



MARICOPA COUNTY
Department of Transportation

MEMORANDUM

Date: March 26, 2015
To: MAG Specifications and Details Committee
From: Robert Herz, MCDOT Representative
Subject: Revision to clarify Table 710-4

Case 15-08

PURPOSE: Eliminate misinterpretation of Criteria 8 in table 710-4. Some readers believe that 3/8 inch mix and 1/2 inch mix are required to be designed for Low Traffic only and that 3/4 inch mix is required to be designed for High Traffic only.

REVISIONS: Relocate item 8 (Number of Gyration) as a new table in Section 710.3.2.2 prior to the existing Table 710-4. This requires renumbering Table 710-4.

710.3.2.2 Gyrotory Mix Design: Gyrotory Mix Designs shall be performed in accordance with the requirements of latest edition of the Asphalt Institute's SP-2 manual. Mix design laboratory compacted specimens shall be prepared using a gyrotory compactor in accordance with AASHTO T-312.

The mix design shall be formulated in a manner described for volumetric mix designs in the current edition of the Asphalt Institute Manual SP-2, except the number of trial blend gradations necessary will be determined by the mix design laboratory. Duplicate gyrotory samples shall be prepared at a minimum of four (4) binder contents to select the recommended binder content. The gyrotory specimens shall be compacted to 160 gyrations. Volumetric data for the design number of gyrations, Ndes, and the initial number of gyrations, Nini, are then back calculated based on the bulk specific gravity, Gmb, of the Nmax specimens and the height data generated during the compaction process of those same specimens.

Table with 3 columns: Parameter, Low Traffic, High Traffic. Rows include Nini, Ndes, and Nmax with values 7, 8, 75, 100, 115, 160.

For Low traffic designs, volumetric data for 115 gyrations, Nmax for Low Traffic designs, is also back calculated from the specimens compacted to 160 gyrations.

The corrected density of the specimens shall be less than 89.0 percent of maximum theoretical density at Nini. The corrected density of the specimens shall be less than 98.0 percent of maximum theoretical density at Nmax. The Gyrotory mix shall comply with the criteria in Table 710-45.

TABLE 710-45				
GYRATORY MIX DESIGN CRITERIA				
Criteria	Requirements			Designated Test
	3/8" Mix	1/2" Mix	3/4" Mix	Method
1. Voids in Mineral Aggregate: %, Min.	15.0	14.0	13.0	AI SP-2
2. Effective Voids: %, Range	4.0 ± 0.2	4.0 ± 0.2	4.0 ± 0.2	AI SP-2
3. Absorbed Asphalt: %, Range *	0 - 1.0	0 - 1.0	0 - 1.0	AI SP-2
4. Dust to Eff. Asphalt Ratio, Range **	0.6 - 1.4	0.6 - 1.4	0.6 - 1.4	AI SP-2
5. Tensile Strength Ratio: %, Min.	75	75	75	ASTM D 4867
6. Dry Tensile Strength: psi, Min.	75	75	75	ASTM D 4867
7. Mineral Aggregate Grading Limits				AASHTO T-27
	Percent Passing with Admix			
Sieve Size	3/8 inch Mix	1/2 inch Mix	3/4 inch Mix	
1 inch			100	
3/4 inch		100	90-100	
1/2 inch	100	90-100	43-89	
3/8 inch	90-100	53-89	-	
No. 8	32-47	29-40	24-36	
No. 40	2-24	3-20	3-18	
No. 200	2.0-8.0	2.0-7.5	2.0-6.5	
8. Number of Gyration	Low Traffic		High Traffic	
N_{ini}	7		8	
N_{des}	75		100	
N_{max}	115		160	

* Unless otherwise approved by the Engineer.

** The ratio of the mix design composite gradation target for the No. 200 sieve, including admixture, to the effective asphalt content shall be within the indicated range.