

2003 Pavement Summit CoreLok Presentation



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In search of “True” density

- Accurate bulk specific gravity measurement is the basis for optimum volumetric mix design

Increase in the use of open graded, OGFC and SMA mixes has generated a concern over the accuracy of the SSD method

Open Graded Mix Definition

- AASHTO T269 specifies:

Section 3.2.3, “*open bituminous paving mixture* - Bituminous paving mixtures in which the air voids are 10 percent or more when compacted”

T166 Requirements

- Under scope of this test method:
Section 1.2- “This method should not be used with samples that contain open or interconnecting voids and/or absorb more than 2% water by volume,.....”

Problem with SSD (T166) Bulk Density

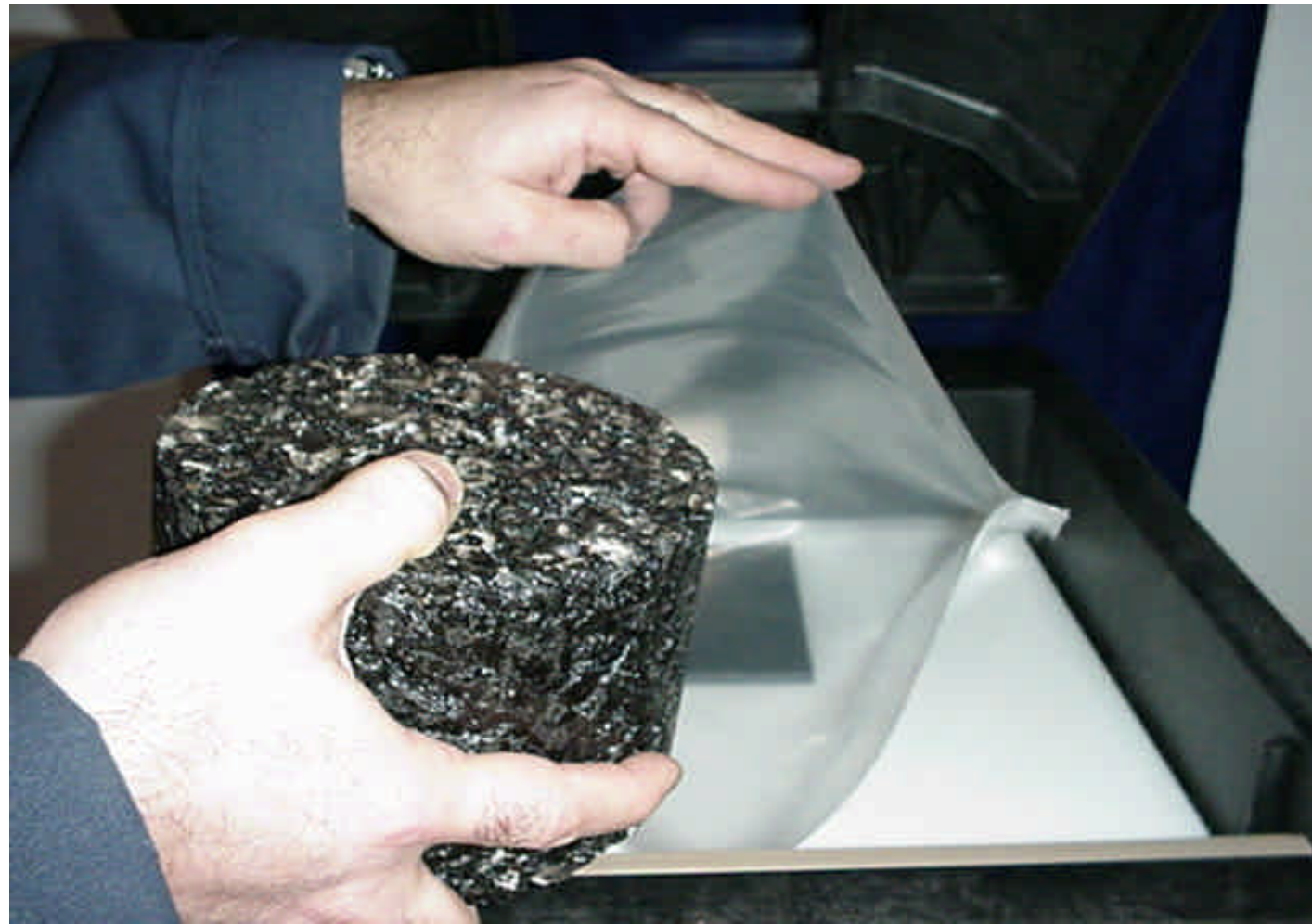
- Cores with large void volume (Coarse SuperPave Mix, SMA, etc.)
 - * Water penetrates into the samples quickly
 - * Drains out of the sample quickly

SSD measurements will result in:

low sample volume estimation

high bulk density

low air voids.







Advantages of Corelok Method

- Specified by ASTM, D6752-02.
- AASHTO is due to be balloted this year
- Little to no operator involvement in the sealing process
- Excellent repeatability and accuracy
- Samples do not get wet. Same sample can be re-tested many times.

Verification of the Unit

- NCAT and Texas DOT were instrumental during development of CoreLok
- Shane Buchanan of NCAT presented at AAPT indicating that CoreLok appeared to give the most accurate results regardless of mix type and air void content.
- More than 21 studies have been conducted on CoreLok

NCAT Recommendation

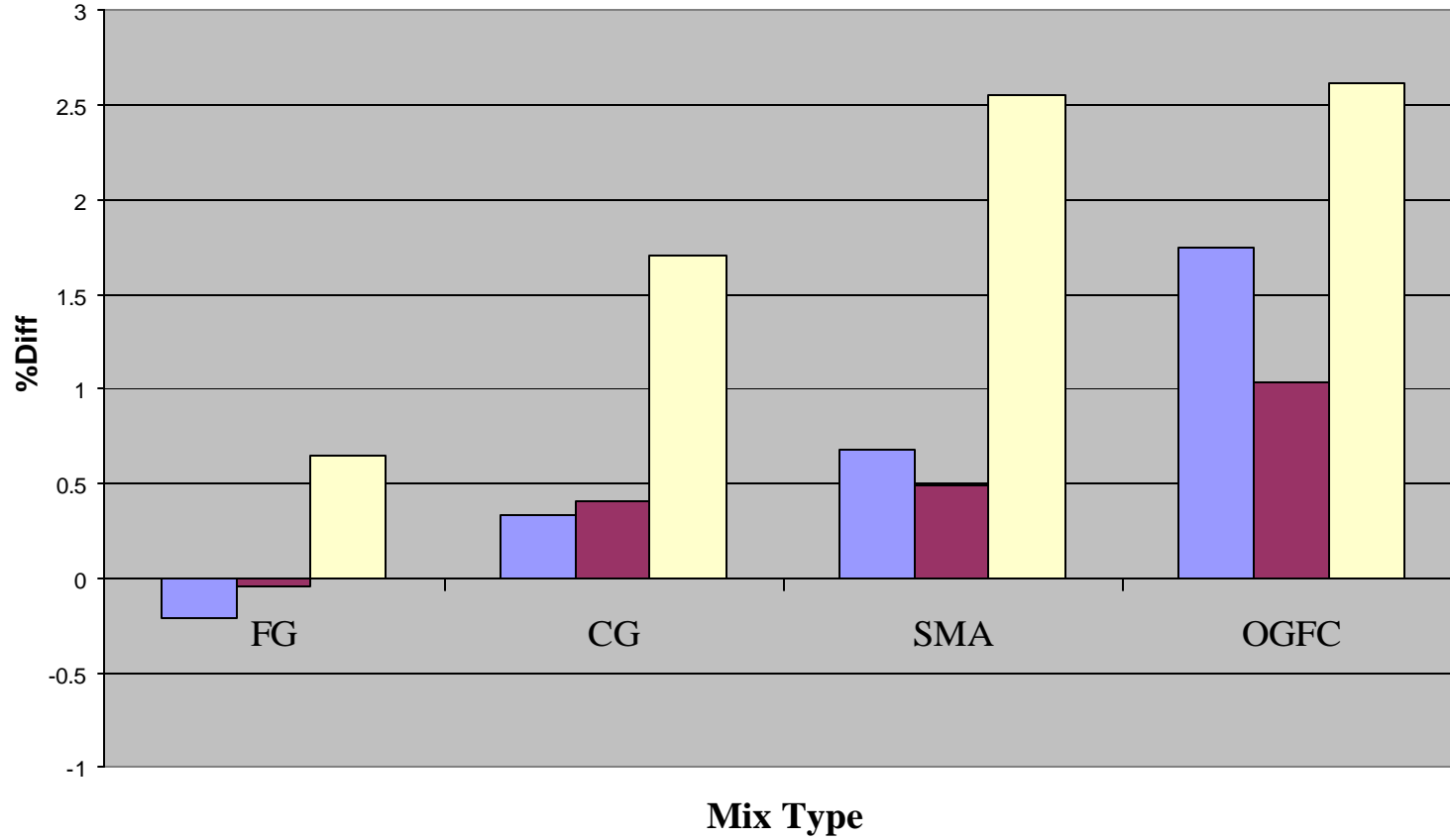
- CoreLok should be utilized for mixes passing below the restricted zone with water absorption of above 0.4
- SSD should only be used for gradation passing more than 5% above the max density line (i.e. fine graded)
- For all other mixes agencies should use the CoreLok

State Specifications

- Texas DOT
- Indiana DOT
- Alabama DOT
- Oklahoma DOT
- Kansas DOT
- Minnesota DOT
- North Carolina DOT

NY, NM, CO, NJ, CT, ME, AK, MI, MO, WI are in process of specification/evaluation

% Air Void Difference From AASHTO T166 Granite Aggregate



■ Parafilm ■ Corelok ■ Volumetric

% Air Void Difference From AASHTO T166 Limestone Aggregate

