

**NATURAL RESOURCES CONSERVATION SERVICE
CONSTRUCTION SPECIFICATIONS**

STRUCTURE FOR WATER CONTROL

1. Scope

The work shall consist of all construction operations and furnishing all materials as required by the drawings and specifications for the complete installation of the works. All work shall be done in a workmanlike manner.

2. Location

The location of the structure shall be as shown on the drawings or as staked in the field.

3. Site Preparation

The foundation area shall be cleared of all topsoil, trees, logs, stumps, roots, boulders, sod, and rubbish. Channel banks and breaks shall be sloped no steeper than 1 horizontal to 1 vertical.

The foundation area will be thoroughly scarified to a minimum depth of 4 inches before placement of the fill material and moisture added, if necessary, so that the first layer of fill material can be bonded to the foundation.

4. Concrete

Concrete shall have a minimum design strength of 3000 psi at 28 days with a maximum net water content of 6.5 gallons/bag.

Portland cement shall be Type I or II. Air entraining admixture shall be used to provide an air content of 5 to 8 percent of the volume of concrete.

Coarse aggregate shall be hard; be free from dirt and organic materials; and consist of well-graded gravel, crushed stone, or other suitable materials larger than 3/8 inch. Maximum size shall be 1 inch.

Fine aggregate shall consist of well-graded natural or manufactured sand with particle gradation ranging from coarse (3/8 inch) to fine (#200 sieve).

Mixing water shall be clean and free from oil, alkali, or acid.

The proportions of the aggregates shall be such to produce a concrete mixture that will work readily into the corners and angles of the forms and around steel reinforcement when consolidated. The slump at the time of placing shall be 3 to 5 inches.

Forms shall be wood, plywood, steel, or other approved materials and shall be mortar-tight. The forms shall be unyielding and shall be constructed so that the finished concrete conforms to the specified dimensions and contours.

Prior to placement of concrete, the forms and subgrade shall be free of chips, sawdust, debris, water, ice, snow, extraneous oil, mortar, or other harmful substances or coatings.

Inspection and approval of the forms and steel placement by designated personnel shall be made prior to the placement of concrete. Copies of the concrete delivery tickets shall also be furnished to verify proper concrete was delivered and placed.

Concrete shall be conveyed from the mixer to the forms as rapidly as practical by methods that will prevent segregation of the aggregates and loss of mortar. Concrete shall not be dropped more than 5 feet vertically except where suitable equipment is used to prevent segregation.

Immediately after the concrete is placed in the forms, it shall be consolidated by spading, hand tamping, or vibration as necessary to ensure smooth surfaces and dense concrete.

Forms shall be removed in such a way to prevent damage to the concrete.

The minimum period from completion of the concrete placement to the removal of the forms shall be 12 hours.

All exposed surfaces of the concrete shall be accurately screeded to grade and then wood-floated.

Concrete shall be prevented from drying for a curing period of at least 7 days after it is placed. Exposed surfaces shall be kept continuously moist for the entire period or until curing compound is applied.

Concrete shall not be mixed nor placed when the atmospheric temperature is less than 40° F or more than 90° F unless facilities are provided to prevent freezing or for cooling as required.

If concrete is placed when temperatures may fall below 40° F during the curing period, it will be insulated or heated to maintain a temperature of 50° F for the first 3 days of the curing period.

5. Backfill

The material placed in the fill shall be free of sod, roots, frozen soil, stones over 2 inches in diameter, and other objectionable material.

The placing and spreading of fill material shall be started at the lowest point and brought up in horizontal layers not more than 4 inches thick before compaction.

The distribution and gradation of materials shall be such that there will be no lenses, pockets, streaks, or layers of material differing substantially in texture or gradation from the surrounding material.

The completed work shall conform to the lines, grades, and elevations shown on the drawings or as staked in the field.

Topsoil strippings will be placed on the outer portion of the embankment.

6. Moisture Control

The moisture content at time of compaction shall be such that, when kneaded in the hand, a ball will form which does not separate readily

7. Compaction

The construction equipment shall be operated over the areas of each lift of earthfill in a way that will result in the required compaction. Special equipment will be used when the required compaction cannot be obtained without it.

8. Vegetation

A protective cover of vegetation shall be established on all exposed earth surfaces. Seedbed preparation, seeding, fertilizing, mulching, or other vegetation shall be as specified in the "Construction Details" section.

9. Construction Details