CITY OF
SWIFT CURRENT
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SECTION 03005
GRANULAR BASE COURSE

DECEMBER 2015

1 GENERAL

1.1 DESCRIPTION

1.1.1 The work described in this section pertains to base course gravel as detailed on the drawings.

1.2 RELATED SECTIONS

- 02010 Site Preparation and Grading
- 02015 Sub – Grade Preparation
- 03001 Aggregates General
- 03010 Granular Sub – Base
- 03060 Geotextile and Rolled Erosion Control Devices
- 03070 Rip – Rap
- 04000 Asphalt Pavement Crack Routing and Sealing
- 04001 Asphalt Pavement Crack Sealing
- 04015 Asphalt Concrete
- 04025 Prime, Tack and Fog Coats
- 04070 Asphalt Concrete Pavement Milling
- 06010 Concrete Side walk, Curb and Gutter Construction
- 07000 Pavement Markings
- 10000 Flexible Guide Posts and Delineators
- 12000 Regulatory Roadway Signs

1.3 INSPECTION AND TESTING

1.3.1 Field density, moisture content and sieve analysis tests shall be carried to ensure that the material is satisfactory.

1.3.2 The frequency of field density and moisture content tests shall be 1 test per approximately 100 metres of constructed roadway and at various locations offset left and right of centre line, or as directed by the Project Manager.

1.3.3 The Contractor will, as the Project Manager requires, provide a loaded gravel truck with operator for visual proof rolling of soft spots. The granular surface course shall show no visible subsidence of deflection under the wheels of the truck. At the discretion of the Project Manager this method of proof roll testing may be accepted as the sole method of testing on specific projects or in specific locations.

2 PRODUCTS

2.1 GRADATION

2.1.1 Granular base material shall consist of crushed rock and/or crushed gravel and sand consisting of hard, clean, durable material, free from coatings of silt, clay or other deleterious materials, and containing no organic matter. The base course aggregate shall meet the following gradation requirements when tested to ASTM C135:

Sieve Size (mm)	Passing by Mass
25.000	100
20.000	93 - 100
12.500	72 - 93
5.000	45 - 77
2.000	29 - 56
0.800	17-38
0.400	13 – 26
0.160	7 – 14
0.080	7 - 11

2.1.2 A minimum of 60% by weight of the material retained on the 5,000 sieve shall have at least 2 fractured faces. Other properties shall be as follows for material passing the 0.400mm sieve:

Liquid Limit: maximum 25, ASTM D423-66
Plasticity Index: maximum 6, ASTM D424-59

2.2 APPROVAL

2.2.1 Preliminary approval of the material as represented in the test results shall not constitute general acceptance of all material in the deposit or source of supply, and acceptance shall be subject to confirming field tests taken at the discretion of the Project Manager.

2.2.2 Materials may be considered unsuitable even though particle sizes are within the limits of the gradation sizes required, if particle shapes are thin or elongated, if any other characteristic precludes satisfactory compaction or if the material fails to provide a roadway suitable for traffic.

2.2.3 The acceptability of the final material will be determined by the Project Manager.

2.3 QUALITY

2.3.1 The material shall consist of hard, durable rock or gravel. The base course shall not contain any organic or other deleterious materials. The material shall have a minimum California Bearing Ratio of 55%, as determined by the current issue of ASTM D1883 at the specified compaction.

2.3.2 Granular material retained on the 5 mm sieve shall have a minimum average of forty-five percent (45%) of the aggregate with at least one fractured face. Average will be defined as the average all tests for each working shift.

2.4 CLAY BINDER

2.4.1 Shall consist essentially of fine particles of sand, silt and clay containing no particles larger than will pass a 25 mm square opening screen, and shall be free from injurious amounts of organic matter or other deleterious material. It shall have a Plasticity Index of not more than 15. The clay shall be broken down by a shredder or pulverizer before being added to the mixture if required by the Project Manager.

2.5 FILLER

2.5.1 Filler material shall be fine sand (minimum 100% passing 630 µm sieve) and free from rocks or any deleterious material.

2.6 WATER

2.6.1 Water shall be reasonably clean and free from substances which might render it unfit for use.

3 EXECUTION

3.1 PLACEMENT

3.1.1 The granular base course material shall not be placed until the underlying subgrade or granular sub-base course has been inspected and approved by the City.

3.1.2 The base course shall consist of an intimate mixture of course aggregate, sand, clay, and water. These materials shall be combined, compacted and finished in a true workmanship like manner on the previously prepared sub-base or subgrade to a compacted thickness shaped to cross section shown on the drawings, or as directed by the City, and shall be maintained free of ruts, waves, and undulations by whatever means are necessary.

3.1.3 Unless otherwise specified, the granular material shall be placed in uniform layers not exceeding a 200mm compactive depth. The material shall be placed by mechanical spreaders or deposited in windrows and levelled with a suitable motor grader.

3.1.4 When called for in the contract temporary material shall be placed from the granular base course level to the lip of gutter, with a 1-2% crown. The following year this material shall be excavated, reshaped and re-compacted prior to paving. Any additional material shall be used as sub-base material in lanes or as directed by the Project Manager.

3.2 COMPACTION

3.2.1 The material shall be compacted by rolling with a pneumatic-tired or vibrating roller of a type approved by the Project Manager. The full depth of fills shall be constructed in layers not exceeding two hundred millimetres (200mm) compactive depth. Each layer shall be compacted to a minimum of ninety eight percent (98%) Standard Proctor Density (SPD) within plus or minus 2 percent (± 2%) optimum moisture content.

3.2.2 For temporary material, compaction shall be 95% Standard Proctor Density.

3.2.3 Materials which cannot be compacted to the specified density, due to high or low moisture content, shall be dried or watered by the Contractor to their optimum moisture content as necessary to achieve the specified compaction.

3.3 SHAPING AND FINISHING

3.3.1 A motor grader shall be used in conjunction with compaction equipment to keep the finished surface of each layer even and uniform.

3.3.2 The finished surface of the granular base course shall conform to the required cross-section and grade as shown on the drawings or as directed by the Project Manager, within a tolerance of plus or minus 20mm.

3.3.3 The granular base course shall be uniform and show no signs of segregation of the material placed.

4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

4.1.1 Measurement shall be based on the volume using cross sections at approximately twenty meter (20m) intervals along the road centreline.

4.2 PAYMENT

4.2.1 Payment will be made at the bid unit price per cubic meter (m^3) and shall include all cost for excavation, hauling, placing, compacting, watering or drying the material, culling and disposal of cobbles and boulders, trimming, filling low areas, finishing and shaping to grade and the designated cross section including minor excavation to grade, disposal of excess materials and debris at approved locations, and clean up.

END OF SECTION