NATURAL RESOURCES CONSERVATION SERVICE
CONSTRUCTION SPECIFICATION

IA-604 SATURATED BUFFER

1. SCOPE

The work consists of furnishing materials, installing all components, and performing all clearing and grubbing, excavations, grading, and earthfill required to construct the Saturated Buffer as shown on the plans or as staked in the field.

It is the Land Owner's responsibility to locate any existing subsurface drains that may be under, along, or crossing the saturated buffer prior to construction. The NRCS is not responsible for any subsurface drains damaged during construction.

2. MATERIALS

Earth materials used in backfilling around the structure and pipe shall be suitable material obtained from excavated material or from other approved sources as shown on the plans, described in Section 8, or approved by the Inspector. The fill material shall be free from brush, roots, frozen material, sod, stones over 6 inches in diameter, or other objectionable material.

All disturbed areas shall be finished so they are suitable for the planned use after construction is completed. If needed, topsoil shall be stockpiled and spread over excavations and other areas to facilitate establishment of vegetation.

Pipe, pipe sizes, fittings, and other appurtenances shall be as specified on the plans. These items shall conform to the "materials" section of Construction Specification IA-620, Underground Outlet, or as shown in Section 8 of this specification.

Structures shall be fabricated and installed as shown on the plans. Structures must be of durable material, structurally sound, and resistant to damage by rodents or other animals. Structures shall be of rigid material which does not require supplemental support to remain in a vertical position. Materials which meet these requirements include the following:

1. Corrugated metal pipe, galvanized or aluminum, 16 gauge minimum,
2. Smooth steel pipe, with 3/16 inch minimum wall thickness,
3. Smooth plastic pipe, polyvinyl chloride (PVC), with an SDR of 43 or less,
4. High-density polyethylene pipe (PE). Round pipe shall have an SDR of 43 or less. Square intakes shall have minimum wall thickness as shown in the following table:

Nominal Size	Minimum Thickness
6 inch	0.16 inch
8 inch	0.21 inch
10 inch	0.26 inch
12 inch	0.31 inch

All plastic and polyethylene structures shall include ultra-violet stabilizer to protect them from solar degradation.

Appurtenances (i.e. tees and elbows) for polyvinyl chloride (PVC) inlets shall be schedule 40 or heavier.

3. EXCAVATION

Remove all trees, stumps, roots, brush, and other objectionable materials from the work area as shown on the plans or as agreed upon with the Land Owner and Inspector. Burning of trees and brush shall comply with all applicable state and local regulations.

Cuts and fills should be made in such a manner that topography will be enhanced. Excess spoil material shall be placed, spread, leveled, shaped, or hauled away as shown on the plans or as staked in the field.

All excavations must conform to the lines, grades, elevations, bottom width, and side slopes shown on the construction plans or as staked in the field. The conduit trench bottom must be smooth and free of exposed rock. If rock is encountered in the trench bottom, over-excavate the trench and place at least 6 inches of compacted fill or sand bedding in the trench to bring it up to the conduit grade.

If not otherwise shown on the plans, trench width at the top of the conduit shall have a minimum clearance of 3 inches from outside edge of the conduit. The trench width at the top of the conduit shall have a maximum clearance of 6 inches from the outside edge of the conduit unless an approved bedding material is used.

Plow installation is allowed. The minimum trench width shall be 2 inches wider than the conduit on each side. Grade control and bedding conditions shall be closely monitored during the plow installation.

All excavation for structure installation shall be sloped to no steeper than 2:1.

4. STRUCTURE INSTALLATION

Structures shall be installed according to the lines, grades, and elevations shown on the plans and as staked in the field. Prefabricated structures must be handled in accordance with manufacturer recommendations to insure the structure's integrity after installation.

Backfill around the structure shall be placed in 9 inch lifts and hand compacted. The moisture content of the fill material shall be such that a ball formed with the hands does not crack or separate when struck sharply with a pencil and will easily ribbon out between the thumb and finger.

The finished surfaces must present a workmanlike appearance.

5. PIPE INSTALLATION

Pipe shall be installed as shown on the plans and/or as staked in the field.

Unless otherwise specified, no filter or envelope is required around the distribution pipe. In stable soils, the bottom of the trench shall be shaped to form a semicircular, trapezoidal, or 90-degree "V" groove in its center. The groove shall be shaped to fit the size of tile. The 90-degree "V" groove shall not be used on conduits greater than 6 inches in diameter.

If the bottom of the trench does not provide a sufficiently stable or firm foundation for the distribution pipe, a sand-gravel mix or other approved material shall be used to stabilize the bottom of the trench.

When a filter is specified, the shape of the bottom of the trench and the gradation and thickness of the filter or envelope material to be placed around the conduit will be as shown on the plans. The filter or envelope material shall be placed in the bottom of the trench just prior to the laying of the conduit. The conduit shall then be laid and the filter or envelope material placed over the conduit.

The slope of the distribution lines is critical. Extra care must be taken to ensure that these lines are laid on a uniform grade throughout the length of the line or as shown on the plans. The pipe must be tied down or loaded sufficiently during backfilling around the sides to prevent its being lifted from the bedding. Backfill shall extend above the ground surface and be well rounded over the trench.

The minimum depth of backfill over the distribution conduit is 18 inches.

Lateral connections shall be made with manufactured appurtenances (wyes, tees, couplings, etc.) comparable in strength and durability with the type of conduit being used. Pipe connections to the structure shall be watertight.

6. OUTLET

A continuous section of non-perforated conduit at least 20 feet long shall be used at the outlet. At least two-thirds of the outlet pipe shall be buried in the ditch bank, and the cantilever section must extend to the toe of the ditch side slope or the side slope must be protected from erosion. Acceptable materials for use at the outlet include the following:

1. Corrugated metal pipe, galvanized or aluminum, 16 gauge minimum;
2. Smooth steel pipe with a minimum wall thickness of 3/16 inch;
3. Smooth plastic pipe, polyvinyl chloride (PVC), with a SDR of 26 or less or schedule 40 or heavier; or
4. Corrugated profile wall (dual wall) polyethylene pipe (PE).

All plastic (PVC) and polyethylene pipe (PE) outlets shall include ultra-violet stabilizer. PVC and PE pipe outlets shall not be used where burning vegetation on the outlet ditch bank is likely to damage the pipe.

All outlet pipes must have a flap-gate type animal guard.

7. SEEDING

A protective cover of vegetation shall be established on the entire soil saturation area and all surfaces disturbed by construction as shown on the plans or staked in the field. Plant species shall be water tolerant and suitable for wet soil conditions. Seeding and mulching shall be performed in accordance with the IA-CPA-4, Seeding Plan, and Construction Specification IA-6, Seeding and Mulching for Protective Cover.

8. SPECIAL SPECIFICATIONS