

## **Part 1      General**

### **1.1      Section Includes**

- .1      Materials and installation for foundation and underslab drainage.

### **1.2      Related Sections**

- .1      Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

### **1.3      References**

- .1      American Society for Testing and Materials International, (ASTM)
  - .1      ASTM D698-00a, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
- .2      Canadian General Standards Board (CGSB)
  - .1      CAN/CGSB-34.22-94, Asbestos-Cement Drain Pipe.
- .3      Canadian Standards Association (CSA International)
  - .1      CSA-A23.1/A23.2-00(June 2001), Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
  - .2      CSA B1800-02, Plastic Non-pressure Pipe Compendium - B1800 Series (Consists of B181.1, B181.2, B181.3, B181.5, B182.1, B182.2, B182.4, B182.6, B182.7, B182.8 and B182.11).
    - .1      CSA B182.2-02, PVC Sewer Pipe and Fittings (PSM Type).
  - .3      CSA-G401-01, Corrugated Steel Pipe Products.
- .4      Department of Justice Canada (Jus)
  - .1      Canadian Environmental Protection Act, 1999 (CEPA)
- .5      Transport Canada (TC)
  - .1      Transportation of Dangerous Goods Act, 1992 (TDGA)

### **1.4      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      Collect and separate for disposal packaging material for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .4      Divert unused concrete, aggregate materials, metal materials, and geotextiles from landfill to recycling facilities or as otherwise approved by Contract Administrator.
- .5      Place materials defined as hazardous or toxic in designated containers.

- .6 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
- .7 Dispose of unused asbestos cement pipe in accordance with regulations governing the disposal of hazardous materials.

## **1.5 Site Conditions**

- .1 Known underground utility lines and buried objects are as indicated on plans.
- .2 Ensure that existing weeping lines are connected to the new sump pumps. Do not attach existing lines to new lines. Carry separately drainage from existing weeping lines to new sanitary pump.

## **Part 2 Products**

### **2.1 Bedding and Surround Materials**

- .1 Coarse filter aggregate: to CSA-A23.1/A23.2, Group 1 20-5 mm .
- .2 Flexible plastic tubing and fittings to NQ 3624-115. Perforated and Non-perforated nominal inside diameter 100 mm.
- .3 Rigid plastic pipe and fittings: to CSA-B182.1, size NPS 4, complete with fittings.
- .4 Geotextile filter:
  - .1 Acceptable material: Filter Soc by Princo, or approved equal in accordance with B6.
- .5 Cleanouts: As recommended by Manufacturer
- .6 Locations: Perforated perimeter piping as shown in drawings. Non-perforated carrier piping to sump pumps. Perforated piping in crawlspace as shown in drawings.

### **2.2 Backfill Material**

- .1 Type 2, in accordance with Section 31 23 10 - Excavating, Trenching and Backfilling.
- .2 Excavated or graded material existing on site may be suitable to use if approved by Contract Administrator.

## **Part 3 Execution**

### **3.1 Examination**

- .1 Ensure graded subgrade conforms to required drainage pattern before placing bedding material.

- .2 Ensure improper slopes, unstable areas, areas requiring additional compaction or other unsatisfactory conditions are corrected to approval of Contract Administrator.
- .3 Ensure foundation wall, waterproofing and rigid insulation have been installed and approved by Contract Administrator before placing bedding material.

### **3.2 Bedding Preparation**

- .1 Cut trenches into undisturbed subgrade around the perimeter of the new building.
- .2 Cut carrier trenches to depth and slope required.
- .3 Compact base of trench for effective water stop.
- .4 Place perforated sand place bedding material in uniform layer not exceeding 150 mm compacted thickness.
- .5 Shape bed true to grade and to provide continuous, uniform bearing surface for pipe.
- .6 Shape transverse depressions, as required, to suit joints. Compact each layer full width of bed to at least 95% of corrected maximum dry density.
- .7 Fill excavation below design elevation of bottom of specified bedding with compacted bedding material.

### **3.3 Pipe Insulation**

- .1 Place 38 mm of levelling sand in compacted trench.
- .2 Ensure pipe interior and coupling surfaces are clean before laying.
- .3 Lay perforated pipe level but to slope of 1:100. For pipe face perforations and coupling slots downward.
- .4 Lay non-perforated pipe to slope of 1:50 from perforated pipe to disposal area. Make joints watertight.
- .5 Grade bedding to establish pipe slope.
- .6 Install end plugs at ends of collector drains to protect pipe ends from damage and ingress of foreign material.
- .7 Connect non-perforated pipe to drain sump pit storm sewer by appropriate adapters manufactured for this purpose.
- .8 Provide cleanouts on non-perforated pipe at changes of pipe direction and in runs greater than 15 m, or at edge of walls where cleanouts projecting above inside finished floors will not impede activity.
- .9 Provide flush cleanouts where directed by Contract Administrator.
- .10 Connect drainage system to building storm sewers.

**3.4 Pipe of Tubing Surround Material**

- .1 Upon completion of pipe laying and after Contract Administrator has inspected Work in place, surround and cover pipe and install geotextile filter as indicated.
- .2 Hand place surround material in uniform layers not exceeding 150 mm compacted thickness, as indicated. Do not drop material within 1 m of pipe.
- .3 Place layers uniformly and simultaneously on each side of pipe.
- .4 Compact each layer from pipe invert to mid-height of pipe to at least 95% of corrected maximum dry density.
- .5 Compact each layer from mid-height of pipe to underside of backfill to at least 90% of corrected maximum dry density.

**3.5 Backfill Material**

- .1 Place backfill material above pipe surround in uniform layers not exceeding 150 mm compacted thickness up to grades as indicated.
- .2 Under paving and walks, compact backfill to at least 95% corrected maximum dry density. In other areas, compact to at least 90% corrected maximum dry density.

**END OF SECTION**