

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal Procedures
- .2 Section 01 74 21 – Construction/Demolition Waste Management and Disposal
- .3 Section 31 05 16 – Aggregate Materials
- .4 Section 31 23 33.01 – Excavating, Trenching and Backfilling

1.2 REFERENCES

- .1 CSA International
 - .1 CSA B182.6-11, Profile Polyethylene (PE) Sewer Pipe and Fittings for Leak-Proof Sewer Applications
 - .2 CSA B182.8-11, Profile Polyethylene (PE) Storm Sewer Pipe and Drainage Pipe and Fittings
 - .3 CSA –G401, Corrugated Steel Pipe Products

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit list of all pipe, indicating location, type, diameter, length and invert elevations for Departmental Representative review, at least 4 weeks prior to ordering of pipe.
- .3 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for pipes and backfill and include product characteristics, performance criteria, physical size, finish and limitations.
- .4 Samples:
 - .1 Inform Departmental Representative at least 4 weeks before beginning Work, of proposed source of bedding materials and provide access for sampling.
- .5 Certification: to be marked on pipe.
- .6 Test and Evaluation Reports:
 - .1 Submit manufacturer's test data and certification at least 4 weeks prior to beginning Work.

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 Store and protect pipes from damage.
- .3 Replace defective or damaged materials with new.

Part 2 Products

2.1 HIGH DENSITY POLYETHYLENE (HDPE) PIPE

- .1 High Density Polyethylene Pipe: double walled, with a smooth interior surface, conforming to CSA-B182.8. HDPE shall have a minimum stiffness of 320 Kpa.
- .2 Joints: Bell and spigot with integrated gasket.

2.2 CORRUGATED STEEL PIPE

- .1 Corrugated steel pipe: to CSA-G401, aluminized or double zinc corrugated steel pipe, couplers, nuts and bolts. Diameter as noted with 68 x 13 corrugations, or to match pipe to be extended.
- .2 Couplers to be annular corrugated with minimum width of 600 mm and extend 360 degrees around the pipe and fastened with bolts.

2.3 GRANULAR BEDDING AND BACKFILL

- .1 Granular bedding and backfill material to Section 32 11 23 - Aggregate Base Courses.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for pipe culvert installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 PREPARATION

- .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, according to sediment and erosion control plan, specific to site, that complies with requirements of authorities having jurisdiction.
 - .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.

3.3 TRENCHING

- .1 Do trenching work in accordance with Section 31 23 33.01 – Excavating, Trenching and Backfilling.
- .2 Obtain Departmental Representative's approval of trench line and depth prior to placing bedding material or pipe.

3.4 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.
- .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 indicated or as directed by Departmental Representative, free from sags or high points.
- .4 Place bedding in unfrozen condition.

3.5 LAYING HDPE PIPE CULVERTS

- .1 Begin placing pipe at downstream end of culvert with flanged end of first pipe section facing upstream.
- .2 Ensure bottom of each pipe is in contact with shaped bed throughout its length.
- .3 Do not allow water to flow through pipes or excavation during construction except as permitted by Departmental Representative.
 - .1 Water control proposed by the Contractor is subject to review and approval by the Departmental Representative.

3.6 JOINTS: HDPE PIPE CULVERTS

- .1 Joints to be Type 2 silt-tight gasket joints which shall not leak when tested in accordance with ASTM D3212.

3.7 LAYING CORRUGATED STEEL PIPE CULVERTS

- .1 Begin placing pipe at downstream end.
- .2 Ensure bottom of each pipe is in contact with shaped bed throughout its length.
- .3 Lay pipe with outside circumferential laps facing upstream and longitudinal laps or seams at side or quarter points.
- .4 Do not allow water to flow through pipes or excavation during construction except as permitted by Departmental Representative.
 - .1 Water control proposed by the Contractor is subject to review and approval by the Departmental Representative.

3.8 JOINTS: CORRUGATED STEEL CULVERTS

- .1 Corrugated steel pipe: joints / couplings shall be non-corroding, steel culverts aluminized Type II to manufacturer's standards.
- .2 Match corrugations or indentations of coupler with pipe sections before tightening.
 - .1 Tap couplers firmly as they are being tightened, to take up slack and ensure snug fit.
 - .2 Insert and tighten bolts.

3.9 BACKFILLING

- .1 Place and compact granular material for bedding and backfilling in accordance with Section 31 23 33.01 – Excavating Trenching and Backfilling.

END OF SECTION