CITY OF
SWIFT CURRENT
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# SECTION 03010
# GRANULAR SUB-BASE

**DECEMBER 2015**

# 1 GENERAL

## 1.1 DESCRIPTION

1.1.1 The work described in this section pertains to granular sub-base material as detailed on the drawings or in the City Specifications.

## 1.2 RELATED SECTIONS

- 02010 Site Preparation and Grading
- 02015 Sub – Grade Preparation
- 03001 Aggregates General
- 03005 Granular Base Course
- 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 out 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 All sieve tests should comply with the gradation limits as stated in above.

1.3.4 The Contractor will, as the Project Manager requires, provide a loaded gravel truck with operator for visual checks of soft spots. At the discretion of the Project Manager this method of roll testing may be accepted as the sole method of testing on specific projects or in specific locations.

# 2 PRODUCTS

## 2.1 GRANULAR SUB-BASE

2.1.1 Granular sub-base is the material lying above the subgrade and below the base course. The gradation to be utilized shall be as designated by the City.

## 2.2 GRADATION

2.2.1 The granular sub-base material shall consist of crushed rock, gravel and sand consisting of hard, clean, durable material, free from coatings of silt, clay or other deleterious materials and contain no organic matter.

2.2.2 The following gradation shall apply to crushed granular sub-base courses:

| Sieve Size (microns) | Percent Passing By Weight |
|---|---|
| 50 000 | 100 |
| 25 000 | 66 – 90 |
| 5 000 | 30 – 63 |
| 400 | 13 – 30 |
| 80 | 4 – 10 |

## 2.3 APPROVAL

2.3.1 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. Materials may be considered unsuitable, even though particle sizes are within the limits of the gradation sizes required, if any characteristic precludes satisfactory compaction or if the material fails to provide a roadway suitable for traffic. The acceptability of the final material will be determined by the Project Manager.

## 2.4 QUALITY

2.4.1 The material shall consist of durable rock or gravel. The granular sub-base shall not contain any organic or other deleterious materials.

# 3 EXECUTION

## 3.1 PLACEMENT

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

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

### 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 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 the compaction equipment to keep the finished surface of each layer even and uniform. The finished surface of the granular sub-base shall conform to the required cross-section and grades as shown on the drawings or as directed by the Project Manager, within a tolerance of 30mm. The sub-base material shall be uniform and show no signs of segregation.

## 4 MEASUREMENT AND PAYMENT

### 4.1 MEASUREMENT

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

4.1.2 Measurement for extra granular sub-base fill in soft spots shall be by volume in cubic meters of compacted in-place sub-base, based upon field measurements of the depth, width and length of area satisfactory completed.

### 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 hauling, placing, compacting, watering or drying the material, 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.

4.2.2 Payment for granular sub-base for soft spots will be made when approved by the Engineer. The quantity to be paid shall be based on the measured volume and paid at the rate specified in the contract Provisionals, or the calculated volume rate for sub-base.

**END OF SECTION**