



Practice Specification Water and Sediment Control Basin (Code 638)

1. SCOPE

This specification covers the construction of a water and sediment control basin. The work shall consist of furnishing all materials, labor, and equipment necessary for constructing the water and sediment control basin, including all appurtenances, in accordance with the construction drawings and these specifications.

2. SAFETY

It is the responsibility of the landowner and contractor to determine if there are buried or overhead utilities in the vicinity of the proposed work. The contractor is required to call North Carolina One Call (811). They shall follow proper procedures to ensure that the utilities are not jeopardized and that equipment operators and others will not be injured during construction operations. They will conduct all work and operations in accordance with the proper safety codes for the types of construction being performed with due regard to the safety of all persons and property.

The Natural Resources Conservation Service (NRCS) makes no representation on the existence or non-existence of any utilities. Absence of utilities on the drawings is not assurance that no utilities are present at the site.

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.

3. CONSTRUCTION OPERATIONS

NRCS should be notified at least 72 hours before the start of construction operations.

4. PERMITS

The owner will be responsible to obtain all required permits. All required permits must be obtained prior to the start of construction.

All permits required to construct and operate the water and sediment control basin shall be the responsibility of the owner.

5. CLEARING AND GRUBBING

Basin Area. All trees and brush shall be cut as flush with the ground as practicable, and all such trees, brush, logs and other debris shall be removed from the pond site. Clearing shall be performed around the shoreline as on the plans or as specified in Section 15.

Auxiliary Spillway and Borrow Areas. On areas from which fill materials are to be obtained, all trees, brush, logs, roots and other debris larger than 1 inch in diameter shall be removed.

The Embankment Site. All trees, brush and other debris shall be removed from the area on which fill is to be placed. All stumps and roots one inch in diameter and larger should be removed from the fill site to a depth of 12 inches.

Disposal of Cleared and Grubbed Material. All combustible material cleared and grubbed, from the site, shall be disposed of by burning, burying at approved locations or removing from the site. All burning shall conform to North Carolina laws and regulations. All noncombustible materials cleared and grubbed from these areas shall be removed from the site or buried with a minimum cover of 2 feet.

Topsoil. Topsoil, when available, will be stockpiled at locations as shown on the drawings for use on the embankment, auxiliary spillway and other disturbed areas to facilitate establishment of vegetative cover.

6. FOUNDATION PREPARATION

The foundation area for the embankment shall be cleared of all trees, stumps, roots, brush, boulders, sod, and debris. All channel banks and sharp breaks shall be sloped to no steeper than one horizontal to one

vertical (1:1). All material containing excessive amounts of organic matter shall be removed. The surface of the foundation area will be thoroughly scarified before placement of the embankment material.

7. EXCAVATION

Excavation and Backfill of Cutoff Trench. The cutoff trench shall be excavated to the depths, bottom width and side slopes (minimum one horizontal to one vertical) shown on the plans. All standing water shall be removed from the trench and it shall be backfilled using thin layers (maximum 9 inches) to the ground surface with suitable material by the same methods herein prescribed for "earth-fill."

Excavation and Backfill of Stream Channels. Existing stream channels or watercourses crossing the foundation area shall be deepened and widened as necessary to remove all stones, gravel, sand, sediment, stumps, roots, organic matter and other objectionable material and to accommodate compaction equipment. Side slopes shall be constructed no steeper than one horizontal to one vertical (1:1). All water shall be removed from the channels, and they shall be backfilled in the same manner as prescribed for the cutoff trench.

Spillway and Borrow Excavation. The completed spillway excavation shall conform as nearly to the lines, grades, bottom width and side slopes shown on the plans as skillful operation of the excavating equipment will permit. The channel bottom shall be constructed transversely level and the side slopes uniform. All borrow areas outside the basin area shall be graded and constructed in such a manner that they are well drained and protected from erosion by the use of diversions or other conservation measures. Side slopes of borrow areas shall be constructed in such condition that establishment of vegetation, mowing and maintenance operations will be facilitated.

Excavation in borrow areas within the basin area shall be graded in such a manner that they are well drained and will provide the minimum specified depth of water at the normal water level.

Suitable excavated material shall be used in fills. Excess excavated material or unsuitable material shall be disposed of in designated spoil areas as stated in Section 15.

8. EARTHFILL

Selecting, Placing and Spreading of Material. The fill material shall be free of all sod, roots, frozen soil, stones over 6 inches in diameter, and other objectionable material. The placing and spreading of the fill material shall be started at the lowest point of the foundation (cutoff trench) and the fill shall be brought up in approximately horizontal layers not exceeding 9 inches in uncompacted thickness. Special attention will be given to compaction in the cutoff trench where it joins the abutment slopes.

These layers shall be of approximately uniform elevation and shall extend over the entire area of the fill. Each layer shall be thoroughly compacted by at least three complete passes of the construction equipment over the entire surface area of each layer after the layer has been spread to the lift thickness. Special compaction equipment shall be used when the required compaction cannot be obtained by routing of the construction equipment.

The distribution and gradation of materials throughout the fill 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. Where it is necessary to use material of varying texture and gradation, the more impervious material shall be placed in the upstream and center portions of the fill.

Drain-fill shall be kept from being contaminated by adjacent soil materials during placement by either placing it in a cleanly excavated trench or by keeping the drain at least 1 foot above the adjacent earth-fill.

Selected drain-fill and backfill material shall be placed around structures, pipe conduits, and anti-seep collars at about the same rate on all sides to prevent damage from unequal loading.

Moisture Control. The moisture content of fill material shall be such that the specified compaction can be obtained with the equipment used. The moisture content of the fill shall be maintained within a range to:

- prevent the bulking or dilatence of the material under the action of the hauling or compaction

equipment

- prevent adherence of the fill material to the equipment
- ensure the crushing and blending of the soil clods and aggregation into a homogeneous mass
- for fine grained soils, contain adequate moisture so that a sample can be hand molded.

The completed fill shall conform as nearly to the lines and grades, top width, and side slopes shown on the plans as skillful operation of the construction equipment will permit.

9. OUTLET INSTALLATION

The underground outlet shall be placed on a firm uniform foundation to the lines and grades shown on the plans. Selected backfill material shall be placed around the outlet and its component parts in layers not exceeding 6 inches in thickness. Each successive layer shall be thoroughly compacted by hand or power tampers. Heavy equipment shall not cross over the outlet pipe until 1 foot of hand compacted material has been placed over it.

Materials. All of the component parts of the outlet including barrel, riser, trash rack, anti-seep collars, support posts, braces and hardware for mounting shall be of the quality specified and constructed as shown on the plans.

Concrete. The work shall consist of furnishing, forming, placing, finishing and curing Portland cement concrete.

When concrete is used for footings under risers and anti-seep collars, the mixture shall be not less than five bags per cubic yard. The consistency of the concrete shall be such as to allow the concrete to be worked into place without segregation or excessive laitance.

The components of the mix shall be as follows. A standard known brand, Type I Portland cement, washed sand and gravel. Clean water shall be used in the mix. (Suggested ratio in mix: 94 pounds cement (1 bag), 6 gallons. water, 170 pounds clean dry sand, 315 pounds dry gravel. Smaller batches, 1 part cement, 2 parts sand, and 3 parts gravel, and water at the rate of 1 gallon per 16 pounds of cement).

Concrete shall not be placed when the atmospheric temperature may be expected to fall below 40°F at the time concrete is delivered and placed at the work site nor when it is expected to exceed 90°F during placement. All exposed surfaces of concrete shall be protected from the direct rays of the sun for at least the first seven days. All concrete shall be cured by keeping it continuously moist for at least seven days after being placed or by spraying with two coats of curing compound when other concrete will not be bonded to the concrete surface. Concrete shall not be exposed to freezing temperature during the curing period.

Pre-Bedding. The strength of lightweight, flexible PVC and corrugated steel and aluminum pipe is highly dependent on the bedding and backfill. It must be carefully jointed together, bedded, and backfilled. The backfill to be used in the vicinity of the pipe should be the most impervious fine grained material available and have proper moisture content to assure good compaction around the conduit. The pipe conduit should be cambered to prevent breaking or joint separation when the dam is built. The bottom of the bedding trench will be shaped as a minimum to fit the lower one third (120°) of the pipe. Proper inspection of the installation is essential, especially during the bedding of the conduit and backfilling adjacent to the conduit and anti-seep collars. All other requirements for installation of plastic pipe will be in accordance with Florida NRCS conservation practice standard Subsurface Drains, Code 606.

Principal Spillways, Trash Racks and Fittings. The outlet pipe and pipe connecting bands shall conform with the plans or as specified in Section 15 of this specification.

Anti-seep collars are to be of materials compatible with the pipe and installed so as to be watertight. The pipe shall be installed in accordance with the manufacturer's instructions and to the lines and grades shown on the drawings.

Inspection of Materials. All materials used in the fabrication and installation of the outlet pipe, trash rack, valves and other fittings, shall be visually inspected prior to or during their installation to assure quality and integrity of material.

10. VEGETATION

The embankment, auxiliary spillway, borrow areas and other areas disturbed during construction, that will not be farmed, must be sodded or seeded and mulched immediately after construction.

Temporary vegetation or mulching will be used after construction is completed if permanent vegetation is not feasible due to time of year or weather conditions.

Vegetation will be in accordance with NRCS NEH 642 Construction Specification 6, Seeding, Sprigging and Mulching or Section 15 of this specification. Any stockpiled topsoil shall be spread prior to vegetating.

11. POLLUTION CONTROL

Construction operations shall be carried out so that erosion and sediment are controlled during construction, and air and water pollution are minimized. Best management practices (BMP) for construction shall be installed and maintained as needed and according to NPDES permit if required. BMP's consisting of silt fences, hay bale barriers, diversions, mulching, stream crossings, temporary vegetation, fencing and others may be appropriate to adequately control erosion and sediment during construction.

12. WORKMANSHIP

Construction shall be performed to the neat lines and grades specified by the design and as shown on the engineering plans.

All construction shall be performed in a workmanlike manner, and the job site shall have a neat appearance when finished.

13. BASIS OF ACCEPTANCE

The acceptability of this practice shall be determined by quality assurance inspections to insure compliance with all the provisions of this specification and construction drawings. Construction shall be approved by an NRCS employee with appropriate engineering job approval authority or Technical Service Providers.

Any modifications to the plans and specifications or changes shall be approved by the responsible NRCS employee before construction begins and any modification or changes needed during construction will be approved before installed.

14. CERTIFICATION AND GUARANTEE

The installing contractor shall certify that the construction complies with the requirements of this standard. A written guarantee that protects the owner against defective workmanship and materials for not less than one (1) year shall be furnished to the landowner.

15. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefor are:

Specific Site Requirements