

## **1 General**

### **1.01 SECTION INCLUDES**

- .1 The work under this section shall include the supply of all labour, supervision, materials, plant, equipment and transportation necessary to complete granular base material installation as shown on the drawings, as specified herein and as directed by the Departmental Representative, complete in every respect.

### **1.2 RELATED SECTIONS**

- .1 Section 31 05 17 - Aggregate Materials

### **1.3 REFERENCES**

- .1 American Society for Testing and Materials (ASTM):
  - .1 ASTM C117-95, Standard Test Methods for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.
  - .2 ASTM C136-96a, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .3 ASTM D422-63 (1998), Standard Test Method for Particle-Size Analysis of Soils.
  - .4 ASTM D698-00a, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (600kN-m/m<sup>3</sup>).
  - .5 ASTM D4318-00, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB):
  - .1 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

### **1.4 MEASUREMENT FOR PAYMENT**

- .1 Supply, placement and compaction of Granular Base will be measured for payment in Tonnes of material acceptably incorporated into the work.

### **1.5 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver and stockpile aggregates in accordance with Section 31 05 17 - Aggregate Materials.

## **2 Products**

### **2.1 MATERIALS**

- .1 Granular base: material in accordance with following requirements:
  - .1 Crushed stone or gravel.
  - .2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.2.

.3 Table:

Sieve Size	% Passing
37.5 mm	100
31.5 mm	95-100
25.0 mm	83-100
19.0 mm	70-90
12.5 mm	55-78
9.5 mm	45-72
4.75 mm	30-57
2.36 mm	20-46
1.18 mm	14-35
0.300 mm	5-19
0.075 mm	0-6

.4 Other properties as follows:

- .1 Liquid Limit: to ASTM D4318, Maximum 20.
- .2 Plasticity Index: to ASTM D4318, Maximum 3. Micro-Deval: to MTO LS-618, Maximum 25% loss.
- .4 Freeze/Thaw: to MTO LS-614, Maximum 20%.
- .5 Gravel Base shall have a minimum of 40% of the particles, by mass, having at least one fractured face, when tested in accordance with ASTM D5821.

### 3 Execution

#### 3.01 SEQUENCE OF OPERATION

- .1 Place granular base after subbase surface is inspected and approved by the Departmental Representative.
- .2 Placing:
  - .1 Construct granular base to depth and grade in areas indicated.
  - .2 Ensure no frozen material is placed.
  - .3 Place material only on clean unfrozen surface, free from snow and ice. Begin spreading base material on crown line or on high side of one-way slope.
  - .5 Place material using methods which do not lead to segregation or degradation of aggregate.
  - .6 Place material to full width in uniform layers not exceeding 150 mm compacted thickness. The Departmental Representative may authorize thicker lifts (layers) if specified compaction can be achieved.
  - .7 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
  - .8 Remove and replace that portion of layer in which material becomes segregated during spreading.
- .3 Compaction Equipment:
  - .1 Compaction equipment to be capable of obtaining required material densities.

- .4 Compacting:
  - .1 Compact to density not less than 98% of maximum dry density in accordance with ASTM D698.
  - .2 Shape and roll alternately to obtain smooth, even and uniformly compacted base.
  - .3 Apply water as necessary during compacting to obtain specified density.
  - .4 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by the Departmental Representative.
  - .5 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

### 3.02 SITE TOLERANCES

- .1 Finished subbase surface to be within 19 mm of elevation as indicated but not uniformly high or low.

### 3.03 PROTECTION

- .1 Maintain finished base in condition conforming to this section until succeeding material is applied or until acceptance by the Departmental Representative.

**END OF SECTION**