

CONSTRUCTION AND CONSTRUCTION MATERIAL SPECIFICATION

MT-430-HH Irrigation Water Conveyance

Rigid Gated Pipeline

(Owner/Operator)

(Project Title)

1. SCOPE

This specification covers the furnishing of all materials, equipment, and labor; and performing all operations in connection with the installation of rigid gated pipelines; and the necessary couplings, fittings, and appurtenances as shown on the plans (or as herein specified and directed by the Technician). Reaches of unburied ungated pipe necessary for the surface irrigation system may be included.

2. GENERAL

The rigid gated pipe shall be placed at the location and to the line and grades shown on the drawings or established on the job.

Pipe shall be of the diameter, length wall thickness, and material as shown on the drawings or specified in Section 7 of this specification.

3. MATERIALS

Gated pipe shall be aluminum, plastic, or other materials approved in accordance with Part 512, Subpart C of the National Engineering Manual.

3.1 Aluminum Pipe

1. **Chemical composition.** The pipe shall conform to the chemical composition criteria in ASTM-B-241, Specifications for Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube; ASTM-B-313, Specifications for Aluminum-Alloy Round Welded Tubes; and ASTM-B-210, Specifications for Aluminum-Alloy Drawn Seamless Tubes.
2. **Wall thickness.** The pipe shall meet the minimum wall thickness listed in Table 1 for the given pipe diameter and specified material.

Table 1. -- Minimum wall thickness for aluminum gated pipe

| Tube diameter | Minimum wall thickness |
|---------------|------------------------|
| in. | in. |
| 6 | .050 |
| 8 | .050 |
| 10 | .050 |
| 12 | .058 |

3.2 Plastic pipe

1. **Quality of plastic.** Compounds used in manufacturing plastic gated irrigation pipe shall meet the requirements of one of the PVC materials as specified in ASTM-D-1784 and shown in Table 2.

The compound shall contain an ultra-violet stabilizer that will protect against solar degradation for a minimum of 5 years.

Clean, rework material generated from the manufacturer's own pipe production may be used by the same manufacturer if the pipe produced meets all requirements of this standard.

The pipe shall be homogeneous throughout and free from visible cracks, holes, foreign matter, or other defects. The pipe shall be as uniform in color, opacity, density, and other physical properties as is commercially practicable.

Table 2. -- Material specifications for plastic gated pipe

| Code classification | Designation |
|---------------------|-------------|
| 12454-B | PVC 1120 |
| 12454-C | PVC 1220 |
| 13333-D | PVC 2116 |
| 13333-D | PVC 2112 |
| 13333-D | PVC 2110 |

2. **Pipe requirements.** The rigid plastic gated pipe shall meet the dimensional requirements listed in Table 3. The minimum working pressure class for this pipe without gates shall be 22 psi or 50 ft of head.

In addition, the pipe shall meet the requirements of ASTM-D-2241, Polyvinyl Chloride (PVC) Plastic Pipe (SDR-PR), as shown in sections pertaining to dimensions

and tolerances, flattening, extrusion, quality, conditioning, test conditions, and sampling. The dimensions and tolerances in Table 3 shall apply.

Table 3. -- Dimensions and tolerances of rigid gated plastic pipe

| Nominal Size | Outside diameter | | Wall thickness | |
|--------------|------------------|-------------|----------------|-------------|
| | Average | Tolerance | Minimum | Tolerance |
| in | in | in | in | in |
| 6 | 6.000 | ± 0.011 | 0.120 | ± 0.020 |
| 8 | 8.000 | $\pm .015$ | .120 | $\pm .020$ |
| 10 | 10.000 | $\pm .015$ | .120 | $\pm .020$ |
| 12 | 12.000 | $\pm .015$ | .120 | $\pm .020$ |

3. Pipe markings for plastic pipe

Markings. Markings on the pipe shall include the following, spaced at intervals of not more than 5 ft.

1. Nominal pipe size (for example, 10 in).
2. Applicable material specification according to the designation code (for example, PVC 1120).
3. Manufacturer's name or trademark.

3.3 Fittings and couplers. All fittings and couplers shall equal or exceed the pressure rating of the pipe with which they are used. They shall be made of material that is recommended by the manufacturer for use with the pipe.

The pipe and appurtenances shall be furnished with a coupling system that is interchangeable with aluminum gated pipe.

3.4 Rubber gaskets. Gasket dimensions shall be according to the manufacturer's standard design dimensions and tolerances. The gasket shall be of such size and shape as to provide an adequate compressive force against the spigot and socket after assembly to effect a positive seal.

The gasket shall be the sole element depended upon to make the joint flexible and watertight. The gasket shall be a continuous elastometric ring.

3.5 Certification. If requested by the state conservation engineer, the manufacturer shall certify that the pipe complies with the requirements of this specification.

4. Installation

The pipe shall be installed according to the recommendations of the manufacturer.

5. Joints and connections.

All joints and connections shall be capable of withstanding the design maximum working head for the pipeline without leakage and shall leave the inside of the line free of any obstruction that can reduce the capacity below design requirements. All fittings shall be installed according to the recommendations of the manufacturer.

If dissimilar metals are used, the fittings or orifice plates shall be protected against galvanic corrosion. For example, separate dissimilar metals with a rubber or plastic insulator.

A flexible connection shall be installed between the pump discharge pipe and the pipeline. Aluminum lines shall be coupled with a suitable insulating material.

6. ADDITIONAL SPECIFICATIONS

The following Montana Construction and Construction Material Specifications are hereby included as a part of this specification and are attached.

- MT-1 General Construction
- MT-2 Non-plastic Pipe Materials and Installation
- MT-3 Reinforced Concrete
- MT-3A Concrete for Minor Structures
- MT-4 Earth Fill
- MT-5 Compacted Earth Fill
- MT-6 Gates, Valves, and Miscellaneous Metalwork
- MT-9 Plastic Pipe Materials and Installation
- Others _____

7. SPECIAL PROVISIONS

- None
- See attached sheet(s) _____

This set of specifications has been compiled for the _____ project.
(Project Title)

SCS Approval By:

(Name and Title)

(Date)