

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 and Backfilling.
- .4 Section 32 11 16 - Granular Sub-base.

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 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>).
  - .5 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>).
  - .6 ASTM D1883-99, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
  - .7 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 DELIVERY,  
STORAGE, AND HANDLING

- .1 Deliver and stockpile aggregates in accordance with Section 31 05 17 - Aggregate Materials. Stockpile minimum 50% of total aggregate required prior to beginning operation.
- .2 Store cement in weather tight bins or silos that provide protection from dampness and easy access for inspection and identification of each shipment.

1.4 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.

1.5 MEASUREMENT  
FOR PAYMENT

- .1 Granular base: Supply, placement and compaction of granular base material will be measured by the square metres (m<sup>2</sup>) of materials installed to the limits and thickness indicated on the drawings.
- .2 No separate measurement for payment to be made for granular base material used in new electrical trenches. Include all costs in the lump sum arrangement as noted on the bid and acceptance form.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Granular base: material in accordance with Section 31 05 17 - Aggregate Materials and 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-8.1 and CAN/CGSB-8.2.

.1 Gradation Method to:

Sieve Designation	% Passing
19 mm	100
9.5 mm	55-100
4.75 mm	35-60
1.20 mm	17-35
0.300 mm	7-20
0.075 mm	3-8

- .2 Liquid limit: to ASTM D4318, maximum 25.
- .3 Plasticity index: to ASTM D4318, maximum 6.
- .4 Los Angeles degradation: to ASTM C131. Max. % loss by weight: 45.
- .5 Crushed particles: at least 60% of particles by mass within each of following sieve designation ranges to have at least 1 freshly fractured face. Material to be divided into ranges using methods of ASTM C136.

Passing	Retained on
19.0 mm	4.75 mm

PART 3 - EXECUTION

3.1 SEQUENCE OF OPERATION

.1 Place granular base after sub-base surface is inspected and approved by 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.
  - .4 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 100% corrected maximum dry density.
  - .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 Departmental Representative.
  - .5 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.2 SITE TOLERANCES .1 Finished base surface to be within plus or minus 10 mm of established grade and cross section but not uniformly high or low.

3.3 PROTECTION .1 Maintain finished base in condition conforming to this Section until succeeding material is applied or until acceptance by Departmental Representative.