

**NATURAL RESOURCES CONSERVATION SERVICE  
PACIFIC ISLANDS AREA  
CONSERVATION PRACTICE SPECIFICATION  
UNDERGROUND OUTLET (620)**

**SCOPE**

The work shall consist of the construction of an underground or outlet. Construction shall comply with the drawings and these specifications, or as staked in the field.

**SAFETY**

Landowners or operators, sponsoring organizations, and contractors shall be liable for damage to utilities and damage resulting from disruption of service caused by construction activities. The Natural Resources Conservation Service 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.

It is the responsibility of the landowner or operator to determine if there are buried or overhead utilities in the vicinity of the proposed work. They should take proper procedures to insure that the utilities shall not be jeopardized and that equipment operators and others will not be injured during construction operations.

**CONSTRUCTION OPERATIONS**

Construction operations shall be carried out in such a manner and sequence 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.

**INSTALLATION**

**Site Preparation.** The work area shall be cleared of all trees, stumps, roots, brush, boulders, sod, debris, and other objectionable material.

**Disposal.** All trees, brush, stumps, and other obstructions shall be disposed of in a manner consistent with environmental concerns, so as to ensure no interference with excavating, shaping, compaction, smoothing, or proper functioning of the underground outlet.

**Materials.** Materials for underground outlets shall meet the requirements shown on the drawings and also shall be field inspected for any defect or drainage. No pipe shall be laid which is cracked, checked, spalled, or damaged beyond ASTM specification tolerances. All such sections of pipe shall be permanently removed from the work site.

**Placement.** The underground outlet system shall be constructed as shown on the drawings. Conduit lines should be installed and properly backfilled prior to placement of earth fill for the storage basin. All appurtenant structures, including trash and animal guards, shall be installed promptly, and provisions shall be made for protecting them during installation.

If water is in the trench, it shall be removed before placement of the pipe. The interior of the pipe shall be kept free of dirt and other foreign material as pipe installation progress.

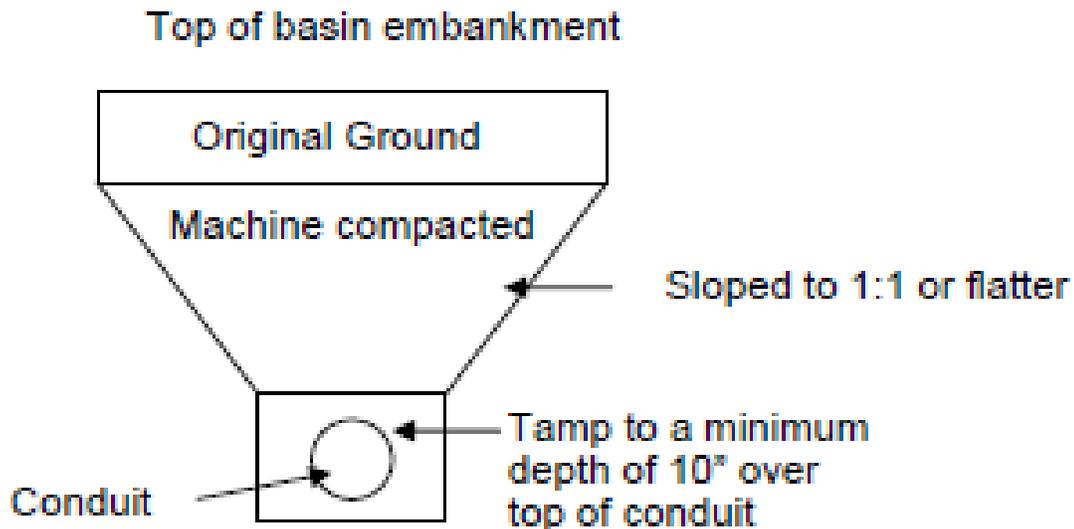
**Trench excavation.** Conduit lines shall be buried deep enough to provide at least 30 inches cover.

The width of the trench at any point below the top of the pipe shall be no wider than is necessary to join and backfill the pipe, and in no event be more than 24 inches wide. The bottom of the trench shall be grooved in the center for proper conduit bedding.

If the conduit line is to be installed in a rock trench, or where rock is exposed in the bottom of the trench, enough rock shall be removed below grade to provide at least 2 inches of compacted earth fill bedding.

**Trench backfill.** Earth backfill material shall be placed in the trench in such a manner that displacement of the conduit line will not occur. Fine grained soil material shall be used for blinding around the conduit prior to machine backfilling. The material shall be selected soil or sand, free from rocks or stones larger than one inch in diameter. At the time of placement, the moisture content of the material shall be such that the required degree of compaction can be obtained. Excess excavated material shall be mounded over the conduit trench.

Backfill under the basin embankment shall be placed in the trench in 4-inch layers and tamped until a depth of at least 10 inches over the top of the conduit is reached. Water packing of the backfill material may be used in lieu of tamping. The remainder of the trench shall be sloped to 1:1 or flatter and may be machine compacted. Required backfilling operations under the basin embankment are shown in the following detail:



**Hand or Mechanical Backfill.** Compaction shall be accomplished by means of hand tamping or manually directed power tamper, or plate vibrators. Fill shall be placed in approximately horizontal layers. Hand compacted fill shall be placed in layers not more than 4 inches thick before compaction. Fill shall be placed in a manner that will prevent damage to the conduit. The height of the fill adjacent to the conduit shall be increased at approximately the same rate on all sides. Water shall be added to the fill material to obtain the proper moisture for compaction as directed by the technician.

**Water Packing.** When water packing is used, the pipeline shall first, be filled with water. The initial backfill, before wetting, shall be of sufficient depth to insure complete coverage of the pipe after consolidation has taken place. Water packing is accomplished by adding water to diked reaches of the trench in such quantity as to thoroughly saturate the initial backfill without excessive pooling of water. After saturation, the pipeline shall remain full until after final backfill is made. Before commencing final backfill, the wetted fill shall be allowed to drain until firm.

**Final Backfill** Final backfill material shall be free of large rocks and other debris greater than three inches in diameter. The material shall be placed and spread in approximately uniform layers in such a manner that there will be no unfilled spaces in the backfill. The backfill will be level with the natural ground or at the design grade required to provide the minimum depth of cover after settlement has taken place. Rolling equipment shall not be used to consolidate the final backfill, until a minimum depth of cover of 30 inches have been placed.

All special backfill requirements of the pipe manufacturer shall be followed, during the backfill operations.

**Joints.** Conduit line joints shall be made with standard couplers or fittings installed in accordance with instructions furnished by the manufacturers. Open ends of the conduit lines shall be capped with standard end caps or by concreting.

**Inlet.** Inlets shall be constructed as shown on the plans. Inlet holes shall be smoothly cut and burr free. Orifice plates, when specified, shall fit tightly and have a smooth edge.

### **WORKMANSHIP**

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

All disturbed areas not graveled or paved will be vegetated to control erosion.

### **BASIS OF ACCEPTANCE**

The acceptability of this practice shall be determined by inspections to insure compliance with all the provisions of this specification and to the drawings.