

New Jersey Department of Transportation
1035 Parkway Avenue, PO Box 600, Trenton, New Jersey 08625-0600



Baseline Document Change Announcement

ANNOUNCEMENT: BDC18S-12

DATE: October 31, 2018

SUBJECT: Spray Paver
- **Revision to the 2007 Standard Specifications for Road and Bridge Construction, Sections 401, 402, 403, 404, 406, 407, 408, 555, and 1003.**

Subparts 401.02.02, 401.03.02, 401.03.03, 402.02.01, 402.02.02, 402.03.01, 402.03.02, 402.04, 403.02.02, 404.02.01, 404.02.02, 404.03.01, 404.04, 406.02.01, 406.02.02, 406.04, 407.02.01, 407.02.02, 407.03.01, 407.04, 408.02.01, 408.02.02, 408.04, 555.02.01, 555.02.02, 555.03.01, 555.04, 1003.03, & 1003.04 of the *2007 Standard Specifications for Road and Bridge Construction* have been revised to allow the use of a Spray Paver in lieu of a HMA Paver and replace “Ultra-Thin Paver” to “Spray Paver”.

The following revisions have been incorporated into the Standard Inputs (SI 2007).

SECTION 401 – HOT MIX ASPHALT (HMA) COURSES

401.02.02 Equipment

THE FOLLOWING IS ADDED AT THE END:

NOTE: A Spray Paver as specified in 1003.04 may be used in lieu of a HMA Paver.

401.03.02 Tack Coat and Prime Coat

THE FOLLOWING IS ADDED AFTER THE THIRD PARAGRAPH AS APPEARS IN THE SI:

A spray paver may be used to apply tack coat, or polymer modified tack coat, and HMA in a single operation. When paving HMA with a spray paver, use tack coat. When paving polymer modified HMA with a spray paver, use polymer modified tack coat. When using a spray paver then apply tack coat at a rate of 0.10 to 0.15 gallons per square yard and at a temperature as specified in Table 401.03.02-1.

PART 3 AS APPEARS IN THE SI IS CHANGED TO:

- 3. Polymer Modified Tack Coat.** When paving polymer modified HMA, apply polymer modified tack coat with a spray paver at a temperature of 140 to 185 °F. Continuously monitor rate of spray, ensuring a uniform application rate over entire width to be overlaid. Apply at the rate of 0.10 to 0.15 gallons per square yard. For ultra-thin friction course, modified open-graded friction course and asphalt-rubber open-graded friction course, apply at a rate of 0.20 to 0.25 gallons per square yard. For Bridge Deck Waterproof Surface Course, apply at a rate of 0.15 to 0.20 gallons per square yard. Do not allow traffic, equipment, tools, or any other disturbance to the polymer modified tack coat before placing the HMA material.

401.03.03 HMA Courses

C. Test Strip.

THE ENTIRE TEXT IS CHANGED TO:

Construct a test strip for each HMA mix for contracts with more than a total of 5500 tons of HMA. For HMA HIGH RAP, construct the test strip at least 14 days prior to production. Test strips are not necessary for temporary pavement. Ensure that the tack coat or prime coat has been placed as specified in 401.03.02, before placing HMA. Transport and deliver, spread and grade, and compact as specified in 401.03.03.D, 401.03.03.E, and 401.03.03.F, respectively, and according to the approved paving plan. Construct a test strip for the first 700 to 1200 square yards placed for each job mix formula. While constructing the test strip, record the following information and submit to the RE:

1. **Ambient Temperature.** Measure ambient temperature at the beginning and end of each day’s paving operation.
2. **Base Temperature.** Measure the surface temperature of the existing base before paving.
3. **HMA Temperature.** Measure the temperature of the HMA immediately after placement.
4. **Roller Pattern.** Provide details on the number of rollers, type, and number of passes used on the test strip.
5. **Nuclear Density Gauge Readings.** Obtain the maximum density from the plant, and input it into the nuclear density gauge. Use the nuclear density gauge to read the bulk density and percent air voids.
6. **Quality Control Core Density Test Results.** Take 5 randomly selected quality control cores to test for the bulk specific gravity and the maximum specific gravity.

Use drilling equipment with a water-cooled, diamond-tipped, masonry drill bit that shall produce 6-inch nominal diameter cores for the full depth of the pavement. Remove the core from the pavement without damaging it. After removing the core, remove all water from the hole. Fill the hole with HMA or cold patching material, and compact the material so that it is 1/4 inch above the surrounding pavement surface.

Compare the nuclear density gauge readings and the core test results to establish a correlation. Use this correlation as a guide for the continued use of the nuclear density gauge for density control.

7. **Warm Mix Asphalt.** Note the warm mix asphalt additive or process, if used.

When a spray paver is used, during the test strip or prior to starting the paving operation, operate spray paver without mix to verify tack coat application rate and demonstrate full tack coat coverage to the RE for the project. Only after the RE approves the tack coat application and coverage, then proceed with the test strip.

Upon completion of the test strip, the Contractor may continue paving except when paving HMA HIGH RAP. If the Contractor does not continue paving, the Department will accept the test strip as the first lot regardless of size.

If the test strip does not meet requirements, make adjustments and construct a second test strip. If the second test strip does not meet requirements, suspend paving operations until written approval to proceed is received.

Before making adjustments to the paving operations, notify the RE in writing. If any changes are made to the paving plan after the beginning of the paving operation, construct an additional test strip.

SECTION 402 – HMA FRICTION COURSE

402.02.01 Materials

THE FOLLOWING IS ADDED TO THE LIST OF MATERIALS:

Polymer Modified Emulsified Asphalt, Grade CRS-1P.....902.01.04

402.02.02 Equipment

THE FOLLOWING IS ADDED AT THE END:

NOTE: A Spray Paver as specified in 1003.04 may be used in lieu of a HMA Paver.

402.03.01 Installing OGFC and MOGFC

E. Spreading and Grading.

THE ENTIRE TEXT IS CHANGED TO:

Apply tack coat 64-22 as specified in 401.03.02.2. When using a spray paver, apply the tack coat as specified in 401.03.02. Place OGFC at a laydown temperature of 225 °F. Place MOGFC at the laydown temperature recommended by the binder manufacturer. Ensure that the OGFC and MOGFC meet the thickness and tolerance requirements specified in Tables 902.03.03-1 and 902.03.03-2. Spread and grade OGFC and MOGFC as specified in 401.03.03.E. Do not apply polymerized joint adhesive or tack coat to longitudinal joints.

402.03.02 AR-OGFC

E. Spreading and Grading.

THE ENTIRE TEXT IS CHANGED TO AS APPEARS IN THE SI:

Apply tack coat 64-22 as specified in 401.03.02. When using a spray paver, apply the polymer modified tack coat as specified in 401.03.02. Place AR-OGFC at a laydown temperature between 275 °F and 330 °F maximum. Spread and grade AR-OGFC as specified in 401.03.03.E, except do not apply polymerized joint adhesive or tack coat to longitudinal joints.

402.04 MEASUREMENT AND PAYMENT

THE THIRD PARAGRAPH AS APPEARS IN THE SI IS CHANGED TO:

The Department will not include payment for TACK COAT, POLYMER MODIFIED TACK COAT, TACK COAT 64-22 and HMA CORE SAMPLES in the various Items of this Section.

THE FOLLOWING IS ADDED AT THE END:

The Department will make payment for POLYMER MODIFIED TACK COAT as specified in [401.04](#).

SECTION 403 – ULTRA-THIN FRICTION COURSE

403.02.02 Equipment

THE ENTIRE TEXT IS CHANGED TO:

Provide equipment as specified:

Materials Transfer Vehicle (MTV)	1003.01
Spray Paver	1003.04
HMA Compactor	1003.05
Vibratory Drum Compactor	1003.06
HMA Plant	1009.01
HMA Trucks	1009.02

SECTION 404 – STONE MATRIX ASPHALT (SMA)

404.02.01 Materials

THE ENTIRE TEXT IS CHANGED TO:

Provide materials as specified:

SMA	902.05
Tack Coat	902.01.03
Polymer Modified Emulsified Asphalt, Grade CRS-1P	902.01.04

404.02.02 Equipment

THE FOLLOWING IS ADDED AT THE END:

NOTE: A Spray Paver as specified in 1003.04 may be used in lieu of a HMA Paver

404.03.01 SMA

E. Spreading and Grading.

THE ENTIRE TEXT IS CHANGED TO:

Apply tack coat as specified in 401.03.02. Place SMA at a laydown temperature of at least 285 °F. Spread and grade SMA as specified in 401.03.03.E. Ensure that the screed is operated in the vibratory mode. If constructing a cold longitudinal joint, construct a butt joint. Do not rake the joint.

404.04 MEASUREMENT AND PAYMENT

THE FOLLOWING IS ADDED AT THE END:

The Department will make payment for POLYMER MODIFIED TACK COAT as specified in 401.04.

SECTION 406 – HIGH PERFORMANCE THIN OVERLAY (HPTO)

406.02.01 Materials

THE ENTIRE TEXT IS CHANGED TO AS APPEARS IN THE SI:

Provide materials as specified:

Tack Coat.....	902.01.03
Polymer Modified Emulsified Asphalt, Grade CRS-1P.....	902.01.04
HPTO.....	902.08

406.02.02 Equipment

THE ENTIRE TEXT IS CHANGED TO AS APPEARS IN THE SI:

Provide equipment as specified:

Materials Transfer Vehicle (MTV).....	1003.01
HMA Paver.....	1003.03
Spray Paver.....	1003.04
HMA Compactor.....	1003.05
HMA Plant.....	1009.01
HMA Trucks.....	1009.02

Provide a thin-lift nuclear density gauge according to ASTM D 2950.

406.04 MEASUREMENT AND PAYMENT

THE FOLLOWING IS ADDED AT THE END AS APPEARS IN THE SI:

The Department will make payment for POLYMER MODIFIED TACK COAT as specified in 401.04.

SECTION 407 - BINDER RICH INTERMEDIATE COURSE

407.02.01 Materials

THE FOLLOWING IS ADDED TO THE LIST OF MATERIALS AS APPEARS IN THE SI:

Polymer Modified Emulsified Asphalt, Grade CRS-1P	902.01.04
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407.02.02 Equipment

THE THIRD PARAGRAPH AS APPEARS IN THE SI IS CHANGED TO:

NOTE: A Spray Paver as specified in 1003.04 may be used in lieu of a HMA Paver.

407.03.01 BRIC

E. Spreading and Grading.

THE ENTIRE TEXT IS CHANGED TO AS APPEARS IN THE SI:

Do not start paving of the BRIC until the RE has approved the underlying surface. Apply tack coat as specified in 401.03.02. Place BRIC at the laydown temperature recommended by the supplier of the asphalt binder or the supplier of the asphalt modifier without exceeding 330°F maximum discharge temperature at the HMA plant. Spread and grade BRIC as specified in 401.03.03.E.

407.04 MEASUREMENT AND PAYMENT

THE FOLLOWING IS ADDED AT THE END AS APPEARS IN THE SI:

The Department will make payment for POLYMER MODIFIED TACK COAT as specified in 401.04.

SECTION 408 – ASPHALT RUBBER GAP GRADED COURSES

408.02.01 Materials

THE FOLLOWING IS ADDED TO THE LIST OF MATERIALS AS APPEARS IN THE SI:

Polymer Modified Emulsified Asphalt, Grade CRS-1P..... 902.01.04

408.02.02 Equipment

THE THIRD PARAGRAPH AS APPEARS IN THE SI IS CHANGED TO:

NOTE: A Spray Paver as specified in 1003.04 may be used in lieu of a HMA Paver.

408.04 MEASUREMENT AND PAYMENT

THE FOLLOWING IS ADDED AT THE END AS APPEARS IN THE SI:

The Department will make payment for POLYMER MODIFIED TACK COAT as specified in 401.04.

SECTION 555 - BRIDGE DECK WATERPROOF SURFACE COURSE

555.02.01 Materials

THE FOLLOWING IS ADDED TO THE LIST OF MATERIALS AS APPEARS IN THE SI:

Polymer Modified Emulsified Asphalt, Grade CRS-1P..... 902.01.04

555.02.02 Equipment

THE THIRD PARAGRAPH AS APPEARS IN THE SI IS CHANGED TO:

NOTE: A Spray Paver as specified in 1003.04 may be used in lieu of a HMA Paver.

555.03.01 BDWSC

C. Test Strip.

THE ENTIRE TEXT AS APPEARS IN THE SI IS CHANGED TO:

At least 14 days prior to the production of BDWSC, construct a test strip of the BDWSC at a location agreed upon with the RE. Ensure that the tack coat has been placed as specified in 555.03.01.D before placing BDWSC.

Transport and deliver, spread and grade, and compact as specified in 555.03.01.E, 555.03.01.F, and 555.03.01.G, respectively, and according to the approved paving plan. Construct a test strip of at least 60 tons. While constructing the test strip, record the following information and submit to the RE:

1. **Ambient Temperature.** Measure ambient temperature at the beginning and end of each days' paving operation.
2. **Base Temperature.** Measure the surface temperature of the existing base before paving.
3. **HMA Temperature.** Measure the temperature of the HMA immediately after placement.
4. **Roller Pattern.** Provide details on the number of rollers, type, and number of passes used on the test strip.
5. **Nuclear Density Gauge Readings.** Obtain the maximum density from the plant, and input it into the nuclear density gauge. Use the nuclear density gauge to read the bulk density and percent air voids.
6. **Quality Control Core Density Test Results.** Take 5 randomly selected quality control cores to test for the bulk specific gravity and the maximum specific gravity.

Use drilling equipment with a water-cooled, diamond-tipped, masonry drill bit that produces 6 inch nominal diameter cores for the full depth of the pavement. Remove the core from the pavement without damaging it. After removing the core, remove all water from the hole. Fill the hole with HMA or cold patching material, and compact the material so that it is 1/4 inch above the surrounding pavement surface.

Compare the nuclear density gauge readings and the core test results to establish a correlation. Use this correlation as a guide for the continued use of the nuclear density gauge for density control.

When a spray paver is used, during the test strip or prior to starting the paving operation, operate spray paver without mix to verify tack coat application rate and demonstrate full tack coat coverage as specified in 401.03.02 to the RE. Only after the RE approves the tack coat application and coverage, then proceed with the test strip.

If the test strip does not meet requirements, make adjustments and construct a second test strip. If the second test strip does not meet requirements, suspend paving operations until written approval to proceed is received.

Before making adjustments to the paving operations, notify the RE in writing.

D. Tack Coat.

THE ENTIRE TEXT AS APPEARS IN THE SI IS CHANGED TO:

Clean the surface where the BDWSC is to be placed of foreign and loose material. Immediately before beginning paving operations, ensure that the surface is completely dry. Use propane torches or other methods acceptable to the RE to dry the surface. Only apply tack coat that can be paved over in the same day. Apply tack coat 64E-22 at a rate of 0.25 ± 0.05 gallons per square yard and at a spraying temperature of $325 \text{ }^\circ\text{F} \pm 25 \text{ }^\circ\text{F}$. When using a spray paver for BDWSC, apply polymer modified tack coat as specified in 401.03.02. Adjust the spraying temperature and application rate to produce a uniform coating with no excess material. Ensure that the tack coat is fully cured prior to placing the BDWSC. To prevent tracking of the tack coat onto the HMA paver and HMA truck tires, spread a small amount of clean dry sand over the tack coat prior to opening to construction equipment traffic. Apply a 1/8 inch thick, uniform coating of polymerized joint adhesive to vertical contact surfaces of curbing, gutters, scuppers, parapets, and other structures before the placing of the BDWSC against them. Apply the polymerized joint adhesive slowly to ensure an even coating thickness.

555.04 MEASUREMENT AND PAYMENT

THE FOLLOWING IS ADDED AT THE END AS APPEARS IN THE SI:

The Department will make payment for POLYMER MODIFIED TACK COAT as specified in 401.04.

SECTION 1003 – HMA SITE EQUIPMENT

1003.03 HMA PAVER

THE FOLLOWING IS ADDED AT THE END:

NOTE: A Spray Paver as specified in 1003.04 may be used in lieu of a HMA Paver.

1003.04 ULTRA-THIN LIFT PAVER

THE HEADING AND THE ENTIRE SUBSECTION TEXT IS CHANGED TO:

1003.04 SPRAY PAVER

Provide a self-propelled spray paver that meets the requirements in 1003.03 and is specifically designed and manufactured for applying tack coat and polymer modified tack coat immediately in front of, and just prior to applying, hot mix asphalt in a single operation without trafficking and tracking of the tack coat. Ensure the spray paver is insulated and equipped with a heater to evenly heat, maintain and apply the tack coat at the proper temperature recommended by the manufacturer. Ensure the spray paver can apply tack coat in a controlled manner which automatically adjusts the rate of tack coat application based on the speed of the paver to provide a uniform and complete tack coat coverage of the paving surface. Ensure that the spray paver is capable of spreading tack coat and HMA to the width, thickness, and application rates required without tearing, shoving, or gouging the mixture, to produce a smooth and homogeneous surface. Ensure the spray paver is capable of operation at forward speeds of at least 70 feet per minute. Ensure that the spray paver is equipped and operated using a heated vibratory screed or tamper bar to ensure material is capable of being placed and compacted to the required density and smoothness. Ensure that the paver is equipped with an automatic reverse signal alarm that is audible above the surrounding noise.

Implementation Code R (ROUTINE)

Changes must be implemented in all applicable Department projects scheduled for Final Design Submission at least one month after the date of the BDC announcement. This will allow designers to make necessary plan, specifications, and estimate/proposal changes without requiring the need for an addenda or postponement of advertisement or receipt of bids.

Recommended By:



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PS: NP: HP