1808   **PERCENT AIR VOIDS**
                    AASHTO Designation T 269 (Mn/DOT Modified)

1808.1   SIGNIFICANCE AND USE

The percent of air voids in a bituminous mixture is used as one of the criteria in both the designing the mixture and evaluation of the compaction.

1808.2   DEFINITIONS

Air Voids - The pockets of air between the bitumen-coated aggregate in a compacted mixture.

Dense Bituminous Mixture - Mixtures in which the air voids are less than 10% when compacted.

Open Bituminous Mixtures - Mixtures in which the air voids are 10% or more when compacted.

NOTE 1: For borderline cases, a bituminous mixture shall be designated as an open bituminous mixture if the calculated % air voids is 10% or more.

1808.3   PROCEDURE & CALCULATION FOR DENSE BITUMINOUS MIXTURES

Determine the bulk specific gravity according to section 1806 and refer to Section 1810. Determine the maximum specific gravity according to section 1807.

Calculate as follows:

E **=** Average bulk specific gravity of the Marshalls – From Section 1806

N **=** Maximum specific gravity - From Section 1807.4.

Percent Air Voids = $\dfrac{N - E}{N}$ **X** 100 (Record to the nearest 0.1%)

OR

Percent Air Voids = 100 **X** $(1 - E \div N)$ (Record to the nearest 0.1%)

1808.4 EXAMPLE WORKSHEET FOR DENSE MIXTURES (Bulk Sp. Gr., Max. Sp. Gr., Stability, and Percent Air Voids)

RECOMMENDATION NO. _____ LAB NO. _____

Project _____ Sampled by _____ Date Sampled _____
T.H. _____ Contractor _____ Date Received_____
% AC added _____ Course/Lift _____ Spec./Type _____
Stationing _____ No. of Blows_____

BULK SPECIFIC GRAVITY

Specimen ID					Average
Thickness inches or mm					
Dry wt in Air	A				
SSD Weight	B				
Immersed Weight	C				
Volume (B-C)	D				
Bulk Specific Gravity (A/D)	E				
Density (E x 62.3)	F				

STABILITY

Flow					
Stability Reading: lbs or N	O				
Height Correlation Ratio	P				
Corrected Stability (OxP)					

MAXIMUM SPECIFIC GRAVITY (RICE TEST)

Container ID					Average
Container & Sample in Air	G				
Container in Air	H				
Dry Wt of Sample (G-H)	I				
Container & Sample In Water	J				
Container in Water	K				
Wt of Sample in Water(J-K)	L				
Volume of Sample (I-L)	M				
Maximum Spg (I/M)	N				
%Air Voids 100x[(N-E)/N]					

Tested by: _____ Date _____

REMARKS