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SECTION 3.14 – GRANULAR SURFACE WORKS

3.14.1 SCOPE

The work described in this sub-section pertains to the supply, crushing, hauling, placing, spreading, compacting and all other associated work required to construct a granular surface course to the thickness, cross-section and grades shown on the plans or as directed by the Consultant.

3.14.2 MATERIALS

3.14.2.1 SAMPLES

Before any aggregates are used in the work, the Developer is to obtain and ship to the Engineer for preliminary approval, representative samples containing not less than 25kg of aggregate. Sampling is to be done in accordance with ASTM Designation D75-71 for sampling materials.

3.14.2.2 GRADATION

The following gradation applies to the granular surface course.

TABLE 3.14.2.2
PHYSICAL REQUIREMENTS OF GRANULAR SURFACE COURSE

SIEVE NO. (mm)	PASSING BY MASS (%)
20.000	100
12.500	70 - 100
10.000	62 - 94
5.000	45 - 82
2.000	28 - 62
1.000	18 - 43
0.400	12 - 32
0.160	7 - 18
0.063	5 - 12

The percentages passing the designated sieve sizes for any representative sample, when plotted on a semi log grading chart, are to show a free-flowing curve without sharp breaks within the limits specified. The material passing through the 0.400 mm sieve is to have a liquid limit not greater than 25 and a plastic limit not greater than six nor less than two.

3.14.2.3 APPROVAL

Preliminary approval of the aggregate as represented in the samples are not to constitute general acceptance of all material in the deposit or source of supply: acceptance is to be subject to field tests taken at the discretion of the Consultant.

Materials may be considered unsuitable even though particle sizes are within the limits of the gradation sizes required. If particle shapes are thin, elongated or any other characteristic precludes satisfactory compaction or if the material fails to provide a roadway suitable for traffic, the material may be rejected. The Engineer will determine acceptance of the final materials.

3.14.2.4 QUALITY

The granular surface course is not to contain any organic or other deleterious materials. The material is to have a minimum California Bearing Ratio of 55% as determined by the current issue of ASTM D1883 at the specified compaction.

3.14.3 CONSTRUCTION

3.14.3.1 PLACEMENT

The granular surface course is not to be placed until the Engineer has approved the underlying surface. Unless otherwise specified, the granular material is to be placed in a uniform layer before compaction commences. The material is to be placed by mechanical spreader or deposited in windrows and levelled with a suitable motor grader, true to line and grade. Material is not to be placed or worked so that aggregate becomes segregated.

3.14.3.2 COMPACTION

The material is to be compacted by rolling with a pneumatic-tired or vibrating roller of a type approved by the Engineer. The material is to be compacted near the optimum moisture content to 98% Standard Proctor Density.

If the moisture content exceeds the optimum during compaction, the material is to be aerated by mechanical means until the material has dried sufficiently. If the moisture content is below the optimum, water is to be added by an acceptable applicator to achieve the specified compaction.

3.14.3.3 SHAPING AND FINISHING

A motor grader is to be used in conjunction with the compaction equipment to keep the finished surface even and uniform.

The granular surface course is to be finished in such a way as to conform to the required cross-section and grades as shown on the drawings or as staked, within a tolerance of 30mm.

Before approval by the Engineer, the granular surface course is to be true to cross-section and grade, is to conform to the density requirements specified, and is to show no visible subsidence or deflection under the wheels of a loaded gravel truck. The Developer will, as required by the Engineer, provide a loaded gravel

truck with operator for visual checks of soft spots. A roll test can be performed at any phase of construction including right before paving.

3.14.3.4 HAULING

The Developer is to haul by truck only, and the volume hauled must be measurable to a degree of accuracy sufficient to enable the setting of spread stakes. No hauling will take place without the approval of the Consultant.

3.14.3.5 TIMING

The Developer is to give the Consultant a minimum of 48 hours' notice prior to commencement of crush haul, and is to keep the Consultant aware of his operational activities.

3.14.4 TESTS

The Consultant, or his representative, will perform field density, moisture content, and sieve analysis tests to ensure that the material is satisfactory.

The frequency of field density and moisture content tests are to be one test per approximately 100 meters of constructed roadway and at various locations offset left and right of centerline, or as directed by the Consultant.

The frequency of sieve analysis tests is to be one test every 3 hours. All tests are to comply with the gradation limits stated in Section 3.14.2.2. If they do not, an additional test is to be taken directly thereafter. If the second test fails to comply with the gradation limits, the Developer is to be directed to shut down and adjust his equipment in such a way as to comply with tests.