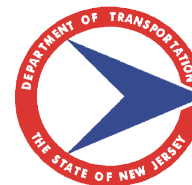


New Jersey Department of Transportation
1035 Parkway Avenue, PO Box 600, Trenton, New Jersey 08625-0600



Baseline Document Change Announcement

ANNOUNCEMENT: BDC21S-14

DATE: December 30, 2021

SUBJECT: Stone Matrix Asphalt (SMA)
- **Revision to the 2019 Standard Specifications for Road and Bridge Construction, Subsection 902.05**

Subsection 902.05 of the 2019 Standard Specifications for Road and Bridge Construction has been revised in order to update the Stone Matrix Asphalt (SMA) specifications based on current construction practices and to clarify its intent.

The following revisions have been incorporated into the 2019 Standard Specifications via 2019 Standard Inputs, SI2019:

902.05 STONE MATRIX ASPHALT (SMA)

902.05.01 Composition of Mixture

THE FIFTH PARAGRAPH IS CHANGED TO:

For fine aggregate, use 100 percent manufactured stone sand conforming to 901.05.02. Ensure that the combined fine aggregate of 100 percent manufactured stone sand in the mixture conforms to the requirements in Table 902.02.02-2.

902.05.02 Mix Design

TABLE 902.05.02-1 AND TABLE 902.05.02-2 ARE CHANGED TO:

Table 902.05.02-1 SMA Specification Band (% Passing) Nominal-Maximum Aggregate Size

Production Control Tolerances from JMF1	Sieve Size	19 mm % Passing	12.5 mm % Passing	9.5 mm % Passing
0%	1"	100	100	100
±3%	3/4"	90 – 100	100	100
±5%	1/2"	50 – 88	90 – 100	100
±5%	3/8"	25 – 60	50 – 80	70 – 95
±6%	No. 4	20 – 28	20 – 35	30 – 50
±3%	No. 8	16 – 24	16 – 24	20 – 30
±4%	No. 16	–	–	0 – 21
±3%	No. 30	–	–	0 – 18
±3%	No. 50	–	–	0 – 15
±2%	No. 200	7.0 – 11.0	7.0 – 11.0	7.0 – 12.0
–	Coarse Aggregate Fraction	Portion Retained on No. 4 Sieve	Portion retained on No. 4 Sieve	Portion retained on No. 8 Sieve

1. Production tolerances are for the approved JMF and may not fall outside of the wide band gradation limits.

Table 902.05.02-2 SMA Mixtures Volumetrics for Design and Plant Production

Property	Production Control Tolerances	Requirement
Air Voids	±1%	3.5%
Voids in Mineral Aggregate (VMA)	–	17.0% minimum
VCA _{mix}	–	Less than VCA _{DRC}
Draindown @ production temperature ¹	–	0.30% maximum
Asphalt Binder Content (AASHTO T 308) ²	±0.40%	6% minimum ³
Tensile Strength Ratio (AASHTO T 283)	–	80% minimum

1. For design, conduct draindown test at anticipated mixing temperature and 15°F higher. Ensure draindown test meets requirement at both temperatures. For production, conduct draindown test at 15°F higher than anticipated mixing temperature.
2. Asphalt binder content may not be lower than the minimum after the production tolerance is applied.
3. Aggregate blends with a G_{sb} value of 2.90 and higher may produce the mix with a minimum asphalt content of 5.8% with ME approval.

902.05.03 Sampling and Testing

THE ENTIRE SUBSECTION IS CHANGED TO:

- A. General Acceptance Requirements.** Ensure that the mix meets the requirements as specified in 902.02.04.A.
- B. Sampling.** The ME will take a random sample from each 700 tons of production for volumetric acceptance testing and to verify composition. The ME will perform sampling according to AASHTO T 168, NJDOT B-2, or ASTM D 3665. During production at the plant, a sample of asphalt binder will be taken once every 3,500 tons or as directed by the ME.
- C. Quality Control Testing.** Perform quality control testing as specified in 902.02.04.C.

For each acceptance test, perform testing for draindown according to AASHTO T 305 at 15°F above the mixing temperature.

Perform bulk specific gravity of coarse aggregates (G_{CA}) and dry-rodded voids in coarse aggregate VCA_{DRC} testing according to AASHTO R 46 by sampling and drying aggregates according to AASHTO R 90 and AASHTO T 255, respectively. The ME shall ensure that the G_{CA} and VCA_{DRC} of the aggregate blend has been determined within 7 days of the start of production. Stop production and conduct VCA_{DRC} test immediately when there are major changes to aggregate blend percentages. When performing the VCA_{DRC} test during production, use the G_{CA} value that was determined prior to production. The ME may request additional VCA_{DRC} tests to be conducted with or without requiring a new G_{CA} test to be performed at any time.

- D. Acceptance Testing and Requirements.** The ME will determine volumetric properties at 75 gyrations for acceptance from samples taken, compacted, and tested at the HMA plant according to AASHTO T 312. The ME will determine bulk specific gravity of the compacted sample according to AASHTO T 166. The ME will use the QC maximum specific gravity test result in calculating the volumetric properties of the SMA. The ME will determine VCA_{mix} according to AASHTO R 46.

If the acceptance sample is outside of the control tolerances for the No. 4 sieve in Table 902.05.02-1 or VCA_{mix} is greater than VCA_{DRC}, immediately take a quality control sample for testing. If the quality control sample is outside of the control tolerances for the No. 4 sieve in Table 902.05.02-1 or VCA_{mix} is greater than VCA_{DRC}, immediately stop production and shipping.

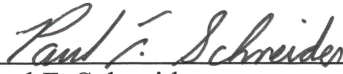
If the test results other than the No. 4 sieve or VCA_{DRC} are outside of the production control tolerances specified in Table 902.05.02-1 or Table 902.05.02-2 for an acceptance sample, immediately run a quality control sample. If the quality control sample is also outside of the control tolerances in Table 902.05.02-1 or Table 902.05.02-2, determine if a plant adjustment is needed and take corrective action to bring the mix into compliance. Take an additional quality control sample immediately after completing the corrective action to ensure that the mix is within tolerances. If the mix is within tolerance based on the quality control sample results, then the ME will immediately take an acceptance sample to test and verify that the composition, air voids, draindown, VCA_{mix}, and VMA meet the production control tolerances specified in Table 902.05.02-1 and Table 902.05.02-2. If 2 consecutive acceptance or quality control samples are outside the tolerances specified in Table 902.05.02-1 or Table 902.05.02-2, immediately stop production and shipping.

After a production stop, obtain ME approval of a plant correction plan before resuming production. Upon restarting production, do not transport mixture to the Project Limits before the results of a quality control sample from the mixture indicate that the mixture meets JMF tolerances and ME approval.

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 addenda or postponement of advertisement or receipt of bids.

Recommended By:



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PS: NE: HP