

2025
APAM
Conference
Hot Mix Asphalt
(HMA) Update

NATHAN MAACK

HMA OPERATIONS

MICHIGAN DEPARTMENT OF
TRANSPORTATION

CHUCK MILLS

ASPHALT PAVEMENT ASSOCIATION OF
MICHIGAN

2-27-25

Binders and Emulsions

Binders and Emulsions **must** come from an approved source

The lists are currently on the website: <https://www.michigan.gov/mdot/business/construction>

The screenshot displays a webpage with three main sections at the top: 'Standard Specs & Publications', 'Construction Manual', and 'Business Forms'. Below these is a 'Resources' section containing several links. An orange arrow points from the 'Resources' section to the 'Approved Asphalt Binder Suppliers' link.

Standard Specs & Publications
Standards for the basic requirements governing materials, equipment & methods used in construction contracts.

Construction Manual
Developed and maintained by Field Services, this manual provides guidance to administrative, engineering & technical staff.

Business Forms
MDOT forms are searchable by form number, keyword, or area, and are available for external customers and MDOT staff.

Resources

- [Bid on Construction Projects](#)
- [Become a Prequalified Contractor](#)
- [Construction Scheduling](#)
- [Prevailing Wage Compliance](#)
- [Dispute Review Board](#)
- [FieldManager](#)
- [Approved Asphalt Binder Suppliers](#)
- [Emulsified Asphalt Suppliers](#)
- [New Materials/Qualified Product Evaluation](#)

Approved Asphalt Binder Suppliers List
(Updated May 21, 2024)

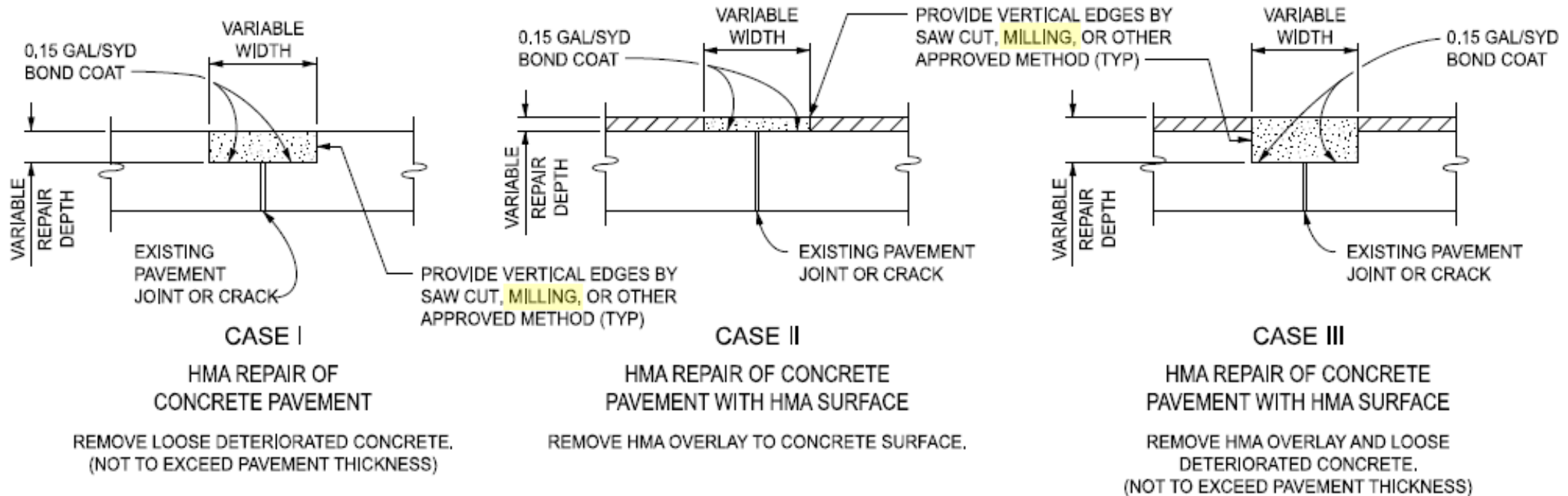
<u>Supplier Name, City, State</u>	<u>Certifier #</u>	<u>Grade</u>
Ace Saginaw Paving Co., River Rouge, MI	ABS3700	PG 58-22 PG 58-28 PG 64-22 PG 64-28
Ajax Asphalt Terminal, Detroit, MI	ABS2500	PG 52-22 PG 52-34 PG 58-22 PG 58-34 PG 64-22 PG 52-28 PG 58-28 PG 64-28 PG 64-34 PG 64-28P PG 64-34P PG 70-22P PG 70-28P PG 76-22P
Bit-Mat Products of Michigan, Bay City, MI	ABS2800	PG 52-28 PG 58-22 PG 58-28 PG 58-34 PG 64-22 PG 64-28 PG 64-28P PG 64-34P PG 70-22P PG 70-28P
Bit-Mat Products of Indiana, South Bend, IN	ABS2700	PG 64-28 PG 70-28P

BB Asphalt Terminal, Detroit, MI ABS6010 PG 58-22

Emulsified Asphalt Suppliers List
(Updated June 26, 2024)

<u>Supplier Name, City, State</u>	<u>Emulsified Asphalt Grade</u>
Asphalt Materials, Inc., Oregon, OH	CSS-1hM SS-1h CRS-2M MS-2h Chip Seal Emulsified Asphalt CSS-1h HFRS-2 HFRS-2M SSEA CQSEA LTBC-2 MSEA
Asphalt Materials, Inc., Warsaw, IN	PPSS
Bit-Mat Products, Bay City, MI	SS-1h HFRS-2M HFRS-2 LTBC-2 CRS-2M
Bit-Mat Products, South Bend, IN	HFRS-2 LTBC-2
Blacklidge Emulsions, Inc., Greer, SC	LTBC-1
Blacklidge Emulsions, Inc., Gulfport, MS	LTBC-1

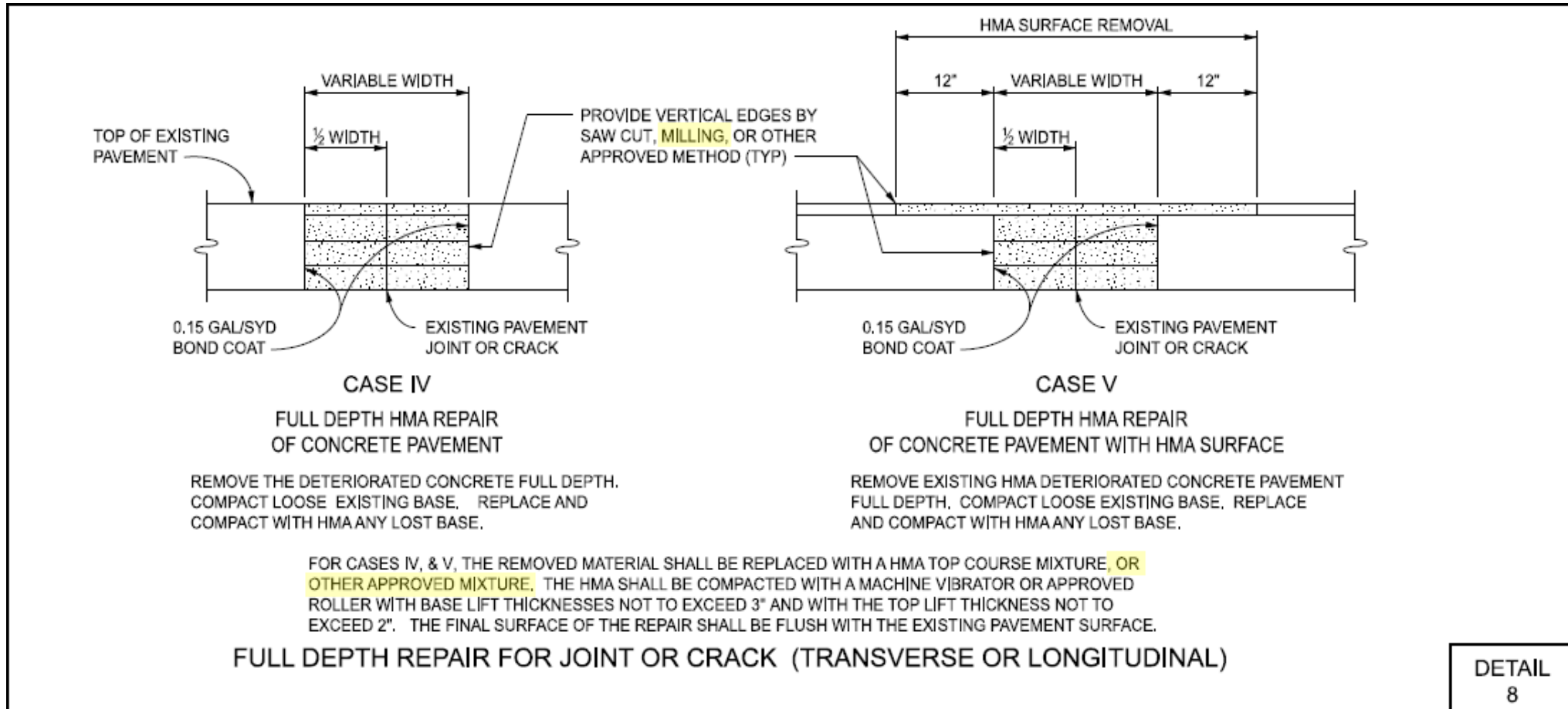
Detail 7s and 8s



FOR CASES I, II, & III, THE REMOVED MATERIAL SHALL BE REPLACED WITH A HMA TOP COURSE MIXTURE, OR OTHER APPROVED MIXTURE. THE HMA SHALL BE COMPACTED WITH A MACHINE VIBRATOR OR APPROVED ROLLER WITH BASE LIFT THICKNESSES NOT TO EXCEED 3" AND WITH THE TOP LIFT THICKNESS NOT TO EXCEED 2". THE FINAL SURFACE OF THE REPAIR SHALL BE FLUSH WITH THE EXISTING PAVEMENT SURFACE.

SURFACE REPAIR FOR JOINT OR CRACK (TRANSVERSE OR LONGITUDINAL)

Detail 7s and 8s







12
↑

NO RIGHT
TURN
AHEAD

NO RIGHT
TURN

AMTRAK
Dearborn, MI
John D. Dingell
Transit Center







Bond Coat Checklist

Form 0552

Available on the MDOT website

More information available in the Construction Manual

Michigan Department
of Transportation
0552 (04/20)

Clear Form

BOND COAT APPLICATION INSPECTOR / OPERATORS CHECKLIST

DOCUMENT REVIEW	
<input type="checkbox"/>	Type of bond coat (<i>typical is SS-1H</i>)
<input type="checkbox"/>	Planned application rate (<i>standard is indicated in plans</i>)
<input type="checkbox"/>	Materials Safety Data Sheet (<i>on file in the Contractors' MSDS binders</i>)
<input type="checkbox"/>	Manufacturer's instructions
EQUIPMENT INSPECTION – DISTRIBUTOR	
<input type="checkbox"/>	The spray bars are at the proper height
<input type="checkbox"/>	All nozzles are uniformly angled 15° to 30° from the spray bar
<input type="checkbox"/>	All nozzles are free of clogs
<input type="checkbox"/>	The spray pattern has been checked for uniformity
<input type="checkbox"/>	Circulating bond material before spraying
<input type="checkbox"/>	The spray pattern has been checked for proper overlap
<input type="checkbox"/>	The application pressure has been verified
<input type="checkbox"/>	The distributor's application calibration has been verified (<i>ASTM D2995</i>)
<input type="checkbox"/>	Set application rate
PROJECT REVIEW – WHAT TYPE OF SURFACE WILL BE BOND COATED	
<input type="checkbox"/>	Milled
<input type="checkbox"/>	Existing HMA
<input type="checkbox"/>	New HMA
<input type="checkbox"/>	PCC
Is the existing surface to be bond coated non-uniform?	
<input type="checkbox"/>	Yes
<input type="checkbox"/>	No











Impact Spacing
10-14 Impacts per foot

LOCAL NEWS

Erika Erickson, Reporter

Published: December 9, 2024 at 7:11 PM

Updated: December 9, 2024 at 7:36 PM

Tags: [Macomb County](#), [Metro Detroit](#)



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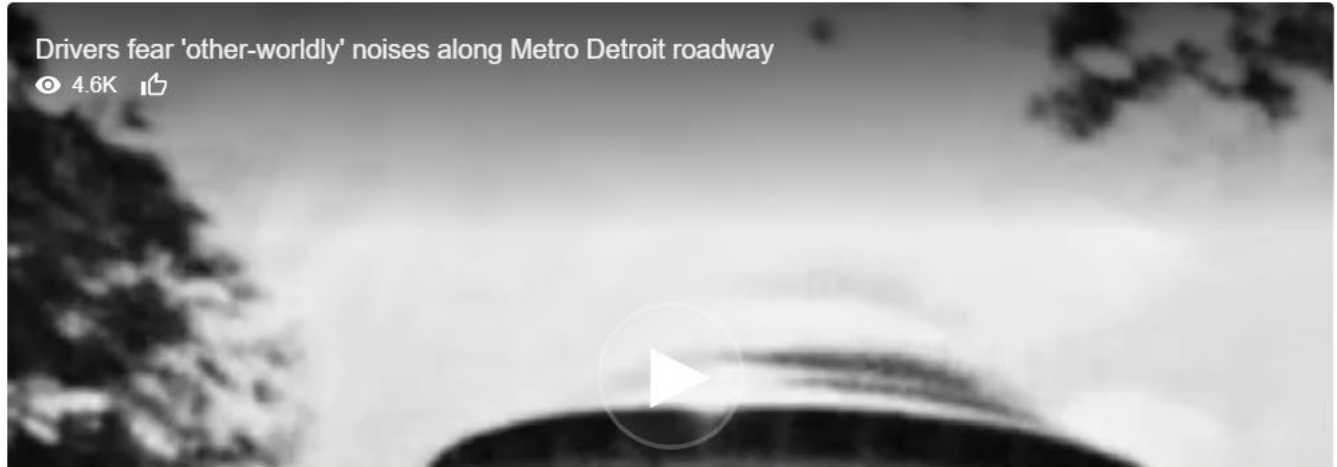
Advertisement

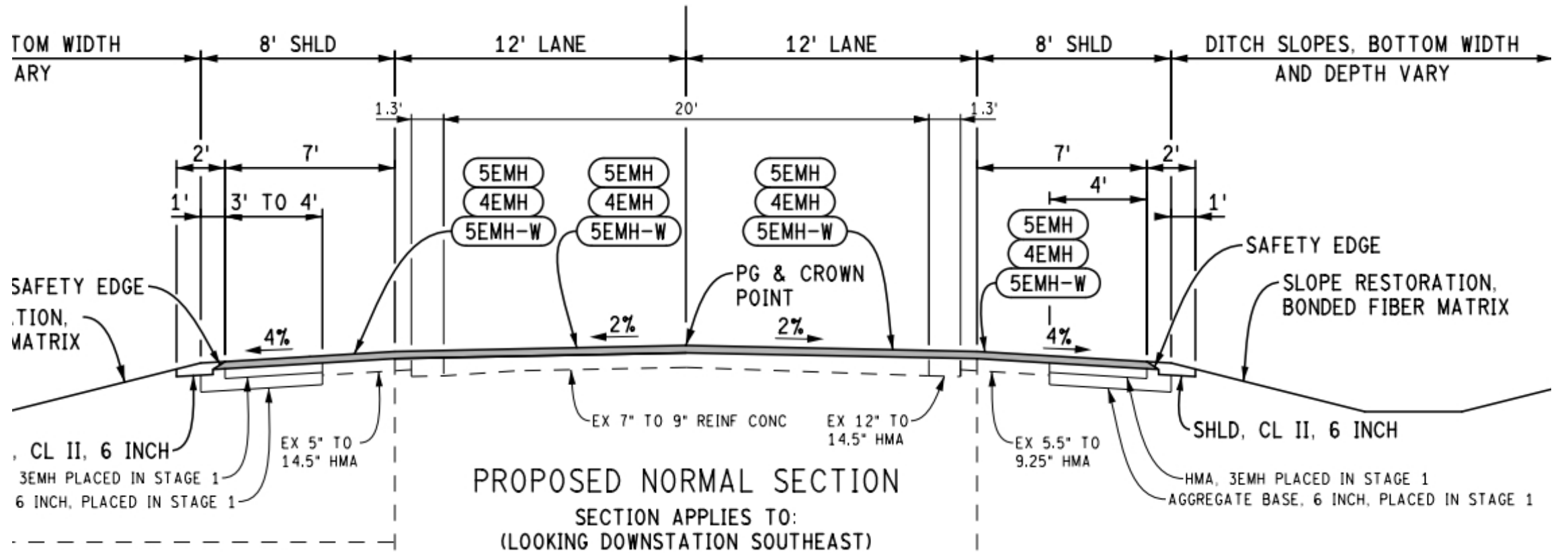
The mysterious sounds of Van Dyke Road: Ghosts, aliens, or just new asphalt?

Mystery has sparked many questions and concerns on social media

Drivers fear 'other-worldly' noises along Metro Detroit roadway

4.6K





Longitudinal Joint Specification Update

- Deleted language excluding echelon joints from testing and incentive/disincentive
- Include the longitudinal joint pay item
- The contractor is allowed to over pave and trim back
- MDOT will pay for up to 2 inches of mix and deduct any quantity in excess

PWL Specification Update

Changed IPL Waiver Requirements

- Added: If an IPL was not completed for this mix design the contractor will be allowed to submit 4 consecutive QA tests, STA or PWL, from the current or prior season that meet the requirements in subsections e.3.C and e.3.D.
- Now allowed a waiver in consecutive seasons
- Deleted Section 2, requiring 2 lots to be completed.

Updated section references and links

PWL Specification Update

Reviewed PWL and STA data from 2019 through 2022

- STA
 - Spec limits for VMA, Air Voids and Binder Content were appropriate
 - Density was raised to 91.0 min density, 92.5 is min for full pay
 - The density pay equations were updated
 - If any individual PF is below 100 then the OSPF may not be greater than 100.
- PWL
 - Pay factors for Air Voids, VMA and Density were appropriate
 - Binder Content upper limit was adjusted to 0.50, the lower limit of 0.35 was appropriate
 - The action and suspension limits for binder content were updated
 - Sublot RQL limits were added for binder content

Mini-Stockpile is now required for sampling during wedging operations.

Stone Matrix Asphalt Update

2021 SMA Round Robin

Reviewed multiple state DOT specifications

Collected PWL and STA QA results from 2014 through 2021

Used the QA results to develop a new specification

New SP will be contractor option

Stone Matrix Asphalt Update

3 Pay Factors

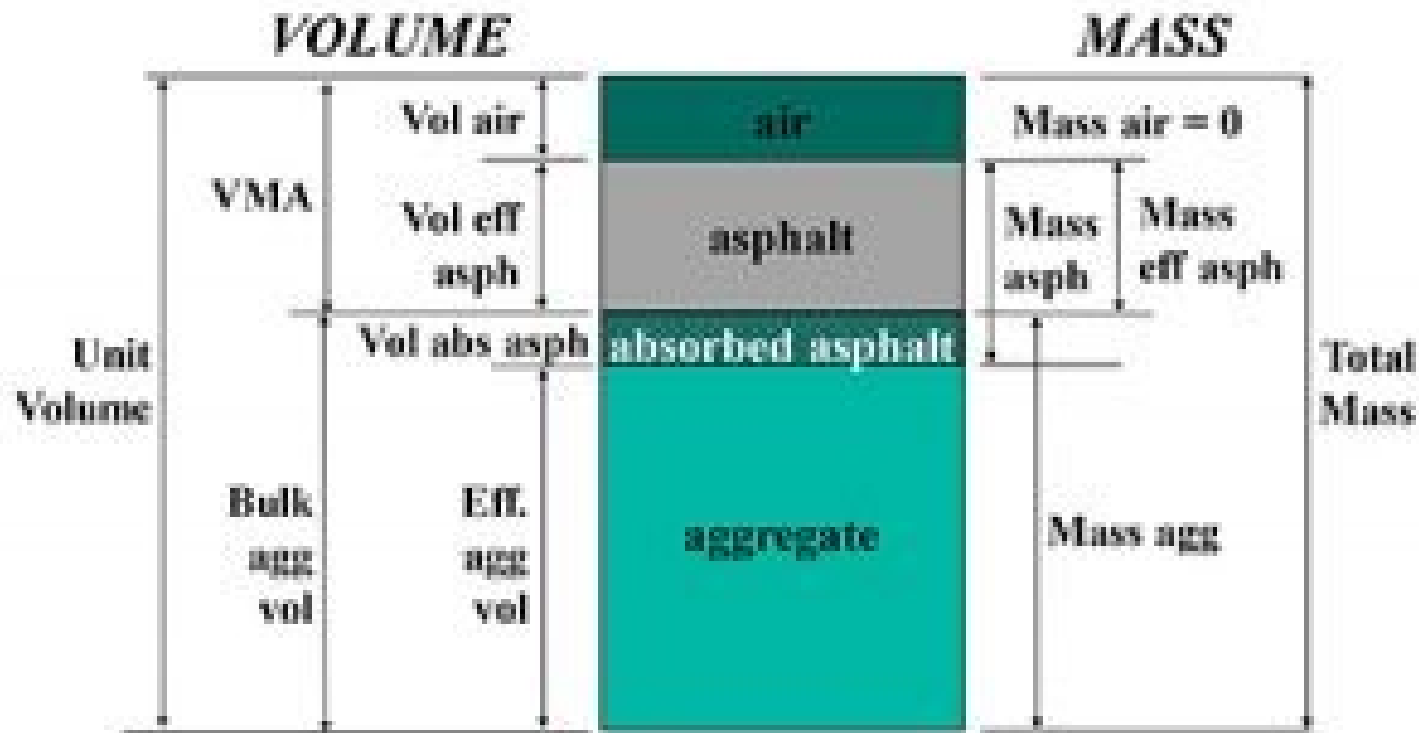
- Air Voids
- Volume of Effective Binder, V_{be}
- Density

Overall Lot Pay Factor

- Air Voids 30%
- V_{be} 30%
- Density 40%

Binder Content is a Quality Control parameter

Stone Matrix Asphalt Update



Stone Matrix Asphalt Update

Air Voids

- Spec Limit +/-1.50
- RQL +/-2.00

Vbe

- Target 15.00
- Spec Limits -1.00, +1.50
- RQL -1.50, +2.00

Density

- 92.50% Minimum

Stone Matrix Asphalt Update

Reviewed 2023 Data

Making some changes to the mix design process for SMA mix designs

- All SMA designs will not be express
- Run VCA test

Check VCA during production

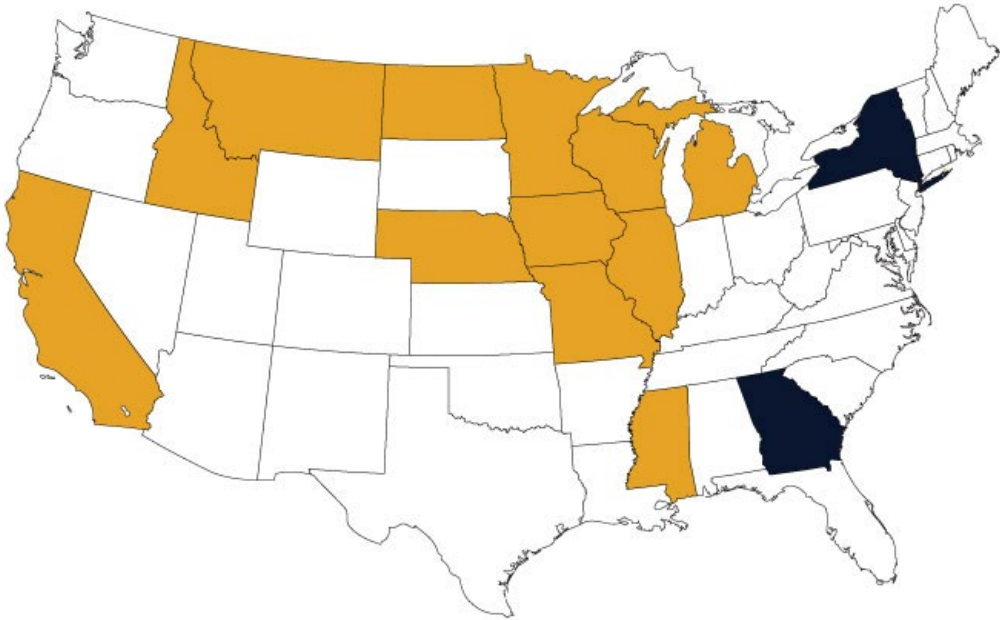
Consortium for Asphalt Pavement Research and Implementation (CAPRI)

- APAM and MDOT are members
- Purpose to improve asphalt pavements by addressing knowledge gaps and research needs in the industry.
- Stakeholders:
 - State, local, and federal highway agencies
 - Industry associations
 - Companies
 - Academic institutions
 - Research organizations

Consortium for Asphalt Pavement Research and Implementation (CAPRI)

- Completed Research
 - TechBrief - Asphalt Longitudinal Joint Current and Best Practices Construction Methods, Materials, & Acceptance
 - Longitudinal Joints, 2-pager
 - Guidelines and Recommendations for Field Validation of Test Criteria for Balanced Mixture Design (BMD) Implementation
- For more info capriasphalt.us

National Road Research Alliance



National Road Research Alliance

- Perpetual Pavements in Wet-Freeze Climates
- MnROAD Reflective Cracking Challenge
- Validation of Loose Mix Aging Procedures for Cracking Resistance Evaluation in Balanced Mix Design

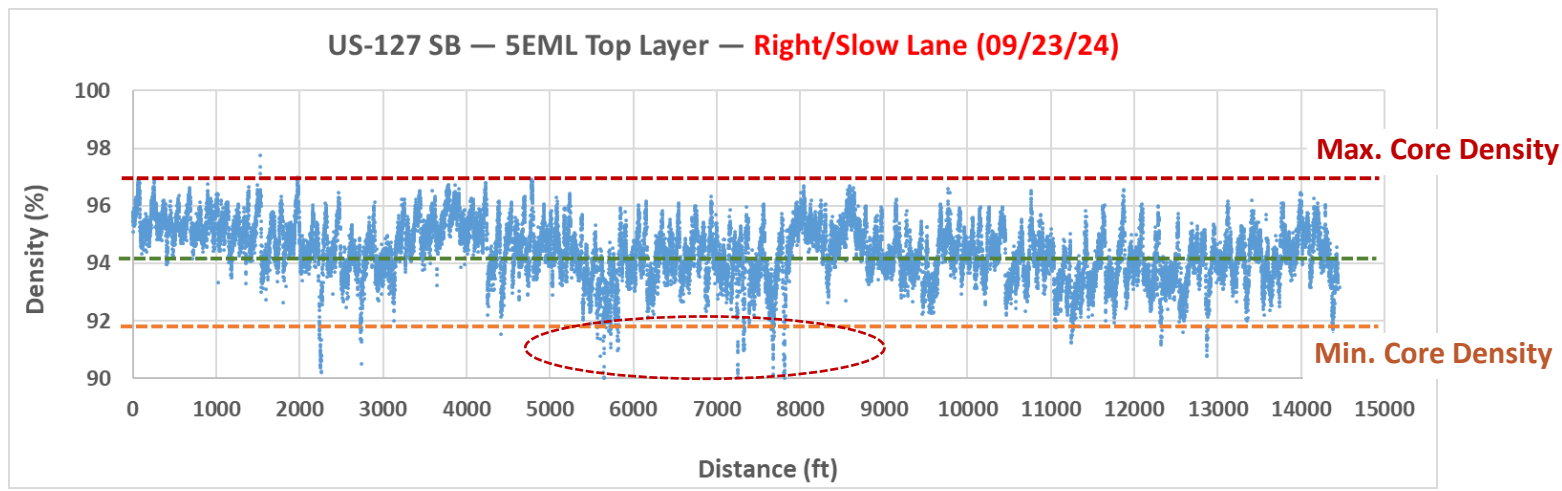
US-127 (Ithaca)

- ❑ ~ 3 miles of US-127 NB and SB
- ❑ Milling & Two Course Overlay
 - 1.5" **Superpave 5EML (64-28) – Top Layer**
 - 2.0" **Superpave 4EML (64-28) – Leveling Layer**

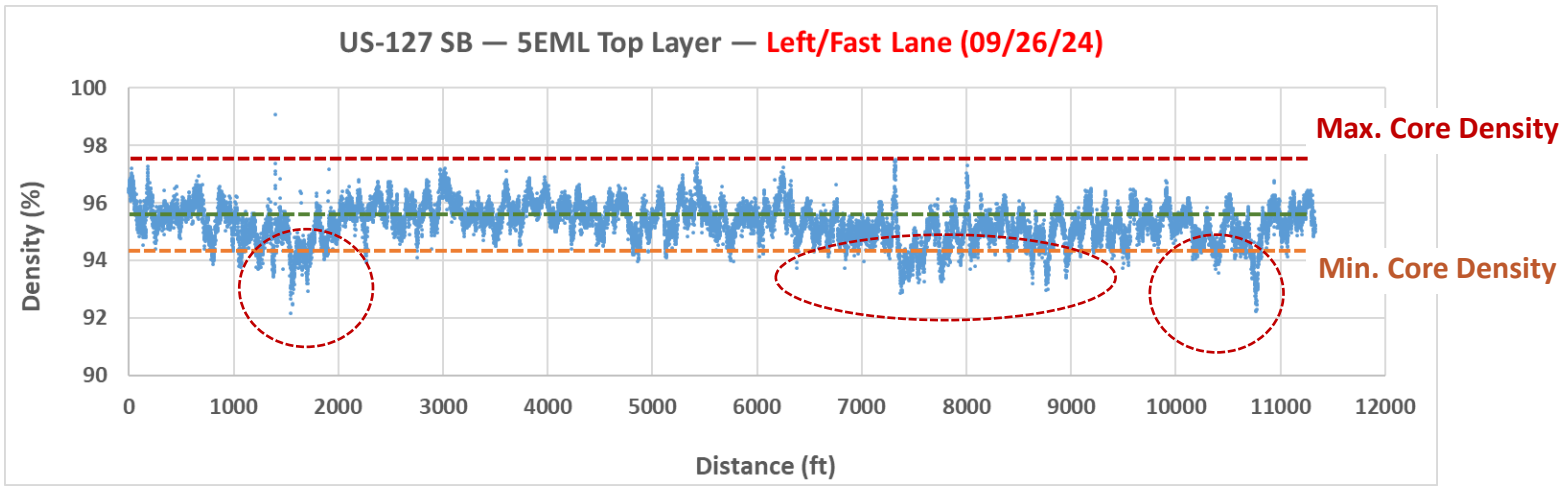
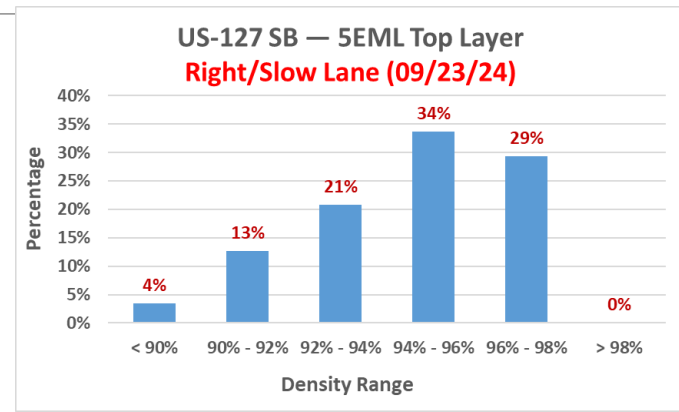


US-127 SB (5EML – Top Layer)

- ~ 2.7 miles (8 QA cores)

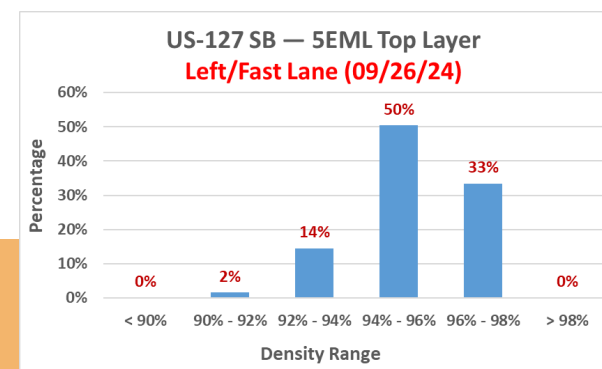


Sublots (1-2)	QA Cores	DPS
Max. %Density	96.19	96.93
Min. %Density	91.56	90.39
Average	93.81	94.40

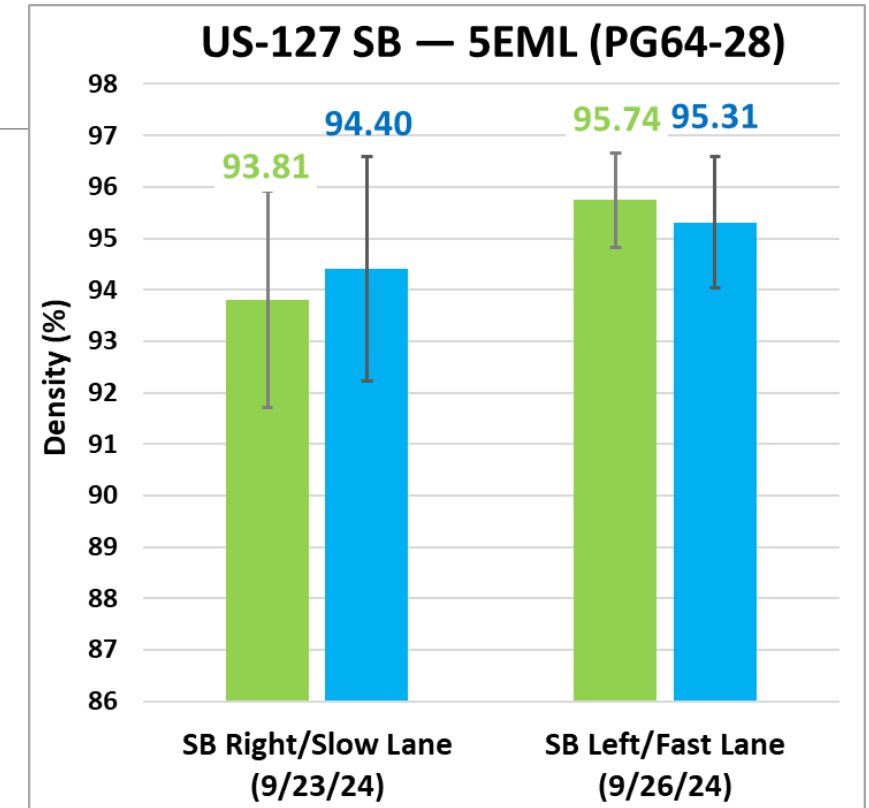
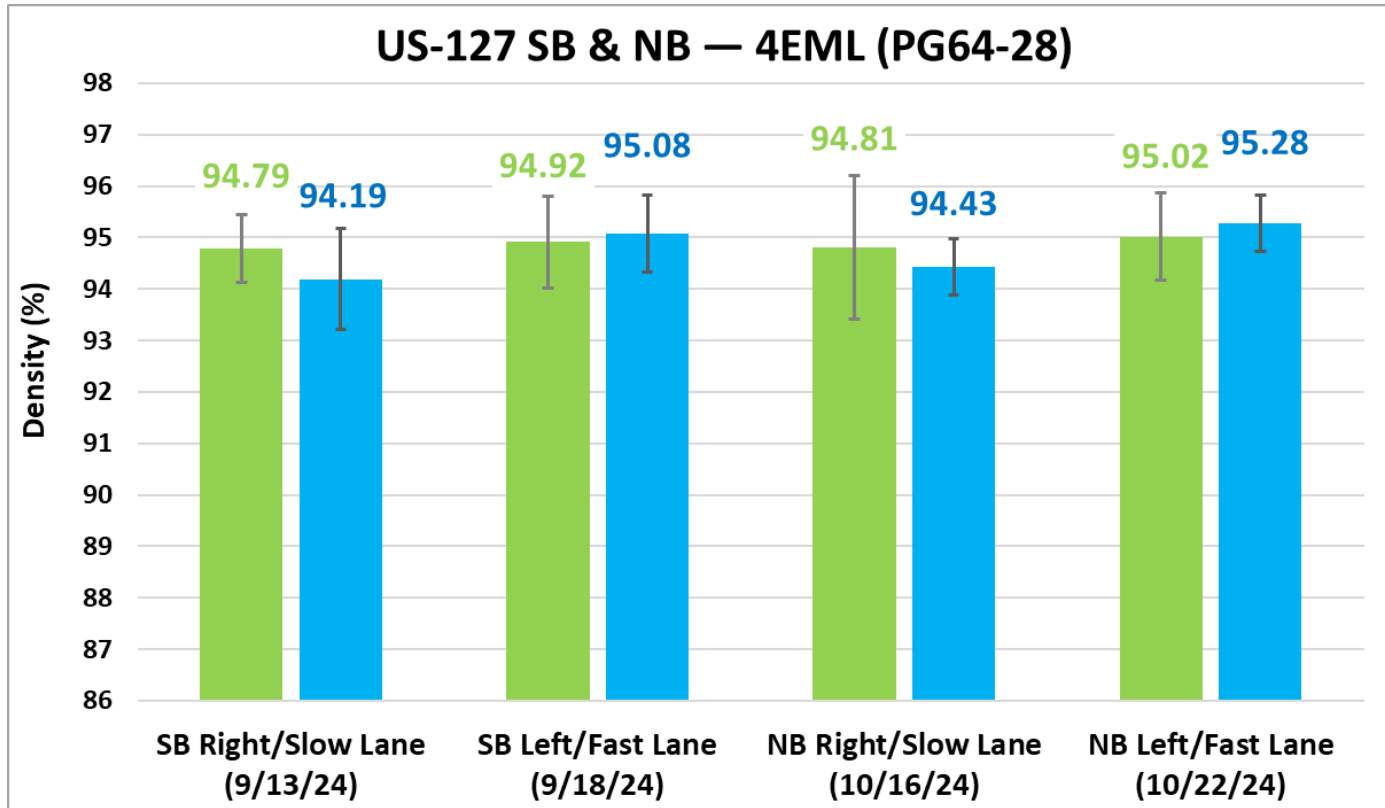


- ~ 2.2 miles (8 QA cores)

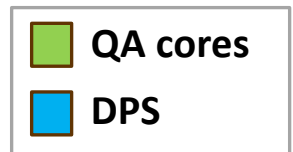
Sublots (3-4)	QA Cores	DPS
Max. %Density	97.28	97.01
Min. %Density	94.29	92.85
Average	95.74	95.31



US-127 SB & NB



❑ DPS-calculated densities and QA core densities were **statistically similar**, validating the accuracy of DPS measurements for mat density.



Upcoming Items

- Changes to Gsb testing
- Looking at Vbe spec for all HMA Mixes
- BMD is coming
- Production Manual Update
 - Mix Design procedure changes and updates
 - Updated test methods
 - Add Binder and Emulsion Certification language and remove it from MQAP
 - Process for changing QA Labs during a project
- FHWA Mobile Asphalt Testing Trailer
 - Coming to Michigan in 2025
 - Located at CFS in Lansing
- Ride Quality SP update

Questions

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