IRRIGATION SYSTEM, MICROIRRIGATION (Code 441)

1. GENERAL

The work will consist of furnishing and installing materials as required to provide a complete microirrigation system for the tract of land as shown on the drawings.

2. SOURCE OF WATER

The source of water shall be as shown on the drawings, and as previously determined by the landowner. Water quality test and Water rights are the responsibility of the landowner. The source shall provide the full capacity as may be needed for the system being installed.

3. INSTALLATION

The materials shall be fabricated in accordance with the manufacturer's instructions. The system shall be tested to determine if the system is in proper working order, and will deliver the required capacity to meet the crop consumptive use, and the specified uniformity distribution rate.

4. MAIN AND SUB-MAINS

Main and sub-main lines shall be of the material type, size and pressure rating as shown on the drawings. The installation of buried plastic pipe shall meet the requirements of Montana Construction Specifications, Steel Pipe, MT-110 and/or Plastic Pipe-Pressure Conduits, MT-111 as specified on the drawings.

Above-ground installation of main and/or sub-main lines may be used when specified on the drawings. Pipe shall be ultraviolet-resistant polyethylene or fiber-reinforced material rated for above-ground use. All joints and connections shall be capable of withstanding the designated design working pressure for the respective pipe. Pipe crossing over rock shall be supported on saddles or pedestals, or the rock shall be covered with a minimum of 6 inches of earth before installing the pipe. Pipe supports and/or anchorage shall be in accordance with specific manufacturer’s recommendations and details specified on the drawings.

5. LATERAL LINES

Lateral lines and emitters/bubblers/tape or spray spinners shall be of the materials, size, type, pressure rating and spacing as shown on the design. Lateral lines shall be placed as noted on the drawings. When an Emission Uniformity (EU) coefficient is specified in the design, the combination of spacing, emitter type and operating pressure shall be evaluated to see that the selected equipment meets or exceeds the specified EU. Connections and fittings for and between system components shall be compatible with the materials used and shall meet the manufacturer’s requirements.

6. APPURTENANCES

Valves, fittings, filters, pressure regulators, etc., shall be as specified on the drawings. Filters shall be set on a firm base. Chemigation devices shall meet the minimum requirements of the Montana State Department of Agriculture.

7. PUMPING PLANT

The pump(s) shall be capable of delivering water at the flow and total dynamic head as specified on the drawings. The power unit shall be capable of operating the pump at maximum capacity and head without being in an overload condition. The pump and power unit shall be installed in accordance with the Manufacturer’s recommendations and properly documented on form Pumping Plant Certification of Installation, MT-ENG-533.
All electrical wiring and equipment shall be in accordance with the current standards of the National Electrical Manufacturer's Association (NEMA), the Underwriters Laboratory, Inc. (UL) and State of Montana regulations.

8. BASIS OF ACCEPTANCE

The basis of acceptance shall be the ability of the system to deliver the required amount of water to meet the peak consumptive use of the crop, with a emission uniformity rate of 85 percent or greater.

9. OPERATION AND MAINTENANCE (O&M) ITEMS

A properly operated and maintained microirrigation system is an asset to your farm. This irrigation system was designed and installed to apply irrigation water to meet the needs of the crops without causing excessive erosion or runoff. The estimated life span of this installation is at least 10 years. The life of this system can be assured and usually increased by developing and carrying out a good operation and maintenance program.

This practice will require you to perform periodic maintenance and may also require operational items to maintain satisfactory performance. Here are some recommendations to help you develop a good O&M program.

Operate system when needed to furnish water for plant growth; the soil may also be used to store moisture within the rooting depth of the plant.

Check to make sure that all connections are watertight and all valves are working properly.

Make sure that the filter system is working, including automated systems. Make adjustments if needed.

Periodically examine each emitter for proper operation and replace if defective.

Exclude all livestock from the equipment or irrigated areas.

Monitor the crop noting areas of moisture stress and repair or adjust system operation.

During non-seasonal use place the system in an area where it will not be damaged.

Maintain all pumps, agitators, piping, valves and other electrical and mechanical equipment in good condition following the manufacturer's recommendations.

Eradicate or otherwise remove all rodents or burrowing animals. Immediately repair any damage caused by their activity.

Immediately repair any vandalism, vehicular or livestock damage.

10. MEASUREMENT AND PAYMENT

Payment for subsurface, surface, micro sprinklers, orchards systems and truck gardens will be determined by measuring the acres under the Microirrigation system. High tunnel and shelterbelt micro system payments will be based on square footage of irrigated area.