

PART 1 - GENERAL

1.1 Description

- .1 This section includes, but might not necessarily be limited to, the following:
 - .1 Supply and installation of CSP culvert extensions to one (1) 1800mm diameter culvert, one (1) 1200mm diameter culvert, one (1) 1000mm diameter culvert and two (2) 900mm diameter culverts.

1.2 References

- .1 ASTM International
 - .1 ASTM C 117-13, Standard Test Method for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C 136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D 698-12, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ftn (600 kN-m/mn)).
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.
- .3 CSA International
 - .1 CAN/CSA G401-07, Corrugated Steel Pipe Products.
- .4 Government of Newfoundland and Labrador, Municipal Water, Sewer and Roads Master Construction Specification, latest edition.

1.3 Material Certification

- .1 Submit manufacturer's test data and certification at least two (2) weeks prior to commencing work.
- .2 Certification to be marked on pipe.

1.4 Delivery, Storage and Handling

- .1 Contractor to deliver, store and handle materials in accordance with Product Requirements and manufacturer's instructions.

1.5 Measurement for Payment

- .1 1800mm CSP Culvert Extension (Supply and Install): Measurement in linear metres (LM) along the centre line of the invert of the culvert. This item

includes supply, excavation, trenching, bedding, installation, backfilling and compaction of CSP culvert, complete with all associated fittings, couplers and hardware, as indicated in the Specifications and on the Project Drawings.

- .2 1200mm CSP Culvert Extension (Supply and Install):
Measurement in linear metres (LM) along the centre line of the invert of the culvert. This item includes supply, excavation, trenching, bedding, installation, backfilling and compaction of CSP culvert, complete with all associated fittings, couplers and hardware, as indicated in the Specifications and on the Project Drawings.
- .3 1000mm CSP Culvert Extension (Supply and Install):
Measurement in linear metres (LM) along the centre line of the invert of the culvert. This item includes supply, excavation, trenching, bedding, installation, backfilling and compaction of CSP culvert, complete with all associated fittings, couplers, elbow and hardware, as indicated in the Specifications and on the Project Drawings.
- .4 900mm CSP Culvert Extension (Supply and Install):
Measurement in linear metres (LM) along the centre line of the invert of the culvert. This item includes supply, excavation, trenching, bedding, installation, backfilling and compaction of CSP culvert, complete with all associated fittings, couplers, elbow and hardware, as indicated in the Specifications and on the Project Drawings.
- .5 There will be no additional payment for cutting, removal and disposal of damaged or deteriorated culvert ends to ensure an adequate fit for the extension to structurally sound existing culvert.

PART 2 - PRODUCTS

- 2.1 Corrugated Steel Pipe.1 Corrugated Steel Pipe: 2.8mm thickness, Aluminized Type II or double-zinc coated and in accordance with Section 02434 of the Government of Newfoundland and Labrador, Municipal Water, Sewer and Roads Master Construction Specification, latest edition. The outlet end of the culvert will be beveled 1:1:5 to match the slope of the armour stone.

- 2.2 Granular Bedding and Backfill .1 The bedding material and backfill material will be Granular Sub-base as provided by Parks Canada. The material is available for pick-up at Rocky Barachois Brook Pit.

PART 3 - EXECUTION

- 3.1 Bedding .1 Dewater excavation, as necessary, to allow placement of culvert bedding in the dry.
- .2 Place minimum thickness of 200 mm of approved granular material on bottom of excavation and compact to minimum 100% maximum density to ASTM D 698.
- .3 Shape bedding to fit lower segment of pipe exterior so that width of at least 25% 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.

- 3.2 Laying Corrugated Steel Pipe Culverts .1 Commence pipe extensions at downstream end of existing culvert. Some existing culvert ends may have to be cut to ensure an adequate fit for the extensions or to remove damaged or deteriorated section of culvert, as approved by the Departmental Representative.
- .2 Ensure bottom of pipe is in contact with shaped bed or compacted fill throughout its length.
- .3 Do not allow water to flow through pipes during construction except as permitted by Departmental Representative.

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

3.4 Backfilling

- .1 Place backfill material, approved by Departmental Representative, in 150 mm layers to full width, alternately on each side of culvert, so as not to displace it laterally or vertically.
- .2 Compact each layer to 100% maximum density to ASTM D 698 taking special care to obtain required density under haunches.
- .3 Protect installed culvert with minimum 600 mm cover of compacted fill before heavy equipment is permitted to cross. During construction, width of fill, at its top, to be at least twice diameter or span of pipe and with slopes not steeper than 1:2.
- .4 Hand place and fit smaller rock, suitable for the purpose, around the entire culvert to protect the culvert during installation of the larger filter stone and armour stone. This will be completed in consultation with and to the approval of the Departmental Representative.

3.5 End Treatments

- .1 Outlet end of culvert to be beveled to match the slope of the surrounding filter stone and armour stone.
- .2 Obtain approval of culvert installation by Departmental Representative prior to installation of any armour stone.