IRRIGATION SYSTEM, SPRINKLER
CONSTRUCTION SPECIFICATION

1. SCOPE

The work shall consist of furnishing materials and installing all components of the sprinkler irrigation system as outlined in the specification and the drawings.

2. MATERIALS

All materials used shall conform to the quality and grade noted on the plans, set forth in Section 6, or as otherwise listed below:

a. PIPE:
PVC pipe shall meet the requirements of schedule 40 (ASTM-D1785) or SDR Pressure Rated Pipe (ASTM-D2241) for the operating pressure specified in Section 6 or on the drawings, or as determined by the pump manufacturer. 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.

The pipe material (class designation) shall be one of the following;
Type I, Grade I (PVC 12454-B),
Type I, Grade II (PVC 12454-C),
Type II, Grade I (PVC 14333-D), as described in ASTM D1784. Other pipe types and materials may be used with the prior approval of the design engineer.

Joints shall meet the requirements of ASTM-D2672. PVC cement shall meet ASTM-D2564.

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

b. SPRINKLER HEADS AND NOZZLES:
Heads shall be chosen as to provide the required spray radius at that location in the spray area.

Nozzles shall be chosen as to provide the required spray angle and wetted diameter for the design pressure at that point in the system.

Heads and Nozzles shall be constructed with a rust resistant, non-corrosive material.

c. PUMP AND COMPONENTS:
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 all wastewater, chemicals, or manure being irrigated. The contractor shall be responsible for assessing the consistency, nature, quality and quantity of the substance to be irrigated, 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) Maintenance requirements
c) Estimated Serviceable Life

The pump shall be installed in a manner to be easily removed and maintained i.e.: pitless adapter or quick disconnect.

d. VALVES AND GAUGES:
All valves and gauges shall be durable and constructed with a rust resistant, non-corrosive, material able to withstand the type of water, chemical, or manure being irrigated.

e. THRUST CONTROL AND ANCHORS:
Concrete aggregate shall meet the requirements and gradation specified in ASTM-C33. Course aggregate shall meet the gradation for size numbers 57 or 67.

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 used for thrust control shall have a 28-day compressive strength of 2500 psi. or greater, unless otherwise specified in Section 6 or on the drawings.

Posts or lumber used for anchoring, shall be the dimensions and species specified in Section 6 or on the drawings. 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.

f. DRAINS:
Drainfill aggregate shall meet the requirements of PennDot Specifications, Section 703.2, Type A, Coarse Aggregate. The size and gradation shall be as specified in Section 6 or on the drawings.

g. FILTERS AND TANKS:
Filters shall be installed at a location where solids removal can be easily accomplished. All filters shall be durable and constructed with a rust resistant, non-corrosive, material able to withstand the type of water, or chemical, being irrigated.

The filter shall maintain all particulates greater in size than the nozzles or pump will permit.

Settling and pump tanks 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. All concrete units shall have a 28-day compressive strength of 4000 psi., or greater, unless otherwise specified in Section 6 or on the drawings.

3. SITE PREPARATION

All trees, brush, fences, and other debris shall be cleared so as not to interfere with construction or proper functioning of the irrigation 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 shall be excavated to the grades and cross sections shown on the drawings. The trench width above the conduit may increase as necessary for safe installation.

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

The pump, tanks, and pipelines shall be free of debris prior to the installation of the sprinkler head.

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.

Backfill shall extend above the adjacent ground to allow for settlement, and be well rounded over the trench.

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

Installation and backfilling shall be done in a workman-like manner.

Construction operations shall minimize soil and water pollution and shall follow all state and local erosion regulations. Areas shall be restored to their pre-construction condition or as otherwise required in the plans or Section 6.

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

6. ADDITIONAL CONDITIONS WHICH APPLY TO THIS PROJECT ARE: