

## **Part 1 General**

### **1.1 APPLICATION**

- .1 This section deals with the backfilling behind the Berlin wall.

### **1.2 REFERENCES**

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM C117-04, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
  - .2 ASTM C136-05, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .3 ASTM D422-63 2002, Standard Test Method for Particle-Size Analysis of Soils.
  - .4 ASTM D698-00ae1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft)
  - .5 ASTM D1557-02e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft)
  - .6 ASTM D4318-05, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-8.2-88, Sieves, Testing, Woven Wire, Metric.

### **1.3 DEFINITIONS**

- .1 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .2 Recycled fill material: material, considered inert, obtained from alternate sources and engineered to meet requirements of fill areas.
- .3 Unsuitable materials:
  - .1 Weak, chemically unstable, and compressible materials.
  - .2 Frost susceptible materials:
    - .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 and ASTM C136: Sieve sizes to CAN/CGSB-8.2.

- .2 Table

Sieve Designation	% Passing
2.00 mm	100
0.10 mm	45 - 100
0.02 mm	10 - 80
0.005 mm	0 - 45

- .3 Coarse grained soils containing more than 20% by mass passing 0.075 mm sieve.

- .4 Unshrinkable fill: very weak mixture of cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

#### **1.4 ACTION/INFORMATIONAL SUBMITTALS**

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Quality Control: in accordance with Section 01 45 00 - Quality Control.
- .3 Preconstruction Submittals:
  - .1 Submit construction equipment list for major equipment to be used in this section prior to start of Work.
  - .2 Submit records of underground utility locates, indicating: location plan of existing utilities as found in field and a location plan of relocated and abandoned services, as required.
- .4 Samples
  - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Inform Departmental Representative at least four (4) weeks prior to beginning Work, of proposed source of fill materials and provide access for sampling.
  - .3 Submit 70 kg samples of type of fill and unshrinkable fill specified.
  - .4 Ship samples prepaid to Departmental Representative, in tightly closed containers to prevent contamination and exposure to elements.

#### **1.5 QUALITY ASSURANCE**

- .1 Do not use soil material until written report of soil test results is approved by Departmental Representative.
- .2 Health and Safety Requirements:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety 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 Divert excess aggregate materials from landfill to local quarry or recycling facility for reuse.

### **Part 2 Products**

#### **2.1 MATERIALS**

- 2.1 The stone for filling behind the Berlin wall will consist of particles hard, resistant and exempt from clods of clay, from organic matters and from quite different harmful substance. It has to be resistance in the deterioration and in the destruction in conditions of frost thaw, of exhibition in the water and has to be of a quality which ensures the continuity of the structure in the weather conditions in which it must be used.
- 3.2 Relative density: to ASTM C127, 2.65

~~4.3~~ Caliber : clean stone 200 – 50 mm

~~5.4~~ The size grading of the stone must be spread as:

.1 D85 : 175 mm

.2 D50 : 140 mm

.3 D15 : 70 mm

~~6.5~~ Quality of materials in compliance with NQ 2560-114

### **Part 3 Execution**

#### **3.1 PREPARATION/PROTECTION**

- .1 Protect existing features in accordance with Section [01 56 00 - Temporary Barriers and Enclosures] and applicable local regulations.
- .2 Protect buried services that are required to remain undisturbed.

#### **3.2 FILL TYPES**

- .1 Use types of fill as indicated on drawings.
  - .1 Backfill between timber crib and Berlin Wall
    - .1 Do not use backfill material which is frozen or contains ice, snow or debris.
    - .2 Place backfill material on a clean and no frozen surface, exempts from snow and ice

#### **3.3 RESTORATION**

- .1 Upon completion of Work, remove waste materials and debris in accordance to Section 01 74 21 - Construction/Demolition Waste Management and Disposal, trim slopes, and correct defects as directed by Departmental Representative.
- .2 Reinstate pavements [and sidewalks] disturbed by excavation to thickness, structure and elevation which existed before excavation.
- .3 Clean and reinstate areas affected by Work as directed by Departmental Representative.
- .4 Use temporary plating to support traffic loads over unshrinkable fill for initial 24 hours.
- .5 Protect newly graded areas from traffic and erosion and maintain free of trash or debris.

**END OF SECTION**