

CITY OF WHITEHORSE SERVICING STANDARDS MANUAL
PART 3 – CONSTRUCTION SPECIFICATIONS
SECTION 3.24 – BITUMINOUS SURFACE TREATMENT SINGLE APPLICATION

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SECTION 3.24 – BITUMINOUS SURFACE TREATMENT SINGLE APPLICATION

3.24.1 DESCRIPTION

This section specifies requirements for single application of emulsified asphalt followed by single application of aggregate to roadway surface in accordance with these specifications.

3.24.2 PRODUCT ACCEPTANCE

The completed Bituminous Surface Treatment is to be free of surface defects as described in paragraph 3.24.2.2 and may be rated by the Engineer for satisfactory performance at any time within thirty days of completion of the initial application.

Performance rating will be in accordance with the criteria described in the following Tables, 1.2.1 - Surface Defect Parameters and 1.2.2 - Density of Surface Defects.

TABLE 3.24.2.1 - SURFACE DEFECT PARAMETERS

SURFACE DEFECTS	SEVERITY	RATING PARAMETERS
LOSS OF COVER AGGREGATE (RAVELLING)	VERY GOOD	NO NOTICEABLE AGGREGATE LOSS
	GOOD	A FEW POCK MARKS
	FAIR	INTERMITTENT POCK MARKS CLOSELY SPACED
	POOR	FREQUENT POCK MARKS OR FEW SURFACE DISINTEGRATIONS
	VERY POOR	EXTENSIVE POCK MARKS OR DISINTEGRATION WITH POTHOLES
POTHOLES	VERY GOOD	FEW MINOR POTHOLES, ONLY INVOLVES B.S.T.
	GOOD	FEW DEEP POTHOLES, INVOLVES GRANULAR BASE
	FAIR	INTERMITTENT POTHOLES
	POOR	FREQUENT POTHOLES
	VERY POOR	EXTENSIVE OR POTHOLES THROUGHOUT
	VERY GOOD	NO/VERY FAINT COLOUR CHANGE IN WHEEL PATH
	GOOD	FEW SECTIONS WITH ASPHALT ON SURFACE

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SURFACE DEFECTS	SEVERITY	RATING PARAMETERS
FLUSHING/ BLEEDING	FAIR	INTERMITTENT SECTIONS WITH ASPHALT ON SURFACE
	POOR	FREQUENT SECTIONS WITH ASPHALT ON SURFACE, HAS WET LOOK OR ASPHALT ON SURFACE THROUGHOUT
	VERY POOR	WET LOOK WITH TIRE NOISE LIKE A WET PAVEMENT
TOTAL FAILURE	ANY	ANY CONDITION WHERE THE ASPHALT MATERIAL SOFTENS OR DISINTEGRATES UNDER TRAFFIC AND AGGREGATE IS PICKED UP OR "KICKED OFF" BY TRAFFIC

TABLE 3.24.2.2 - DENSITY OF SURFACE DEFECTS

UNITS	DENSITY OF SURFACE DEFECTS **		
	RAVELLING (% LENGTH)	POTHoles (NUMBER)	FLUSHING/ BLEEDING (% LENGTH)
FEW	<5%	<5	<5%
INTERMITTENT	>5%, <20%	>5, <15	>5%, <20%
FREQUENT	>20%, <50%	>15, <30	>20%, <50%
EXTENSIVE	>50%, <80%	>30, <50	>50%, <80%
THROUGHOUT	>80%	>50	>80%

Note: ** Based on number of surface defects or percent of surface affected by defect, as applicable, per 500 metre length of BST application width section.

The Engineer will notify the Contractor in writing of the requirement for repairs/replacement of failed Bituminous Surface Treatment.

Repair/replacement of failed surface treatments is to be completed within 30 days of notification by the Engineer in accordance with the requirements of Table 3.24.2.3. When surface condition is a safety concern, repair/replacement of failed surface treatments are to be completed within 7 days of notification by the Engineer. Any materials used in repair/replacement surface treatments are to be consistent with those originally specified in the Contract or otherwise approved by the Engineer.

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TABLE 3.24.2.3 – SURFACE TREATMENT REPAIR/REPLACEMENT CRITERIA

SURFACE DEFECT	SEVERITY	REPAIR/REPLACEMENT METHOD
LOSS OF COVER AGGREGATE (RAVELLING)	VERY GOOD/GOOD	NONE
	FAIR/POOR/VERY POOR	RESEAL OF AFFECTED AREA ***
POTHoles	VERY GOOD/GOOD	ALL POTHoles TO BE FILLED WITH ASPHALTIC PATCHING MATERIAL
	FAIR/POOR/VERY POOR	PATCH POTHoles AND RESEAL AFFECTED AREA ***
FLUSHING BLEEDING	VERY GOOD/GOOD	NONE
	FAIR	APPLICATION OF SAND BLOTTER
	POOR/VERY POOR	RESEAL OF AFFECTED AREA. REMOVAL OF INITIAL SURFACE TREATMENT AT CONTRACTOR'S OPTION ***
TOTAL FAILURE	ANY	REMOVE AND DISPOSE OF FAILED SURFACE TREATMENT IN ITS ENTIRETY AND APPLY NEW SURFACE TREATMENT

NOTE: *** Reseal is to consist of a new bituminous surface treatment single application. Area of the reseal repair/replacement is not to be less than one application width x 10 metres in length. If there is less than 10 metres between two sections in the application pass designated for repair/replacement, the repair/replacement is to be continuous.

3.24.3 MATERIALS

3.24.3.1 ASPHALT EMULSION: To conform to Section 3.23, Supply and Delivery Asphalt Emulsion.

3.24.3.2 AGGREGATES: To conform to Section 3.25, Material Specifications for Bituminous Surface Treatment Aggregate.

3.24.4 APPLICATION RATES

Apply asphaltic material at rate of 2.8 to 3.2 litres per square meter on granular base and minimum rate of 2.4 litres per square metre on overlay unless approved in writing by the Engineer. Application rate is to be designed to achieve 70% embedment of coarse aggregate.

Apply aggregate at rate of 34 kg/m² to 46kg/m² or as instructed by Engineer.

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Submit proposed job design application rates to the Engineer one week prior to application of Bituminous Surface Treatment.

3.24.5 EQUIPMENT

3.24.5.1 PRESSURE DISTRIBUTOR:

- Distributor to be designed, equipped, maintained, and operated so that asphalt material at even temperature may be applied uniformly on variable widths of surface up to 4.88 m at readily determined and controlled rates from 0.3 to 5.5 L/m², with allowable variation from any specified rate not exceeding 0.1 L/m². The litres of asphalt loaded on to pressure distributor are to be metered for purposes of checking application rates.
- Capable of distributing asphalt material in uniform spray without atomization at rate and temperature required.
- Equipped with easily read, accurate and sensitive device which registers temperature of liquid in reservoir.
- Equipped with 4.88 metre minimum length spray bar capable of vertical adjustment and of instant full opening and positive cut-off complete with rotary adjustable spray nozzles, designed to ensure uniform fan shaped delivery overlapping to produce uniformly spread surface.

3.24.5.2 MECHANICAL AGGREGATE SPREADER:

A self-propelled unit of approved design supported by at least four wheels equipped with pneumatic tires on two axles. Aggregate spreader to be equipped with positive controls in order that required amount of material will be deposited uniformly over full width of asphalt material.

3.24.5.3 ROLLERS:

- Use a minimum of two Self-propelled pneumatic tired rollers of at least 11000 kg.
 - Wobble wheel rollers are not to be used.
 - Synchronize the speed of the distributor and aggregate spreader with that of the rolling operation.
 - Begin rolling within one minute after spreading the aggregate.
 - Operate rollers at speeds not exceeding 8 km/hr.
 - Proceed in a longitudinal direction, beginning at the outside edge of the aggregate application.
 - Overlap each roller pass by approximately ½ the roller width.
 - Provide a minimum of three (3) roller passes per roller for each layer of aggregate over the entire surface treated area to properly embed the aggregate particles.

3.24.5.4 POWER BROOM:

Pneumatic tire unit, capable of vertical and horizontal angular adjustment, as approved by the Engineer.

3.24.6 PREPARATION

Obtain approval of existing surface or Granular Base before applying asphalt surface treatment material.

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Grade existing surface or Granular Base to specified grade and cross section. Blade smooth and compact. Immediately before asphalt binder is applied broom or otherwise clean as necessary to remove foreign material.

3.24.7 APPLICATION

Schedule work to approval of Engineer. Unless otherwise directed, treat one lane at time.

Apply treatment when existing surface is slightly damp, when atmospheric temperature in shade is above 10°C and rising or above 15°C if falling, and when weather is not foggy or rainy.

Apply asphalt material using approved pressure distributor at rate required. Apply aggregate at rate required following application of asphalt material. All asphalt material to be covered with aggregate. Roll surface after applying aggregate. Broom surface as required to minimize motor vehicle damage from loose cover aggregate.

Apply Bituminous Surface Treatment to cover full design width in a maximum of three passes.

3.24.8 WORK QUALITY

Layout and construct edges parallel to road centreline and true to designated design.

Construct longitudinal and transverse joints so as to prevent surface irregularities which would impede moisture runoff or affect vehicle ride or steering.

Construct Bituminous Surface Treatment to prevent surface corrugations or rutting greater than 12 mm or which affect vehicle ride.

Construct required repair/replacement patches to prevent surface irregularities which would impede moisture runoff or affect vehicle ride or steering.

3.24.9 TRAFFIC CONTROL

Direct traffic through project using warning signs, flagpersons and/or pilot car.

Keep traffic off freshly sprayed asphalt.

If necessary to route traffic over new treatment, restrict speed to 10 km/hr or less, until rolling is completed and asphalt has taken initial set.