PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 45 00 - Quality Control.

.2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.3 Section 31 05 16 - Aggregates for Earthwork.

1.2 MEASUREMENT FOR PAYMENT

.1 Type 1 Granular Base: will be measured in cubic metres (m^3). Supply, placement and compaction of Type 1 granular base including the cost of all plant, labour, equipment and materials required to complete the work as specified.

.2 Type 2 Granular Sub Base: will be measured in cubic metres (m^3). Supply, placement and compaction of Type 2 granular sub base including the cost of all plant, labour, equipment and materials required to complete the work as specified.

1.3 REFERENCES

.1 American Society for Testing and Materials (ASTM)
.1 ASTM C117-04, Standard Test Methods for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
.2 ASTM C131-06, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
.3 ASTM C136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
.4 ASTM D698-07e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft^3) (600kN-m/m^3).
.5 ASTM D1557-09, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft^3) (2,700kN-m/m^3).
.6 ASTM D1883-07e2, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
.7 ASTM D4318-10, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.

.2 Canadian General Standards Board (CGSB)

1.3 REFERENCES (Cont'd)

.2 (Cont'd)
.1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
.2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver and stockpile aggregate in accordance with Section 31 05 17 - Aggregate Materials. Stockpile minimum 50% of total aggregate required prior to beginning operation.

.2 Divert unused granular material from landfill to local facility as approved by Departmental Representative.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Type 1 Granular base: Material to the following requirements:
.1 Granulations to be within follwing limits when tested to ASTM C136-84a and ASTM C117-87. The gradings shall not show marked fluctuatiofrom opposite extremes of the limiting sizes, and giving a smooth curve without sharp breaks when plotted on a semi-log grading chart to ASTM.

ASTM Sieve Designation	% Passing
19.0 mm	100
12.5 mm	70-100
9.5 mm	-
4.75 mm	40-70
2.00 mm	23-50
0.425 mm	7-25
0.180 mm	-
0.075 mm	3-8

.2 Type 2 Granular Sub-Base Material to the following requirements:
.1 Gradation to be within following limits when tested to ASTM C136-82 and ASTM C117-80. The gradings shall not show marked fluctuations from opposite extremes of the limiting sizes, having a smooth curve without sharp breaks when plotted on a semi-log grading chart to ASTM E11-87.

2.1 MATERIALS (Cont'd)

.2 (Cont'd)

ASTM Sieve Designation		% Passing
15.9 mm		45-80
4.76 mm		25-55
1.20 mm		12-35
0.300 mm		7-20
0.075 mm	3-6 (Pit Source)	3-8 (Rock Source)

.2 Other properties as follows:
.1 Liquid Limit ASTM D423-66 (1972) Maximum 25.
.2 Plasticity Index ASTM D424-59 (1971) Maximum 0.
.3 Los Angeles Abrasion ASTM C131-81 Maximum % Loss by Weight: 35.
.4 Crushed fragments: 50%. The percent of crushed particles will be determined by examining the fraction retained on the 4.76 mm sieve and dividing the weight of the crushed particles by the total weight retained on the 4.76 mm sieve.
.5 CBR: AASHTO T180-74 Method D.

.3 Other properties as follows:
.1 Liquid Limit: to ASTM D4318 (1972) maximum 25.
.2 Plasticity Index: to ASTM D4313-59 (1971) maximum 0.
.3 Los Angeles Abrasion: to ASTM C131-06. Maximum % loss by weight: 35.
.4 Crushed Fragments: 50%. The percent of crushed particles will be determined by examining the fraction retained on the 4.76 mm sieve and dividing the weight of the crushed particles by the total weight retained on the 4.76 mm sieve.
.5 CBR:AASSHTO T 193-10 (2010) Min 100 when compacted to 100% of AASSHTO T 180-10 Method D.

PART 3 - EXECUTION

3.1 SEQUENCE OF OPERATIONS

.1 Place granular base after 100 mm minus rock fill is inspected and approved by Departmental Representative.

.2 Placing
.1 Construct granular bae to depth and grade in areas indicated.

3.1 SEQUENCE OF OPERATIONS (Cont'd)

.2 (Cont'd)
.2 Ensure no frozen material is placed.
.3 Place material only on clean unfrozen surface, free from snow and ice.
.4 Place material to full width in uniform layers not exceeding 150 mm compacted thickness. Departmental Represenative may authorize thicker lifts (layers) if specified compaction can be achieved.
.5 Shape to smooth contour and compact to specified density before succeeding layer is placed.
.6 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 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 Departmental Representative.

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.

END OF SECTION