

**PART 1**      **GENERAL**

**1.1**      **RELATED REQUIREMENTS**

- .1      Section 31 05 10 – Corrected Maximum Dry Density for Fill
- .2      Section 31 05 16 – Aggregates for Earthwork

**1.2**      **REFERENCES**

- .1      .1      American Society for Testing and Materials (ASTM)
  - .1      ASTM C 117-95, Standard Test Methods for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.
  - .2      ASTM C 131-96, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
  - .3      ASTM C 136-96a, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .4      ASTM D 422-63(1998), Standard Test Method for Particle-Size Analysis of Soils.
  - .5      ASTM D 698-00a, 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 D 1557-00, 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 D 1883-99, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
  - .8      ASTM D 4318-00, 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 19 - Construction/ Demolition Waste Management and Disposal.
- .2      Divert unused granular material from landfill to local quarry facility as approved by Departmental Representative.

**PART 2**      **PRODUCTS**

**2.1**      **MATERIALS**

- .1      Granular sub-base material: in accordance with Section 31 05 16 – Aggregates for Earthwork and following requirements:
  - .1      Crushed, pit run or screened stone, gravel or sand.
  - .2      Gradations to be within limits specified when tested to ASTM C 136 and ASTM C 117. Sieve sizes to CAN/CGSB-8.1.

**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.
- .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 Compact to density of not less than 98% corrected maximum dry density.
- .3 Shape and roll alternately to obtain smooth, even and uniformly compacted sub-base.
- .4 Apply water as necessary during compaction to obtain specified density.
- .5 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by Departmental Representative.
- .6 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.

**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.

**END OF SECTION**