Introduction to the AASHTO Project Finance Institute (APFI)

May 14, 2015
About APFI

Mission

- To promote **public sector capacity building** in the analysis, understanding, and use of transportation project finance techniques through a program of training, education, and outreach to all State Departments of Transportation and their local partner agencies.

Goals

- Understand project finance tools available to all types of projects
- Create a sound environment for partnership among project delivery stakeholders
- Assess projects for potential delivery via public-private partnership (P3), and, if suitable, empower their delivery of projects under this approach
Services

In-person
- Workshops
- Peer exchanges
- Training Seminars

Online
- Website
- eLearning Modules
- Webinars
Discussion Questions

What are your Transportation Finance Capacity Building Needs?

- What transportation finance **challenges** are you facing?
- What **topics** are you MOST in need of examining?
- What **audiences** are MOST in need of capacity building activities?
- What is your MOST preferred **learning style** for capacity building?
Jennifer Brickett
Director, APFI
jbrickett@aashto.org
202-624-8815
Standing Committee on Highways
TC3 Update

Thursday May 14, 2015
AASHTO Spring Meeting – Cheyenne, Wyoming
Tom Byron, TC3 Chair
TC3 – A Training Resource
Cost Savings through Resource Sharing

Our Mission:
Develop Training to Enhance the Skills of Transportation Workforce

- Curriculum of 80 Courses
- Leverage Collective Resources
- National Subject Matter Network
- Cost Effective Course Development
- Ensure Training Accessibility
Accomplishments

First Two Years

• Technical Service Program (TSP) Transition
  – New Leadership
  – New Committee Structure
  – Member and Partner Recruiting
• New Mission and Goals
• 20 new Course Hours Annually
• Mobile Application Roll-Out
• 90,000 Trained Since 2008
Next Steps
AASHTO Training

• 2015 Mid-Summer Launch of AASHTO LMS
  – Move off NHI Platform
  – Establish Tiered Fee Structure
  – Move Toward Self-Sustaining
  – Update Full Curriculum of Courses
• New TC3 Website
Participation
State Involvement Growing

**Financially**
- 13 States - Fed Pooled Fund
- 30 States - TSP

**Active Membership**
- 12 States as Fed Pooled Fund
- 24 States as TSP

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**State Sharing Program**
- 8 States - Fed Pooled Fund
- 17 States - TSP

**SME Network**
- 25 - Fed Pooled Fund
- 60 - TSP
Future Growth
Resource for AASHTO

AASHTO Training – Looking forward

• Other focuses areas
• Expand SME Network
• Curriculum Growth
• Leverage Technologies
Questions?

Mark Chaput, TC3 Vice Chair, MI DOT chaputm@michigan.gov
or
Keith Platte, AASHTO Staff, kplatte@aashto.org

Thank You!
NAPA INDUSTRY TOUR OF JAPAN 2014

State Transportation Agency Perspective

Paul D. Degges, P.E.
Chief Engineer, Tennessee Department of Transportation
State Transportation Agency Representation

Paul D. Degges, P.E.
Chief Engineer, TDOT

Rebecca Burkel, P.E.
Director, Bureau of Technical Services, WisDOT

Abdul Z. Dahhan, P.E.
Bureau Chief of Materials, IDOT

Chris Abadie, P.E.
Materials Engineer LADOTD
Why are Facility Owners interested in RAP?

- Asphalt pavements are among the largest single assets a transportation agency owns and maintains. These agencies must find new technologies and innovations to lower the cost of constructing and maintaining pavement assets while at the same time increasing their durability and useful life.

- Reclaimed Asphalt Pavements (RAP) have proven to be a resource available to meet these goals.
Japan

Land Area 145,925 mi.²
32° - 47° North Latitude (mainland)
- Roughly San Diego, California to Seattle, Washington

The climate of Japan is predominantly temperate, but varies greatly from north to south.

Population 126,434,964
- Tokyo 13,185,502 (City)
- 35,682,460 (metro area)
Japan’s Highway Network
Japan’s Highway Network
Truck weight limits/loads (General Roads)

Two Major Road Categories
• General Roads
• Freeways
• Maximum Axle Weight 11,000 lbs

Truck weight limits/loads (Freeways)

- Specified Vehicles
- Maximum Axle Weight 11,000 lbs

<table>
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<tr>
<th>Greatest axle distance</th>
<th>8m or more</th>
<th>9m or more</th>
<th>10m or more</th>
<th>11m or more</th>
<th>12m or more</th>
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<th>14m or more</th>
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<td>Gross weight</td>
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<td>26t</td>
<td>27t</td>
<td>29t</td>
<td>30t</td>
<td>32t</td>
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Construction Loads

While freeway weight limits are not too different from those in the US, construction equipment appears to carry much smaller material loads than on a typical US project.

• We estimated most material loads observed were less than 10 tons.
Japanese Perspective towards Recycled Products

Environmental issues appear to be behind much of the Japanese push to increase the use of recycled products.

- Limits on natural resources coupled with limited places to dispose of waste streams have created an opportunity to maximize the use of RAP.
- Japanese Legislation, “Waste Management and Public Cleansing”. Waste Pavements are processed according to this law and a manifest system is used to track the material.
- Additionally, government programs pushing the use of recycled materials have required Japanese contractors to embrace the use of RAP.
- Japan’s usage of RAP averages just under 50% with some contractors in Japan using up to 70% RAP.
Asphalt Production

- The Japanese are using Batch Plants almost exclusively.
- A high volume continuous flow operation does not appear to suit their business model.
- Most plants produce asphalt 6 or 7 days a week around the clock.
- The producers sell mix to many different customers.
- They carefully handle/sort/store their aggregates.
RAP Production

Parallel RAP Heating Technology –

- The use of the separate RAP dryer is a significant difference in plant technology.

• Parallel Heat system
RAP Production

RAP Preparation
• The quality of the RAP aggregate
• Heating the RAP material carefully
• Properly utilizing a softening agent
• Storage
High quality workmanship

Initial reaction to Japanese construction implementation is very positive.

- Safety is Front & Center
- Adequate Staffing
High quality workmanship

Initial reaction to Japanese construction implementation is very positive.

- Close attention to detail
- Clean Worksites
Types of mix designs

Japan’s use of porous friction courses is growing. This includes single–layer PFC, dual–layer PFC, and a hybrid PFC–SMA mix that is produced and placed in a single operation.

The Japanese have had high success with their “Porous” asphalt. They allow RAP in this mixture and it is used as a wearing course.

Noise is an apparent issue in Japan with the high population density. The quietness of porous mix designs was deemed a necessity in many places.
RAP Testing

Simplified Criteria – The criterion the Japanese have in place for the acceptance and use of RAP are very straightforward *(Pen greater than 20, binder content greater than 3.8%, determination of rejuvenator dosage based on some sort of blending chart).*

Japan has established simple mix tests to evaluate mix designs. Those tests are the

- Indirect tensile modulus (peak stress/deformation)
- Wheel tracking test (dynamic stability)

*This allows the mix designer (contractor) to be innovative in developing combinations of materials (e.g. RAP, softer virgin binders, and rejuvenators) to meet the mix design criteria.*
Other Takeaways

• The Japanese are interested in the use of a “Warm” technology in the production of high RAP HMA as a means to further improve the product.
• Contractors do a lot of research and development under the Japanese Program.
• Asset Management is a Key area of interest to the Japanese as a way of improving their program.
• Use of colored Asphalt for Bike and Pedestrian paths is prevalent.
Questions?
Implementation Goals

• Help improve the way state (and other) transportation agencies are doing business by providing usable and scalable products that can become part of established practices within implementing agencies.
Some Successes to Date

• 9 out of 13 new **bridges built** using *Innovative Bridge Designs for Rapid Renewal* (R04)

• New **websites** for major capacity and reliability products:
  - *PlanWorks* (C01) at [https://fhwaapps.fhwa.dot.gov/planworks](https://fhwaapps.fhwa.dot.gov/planworks)
  - *EconWorks/TravelWorks* (C03/11, C16) at [www.planningtools.transportation.org](http://www.planningtools.transportation.org)
  - National Operations Center of Excellence (L17) at [www.transportationops.org](http://www.transportationops.org)

• **Organizing for Reliability** (L06) - 28 implementation plans have been developed and are now being put into action

• **106,000+ incident responders trained** through *National Traffic Incident Management Responder Program* (L12)
Successes to Date - Safety

- 10 States conducting safety research on 11 issues

Topics being researched:
- Pedestrian Safety
- Roadway Departures
- Speeding
- Work Zones
- Horizontal and Vertical Curves
- Interchange Ramps
- Adverse Conditions
- Roadway Lighting
More Safety Opportunities

• April 23, 2015, FHWA issued a Broad Agency Announcement – Pre-Solicitation Notice for additional safety research opportunities using the NDS and RID databases.

• Actual solicitation possible in June with short turnaround time.

• Phased approach similar to the IAP but unlike the existing IAP, researchers would take the lead and a state DOT must be a participant.

• The proposed work must fit into the FHWA Office of Safety R&D’s goals and visions.

• Register at www.fbo.gov to get further information.
Upcoming Regional SHRP2 Events

• By Topic
  – Innovative Bridge Designs (R04):
    • May 19-20, Peer Exchange, Sacramento, CA
    • Sept. 16-17, Peer Exchange, Minneapolis, MN
  – EconWorks/TravelWorks (C03/11, C16)
    • July 6-7, Training Workshop, The Works
  – Guidelines on Pavement Preservation for High-Traffic Volume Roadways (R26)
    • July 23, Showcase, Massachusetts

• At 2015 Regional Meetings
• At AASHTO Committee and Subcommittee Meetings
SHRP2 Implementation

- **SHRP2 Solutions** – 63 products bundled into 40 implementation efforts
- **Solution Development** – processes, software, testing procedures, and specifications
- **Field Testing** – refined in the field
- **Implementation** – 275+ transportation projects; adopt as standard practice
- **SHRP2 Education Connection** – connecting next-generation professionals with next-generation innovations

51 States + DC

275+ projects
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<tr>
<th>PlanWorks (C01)</th>
<th>Up to 7 Lead Adopters @ $300,000 each</th>
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<tbody>
<tr>
<td>Precast Concrete Pavement (R05)</td>
<td>Up to 4 Lead Adopters @ $300,000 each; up to 5 User Incentives @ $80,000 each</td>
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<tr>
<td>New Composite Pavement Systems (R21)</td>
<td>Up to 3 Lead Adopters; between $160,000 - $500,000 each</td>
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<tr>
<td>Utility Investigation Technologies (R01B)</td>
<td>Up to 5 Proofs of Concept @ $150,000 each</td>
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<tr>
<td>Identifying and Managing Utility Conflicts (R15B)</td>
<td>Up to 5 Lead Adopters @ $100,000 each</td>
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<tr>
<td>WISE: Work Zone Impacts and Strategies Estimator Software (R11)</td>
<td>4 Proofs of Concept @ $250,000 each</td>
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<td>Reliability</td>
<td>Date</td>
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<tr>
<td>WISE: Work Zone Impacts and Strategies Estimator Software (R11)</td>
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<td>Pavement Solutions Webinar (R05) &amp; (R21)</td>
<td>May 7</td>
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<tr>
<td>Utility Solutions Webinar (R01B) &amp; (R15B)</td>
<td>May 13</td>
<td>2:00 p.m. – 3:30 p.m.</td>
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<tr>
<th>Capacity</th>
<th>Date</th>
<th>Time</th>
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<tbody>
<tr>
<td>PlanWorks: (C01) TODAY</td>
<td>May 14</td>
<td>2:00 p.m. – 3:30 p.m.</td>
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• Round 6 Application Period
  – May 29 – June 26, 2015

• Round 6 Recipients Announced
  – Early August

• Round 7
  – 2016

Last Chance!
Questions?

- GoSHRP2 website
  www.fhwa.dot.gov/goSHRP2
  - Product details
  - Information about SHRP2 implementation phases

- SHRP2 @AASHTO
  http://SHRP2.transportation.org
  - Implementation Information for AASHTO members
Transportation Association of Canada (TAC) Update
(Chief Engineers’ Council)

AASHTO Spring Meeting
Gregory C. Johnson, P.E.
Chief Operations Officer
Michigan Department of Transportation
TAC Structure

Council of Transportation Ministers

Transportation Association (TAC)

Council of Deputy Ministers

Task Forces & Special Projects

CCMTA

Standing Committees

Open Participation

Governments Only
To be Canada’s transportation center of expertise, providing a neutral forum for exchange of ideas & discussion of technical issues

To contribute to increased awareness of importance of transportation to Canada’s economic & social well-being & to availability & technical currency of transportation professionals in Canada

To be pre-eminent source of transportation materials for Canadian practitioners

To develop & update guidelines & best practices primarily for road & road-related transportation matters.
Chief Engineers’ Council

Forum for chief engineers
- Federal, provincial, territorial departments of transportation
- 10 municipalities
- Select national associations

Responsible for national technical guidelines for design, construction, maintenance & operation of road infrastructure in Canada

In support of provision of a safe, secure, uniform, efficient, sustainable road network
1. National forum/network of senior transportation engineers

2. Oversight for national technical guidelines for road infrastructure in Canada
Standing Committees

- Geometric Design
- Maintenance & Construction
- Pavements
- Road Safety
- Soils & Materials
- Structures
- Traffic Operations & Management
- Asset Management (Task Force)
Ottawa Light Rail Project

- 12.5 km line
- $2.1 billion cost
- Unique Design Build Procurement
- Website Ottawa.ca/confederationline
- Using technology other than traditional tunnel boring machine. Converting BRT to light rail – widening Highway 417 at a cost of $250 million.
- Maximum depth is 35 meters
- 2018 is projected completion
Automated Vehicles: The Coming of the Next Disruptive Technology

Barrie Kirk, P.Eng.
Executive Director, Canadian Automated Vehicles Centre of Excellence
Semi-autonomous vehicles are already here (parking assist, auto braking pedestrian detection, autonomous construction vehicles, lane keeping intelligent cruise control)

National Highway Traffic Safety Administration (NHTSA) defines vehicle automation as having five levels
First Commercial Fully Autonomous Low Speed Vehicles Project
- 2025 as critical mass tipping point for autonomous vehicles
- Reduce collisions by 80%
- No such thing as a crash proof car – challenges include reversing, extreme weather, work zones, traffic signals, police control, etc.
- Automated connected & electric vehicle technologies will converge
- Automated shared services may replace off peak transit service, which may mean reduced traditional transit ridership
- Automated vehicles will not need special infrastructure, but an enhanced infrastructure will complement the Mexico to Manitoba autonomous truck corridor
- $65B Impact to Canadian Economy
- Recommending a Minister of Driverless Vehicle

All major transportation projects should have Automated Vehicle audit
British Columbia is in third generation of maintenance outsourcing
Defined as using different practices & procedures to achieve better outcomes over a set time period
Recent survey assessed the state of outsourcing, successes & failures. Seven respondents, with 4 out of 7 outsourcing maintenance & operations.
Alberta & Ontario finding cost trends going down, but some corner cutting by contractors who bid too little "struggling with LOS"
Appropriate performance measures are key to success
Building Canada Fund

- $53 billion over 10 years
- Indexed at 2% per year
- 11 categories, including road, bridges, transit, rail, ports, disaster mitigation, water, wastewater, & P3 initiatives
- Application process for selection
Thank You
MASH Implementation Plan

Chris Poole, Iowa DOT
SCOD Technical Committee on Roadside Safety

Presentation to SCOH       May 14, 2015
What is MASH (2009)?

AASHTO’s Manual for Assessing Safety Hardware (supersedes NCHRP Report 350)

• Current guidelines for testing and evaluating the performance of safety features

• Contains protocols for crash testing:
  – Longitudinal barriers
  – Terminals and crash cushions
  – Sign and luminaire supports
  – WZ traffic control devices
MASH Update (MASH 2015)

• New crash test matrices for cable barriers placed in sloped medians

• Other technical revisions:
  – Testing for required soil strength
  – Proper ballasting of trucks

• Modifications to vehicle specifications:
  – Length of tractor-trailer trucks
  – Hood height requirements
Current Implementation Agreement

• As of January 1, 2011, all newly developed hardware must be tested using MASH
• 350-compliant hardware does not have to be re-tested to MASH (though we do this)
• 350-compliant hardware may remain in-place and continue to be installed (indefinitely?)
• Non-compliant hardware with no suitable alternatives may be left in place and continue to be installed
Innovation?

- “Parallel approach” was supposed to allow manufacturers time to develop new products
- Over four years later, very few proprietary MASH systems exist
- Additional safety benefits of MASH can only be realized if new hardware is developed
- Sunsetting 350 would provide the incentive
- Joint FHWA/AASHTO/TCRS group formed
Proposed Implementation Agreement

• Applies to National Highway System
• TCRS develops and maintains the evaluation criteria (MASH)
• FHWA continues reviewing and determining eligibility of highway safety hardware for federal-aid reimbursement
Proposed Implementation Agreement

• All 350- or MASH 2009-compliant permanent hardware may remain in place
• Existing 350- or MASH 2009-compliant temporary devices, including portable concrete barrier, may continue to be used through their normal service lives
• Any revision to 350-compliant hardware shall utilize MASH 2015 for re-evaluation and retesting
Proposed Implementation Agreement

- Upon adoption of MASH 2015, any newly developed hardware must utilize MASH 2015 for evaluation and testing
- FHWA will not issue eligibility letters for new or revised hardware tested using MASH 2009 criteria after January 1, 2017
Proposed Implementation Agreement

• Utilization of 2015 MASH-compliant hardware will be required on new construction and reconstruction projects by these dates:
  – Longitudinal w-beam barrier and cast-in-place concrete barrier: **January 1, 2017**
  – Cable barrier, transition units, terminals, crash cushions, and bridge railings: **January 1, 2018**
  – Precast concrete barriers, sign supports, work zone devices, other breakaway hardware, and all other longitudinal barrier: **January 1, 2019**
Proposed Implementation Agreement

• **Urges** agencies to upgrade non-350-compliant hardware, especially when damaged beyond repair

• **Encourages** agencies to upgrade non-MASH 2015-compliant hardware:
  – During reconstruction projects, or
  – During 3R projects
Timeline

• Strong interest in having MASH 2015 and the Implementation Agreement approved this year
• Plan to ballot them both at July TCRS meeting
• Assuming they pass, send on to SCOD
Questions?
Standing Committee on Highways (SCOH) Spring Meeting 2015 – Cheyenne, Wyoming

Business Session

FHWA Activities

WALTER C. WAIDELICH, JR.
ASSOCIATE ADMINISTRATOR FOR INFRASTRUCTURE

MAY 14, 2015
Status of Regulations – MAP-21

- Performance Measure Schedule
  - Safety Transportation Performance Management (PM1)
  - Pavement and Bridge Performance Measures (PM2)
  - System Performance + CMAQ + Freight (PM3)
- Asset Management - NPRM
- NBIS - NPRM
- NTIS – Final Rule
- CMGC Regulation - NPRM
- Engineering and Design Services – Final Rule

http://www.dot.gov/regulations/report-on-significant-rulemakings
Transportation Performance Management Assistance and Support

- New TPM Technical Assistance Program
  - Resources
  - On-site Assistance
  - National Reviews
- TPM Implementation Training
  - 101 Overview Training
  - 201 Technical Training
- Performance Website Development
FHWA Sustainable Pavement Program

**Goals:** For Designing, Constructing, and Maintaining Pavements
- Create useful products for DOTs to use
- Document the body of knowledge
- Increase the use of sustainable technologies

**Outcome:**
- Sustainable Pavements

http://www.fhwa.dot.gov/pavement/sustainability/
FHWA Sustainable Pavement Program

- Technical input from stakeholders
- Technical guidance on pavement and materials sustainability
- Advancing sustainability tools
- Technology transfer
Transportation Engineering Approaches for Climate Resilience (TEACR)

- **Purpose:** Develop recommendations on ways to incorporate climate change as part of engineering practice

- **Approach:** Approximately 12 engineering case studies of climate vulnerability and adaptation for specific highway facilities. Potential examples:
  - Hurricane-induced wave forces on bridge decks in Mobile, AL
  - Permafrost thaw on Dalton Hwy in Alaska
  - Effects of soil swelling/shrinking on pavements in Texas
  - Pavement over-washing and weir flow from combined storm surge and sea level rise in Florida

- Lessons learned from these and other case studies will be synthesized in cross-cutting best practices report

- **Schedule:** Completion late 2016 (case studies late 2015)
Performance-based Practical Design

Notable Attributes:

- PBPD focuses on performance improvements that benefit both project and system needs.
- Agencies make sound decisions based upon performance analysis.
- PBPD approach seeks a greater return on infrastructure investments.
- PBPD does not eliminate, modify, or compromise existing design standards or regulatory requirements but complements the existing flexibility in design.
PBPD – Ongoing & Future Activities

Outreach to States

- Deliver One-day Training Workshops
  - Delivered workshops: CA, IN, TX, VA, MT
  - Future workshops: IA, OH, SD, WA, WI

- Technical Assistance to Divisions and States
  - Peer Exchange in June 2015

- Reviewing Design Exception Process
  - Looking at 13 controlling criteria identified in 1985
  - Watch for future Federal register Notice

http://www.fhwa.dot.gov/design/pbpd/
US DOT “Contracting Initiative” – Pilot Program

- Announced in March 6, 2015 Federal Register as a one year pilot (could be extended)
- Opportunity to deviate from typical FHWA contracting competition requirements
- Primarily focused on promoting local or geographic based hiring to facilitate economic opportunities for veterans and local laborers
- Launched as an experiment under FHWA’s “Special Experimental Project No. 14” (SEP-14)
- SEP-14 proposals must come from States
Other Activities....

- Highway Materials Engineering Course
- Traffic Incident Management Training Program
- Connected Vehicles
- EDC Reports
- STIC Incentive Program
- AID Demonstration Awards
QUESTIONS