IDOT
HMA Update

North Central Hot Mix Asphalt Conference

Illinois Bituminous Paving Conference

Jim Trepanier - HMA Operations Engineer

Topics

- RAP
- WMA Demonstration Projects
- Pavement Preservation
- Profile Equipment Verification (PEV)
- AASHTO Site-Manager
- Rubblization
- PG Binder Usage
- Specifications

RAP Update

Efforts to Increase RAP Usage

- Recycling Summit Meetings 2005 / 06
  - IDOT, Local Agency & Asphalt Industry
  - Focused on finding ways to increase RAP usage to address mountains of RAP in Metro areas
  - Resulted in:
    - Statewide Training for Local Agencies on RAP
    - RAP Mix Design Committee
    - New 2007 RAP Specification

Efforts to Increase RAP Usage

- North East Illinois Recycling Forum “NEIRF”
  - IDOT (Chicago Metro Area), Tollway, Local Agencies, & Asphalt Industry
  - Initial Focus will be on addressing barriers preventing increased RAP usage
    - Fractionalization of RAP
    - Double bump down PG grade for higher RAP contents
    - High Minus #200
    - Other uses for RAP

Higher RAP% with WMA

- Looking for demo projects:
  - Warm Mix
  - Higher Percentage RAP
- Why?
  - Conventional HMA temperature requirement “burn” off lighter oils – why grade bump down is needed

Demo Requirements

- Surface Mix (N 50 or N 70)
- 30% RAP
- PG 64-22 No Grade Bumping
- Fractionation of RAP required
  - -1/2” to #4
  - - #4
- WMA
  - Astec Double-Barrel with Foamed Asphalt nozzle pack
  - Warm mix additives
- Technical Support
  - FHWA, NCAT, Astec willing to assist

RAP Research

- Illinois Center for Transportation (ICT)
  - Level of RAP AC Contribution to Effective AC
    - IDOT's current design philosophy assumes all of the residual asphalt in RAP becomes unbound asphalt functions as effective AC
    - Some research indicates RAP is more of a black rock
    - Other research indicates it is something in between
    - ICT Research being conducted at U of I
      - Will attempt to determine RAP's level of contribution to effective AC
      - July, 2006 - July, 2008

RAP Research

- Illinois Center for Transportation (ICT)
  - ICT Research: Effects of High RAP on Structural Properties and Durability
    - Begins January 1, 2008
    - Ends January 1, 2010

Warm Mix Asphalt

Demonstration Projects

District #1 Sasobit Demo

- Gallager Asphalt
- 1000 tons of Stabilized Sub-Base Layer under the new CRC on Dan Ryan Expressway
- IL 19 mm N-50 @ 3% voids
- Placed in 2 - 3" lifts
- Mix produced at 260 °F & compacted started ≈ 230 °F
- At 175 °F, 1% additional density was possible

District #1 Sasobit Demo

- Sasobit Technology has merits:
  - Mix can be placed and compacted a mix at significantly lower temps.
  - Same equipment was used w/ no changes to the paving train.
- Estimated 8% fuel savings not enough to offset cost of Sasobit

District #7 Evotherm Demo

- Ambraw Asphalt
- 2000 tons N70 Surface mix
- Evotherm concentrate sprayed simultaneously with liquid AC
- Mix produced at 210 - 225 °F & compacted at 200 - 215 °F (roughly 80 °F cooler)
- No significant change in the rolling pattern

District #7 Evotherm Demo

- Evotherm Technology :
  - Mix can be placed and compacted a mix at significantly lower temps.
  - Same equipment was used w/ no changes to the paving train.
  - Evotherm results in lower voids & VMA
- Estimated 6% fuel savings not enough to offset cost of Evotherm

Pavement Preservation

PP Projects Since FY05

- Projects Constructed to Date:
  - 6 A-1 Bituminous Surface Treatments
  - 15 Single-Pass Micro-Surfacing
  - 18 Two-Pass Micro-Surfacing
  - 4 Single-Pass Slurry Seals
  - 9 Cape Seals (A-1 BST + 1-Pass Micro)
  - 8 Half-SMART (Lev. Binder + A-1 BST)
- Approx. 460 Total Lane-Miles
- Approx. $9.3M in Awarded Contracts

PP Performance

- Performance Mixed
- Show Potential when Applied Properly
- Need Better Project Selection (Especially Timing…Goal is Prevention)
- Need Better Construction Quality

  (No Drag Marks/Ripples, Chip Loss, etc.)
- Perform Best when Constructed in Spring (Better Curing of Emulsion)

PP Future

- Continue programming $300,000 per district.
- Funding still limited to four treatments (chip seal, slurry seal, micro-surfacing, and cape seal)
- Guidelines and special provisions are being revised. Target deadline FY 2009.

Profile Equipment Verification (PEV)

PEV

- Required for projects w/ Zero Blanking Band Specification
- Held annually at Rantoul Airport typically in April
- Those certified will receive a reminder
- Also a Notice in “Letting You Know”

2007 PEV

- Held at Rantoul Airport in April 2007:
  - 30 Contractor Profilers Tested
  - 27 Contractor Profilers Approved
    - 18 California-Type Profilographs
    - 9 Inertial (Laser) Profilers

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AASHTO – Site Manager

AASHTO - Site Manager

- Off-the-shelf software for construction and materials management supported by AASHTO
- Improvements made yearly in base software and provided to those using it.
- Scheduled to be Web Based in 2010
- Actual contract work will begin in next few months

AASHTO - Site Manager

- Time: 4 – 4.5 year effort
  - 6 months – develop budget, tasks & timetable
  - Address Materials first, followed by Construction
- What does all this mean?

IDOT Effort

- Focused Oversight groups to be formed to oversee direction
- CARE-AC will be the first effort to develop needed interfaces to get information to mainframe
  - CARE-AC Committee will meet to select a SINGLE version for Site-Manager by February, 2008
  - Reworked version of CARE-AC available in 2009
- RE Visual, PCC and Aggregate interfaces to follow as needed
- Central Office responsible for data screen development

IDOT Impacts

- Technology
  - Start pursuing connectivity improvements in field offices so once Site-Manager is in place ready to implement
  - May need to fit more staff with laptop cellular Internet cards rather than hard line connection

Contractor Impact

- Submittal of data via web
- Connectivity Issues
- Training
- Industry will be kept in loop:
  - Status reports at forums such as this
  - Participation in focus groups

Rubblization

Rubblization with HMA Overlay

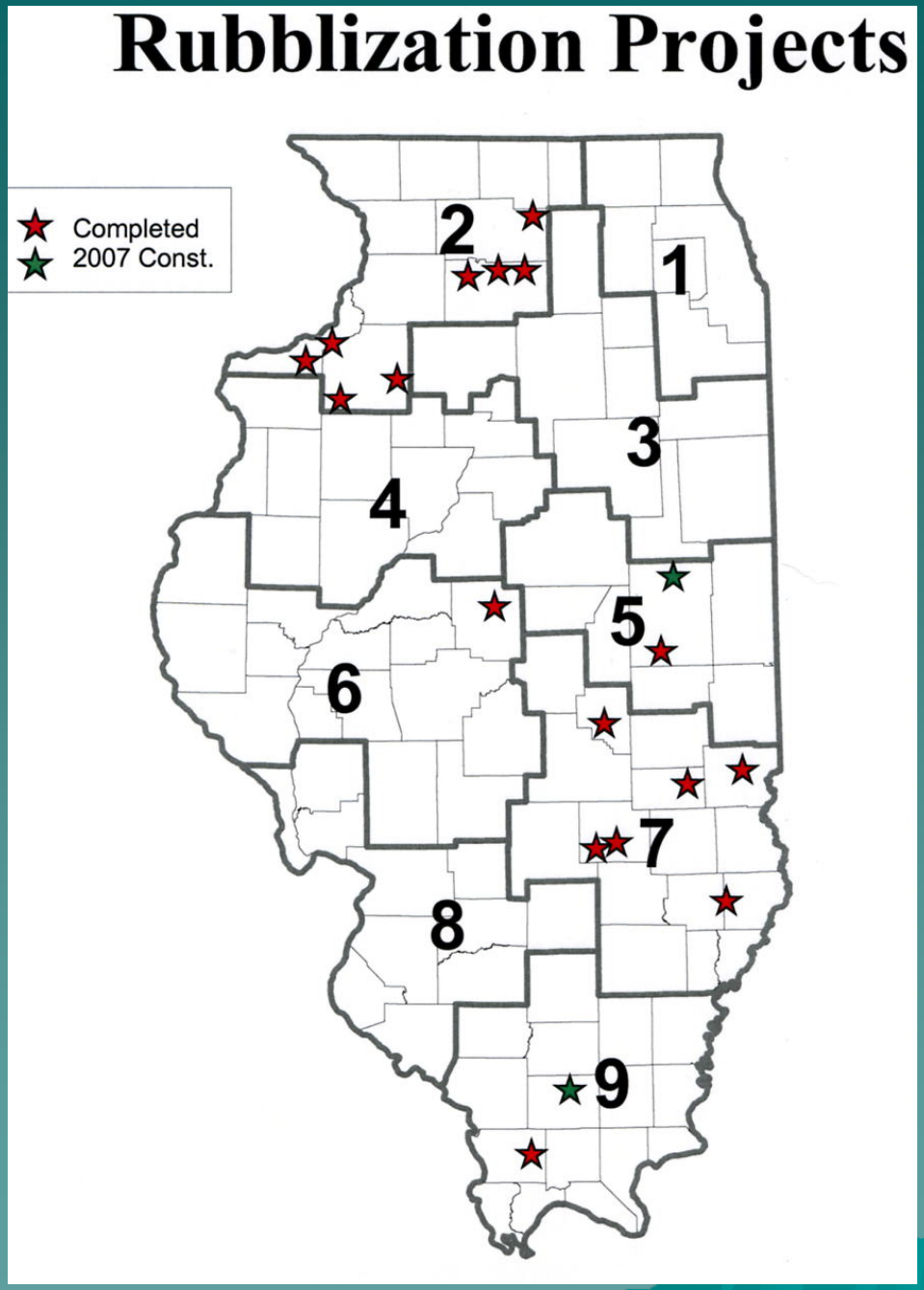
- Rehabilitation method for deteriorated concrete pavements
  - Alternative to extensive patching or reconstruction
- Pavement becomes a high-quality aggregate base
- Eliminates virtually all reflective cracking


ANTIGO

Project History

- First project in 1990
  - SHRP SPS-6 experiment
- Approximately 150 lane-miles of rubblization on IDOT projects to date
  - Used on local roads to high-volume interstate routes
  - Also used extensively on Tollway

Rubblization Projects



Performance

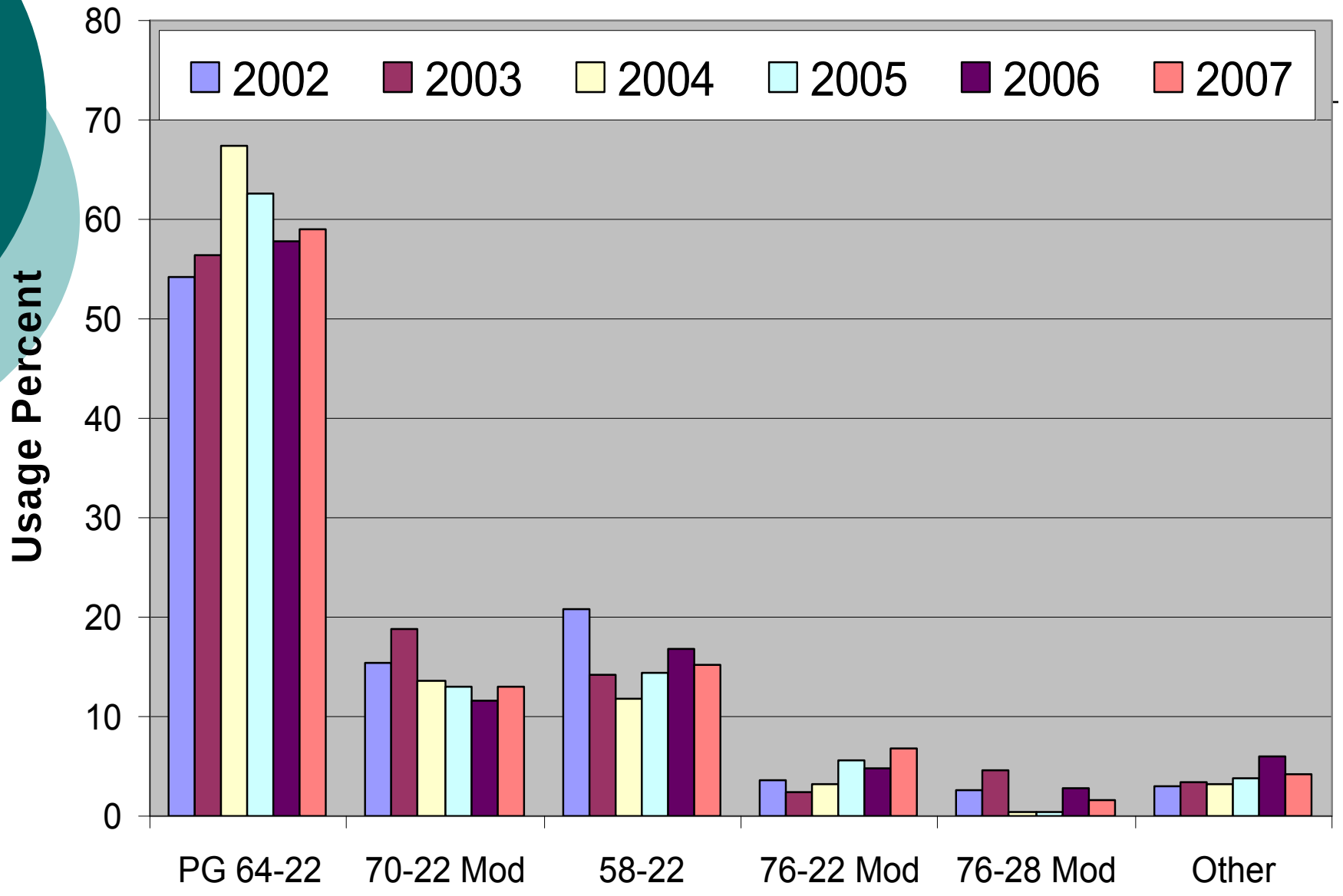
- Overall performance has been good
- Rutting has been minimal on most projects
- Reliable & cost-effective

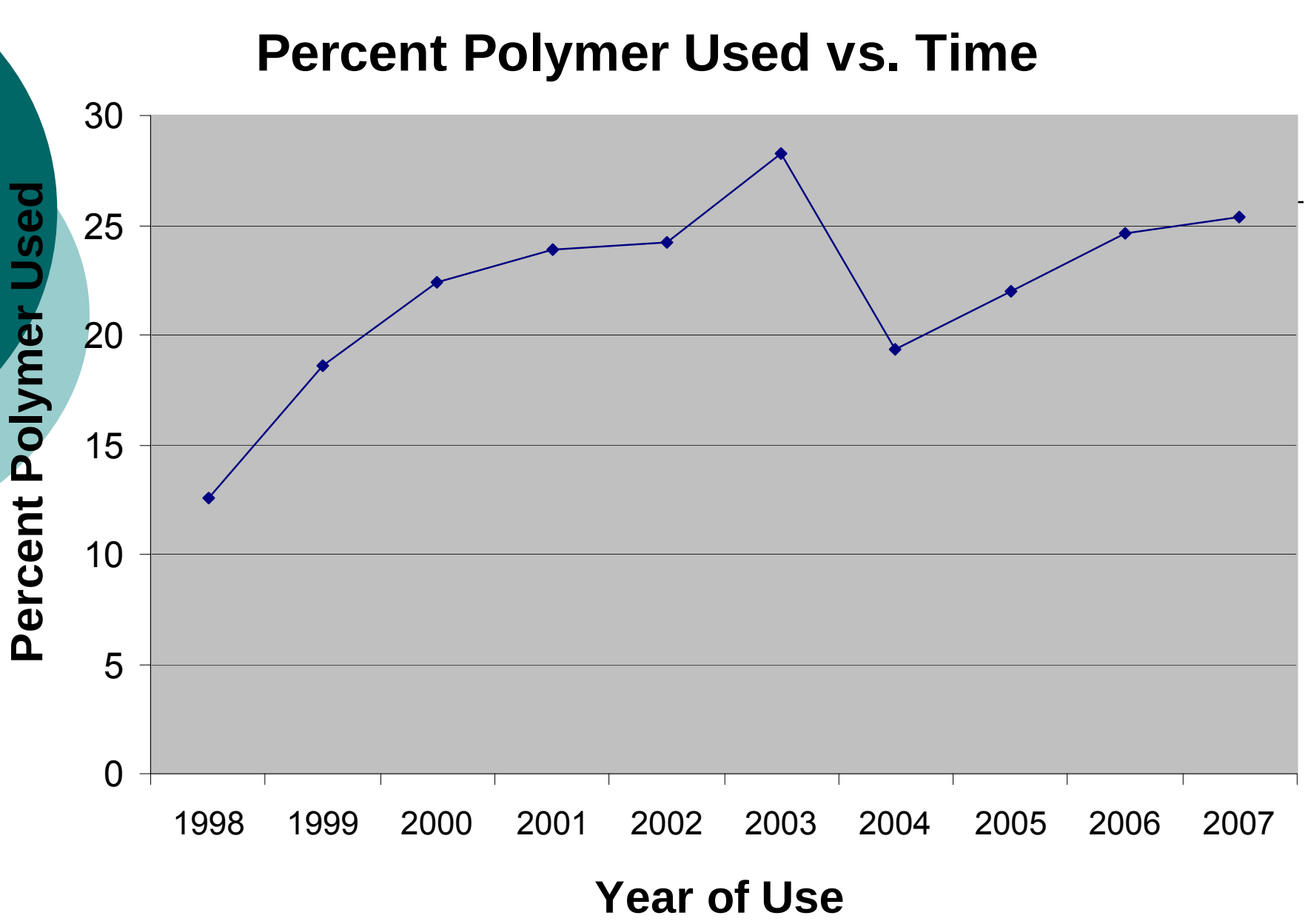
Future Efforts

- Rubblizing remains a specialized design requiring approval for use
- Future use is likely as system continues to deteriorate

PG Binder Usage

2002 to 2007 Grade Usage




Percent Polymer Used vs. Time
Percent Polymer Used
30
25
20
15
10
5
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Year of Use

Specification Update

2008

Specification Update

- Field VMA Specification
  - Effective April 2008
- Longitudinal Joint Density Specification
  - Unconfined Edge Density ≥ 90% w/in edge distance equal to lift thickness
  - Individual Densities instead of averaging 5 across
  - Effective April 2008
- Discontinue reduced voids testing frequency after 2nd day of production for projects ≥ 1200 tons

Specification Update

- Payment for Anti-Strip????
- Begin Efforts on Pay for Performance Spec
  - ≥8,000 tons
  - Incentive / Disincentive Pay
  - PWL
  - Jobsite sampling

Questions?