1. SCOPE

The work shall consist of furnishing and installing the construction operation and furnishing the materials required by drawings, design, plan, specifications, and manufacturer's recommendation for the complete installation of the work.

2. LOCATION

Install the irrigation system (Code 441 or 442) as shown on the drawings or as marked in the field and note on final drawings.

3. DESIGN, PLANS AND DRAWINGS

The vendor or contractor furnishing the irrigation system shall provide the complete plan and design, including necessary drawings, materials, specifications, and all other items necessary for proper functioning of the system. The plan shall specify type, grades, quality, size and construction materials of all equipment and appurtenances included in the system design. The plan and design shall contain sufficient detail to allow it to be installed by someone unfamiliar with the job and the installation to be checked for conformance to this standard and specification. Plans and designs shall be in accordance with the standard for Irrigation System Sprinkler (Code 442) and Irrigation System Microirrigation (Code 441) in the local NRCS field office Technical Guide.

The plan and design, for the sprinkler irrigation system and the specifications for installation of all components with all needed supporting data shall be provided to the landowner and must be approved by the responsible NRCS technician before installation begins.

4. INSTALLATION

Construct and install according to the engineering plans and the specifications as noted.

a. Construction shall be installed to the lines and grades specified by the design, plans, and drawings or staked in the field. Equipment materials shall be of the type, size, and quantities specified in the plans, designs, drawings and specifications.

b. Construction operations shall be conducted in a skillful and workmanlike manner. The completed job shall present a workmanlike appearance. Air and water pollution will be minimized and held within legal limits.

c. Pumps, Power Units and Filters. Pumps, power units, and filters shall be set on a firm base and be placed in proper alignment. All pertinent safety codes and manufacturer's recommendations shall be met for the type of equipment installed. They shall meet the power, capacity, and pressure requirements specified.

d. Quality of Pipe. The pipe shall meet the standard and specification for Irrigation Water Conveyance, Pipeline (Code 430) for permanently installed underground pipelines.

e. The manufacturer shall provide performance data on all other pipe used in the system,

including the maximum allowable operating pressure.

f. Sprinklers/Micro-Drip Emitters. Sprinklers and/or drip emitters (point or line source) shall be installed as recommended by the manufacturer. The manufacturer shall provide the performance capabilities of the sprinkler to determine that it meets the requirements specified in the plan and specifications.

g. Risers. Risers may be constructed of standard galvanized steel, aluminum, or plastic or flexible pipe (low pressure only). On permanent system, they shall be installed in a vertical position and adequately supported by anchor blocks or other suitable means. Plastic materials that will be exposed to sunlight shall be made of ultraviolet-resistant materials or protected by coating or shielding as recommended by the manufacturer. Plastic risers shall conform to the following additional requirements.

i. Meet or exceed the pipe material requirements specified for the mains and laterals.

ii. Braced by a rigid support where the height above natural ground exceeds 2.0 feet.

h. Injectors (Chemical, Fertilizer or Pesticides) and Automatic Operating Equipment (Timer). The equipment shall be located adjacent to the pump and power unit and placed in accordance with manufacturer's recommendation, where automatic equipment or injectors (chemical, fertilizer or pesticide) has been planned for the system. Back-flow prevention devices shall be provided when chemicals are injected as required by state law.

i. Joints and Connections. All joints and connections shall be made in accordance with the manufacturer's recommendations and shall be constructed to withstand the maximum design working pressure for the pipelines without damage or leakage.

j. Valves. All valves shall be equal to the size of pipe in which they are installed and of the material and type specified. Valves shall adequately withstand the maximum design working pressure and meet the performance requirements of the system without damage or leakage.

5. TESTING THE SYSTEM

a. The system shall be thoroughly and completely flushed prior to testing and then tested at the design pressure for pressure strength, proper functioning, and leakage. Any leaks shall be repaired and the system retested.

b. The system shall be tested to insure that it functions properly at design capacity, that this distribution pattern and spacing requirements are met, and that the variation in pressure or discharge rate are within the allowable specified. At or below design capacity there shall be no objectionable flow conditions and all appurtenances shall perform properly.

6. BASIS OF ACCEPTANCE

a. The acceptability of the system shall be determined by inspections to check compliance with the provisions of this standard with respect to the design of the system, the appurtenances, and the

minimum installation requirements specified in the engineering plans and specifications.

b. The plan and design and specification for installation with any modification or changes shall be approved by responsible NRCS Technician before installation begins and any modification or changes needed during installation will be approved before installed.

c. The **landowner shall notify the NRCS prior to construction start so that adequate construction checks** can be made, otherwise the NRCS may not be able to certify practice.

7. MEASUREMENT

a. The number of each type, size, and class of sprinkler irrigation and length of line will be counted. This will constitute full compensation for all labor, materials, equipment and all other items necessary and incidental to the completion of the work except the special fittings and appurtenances listed separately in a bid schedule. Compensation for each special fitting and appurtenance will be made at the contract unit price for that type and size of fitting or appurtenance.

8. CONSTRUCTION DETAILS

The following list of requirements or drawings are attached and are a part of these construction specifications.

a. _____ Irrigation Engineering Plan

b. _____ Irrigation Engineering Report