

## **PART 1 - GENERAL**

### **1.1 RELATED SECTIONS**

- .1 Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
- .2 Section 31 05 17 - Aggregate Materials.
- .3 Section 31 23 10 – Excavating, Trenching & Backfilling.
- .4 Section 32 11 23 – Aggregate Base Courses.

### **1.2 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 C131-96, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
  - .3 ASTM C136-96a, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .4 ASTM D422-63(1998), Standard Test Method for Particle-Size Analysis of Soils.
  - .5 ASTM D698-00a, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft<sup>3</sup>) (600kN-m/m<sup>3</sup>).
  - .6 ASTM D1557-00, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft<sup>3</sup>) (2,700kN-m/m<sup>3</sup>).
  - .7 ASTM D1883-99, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
  - .8 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-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
  - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

### **1.3 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
- .2 Divert unused granular material from landfill to local facility as approved by Departmental Representative.

**PART 1 - GENERAL**  
**(CONT'D)**

**1.4 MEASUREMENT FOR PAYMENT**

- .1 Granular Sub-Base: Measure granular sub-base in cubic meters place measure (CMPM ) of compacted material incorporated into work within the areas and to the thicknesses indicated on the drawings, unless otherwise specified.
- .2 No separate measurement for payment to be made for Granular Sub-Base material used in new electrical trenches. Include all costs in the electrical portion of the lump sum price.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- .1 Granular sub-base material: in accordance with Section 31 05 17 - Aggregate Materials and following requirements:
  - .1 Crushed, pit run or screened stone, gravel or sand.
  - .2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.
  - .3 Table

Sieve Designation	% Passing
50 mm	75-100
15.9 mm	45-80
4.75 mm	25-55
1.20 mm	12-35
0.300 mm	7-20
0.075 mm	3-8
  - .4 Other Properties as follows:
    - .1 Liquid Limit: to ASTM D4318, Maximum 25.
    - .2 Plasticity Index: to ASTM D4318, Maximum 6.
    - .3 Los Angeles degradation: to ASTM C131. Max% Loss by mass: 40.

**PART 3 - EXECUTION**

**3.1 PLACING**

- .1 Place granular sub-base after subgrade is inspected and approved by Departmental Representative.
- .2 Construct granular sub-base to depth and grade in areas indicated.

### **PART 3 - EXECUTION**

#### **(CONT'D)**

#### **3.1 PLACING**

##### **(CONT'D)**

- .3 Ensure no frozen material is placed.
- .4 Place material only on clean unfrozen surface, free from snow or ice.
- .5 Begin spreading sub-base material on crown line or high side of one-way slope.
- .6 Place granular sub-base materials using methods which do not lead to segregation or degradation.
- .7 Place material to full width in uniform layers not exceeding 150 mm compacted thickness. Departmental Representative may authorize thicker lifts (layers) if specified compaction can be achieved.
- .8 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
- .9 Remove and replace portion of layer in which material has become segregated during spreading.

#### **3.2 COMPACTION**

- .1 Compaction equipment to be capable of obtaining required material densities.
- .2 Compacting
  - .1 Compact to density not less than 100% corrected maximum dry density.
  - .2 Shape and roll alternately to obtain smooth, even and uniformly compacted base.
  - .3 Apply water as necessary during compaction to obtain specified density.
  - .4 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by Departmental Representative
  - .5 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

#### **3.3 SITE TOLERANCES**

- .1 Finished sub-base surface to be within 10 mm of elevation as indicated but not uniformly high or low.

**PART 3 - EXECUTION**  
**(CONT'D)**

**3.4    PROTECTION**

- .1      Maintain finished sub-base in condition conforming to this section until succeeding base is constructed, or until granular sub-base is accepted by Departmental Representative.