



PTC Materials
2026 PAPA Technical Meetings



2026 Specification Changes

**CS 313 - SUPERPAVE ASPHALT MIXTURE DESIGN, STANDARD CONSTRUCTION,
BASE COURSE**

**CS 413 - SUPERPAVE MIXTURE DESIGN, STANDARD CONSTRUCTION OF PLANT
MIXED ASPHALT COURSES**

**CS 419 - STONE MATRIX ASPHALT MIXTURE DESIGN, STANDARD
CONSTRUCTION OF PLANT-MIXED WEARING COURSES**

CS 313.1

CS 413.1

DESCRIPTION - This work is the standard construction of a plant-mixed asphalt base course on a prepared surface using a **Coarse Graded** volumetric mixture design as defined in **NAPA-FHWA Series 128 Table 2**, Definition of Fine and Coarse Graded Mixes, developed with the Superpave Gyrotory Compactor (SGC) using prescribed manufactured additives, or plant process modifications or both.

Applies to creation and submission of asphalt mix designs.

TABLE 2: Definition of Fine- and Coarse Dense-graded Mixtures

Mixture NMS Sieve Sizes	Coarse-Graded Less Than	<u>Fine-Graded</u> More Than
37.5 mm (1 1/2")	< 35% Passing 4.75 Sieve #4	> 35% Passing 4.75 Sieve
25.0 mm (1")	< 40% Passing 4.75 Sieve #4	> 40% Passing 4.75 Sieve
19.0 mm (3/4")	< 35% Passing 2.36 Sieve #8	> 35% Passing 2.36 Sieve
12.5 mm (1/2")	< 40% Passing 2.36 Sieve #8	> 40% Passing 2.36 Sieve
9.5 mm (3/8")	< 45% Passing 2.36 Sieve #8	> 45% Passing 2.36 Sieve
4.75 mm (No. 4 Sieve)	N/A (No standard Superpave gradation)	

CS 313

CS 413 **Non-Amine based Warm Mix Technology / Additives**

CS 419

3. WMA Technology Additives or Modifiers Blended at the Asphalt Binder Supplier's Refinery or Terminal. WMA Technology Additives or Modifiers blended at the Asphalt Binder Supplier's refinery or terminal is not permitted. **Non-amine based WMA Technology** additives or modifiers must be blended as specified in Section 413.2(a)4.

4. WMA Technology Additives or Modifiers Blended at the Asphalt Mixture Producer's Plant. Provide a blended asphalt binder consisting of an approved **non-amine based WMA Technology** additive or modifier from an approved manufacturer and source listed in Bulletin 15

***Amine based additives promote asphalt stripping and negates the silane based anti-strip additives.**

1.c. Annual JMF Verification. During initial production of each JMF, verify the mixture conforms to Table A and Table I multiple (n=2) subplot tolerances, the VMA requirements listed in Table B, and the lot meets 100% payment. **Utilize all the mixture components stated on the approved JMF. Material for Verification cannot be shipped to Commission projects. All verification testing must be noted in the Bit-DEL QC section, for each specific JMF.**

Table A	Tolerances Revised
Gradation	Verification Tolerance
Passing 12.5 mm (1/2 inch) and Larger Sieves	±8%
Passing 9.5 mm (3/8 inch) to 150 µm (No. 100) Sieves (Inclusive)	±6%
19mm and larger mixes Passing 75 µm (No. 200) Sieve	±2.5%
12.5mm and smaller mixes Passing 75 µm (No. 200) Sieve	±1.5%

- For initial production the mixtures component percentages, noted on the approved JMF, must be used.

If the mixture does not conform to the requirements of Table A and Table I, suspend shipping the mixture to the project. If verification of the mixture cannot be achieved within **two attempts**, the initially approved JMF will be considered defective, **a new JMF shall be submitted and approved**, in accordance with Bulletin 27, Appendix J.

- **All Mixture Components noted on the JMF must be used in production.**
- **Table A verification tolerances for various sieves was revised.**
- **Material being verified can not be shipped to PTC contracts.**

All samples taken from daily production will be taken according to the producer's QC plan guidelines. Document Asphalt plant adjustments (weight of hot bin changes, % cold feed changes, AC% from RAP, bag house draft changes, mineral filler changes, etc.) during Asphalt production in the PTC Bit-DEL program. **Failure to document these changes will result in the suspension of asphalt plant production to the Commission contracts.**

All producer Asphalt verification, quality control, and acceptance test results must be documented in the current excel Bit-DEL program provided by the Commission. The PTC Bit-DEL program requires Excel version 2010 or newer. Provide computer software compatible with the current Bit- DEL version. The Bit- DEL program and all testing data contained within shall always remain accessible to the Representative. **Provide the Representative daily with the printed or electronic copies of the asphalt plant mixing production recorder data and printed production mix temperature chart recorder data.** At the end of the production season a copy of the Bit-DEL QC and Acceptance software shall be transferred electronically to the Commission's Materials Lab Manager and become the property of the Commission.

Provide a mixture within the following production limits: **Table A-1 Production Sieve Tolerances Added**

Table A-1

Gradation	Production Tolerance
Passing 12.5 mm (1/2 inch) and Larger Sieves	±6%
Passing 9.5 mm (3/8 inch) to 150 µm (No. 100) Sieves (Inclusive)	±4%

During production, individual sieves must comply with Table A1 and Table I tolerances.

If Gmb plugs are outside of the ± 20 gram tolerance, the plug must be discarded and remade.

1.d.3. Gradation. Perform gradation tests of the completed mixture to verify that it conforms to the tolerances of Table A 1 and Table I. Test the completed mixture according to PTM No. 757 or according to PTM No. 702 and PTM No. 739.

1.d.5. Volumetric Analysis of Compacted Specimens. Sample the completed mixture and prepare a minimum of two specimens from each sample according to AASHTO T 312. During design and production, the dry weight of the individual Gmb compacted gyratory specimens shall not vary more than ± 20 grams from the specimen weight listed on the JMF-PTC-TR-448. If a Gmb specimens exceed ± 20 grams from the specimen weight listed on the JMF discard the specimen. Make a new Gmb specimen conforming to the ± 20 grams from the specimen weight listed on the JMF.

JMF Penalty Box

1.e Corrective Actions. Immediately take corrective actions if one or more of the following occurs:

- Test results on a single sample ($n=1$) for percent passing the 75 μm (No. 200) sieve, or asphalt content are not within the tolerances in Table I.
- The average of two G_{mb} specimens tested for V_a are not within tolerances listed in Table I.
- If the average loose material sample test results fail to meet 100% payment values listed in Table I on 3 consecutive production days for Asphalt percentage, No. 200 sieve gradation, V_a , or the minimum VMA tolerance noted in Table B, cease production of the JMF.
- If the $n=1$ mixture/sublot exceeds the sieve tolerances stated in Table A-1 for three consecutive sublots, cease production of the JMF. Reverify the mixture as stated in Section 413.2(e)1.c.

➤ **3 violations of the sieve tolerances during production on 3 consecutive Acceptance Test sublots will place the producer in a production penalty situation, forcing reverification of the JMF and possible complete redesign of the JMF. (Monitored by Materials Insp.)**

CS Revisions – CS 313, 413, & 419

JMF Penalty Box



JOB MIX FORMULA REPORT

JMF NO. 2025 410661
Year Number

SUPPLIER CODE: NEW56B41 MATERIAL CLASS: SMA125
DESIGN ESAL'S: 3 to <30
AGGREGATE SRL: E
ORIGINAL APPROVAL DATE:

DATE: _____ SPEC: 409 PTC CONTRACT #: _____
SUPPLIER NAME: NESL CO INC LOCATION: _____
BITUMINOUS PLANT TYPE: Fully automated drum mixing TONS PER HOUR: _____
CONTRACTOR: _____ MILE POST: _____ TO MIL: _____

Material Supplier Code	Material Code	Material Class	% In Mix
NEW56B14	207	B3 UNWASHED	15.4
NEW56B14	207	Limeville Filler	5.7
NEW56B14	203	A8	19.9
NEW56B14	203	A7S	62.2

Recycled Aggregate

Material Supplier Code	Material Code	Material Class	% In Mix
ASSOC	1	PG70E-28HP	6.8

Virgin Asphalt

Asphalt Additives

Material Supplier Code	Material Code	Material Class	% In Mix
ZYDEXA15 SP2	1	Anti-Strip	0.10

Stabilizer

Material Supplier Code	Material Code	Material Class	% In Mix
Hi-Tech	196	Cellulose Fibers	0.30

JOB MIX FORMULA AND DESIGN

	.075 mm	.150 mm	.300 mm	.600 mm	1.18 mm	2.36 mm	4.75 mm	9.5 mm	12.5 mm	19 mm	25 mm	37.5 mm	50 mm	F/A ratio	Pbe %
Design	6.8	8.0	10	12	14	16	19	30	78	93	100			1.20	6.50
% Virgin AC	6.8	% Reclaimed AC			Reclaimed Binder Ratio			0.00	Calculated Asphalt Film Thickness (microns)					11.6	

Annotations: **+4%** (over .600 mm), **+6%** (over 1.18 mm)

	.075 mm	.150 mm	.300 mm	.600 mm	1.18 mm	2.36 mm	4.75 mm	9.5 mm	12.5 mm	19 mm	25 mm	37.5 mm	50 mm	F/A ratio	Pbe %
Design	6.8	8.0	10	12	14	16	19	30	78	93	100			1.20	6.50
% Virgin AC	6.8	% Reclaimed AC			Reclaimed Binder Ratio			0.00	Calculated Asphalt Film Thickness (microns)					11.6	

MIX CHARACTERISTICS (Gyratory)

Gyrations @ Nini	Gyrations @ Ndes	Gyrations @ Nmax	Design ESAL's	Combined Agg Gravity	Max Density Gmm	Ndes Density Gmb
8	100	160	3 to <30	2.662	2.414	2.322
% Voids @ Nini	% Voids @ Ndes	% Voids @ Nmax	% VMA @ Ndes	% VFA @ Ndes	Lbs / Cu. Ft.	
15.2	3.6	2.3	16.7	80	150.3	

Gyratory Compactor Data

Gyratory Manufacturer	Specimen Wt.	Height of Specimen @ Ndes
Pine	4570.0	114.7

IGNITION FURNACE DATA

Oven Make	Ignition Oven Identification	Set Temp.	Sample Size	AC Correction Factor	#200 Correction Factor
N-CAT	LEFT	538	1513.5	0.51	0.3
N-CAT	RIGHT	538	1512.5	0.48	0.4

TSR DATA

AC Supplier	Dry PSI Strength	Wet PSI Strength	TSR Value	Date TSR's were done	Date of Boil Test
MARA8-15	228.1	230.4	101.0	1/14/25	1/14/25

Combined Aggregate Consensus Properties

AASHTO T176 Sand Equivalent	AASHTO T304 Uncompacted Void Content	ASTM D6821 C. Agg. Angularity 1 Face	ASTM D6821 C. Agg. Angularity 2 Faces	ASTM D4791 Flat & Elong 5:1	ASTM D4791 Flat & Elong 3:1
78.0	47.6	100	100	0.0	4.0

GRADATION CHART IS PART OF THIS JOB MIX FORMULA

Designed by: John C Ditzler Date: 08/28/25
Approved and Submitted by: John C Ditzler Date: 08/28/25
Reviewed by PTC Materials Supervisor: Andrew R Stultz Date: _____

When any of these sieve tolerances, as defined by the production sieve tolerance tables, are exceeded for three consecutive acceptance sub-lots, the mix must be reverified for use on PTC Contracts and may need to be redesigned, resubmitted to the PTC Lab for review and approval, and must be reverified through the asphalt plant at an off-site location before it can be shipped to a PTC Contract.

***Note this could cause delays to the contract paving schedule.**

Production data, hot-bin and temperature charts for batch plants must be provided daily to the PTC materials inspector.

- 1. Batch Plant.** Modify the batch plant to measure the mass (weight) of the RAP before adding it into the pug mill. Design the cold-feed bin(s), conveyor system(s), charging chute(s), and all special bins to prevent RAP from segregating and sticking. Dry the virgin aggregate and then heat the virgin aggregate to a temperature that, after adding RAP, produces a completed mixture within the temperatures specified in Bulletin 25. Dry the aggregate according to the specific recommendations and direction from the WMA Technology Technical Representative(s) and heat to a temperature so the resulting completed mixture temperature is within the mixture temperature recommended by the WMA Technology Technical Representative(s) or manufacturer and Bulletin 25. Ensure that the virgin aggregate is free of unburned fuel oil and excess moisture as specified in Section 413.2(e)1.d.1 when delivered to the pug mill. **Provide the Representative with copies of the production hot bin printouts and production temperature chart for each JMF, for each shift of production.**

Production data, hot-bin and temperature charts for drum plants must be provided daily to the PTC materials inspector.

2. **Drum Mixer Plant.** Modify the drum mixer plant to prevent RAP from directly contacting the burner flame and prevent RAP from overheating. Design the cold-feed bin(s), conveyor system(s), charging chute(s), and all special bins to prevent RAP from segregating and sticking. Produce a completed mixture that is within the mixture temperature range recommended by the WMA Technology Technical Representative(s) or manufacturer and Bulletin 25. Ensure that the aggregate and completed mixture is free of unburned fuel oil and excess moisture as specified in Section 413.2(e)1.d.1. **Provide the Representative with copies of the production cold feed printouts and production temperature chart for each JMF, for each shift of production.**

(d) Hauling Equipment. Haul the mixtures in tightly sealed vehicles that do not contain petroleum oils, solvents, or other materials that adversely affect asphalt mixture. Provide covers of sufficient size and quality to protect the entire load under all conditions. **Covers must extend beyond the sides of the truck bed and be secured. Maintain the proper and uniform placement temperature as specified in Section 413.3(h)1.** Provide insulation on all sides of the truck body, a double-walled truck body, or a heated truck body when the air temperature is below 50°F or from October 1 to April 30. All haul vehicles must be equipped with proper reflective construction signs, back up alarms and lights that are visible 360° or strobe lights on all 4 corners of the truck bed.

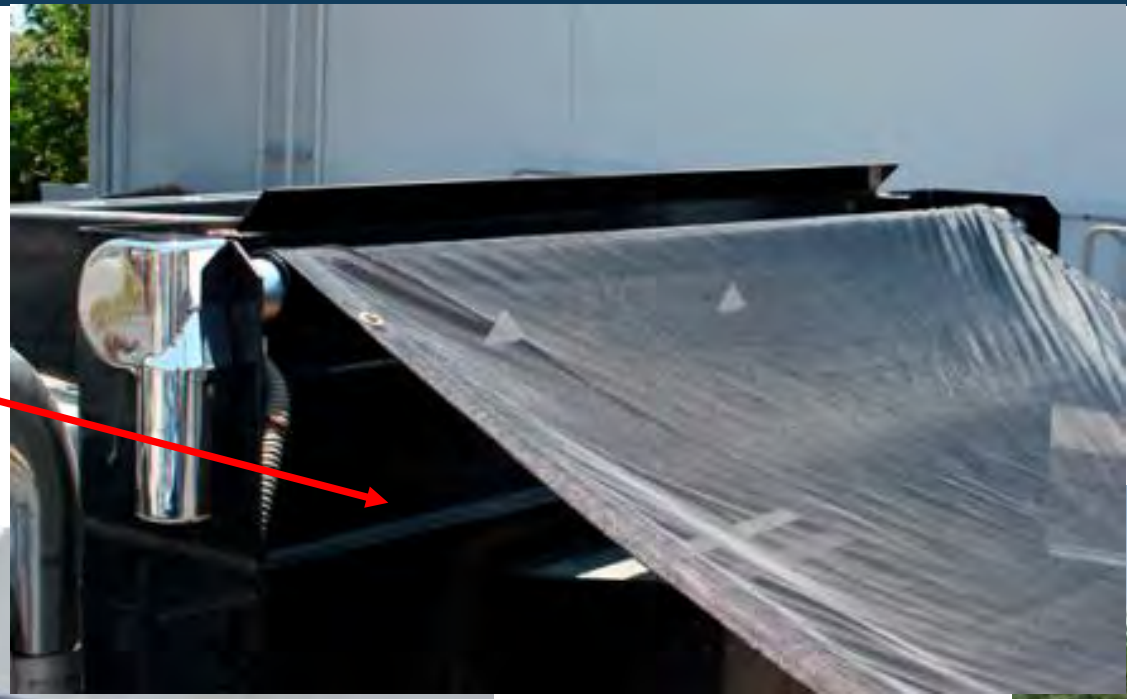
DELETED:

~~Provide a 3/8 inch diameter hole near the center and approximately two-thirds the distance down from the top of the vehicular box, on both sides, to allow for asphalt mixture temperature checks.~~

Tarps must extend beyond the sides of the truck bed and be secured.
(Minimize air gaps of tarped loads.)

Unacceptable Tarps – Limited Coverage / Air Gaps

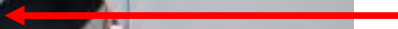
Air Gap



Tarp too narrow. Won't extend over the sides of the truck bed.



Unfit for hauling asphalt.



Acceptable Tarps – Full Coverage / Minimal Air Gaps

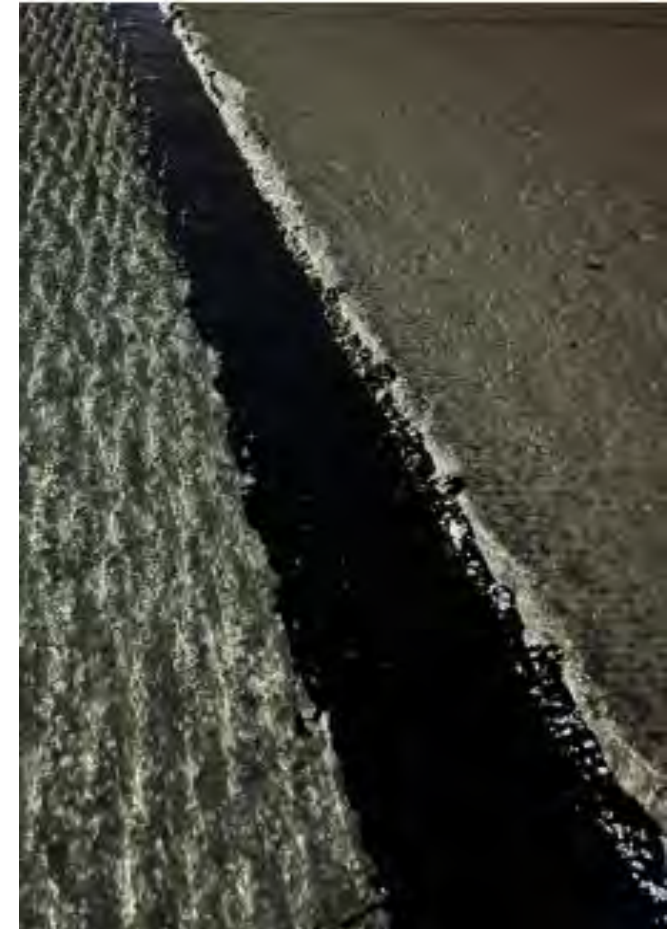


Included back into CS 413

1. Longitudinal Joints.

1.a. General. Offset joints in a layer from the joint in the layer immediately below by approximately 6 inches. Plan joint locations to ensure that the joint in the top layer is at the approximate pavement centerline for two-lane roadways and within 12 inches of the lane lines for roadways with more than two lanes. Avoid joint locations directly beneath planned pavement marking applications where possible.

Before placing abutting lanes, paint the entire face of the joint with a uniform coating of asphalt material, the PG-Binder used in the pavement course or PG 64S-22. Painting of the joint face is not required for scratch courses. **When the lane edge is distorted during the day's work, by traffic or other cause, carefully saw the edge of lane to line as required or approved by the Representative prior to painting PG 64S-22. For projects containing stepped joints, a vertical face must be achieved by either saw cutting or milling.**



CS Revisions – 2020-11 CS 313 , 413, & 419



10/10/25

TABLE I
Contract Unit Price Adjustments - Mixture Acceptance by Lots and Certification Specified Tolerances Based Upon Asphalt JMF Values

Mixture Nominal Maximum Aggregate Size	Test Criteria	Test Values		Payment Factor Percentage		
		Single Sublot Tolerances for the Lot (n = 1)	Combined Sublot Sample Tolerances f/Lot (n = 2)			
Asphalt Content = (20% of Unit Price)						
All sizes	Acceptance Testing % AC	±0.7%	±0.4%	100		
		±0.7%	±0.5%	85		
		±0.7%	±0.6%	70		
		±0.7%	> ±0.6%	*		
Gradation = (20% of Unit Price No. 200 Sieve)						
12.5 mm and smaller	Acceptance Testing for % Passing No. 200 Sieve	±2.9	±1.5%	100		
		±2.9	±1.6% & ±1.7%	96		
		±2.9	±1.8% & ±1.9%	92		
		±2.9	±2.0% & ±2.1%	88		
		±2.9	±2.2% & ±2.3%	84		
		±2.9	±2.4% & ±2.5%	80		
19 mm and larger	Acceptance Testing for % Passing No. 200 Sieve	±2.9	> ±2.5%	*		
		±3.9	±2.5%	100		
		±3.9	±2.6% & ±2.7%	96		
		±3.9	±2.8% & ±2.9%	92		
		±3.9	±3.0% & ±3.1%	88		
		±3.9	±3.2% & ±3.3%	84		
		±3.9	±3.4% & ±3.5%	80		
		±3.9	> ±3.5%	*		
		Volumetric Tolerance of Asphalt Mix = (20% of Unit Price)				
		Note: As per 413.2(e)1.d.5, the average of two specimens will determine the V _a value used for each sublot.				
		All Sizes (Calculated from Asphalt design V _a)	Acceptance Testing V _a %	±2.0	±1.2%	100
				±2.0	±1.3% & ±1.4%	96
±2.0	±1.5% & ±1.6%			92		
±2.0	±1.7% & ±1.8%			88		
±2.0	±1.9% & ±2.0%			84		
±2.0	> ±2.0%			*		
Mat Density per Lot = (40% of Unit Price)						
	Acceptance Testing % Mat Density	Average Density of the 3 Pavement Cores each Sublot	Average of the 2 Sublot Averages			
All 9.5, 12.5, 19, and 25 mm Rich Bottom/ Wearing, Binder, and Base Courses	Note: 25mm and 25mm Rich Bottom are exempt from the max density limit of 97% compaction.	≥92%	≥93% to ≤97%	100		
		≥92%	≥92% to ≤97%	85		
		<92% or >97%	<92% or >97%	*		
Note: If the single sublot tolerances exceed the tolerances listed in Table I the lot will be considered defective. The Single Sublot Tolerances and the Combined Sublot Tolerances must be met to achieve Payment Factor Percentage for the Lot as specified in Section 413.3(h)2.a.						
* Defective pavement: Remove and replace lot or when permitted by the Chief Engineer it may be left in place at 50% or 0% payment of the contract unit price.						

Note: If the single sublot tolerances exceed the tolerances listed in Table I the lot will be considered defective. The Single Sublot Tolerances and the Combined Sublot Tolerances must be met to achieve Payment Factor Percentage for the Lot as specified in Section 413.3(h)2.a.

* **Defective pavement:** Remove and replace lot or when permitted by the Chief Engineer it may be left in place at **50% or 0% payment** of the contract unit price.

50% or 0% Payment

1.b.1 Annual JMF Verification. During initial production of each JMF, verify the mixture conforms to Table C-1 and Table H multiple (n=2) subplot tolerances, and the lot meets 100% payment. **Utilize all the mixture components stated on the approved JMF.** Material for Verification cannot be shipped to PTC projects. All verification testing must be noted in the Bit-DEL QC section, for each specific JMF.

Table C-1

Gradation	Verification Tolerance
Passing 12.5 mm (1/2 inch) and Larger Sieves	±8%
Passing 9.5 mm (3/8 inch) to 150 µm (No. 100) Sieves (Inclusive)	±6%
Passing 75 µm (No. 200) Sieve	±1.5%

- For initial production the mixtures component percentages, noted on the approved JMF, must be used.
- If the mixture does not conform to the requirements of Table C-1 and Table H, suspend shipping the mixture to the project. If verification of the mixture can not be achieved within two attempts, the initially approved JMF will be considered defective. A new JMF will need to be submitted and approved, in accordance with Bulletin 27 Appendix J.

Table C-1 Tolerances added for verification.

All producer Asphalt quality control and acceptance test results must be documented in the current excel Bit-DEL program provided by the Commission. Document Asphalt plant adjustments (weight of hot bin changes, % cold feed changes, AC% from RAP, bag house draft changes, mineral filler changes, etc.) during Asphalt production in the PTC Bit-DEL program. **Failure to document these changes will result in the suspension of asphalt plant production to Commission contracts.**

The PTC Bit-DEL program requires Excel version 2010 or newer. Provide computer software compatible with the current Bit-DEL version. The Bit-DEL program and all testing data contained within shall remain accessible to the Commission Representative at all times. **Provide the Representative daily with the printed or electronic copies of the asphalt plant mixing production recorder data and printed production mix temperature chart recorder data upon request.** At the end of the production season a copy of the Bit-DEL QC and Acceptance software shall be transferred electronically to the Commission's Materials Supervisor and become the property of the Commission. Provide a mixture within the following production limits:

Table C-2

Gradation	Production Tolerance
Passing 12.5 mm (1/2 inch) and Larger Sieves	±6%
Passing 9.5 mm (3/8 inch) to 150 µm (No. 100) Sieves (Inclusive)	±4%

Table C-2, Aggregate Sieve Production Tolerances added.

Approved Anti-Strip Additives

(g) **Anti-Strip Additives.** Use ZycTherm SP2 **or Omega Bond** in-line, blended and metered, at the Asphalt Producer's Plant at a minimum rate of 0.1% of the total asphalt for the JMF being produced. Asphalt terminal or refinery blending of anti-strip additive is not permitted.

These CS Revisions Apply to All PTC Contracts



ENGINEERING DEPARTMENT
Pennsylvania Turnpike Commission
PO Box 67676, Harrisburg PA 17106-7676
717.939.9551

December 8, 2025

Mary Robbins, Ph.D., P.E.
Director of Technical Services
Pennsylvania Asphalt Pavement Association (PAPA)
3544 North Progress Avenue
Suite 100
Harrisburg PA 17110

Re: Asphalt Mix Design and Production Revisions
2026 Construction Season

Dear Dr. Robbins:

Per prior discussions between Commission staff, PAPA staff, and PAPA technical committee members, the Commission has revised Commission Specifications (CS) 313, CS 413, CS 419, and Commission Revisions to PennDOT Publication 27 (Bulletin 27), Asphalt Concrete Mixtures, Design Procedures, and Specifications for Special Asphalt Mixtures, Appendix J, Annual Asphalt Concrete Mix Design Submittal Procedure (Appendix J). The revisions are to better communicate the intended asphalt mix design and production requirements for Commission construction projects. The Commission appreciates the input provided by PAPA as Commission staff finalized these documents.

The Commission is requiring the use of the 2020 Version 11 (dated 10/10/25) of CS 313, CS 413, CS 419, and Appendix J for all Commission projects starting with the 2026 construction season. This applies to all existing asphalt paving work, as well as future projects yet to be bid. Contracts not yet bid will include these documents.

Enclosed for your reference are copies of the 2020 Version 11 (dated 10/10/25) CS 313, CS 413, CS 419, and Appendix J. If PAPA members have any questions regarding these documents, please contact Chris Forry at (717) 756-9005 or cforry@paturnpike.com.

Sincerely,

Matthew R. Burd, P.E.
Assistant Chief Engineer - Construction

Enclosures

cc: C. J. Buchanan, P.E.
S. Szalankiewicz, P.E.
A. R. Williamson, P.E.
F. R. Cassel, P.E.
P. J. Leiby
B. M. Ranck, P.E.
C. A. Forry

Dec. 8, 2025, Matt Burd notified the PA Asphalt Pavement Association, via email, that the 2020-11 CS313, CS413, CS419, and Revised PTC Appendix J will be implemented on all existing and future PTC contracts for the 2026 Construction season.

Contracts transitioned to HiMA and Bidding 2026



- **Total Reconstruction T-319.00T001-3-08 HiMA MP 319-324 Wearing (Travel Lanes)**
- **New Roadway MFE M-052.50X002-3-03 HiMA 25mm**
- **Mainline Tolling Facility T-355.00P002-3-08 MP 353-355 HiMA Wearing (Out to Out)**
- **Asphalt Resurfacing A-085.00R001-3-02 MP A83-A85 Wearing (Travel Lanes)**
- **Asphalt Resurfacing A-095.00R005-3-02 MP A95-A101 Wearing (Travel Lanes)**
- **Asphalt Resurfacing A-115.00R002-3-02 MP A118-A120 Wearing (Travel Lanes)**
- **Asphalt Resurfacing T-057.00R004-3-02 MP 55-58 Wearing (Travel Lanes)**
- **Asphalt Resurfacing T-116.00R001-3-02 MP 119-121 Wearing (Travel Lanes)**
- **Asphalt Resurfacing T-187.00R003-3-02 MP 187-192 Wearing (Travel Lanes)**

RCRAI Contract Bidding 2026



- **Asphalt Resurfacing**
A-095.00R005-3-02
MP A95-A101 Wearing
(Travel Lanes)

This six-mile mill and overlay will consist of RCRAI placed over the milled surface followed by 12.5mm SMA HiMA.

Innovation Requires

- **Attention to the details.**
- **New work processes.**
- **Doing things differently.**
- **Excellent Communication.**
- **Positive working relationships between plant, field, and commission personnel.**
- **A desire to succeed and be successful.**



PTC Materials Lab Update

Brian Paroda
PTC Materials Lab Supervisor



Anti-Strip Additive Update



Anti-Strip Additive Update

- ❑ Silane based anti-strip has been utilized in all PTC asphalt materials since 2024.
- ❑ Approximately 1.7 million tons of asphalt has been produced and placed since implementation.
- ❑ Over 200 production samples have been tested and evaluated.
- ❑ 38% of production samples had suffered asphalt stripping damage.
- ❑ Majority of stripped samples can be traced to a few production plants.

Could there be cross contamination?

- * Through asphalt refinery use of amine additives.
- * Addition of amine-based WMA additives during production.

Expanded testing will be conducted.

Negative Impacts of Blending Amines & Silanes

- ❑ To prove the possibility of cross contamination, Laboratory specimens utilizing three simple binder blends were subjected to the NaHCO_3 soak and boil test.

25% Amine + 75% Silane



50% Amine + 50% Silane



75% Amine + 25% Silane



- ❑ Negative impacts were seen with minimal amine blends. The largest amine / silane blend had lost nearly 70% of the original binder weight.

Possible Considerations

- ❑ Understanding the complexities of asphalt binders, PTC laboratory analysis and data suggests that alkaline water and / or sodium chloride may prematurely oxidize binder.
- ❑ During freeze - thaw cycles, chloride deicers may gradually infiltrate the asphalt pavement. Evidence of this was observed during PTC field core forensic analysis and lab research attempts.



- ❑ Alkalis (particularly sodium) from existing concrete pavement may expedite the moisture damage in asphalt overlays.
- ❑ Sodium may act as a detergent, diluting the asphalt film and / or destabilize the pH level at the aggregate interface. Both could permit the water penetration. The chemical siloxane bonds appear to withstand these potential causes of moisture damage.



Questions

