

PART 1 - GENERAL

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| <u>1.1 Related Work</u> | .1 | Section 31 05 17 - Aggregates: General. |
| | .2 | Section 31 23 10 - Excavating Trenching and Backfilling. |
| <u>1.2 References</u> | .1 | American Society for Testing and Materials (ASTM)
.1 ASTM C 117-13, Standard Test Methods for Material Finer Than 75-micro m (No. 200) Sieve in Mineral Aggregates by Washing.
.2 ASTM D6928-10, Standard Test Method for Resistance of Coarse Aggregate to Degradation by Abrasion in the Micro-Deval Apparatus.
.3 ASTM C 136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
.4 ASTM D 422-63 (2007), Standard Test Method for Particle-Size Analysis of Soils.
.5 ASTM D 698-12, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ftn) (600kN-m/mn).
.6 ASTM D 1883-07e2, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
.7 ASTM D 4318-10, 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. |

PART 2 - PRODUCTS

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| <u>2.1 Materials</u> | .1 | Granular Sub-base Material: in accordance with Section 31 05 17 - Aggregates: General 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 AND CAN/CGSB-8.2.
.3 Table: |
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Sieve Designation	% Passing
75 mm	100
50 mm	75 - 100
12.5 mm	38 - 70
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 D 4318, Maximum 25.
 - .2 Plasticity Index: to ASTM D 4318 Maximum 0.
 - .3 Los Angeles degradation: to ASTM C131. Max % loss by mass: 35.
 - .4 Crushed Particles: at least 50% of particles by mass retained on the 4.75 mm sieve to have at least one fractured face.
 - .5 Particles smaller than 0.02 mm: to ASTM D 422, Maximum 3%.
 - .6 Flat and elongated particles: maximum percent by mass: 15.
- .2 Owner-supplied stockpiles of blasted rock and crushed aggregates are available for use at Contractor's discretion. Stockpiles are located at Rocky Barachois (approx. 7.0km South of the site). Refer to Section 31 05 17 - Aggregates: General.

PART 3 - EXECUTION

3.1 Inspection of Underlying Sub-Base

- .1 Place granular sub-base after surface is inspected and approved by Departmental Representative.
- .2 Underlying material to be compacted to 100% of Standard Proctor Density to ASTM D698

3.2 Placing

- .1 Place granular sub-base after subgrade is to the satisfaction of the 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 Place granular sub-base materials using methods which do not lead to segregation or degradation.
- .6 Place material to full width in uniform layers not exceeding 200 mm compacted thickness. Departmental Representative may authorize thicker lifts (layers) if specified compaction can be achieved.
- .7 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
- .8 Remove and replace portion of layer in which material has become segregated during spreading.
- .9 Place and compact shouldering to 3% cross slope in reconstruction areas. In overlay sections, feather new shoulder material from top of new asphalt to rounding of shoulder slope.
- .10 Compacted shouldering to be flush with asphalt concrete surface.
- .11 Hand work will be required to form base for asphalt concrete gutters/offtakes.
- .12 Place, hand rake and compact new shoulder material under and behind guiderail.

3.3 Compaction

- .1 Compaction equipment to be vibratory-type and capable of obtaining required material densities.
 - .2 Compact to density of not less than 100% of Maximum Dry Density in accordance with ASTM D 698.
 - .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 to the satisfaction of the Departmental Representative.
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- .6 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.4 Site Tolerances

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

3.5 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 the Departmental Representative.
- .2 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.
- .3 Shouldering to have 3% cross slope.