Designer Note: Don't use this BDE Special. Use the District Special named "Hot-Mix Asphalt – Mixture Design Composition and Volumetric Requirements (D-4)".

HOT-MIX ASPHALT – MIXTURE DESIGN COMPOSITION AND VOLUMETRIC REQUIREMENTS (BDE)

Effective: November 1, 2013

Revise Article 406.14(b) of the Standard Specifications to read:

"(b) If the HMA placed during the initial test strip (1) is determined to be unacceptable to remain in place by the Engineer, and (2) was not produced within 2.0 to 6.0 percent air voids or within the individual control limits of the JMF, the mixture and test strip will not be paid for and the mixture shall be removed at the Contractor's expense. An additional test strip and mixture will be paid for in full, if produced within 2.0 to 6.0 percent air voids and within the individual control limits of the JMF."

Revise Article 406.14(c) of the Standard Specifications to read:

"(c) If the HMA placed during the initial test strip (1) is determined to be unacceptable to remain in place by the Engineer, and (2) was produced within 2.0 to 6.0 percent air voids and within the individual control limits of the JMF, the mixture shall be removed. Removal will be paid in accordance to Article 109.04. This initial mixture and test strip will be paid for at the contract unit prices. The additional mixture will be paid for at the contract unit prices will be paid for at one half the unit price of each test strip."

Revise Article 1030.04(a)(1) of the Standard Specifications to read:

High ESAL, MIXTURE COMPOSITION (% PASSING) ^{1/}										
Sieve	IL-25.0 mm		IL-19.0 mm		IL-12.5 mm		IL-9.5 mm		IL-4.75 mm	
Size	min	max	min	max	min	max	min	max	min	max
1 1/2 in (37.5 mm)		100								
1 in. (25 mm)	90	100		100						
3/4 in. (19 mm)		90	82	100		100				
1/2 in. (12.5 mm)	45	75	50	85	90	100		100		100
3/8 in. (9.5 mm)						89	90	100		100
#4 (4.75 mm)	24	42 ^{2/}	24	50 ^{2/}	28	65	32	69	90	100
#8 (2.36 mm)	16	31	20	36	28	48 ^{3/}	32	52 ^{3/}	70	90
#16 (1.18 mm)	10	22	10	25	10	32	10	32	50	65
#50 (300 μm)	4	12	4	12	4	15	4	15	15	30
#100 (150 μm)	3	9	3	9	3	10	3	10	10	18
#200 (75 μm)	3	6	3	6	4	6	4	6	7	9
Ratio Dust/Asphalt Binder		1.0		1.0		1.0		1.0		1.0 ^{/4}

"(1) High ESAL Mixtures. The Job Mix Formula (JMF) shall fall within the following limits.

- 1/ Based on percent of total aggregate weight.
- 2/ The mixture composition shall not exceed 40 percent passing the #4 (4.75 mm) sieve for binder courses with Ndesign \ge 90.
- 3/ The mixture composition shall not exceed 44 percent passing the #8 (2.36 mm) sieve for surface courses with Ndesign \ge 90.
- 4/ Additional minus No. 200 (0.075 mm) material required by the mix design shall be mineral filler, unless otherwise approved by the Engineer."

Delete Article 1030.04(a)(4) of the Standard Specifications.

Revise Article 1030.04(b)(1) of the Standard Specifications to read:

"(1) High ESAL Mixtures. The target value for the air voids of the HMA shall be 4.0 percent at the design number of gyrations. The VMA and VFA of the HMA design shall be based on the nominal maximum size of the aggregate in the mix, and shall conform to the following requirements.

VOLUMETRIC REQUIREMENTS High ESAL								
		Voids Filled with Asphalt Binder						
Ndesign	IL-25.0	IL-19.0	IL-12.5	IL-9.5	IL-4.75 ^{1/}	(VFA), %		
50					18.5	65 – 78 ^{2/}		
70 90 105	12.0	13.0	14.0	15.0		65 - 75		

- 1/ Maximum Drain-down for IL-4.75 shall be 0.3 percent
- 2/ VFA for IL-4.75 shall be 76-83 percent"

Delete Article 1030.04(b)(4) of the Standard Specifications.

Revise the Control Limits Table in Article 1030.05(d)(4) of the Standard Specifications to read:

"CONTROL LIMITS							
Parameter	High ESAL Low ESAL	High ESAL Low ESAL	All Other	IL-4.75	IL-4.75		
	Individual Test	Moving Avg. of 4	Individual Test	Individual Test	Moving Avg. of 4		
% Passing: 1/					g		
1/2 in. (12.5 mm)	± 6%	± 4%	± 15%				
No. 4 (4.75 mm)	± 5%	± 4%	± 10%				
No. 8 (2.36 mm)	± 5%	± 3%					
No. 16 (1.18 mm)				± 4%	± 3%		
No. 30 (600 µm)	± 4%	± 2.5%					
Total Dust Content	± 1.5%	± 1.0%	± 2.5%	± 1.5%	± 1.0%		

No. 200 (75 µm)					
Asphalt Binder Content	± 0.3%	± 0.2%	± 0.5%	± 0.3%	± 0.2%
Voids	± 1.2%	± 1.0%	± 1.2%	± 1.2%	± 1.0%
VMA	-0.7% ^{2/}	-0.5% ^{2/}		-0.7% ^{2/}	-0.5% ^{2/}

1/ Based on washed ignition oven

2/ Allowable limit below minimum design VMA requirement"