

**PART 1 - GENERAL**

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|-----|-------------------------|----|--|
| 1.1 | Related Work            | .1 | Refer to other Specification Sections for related information.   |
| 1.2 | Reference Standards     | .1 | American Society for Testing and Materials International (ASTM) <ul style="list-style-type: none"> <li>.1 ASTM C117-17, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.</li> <li>.2 ASTM C136/C136M-14, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.</li> <li>.3 ASTM D698-12, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup>) (600 kN-m/m<sup>3</sup>).</li> <li>.4 ASTM D4318-17, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.</li> </ul> |
|     |                         | .2 | Canadian General Standards Board (CGSB) <ul style="list-style-type: none"> <li>.1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.</li> <li>.2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.</li> </ul>   |
| 1.3 | Measurement for Payment | .1 | Granular sub-base will be measured in accordance with Section 01 29 10.  |

**PART 2 - PRODUCTS**

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|-----|-----------|----|--|
| 2.1 | Materials | .1 | Granular sub-base material to <b>Section 31 05 17</b> 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 granular material gradation will be within the following limits when tested to ASTM C136 and ASTM C117 (sieve sizes to CAN/CGSB-8.2):                               |

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

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|-----|---|----|---|
| 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 <i>Departmental Representative</i> .  |
| 3.2 | Placing                                 | .1 | Place material only on a clean unfrozen surface, properly shaped and compacted and free from snow or ice.   |
|     |   | .2 | Construct granular sub-base to depth and grade in areas indicated, placing using methods that do not lead to segregation or degradation.  |
|     |   | .3 | Place granular sub-base material to full width in uniform layers not exceeding 200 mm compacted thickness. <i>Departmental Representative</i> may authorize thicker lifts (layers) if specified compaction can be achieved over full layer thickness. |
|     |   | .4 | Shape each layer to a smooth contour and compact to specified density before the succeeding layer is placed.  |
|     |   | .5 | Remove and replace portion of a layer in which material has become segregated during spreading.   |
| 3.3 | Compaction                              | .1 | Compact 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. Compaction equipment to be capable of obtaining specified material densities.   |
|     |   | .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.  |
|     |   | .5 | Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.  |
| 3.4 | Finish Tolerances                       | .1 | Granular sub-base compacted thicknesses to be accordance with drawings.   |
|     |   | .2 | Finish compacted surface to within plus or minus 25 mm of established grade but not uniformly high or low.  |

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|-----------------|----|---|
|                 | .3 | 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 succeeding base is constructed, or until granular sub-base is accepted by <i>Departmental Representative</i> . |
|                 | .2 | <i>Departmental Representative</i> will pay costs for inspection and testing. Refer to Section 01 45 00.  |

END OF SECTION

**PART 1 - GENERAL**

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|-----|-------------------------|----|--|
| 1.1 | Related Work            | .1 | Refer to other Specification Sections for related information.   |
| 1.2 | Reference Standards     | .1 | American Society for Testing and Materials International (ASTM) <ul style="list-style-type: none"> <li>.1 ASTM C117-17, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.</li> <li>.2 ASTM C136/C136M-14, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.</li> <li>.3 ASTM D698-12, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup>) (600 kN-m/m<sup>3</sup>).</li> <li>.4 ASTM D4318-17, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.</li> </ul> |
|     |                         | .2 | Canadian General Standards Board (CGSB) <ul style="list-style-type: none"> <li>.1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.</li> <li>.2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.</li> </ul>   |
| 1.3 | Measurement for Payment | .1 | Granular base will be measured in accordance with Section 01 29 10.  |

**PART 2 - PRODUCTS**

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|-----|-----------|----|---|
| 2.1 | Materials | .1 | Granular Base: Material to Section 31 05 17 and following requirements: <ul style="list-style-type: none"> <li>.1 Crushed stone or gravel consisting of hard, durable, angular particles, free from clay lumps, cementation, organic material, frozen material and other deleterious materials.</li> <li>.2 Type 1 granular fill gradation gradation will be within the following limits when tested to ASTM C136 and ASTM C117 (sieve sizes to CAN/CGSB-8.2):</li> </ul> |
|-----|-----------|----|---|

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**

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|-----|-----------------------------------|----|--|
| 3.1 | Inspection of Underlying Sub-Base | .1 | Do not place granular base until finished sub-base surface is inspected and approved by <i>Departmental Representative</i> .   |
| 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 uniform layers not exceeding 150 mm compacted thickness. <i>Departmental Representative</i> may authorize thicker lifts (layers) if specified compaction can be achieved over full lift 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

**PART 1 - GENERAL**

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|-----|-------------------------|----|--|
| 1.1 | Related Work            | .1 | Refer to other Specification Sections for related information.                           |
|     |                         | .2 | Refer to Section 01 33 00 for Shop Drawing/Submission requirements.                      |
| 1.2 | Submissions             | .1 | Product Data/Samples:  |
|     |                         | .1 | Provide samples of materials proposed for the work.                                      |
|     |                         | .2 | Methodology:   |
|     |                         | .1 | Provide methodology for carrying out the work.   |
|     |                         | .3 | Provide submissions in accordance with Section 01 33 00.                                 |
| 1.3 | Measurement for Payment | .1 | All classes of Nominal Clear Stone will be measured in accordance with Section 01 29 10. |

**PART 2 - PRODUCTS**

- |     |           |    |   |
|-----|-----------|----|---|
| 2.1 | Materials | .1 | Nominal Clear Stone   |
|     |           | .1 | Material to Section 31 05 17 and to be a stone consisting of hard, durable particles, free from clay lumps, silt, cementation, organic material, frozen material and other deleterious foreign materials. Clear stone to be free from splits, seams or defects likely to impair its soundness during handling or under action of water. |
|     |           | .2 | Specific gravity of not less than 2.65 when tested to ASTM C127-81 (AASHTO T85-88).   |
|     |           | .3 | 50 mm Clear Stone gradation will be within the following limits:  |

ASTM SIEVE SIZE		% PASSING BY MASS
50	mm	100
25	mm	35 - 45
12.5	mm	0 - 5

**PART 3 - EXECUTION**

- |     |           |    |  |
|-----|-----------|----|--|
| 3.1 | Placement | .1 | Clear stone can be end dumped provided that no breakage of stone occurs. Any broken rock shall be removed at the contractor's expense. |
|-----|-----------|----|--|

- 3.3 Protection
- .2 Place clear stone at maximum density.
  - .1 Take into account anticipated weather conditions and degree of exposure of site in setting requirements for protection.
  - .2 Schedule and carry out construction so that each phase of work is not left exposed longer than necessary.
  - .3 The Contractor should note that the work site is subject to water level variations due to tidal action.
  - .4 The Contractor will be responsible to replace any mattress lost due to storms, tidal erosion or by his own activities.

END OF SECTION