

PART 1 - GENERAL

1.1 Related Sections

- .1 Section 31 23 10 Excavation, Trenching & Backfilling
- .2 Section 32 11 23 Granular Base.

1.2 Measurement Procedures

- .1 **Polyethylene Cross Culvert:** Measure supply and installation of cross culvert as a unit cost for each pipe installed.
 - .1 No separate measurement will be made for couplings and fittings for plastic pipe culverts.
 - .2 Cost of supply and installation will include any excavation, and dewatering prior to placing of bedding material.
- .2 Measure bedding materials and backfill materials for culverts in accordance with Section 31 23 10 - Excavating, Trenching and Backfilling.

1.3 References

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM F405 Corrugated Polyethylene (PE) Tubing and Fittings.
 - .2 ASTM F 667-16, Standard Specification for Large Diameter Corrugated Polyethylene Pipe and Fittings.
 - .3 ASTM D3350-14, Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.
 - .4 ASTM D1557-12, Standard Test

Methods for Laboratory Compaction
Characteristics of Soil Using
Standard Effort (600 kN-m/m³))

.2 Canadian Standards Association (CSA)

- .1 CAN/CSA B182.8, Corrugated
Polyethylene (PE) Storm Sewer and
Drainage Pipe and Fittings.

1.4 Delivery Storage
and Handling

- .1 Deliver, store and handle materials in
accordance with manufacturer's written
instructions.
- .2 Delivery and Acceptance Requirements:
deliver materials to site in original
factory packaging, labelled with
manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in accordance with
manufacturer's recommendations.
 - .2 Replace defective or damaged
materials with new.

PART 2 - MATERIALS

2.1 Corrugated
Polyethylene Pipe and
fittings

- .1 Polyethylene Plastic: - plastic based
on polymers made with ethylene as
essentially the sole monomer.
- .2 Open Profile Pipe: a pipe product that
has an essentially smooth waterway
braced circumferentially or spirally
with outside corrugations.
 - .1 Pipe stiffness no less than 320 kPa
for open profile pipe at 5%
deflection.

.2 Markings on polyethylene plastic pipe, shall be clearly marked with the following information at intervals of not more than 3 m:

- .1 Pipe Diameter;
- .2 Pipe Stiffness;
- .3 Standard Designation;
- .4 Manufacturer.

.3 Corrugated polyethylene plastic pipe, tubing and fittings to ASTM F405, ASTM F667.

2.2 Granular Bedding
and Backfill Material

.1 Granular backfill material, Section 31 23 10 Excavation, Trenching & Backfilling.

.2 Granular bedding for pipe to Section 32 11 23, Granular Base.

PART 3 - EXECUTION

3.1 Installation

.1 Temporary Erosion and Sedimentation Control:

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been

established.

- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.2 Trenching

- .1 Do trenching Work in accordance with Section 31 23 10 - Excavating, Trenching and Backfilling.
- .2 Obtain Departmental Representative's approval of trench line and depth prior to placing bedding material or pipe.

3.3 Bedding

- .1 Dewater excavation, as necessary, to allow placement of culvert bedding in dry condition.
- .2 Place 200 mm minimum thickness of approved granular material on bottom of excavation and compact to 95% minimum of corrected maximum dry density to ASTM D 698.
- .3 Shape bedding to fit lower segment of pipe exterior so that width of at least 50% of pipe diameter is in close contact with bedding and to camber as directed by Departmental Representative free from sags or high points.
- .4 Place bedding in unfrozen condition.

3.4 Laying Plastic
Pipe

- .1 Begin laying at downstream end of culvert.
- .2 Install pipe in trench by lowering.
- .3 Ensure bottom of pipe is in contact with shaped bedding throughout pipe length.
- .4 Allow water to flow through pipes during construction only as permitted by Departmental Representative.

3.5 Joints for
Polyethylene
Culverts

- .1 Install couplings in accordance with manufacturer's instructions.

3.6 Backfilling

- .1 Backfill around and over culverts with road bed materials as directed by Departmental Representative.
- .2 Place granular backfill material in 150 mm layers to full width, alternately on each side of culvert, so as not to displace it laterally or vertically.
- .3 Compact each layer to 95% corrected maximum dry density maximum density to ASTM D 698.
- .4 Protect installed culvert with minimum 600 mm cover of compacted fill before heavy equipment is permitted to cross.

END OF SECTION
