



ESSEX COUNTY

OFFICE OF THE MANAGER

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TO: All Bidders

FROM: Linda Wolf, CPA, Purchasing Agent

DATE: March 6, 2023

SUBJECT: Addendum #1 HWAY 23-29 ASPHALT FOB

This Addendum, issued to bid document holders of record, indicates changes to the bid documents for the *HWAY 23-29 Asphalt FOB* Bid Opening March 15, 2023.

PLEASE SEE THE FOLLOWING QUESTIONS AND ANSWERS:

QUESTION:

Are there minimum and maximum asphalt content requirements for Superpave and Marshall mixes?

ANSWER

Asphalt Content min and max should be followed per NYS DOT Standard Specifications.

QUESTION:

Is RAP allowed to be used in any or all mixes? If so, at what percentages?

ANSWER:


Please refer to the attached DOT MM5.16 mix design sections VII & VIII. Follow the procedures in this section to analyze the RAP being used in the mix. If there is any changes in type of RAP that must be noted, please determine the binder content and bulk specific gravity for calculations, etc.

We are willing to allow the use of RAP, with the exception that any of these products including RAP would be a separate line item. Any item with RAP should have a percentage no more than 10% to avoid changing the high temperature grade of the mix. We will continue to also use our standard mix Without RAP for both Superpave and Marshall mix.

Please provide mix designs for each material both with and without RAP for evaluation from Essex County DPW.

PLEASE SEE REVISED PROPOSAL PAGES.

END OF ADDENDUM # 1

 <p>Department of Transportation</p> <p>MATERIALS BUREAU ALBANY, NY 12232-0861</p>	<p>Materials Method: MM 5.16</p> <p>Issue Date: December 2022</p>
<p align="center">MATERIALS METHOD</p>	
<p>SUBJECT: ASPHALT MIXTURE DESIGN AND MIXTURE VERIFICATION PROCEDURES</p>	
<p>APPROVED: <u>/s/ Russell D. Thielke</u></p> <p align="center">Russell D. Thielke, P.E., Director, Materials Bureau</p>	<p>Supersedes: MM 5.16 Dated: January 2019 Subject Code: 7.42-1</p>

PREFACE

Materials Method 5.16 describes New York State Department of Transportation's (NYSDOT) requirements and policies for the development of Asphalt mixture designs, including the responsibilities of the Producer and the Department. This Materials Method (MM) also gives the specific testing details and evaluation procedures to be followed in the asphalt mixture design process. Conformance with MM 5.16 assures uniform testing and evaluation of paving mixtures through volumetric analysis of laboratory and plant prepared specimens.

The purpose of the asphalt mixture design system is to design asphalt mixtures that achieve the fundamental volumetric properties needed to result in maximum pavement performance. It is extremely important that the plant quality control procedures outlined in the Producer's Quality Control Plan are followed to ensure uniform production.

Department personnel may suggest to a Producer the methods for improving a mixture design, with the understanding that the suggestions do not bind NYSDOT to accepting material outside of specifications.

Note: This Materials Method (MM) may require the use of hazardous materials and safety sensitive procedures. This MM does not address any of the safety problems associated with its use. It is the responsibility of the user of this MM to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

of 3.5%. Determine the estimated design total binder content.

D. Design Total Binder Content Selection

Submit the test results and data analysis from gyratory compacted specimens for the design aggregate structure at four different total binder contents. The RAP blend proportion must be held constant for all four trial blends. Alterations to the total binder content are made by either: increasing the percent virgin PG binder and decreasing the percent virgin aggregate accordingly; or decreasing the percent virgin PG binder and increasing the percent virgin aggregate accordingly. From this data, determine the design total binder content. Select the design total binder content for the volumetric mix design that results in a compacted density of 96.5% of G_{mm} at N_{design} gyrations. Under no circumstances shall the PG binder content in the asphalt mixture be less than the minimum listed in **Table 3 – PG Binder Content Design**. Check all other volumetric and mechanical properties at this binder content to ensure that all requirements are met.

When more than 10% recycled asphalt pavement (RAP) is utilized in the production of Asphalt Mixture 9.5 and 12.5 Top Course, the mixture design will be formulated such that all the volumetric properties are within the criteria specified in this materials method and meeting the following minimum asphalt content as specified below in **Table 10 – PG Binder Content Design (> 10% RAP)**:

Table 10 – PG Binder Content Design (> 10% RAP)

Asphalt Mixture	Minimum Asphalt Content (%)
9.5 Top Course	6.0
12.5 Top Course	5.4

1. Selecting Total Binder Contents for Evaluation

Evaluate four different total binder contents according to Section 10 of AASHTO R 35. These include 0.5% below the estimated design total binder content, the estimated design total binder content, 0.5% and 1.0% above the estimated design total binder content. If the trial mixture total binder content used in VII. C. 3. *Estimating Total Design Binder Content* is within $\pm 0.2\%$ of one of the four binder contents, it may be used and the other three trial binder contents adjusted accordingly. (i.e., Trial Mixture Total PG Binder = 5.4%, Estimated Design Total Binder Content = 5.2%, Total Binder Contents for Evaluation = 4.9%, 5.4%, 5.9%, and 6.4%)

Note: If the maximum or minimum trial binder contents are unrealistic, consult with the RME to establish revised design points.

2. Data Analysis and Curve Preparation

Follow Section V.-C.-2., *Data Analysis and Curve Preparation*, except plot all properties versus total binder content.

3. Design Total Binder Content Selection

The design total binder content is established at 96.5% of G_{mm} (3.5% Air Voids) at N_{design} gyrations for volumetric mixtures. Show this binder content on form BR 295, *Asphalt Mixture Design Form, Volumetric Property Curves*. All other volumetric and mechanical properties (see **Table 4 - Design Criteria**, and **Table 5 - Volumetric Design Criteria**) are checked at the established binder content to assure that all criteria are met. If any of the criteria are not met at the selected design total binder content, a new design aggregate structure is required.

Prepare at least two specimens with the selected design aggregate structure at the design Total Binder Content. Compact the specimens to N_{max} gyrations. Determine the average $\%G_{mm}$ of the specimens and confirm that it satisfies the design requirement given in **Table 4 - Design Criteria**. If the requirement is not met at the design PG binder content, a new design aggregate structure is required.

E. Moisture Susceptibility Testing

Follow Section V.-D., *Moisture Susceptibility Testing*.

VIII. RECYCLED ASPHALT PAVEMENT MIXTURE SPECIMEN FORMULATION

This section outlines the procedures to develop the design aggregate structure for an asphalt pavement recycled mixture. The Producer develops the design aggregate structure. The RME reviews the design aggregate structure for conformance to requirements. This section also outlines the procedure for batching and compaction of recycled mixture test specimens according to AASHTO T 312 and R 30. As many variables, as possible have been eliminated to promote precise, accurate, and uniform testing.

A. Plant Aggregate Gradation and RAP Binder Content Analysis

Follow Section VI.-A., *Materials Selection*, except as modified herein.

Analyze each sample of RAP, to determine its binder content according to MP 401. Determine the effective specific gravity of the RAP aggregate and use this value as the Bulk specific gravity of the RAP aggregate for calculation purposes.

Note: The ignition oven method may be used to recover RAP aggregate. However, the RME may perform chemical extraction for a specific RAP stockpile, if there is evidence that the ignition oven method causes a change in the aggregate consensus properties of that stockpile. If chemical extraction confirms that the consensus properties are changed during ignition, chemical extraction will be required.

B. Aggregate and RAP Preparation

Obtain representative aggregate samples according to MP 401 and AASHTO R 90. Obtain a sufficient quantity of aggregate for the Producer to prepare a

minimum of sixteen gyratory compacted specimens and sixteen maximum specific gravity samples, and for NYSDOT to prepare a minimum of six gyratory compacted specimens and six maximum specific gravity samples. A total combined aggregate and RAP mass of 300 lbs. (130 kg) should be sufficient. Since additional testing is often required, it is recommended that additional components be obtained when sampling.

Separate aggregate samples to be used in the formulation of gyratory compacted specimens and mixture maximum specific gravity samples into the size fractions listed in **Table 6 - Aggregate Size Fractions**.

Note: At the Producer's discretion aggregates may be broken down into individual screen sizes to perform the mixture design. However, NYSDOT will verify the mixture design using the size fractions listed in **Table 6 - Aggregate Size Fractions**.

RAP samples used in the formulation of gyratory compacted specimens and mixture maximum specific gravity samples must reflect the material that will be introduced into the mixing unit. Process the RAP to remove all material larger than the scalping screen which will be used during production and heat the RAP sample to mixing temperature. To avoid hardening of the RAP binder, heating times, and temperatures should be kept to a minimum. Once a RAP sample has been heated to mixing temperature, it must be used within one hour. Heating of RAP samples more than once is not allowed.

C. Specimens Batching and Compaction

Follow Section VI.-C., *Specimen Batching and Compaction*, with the following additions.

- a. The aggregate gradation history should include the binder content of each RAP sample taken for gradation analysis.
- b. During the preparation and specimen formulation process the RAP is handled as a composite material. Do not extract the RAP binder from the RAP aggregate and handle the two materials separately.
- c. Batch the RAP as the last aggregate component prior to batching the virgin PG binder.

IX. VERIFICATION

The Regional Materials Engineer (RME) will verify all the mix designs. At a minimum, verification will include a review of the submitted mix design documentation and plant verification during initial production. The RME may also have laboratory mixes prepared and tested to verify the design prior to plant verification.

In addition to submitting a complete asphalt mixture design, the Producer may be required to submit the following to the RME:

- A sufficient sample of aggregate for laboratory verification purposes, separated into the size fractions given in **Table 6 – Aggregate Size Fractions**. Place each

aggregate size fraction in a separate substantial, sealed container. Label each container with the aggregate source number, aggregate size designation, and size fraction.

- A sufficient quantity of 1-quart (1-liter) PG binder samples from the plant, terminal, or refinery for laboratory verification purposes. The PG binder must be in clean, sealed containers suitable for heating. Label the containers with the grade, the source, the name of the Warm Mix Asphalt Technology additive, and the target dosage rate. The PG binder samples must be accompanied by the appropriate Materials Safety Data Sheet (MSDS).

Note: When sampling the PG binder, use the approved sampling valve and drain off at least 4 quarts (4 liters) from the spout before sampling.

- If the PG Binder is not pre-blended with a Warm Mix Asphalt (WMA) Technology, an adequate quantity of the WMA Technology additive for laboratory verification purposes shall be provided. In addition, the name of the WMA Technology, the target dosage rate, and the directions for properly incorporating the additive into the laboratory made mixture shall be provided. Submit a Materials Safety Data Sheet (MSDS) for the additive.

—Note: If a mix design is using a foaming process as its WMA Technology, plant verification is required only.

The RME will review the submitted asphalt mix design and either assign Verification Status, require a laboratory verification, or will reject the mixture design. The decision must be made within twenty-eight days of the date of submission. When a design is submitted during the paving season, the RME will review and decide within fourteen days of the date of submission. When multiple designs are submitted, each design will be prioritized and given the appropriate review period, and the review period for each mix design will be administered consecutively.

A. Mixture Design Review

1. The RME will review the submitted asphalt mix design to determine if:
 - a. A complete design has been prepared according to this manual, meeting all volumetric criteria and aggregate consensus property requirements.

Note: If the VMA is 3% or greater than the minimum design for 25.0 and 37.5 mixtures, the mix design may be sent to the Main Office for approval. All the necessary constituents to perform the drain-down test must be included in the shipment.
 - b. The specific production facility is using the same aggregate source(s) for production as were used for the design.
 - c. The asphalt mix gradation is representative of actual plant production, and the aggregate target values listed on the JMF correspond to the gradation appearing on the BR 253-257 and BR 272 (as appropriate), "Job Mix Formula," for the selected aggregate blend.

- d. No excessive variation exists in the compacted specimen's bulk specific gravity or the mixture's maximum specific gravity data at the binder contents evaluated.
 - e. The submitted design was completed according to the appropriate procedures and contains a reasonable PG binder content for the materials used and the design traffic loading level specified.
2. Based on this review, the RME will do one of the following.
- a. Assign Verification Status to the design without lab verification and only perform plant verification.
 - b. Will not assign Verification status to the design for being incomplete.
 - c. Will not assign Verification status to the design for not meeting the mixture volumetric criteria or the aggregate consensus property requirements.
 - d. Reject the design because it is not designed using the procedures listed in this MM.

B. Laboratory Verification

The RME may waive the laboratory verification requirement and assign Verification Status to the design. The RME is solely responsible for making this determination.

If laboratory verification is performed, two specimens will be prepared at N_{design} gyrations and calculate air voids for verification. The RME will use the tolerances listed in **Table 11 - Laboratory Verification Tolerances** and **Table 12 - Laboratory to Laboratory Verification Tolerances** in determining laboratory verification of a submitted design.

Table 11 - Laboratory Verification Tolerances

Design Criteria	Laboratory Verification Tolerances
Air Voids, V_a	$\pm 1.0\%$
Voids in the Mineral Aggregate, VMA, for Volumetric Mixes	$VMA_{\text{Table 4}} - (3.5 - V_{a(\text{lab})})$ when $2.5 \leq V_{a(\text{lab})} \leq 3.5$ $VMA_{\text{Table 4}} + (V_{a(\text{lab})} - 3.5)$ when $3.5 < V_{a(\text{lab})} \leq 4.5$

Table 12 – Laboratory to Laboratory Verification Tolerances

Test	Acceptable Variation
Theoretical Maximum Specific Gravity	± 0.019
Bulk Specific Gravity	± 0.028

Based on the results of the laboratory verification, the RME will do one of the following:

- a. Assign Verification Status to the design.
- b. Will not assign Verification status to the design for not complying with the volumetric property requirements.

At this point a complete redesign is required. As a minimum, this will consist of analyzing three distinct aggregate blends and determining the design PG binder content through the analysis of four design points. If the same aggregate sources are used in the redesign, only one additional aggregate blend is required. When a redesign is submitted, the Mixture Design Verification Procedure starts at the beginning of the verification process.

C. Plant Verification

Once the submitted mixture design has been assigned Verification Status by the RME, the Producer must plant verify the design as described below. The production and gradation tolerances shown in MP 401 shall apply during production of a mixture in Verification Status.

1. Initial Production Notification

The Producer must notify the RME and the Contractor by 3:00 pm the day before initial production. If this notice is not given, mixture verification will not begin, and any material shipped to Department projects will not be accepted.

2. Supplying Verification Status Material to Department Projects

Asphalt mix produced during the plant verification of a Verification Status design may be supplied to Department projects. The RME will coordinate the shipment of material produced under Verification Status with the Engineer-In-Charge. All efforts should be made to limit the use of a mixture produced under Verification Status to non-mainline areas; however, mainline is not specifically excluded. If the verification mixture is shipped to the mainline and the modifications exceed the tolerances in **Table 12 – Laboratory to Laboratory Verification Tolerances**, then the RME shall stop all shipments of this mixture to the mainline. However, the mixture can be shipped to non-mainline areas.

3. Quality Control During Verification Status Production

The Producer must monitor all volumetric properties and aggregate gradations during Verification Status according to Section 401, *Plant*

Production, of the Standard Specifications. Obtain quality control samples using procedures outlined in Materials Procedure (MP) 401, *Quality Control and Quality Assurance Procedures for Asphalt Mixture Production*. Compact all specimens to N_{design} gyrations. In addition, prepare two specimens gyrated to N_{max} and determine the % of G_{mm} during Verification Status.

The Producer is authorized to make necessary adjustments during production of a mixture in Verification Status to bring the design into conformance with all specified requirements.

During production under Verification Status, submit a copy of each day's BR 328, *Computation of Volumetric Mix Proportions*, to the RME before 6:00 a.m. the following day. Clearly indicate the total tons of production for each day under Verifications Status.

Note: If the asphalt mixture design contains aggregates that do not meet the specified aggregate consensus properties and adjustments are made to the percentages of any aggregate's blend proportion as shown on the JMF to improve the quality of the plant produced mixture, the Producer must recalculate the blend EAQ(s) as outlined in Section V.-B.-1., *Mixture Aggregate Consensus Properties*, to ensure total blend still meets the consensus property requirements.

4. Determining QAFs for Verification Status Material

For each day of production under Verification Status, the Department will determine the daily production QAF according to MP 401.

5. Assigning Production Status

Production of a mixture in Verification Status will continue until the end of the third verification day. A verification day is defined as a day when production is greater than or equal to 150 tons. The RME may take action on a mixture in Verification Status based on the criteria outlined below.

- a. If the daily QAF yielded by the required tests in accordance with MP 401 is below 1.00 for every verification day, the design will be rescinded, and a complete redesign will be required.
- b. If a mixture cannot be properly placed and compacted, exhibits damage from the compaction operation, or exhibits poor performance (i.e., shoving, rutting, flushing, etc.), the RME will immediately suspend production for that project according to Section 105, *Control of Work*, and Section 106, *Control of Material*, of the Standard Specifications. However, a mixture under Verification Status may continue to be placed on other project(s) if the mixture volumetrics are within the acceptable limits. If a mixture in Verification Status is placed on more than one project and exhibits similar problems on more than one project, the design will be rescinded and a complete redesign is required.

Otherwise, at the successful conclusion of Verification Status, the RME will assign Production Status to the mixture design.

PROPOSAL

Type of Asphaltic Concrete	FOB Plant Price/Ton	FOB Plant Price/Ton with 10% RAP
Marshall Mixes		
Item No. 403.138902 - Binder Course– Conforming to Schedule-A attached herein “NYSDOT Type 3 Binder JMF Curve”		
Item No. 403.178902 - Top Course– Conforming to Schedule B attached herein “NYSDOT Type 6 Top JMF Curve”		
Item No. 403.198902 - Top Course (Armor Coat) – Conforming to Schedule C attached herein “NYSDOT Type 7 Top JMF Curve”		
Item No. 403.2010 – Cold Patch Regular Mix		
Item No. 403.2030 - Cold Patch Modified Mix		
Superpave Mixes		
Item No. 402.068304 6.3 Top Course HMA with PG64-V22 Binder – Conforming to Schedule D attached herein “NYSDOT Design Control Points”.	FOB Plant Price/Ton	FOB Plant Price/Ton with 10% RAP
Item No. 402.098304 9.5 – F3 Top Course HMA with PG64S-22 Binder – Conforming to Schedule D attached herein “NYSDOT Design Control Points”.		
Item No. 402.128304 12.5 – F3 Top Course HMA With PG64S-22 Binder – Conforming to Schedule D attached herein “NYSDOT Design Control Points”.		
Item No. 402.198904 19.0 – F9 Binder Course HMA with PG64S-22 Binder – Conforming to Schedule D attached herein “NYSDOT Design Control Points”.		
Item No. 402.258904 25.0 – F9 Binder Course HMA with PG64S-22 Binder – Conforming to Schedule D attached herein “NYSDOT Design Control Points”.		
Item No. 402.378904 37.5 – Base Course HMA with PG64S-22 Binder – Conforming to Schedule D attached herein “NYSDOT Design Control Points”.		

Scale tickets shall be provided for each truck loaded.

Location of Plant of Bidder _____

Purchases under this specification shall be influenced by the availability of material from the successful bidder.

The undersigned agrees to furnish materials and service in compliance with the instructions and specifications and at the prices above.

NAME: _____

ADDRESS: _____

SIGNATURE OF AUTHORIZED REPRESENTATIVE:

TITLE: _____

DATE: _____

SOCIAL SECURITY/FEDERAL I.D. NUMBER:

PHONE NUMBER: _____ FAX NUMBER: _____

EMAIL: _____

Table 1 - Design Control Points

SCHEDULE-D

Standard Sieve Sizes		Percent Passing Criteria ¹											
		Nominal Maximum Aggregate Size											
		1 1/2 inch		1 inch		3/4 inch		1/2 inch		3/8 inch		1/4 inch	
		37.5 mm		25.0 mm		19.0 mm		12.5 mm		9.5mm		6.3 mm	
inch	mm	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
2	50.0		100										
1 1/2	37.5	100	90		100		100						
1	25.0	90		100	90	100	97						
3/4	19.0			90		100	90		100		100		
1/2	12.5					90		100	90	100	97		
3/8	9.5							90		100	90		100
1/4	6.3											100	90
No. 4	4.75									90		90	
No. 8	2.36	41	18	45	22	49	26	58	31	67	32	70	37
No. 200	0.075	6	0	7	1	8	2	10	2	10	2	10	2

Note:

- 1) Percent passing rounded to the nearest whole number.
- 2) The 1/4-inch (6.3 mm) sieve is used only for the 6.3 HMA gradation.

APPENDIX A**NYSDOT Average Posted Prices for Asphalt (Performance Graded Binder)**

The following is a listing of Average Posted Prices for Asphalt (Performance Graded Binder) which are to be used in computation of progress and final payments for the Asphalt Price Adjustment (Item 698.01 and 698.04). Instructions for calculating these payments are contained in the NYSDOT Standard Specifications.

	2023		2022		2021		2020	
	\$/ton (metric)	\$/ton	\$/ton (metric)	\$/ton	\$/ton (metric)	\$/ton	\$/ton (metric)	\$/ton
January		626	508	580	508	461	555	504
February		608	535	605	535	486	567	515
March			550	624	550	499	574	521
April			571	655	571	518	568	515
May			601	719	601	546	547	496
June			609	779	609	552	519	471
July			626	824	626	568	511	464
August			631	829	631	573	522	474
September			634	806	634	575	522	474
October			631	764	621	572	519	471
November			628	690	628	570	508	461
December			633	640	633	574	499	453

BASE PRICE: \$608/US Ton February 2022

Asphalt Adjustment: \$(Current Month's PGB)/US Ton

BASE PRICE - ASPHALT ADJUSTMENT = \$____US Ton Difference

$\$(\text{US Ton Difference}) \times \% \text{ Asphalt per Product} = \text{Total Adjustment per Ton}$

When the adjustment is less than the Base Price, the escalation is a credit for the County

NYSDOT Item#	Asphalt + Fuel Adj. %/ US Ton	Asphalt + Fuel Adj. \$/ US Ton
Top (6.3 MM) 402.068	6.70% + 1.00% = 7.70%	0.000
Top (9.5 MM) 402.098	6.20% + 1.00% = 7.20%	0.000
Top (12.5 MM) 402.128	5.50% + 1.00% = 6.50%	0.000
Binder (19 MM) 402.198	4.90% + 1.00% = 5.90%	0.000
Binder (25 MM) 402.258	4.50% + 1.00% = 5.50%	0.000
Base (37.5 MM) 402.378	4.10% + 1.00% = 5.10%	0.000
Cold Patch – Regular Mix 403.2010	6.00% + 1.00% = 7.00%	0.000
Cold Patch – Modified Mix 403.2030	6.00% + 1.00% = 7.00%	0.000
Diluted Tack Coat	0.17%	0.000
Type 6 Top 403.178	6.20% + 1.00% = 7.20%	0.000
Type 7 Top 403.198	6.85% + 1.00% = 7.85%	0.000
Type 3 Binder 403.138	5.50% + 1.00% = 6.50%	0.000