

**NATURAL RESOURCES CONSERVATION SERVICE
CONSTRUCTION SPECIFICATIONS**

STRUCTURE FOR WATER CONTROL

(No.)
Code 587

SCOPE

This item shall include all work necessary for the installation of the water control structure. Construction operations shall be carried out in such a manner that erosion, air, water and noise pollution will be minimized and held within legal limits as established by state or local regulations.

SITE PREPARATION

All brush, trees, stumps, fence rows, and other objectionable material shall be removed and disposed of in such a way that it will not interfere with constructing, shaping, or proper functioning of the water control structure.

Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable fill material compacted to provide adequate support. Backfill of selected material shall be placed in layers not to exceed 9 inches and properly compacted.

All earth removed and not needed in construction shall be spread or disposed of in such a way that it will not interfere with the functioning of the water control structure. All portions of the structure shall be finished and smoothed in such a manner that the applied vegetative cover can be properly maintained.

Topsoil shall be stockpiled and spread where needed to provide a seedbed for areas to be vegetated. Mechanical excavation for placement of pipes shall be to the approximate grade with final shaping to finished grade done with hand tools. Pipes shall have a straight grade in the direction of flow and shall be placed on firm, smoothly graded foundations.

EARTHFILL

Material. The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", or other objectionable materials.

Borrow areas should be free from invasive/exotic species and noxious weeds.

Placement. Areas on which fill is to be placed shall be scarified prior to placement of fill. The placing and spreading of the fill material shall be started at the lowest point of the foundation and shall be brought up in approximately horizontal layers not exceeding 9 inches in thickness (before compaction). The layers shall be of approximately the same elevation and shall extend over the entire area of the fill. The most permeable borrow material shall be placed in the downstream portions of the embankment. The embankment shall be constructed to the elevation shown on the plans, including additional height for settlement.

Compaction. The construction equipment shall be operated over the area of each layer in a manner that will result in the specified compaction of the fill material. A minimum of two complete passes of the construction equipment over each layer must be obtained after the layer has been spread to the layer thickness. Special compaction equipment shall be used when the required compaction cannot be obtained by the routing of equipment.

The moisture content of the fill material shall be such that the specified compaction can be obtained with the equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble yet not be so wet that water can be squeezed out. The moisture content of the fill shall be maintained within the limits to:

- (1) prevent the bulking or dilatance of the material under the action of the hauling or compaction equipment,
- (2) prevent adherence of the fill material to the equipment, and
- (3) ensure the crushing and blending of the soil clods and aggregation into a homogeneous mass.

Cutoff trench. Where required, the cutoff trench shall be excavated into impervious material along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, with the minimum width being four feet. The depth shall be as shown on the plans. The side slopes of the trench shall be 1 horizontal to 1 vertical (1:1) or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

Structure backfill. Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24 inches or greater over the structure or pipe. The pipe shall be firmly and uniformly bedded throughout its entire length.

MATERIALS

Pipe. All pipes shall be circular in cross section and shall meet the requirements as shown on the engineering plans.

Coupling bands, anti-seep collars, end sections, etc., must be composed of the same material as the pipe. Metals must be insulated from dissimilar materials with the use of rubber or plastic insulating materials of at least 24 mils in thickness.

All connections with pipes must be completely watertight. The pipe barrel connection to the riser shall be welded all around when the pipe and riser are metal. Anti-seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dimple bands are not considered to be watertight.

Helical corrugated pipe shall have either continuously welded seams or have lock seams with internal caulking or a neoprene bead.

Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Concrete. Concrete shall meet the requirements of NRCS Construction Specification 32, Structure Concrete.

Rock riprap. Rock riprap shall meet the requirements of NRCS Construction Specification 61, Rock Riprap.

Geotextile. Geotextile shall be placed under all riprap and shall meet the requirements of NRCS Construction Specification 95, Geotextile.

Any special protection materials shall be installed per manufacturer's instructions.

POLLUTION CONTROL

Construction operations shall be carried out so that erosion and sediment control are addressed, and air and water pollution are minimized. This may include such items as silt fence, hay bale barrier, temporary vegetation, mulching, etc.

VEGETATION

Vegetation will be established as specified in the vegetative plan.