**FLEXIBLE PAVEMENTS OF OHIO**  
**2015 COMPREHENSIVE ASPHALT MIX DESIGN SCHOOL**  
February 9-13, 2015 — Columbus, Ohio  
ODOT Office of Materials Management, 1600 W. Broad St.

Classroom Instructors: Mitch Forst (MF), Larry Shively (LS), Cliff Ursich (CU), Dave Powers (DP).  
Lab Instructors: Steve McAvoy, Tim Selby, Mark Mantle, Mickey Cronin (MC) Fred Chambers (FC)

**Monday AM (Classroom)**  
7:45 — 8:15 REGISTRATION  
8:15 — 8:45 Welcome; Introductions; Scope of Course (CU, DP, & MF)  
8:45 — 10:00 ODOT Specifications for HMA; Asphalt Materials, Specifications, & Temperature-Viscosity Relationships (MF)  
10:00 — 10:15 BREAK  
10:15 — 11:00 Aggregate Properties/Specifications (MF); Specific Gravity Intro (MF)  
11:00 — 12:00 Specific Gravity Tests (MF), Specific Gravity Calculations/Relations/Nomenclature (MF)  
PM  
12:00 — 1:00 LUNCH  
1:00 — 2:30 Rounding Rule, Aggregate Blending & Batching (MF), Power 45, F-T value  
2:30 — 4:00 LABORATORY — Aggregate Section: **Demonstration** of coarse & fine aggregate specific gravity test. (MC)  
Asphalt Concrete Section: **Each student** batches the aggregate for a Marshall specimen.

**Tuesday AM (Classroom)**  
8:00 — 8:15 Review of Monday's work (MF)  
8:15 — 10:00 Marshall Mix Design Method Objectives & Procedures (MF)  
10:00 — 10:15 BREAK  
10:15 — 10:45 Bulk Specific Gravity Test Procedure - Gsb (MF)  
10:45 — 11:15 Method for Determining Maximum Specific Gravity of Mix - Gmm [Rice Test] (MF)  
11:15 — 12:00 Blend AC content, Introduction to Volumetrics and Calculations MS-2 Chap. 4 (MF)  
PM  
12:00 — 1:00 LUNCH  
1:00 — 4:30 LABORATORY — Asphalt Concrete Section: **Demonstration** of Maximum Specific Gravity of Mix (Rice) Test and Gyratory Compaction. **Each student** mixes & compacts a Marshall specimen and compacts a Gyro specimen. **Each student** performs the bulk specific gravity test on his/her compacted specimen and records all data for that specimen.
Wednesday AM (Classroom)
8:00 — 8:15 Review of Tuesday Lab Work (MF)
8:15 — 10:00 Volumetric Analysis (continued): specific gravities; air voids; VMA; etc. (MF)
10:00 — 10:15 BREAK
10:45 — 12:00 LABORATORY — Asphalt Concrete Section: Each student performs Marshall Stability & Flow tests on his/her specimen and records data.

PM
12:00 — 1:00 LUNCH
1:00 — 1:15 Introduction to ODOT PG binder testing lab (FC).
1:15 — 2:00 Mix Design Calculations & Selection of Optimum Asphalt Content (MF)
2:00 — 3:00 Students consolidate and submit test data by group, interpret data (MF)
3:00 — 4:30 Students perform Marshall Mix Design calculations, Plot graphs, & select opt. asphalt, review design & specification compliance (MF)

Thursday AM (Classroom)
8:00 — 8:30 Review of mix design calculations & selection of optimum asphalt content (MF)
9:30 — 11:15 Complete ODOT mix design submittal with new set of data. (MF)
11:15 — 12:00 Superpave Mixture Design (LS)

PM (Classroom)
12:00 — 12:30 LUNCH — Pizza in classroom
12:30 — 12:45 Warm Mix Asphalt — WMA (LS)
12:45 — 1:15 TSR procedures and requirements (LS)
1:15 — 1:30 Shingle use in Ohio (LS)
1:30 — 1:45 RAP Procedures/ODOT requirements (MF)
1:45 — 2:00 Abson Recovery Method (MF)
2:00 — 2:15 BREAK
2:15 — 2:45 Course Summary
2:45 Review for Examination (ODOT Asphalt Materials Section)

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8:00 AM — 4:30 PM LEVEL 3 EXAMINATION
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Mix Design Packets (Marshall, Superpave, Marshall-302)

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ODOT Supplemental Specifications and Testing Supplements

SS 800 (10-17-2014) – Asphalt Revisions to 2013 CMS (Asphalt related items only) (23 pages)
Changes to 400 (18Jan2015) (11 pages)
Changes to 442 (18Jan2015) (3 pages)
SS 823 (7/18/2014) – Light Traffic Asphalt Mixture Composition Requirements
S 1004 (7-15-2011) - Method of Test for Sieve Analysis of Fine and Coarse Aggregates
S 1031 (7-19-2013) - Method Of Test For determining Specific Gravity And Percent Absorption For Coarse And Fine Aggregate
S 1032 (10-17-2013) - Asphalt Material Certification Requirements
S 1035 (4-18-2008) - Field Sampling Asphalt Concrete
S 1036 (1-16-2015) - Determination of Theoretical Maximum Specific Gravity, Bulk Specific Gravity and Percent Air Voids in Compacted Dense Asphalt Concrete Mixtures
S 1037 (4-18-2008) - Method Of Test For Determination Of Percent Voids In The Mineral Aggregate (Vma) In Compacted Asphalt Concrete Mixtures
S 1038(4-18-2008) - Method Of Test For Extraction Of Asphalt Binder From Asphalt Concrete Mixtures
S 1039(4-18-2008) - Method Of Test For Mechanical Analysis Of Extracted Aggregate
S 1041 (4-18-2014) - Asphalt Concrete Quality Control Assurance Program Administration
S 1043 (1-18-2013) - Calibration and Test Procedures for use of Asphalt Content Nuclear Gauges
S 1044 (4-18-2008) - Mix Design Method for Asphalt Concrete Base
S 1051 (1-15-2010) - Resistance of Compacted Bituminous Concrete to Moisture Induced Damage
S 1052 (4-18-2008) - Determination of Methylene Blue Adsorption Value of Mineral Aggregate Fillers and Fines
S 1053 (4-18-2008) - Storage and Introduction of Antistrip Additives into an Asphalt Concrete Plant
S 1054 (4-18-2008) - Test Method for Determination of Asphalt Cement Content by the Ignition Method
S 1055 (4-18-2014) – Asphalt Mat Density By Gauge Testing
S 1057 (4-18-2008) – Loaded Wheel Tester Asphalt Mix Rut Testing Method
Section 7

AASHTO Specifications:
T11-05 (2013) – Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregate by Washing
T27-14 – Sieve Analysis of Fine and Coarse Aggregates
T30-14 – Mechanical Analysis of Extracted Aggregate
T84-13 – Specific Gravity and Absorption of Fine Aggregate
T85-14 – Specific Gravity and Absorption of Coarse Aggregate
T164-14 – Quantitative Extraction of Bitumen from Bituminous Paving Mixtures
T166-13 – Bulk Specific Gravity of Compacted Asphalt Mixtures Using
Saturated Surface-dry Specimens
T168-03 (2011) – Sampling Bituminous Paving Mixtures
R59-11 – Recovery of Asphalt from Solution by Abson Method (formerly numbered T170)
T209-12 – Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
T248-14 – Reducing Samples of Aggregate to Testing Size
T269-14 – Percent Air Voids in Compacted Dense and Open Asphalt Mixtures
T283-14 – Resistance of Compacted Asphalt Mixtures to Moisture-Induced Damage
T312-14 – Preparing and Determining the Density of Hot-Mix Asphalt (HMA) Specimens by Means of the Superpave Gyratory Compactor
T316-13 – Viscosity Determination of Asphalt Binder Using Rotational Viscometer
M320-10 – Performance-Graded Asphalt Binder
M323-13 – Superpave Volumetric Mix Design
R35-14 – Superpave Volumetric Design for Hot-Mix Asphalt (HMA)

Section 8

ODOT Approved release agents and shingle processors (10-27-2014)

Section 9


Section 10

Work Problems for Level 2 Refresher

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Work Problem Solutions