CONSTRUCTION SPECIFICATION FOR PRIMING GRANULAR BASE

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302.01 SCOPE
This specification covers the requirements for surface preparation and application of bituminous primer on a granular surface and, where required, a sand cover to accommodate traffic.

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

Ontario Provincial Standard Specification, General:
OPSS 102  Weighing of Materials
Ontario Provincial Standard Specifications, Material:

OPSS 1001  Aggregates - General
OPSS 1102  Liquid Asphalt
OPSS 1103  Emulsified Asphalt

Ministry of Transportation Publications:

MTO Laboratory Testing Manual -

LS-602  Sieve Analysis of Aggregate
LS-619  Resistance of Fine Aggregate to Degradation by Abrasion in the Micro-Deval Apparatus
LS-703/704  Liquid Limit, Plastic Limit, and Plasticity Index of Soils

302.03  DEFINITIONS

For the purpose of this specification, the following definitions apply:

Appurtenances:  mean maintenance hole, catchbasin, valve chamber and water valve covers and similar utility access covers located within the paved portion on the roadway.

Lot:  means the quantity of work completed with a tanker truck shipment of primer.

Primer:  means the emulsified asphalt or low viscosity liquid asphalt sprayed on a prepared granular base.

Sand Cover:  means a Class 4 aggregate applied over the primer to blot the primer and permit the passage of traffic.

302.05  MATERIALS

302.05.01  Primer

Primer shall consist of one or more of the following types of asphaltic materials:

a)  Emulsified Asphalt Primer according to OPSS 1103.

b)  MTO Primer or RC-30 according to OPSS 1102.

302.05.02  Sand Cover Aggregate

Aggregate shall be according to OPSS 1001 and Tables 1 and 2.

302.06  EQUIPMENT

302.06.01  Pressure Distributor

The pressure distributor shall be designed and manufactured to spray primer uniformly on the road surface. The pressure distributor shall be capable of applying primer at the specified rates and in a continuous and uniform manner both longitudinally and transversely for a full lane width.
302.06.02 Mechanical Aggregate Spreader

The mechanical aggregate spreader shall be designed and manufactured to be self-propelled and capable of continuously and uniformly distributing aggregate on the primed granular base at the specified application rate.

302.06.03 Pilot Vehicle

The pilot vehicle shall be equipped with an amber rotating light and a sign mounted with clearance not less than 1 m above the road. The sign shall be at least 1.5 m in width and 0.75 m in height, orange with black lettering and shall display the words: "Pilot Vehicle, Do Not Pass".

302.07 CONSTRUCTION

302.07.01 General

302.07.01.01 Surface Preparation

The granular surface shall be free of debris and prepared by dampening, fine grading, and compacting immediately prior to the application of the primer.

302.07.01.02 Primer

The Contract Administrator reserves the right to require the Contractor to provide primer field samples for testing purposes. Sampling, labelling, packaging, and delivering samples of primer for testing shall be included in the work.

Each liquid asphalt primer sample shall consist of a one litre sample of material. The sample containers for liquid asphalt primer samples shall be new triple tight cans.

Each emulsified asphalt primer sample shall consist of two 4 litre samples of material. The sample containers for emulsified asphalt primer samples shall be new triple tight cans.

Sample containers shall be supplied by the Contractor.

Primer samples shall be delivered by the Contractor within five business days of sampling to the specified laboratory.

302.07.01.03 Sand Cover Aggregate

The Contract Administrator reserves the right to sample the sand cover aggregate for testing purposes.

302.07.02 Operational Constraints

Primer shall not be applied when the ambient temperature at the work location is less than 10°C or when climatic conditions preclude the curing of the primer.

Primer shall not be applied prior to May 15th south of a line through Pembroke, Magnetawan, and Pointe au Baril Station, and not prior to June 1st north of the line.
Emulsified primers shall not be applied after September 1st. The placing of aggregate shall be terminated one hour before sunset.

302.07.03 Determination of Primer and Aggregate Application Rates

The Contractor shall demonstrate to the Contract Administrator satisfactory compliance to the specified application rates of primer and aggregate. At the Contract Administrator’s discretion, this compliance may include a minimum 300 metre one lane width trial section to ensure that the primer and aggregate are applied at the specified rate.

302.07.04 Longitudinal and Transverse Joints

Joints shall be constructed so that all granular base is covered with primer and the overlap of primer and sand cover is minimal.

Transverse joints and intersections shall be constructed, with a minimum of overlaps to ensure full coverage.

302.07.05 Protection of the Work and Traffic Control

Traffic shall not be allowed on the primed granular base until the sand cover has been applied. Primed surfaces damaged by traffic shall be repaired by the Contractor at no cost to the Owner.

302.07.06 Primer Application Temperature

Primer application temperatures shall be according to OPSS 1102 and OPSS 1103.

302.07.07 Application of Primer

The primer shall be uniformly sprayed on the granular base at the specified rate.

The application of primer shall terminate at the same station for both lanes at the end of each day.

All roadway appurtenances within the area to be surfaced shall be properly covered and protected immediately prior to priming.

302.07.08 Application of Sand Cover

Following the application of the primer, a minimum curing time of 20 minutes shall be provided before sand cover aggregate is applied. Sand cover aggregate shall be uniformly applied by means of a mechanical aggregate spreader at the rate of $11 \pm 1.0 \text{ kg/m}^2$.

Two passes of a pneumatic tired roller shall be used to seat the aggregate.

302.07.09 Traffic Convoy

When specified, the Contractor shall convoy traffic.

The Contractor shall supply one pilot vehicle and operator to guide one-way traffic through or around construction. The maximum speed of the convoy shall be 30 km/h and the convoys shall be maintained for a minimum of one hour after application of the sand cover, or longer if directed by the Contract Administrator.
302.09 MEASUREMENT FOR PAYMENT

302.09.01 Primer

Primer will be measured for payment by mass in kilograms according to OPSS 102.

302.09.02 Sand Cover Aggregate

302.09.02.01 By Mass

Sand cover aggregate applied to the road will be measured in tonnes according to OPSS 102.

302.09.02.02 By Volume

Measurement will be in cubic metres, loose, by pre-determined truck capacities. The pre-determined capacity of each truck will be that computed from its box dimensions.

Loading of each truck shall be kept to not less than the pre-determined capacity. The Contractor will not be required to load trucks in excess of this capacity to allow for bulking, and no deduction shall be made for any settlement of the load during transportation, provided that such settlement is not caused by spillage or leakage.

Each truck shall be uniquely and readily identifiable.

302.09.03 Traffic Convoy

The measurement for traffic convoy will be based on the number of hours that the pilot vehicle is convoying traffic.

302.10 BASIS OF PAYMENT

302.10.01 Primer - Item
Sand Cover Aggregate - Item
Traffic Convoy - Item

Payment at the contract price for the above tender items shall be full compensation for all labour, equipment and material to do the work.
Table 1
Gradation Requirements for Class 4 Aggregate
MTO Test No. LS-602

<table>
<thead>
<tr>
<th>MTO SIEVE DESIGNATION</th>
<th>PERCENTAGE PASSING</th>
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<tbody>
<tr>
<td>9.5 mm</td>
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<tr>
<td>4.75 mm</td>
<td>70 - 100</td>
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<tr>
<td>2.36 mm</td>
<td>10 - 100</td>
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<tr>
<td>1.18 mm</td>
<td>5 - 90</td>
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<tr>
<td>600 µm</td>
<td>3 - 70</td>
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<tr>
<td>300 µm</td>
<td>2 - 40</td>
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<tr>
<td>150 µm</td>
<td>0 - 15</td>
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<tr>
<td>75 µm</td>
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Table 2
Physical Requirements for Class 4 Aggregate

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<tr>
<th>MTO LABORATORY TEST</th>
<th>MTO TEST NUMBER</th>
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<tbody>
<tr>
<td>Micro-Deval Abrasion on Fine Aggregate, % Loss, Maximum</td>
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<tr>
<td>Plasticity Index, Maximum</td>
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<tr>
<td></td>
<td>LS-619</td>
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<tr>
<td></td>
<td>LS-703/704</td>
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