

**NATURAL RESOURCES CONSERVATION SERVICE**  
**MISSOURI CONSTRUCTION SPECIFICATION**  
**FOR**  
**STRUCTURE FOR WATER CONTROL**  
**(NO.)**  
**CODE 587**

**SCOPE**

The work will consist of installing the structure for water control and all appurtenances to the lines, grades, and elevations as shown on the drawings.

**GENERAL**

Construction operations shall be done in such a manner that erosion and air and water pollution are minimized and held within legal limits. The owner, operator, Contractor or other persons will conduct all work and operations in accordance with proper safety codes for the type of construction being performed with due regards to the safety of all persons and property.

The completed job shall be workmanlike and present a good appearance.

**MATERIALS**

**A. Timber and Lumber.** Timber and lumber shall be of the dimensions, species, and preservative treatment as specified on the drawings. Timber and lumber shall be accurately cut and assembled to a close fit and shall have an even bearing on the entire contact surface. No open or shimmed joints will be accepted. All cuts, holes, and abrasions shall be swabbed with not less than three coats of the same preservative used in the original treatment. Fasteners shall be as shown on the drawings and shall be compatible with the wood treatment to limit corrosion.

**B. Rock Riprap.** Rock riprap shall consist of hard, durable, well graded angular to subangular rock conforming to the gradation shown on the drawings. Rock riprap and source shall be approved prior to commencement of work. Bedding or geotextile shall be as specified on the drawings. Geotextile shall conform to Construction Specification 753.

**C. Metals.** Unless specified otherwise, all structural steel shall have a minimum yield stress of 36,000 psi. All metal, not galvanized, stainless, aluminum, or painted by the manufacturer, shall be protected by paint, powder coating, and/or cathodic protection, or other approved coating as specified and appropriate for the exposure conditions of the metal.

**D. Pipe.** Corrugated metal pipe shall conform to the requirements of ASTM A760, A762, A885, B745, or B790 as appropriate. Plastic pipes through a dam shall be polyvinyl chloride pipe, PVC 1120 or 1220 conforming to ASTM D1785, ASTM D2241, or ANSI/AWWA C900. The SDR PVC plastic sewer pipe shall conform to ASTM D3034. Ductile iron pipe shall conform to ANSI/AWWA C151/A21.51 or ASTM A674. Welded steel pipe shall meet tolerance requirements of ASTM A53 or equivalent specifications. Anti-seep collars shall be of materials compatible with the pipe. Reinforced concrete culvert pipe shall conform to the requirements of ASTM Specification C76 for the class of pipe specified on the plans. The pipe shall be joined with rubber gasket joints and in accordance with the gasket manufacturer's recommendations except as otherwise specified on the drawings. Pipe joints shall be sound and watertight. The pipe gasket shall conform to the requirements of ASTM Specification C443.

## CONCRETE

Concrete and reinforcing steel shall conform to Construction Specification 750. Concrete and reinforcing steel shall be as shown on the drawings.

## SITE PREPARATION

**Foundation Area.** The entire structure area shall be cleared of all trees, brush, roots, sod, soil containing excess amounts of organic matter and other objectionable materials and shall be disposed of at sites away from the area of work. All trees with root systems hazardous to any structure shall be removed.

Clearing and disposal methods shall be in accordance with applicable state and county laws with due regard to the safety of persons and property.

## EXCAVATION

Excavation for the structure shall conform to the lines, grades, and elevations shown on the drawings or as staked in the field. Unsuitable material, as shown on the drawings or as determined by the Engineer, shall be removed and backfilled with firmly compacted material. Excavated materials meeting the specified fill requirements may be used in embankments or other fill areas. Excess material shall be wasted at locations noted on the drawings or as staked in the field.

## INLET AND OUTLET APPURTENANCES.

The inlet and outlet appurtenances shall conform to materials, sizes and installation as shown on the drawings. Pipe bedding conditions and depths of cover shall be as shown on the drawings. Water control gates, when required, shall conform to the details shown on the drawings and shall be installed according to the manufacturer's recommendation.

The pipe conduit shall be placed on a firm foundation to the lines and grades shown on the drawings. Installation shall be conducted in a skillful and workmanlike manner.

Antiseep collars are to be installed at locations shown on the drawings with watertight connections. When the bottom half is placed in a trench, special backfill and compaction will be required to prevent leakage.

Where no cradle is provided under the pipe, the foundation shall be covered with one (1) inch of loose, friable ML or CL soil material (Unified Soil Classification System) immediately prior to placing the pipe. This material should be saturated before additional backfill is placed.

## STRUCTURAL BACKFILL

**Materials.** The fill materials shall be the in place excavated materials unless otherwise stated and shown on the drawings.

**Placement.** The fill shall be placed so that the distribution of materials will be to the limits shown on the drawings and shall be free from lenses, pockets, streaks, or layers of material differing substantially in texture or gradation from the surrounding material. No fill shall be placed upon a frozen surface nor shall snow, ice or frozen material be incorporated in the fill.

Selected backfill of friable ML or CL material shall be placed around structures, pipe conduits, and antiseep collars at approximately the same rate on all sides to prevent unequal pressures. Water packing is permitted for smooth steel conduits 36 inches or less in diameter when total fill over the conduit will be ten (10) feet or less. Rubber tire, hand, or manually directed power tamper will be used on backfill around

