

PART 1 - GENERAL

- 1.1 Related Work .1 Section 31 05 17 - Aggregates - General.
- 1.2 Reference Standards .1 ASTM D698-12e1, Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft) - Method C.
- 1.3 Measurement for Payment .1 Granular sub-base will be measured in accordance with Section 01 29 00.

PART 2 - PRODUCTS

- 2.1 Materials .1 Granular sub-base material to Section 31 05 17 and following requirements:
  - .1 Crushed stone or gravel consisting of hard durable angular particles free from clay lumps, cementation, organic material, frozen material and other deleterious materials.
  - .2 Type 2 (Class 'C') granular material gradation will be within the following limits:

ASTM SIEVE SIZE	% PASSING BY MASS
56 mm	100
28 mm	60 - 80
5 mm	25 - 45
0.160 mm	0 - 10

PART 3 - EXECUTION

- 3.1 Inspection of Existing Sub-Base Surface .1 Do not place new granular sub-base until underlying backfill material is compacted, inspected and approved by the Departmental Representative.
- 3.2 Placing .1 Place material only on a clean unfrozen surface, properly shaped and compacted and free from snow or ice.
  - .2 Place Type 2 to full width in uniform layers not exceeding 100 mm compacted thickness. Departmental Representative may authorize thicker lifts (layers) if specified compaction can be achieved.
  - .3 Shape each layer to a smooth contour and compact to specified density before the succeeding layer is placed.

- .4 Remove and replace portion of a layer in which material has become segregated during spreading.
- 3.3 Compacting
  - .1 Compact sub-base material to density of not less than 98% maximum dry density in accordance with ASTM D698.
  - .2 Shape and roll alternately to obtain a smooth, even and uniformly compacted sub-base.
  - .3 Apply water as necessary during compaction to obtain specified density. If sub-base is excessively moist, aerate by scarifying with suitable equipment until moisture content is corrected.
  - .4 In areas not accessible to rolling equipment, compact to specified density with approved mechanical tampers.
- 3.4 Finish Tolerances
  - .1 Granular sub-base compacted thicknesses will be as follows: Type 2, thickness as indicated on the Project Drawings.
  - .2 Compact backfill material to the thickness as required to attain the grades indicated on the drawings.
  - .3 Finish compacted surface to within plus or minus 25 mm of established grade but not uniformly high or low.
  - .4 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.
- 3.5 Maintenance
  - .1 Maintain finished sub-base in condition conforming to this section until granular sub-base is accepted by Departmental Representative.
  - .2 Departmental Representative will pay costs for inspection and testing. Refer to Section 01 45 00.

**END OF SECTION**

PART 1 - GENERAL

- 1.1 Related Work .1 Refer to other Specification Sections for related information.
- 1.2 Reference Standards .1 ASTM D698-12e1 Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft) - Method C.
- 1.3 Measurement for Payment .1 Granular base will be measured in accordance with Section 01 29 00.

PART 2 - PRODUCTS

- 2.1 Materials .1 Granular Base: Material to Section 31 05 17 and following requirements:
  - .1 Crushed stone or gravel consisting of hard, durable, angular particles, free from clay lumps, cementation, organic material, frozen material and other deleterious materials.
  - .2 Type 1 (previously Class "A") granular fill gradation will be within following limits:

ASTM SIEVE SIZE	% PASSING BY MASS
20 mm	100
14 mm	50 - 85
5 mm	20 - 50
0.16 mm	0 - 10
0.080 mm	0 - 7

PART 3 - EXECUTION

- 3.1 Inspection of Underlying Sub-Base .1 Do not place granular base until finished sub-base surface is inspected and approved by Departmental Representative.
- 3.2 Placing .1 Place material only on a clean unfrozen surface, properly shaped and compacted and free from snow and ice.
  - .2 Place using methods which do not lead to segregation or degradation of aggregates.

- .3 Place material to full width in a uniform layer to mm compacted thickness.
  - .4 Shape each layer to a smooth contour and compact to specified density before succeeding layer is placed.
- 3.3 Compacting
- .1 Compact to density not less than 98% maximum dry density in accordance with ASTM D698.
  - .2 Shape and roll alternately to obtain a smooth, even and uniformly compacted base.
  - .3 Apply water as necessary during compacting to obtain specified density. If material is excessively moist, aerate by scarifying with suitable equipment until moisture content is corrected.
  - .4 In areas not accessible to rolling equipment, compact to specified density with approved mechanical tampers.
- 3.4 Finish  
Tolerances
- .1 Finished base surface shall be within plus or minus 10 mm of established grade but not uniformly high or low.
  - .2 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.
- 3.5 Maintenance
- .1 Maintain finished base in a condition conforming to this section until succeeding material is applied or until acceptance.

**END OF SECTION**