

# New Jersey Turnpike Authority

P.O. Box 5042, Woodbridge, NJ 07095



December 15, 2021

## Document Change Announcement

### *2016 Standard Supplementary Specifications*

### *Resurfacing Materials*

**DCA2021SS-09**

#### **Subject: Revisions to**

Section 302 Hot Mix Asphalt (HMA) Pavements, Subsection 302.02 Materials

Section 302 Hot Mix Asphalt (HMA) Pavements, Subsection 302.05 Methods of Construction

Section 302 Hot Mix Asphalt (HMA) Pavements, Subsection 302.10 Payment

Section 903 Hot Mix Asphalt (HMA), Subsection 903.01 Composition

Section 903 Hot Mix Asphalt (HMA), Subsection 903.04 Tables

Section 904 Bituminous Materials, Subsection 904.02 Tack Coat.

#### **Description of Change:**

This DCA incorporates specifications for trackless tack coat and polymerized joint adhesives.

#### **Notice to New Jersey Turnpike Authority Staff and Design Consultants**

Effective immediately, all contracts currently in the design phase shall incorporate the revisions herein. For advertised contracts awaiting the opening of bids this revision shall be incorporated via addendum. Contact your New Jersey Turnpike Authority Project Manager for instruction.

The revisions may be accessed on the Authority's webpage: <https://www.njta.com/doing-business/professional-services>

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**NOTE: All text herein are REVISIONS, as indicated by the tracked changes, to the latest version of the 2016 Standard Supplementary Specifications.**

## DIVISION 300 – PAVEMENT

### SECTION 302 - HOT MIX ASPHALT (HMA) PAVEMENTS

#### 302.02 Materials

The following is added:

The HMA Bridge Surfacing mixture to be used for Temporary Surfacing and the Force Account for Emergency and Routine Bridge Repairs shall be

At the Contractor's option and subject to the approval of the Engineer, the Contractor may use a higher grade HMA Surface Course for the Temporary Surfacing and the Force Account for Emergency and Routine Bridge Repairs at no additional cost to the Authority.

Remove the following:

TACK COAT .....904.02

Add the following:

TRACKLESS TACK COAT .....904.02

POLYMERIZED JOINT ADHESIVE .....904.11

Subject to approval of the Engineer, Contractor may substitute trackless tack coat for tack coat meeting the following requirements:

Tack coat material shall be undiluted Grade RS-1 or Grade SS-1 emulsified asphalt, conforming to the requirements of AASHTO M140 or Grade PG 64-22 conforming to the requirements of AASHTO MP1. Asphalt material grade RC-70 or RC-250 conforming to the requirements of AASTHO M81 may only be used when approved by the Engineer.

#### 302.05 Methods of Construction

##### (A) Preparation of Existing Surface.

##### (1) Trackless Tack Coat

Delete the two tables in this Subparagraph and replace with the following:

<u>Minimum Tack Coat Application Rates (gallons per square yard)</u>		
	<u>HMA</u>	<u>AR-OGFC</u>
<u>Over New HMA</u>	<u>0.05</u>	<u>0.07 to 0.12</u>
<u>Over Existing HMA and PCC Pavement</u>	<u>0.07</u>	<u>0.11</u>
<u>Over Milled Pavement</u>	<u>0.10</u>	<u>0.12</u>

<u>Material</u>	<u>Spraying Temperature</u>	<u>Season</u>
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<u>Trackless Tack Coat</u>	<u>160° - 180°F</u>	<u>All Year</u>
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The following is added:

(a) Storage

The Contractor shall ensure Trackless Tack Coat storage tanks are clean and free of contaminants, especially cationic emulsified asphalt residue. The Contractor shall store Trackless Tack Coat at temperatures not exceeding 110 degrees F, unless otherwise approved by the Engineer and in accordance with the Manufacturer's recommendations. The Contractor shall circulate or agitate the Trackless Tack Coat being stored for a minimum of 15 minutes per day unless otherwise approved by the Engineer and in accordance with the Manufacturer's recommendations. The Contractor shall fill Trackless Tack Coat storage tanks from bottom up, unless otherwise approved by the Engineer and in accordance with the Manufacturer's recommendations.

(b) Heating and Circulation

The Contractor shall slowly heat the product to a temperature of 110 degrees F, then slowly increase the temperature to 160 degrees F while circulating the distributor tank at 100 to 150 gallons per minute. The Contractor shall circulate the spray bars upon reaching 160 degrees F.

(c) Application

The Contractor shall not apply Trackless Tack Coat to dirty or wet surfaces. Trackless Tack Coat shall be applied using a distributor in accordance with Subsection 302.04, to all existing surfaces to be paved under the contract including but not limited to curbs, inlet grates, manholes, and other similar structures. Clean exposed surfaces of these structures and apply a uniform coating to contact surfaces prior to paving. The Contractor shall check the tank, pump, and spray bar for contamination prior to applying Trackless Tack Coat and flush cationic material if encountered.

In areas inaccessible to distributor spray bars, use hand spraying equipment for tack coat.

See manufacturer's representative for correct distributor settings. Thoroughly clean all equipment if cationic emulsion was previously used.

Uniformly apply the asphalt material as noted above.

Dilution is not permitted.

If product is stored for an extended period of time or shows signs of separation, prior to application, agitate or gently circulate the material.

All nozzles and spray patterns shall be identical to one another along the distributor spray bar. The angle of the nozzles should be set at an angle between 15 and 30 degrees to the spray bar axis to maximize overlap or as recommended by the nozzle manufacturer. Contact the manufacturer's representative for required spray nozzle size, and distributor and nozzle settings.

The Engineer will determine the actual application in gallons per square yard by a check on the project.

The application is considered satisfactory when the material is applied uniformly with no visible evidence of streaking or ridging and the application rate is within  $\pm 10\%$  of the specified rate.

The Contractor shall not allow traffic or construction vehicles on tack coated surfaces until the emulsion has broken, or as otherwise directed by the Engineer.

The Contractor shall only apply tack coat that can be paved over in the same shift.



The Contractor shall follow the manufacturer's requirements for distributor settings.

(d) Tack Coat Bond Strength Requirements and Testing Methods

Trackless Tack Coat interlayer shear strength will be measured using the following testing method:

- AASHTO TP 114, Standard Method of Test of Determining the Interlayer Shear Strength (ISS) of Asphalt Pavement Layers

The minimum interlayer shear strength between any new HMA surface course on an existing asphalt or concrete pavement is as follows:

Laboratory Shear Testing

- 100 PSI minimum average for three (3) samples with no single value less than 50 PSI

Bond strength testing shall initially be performed during the test strip phase of the project. Do not begin production paving until laboratory shear testing results have met the minimum requirement. The Contractor shall repeat the test strip procedure until passing results are achieved.

The Engineer will direct additional testing during production paving to ensure that quality is being maintained. The frequency of testing will be determined by the Engineer.

When the tack coat bond strength fails to meet the minimum specified above, the Contractor shall suspend paving and submit a plan for corrective action. The Contractor shall not resume paving until the corrective action plan is approved by the Engineer. The Contractor shall repeat the test strips until acceptable results are achieved from three (3) randomly selected, 6 inches in diameter cores. The Contractor shall extract the cores and perform laboratory testing for interlayer shear strength. The sampling area will include all pavement constructed subsequent to the last acceptable bond strength test results. Any individual test sample value less than 50 psi is considered defective and subject to retesting. If retest fails the Contractor shall remove and replace the respective area. If subsequent test results fail to meet the minimum bond strength requirements, the Contractor shall remove and replace all Hot Mix Asphalt Pavement constructed where the defective tack coat was applied. The Contractor shall make adjustments to the equipment and/or materials as necessary to achieve the specified tack coat shear strength. The Contractor shall obtain a new material supplier and/or asphalt distribution method when subsequent strength test results fail. The Contractor shall resume paving operations only after acceptable bond strength has been demonstrated and the no exception is taken to the tack coat material by the Engineer. Suspension of paving operations due to defective tack coat shall not be subject to a time adjustment or pay adjustment under the Contract.

(e) Tack Coat Application Rate Requirements and Testing Methods

Tack Coat spray and residual application rates shall be performed and calculated in accordance with ASTM D2995-14.

**(F) Storing or Holding the Mixture**

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The following is added after the first paragraph:

The Contractor shall have at his disposal a portable heated asphalt storage unit with a minimum four ton capacity for the purpose of having hot mix available for the emergency pavement replacement and emergency concrete deck replacement items when material is not available from the asphalt plant. The asphalt storage unit shall be of triple wall construction heated with infrared propane gas burners that supply no more than 45,000 BTU per hour. The unit shall be capable of holding hot asphalt at the proper



laydown temperatures for a minimum of 48 hours. The temperature of the inside skin of the storage unit shall not exceed 280°F. Any associated cost shall be included in the unit prices bid for HMA items.

#### **(H) Placing Limitations.**

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The following is added after the seventh paragraph:

##### **Emergency and Routine Repairs**

In the event that the HMA bridge surfacing cannot be placed at areas of deck slab replacement due to adverse weather conditions or other unforeseen events, the Contractor shall place temporary asphalt surfacing over the spall area, bridge resurfacing area or deck slab replacement area, when so directed by the Engineer, to allow the closed lane to be opened to traffic.

Just prior to placement of the temporary surfacing, the Contractor shall apply an approved bond breaker to the surface of the membrane waterproofing in order to facilitate subsequent removal of the temporary surfacing. Placement and compaction of the temporary surfacing shall be as specified herein for asphalt pavement courses.

After the affected lane can again be closed, the Contractor shall remove the temporary surfacing, being careful so as not to cause damage to the waterproofing membrane. Saw cutting shall be performed, as may be required, to properly and safely remove the temporary surfacing and to provide vertical faces in the existing adjacent asphalt surfacing. Any damage caused to the concrete deck slab shall be repaired to the satisfaction of the Engineer prior to placement of the HMA bridge surfacing. Any damage to the membrane waterproofing shall be repaired or the membrane replaced as directed by the Engineer. Repairs or replacement of membrane and/or repairs to concrete deck slabs shall be made by the Contractor at no additional cost to the Authority.

When placing HMA to the thicknesses specified in Subsection 302.01 the base temperature shall be 32° F or above and the minimum HMA laydown temperature (in the paver) shall be 290° F or above.

#### **(I) Spreading and Finishing**

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The following is added after the ninth paragraph:

In situations where paving is completed shortly before opening of the lane to traffic and the newly placed asphalt surfacing has not sufficiently cooled, the Contractor shall, upon direction by the Engineer, water down the pavement to accelerate the cooling off process. Any associated cost shall be included in the HMA items bid in the Proposal.

#### **(J) Joints**

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Replace subparagraph (2) with the following:

For all longitudinal pavement joints which fall below 150°F or existing pavement to remain in place the Contractor shall thoroughly clean the joints to ensure they are free of dust and debris and apply polymerized joint adhesive over the entire joint. The Contractor shall uniformly apply a 1/8" thick coating of polymerized joint adhesive over the entire joint face. The material shall conform to the requirements set forth in Section 904 of these Specifications.

The following is added:

All transverse joints constructed at bridge abutment structures and Hot Mix Asphalt/Portland Cement Concrete Pavement (HMA/PCCP) interfaces at toll plazas shall be sawcut and sealed with hot poured joint sealant in accordance with the Plans, Subsection 904 in the Specifications, or as directed by the Engineer.

All transverse joints constructed against new and existing pavement to remain in place shall be surface sealed with asphalt cement viscosity Grade AC-20 in accordance with the Plans, these Specifications or as directed by the Engineer.

For all longitudinal pavement joints constructed against cold pavement or existing pavement to remain in place the Contractor shall thoroughly clean the joints to ensure they are free of dust and debris and apply polymerized joint adhesive over the entire joint.

Contractor shall uniformly apply a 1/8" thick coating of polymerized joint adhesive over the entire joint face. The material shall be applied slowly to ensure an even coating thickness. Polymerized joint adhesive material shall conform to the requirements set-forth in Section 904 of these Specifications.

#### (K) Compaction

##### (1) Compacted Thickness

The following is added:

HMA paving mixture placed for bridge surfacing or for approach roadway surfacing shall be placed in one layer to the compacted thickness prescribed in the Standard Specifications which will achieve a smooth profile using the bridge armor joints and/or the bridge profile for control, or as directed by the Engineer. The details shown on the plans shall be followed for transitioning the new pavement to the existing pavement.

The Contractor shall pave so that in the final compacted state, the asphalt surfacing meets top of armoring or if there is no armor joint the surfacing meets joint headers or abutment headblocks with an allowable tolerance of + 1/8 inch to + 1/4 inch. In order to achieve the desired grades, a smooth profile and a smooth riding pavement surface, the Contractor shall employ string lining to take elevations to establish pavement lift control points at the appropriate spacing, as necessary, to develop a profile that meets the aforementioned requirements.

##### (2) Rolling.

The following is added:

The use of vibrating rollers on bridges will not be permitted.

### 302.10 Payment

Payment for Temporary Surfacing will be made in accordance with Section 532.

No separate payment will be made for the labor, equipment and materials required for the removal and disposal of temporary surfacing, or for the furnishing and applying the bond breaking agent placed on the membrane waterproofing, but the costs thereof will be paid for under Section 532. No payment will be made for temporary surfacing that is installed because the Contractor is not able to finish work within allowable lane, roadway, shoulder and/or ramp closing durations (see Division 800).

Delete the following:

<u>PAY ITEM.....</u>	<u>PAY UNIT</u>
<u>TACK COAT .....</u>	<u>GALLON</u>

Add the following:

<u>PAY ITEM.....</u>	<u>PAY UNIT</u>
<u>TRACKLESS TACK COAT .....</u>	<u>GALLON</u>



## DIVISION 900 – MATERIALS

### SECTION 903 – HOT MIX ASPHALT(HMA)

#### 903.01 Composition

Replace the last paragraph and table with the following:

Nominal maximum size of aggregates and asphalt binder for mixes shall be as follows:

	<u>Asphalt Binder</u>	<u>Aggregate Size</u>
<u>Base Course</u>	<u>PG 64-22</u>	<u>1" (25.0 mm)</u>
<u>Intermediate Course*</u>	<u>PG 64-22</u>	<u>¾" (19.0 mm)</u>
<u>Surface Course</u>	<u>PG 64-22</u>	<u>½" (12.5 mm)</u>
<u>Surface Course</u>	<u>PG 76-22</u>	<u>½" (12.5 mm)</u>

\*Where permitted by the Contract Documents the nominal aggregate size for intermediate courses may be adjusted to ¾", ½" or 3/8" mixes as necessary to accommodate the lift thickness of material to be placed. Lift thickness shall be no less than three (3) times the nominal maximum aggregate size unless otherwise permitted by the Engineer.

#### 903.04 Tables

The following is added:

All other asphalt binder shall conform to AASHTO M 320, Table 1. A written certification of compliance shall be furnished for the asphalt cement and shall be submitted in accordance with Subsection 105.04.

Delete the last row from Table 903-2.

Delete the last row from Table 903-3.

Delete the last row from Table 903-4.

Delete Mix Compaction Level "H" from last row in Table 903-5.

Delete Mix Compaction Level "H" from last row in Table 903-6.

### SECTION 904 - BITUMINOUS MATERIAL

#### 904.02 Tack Coat

The following is added:

Tack coat for Work Areas ~~[insert locations]~~ shall be as specified in 904.01.

Delete Subsection 904.02 in its entirety and replace with the following:

#### 904.02 Trackless Tack Coat

Trackless Tack Coat shall be as listed in QPL, or an approved equal shall conform to the following physical properties:

<u>Parameter</u>	<u>Test Method</u>	<u>Min.</u>	<u>Max.</u>
<u>Saybolt Furol Viscosity, SFS @ 25° C</u>	<u>ASTM D88</u>	<u>15</u>	<u>100</u>
<u>Storage Stability, 24 hrs., %</u>	<u>ASTM D244</u>	<u>=</u>	<u>1</u>

<u>Storage Stability, 5 days, %</u>	<u>ASTM D244</u>	<u>=</u>	<u>5</u>
<u>Residue by Distillation, %</u>	<u>ASTM D244</u>	<u>50</u>	<u>=</u>
<u>Oil Distillate, %</u>	<u>ASTM D244</u>	<u>=</u>	<u>1</u>
<u>Sieve Test, %</u>	<u>ASTM D244</u>	<u>=</u>	<u>0.3</u>
<u>Test on Residue</u>	<u>=</u>	<u>=</u>	<u>=</u>
<u>Penetration, @ 25° C</u>	<u>ASTM D5</u>	<u>=</u>	<u>20</u>
<u>Softening Point Range Deg. C</u>	<u>ASTM D36</u>	<u>65</u>	<u>=</u>
<u>Solubility, %</u>	<u>ASTM D2042</u>	<u>97.5</u>	<u>=</u>
<u>Original Binder DSR @ 82° C</u>	<u>=</u>	<u>=</u>	<u>=</u>
<u>G*/SIN δ, 10 rad./sec.</u>	<u>AASHTO T111</u>	<u>1</u>	<u>=</u>
<u>Product should not contain filler such as clay, etc.</u>	<u>=</u>	<u>=</u>	<u>=</u>
<u>Keep from Freezing</u>	<u>=</u>	<u>=</u>	<u>=</u>

The following is added:

#### **904.11 Polymerized Joint Adhesive**

For longitudinal cold joints in HMA paving, use polymerized joint adhesive that is a hot applied joint adhesive that conforms to the requirements in Table 904.11-1:

<b><u>Table 904.11-1 Requirements for Polymerized Joint Adhesive</u></b>		
<b><u>Property</u></b>	<b><u>Test Method</u></b>	<b><u>Requirement</u></b>
<u>Cone Penetration, 25° C</u>	<u>ASTM D 5329</u>	<u>60 - 100</u>
<u>Flow, 60° C</u>	<u>ASTM D 5329</u>	<u>5 mm maximum</u>
<u>Resilience, 25° C</u>	<u>ASTM D 5329</u>	<u>30% minimum</u>
<u>Ductility, 4° C</u>	<u>ASTM D 113</u>	<u>30 cm minimum</u>
<u>Tensile Adhesion, 25° C</u>	<u>ASTM D 5329</u>	<u>500% minimum</u>
<u>Softening Point</u>	<u>ASTM D 36</u>	<u>77° C minimum</u>
<u>Asphalt Compatibility</u>	<u>ASTM D 5329</u>	<u>Pass</u>

The Contractor shall ensure that the polymerized joint adhesive has a viscosity at the recommended pour temperature to allow for proper application of the material. The Contractor shall obtain documentation of recommended pour temperature and safe heating temperature for the material from the manufacturer. The Contractor shall submit certification of compliance, as specified in 105.04, for polymerized joint adhesive. Attach test results to the certification.

Material for surface sealing transverse joints in the new HMA pavement shall be asphalt cement Viscosity Grade AC-20.

Hot poured joint sealant to be placed at bridge abutment structures and HMA/PCCP interfaces at toll plazas shall be as listed in QPL, or an approved equal.