

PAVER PLACED SURFACE TREATMENT SPECIFICATIONS

DESCRIPTION

The Paver Placed Surface Treatment consists of a warm polymer modified asphalt emulsion tack coat followed immediately with an ultra-thin hot mix asphalt wearing course. The tack coat is spray applied immediately prior to the application of the wearing course to produce a durable wearing surface that can be opened to traffic. The finished surface treatment has a minimum thickness of 12.5mm, (1/2”), for Type A and 16mm, (5/8”), for Type B and Type C. All pavement repairs, crack filling and joint filling will be paid for under the appropriate items.

MATERIALS

The contractor shall formulate and submit to the awarding authority, a job mix formula that satisfies the design general limits listed in Table 1 – Mixture Requirements.

Table 1 – Mixture Requirements

AASHTO Standard Sieve Sizes		Total % Passing by Weight		
METRIC	US	Type A 1/4”	Type B 3/8”	Type C 1/2”
19 mm	3/4”	-	-	100
12.5 mm	1/2”	-	100	85-100
9.5 mm	3/8”	100	85-100	60-90
6.3 mm	1/4”	75-100	30-50	30-50
4.75 mm	#4	40-60	24-40	24-40
2.36 mm	#8	21-32	21-32	21-32
1.18 mm	#16	16-26	16-26	16-26
0.60 mm	#30	12-20	12-20	12-20
0.30 mm	#50	8-16	8-16	8-16
0.15 mm	#100	5-10	5-10	5-10
0.075 mm	#200	4-7	4-7	4-7
%PGB		4.9 – 5.4	4.8 – 5.3	4.8 – 5.3

*Note: All aggregate percentages are based on the total weight of the aggregate.

ASPHALT BINDER

Use the appropriated performance graded binder, (PGB), for the project’s geographical location and design traffic level.

COARSE AGGREGATE

The single size coarse aggregate shall be nominal 6.3 mm, (1/4”), 9.5 mm, (3/8”), or 12.5 mm, (1/2”) meeting the requirements listed in Table 2 – Coarse Aggregate Gradations.

Table 2 – Coarse Aggregate Gradations

Screen Size	Total % Passing by Weight		
12.5 mm, (1/2”)		100	100
9.5 mm, (3/8”)	100	85-100	25-50
6.3 mm, (1/4”)	85-100	0-15	0-15
4.75 mm, (#4)	25-50	0-3	0-3
2.36 mm, (#8)	0-3	0	0
1.18 mm, (#16)	0		

Coarse aggregates used shall be from approved sources and shall meet one of the following requirements.

1. Coarse aggregates shall be crushed limestone having an acid insoluble residue content of not less than 20%, excluding particles of chert and similar siliceous rocks.
2. Coarse aggregates shall be crushed dolomite having an acid insoluble residue content of not less than 17%, excluding particles of chert and similar siliceous rocks.
3. Coarse aggregates shall be crushed gravel or blends of two or more of the following types of materials: crushed gravel, limestone, dolomite, sandstone, granite, chert, traprock, ore tailings, slag or other similar materials. These aggregates must meet the following requirements: for Paver Placed Surface Treatment / Ultra Thin Hot Mix Asphalt Concrete Wearing Course mixes – not less than 20% (by weight with adjustments to equivalent volume for materials of different specific gravity's) of the total coarse aggregate particles, (plus 3.2 mm, (1/8”), material), shall be non-carbonate. Non-carbonate particles are defined as those having an acid insoluble residue content not less than 80%.

Where coarse aggregates for these mixes are from more than one source or of more than one type of material, they shall be proportioned and blended to provide a uniform mixture.

Table 3 – Coarse Aggregate Properties

	Test Method	Value
LA Abrasion Coefficient	ASTM C131	<25
Water Absorption	ASTM C127	<2
Flakiness Index	NFP 18-561	<20
Flakiness Coefficient (G/E)*		1.58 max.
Crushing Ration, %		100
Cleanliness (% passing 0.60 mm, (#30))	ASTM D142	<2
Resistance to stripping**	ASTM D3625	>95

* Where “G” is the smallest square opening through which the particle can pass and “E” is the smallest slot through which the particle can pass.

** Anti-Stripping agents may be required to provide resistance to stripping.

FINE AGGREGATE

The fine aggregate shall have a minimum sand equivalent of 60, (ASTM D2419).
The fine aggregate shall be 100% crushed and shall meet the gradations listed in Table 4 – Fine Aggregate Gradation.

Table 4 – Fine Aggregate Gradation

Screen Size	% Passing
4.75 mm, (#4)	100
2.36 mm, (#8)	90-100
1.18 mm, (#16)	60-80
0.60 mm, (#30)	45-60
0.30 mm, (#50)	30-40
0.15 mm, (#100)	20-30
0.075 mm, (#200)	15-25

MINERAL FILLER

Hydrated lime, fly ash, baghouse fines and cement are acceptable as mineral filler.

Typical acceptable gradation: 100% passing 0.60 mm, (#30)
75-100% passing 0.075 mm, (#200).

TACK COAT

Use grade CRS-2 asphalt emulsion modified with latex, natural or synthetic, and meeting the requirements of ASTM D2397 except as modified in Table 5 – Tack Coat Material Properties. It is required that the latex be co-milled at the bulk emulsion facility, to ensure complete and balanced blending.

Table 5 – Tack Coat Material Properties

Property	Method	Minimum	Maximum
Latex Content, % Mass of Total Residue		3.0	
Viscosity at 25 degrees C, (Sec.)	ASTM D244	20	100
Setting Time, Minutes	Observation	3	7
Demulsibility, % by wt. Residue	ASTM D244	40	

EQUIPMENT

PAVING

The self-priming paver must be capable of spraying the tack coat, applying the hot asphalt overlay and smoothing the surface of the mat in one pass at the rate of 10-30 meters, (33-98 feet), per minute. The self-priming paver must incorporate a receiving hopper, feed conveyor, insulated storage tank for emulsion, metered tack coat spray bar and a variable width, heated, ironing type screed. The screed must have the ability to be crowned at the center both positively and negatively and have vertically adjustable extensions to accommodate the desired pavement profile.

COMPACTION

Use steel wheeled double drum roller weighing at least 7.25 to 9 metric tons, (8 to 10 ton), that are equipped with functioning water systems and scrapers to prevent the fresh mix from adhering to the roller drums.

CONSTRUCTION DETAILS

TRAFFIC CONTROL

All Traffic Control to be provided by the Awarding Authority.

SURFACE PREPARATION

All surface preparations shall be completed by awarding authority prior to applying the wearing course.

Cover all manhole covers, water boxes, catch basins and other such utility structures with plastic or building felt. Reference each for location and adjustment after paving

Remove all thermoplastic traffic markings.

Clean and flush fill all cracks and joints greater than 6.3 mm, (1/4"), wide with material approved by the engineer. No over banding will be permitted. Fill all surface irregularities greater than 25 mm, (1"), deep with material approved by the engineer.

Thoroughly clean the entire area to be overlaid. Pressurized water and / or vacuum may be required.

Remove all standing water. A damp surface is acceptable if favorable weather conditions are expected during paving operations.

APPLICATION

The minimum pavement surface temperature for application of the tack coat and placement of the wearing course is 10° C, (50° F.).

Apply the tack coat at a temperature of 60° - 70° C, (140° - 160° F.). Provide a uniform application across the entire width to be overlaid, at a rate of 0.68 – 1.13 liters per square meter, (.15 - .25 gallons per square yard). Continuously monitor the rate of spray.

No equipment shall come in contact with the tack seal coat before the hot mix asphalt concrete wearing course is applied.

Immediately after applying the tack coat, apply the hot mix asphalt overlay across the full width of the tack coat at a temperature of 150° – 165° C., (300° - 325° F.).

COMPACTION

Begin compaction immediately after the application of wearing course. Use a minimum of two passes. The roller(s) will not be allowed to stop on the freshly placed wearing course. Use an adequate number of rollers to complete compaction before the pavement temperature falls below 85° C., (185° F.). Protect the wearing course from traffic until the rolling operation is complete and the material has cooled sufficiently to resist damage.

METHOD OF MEASUREMENT

The Paver Placed Surface Treatment will be measured as the number of square yards of pavement surfaced.

BASIS OF PAYMENT

The unit bid price per square yard shall include all labor, materials and equipment necessary to complete the work.

BID FORM

Paver Placed Surface Treatment installed on designated town roads.

Schedule of Prices Per Square Yard.

Square Yards	Type A, B, or C
10,000 – 15,000	\$ _____ per square yard
15,001 – 30,000	\$ _____ per square yard
30,001 PLUS	\$ _____ per square yard

OPTION 1

a. Contractor to provide milling of keyways \$ _____ per hour.

OPTION 2

a. Contractor to install manhole/catch basin adjustment ring \$ _____ per unit.

b. Contractor to install water gate adjustment ring \$ _____ per unit.

Company Name: _____

Address: _____

Telephone: _____ Fax: _____

Signature: _____

Printed Name & Title: _____

Date: _____