

PART 1 - GENERAL

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| 1.1 RELATED
REQUIREMENTS | .1 | Section 31 23 33.01 - Excavating, Trenching and Backfilling. |
| | .2 | Section 33 41 00 - Storm Utility Drainage Piping. |
| 1.2 REFERENCES | .1 | ASTM International
.1 ASTM D 698-12, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft ³ (600 kN-m/m ³)). |
| | .2 | Canada Green Building Council (CaGBC)
.1 LEED Canada-NC-2009, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations. |
| | .3 | Newfoundland and Labrador Department of Municipal Affairs.
.1 Municipal Water, Sewer and Roads Master Construction Specifications, latest revision. |
| 1.3 ACTION AND
INFORMATIONAL
SUBMITTALS | .1 | Submit in accordance with Section 01 33 00 - Submittal Procedures. |
| | .2 | Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for maintenance holes and catch basin structures and include product characteristics, performance criteria, physical size, finish and limitations. |
| | .3 | Shop Drawings:
.1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Newfoundland and Labrador, Canada. |

1.3 ACTION AND
INFORMATIONAL
SUBMITTALS
(Cont'd)

- .4 Sustainable Design Submittals:
 - .1 LEED Canada submittals: in accordance with Section 01 35 21 - LEED Requirements.
 - .2 Construction Waste Management:
 - .1 Submit project Waste Management Plan highlighting recycling and salvage requirements.
 - .2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 75% of construction wastes were recycled or salvaged.
 - .3 Recycled Content:
 - .1 Submit listing of recycled content products used, including details of required percentages or recycled content materials and products, showing their costs and percentages of post-consumer and post-industrial content, and total cost of materials for project.
 - .4 Regional Materials: submit evidence that project incorporates required percentage 20% of regional materials and products, showing their cost, distance from project to furthest site of extraction or manufacture, and total cost of materials for project.

1.4 QUALITY
ASSURANCE

- .1 Submit in accordance with Section 01 45 00 - Quality Control.
- .2 Certifications:
 - .1 Submit manufacturer's test data and certification at least 4 weeks prior to beginning Work. Include manufacturer's drawings, information and shop drawings where pertinent.
 - .2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - .3 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures.

1.5 DELIVERY,
STORAGE AND
HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and 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 and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect maintenance holes and catch basin structures from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan related to Work of this Section and in accordance with Section 01 35 21 - LEED Requirements.
- .5 Packaging Waste Management: remove for reuse or return of pallets, crates, padding, banding, and packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal and Section 01 35 21 - LEED Requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Precast manhole sections, precast catch basin sections, ladder rungs, adjustment rings, non-shrink grout, frames, gratings and covers, precast joints, in accordance with Section 02601 of the Newfoundland and Labrador Municipal Water, Sewer and Roads Master Construction Specifications.
- .2 Granular bedding: in accordance with Section 33 41 00- Storm Utility Drainage Piping.

2.1 MATERIALS
(Cont'd)

- .3 Backfill: Type 3 in accordance with Section 31 23 33.01 - Excavating, Trenching and Backfilling.
- .4 Unshrinkable fill: in accordance with Section 31 23 33.01 - Excavating, Trenching and Backfilling.

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 maintenance holes and catch basin structures 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 EXCAVATION AND BACKFILL

- .1 Excavate and backfill in accordance with Section 31 23 33.01 - Excavating Trenching and Backfilling and as indicated.
- .2 Obtain approval of Departmental Representative before installing outfall structures, maintenance holes or catch basins.

3.3 INSTALLATION

- .1 Construct units in accordance with details indicated, plumb and true to alignment and grade.
- .2 Complete units as pipe laying progresses.
 - .1 Maximum of 3 units behind point of pipe laying will be allowed.

3.3 INSTALLATION
(Cont'd)

- .3 Dewater excavation to approval of Departmental Representative and remove soft and foreign material before placing concrete base.
- .4 Cast bottom slabs directly on undisturbed ground.
- .5 Set precast concrete base on 150 mm minimum of granular bedding compacted to 100% maximum density to ASTM D 698.
- .6 Precast units:
 - .1 Set bottom section of precast unit in bed of cement mortar and bond to concrete slab or base.
 - .2 Make each successive joint watertight with Departmental Representative approved rubber ring gaskets.
 - .3 Plug lifting holes with precast concrete plugs set in cement mortar or mastic compound.
- .7 For sewers:
 - .1 Place stub outlets and bulkheads at elevations and in positions indicated.
 - .2 Bench to provide smooth U-shaped channel.
 - .1 Side height of channel to be 0.5 times diameter of sewer.
 - .2 Slope adjacent floor at 1 in 20.
 - .3 Curve channels smoothly.
 - .4 Slope invert to establish sewer grade.
- .8 Compact granular backfill to 95% maximum density to ASTM D 698.
- .9 Place unshrinkable backfill in accordance with Section 31 23 33.01 - Excavating, Trenching and Backfilling.
- .10 Installing units in existing systems:
 - .1 Where new unit is installed in existing run of pipe, ensure full support of existing pipe during installation, and carefully remove that portion of existing pipe to dimensions required and install new unit as specified.
 - .2 Make joints watertight between new unit and existing pipe.

- 3.3 INSTALLATION (Cont'd)
- .10 (Cont'd)
- .3 Where deemed expedient to maintain service around existing pipes and when systems constructed under this project are ready for operation, complete installation with appropriate break-outs, removals, redirection of flows, blocking unused pipes or other necessary work.
- .11 Place frame and cover on top section to elevation as indicated.
- .1 If adjustment required use concrete ring.
- .12 Clean units of debris and foreign materials.
- .1 Remove fins and sharp projections.
- .2 Prevent debris from entering system.
- .13 Install safety platforms in maintenance holes having depth of 5 m or greater, as indicated.
- 3.4 FIELD QUALITY CONTROL
- .1 Leakage Test:
- .1 Install watertight plugs or seals on inlets and outlets of each new sanitary sewer maintenance hole and fill maintenance hole with water.
- .2 Leakage not to exceed 0.3% per hour of volume of maintenance hole.
- .3 If permissible leakage is exceeded, correct defects.
- .4 Repeat until approved by Departmental Representative.
- .5 Departmental Representative will issue Test Certificate for each maintenance hole passing test.
- 3.5 TESTING
- .1 Inspection and testing of bedding and backfill will be carried out by independent inspection and testing agency designated by Departmental Representative. Costs of these tests will be paid by Contractor in accordance with Section 01 29 83 - Payment Procedures for Testing Laboratory Services and Section 01 45 00 - Quality Control.

- 3.6 CLEANING
- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
 - .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal and Section 01 35 21 - LEED Requirements.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.