This specification outlines the requirements for the supply and the placing of Selected Granular Base Course Class "A".

REFERENCES

This specification refers to the following standards, specifications, or publications:

ASTM International

C117-13	Standard Test Method for Materials Finer than 75-muem (No.200) Sieve in Mineral Aggregates by Washing
C131/C131M-14	Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
C136-06	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
D698-12	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft^3 (600 kN-m/m^3)), Method D
D4318-10	Standard Tests Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
E11-13	Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves

American Association of State Highway and Transportation Officials (AASHTO)

T180-10	Standard Method of Test for Moisture-Density Relations of Soils Using A 4.54-KG (10-LB) Rammer and A 457-mm (18-in) Drop
T193-13	Standard Method of Test for the California Bearing Ratio

PART 1 - GENERAL

1.1 MEASUREMENT FOR PAYMENT

.1 No separate measurement for payment will be considered for the supply and placement of granular sub-base material. Costs for the supply and placement of granular base course Class :A" material required for the patching of asphalt will be considered incidental to this work and shall be included in the m^2 unit price for asphalt patching.
100% of the calculated quantities based on theoretical limits and approved tickets.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 The granular materials shall be composed of clean, hard, uncoated particles and shall be free from organic matter, clay lumps and deleterious materials such as shale, slate, ochre and schists.

.2 Materials from deposits acceptable as to the quality of the particles, but deficient in sizes to provide the required gradation, may be accepted if the Contractor furnishes and satisfactorily incorporates into the product supplementary sizes from other sources to produce the required grading. If the deficiencies occur in Class "A" or Class "B" materials, corrections may be attempted by crushing to a smaller maximum particle size. In that event, the Engineer will furnish special grading limits on the actual maximum particle size.

.3 Materials shall be considered unsuitable even though particle sizes are within the specified gradation limits if particle shape or any other characteristic precludes satisfactory compaction or fails to provide a roadway suitable for traffic. If, in the opinion of the Engineer, an improved particle shape can be achieved by using a different crushing unit from that proposed by the Contractor, then the Contractor shall supply and use a crushing unit of the type directed by the Engineer.

.4 Class "A" and Class "B" shall be processed by crushing and, when necessary, to eliminate surplus fines passing the 4.76 mm sieve, shall be screened and washed.

.5 Granular base material (Class "A") to following requirements:

.1 Gradation to be within following limits when tested to ASTM C136-06 and ASTM C117-13. The gradings shall not show marked fluctuations from opposite extremes of the limiting sizes, and giving a smooth curve without sharp breaks when plotted on a semi-log grading chart to ASTM E11-13.

ASTM Sieve Designation	% Passing
19.0 mm	
100 9.51 mm	
55 - 80 4.76 mm	
35 - 60 1.20 mm	
17 - 35 0.300 mm	
7 - 20	
0.075 mm	3 - 6 (Pit Source) 3 - 8 (Rock Source)

.2 Liquid Limit ASTM D4318-10 Maximum 25
.3 Plasticity Index ASTM D4318-10 Maximum 0
.4 Los Angeles Abrasion ASTM C131/C131M-14 Max. % loss by weight: 35
.5 Crushed Fragments: 50%. The percent of crushed particles will be determined by examining the fraction retained on the 4.76 mm sieve and dividing the weight of the crushed particles by the total weight retained on the 4.76 mm sieve.
.6 CBR: AASHTO T193-13 Min 100 when compacted to 100% of AASHTO T180-10, Method D

PART 3 - EXECUTION

3.1 INSPECTION OF UNDERLYING SUB-BASE OR SUB-GRADE

.1 The Contractor shall prepare the road surface before commencing placement of any selected granular base course materials.

3.2 PLACING

.1 The Contractor shall place all granular bases in such a manner as to prevent contamination by other materials and to prevent segregation. If, in the opinion of the Engineer, the methods and techniques used by the Contractor cannot overcome contamination or segregation, then the Engineer may direct a modification in these methods which may require the use of an approved spreader box or other acceptable device.

.2 All granular bases shall be placed in uniform layers such that the thickness of the compacted layer does not exceed 150 mm.

.3 Prior to closing down operations for each working day, all granular materials shall be bladed and compacted to the specified density.

.4 The materials shall be sprayed with water when and as directed by the Engineer, either to aid compaction or reduce dust nuisance or both. When water is added to aid compaction, it shall be applied immediately ahead of the compacting unit.

.5 Each layer of granular base shall be bladed shaped and compacted as necessary to produce the required profile and cross-section. The finished surface shall not deviate at any place on a 3 m straight edge by more than 10 mm for Class "A". The upper layer shall be maintained to these tolerances and to the specified density until completion of the contract, or until the surface is paved. This may require keeping the moisture content at the appropriate value during periods of dry weather in addition to regrading and recompacting as frequently as may be deemed necessary by the Engineer.

3.3 SHOULDERING

.1 Unless otherwise directed by the Engineer the placing of granular materials for shoulder construction shall be carried out by means of an approved spreader. Spreader shall consist of a box to hold shouldering material and a suitable mechanism to control the width and rate of application and to prevent material getting onto the pavement.

.2 Granular materials for shoulder construction shall be placed directly on the shoulder and any spillage and materials dragged onto the pavement surface shall be immediately removed, without damage to the pavement, and the area so affected shall be thoroughly cleaned.

.3 The shoulders shall be sloped to the specified lines, grades and cross-section.

.4 Shouldering operations shall not commence along any section of pavement until 24 hours have elapsed from the time of completion of the final pavement course in that section, but the shouldering operations shall be completed within the next 24 hours on sections which are open to traffic.

3.4 COMPACTION

.1 All Class "A" materials placed on the roadway, or placed on shoulders, shall be compacted to not less than 100% of the maximum Standard Proctor Dry Density ASTM D698-12, Method D.

.2 Compaction operations shall be carried out as closely as possible behind the placing and spreading operation. At the end of each working day, all materials placed shall have been compacted to the specified density.

.3 Each layer of material shall be graded and compacted as specified before the next layer is placed.

.4 Where necessary to obtain the required compaction, the Contractor shall apply sufficient water by means of an approved distributor.

3.5 MAINTENANCE

.1 Maintain finished base in a condition conforming to this section until succeeding material is applied or until acceptance.

3.6 BASIS OF PAYMENT

.1 All costs associated with the work outlined in this specification shall be deemed to be included incidental to the work required for the patching of asphalt pavement. No

separate payment will be considered for the supply and placement of granular base course Class "A".