

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSTRUCTION SPECIFICATION**

**FOR  
IRRIGATION SYSTEM, MICROIRRIGATION - WINDBREAKS**

**General**

The work shall consist of the necessary construction operations and furnishing of materials so that all requirements for proper installation shall be met with the system operating as planned. The designer of the microirrigation system (consulting engineer, equipment vendor, or others) shall furnish the landowner with the complete plans and design covering all components of the system. The plans and design shall contain sufficient detail to allow it to be installed by someone unfamiliar with the job, and the installation is to be checked for conformance with the plans. The plans shall specify grades, types, quality, and sizes of construction materials and all equipment and appurtenances included in the system design.

The completed job shall present a workmanlike appearance and shall conform to the line, grades, and elevations shown on the drawings or as staked in the field.

All operations shall be carried out in a safe and skillful manner. Safety and health regulations shall be observed and appropriate safety measures used. The contractor shall be assured that all state laws concerning buried utilities are met prior to beginning work.

**Materials**

Equipment and materials shall be of types, sizes, and quantities specified in the plans and specifications. A copy of the manufacturer's materials data shall be provided to NRCS prior to installation.

**Applicators (emitters, orifices, perforated tubing, tapes, bubblers, spray jets, micro-sprinklers, etc.)**

These applicators shall be installed as recommended by the manufacturer. The applicators shall be manufactured from materials resistant to the normal effects of water, weather, sun, and commonly injected agricultural chemicals used for cleaning, chemigation, and water amendments. Spray-type emitters will be installed in such a manner that the percent plant wetted area (Pw) used in the design can be obtained.

**Pumps, power units, and filters**

These shall be set on a firm base; be placed in proper alignment; and meet the power, capacity, and pressure requirements specified. All pertinent safety codes and manufacturer's recommendations shall be met for the type of equipment installed.

**Pipe**

The manufacturer's performance data will be provided for the pipe (tubing) used as laterals in the system. The manufacturer's data must include the maximum allowable operating pressure and inside diameter. The pipe and tubing shall be installed as recommended by the manufacturer.

**Joints and connections**

All joints and connections involved in the installation of laterals to the manifold lines shall be made in accordance with the pipe manufacturer's recommendations and shall be constructed to withstand the maximum design working pressure for the pipelines without leakage. Connections of applicators to the lateral lines shall be in accordance with the manufacturer's recommendations.

**Valves**

All valves which must pass the design discharge should be equal to the size of pipe but shall not be smaller than the size recommended by the manufacturer. The valves to be installed shall be the type specified and manufactured from the material as specified. Valves shall be installed according to the manufacturer's recommendations to withstand the maximum design working pressure without damage or leakage.

**Injectors (chemical, fertilizer, or pesticide) and automatic operating equipment (timer)**

Where automatic equipment or injectors (chemical, fertilizer, or pesticide) have been planned for the system, they shall be located adjacent to the pump and power unit and placed in accordance with the manufacturer's recommendations. Back-flow prevention devices shall be provided, as required by state law, when chemicals are injected.

**Installation**

Construction shall be to the lines and grades specified by the design and shown on the plans or as staked in the field.

The following methods of lateral pipe (1" diameter or less) placement are:

- Above ground - the lateral pipe is designated to be drip irrigation tubing, guaranteed by the manufacturer, in writing, for a serviceable life of at least 5 years in above ground placement, the lateral pipe is placed on the ground surface for the irrigation of windbreaks. Provisions for draining the lateral lines during freezing weather must be provided. Laterals installed above ground must be secured by mechanical means (staples), or aggregate or loose ballast (mulch, etc.).
- Below ground - lateral pipe used in subsurface installations for ABS, PE, or PVC, or designated drip tubing shall be buried to the depth recommended by the manufacturer. The burial depth must consider soil type, tubing and emitter spacing, emitter output, tree or shrub type to be grown, potential for root pinching or intrusion, and time of irrigation.

