

This specification outlines the requirements for the supply and installation of foundation and underslab drainage.

## PART 1 REFERENCES

This specification refers to the following standards, specifications, or publications:

CSA Group

A23.1/A23.2      Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete

B1800      Thermoplastic Non-pressure Piping Compendium  
(Consists of B181.1, B181.2, B181.3, B181.5, B182.1, B182.2, B182.4, B182.6, B182.7, B182.8, B182.11 and B182.13)

G401      Corrugated Steel Pipe and Buried Structures Products

Canadian General Standards Board (CGSB)

CAN/CGSB-51.34      Vapor Barrier, Polyethylene Sheet for Use in Building Construction

## PART 2 GENERAL

### 2.1 SUBMITTALS

- .1 Submit in accordance with Section 01340 – Shop Drawings, Samples and Submissions.
- .2 Submit manufacturer's test data and certification at least two (2) weeks prior to commencing work.
  - .1 Certification to be marked on pipe.
  - .3 Submit manufacturer's information data sheets and instructions.

### 2.2 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01600 – Material and Equipment 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 in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- .2 Store and protect from nicks, scratches, and blemishes.
- .3 Replace defective or damaged materials with new.

## 2.3 SITE CONDITIONS

- .1 Examine sub-surface investigation report.
- .2 Refer to Section 02223 – Excavating, Trenching and Backfilling, dewatering if excavation is below existing water table.
- .3 Known underground utility lines and buried objects are as indicated on plans.

## PART 3 PRODUCTS

### 3.1 BEDDING AND SURROUND MATERIALS

- .1 Coarse filter aggregate in accordance with CSA A23.1/A23.2, Group 1 20 to 5 mm.
- .2 Fine filter aggregate in accordance with CSA A23.1/A23.2.
- .3 Rigid Plastic pipe and fittings in accordance with CSA B1800.
- .4 Perforated ~~C~~orrugated steel pipe, couplers and fittings in accordance with CSA G401 ~~with asphalt coating~~, inside diameter as indicated on the drawings.
- .5 Polyethylene sheet in accordance with CAN/CGSB-51.34.
- .6 Geotextile filter fabric in accordance with Section 02897 – Geotextile (Filter Fabric).

### 3.2 BACKFILL MATERIAL

- .1 Type 2, in accordance with Section 02223 - Excavating, Trenching and Backfilling or as indicated.
- .2 Excavated or graded material existing on site may be suitable to use if approved by the Owner.

## PART 4 EXECUTION

### 4.1 INSPECTION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for drainage

materials installation in accordance with manufacturer's written instructions.

- .1 Visually inspect substrate in presence of the Owner.
- .2 Inform the Owner 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 the Owner.
- .4.2 Ensure graded subgrade conforms with required drainage pattern before placing filter bed material.
- .2.3 Report to Owner~~Make sure~~ improper slopes, unstable areas, areas requiring additional compaction or other unsatisfactory conditions are corrected to the approval of the Owner.
- .4 Ensure foundation wall, damp proofing, and water-proofing, and rigid insulation have been inspected and accepted/approved by the Owner before placing bedding material.
- .3.5 Begin installation of foundation drainage after deficiencies have been corrected.

#### 4.2 BEDDING PREPARATION/INSTALLATION

- .1 Pipe bedding: Cut trenches in compacted sub-base and place bedding material in uniform layers not exceeding 100 mm compacted thickness minimum of coarse filter aggregate and tamp to depth as indicated to grade.
- .2 Shape bed true to grade and to provide continuous, uniform bearing surface for pipe.
- .3 Shape transverse depressions, as required, to suit joints.
- .4 Compact each layer full width of bed to minimum 95% corrected maximum dry density, where the maximum dry density is determined in accordance with to-ASTM D698 and corrected as specified in Section 02501 – Corrected Maximum Dry Density.
- .4.5 Fill excavation below design elevation of bottom of specified bedding with compacted bedding material or lean mix concrete.

#### .24.3 PIPE OR TUBING INSTALLATION/LAYING:

- .1 Ensure pipe interior and coupling surfaces are clean before laying.
- .2 Lay perforated pipe to a minimum slope of 1:100 or grade as indicated. Face perforations and coupling slots downward.

- .3 Lay non-perforated pipe to grade as specified, from perforated pipe to disposal source. Make joints watertight.
- .4 Do not use shims to establish pipe slope. Grade bedding to establish pipe slope.
- .5 Use fittings recommended by manufacturer except where indicated otherwise.
- .6 Install end plugs at ends of collector drains to Pprotect pipe ends from damage and ingress of foreign material.
- .7 Connect pipe to storm drain or sump pit by appropriate adapters manufactured for this purpose.
- .8 Provide cleanouts on pipe at changes of pipe direction and in runs greater than 15 m.
- .9 Provide flush cleanouts where indicated in Contract Documents.
- .3.10 Provide certificate of quality compliance upon satisfactory completion of installation.

4.34.4 PIPE SURROUND MATERIAL FILTER BED BACKFILL:

- .1 Upon completion of pipe laying and after Owner has inspected and approved Work in place, surround and cover pipe as indicated. Place filter bed backfill after pipe installation is approved.
- .2 Hand pPlace surround material in uniform layers not exceeding minimum of 150 mm compacted thickness coarse filter aggregate on each side of perforated pipe and minimum of 300 mm thickness coarse filter aggregate over perforated pipe.
- .3 Compact each layer from pipe invert to mid-height of pipe to at least 95% of corrected maximum dry density, where the maximum dry density is determined in accordance with to-ASTM D698 and corrected as specified in Section 02501 – Corrected Maximum Dry Density.
- .4 Compact each layer from mid-height of pipe to underside of backfill to at least 90% of corrected maximum dry density, where the maximum dry density is determined in accordance with to-ASTM D698 and corrected as specified in Section 02501 – Corrected Maximum Dry Density.
- .2.5 Provide flush clean-outs for systems where nature of filter material or ingress of deleterious material warrants maintenance.
- .6 Place top seal of polyethylene or building paper to prevent surface infiltration of fine materials into coarse filter material, thereby blocking ground water infiltration.

4.44.5 BACKFILL MATERIAL

- .1 Place minimum of 150 mm thickness clean sand on each side and over non-perforated pipe.
- .1 Place backfill material above filter bed pipe surround in uniform layers not exceeding in 150 mm lifts. Consolidate tamping lightly. Prevent displacement of pipe.
- .2 Under paving and walks, compact backfill to at least 95% corrected maximum dry density, where the maximum dry density is determined in accordance with to-ASTM D698 and corrected as specified in Section 02501 – Corrected Maximum Dry Density. In other areas, compact to at least 90% corrected maximum dry density.
- .3 Use appropriate compaction equipment.
  - .1 Conduct hand tamping around confined areas of pipe.
  - .2 Do not use water or other hydraulic means to place or consolidate backfill material.

4.6 FOUNDATION

- .1 Extend coarse filter aggregate to and along foundation wall minimum 300 mm above top of pipe. Place 150 mm thickness of fine filter aggregate over coarse filter aggregate.
- .2 Make penetrations through foundation structures only after receipt of written approval from the Owner.

**PART 5 PAYMENT**

**5.1 MEASUREMENT FOR PAYMENT**

- .1 All work associated with the installation of foundation and underslab drainage will be measured as a lump item within a 1.5 metre perimeter outside the foundation or slab.

**5.2 BASIS OF PAYMENT**

- .1 All costs associated with the work outlined in this specification shall be deemed to be included in the appropriate unit and lump sum prices quoted as outlined in the Measurement for Payment subsection of this section and as included in the MERX Schedule of Quantities and Prices.

Not For Construction