PAVEMENTS AND INNOVATION

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PAVEMENTS AND CONSTRUCTION

2013 ARIZONA PAVEMENTS / MATERIALS CONFERENCE
Overview

- Organizational Changes
- MAP-21 Rules
- Pavement and Materials Program
- SHRP2
- EDC2
FHWA Organizational Structure

- Office of Pavement Technology
  - Asphalt Team
  - Concrete Team
  - Pavement Design and Analysis

- Office of Asset Management, Pavements, and Construction (Proposed)
  - Pavement Design and Analysis
  - Materials and Quality Assurance
  - Construction Management
  - Asset Management
MAP-21 Rule-making Initiatives

- Two rules that have direct impact to you
- NPRM detailing the asset management plan process
- NPRM assessing condition of the Interstate and NHS Pavement AND establishing a minimum threshold for the condition of the Interstate pavement
MAP-21 Asset Management

- Basic outline contained in MAP-21, follows AASHTO Guide

- Includes new provisions for Pavement Management Systems

- At minimum includes inventory and condition assessment of all Interstate and NHS pavements
MAP-21 Pavement Performance Measures

- One of three System Performance Measures

- Collaborative approach to assessing pavements on a nationwide basis

- Establishing minimum threshold for Interstate Pavements

- States will establish targets
MAP-21 NPRMs

- Both undergoing legal review

- Expect to see AM NPRM late December or early January

- Expect to see Safety Performance Measure rule out this fall, Pavement (Infrastructure) Measure rule out early next year (spring)
Goals of MAP-21 Pavement Implementation & Deployment

- cost-effective design, materials, recycled materials, and practice to extend pavement life
- reduce initial cost and life-cycle cost of pavements accelerated construction
- design criteria and specs for practices, product materials
- technology transfer
FHWA (Concrete) Pavement Program

- Pavement Design and Analysis
  - DARWIN-ME Deployment Team and State support
  - Development of Regional User Groups for implementation and calibration
  - Support development of network level assessment tools
- POC: Tom Yu

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\[ R^2 = 1.00 \]
Pavement and Materials Quality Assurance

Concrete Technical Guidance Program
  - Mobile Concrete Lab field projects

Expert Task Groups

QA State reviews, training, tools

Equipment Loan Program

POC:
Gary Crawford
FHWA (Concrete) Pavement Program

- Advancing New Materials and Technologies
  - Internal Curing for Concrete Pavements
    - Improved concrete properties
    - Minimize curling and cracking
    - Longer life pavement

- Implementation activities are being discussed with industry and State DOT’s
FHWA (Concrete) Pavement Program

- Construction Technology
  - Concrete Overlay Guidance and Demonstrations
FHWA (Concrete) Pavement Program

- Environmental Stewardship
  - Sustainable Pavements Program TWG and deployment support
  - Innovative materials and environmental issues
  - Life cycle development for pavements
- POC: Gina Ahlstrom
FHWA (Concrete) Pavement Program

- Increase Technical Capacity
  - Industry / DOT Workshops
  - 6 weeks Materials Course
  - POC: Mike Rafalowski

- Field Support / Technical Assistance
  - State pooled fund support
  - Program area ETG with stakeholders
Established to assist in accomplishing goals under MAP-21

Possible 5 year award
- Base Period (24 months)
- 3 Option Years (12 months each)

Awarded in 2012

5 Objective Areas Identified
Cooperative Agreement FHWA-CP Tech

1. Advance Sustainable Aspects of Concrete Pavements and Materials: Recycled Materials, Industrial Byproducts, Blended Cements
2. Advance Preservation and Maintenance Techniques for Concrete Pavements
3. Advance Long-Life Concrete Pavements
4. Advance Innovative Concrete Materials and Mixture Design
5. Advance New Technologies and Advancements in Concrete Pavement Placements
6. POC: Gina Ahlstrom
Cooperative Agreement- ACI

- Implementation of Ternary Mixtures
- Chemical Admixture Workshops
- Cementitious Materials Workshop
- Self Consolidating Concrete Workshop
- POC: Tom Yu
Cooperative Agreement-CRSI

- Technology Transfer Activities for CRCP
  - Workshops
  - Webinars
  - Provide technical assistance to State DOT’s
  - Establishment of a Technical Working Group
  - POC: Sam Tyson
IDIQ Contract - Pending

- Established to assist in accomplishing goals under MAP-21
- 5 year award
- Pending Award in 2013
- 6 Task Areas Identified
IDIQ Contract - Pending

1. Development of Best Practice Guidelines
   - Tech Briefs, Technical Advisories, Guide Specifications
2. Technology Delivery
   - Workshops, Webinars, Web-Based Training, Open Houses
3. Demonstration Projects
4. Technical Assistance to States
   - Peer-to-Peer exchanges, forensic evaluation
5. National and International Conferences
6. Expert Task Groups
   - Gather stakeholder input and feedback
Asphalt Materials Lab Field Support

• Focus on Emerging Technologies - New asphalt binder modifiers, high recycled asphalt, warm mix asphalt, recycled shingles, ground tire rubber
• Field Data QC/Testing
• Use/Demo Emerging Test Devices
• POC: Matthew Corrigan
Asphalt Mix Design & Testing

• Mix Design Manual - NCHRP 9-33

• Asphalt Mix Performance Tester (AMPT)
  • Refined under NCHRP 9-29
  • Provides Pavement ME Design input
  • Dynamic Modulus E* | and Flow (Fn)
  • Fatigue Testing protocols

• POC: Jeff Withee
Reclaimed Asphalt Pavement & Recycled Asphalt Shingles

- Guidance on use of High RAP +25%
- Guidance on RAS Usage
- Ongoing NCHRP Research Studies
- Update AASHTO Test Standards
- Usage: NAPA Member Survey
- POC: Lee Gallivan

Website: [www.moreRAP.us](http://www.moreRAP.us)
Warm Mix Asphalt Initiatives

• Guidance on use of WMA
• Regional Training
• On-going and Proposed Research Needs
• Recommendation for AASHTO Test Standards
• EDC Technology and Industry Focus

http://warmmixasphalt.com

• POC: Matt Corrigan
Ground Tire Rubber, GTR

- GTR blending study – size, source, %
- Evaluate GTR modified binders to the Superpave Performance Grading system.
- GTR size will effect test results
- Careful formulation is needed to meet all current asphalt binder standards.
  — but it can be done successfully
- POC: John Bukowski
In-Place Recycling Technologies

• Basic Asphalt Recycling Manual (Currently being updated by FHWA and ARRA for release in 2013)
  – Hot In-Place Recycling (HIR)
  – Cold In-Place Recycling (CIR)
  – Full Depth Reclamation (FDR)

• FHWA-NHI Training Course # 131050 (Asphalt Pavement In-Place Recycling Technologies)
  – Web Based Training
  – Instructor Lead Training (2-days)

• POC: Lee Gallivan
Quality Assurance

• State Programmatic Stewardship Review
  • Title 23 CFR Part 637
  • Since 2003 – 39 States

• QA Assessment - Average index score nationwide for materials quality assurance systems – 2013 75% target

• Information - Technical Advisory T 6120.3, FHWA-RD-02-095, FHWA-HRT-04-046, NHI Course 134042, TB FHWA-HIF-12-045

• Lab Accreditation

• POC: Rafalowski/Dvorak
Pavement Management and Preservation

- Major component of MAP-21
- New standards for management systems
- Preservation an eligible Federal Aid activity
- New training from NHI on PMS
- Expanded partnership with TSP2 and NCPP
SHRP 2 Implementation of Renewal Research Products

- Preservation for High Volume Roadways (R26)
- Modular Pavement Technology (R05)

- Real-Time Smoothness Measurements on PCC Pavements During Construction (R06E)
- Performance Specification for Rapid Renewal (R07)
  - Guide specifications for concrete pavements and bridge decks
SHRP 2 Implementation of Renewal Research Products

- Composite Pavement Systems (R21)
  - Thin asphalt over concrete
  - Two-lift concrete

- Using Existing Pavements in Place (R23)
  - Long-Life Pavements
    - Lower cost over pavement life
    - Use substantially less new materials
    - Constructed quickly
Exploring National Leader

3D ENGINEERED MODELS FOR CONSTRUCTION (3D) – CURRENT STATUS

Source: Data from EDC 2 State Baseline Profiles - July 2013 and Professional Knowledge
EDC2 SLIDE-IN BRIDGE
CONSTRUCTION – CURRENT STATUS

Source Data from EDC 2 Baseline Profiles July 19, 2013
Exploring National Leader

Source: EDC 2 Division Office Survey Aug 2013 and Professional Knowledge
THANK YOU!

QUESTIONS ?