

Part 1 General

1.1 SECTION INCLUDES

- .1 Materials and installation for pipe culverts.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 61 00 - Common Product Requirements.
- .3 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .4 Section 31 23 33.01 - Excavating, Trenching and Backfilling.
- .5 Section 31 24 13 - Roadway Embankments.

1.3 REFERENCES

- .1 Standard Specification, Department of Transportation and Infrastructure of New Brunswick.
- .2 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM C76M-14, Standard Specification for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe (Metric).
 - .2 ASTM C117-13, Standard Test Method for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .3 ASTM C136-14, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .4 ASTM C144-11, Standard Specification for Aggregate for Masonry Mortar.
 - .5 ASTM C443M-12, Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets (Metric).
 - .6 ASTM D698-12e2, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 - .7 ASTM D1248-12, Standard Specification for Polyethylene Plastics Extrusion Materials For Wire and Cable.
- .3 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.
- .4 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-A3000-13, Cementitious Materials Compendium
 - .2 CAN/CSA-A257 Series-14, Standards for Concrete Pipe and Manhole Sections.

1.4 SUBMITTALS

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Inform the Departmental Representative at least four (4) weeks prior to beginning Work, of proposed source of bedding materials and provide access for sampling.
- .3 Submit manufacturer's test data and certification at least four (4) weeks prior to beginning Work.
- .4 Certification to be marked on pipe.
- .5 Submit to the Departmental Representative one (1) copy of manufacturer's installation instructions.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Divert unused metal materials from landfill to metal recycling facility as approved by the Departmental Representative.
- .4 Divert unused concrete materials from landfill to local quarry or facility as approved by the Departmental Representative.
- .5 Divert unused aggregate materials from landfill to quarry or facility for reuse as approved by the Departmental Representative.
- .6 Fold up metal banding, flatten and place in designated area for recycling.

1.7 SCHEDULING

- .1 Schedule Work to minimize interruptions to existing services and to maintain existing flow during construction.
- .2 Submit schedule of expected interruptions for approval and adhere to approved schedule.

Part 2 Products

2.1 CONCRETE PIPE

- .1 Reinforced circular concrete pipe: to CAN/CSA-A257, 750 mm and 900 mm dia, Class 100D (ASTM Class IV) as indicated.

- .2 Rubber gaskets for joints: to CAN/CSA-A257.
- .3 Lifting holes:
 - .1 Pipe 900 mm and less diameter: no lift holes.
 - .2 Pipe greater than 900 mm diameter: lift holes not to exceed two in piece of pipe.
 - .3 Provide pre-fabricated plugs to effectively seal lift holes after installation of pipe.

2.2 GRANULAR BEDDING AND BACKFILL

- .1 Granular bedding and backfill material to Section 31 23 33.01 - Excavating, Trenching and Backfilling.

Part 3 Execution

3.1 PREPARATION

- .1 Clean pipes and fittings of debris and water before installation, and remove defective materials from site to approval of the Departmental Representative.

3.2 TRENCHING

- .1 Do trenching Work in accordance with Section 31 23 33.01 - Excavating Trenching and Backfilling.
- .2 Obtain the Departmental Representative's approval of trench line and depth prior to placing bedding material or pipe.
- .3 Culverts shall be disposed of in accordance with Section 01 74 21 – Construction/Demolition of Waste Management and Disposal.

3.3 BEDDING

- .1 Dewater excavation, as necessary, to allow placement of culvert bedding in dry condition.
- .2 Place minimum thickness of 200 mm of approved granular material on bottom of excavation and compact to minimum 95% of corrected maximum dry density, obtained from ASTM D698.
- .3 Place bedding in unfrozen condition.

3.4 LAYING CONCRETE PIPE CULVERTS

- .1 Begin at downstream end of culvert with flanged end of first pipe section facing upstream.
- .2 Ensure barrel of each pipe is in contact with shaped bed throughout its length.
- .3 Do not allow water to flow through pipes during construction except as permitted by the Departmental Representative.

3.5 JOINTS: CONCRETE PIPE CULVERTS

- .1 Joints may be made with rubber gaskets.
 - .1 Rubber gasket joints:
 - .1 Install to manufacturer's recommendations.
 - .2 Ensure that tapered ends are fully entered into flanged ends.

END OF SECTION