The Bailey Method
Achieving Volumetrics and Compactability

Day 1 – Monday

I. Introduction (slides 1-9) 1:00 – 2:15 p.m.
   a. Aggregate Blending
   b. Origin of the Bailey Method
   c. 0.45 Power Curve
   d. The Big Picture
      i. Coarse-Graded
      ii. Stone Matrix Asphalt
      iii. Fine-Graded

II. Aggregate Packing (slides 10-20) 2:15 – 3:00 p.m.
   a. What is Voids in the Mineral Aggregate (VMA)?
   b. Aggregate Packing Factors
   c. Defining Coarse and Fine
   d. Primary Control Sieve
   e. Volume vs. Weight

Break 3:00 – 3:15 p.m.

III. Conducting Unit Weight Tests (slides 21-33) 3:15 – 5:00 p.m.
   a. Coarse Aggregates (9.5 mm NMAS or >)
      i. Loose
      ii. Rodded
      iii. Rules-of-Thumb
   b. Fine Aggregates (4.75 mm NMAS or <)
      i. Loose
      ii. Rodded
      iii. Rules-of-Thumb
   c. Video of Laboratory Unit Weight Tests
Day 2 – Tuesday

IV. Review Time
   8:00 – 9:00 a.m.

V. Mix Type (slides 34-59)
   9:00 – 2:30 p.m.
   a. Defining Mix Type
   b. Determining Mix Type
   Break 10:00 – 10:15 a.m.
   c. Comparing CA’s With Different Specific Gravities
   d. CA Chosen Unit Weight
      i. Mix Type
      Lunch Noon – 1:00 p.m.
      ii. Categorizing Aggregates as CA or FA (Tab 1)
      iii. Converting from Volume to Weight (Tab 2)
   Break 2:30 – 2:45 p.m.

VI. Evaluating the Combined Blend (slides 60-92)
   2:45 – 5:00 p.m.
   a. Coarse-Graded Mixes
      i. Ratios – CA, FAc and FAf
      ii. Overview of the Four Principles
      iii. Summary Table & Suggested Ranges Based on NMAS
   b. Stone Matrix Asphalt Mixes
      i. Ratios - Similarities & Differences to C-G Mixes
      ii. Overview of the Four Principles
      iii. Summary Table & Suggested Ranges Based on NMAS
         Break 4:00 – 4:15 p.m.
   c. Fine-Graded Mixes
      i. Revised Ratios – New CA, New FAc and New FAf
      ii. Overview of the Four Principles
      iii. Summary Table & Suggested Ranges Based on NMAS
Day 3 – Wednesday

VII. Review Time 8:00 – 9:00 a.m.

VIII. Volumetrics vs. CA Volume (slides 93-105) 9:00 – Noon
   a. Coarse Volume Influence
   b. Fine Fraction Influence
   c. Coarse Fraction Influence
   d. Degradation Issues
   e. Influence of CA Volume on Field Compactability
      i. Coarse-Graded Mixes
      ii. Fine-Graded Mixes
   Break 10:15 – 10:30 a.m.
   f. Aggregate Packing Overview
   g. Minus PCS Material (Tab 3)
   h. Fine-Graded Mixes that “ACT” as Coarse-Graded Mixes
   Lunch Noon – 1:00 p.m.

IX. Volume Blending Spreadsheet (VBS) (slides 106-109) 1:00 – 2:00 p.m.
   a. Required Information
   b. Initial Blending Example (Tab 4)

X. VBS – Including Recycle (slides 110-113) 2:00 – 3:00 p.m.
   a. Determining the Combined Blend
   b. Evaluating the Combined Blend
   c. Additional Considerations
   d. Initial RAP Blending Example (Tab 5)
   Break 3:00 – 3:15 p.m.

XI. VBS – Evaluating Existing Mixes (slides 114-116) 3:15 – 5:00 p.m.
   a. Virgin (Tab 6)
   b. RAP (Tab 7)
Day 4 – Thursday

XII. Review Time 8:00 – 9:00 a.m.

XIII. Finding a Starting Point (slide 117) 9:00 – 9:30 a.m.
   a. Mix Type
   b. Mix Needs (Tab 8)

XIV. Laboratory Blending (slides 118-120) 9:30 – 10:00 a.m.
   a. Virgin Mixes
   b. RAP Mixes

   Break 10:00 – 10:15 a.m.

XV. Estimating VMA and Voids (slides 121-129) 10:15 – 2:00 p.m.
   a. Coarse-Graded Example
   b. Fine-Graded Example
   c. Hand-Calculation Example (Tab 9)

   Lunch Noon – 1:00 p.m.

   d. Spreadsheet Overview (Tab 10)

XVI. VMA and Voids Est Spreadsheets (slides 130-138) 2:00 – 5:00 p.m.
   a. Estimated vs. Actual Results
   b. Estimation Sheets with Values:
      i. Hand-Calculation Example (Tab 11)

      Break 3:00 – 3:15 p.m.

      ii. Coarse-Graded Example (Tab 12A)

      iii. Evaluating Multiple Trials Before Doing Lab Work (Tab 12B)

      iv. Fine-Graded Example (Tab 13)
Day 5 – Friday

XVII. Review Time

8:00 – 8:30 a.m.

XVIII. Est Examples for Class Eval (slides 139-140, Tabs 14-15)

8:30 – 11:30 a.m.

a. Close with Rules-of-Thumb
b. Wrong Mix Type and Size
c. Importance of Determining FA Dips
d. Questionable Samples
e. Shape, Strength or Texture SHIFT
   i. Includes Gradation and AC Content trend example
f. Gsb Gravity Issue
g. Adjusting AC Volume Correction for Voids Estimation
h. Evaluating a Proposed Blend Adjustment

Break 10:15 – 10:30 a.m.

XIX. Est Spreadsheets – Interpreting Values (slides 141-150)

11:30 – 11:55 a.m.

a. VMA1 graph – Sample to Design
b. Voids1 graph – Sample to Design
c. VMA2 graph – Sample to Sample
d. Voids2 graph – Sample to Sample
e. Things to Watch For!
   i. Sample Location and Source
   ii. FA Dip – Range Limits vs. Actual Values
   iii. Individual Principle with Max Change
   iv. Other Highlighted Cells
   v. Negative Pba Values
   vi. “Spread” Between Diff in VMA and Diff in Voids
   vii. Enter ALL the Gmb’s and Gmm’s!
   viii. Relating Standard Deviation to Proposed Adjustments
   ix. Gradation and AC Content should NOT track!
   x. Adjusting the Factor Range Limits during Optimization

XX. Summary and Closing Thoughts (slides 151-153)

11:55 – Noon