall be approved by the engineer prior to installation.

c. CONTROLS:

All check valves and directional control valves, gauges, quick disconnects, and automatic controls shall be durable and constructed with a rust resistant, non-corrosive, material able to withstand the type of water, or manure being pumped.

d. SUCTION AND DISCHARGE BAYS:

Suction and discharge bays shall be designed to conform to the hydraulic characteristics of the pump. They shall be to the dimension and capacity as specified in Section 6 or on the drawings.

Precast concrete units shall be in conformance with PennDot specifications for such units and/or comply with ACI-525 and 533. All concrete units shall have a 28-day compressive strength of 4000 psi., or greater, and all reinforcement bars shall be of grade 60 steel or higher, unless otherwise specified in Section 6 or on the drawings.

Portland cement shall be Type I, IA, II, or IIA and conform to ASTM-C150, unless otherwise set forth in Section 6. If Type I or II is used, an air-entrainment agent shall be used.

Concrete Aggregate shall meet the requirements and gradation specified in ASTM-C33. Coarse aggregate shall meet the gradation for size numbers 57 or 67.

Reinforcement bars shall conform to ASTM-A615, A616, or A617. Welded wire fabric reinforcement shall conform to ASTM-A185 or A497. Reinforcement shall be free from loose rust, oil, grease, curing compound, paint or other deleterious coatings.

All rock structures shall be of rock that is durable and resistant to weathering. The rock shall be of the type specified in Section 6 and shall be obtained from a source listed in the most current edition of PennDot Bulletin #14. The gradation of the rock shall comply with the requirements set forth by the National Crushed Stone Association.

e. **HOUSING AND ACCESSORIES:**

Trash racks, housings, and other devices shall be installed as shown on the drawings provided to and concurred in by NRCS. All materials furnished and installed shall conform to the quality and grade noted on the drawings. A site specific set of construction drawings shall be at the site during construction.

Wood shall be graded and stamped by an agency accredited by the American Lumber Standards Committee as meeting the required species, grade, and moisture content. All exposed or buried lumber shall be pressure treated. Pressure treated wood products shall be Douglas Fir, Southern Yellow Pine, or as otherwise specified in Section 6 or on the drawings. They shall be treated with preservatives in accordance with the American Wood Preservers Association (AWPA) Standard C16 for "wood used on Farms, Pressure Treatment". Non-CCA preservative pressure treated lumber shall be used where aquatic life is a concern.

Roofing material shall be corrugated 29 gage galvanized steel. Equivalent or

better material may be approved by the Engineer.

Sheet piling shall be of steel or vinyl type. The piling must be of the thickness and grade specified in Section 6, and as recommended by the manufacturer for the intended use. Suitable methods of installing and anchoring the piling shall be as listed in Section 6, and as recommended by the manufacturer.

3. SITE PREPERATION

All trees, brush, fences, and other debris shall be cleared so as not to interfere with construction or proper functioning of the Pumping Plant system. All material removed by the clearing and grubbing operation shall be disposed of as directed by the Owner or his/her Representative.

4. SAFETY

All positive responses from the Pennsylvania One Call System should be shown on the drawings and the Pennsylvania One Call serial number and date noted on the plans. It is the Contractor's or Landowner's responsibility to contact the affected utility for marking at the time of construction.

The Contractor must comply with OSHA requirements Part 1926, subpart P, for protection of workers entering trenches.

5. INSTALLATION

Pipelines shall be placed so that they are protected against hazards imposed by traffic, farm operation, freezing temperatures, or soil cracking. Other means of protection must be provided if the depth required for protection is impractical because of shallow soils over rock or for other reasons.

Trenches for pipeline shall be free of rocks and other sharp-edged materials. The pipe shall be carefully placed to prevent damage.

Before backfilling, the pipeline shall be pressure tested. To pressure test the pipe, fill the pipe with water and test at the design working head and pressure. All leaks must be

repaired, and the test must be repeated before backfilling.

All backfilling shall be completed before the line is placed in service. The initial backfill shall be of selected material that is free of rocks or sharp-edged materials that can damage the pipe.

Deformation or displacement of the pipe must not occur during backfilling.

All seeding shall be in accordance with the Critical Area Planting Standard and Specifications (PA342).

6. ADDITIONAL CONDITIONS WHICH APPLY TO THIS PROJECT ARE: