

**Training Workshop on
Thin Surface Treatments
(Bituminous Pavements)**

**April 2-3, 2008
K-State Student Union
Kansas State University
Manhattan, Kansas**



by

**James Campbell, SemMaterials, L.P.
Rex Eberly, Ballou Construction Co., Inc.
Brian Hanson, Dustrol, Inc.
Ron Matteson, SemMaterials, L.P.
Dean M. Testa P.E., DEM Enterprises.**

Sponsored by

**Kansas State University
University Transportation Center**

**Training Workshop on
Thin Surface Treatments
(Bituminous Pavements)
April 2-3, 2008
K-State Student Union**

Agenda

Day 1 (Wednesday)

- | | |
|--------------|---|
| 8:30 – 9:30 | Introduction to Thin Surface Treatment and Project Selection (<i>DEM Enterprises</i>) |
| 9:40 – 12:00 | Micro surfacing (<i>Ballou Construction Co., Inc.</i>) |
| 12:00 – 1:00 | Lunch |
| 1:00 – 2:00 | Surface Recycling (<i>Dustrol, Inc.</i>) |
| 2:10 – 3:20 | Surface Recycling (<i>Dustrol, Inc.</i>) |
| 3:30 – 5:00 | Surface Recycling (<i>Dustrol, Inc.</i>) |

Day 2 (Thursday)

- | | |
|---------------|--|
| 8:00 – 9:30 | Chip Seal (<i>SemMaterials, L.P.</i>) |
| 9:40 – 10:50 | Chip Seal (<i>SemMaterials, L.P.</i>) |
| 10:50 – 12:00 | Chip Seal (<i>SemMaterials, L.P.</i>) |
| 12:00 – 1:00 | Lunch |
| 1:00 – 2:10 | Ultra-Thin Bonded Asphalt Surface (<i>SemMaterials, L.P.</i>) |
| 2:20 – 3:40 | Ultra-Thin Bonded Asphalt Surface (<i>SemMaterials, L.P.</i>) |
| 3:50 – 5:00 | Ultra-Thin Bonded Asphalt Surface (<i>SEM Materials, L.P.</i>) |

THIN SURFACE TREATMENT WORKSHOP
April 2-3, 2008
K-State Student Union

MICRO-SURFACING

OUTLINE

- Introduction to Micro-Surfacing
 - Description of Micro-Surfacing
 - Components of Micro-Surfacing
 - Aggregate
 - Emulsion
 - Polymer
 - Cement
 - Micro-Surfacing Paver
 - Surface Preparation
 - Advantages of Micro-Surfacing
 - Uses of Micro-Surfacing
 - Surface Treatment (Seal Coat)
 - Re-Profiling
 - Rutfilling
 - Treating flushed pavements
- KDOT Specifications
 - Specification Review
 - Quality Measurements
 - Mix Design
 - Testing
 - Paver Calibration
- Quality Assurance
 - Possible problems – prevention and correction
 - Drag Marks
 - De-bonding
 - Transverse Joints
 - Longitudinal Joints
 - Edge Lines
 - Rut Work
 - Hand Work
- Short Quiz

THIN SURFACE TREATMENT WORKSHOP
April 2-3, 2008
K-State Student Union

Surface Recycling Outline

Introduction

Asphalt Recycling methods
What is Hot in Place Asphalt/Surface Recycling?
Why use HIR?
Different types of HIR

Candidates and project selection

Location
Size & width
equipment type used
economics of scale

Project selection

What to look for, good and bad

Additives

Emulsion
Polymer additive
Rejuvenators
KDOT Spec
Field adjustments
Mix Designs
Other additive options

HIR the process

Project set up and prep
Preheating
Scarification/ Milling/ Mixing
Paving
Compaction
Surfacing options

Other considerations

Traffic Control
Safety
Field testing

Factors that cause success/failures

Agency control
Contractor control
Weather related
Material suppliers

Review KDOT Specifications

Shot Quiz

THIN SURFACE TREATMENT WORKSHOP
April 2-3, 2008
K-State Student Union
Chip Seal Outline

Introduction

- What is a Chip Seal?
- What is the purpose of a Chip Seal?
- What are the limitations of a Chip Seal?
- What will we be covering today?

Candidates & Preparation for Chip Sealing

- Load bearing capacity of road
- Ride
- Cracking
- Defects
- Cleanliness

Chip Seal Components

- What are they?
- What is their purpose?

Aggregates

- Types
- Gradation (Specifications)
- Fines
- Moisture
- Durability
- Shape
- Availability

Asphalt

- Types (Emulsions, Cutbacks, Asphalt)
- Specifications
- Characteristics
- Performance

Designing A Chip Seal

- Factors to consider
- Design Procedures
- Sampling & handling

Calibration of Equipment

- Chip Spreader
- Distributor
- Rollers
- Trucks
- Field checks

Application

Distributor (Application of Asphalt)
Chip Spreader (Application of Chips)
Trucks (Traffic pattern to aid compaction)
Rollers (Compaction of chips)
Sweepers
Traffic Control

Factors that cause Failures

Factors Agency Controls
Factors Contractors Control
Factors Suppliers Control
Factors God Controls

Examples of Failures & Probable Causes

Review Specifications

Short Quiz

THIN SURFACE TREATMENT WORKSHOP
April 2-3, 2008
K-State Student Union

Ultra-Thin Bonded Asphalt Surface (UBAS) Outline

- I. Introduction of thin surface treatments – Ultra-thin Bonded Asphalt Surface
- II. Process and Production – focus on the end product
 - Macro-texture, Emulsions, and Ride
- III. Mix Design
 - Gap Graded Designs
 - i. Film Thickness
 - ii. Gradation
 - iii. Asphalt Content
- IV. Production
 - HMA Plant Operations
 - Stockpile Management
- V. Construction
 - Macro-texture and Lift Thickness Discussions
 - Roller Operations
 - EBL Monitoring and Setting the Rate - adjustments
 - Spray Pavers
- VI. Quality Assurance and Quality Control
- VII. Compare & Contrast – Ultra-thin vs. Dense Graded
- VIII. KDOT Specification Review
- IX. Project Specifics
 - Start Date:
 - Design Acceptance
 - Materials
 - Paving Sequence
 - Plant Location
 - Lab Location
 - Rain Out – communications
 - Project Meetings
- XI. Short Quiz