



## 5000 - SPECIFICATION FOR INSTALLING PIPE CULVERTS

### 5000 - 1 DESCRIPTION

- 1.01 The work shall consist of corrugated metal pipe culverts and reinforced concrete pipe culverts installed at locations and in conformity with the lines and grades shown on the plans or designated by the Engineer.
- 1.02 The work shall include all types and sizes of corrugated metal pipe culverts except structural plate culverts and drain pipes for subsurface drainage as set out in Specification for Installing Sub-Surface Drain Pipes (Specification 5015).

### 5000 - 2 MATERIALS

- 2.01 The Department will supply and pay for the culvert material .

### 5000 - 3 CONSTRUCTION

- 3.01 The location, elevation, and excavation for the culvert will be staked by the Engineer.
- 3.02 The excavation for the culvert and the culvert bed, including sub-cut if required, shall be in accordance with the requirement for Earth Excavation (Specification 2200) and/or Rock Excavation (Specification 2250).
- 3.03 If the foundation is unsuitable, the bottom of the bed shall be sub-cut to the dimensions staked by the Engineer. The sub-cut shall be backfilled in accordance with the requirements for Granular Backfill (Specification 6600) and/or Embankments (Specification 2300) as designated by the Engineer.
- 3.04 The bedding line shall be shaped to fit the culvert.
- 3.05 Corrugated metal pipe culverts shall be placed with the inside circumferential laps pointing downgrade and with the longitudinal laps at the sides or quarter points. The sections of the culvert shall be firmly joined with coupling bands. Joints shall be as tight as possible.
- 3.06 Reinforced concrete pipe culverts shall be placed starting at the downstream end, with the groove end of the sections pointing upgrade. Joints shall be as tight as possible.
- 3.07 If required, granular backfill shall be placed around reinforced concrete pipe culverts in accordance with the requirements for Granular Backfill (Specification 6600).
- 3.08 Earth backfill under the haunches of culverts, except those in approaches not to be paved, and polyethylene pipe culverts, shall be compacted with mechanical impact tampers. If a density for embankments has not been specified, mechanical impact tampers shall be used for compacting the earth material against the culvert.
- 3.09 After the earth backfill and granular backfill has been placed and compacted around the culvert, the remainder of the embankment shall be constructed in accordance with the requirements for Embankments (Specification 2300).

- 3.10 The earth material above the bedding line shall be placed, simultaneously and uniformly, in lifts on each side of the culvert. In subcut, the lift shall extend to the limits of the sub-cut; otherwise the lifts shall extend not less than 15 metres from each side of the culvert.
- 3.11 No objectionable material shall be used within that portion of the embankment above or below the bedding line on culverts through the roadbed.
- 3.12 The embankment, within three diameters or three span; of the culvert barrel, shall be free from rocks having a dimension of eight centimetres or greater when measured in any direction.
- 3.13 The Contractor shall repair or replace, at no direct expense to the Department, any culvert damaged by his operation.

#### **5000 - 4 MEASUREMENT**

- 4.01 Culverts will be measured in metres. Measurements will be taken along the invert, including sloped ends and end sections, parallel to the barrel of the culvert.
- 4.02 For the purpose of this specification, culvert groups are defined as follows:
- Group A** - This group shall include all sizes of reinforced concrete pipe culverts up to and including a diameter of 60 centimetres.
- Group B** - This group shall include all sizes of corrugated metal pipe culverts up to and including a diameter of 60 centimetres and all sizes of corrugated metal arch culverts up to and including an arch of 68 centimetres x 50 centimetres.
- Group C** - This group shall include all sizes of corrugated metal pipe culverts greater than 60 centimetres and up to and including a diameter of 120 centimetres and all sizes of corrugated metal arch culverts greater than 68 centimetres x 50 centimetres and up to and including an arch of 139 centimetres x 97 centimetres.
- Group D** - This group shall include all sizes of polyethylene pipe culverts up to and including a diameter of 60 centimetres.
- 4.03 All reinforced concrete pipe culverts greater than 60 centimetres, all corrugated metal pipe culverts with a diameter greater than 120 centimetres, all corrugated metal arch culverts greater 139 than centimetres x 97 centimetres and all polyethylene pipe culverts with a diameter greater than 60 centimetres will be specified individually in the tender form.

#### **5000 - 5 PAYMENT**

- 5.01 Payment for INSTALLING CORRUGATED METAL PIPE CULVERTS, INSTALLING CORRUGATED METAL PIPE ARCH CULVERTS and INSTALLING POLYETHYLENE PIPE CULVERTS, will be at the contract unit price per metre for the group or size specified in the tender form. The unit price will be full compensation for unloading, storing, handling, and hauling culvert materials; preparing the bed; assembling the culvert; and compacting the earth backfill.
- 5.02 Payment for excavated material will be in accordance with the requirements for Earth Excavation (Specification 2200) and/or Rock Excavation (Specification 2250) and/or Disposal of Surplus Rock (Specification 2320).
- 5.03 Payment for granular backfill will be in accordance with the requirements for Granular Backfill (Specification 6600).