

### 680.1 DESCRIPTION

This work consists of subgrade drainage installations of porous backfill and underdrain pipe.

### 680.2 MATERIALS

**A. Porous Backfill:** Porous backfill for underdrains shall conform to Section 800, with the following modifications:

The material shall consist of natural sand. Crushed material is not acceptable. The percentage of material passing a No. 200 (75  $\mu\text{m}$ ) sieve shall not exceed two percent.

**B. Corrugated Polyethylene Drainage Tubing:** Corrugated polyethylene drainage tubing shall conform to Section 990.

**C. PVC Pipe:** In lieu of corrugated polyethylene tubing a profiled wall PVC pipe may be substituted. PVC pipe and fittings shall meet the physical requirement specified for polyethylene pipe and shall meet the material requirements of ASTM D 3034, except dimensions at time of manufacture.

**D. Concrete:** Concrete shall conform to Class M6 (I28), Section 462.

### 680.3 CONSTRUCTION REQUIREMENTS

The trench to receive the porous backfill shall be excavated to the lines shown on the plans or as staked by the Engineer. The trench bottom shall be shaped and tamped as required by the Engineer. Disposal of surplus excavation shall be the responsibility of the Contractor.

Prior to placement of underdrain pipe, a layer of porous backfill shall be placed to the depth shown on the plans and shaped to receive the pipe.

The porous backfill material shall be placed in one-foot (300 mm) layers without compaction. The backfill shall be uniformly spread without segregation or contamination. Tarpaulins or other approved devices shall be used as guides from the hauling vehicle to the trench to prevent pulling dirt in with the backfill.

Clear and unobstructed outlets shall be provided for all drains. Where possible, all outlets shall have a 12 inch (300 mm) free fall and shall be properly marked and protected with a four inch by four inch by six foot (100 mm by 100 mm by 2 m) guide post painted with two coats of white paint.

Drain installations and waste disposal shall be finished and left in a neat appearing condition satisfactory to the Engineer.

### 680.4 METHOD OF MEASUREMENT

- A. **Porous Backfill:** Porous backfill will be measured, to the nearest 0.1 ton (0.1 metric ton). Material used to fill unauthorized trench widths or other dimensions will not be measured for payment.
- B. **Underdrain Pipe:** Underdrain pipe will be measured parallel to the pipe to the nearest foot (0.1 meter).
- C. **Concrete Outlet Headwall:** Concrete outlet headwalls will be measured by the number of completed headwalls installed.

#### 680.5 BASIS OF PAYMENT

- A. **Porous Backfill:** Porous backfill will be paid for at the contract unit price per ton (metric ton). Payment will include full compensation for furnishing the material, labor, equipment, and incidentals necessary.
- B. **Underdrain Pipe:** Underdrain pipe will be paid for at the contract unit price per foot (meter) for the various types and classes of pipe, inclusive of necessary bands, bolts, wyes, elbows, grates, lids, covers, guide posts, screens, breathers, excavation, backfilling, and handling waste disposal.
- C. **Concrete Outlet Headwall:** Concrete outlet headwalls will be paid for at the contract unit price per each.