

**2015 AASHTO Subcommittee on Maintenance Meeting, Des Moines, Iowa  
Leadership Meeting Minutes – July 2015**

**SUNDAY, JULY 19, 2015**

**SCOM Leadership Meeting:** Mark McConnell, MSDOT – Presiding

- Welcome and Introductions – Mark McConnell
  - Tim Cunningham – Equipment TWG Chairman
  - Chris Christopher – Has had a change in position and is moving onto construction.
  - New Members: No new members in leadership meeting
- Summer Meeting Update and Logistics – Bob Younie
- Resolutions
  - Jameelah – Handed out and reviewed 2014 resolutions
  - Proposed – Equipment TWG has a couple. Mark requested draft resolutions prior to leadership meeting in the future.
  - In the future, we will be issuing letters as “thank you” rather than resolutions. The letters and cards provide an opportunity to personalize.
- AASHTO Update – Gummada Murthy
  - AASHTO looking for SCOM liaison with Deployment Program and Connected Vehicles Coalition. Mark assigned safety and reliability committee to recommend a liaison.
- TRB Update – James Bryant
  - TRB – Recommend registering for the My TRB account. This will provide updates on the latest information for the 2016 TRB conference. Technical presentations will be recorded and posted. This year’s TRB will be held in two stages. The January session in person and an online session scheduled for the summer of 2016.
- NCHRP Update – Amir Hanna
  - NCHRP – Amir circulated a list of projects that NCHRP has published and reviewed them. Described current solicitation of 2017 projects. Research statements for FY17 funding are due no later than October 15, 2015. Research statements should have clear objectives; state what the product will be, and how it will be helpful to the State DOT’s. Amir offered to review and comment on draft problem statements.
  - How to endorse another Subcommittee’s research statement: The Subcommittee should vote to endorse it and the Chair would write a letter of endorsement.
  - Amir encouraged SCOM to submit possible members for current NCHRP research panels. Anita Bush agreed to provide Amir with some names.
  - General Research(3-4 yrs / 100K to 400K), 20-07 (1yr / <\$100), 20-05 Synthesis (Big Pool – Rarely selected)

- Mark requested additional information for research statements to support his argument during the AASHTO meeting.
- FHWA Update – Bryan Cawley
  - Provided proposed research statements from West and South MPN's.
  - SCOM documents need to be supplied to FHWA by Wednesday at 5:00pm.
  - FHWA asked for comments on the Maintenance and Preservation definitions.
- SCOM Strategic Plan Update – Mark McConnell
  - Provided copy of draft SCOM Strategic Plan to leadership and provided comments.
  - Asked TWG to identify liaisons for different committees.
  - TWG's were asked to update their own strategic plan to align to the Subcommittees.

#### TWG Reports

- General Update: 2015 Work Plan Accomplishments (Research, Workforce Development, Performance Measures, & Environment), Tentative Research Problem Statements, and Proposed Resolutions.
- Bridge – Summary of Thursday, business meeting presentation.
- Equipment - Summary of Thursday, business meeting presentation.
  - No resolution necessary for advancement of equipment academy. Material will be developed and brought back for AASHTO SCOM support for endorsement by AASHTO.
  - Proposing to increase contribution to TSP for equipment TSP from \$3,000 to \$5,000.
- Highway Safety and Reliability, to be renamed to Maintenance Operations – Summary of Thursday, business meeting presentation.
- Pavement – summary of Thursday, business meeting presentation.
- Roadway and Roadside – summary of Thursday, business meeting presentation. Beth from Missouri DOT has retired.
  - 2-webinars a year to keep TWG up to date.

#### **OTHER:**

- TWG need to discuss and propose possibilities for a domestic scan during this meeting. Proposals are due mid-October.
- SICOP – update sheet provided
- PIARC – Winter Service TWG – Data book of 27 countries concerning standard policy regarding how they inventory equipment, type of equipment, how they use equipment and materials to address winter services. Offered in 2 languages. In addition, presenting case studies within a series of webinars in 2016.

- Regional meeting needs – FHWA will take notes and prepare slides for report out at Thursday Business Meeting.
- New Employee Orientation – Handout for new employees to identify which TWG they are interested with and how they can actively engaged with SCOM. Example work plan to present format and type of material being presented.
- Next year’s meeting – Clark County, NV, Renaissance Marriott, July 17 – 21.

**2015 AASHTO Subcommittee on Maintenance Meeting, Des Moines, Iowa  
General Session & Business Meeting Minutes – July 2015**

Note: Additional information on many of the presentations noted below and others will be available at the following website: <http://maintenance.transportation.org/Pages/default.aspx>

**MONDAY, JULY 20, 2015**

**SCOM General Session:** Mark McConnell, MSDOT – Presiding

**Opening Remarks: Mark McConnell, MSDOT**

Welcome to Iowa and thanks to Iowa DOT for putting all of this together. Iowa DOT Motor Vehicle Enforcement Honor Guard started the conference off with a flag ceremony and singing the National Anthem.

**Welcome: Paul Trombino III, Director, IADOT**

Highway, bridge, and winter maintenance and is very important and are critical components of what we do. When we talk about funding, construction is important but we live and die on how well we maintain the system, especially in winter. Expectations and demand on our transportation system is growing. This is the right business to be in when your services are in high demand. Innovation in how we maintain our highways and bridges is higher when compared to other areas. Small innovation techniques help us to meet this demand more efficiently. Thanks for what you do and for focusing on safety first. It's very important that everyone makes it home at the end of the day.

**Welcome: Kim Reynolds, Lieutenant Governor for the State of Iowa**

Thanks to Paul for infusing technology and new ideas into our business practices. Iowa's transportation system is very valuable with over 9,000 miles of roads and 4,000 plus bridges. Our weather brings with it various freeze thaw cycles, and maintenance challenges and opportunities. Iowa DOT has over 430 snow plows and many have cameras for the public to see what the roads look like before they travel. The public and social media response to this initiative has been very positive. Data, images, road conditions, and global positioning help us to make smarter decisions. In February 2015 our legislature passed a 10 cent fuel tax 100% dedicated to critical roads and bridges. This will have a significant impact. Additionally we have challenged Iowa DOT to look for efficiencies in our processes through which we expect to save millions annually. I supported the development of the Iowa Supply Chain design for the entire state where we identified facilities to reduce cost and improve competitiveness. This helps us to focus on transportation and economic development. Our goal is to prioritize investments, lower transportation costs, and maintain and improve the transportation system.

**SCOM Update: Mark McConnell, MSDOT**

The SCOM Strategic Plan was updated this year. We have a new vision, mission, and goals and our focus is to meet the needs of our customers. A copy of the plan is in your registration package. Two new focus areas were added, safety and communication. The SCOM structure

was also tweaked to reflect the new changes. If you have maintenance topics for the US Domestic Scan Program please share them with the leadership team. Outcomes from the scan program can provide successful approaches to identified gaps and help us to better utilize existing funding levels. Towards zero deaths is our number one initiative. During the Regional Meetings talk about key initiatives and issues that are important to you and your states. Take time to network, it's important. Get active and participate year round in your TWG's. Make a point to participate. In closing, the subcommittee wishes to thank Erle Potter and Chris Christopher for their many years of dedicated service.

**FHWA SCOM Update: Bryan Cawley, FHWA**

MAP-21 Section 116 is great for preservation and increased funding eligibility. Preservation is integral with an increased focus on asset management. The asset management rule making process is ongoing and FHWA is deciding how to address the comments. What performance management is and how it will help was shared. The current TPM rulemaking schedule was also shared. Asset management plans are a must and performance management is required. Performance measures and targets are still being fleshed out for pavements, bridges, and safety and will most like be broken down by NHS and Non-NHS routes. We continue to work on snow and ice, connected vehicles and related work. We are currently updating definitions for maintenance, routine maintenance, preventative maintenance, and preservation. We are capturing research best practices in utility cuts, constructing micro surfacing, slurry seals, and chip seals, and flooded pavement assessments. We are also looking at low cost snowplow visual guidance. Training was developed with the International Slurry Surfacing Association on slurry seals and micro surfacing treatments and other training with the Society for Protective Coatings. An 8 week blended training Maintenance Leadership Academy is available. Contact NHI for additional information at [nhicustomerservice@dot.gov](mailto:nhicustomerservice@dot.gov).

**AASHTO Update: Jameelah Hayes, AASHTO**

MAP-21 expired on September 30, 2014 with no new increases since then. In 2014 AASHTO updated its 2009 Strategic Plan which now runs until 2019. The updated plan provides direction to AASHTO but not to State DOT's. AASHTO updated its vision and mission statements and the remainder of the plan. Our new focus is about transportation across the modes. Jameelah shared how the new plan be used and talked about the new Technical Service Programs and the National Operations Center of Excellence. AASHTO training was presented along with its link to the Transportation Curriculum Coordination Council (TC3). The World Road Association / PIARC is the international roads version of AASHTO. <http://piarc.transportation.org>. Info was shared on SHRP2 Implementation: Solutions, Solution Development, Field Testing, Implementation, and Education Connection. Successes to Date: innovative bridge designs for rapid renewal, new websites, Plan Works, EconWorks/TravelWorks, and the National Operations Center of Excellence. In closing, a presentation of anticipated products was shared.

**Operations Center of Excellence: Dennis Motiani, AASHTO**

With over 33 thousand people dying each year, congestion expected to increase 25% by 2030, and truck traffic by 64% reliability in the transportation network and Towards Zero Deaths is the end game. An incredible amount of gas and hours of delay are wasted each year. We can

make a difference in reducing these upward trends. Winter road conditions / icing cause more deaths and injuries annually than all other forms of severe weather combined. In the future, information about icy roads and bridges will be sent to your car and it will automatically adjust so you don't slip and slide. Our customers expect us to maintain our pavement markings and roadway signs. We can stop vehicles from overturning. TSM&O is here to help you prepare for the unexpected. This Community of Practice will help you figure out the answers and best practices in operations. A discussion platform, resources and technical services are available at [www.transportationops.org](http://www.transportationops.org). Come join the community!

#### **Iowa DOT Maintenance Perspectives, Bob Younie, IADOT**

Zero fatalities, it's a goal we can all live with. We can improve system safety and mobility by basing prioritized system investments in performance management. With increasing lane miles and bridges in need of repair something has to change if additional funding doesn't materialize. Pictures of truck mounted snow blowers were shown along with a discussion on tablet collector applications. Paint retro-reflectivity and Iowa's Maintenance Portal were shared. Extensive outreach to numerous organizations and legislation was passed to allow snow plow trucks to have blue and white warning lights installed in addition to amber for better visibility. "We want to be safe, you want to be safe, let's give it a try." The public and the media love our plow cams. Our salt dashboard with traffic factors has saved millions of dollars over the past 4 years. In closing, Iowa's shared worker program was presented.

#### **Technical Service Program Update - SICOP Program, Rick Nelson, SICOP**

Various accomplishments and an update on the Winter Maintenance Policy Coordinating Committee were presented. Results of several implementation surveys' and the Top 10 practices that constitute a winter maintenance program were shared. How many times did your program stop because there was no money? Winter wins compared to spending budgets on summer maintenance. Update on annual winter maintenance surveys and the National Earned Media Operation. We have done technology transfer activities and prepared research needs statements. We support TWGs and other AASHTO committees. We share the State DOT perspective to the weather forecasting community. Support member states, workforce development, communication, research, and information sharing on winter maintenance related topics.

#### **Technical Service Program Update - TSP2 Program, Larry Galehouse, NCPP**

The purpose of TSP2 is to share information with members on preserving highway infrastructure. TSP2 qualitative benefits: sharing information, networking, demos, new products, and development of guidelines, specifications, videos, research, and websites. Our oversight panel has maintenance representatives, State DOT's and national industry members at the table. A Preservation Research Roadmap was prepared and reveals gaps in needed areas of research.

#### **Technical Service Program Update - EMTSP Program, Jim Smith, PNDOT**

Jim discussed the need to have payback for dollars invested. He shared background information for technical exchanges and gave an overview of the EMTSP Oversight Panel. Four regional

partnership meetings were hosted and the vision and mission statements were updated. The replacement cost for PENNDOT's equipment fleet is worth over \$900 million dollars. Our highways and bridges are the only thing in the department that cost more. The EMTSP Strategic Plan and goals were updated in 2015 and posted on [www.EMTSP.org](http://www.EMTSP.org). TC3 web-based training is also utilized. Training on preventative maintenance concepts and bench marking are under development. Our overall goal is to continue to improve and keep the momentum moving with equipment management and research.

### **TRB / NCHRP Update and Joint Conference Introduction, James Bryant & Amir Hanna**

TRB is part of the National Academies of Sciences, Engineering, and Medicine. One of our main goals is to increase the value of research for our sponsors, participants, and customers. TRB Annual Conference is January 10-14, 2016. This year's theme is, "Research Convergence for a Multi-Modal Future". Winter Maintenance Workshops are scheduled for February and April 2016. Amir noted that NCHRP is sponsored by the State DOT's. Our focus is goal oriented maintenance research which meets the needs of the DOT's. We have regular research projects, 20-07 projects, and 20-05 synthesis studies. Publication of research reports can be found on the AASHTO and TRB websites. FY16 NCHRP selected research projects include topics related to chip seals and micro-surfacing. These will help to identify appropriate triggers and timings for placement of pavement preservation treatments. Complete research problem statements are due no later than October 15, 2015.

### **WEDNESDAY, JULY 22, 2015**

**SCOM General Session:** Mark McConnell, MSDOT – Presiding

### **MAP-21 Emergency Relief Change, Jeff Lewis, FHWA**

Emergency Relief (ER) funds are extra money to help during emergency events which meet the requirements of the program. MAP-21 removed the \$100 million annual cap for the program. States are limited to submitting ER applications no later than two years after the date of the event. Reimbursements are limited to the cost of a comparable facility. Deficient bridges, debris removal, governor's proclamation, and the Stafford Act requirements were covered. ER funds are only eligible on Federal-aid routes classified as rural major collectors or above. FEMA deals with routes that are not eligible for ER funds. Detailed Damage Inspection Reports must be filled out for each location with reimbursement rates varying based on whether damages are fixed before or after the 180 day emergency repair window. Project completed after 180 days are permanent repairs. Categorical Exclusions (CE) are typically adequate for ER projects.

### **Maintenance Peer Network, Jennifer Brandenburg, NCDOT & Lacy Love, Volkert Inc**

All four MPN workshops are now complete. What is the MPN? Proceedings for one of the workshops are posted on SCOM website. The MPN workshop steering committee, format, and agenda was also presented, as well as an overview of the four MPN regions. Key takeaways from each of the four roundtable discussions were presented. When the remaining reports are complete they will be posted on the SCOM website. At the closing, research ideas, Maintenance Quality Assurance and Performance, State AVL/GPS systems, and synthesis were shared.

### **Advances in Developing a Cross-Trained Workforce, Greg Duncan, Applied Pavement Tech**

If you want to run better how would you do it? Utah DOT along with several other states has already done this. There are various pros and cons associated with this. There are union issues to deal with in some states and not so in right-to-work states. How should we implement this? This was important domestic scan (13-01). Presentation topics included: scan objectives, problem statements, best practices, definition of cross training, business needs, executive cross training, new employees, engineer-in-training, large scale silo swapping (rotational assignments), performance measures, and recommendations. It's all about strengthening our core business practices and core competencies. In conclusion: how do you do it, who do you involve, and why do you do it. The final report is due out shortly.

### **THURSDAY, JULY 23, 2015**

**SCOM Business Meeting:** Mark McConnell, MS - Presiding

**State Roll Call:** Jameelah Hayes, AASHTO; Determination of a quorum. (Approximately XX States were present); without a quorum this resolution will be reviewed and no official ballot taken. This will officially be done later by email vote.

**Thank You:** Mark McConnell, MS

**New Resolution:** Mark McConnell, MS

**Strategic Plan Vote** – Mark McConnell, MS; by email via SCOM

**Research Ballot:** Jon Wilcoxson – KY; a vote was taken on what is the importance of this research to each of the state's present.

**TWG Report Outs:** Bridge, Equipment, Highway Safety and Reliability, Pavement, & Roadway/Roadside TWGs; See report out slides for details. All TWG Chairs reported out on their 2015 Work Plan Accomplishments (Research, Workforce Development & Retention, Performance Measures, & Environment), 2016 Work Plan Proposal (Research, Workforce Development & Retention, Performance Measures, Environment, Safety, & Communication); Research Implementation Recommendations; New Research Problem Statements, and Proposed Resolutions.

#### **TWG Presenters for Report Outs:**

Bridge TWG: Jeff Milton, VA – Chair  
Maintenance Operations: Brad Darr, ND – Vice Chair  
Pavement TWG: Anita Bush, NV – Chair  
Equipment TWG: Tim Cunningham, KS – Chair  
Roadway/Roadside TWG: Jerry Hatcher, TN – Chair

**Regional Meeting Updates:**

See report out slides for details. Regional Meeting minutes are also available.

- NASTO
- SASHTO
- MAASTO
- WASHTO

**Future Meetings:** 2016 Nevada Subcommittee on Maintenance Update: Anita Bush, NV – Subcommittee Meeting. Anita showed a promotional video and invited everyone to come to Clark County next year. Next year’s meeting will be at the Renaissance Marriot in Clark County, NV. Additional SCOM meetings are scheduled for 2017(RI), 2018(NC), 2019(MI), and WASHTO (Possible CO or WY).

**TRB/NCHRP Update:** Amir Hanna, NCHRP; NCHRP Overview, FY16 & FY17 program summary and special projects, and SCOM participation in NCHRP. NCHRP Project 14-37 & 14-38 were covered as well.

**Other Business:** Mark McConnell, Thank you to everyone for your assistance and for being here this morning. Please stay for the business meeting so we can vote. Colorado is hosting the Maintenance Leadership Academy, please register in the next two weeks.

**Iowa/Nevada Transition Meeting:** This was held with SCOM Leadership Staff to help prepare Nevada for expectations for the 2016 meeting next summer.

End of Minutes

**AASHTO Subcommittee on Maintenance  
Technical Working Group Breakout Session Minutes  
Des Moines, IA – July 2015**

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**AASHTO SCOM Bridge Technical Working Group**

**Afternoon Breakout Session 7/20/15 @3:30-5:00**

Jeff Milton welcomed all to meeting

Self-introductions were made all around

Sign-in sheets were circulated

Jeff Milton began by reviewing activities from the past year. NCHRP 14-24 has been completed. NCHRP 14-23 – “Practical Bridge Preservation Actions and Investment Strategies” – Research Agency: Michigan State University – The work under the current task descriptions of NCHRP 14-23 has been terminated. The work that was completed through Phase 1 and Phase 2 has been documented in three un-reviewed deliverables submitted by the research team. Further research related to bridge preservation will be performed under the new NCHRP Project 14-36 – “Proposed AASHTO Guide for Bridge Preservation Actions”. The RFP for Project 14-36 was posted on March 27, 2015 and the RFP close date was May 12, 2015. A research contractor has been selected for this project, and the contracting process is underway. NCHRP 14-28 is underway on the third phase. NCHRP 14-30 will be complete March of 2016. NCHRP 12-100 will be complete in January, 2016. NCHRP 10-97 should be awarded ant time. Project 20-07/task 387, along with Task 379 & 380 are all in progress. Project 14-36 is new.

Jeff Milton asked for a bridge person to volunteer for the Policy Resolution PR-10-14.

Co-chair Steve Cook explained to group that the Bridge TWG will submit a work plan for Thursday, and that is a primary goal of the breakout meetings. Mr. Cook further explained how regional partnerships

can transmit research ideas up to the Bridge TWG to submit for funding. Mr. Cook indicated that leadership had a good strategic plan meeting.

Co-chair David Miller indicated that the leadership worked on a compressed and improved strategic plan.

**Ed Welch** delivered a bridge update presentation for TSP2 activities. Mr. Welch indicated the need for consensus on the definition of bridge preservation, and the need of a working group for this. Regarding training, Mr. Welch stated that we need it especially in local areas, a grassroots training program for locals. He further stated that NHI bridge maintenance course now available. Moving on, Mr. Welch explained that bridge partnerships are truly engaged in peer exchanges that include industry, academia, and consultants, and have lots of enthusiasm. New for this year in the partnerships are virtual demonstrations. TSP2 is working on its research roadmap—the Northeast partnership will be first to have full session on research roadmap and future needs. The group now has technical tours. TSP2 is developing national working groups, and has been conducting new member orientation lunches. Mr. Welch continued the discussion indicating that the TSP2 bridge webpage is very active. There are 27 bridge working groups in the four regions overall, with four national working groups: coatings, decks, performance specs, and social media. There is a bridge preservation blog on the website, along with a technical exchange so every state can post things on website. There were four meetings in 2015. Other website features include contributor payment information. The challenge is the need to keep the three legs of the stool strong, those legs being: TSP2, BPETG, and AHD37. What's next: get municipalities and provinces more involved, propose small research projects, hold 2016 meetings in Texas, Utah, Pennsylvania, and a location TBD. Mr. Welch indicated that the working groups are our focus areas—and we need to determine what their needs are. **Questions:** Josh: SCOBs and SCOM previously worked together to define bridge preservation, and in light of your (Mr. Welch's) comments about definitions, is this not clear? **Answer:** AASHTO & FHWA definitions are different, and this discrepancy needs to be sorted out. Jeff Milton disagrees with FHWA definition on one point, and said that for consistency, this shouldn't be left as a gray area. The AASHTO definition of bridge preservation is on TSP2 Bridge website.

**Richard Van Allen**, Chair of Northeast bridge preservation partnership, went over his group's leadership structure. Some of their recent activities include monthly conference calls, planning for the September meeting. The regional working groups are looking at deck overlays and protection, beam end treatments, scour, and bridge cleaning. They are also participating in national coating groups. The partnership has completed a small movement joint research project. Future events include a 9/9-9/11 2015 preservation partnership meeting at the Radisson hotel in Manchester, New Hampshire.

**Questions:** none.

**Chris Keegan**, the chair of the Western Bridge Preservation Partnership, provided an update. Mr. Keegan provided the statistic that the Western Region has only 13% of all US bridges, but 26% of the US states in number, and 50.2% of the total land mass of US. The partnership includes a Deck Matrix National Committee, which is presently looking for AASHTO funds. The group's bridge preservation

matrix contains information on activities, the states that do the activities, and industry contacts. The Research Committee aggregates state research studies on bridge preservation. The last two committees are the Bridge Joints committee, which has a national focus, and the Agenda committee. The 2015 WBPP meeting occurred on 5/20/15 in Portland, Oregon. During a roundtable discussion, the following questions were raised: Does your state have bridge preservation performance measures, and if so what are the performance measures? If no measures, then what do you use? Do you have an asset management plan for bridges, and if so are your bridge performance measures tied to the asset plan? Do you use performance measure for funding? If so, has it secured additional funds? Has it lead to structural improvement or longevity? Has your visualization improved over time, and do you have a public internet site reporting performance measures? **Questions:** None

**David Steele** is Chair of the Midwest Bridge Preservation Partnership. Every month the partnership holds a teleconference first Tuesday of the month. The regional meeting will occur on September 30-October 2 in Kansas City, and an agenda has been developed for this meeting. There are nine working groups: Annual Meeting Group, Bridge Preservation Research Group, Communication Group, Deterioration Modeling Group, Local Agency Outreach Group, Preservation Matrix Group, Regional Specification and Product Evaluation Database Group, Social Media Development Group, and Systematic Preventative Maintenance Group. A general question was raised regarding whether a commercial product rating system should be used, and in that case is the rater liable for comment? Additional recent changes to the group are: they are sending four individuals to SCOM every year, circulate survey on discussion topics, there are 12 out of 14 paid dues, MWBPP TSP2 website has been updated. The group also agreed to not have a training working group, and they discussed bridge preservation magazine and a construction task catalog (price catalog).

**Andy Doyle:** Southeast Bridge Partnership had a national meeting in April. The meeting included virtual demonstrations, and the new member lunch went well. Performance measures were discussed. This partnership will be sending for members to SCOM. The next regional meeting will be in Texas 2016.

**Meeting adjourned 5:15.**

### **7/21/15 Bridge Concurrent Session**

**Jeff Milton** presented VDOT's maintenance prioritization method for bridges on behalf of Adam Matteo, which uses the concept of equity. There are several formula variables: Importance factor, risk factor, geometric accuracy, Virginia health index, and cost effectiveness. VA has good understanding of each structure, and element data are collected during inspection for AASHTO elements. The method uses deterioration models to determine current value. Lifecycle cost analyses are determined with a simple equity curve. **Questions:** How do you determine element replacement cost? A: Use historical unit cost. Q: Can I get copies? A: Jeff will share this, plus all presentations will be posted on the SCOM site. Q: how many bridges plugged in to system? A: less than 100. Q: Is this prioritization only

major structures? A: yes, but the process can be automated in future—it's a work in progress. Q: is there public/legislative buy-in? A: not yet.

**Jason Bittner** of Cambridge Systematics delivered presentation on Bridge Business Process: Principals of Asset Management. Topics covered included TAM efforts, current practices, and bridge management diagrams. In a MAP-21 context, Jason went over MassDOT example, which included an interview with Boston DOT, each district, current organization, bridge condition, and other factors. This was the first time this information was documented. Three themes: bridge preservation asset management is not well understood, needs standardization, and needs a clarity of funding streams. The study defined a “best practice” agency. The effort found many opportunities for standardization—districts did things in varied ways. The study identified five tasks: prioritize deficiencies, select intervention and build scope, administrate contracts and assign work, supervise and report on work, select materials for structural work. Funding streams were looked at and the conclusion was that they needed clarity, so these various sources were pulled together and organized. Jason presented bridge selection process diagrams for MassDOT, and discussed life cycle workflow. Next steps: continue to implement SAMP, review staffing, and identify additional opportunities. **Questions:** Q: What was the time frame to do this study? A: 18 months + 6 months. Q: Has this effort helped support funding? A: yes and no. Q: Was there any resistance to standardization? A: There was less resistance than expected, and conglomeration of the individual agencies helped. Q: When prioritized by central district, did field funding change? A: It is too early to determine, but the idea is that total flow do not necessarily change.

**Jorge Rueda** gave a presentation regarding a study involving applying social returns on investment to risk-based TAMPs in low volume bridges. The main question: what is the risk of allocating resources to one asset vs another? Jorge presented a snapshot of bridge condition in Iowa along with the question: has highway infrastructure progressed with corn production? Two computational methods, SROI (present value of impact/present value of project) and HDM-4 (World Bank program to analyze user costs based on many factors), were used for analysis. RUC (Road Users Cost) was also calculated. The research effort calculated SROI using a case study in Iowa. The effort the moved forward with a prioritization process using IADOT methodology. The overall results showed that by using SROI, IADOT could have increased road impact by 17%, and reduced entire liabilities by 28%. A higher AADT did not represent a higher impact. The study also found that using SROI in TAM helps measure and communicate performance. **Questions:** Q: Were all the bridges the same size? A: Yes, and although the process is very flexible, the study used the same size bridge.

**Charles Pilson** delivered a presentation on the quantitative benefits of early bridge maintenance and preservation; Charles noted that the work was actually done by Abishek Bhargava. The work was performed in NC. Two strategies were used: normal maintenance & enhanced, and focused on concrete structures. The study began by taking into account all bridges with GOOD health index, then looking at treatment cost and remaining service life (RSL). The effort resulted in data set of 2900 bridges. There were differences between the two strategies: the second strategy generally does things earlier in different repair operations for different bridge elements. Results: Over the next 40-60 years, maximizing condition, determining cost: RSL dropped off and then stabilized for Strategy 1; for strategy

2, RSL jumped up a bit and then stabilized. The big difference between the two strategies over the long term was in RSL. The study produced the same results for Bridge health index (BHI). The main differences show up in first 12 years: lots of money spent up front, then coasts after 12 years or so.

**Questions:** Q: Did the study look at overlays on decks? A: No. Q: Is there any data to support this study? A: Yes, this is the real data. Q: Were the 2900 bridges in the study of varying ages and conditions? A: No, the study focused on good bridges. Q: Were the bridges all bare deck? A: Do not know answer, but can find out.

### **AASHTO Bridge TWG Breakout session 7/21/15 @10:00**

**John Hookes** updated the group on the Bridge & Pavement Research Roadmap, which was published in 2008 by FHWA. John described the bridge portion of the effort, talked about what group discussed, and how the ratings were determined. The full report is available on the NCPP website. John emphasized that lots has happened since 2008, with more active groups in the field of infrastructure preservation. Since 2008, there have been lots of industry participants joining in the field, also. As the topic progresses, new issues arise along with new materials and methods. More recently, the TSP2 oversight panel thought it would be beneficial to step back and to create an online research roadmap database. The panel examined to what degree the prescribed research has been done since 2008, and to revisit current research needs. It was found that not many topics matched well with those identified in 2008: 4four topics had significant overlap, three had some, and eighteen had few or no matches. The conclusion was that important research needs are not addressed, and the topics have not gotten to table; consequently, the research statements need to be re-written. Nationally, 300 studies have been done, and some of these may match up with the 2008 database.

Post-meeting update: the group wants to share findings with other three partnerships, with the ultimate goal to update the roadmap. **Questions:** Q: Found link to research for Kentucky, with other states. Has anyone looked at these? A: Have not, but some states make it easier than others. Q: The whole problem was no updates for 2008, and hopefully for the future they will do the updates. A: Yes. Q: You indicated that someday soon the group will add research into database—how soon? A: Unknown but working on it. Q: Do you have a table of contacts? A: Can get and provide list. Jeff will help coordinate. Q: If we put together research statements, how does it get to funders? A: It was a problem before, but now there is more of a push to get info out there. Q: Include NCHRP in roadmap? A: Yes.

**Jeff Milton:** Updated group on NCHRP call for domestic scan proposals (group of experts gather and travel to investigate particular topic). Anyone (including individuals) can submit for this program through NCHRP 20-68A. The work involves 8-12 professionals over two weeks of travel, performing onsite visits. The proposals do not need to go through SCOM vetting process. Q: What is a scan? A: See explanation earlier.

**Mark McConnell** sat in for this meeting. He says “can you please put in highlights in research statement?”.

**Steve Cook:** Talked about sensor technology research in Michigan, particularly Unmanned Aerial Vehicles (UAS's) for transportation-related purposes. Legally, an entity needs an FAA COA to operate UAVs if they are not a hobbyist—and the COA contains very specific conditions of approval. There is an exemption (333) that allows public agencies, academia, and industry to fly under certain conditions. Steve impressed that the benefits to UAV usage are huge in terms of safety, mobility, speed, efficiency, legacy costs, and economic benefit. The technology associated with UAVs has changed radically in 5 years. Michigan experimented with ground vehicle mounted nondestructive evaluation (NDE) sensor technology at highway speeds—the results were a “disaster”, didn't work. The barriers to wide UAV use are regulation and public perception; the technology is sufficiently mature. Steve's opinion regarding UAV deployment is that third parties will do work as contractors in immediate future. Steve continued, describing recent MDOT research in the use of UAS in transportation. The study looked at infrared and LiDAR in particular. Steve described different currently available technology, and indicated that they even looked at tethered blimp use. The UAV platform was used to map unpaved road conditions in 3D, confined space inspections, traffic operations, and NDE evaluation of bridge elements—all worked well. The research looked at thermal IR scanning with UAS—how does it compare to other methods? It was found that LiDAR scanning for asset management uses terabytes not petabytes of memory. Other UAV uses can include crash reconstruction by the police department. Steve described Michigan's Phase II research which will include deployment and implementation, near-real time data gathering, data uses and analyses, data quality protocols, training, ROI, and the FAA COA (prob use 333 exemption). **Questions:** Q: How to deal with regulation? A: MDOT is taking its time in implementing UAVs to allow guidance and regulations to sort out. Q: For decks, organizations are using truck mounted sensors. What are benefits of UAV to truck mounted sensors? A: Whatever works best use it. Some highway-speed evaluations don't work right. Technology is not the limiting factor, it is regulations and and public perception. Q: Can UAVs scan slowly, and increase accuracy? A: Yes, multiple scan are better suited to UAS. Q: What altitude is ideal for a bridge deck scan? A: 30-40 feet, but can be lower. Q: FHWA needs to be more receptive to UAS inspections. A: Yes, and the more research work that is done the better case will be made for their use.

**Jeff Milton** described to the group two proposed research problem statements. **First Statement:** “Summary of effective practices/procedures that are associated with Bridge Maintenance and Preservation activities which minimize environmental impacts.” Since this project was previously not selected for funding, Jeff asked the group if they would like to send through again for possible NCHRP funding, perhaps resubmitting as a non-20-07 project and try again. It was felt that the problem statement was well discussed by the TWG last year. Amir Hanna, present in the room, was asked if help tweak it. Amir indicated that the group should look at getting a T9 and environmental endorsements. Amir emphasized that there is lots of competition, with typically only one project picked per cycle per subcommittee. It was brought up to possibly look at a pooled fund structure. The TWG's consensus was try again, don't list as a 20-07 project, and strike “rehabilitation”. **Second Statement:** This came from Subcommittee on Materials: *“Concrete is the second most used commodity in the world. It is well documented that the majority of concrete durability problems in transportation infrastructure are caused by the ingress of water and salts (e.g., corrosion of reinforcing steel, freezing and thawing*

damage, etc.). Many improvements have been implemented in specifying longer lasting less-permeable concrete. Cracking in concrete is especially problematic as it provides a direct pathway for external fluids to enter into it and subsequently cause damage. Research is also needed to determine what to do with cracked structures, and how to maintain and repair them to maximize service life and minimize life-cycle cost. Improvements in the lifespan of concrete will lead to tremendous economic savings over the life-cycle of structures, and a reduced environmental impact from concrete reconstruction. This work will provide the practitioner with a recommended practice on how corrosion, freeze-thaw and other deterioration mechanisms in concrete are influenced by cracking, and therefore provide information necessary to more effectively perform preventative maintenance on the concrete.” Amir commented that this project has not been reviewed by the subcommittee on materials, and was only written by author, and needs endorsement from this group (bridges). Mark will bring it up on Thursday during the business meeting. It was commented that the statement needs to be endorsed by vote because it will be up for competition with other groups’ projects. The project outcome will be AASHTO-recommended practice. **Questions:** Q: What is this project addressing that doesn’t exist? A: Amir: Production of a model is implied, and the problem statement needs to be re-written to address this. Consensus: The TWG needs to see a re-write in two weeks before taking a vote of support. In general, need more detail on research product: will reconsider if TWG can get a revised problem statement and will then vote by email or conference call. **Third Statement:** “Costs and consequences of bridge deck preservation actions”. Do we (Bridge TWG) or SCOB submit? Mike gave a general overview of the proposed project: bridges offer greatest opportunity for preservation. What treatments are currently being used? Document deck preparation, performance history of deck preservation, and develop cost-benefit analysis for bridge preservation treatment. TWG will ask SCOM to endorse and be submitted by SCOBs. Q: What implementation comes out of this? A: Survey of states, make a list of specs and treatments, develop cost-benefit for each treatment. Data is out there, and it needs to be gathered. This is seen by author as starting point (from 2008 roadmap), and to be geared toward individual states for cost-benefit analysis for a given product. The project will provide a general methodology for analysis. Group voted to endorse problem statement. SCOBs will submit.

**Jeff Milton:** Need to discuss 2016 Work Plan to be presented during the Thursday business meeting: The TWG was asked: what does “state of good repair” mean? Jeff went through draft slides for work plan. Chris Keegan volunteered for new effort toward bridge safety and OSHA issue.

### **7/22/15 Bridge Breakout Session @1:00 Davenport Room**

Jeff called the meeting to order at 1:00.

Siva Venugopalan presented on corrosion, preservation, and research. He gave the basics of a corrosion curve, and described intervention points, the critical point, and the current FHWA preservation definition and guide. He indicated that the average preservation savings to owner can be on order of 75-80%. Siva continued by showing some deterioration examples, and describing the applicable evaluation

tools. The SHRP2 R06A project (NDT) was briefly talked about. Siva briefly went over the use of NDT to see hidden problems, and described currently available technologies and their effectiveness rankings. He presented the website for SHRP2 project toolbox. The conclusion of the study indicates that you must match NDE technology with a specific purpose and corresponding type of corrosion.

**Questions:** Q: Was NDT evaluation performed on an all concrete deck? A: No, and it works with asphalt too. Q: What is ASR? A: alkali-silica reactivity

**Josh Sletter** presented on bridge preservation management cost projection methodology for UDOT. Josh indicated that it has been challenging matching Utah performance measures with MAP-21 requirements. The presentation described the investigation of different bridge condition assessment models, and also trying to develop a bridge health index. Josh talked about where preservation interventions happen and the effect they have in terms of extending use life and the costs associated with these. The presentation then showed what funding scenarios will produce what result, and went over some case studies in Utah. The overall outcome was that UDOT received the money they requested from their legislature.

**Morgan Kessler** provided update on FHWA research projects relating to bridge preservation. The current and upcoming projects that FHWA is conducting at Turner-Fairbank Highway Research Center (TFHRC) are:

- **“Effective Use of Geospatial Tools in Highway Construction”**—This project will focus on UAS, specifically in context of highway construction and maintenance. Begins in August 2015.
- **“Integrating 3D Digital Models into Asset Management”**—Investigates use of CIM models to produce maintenance and asset management information for highway infrastructure. Project underway, will be complete in 2016.
- **“Cost/Benefit of Tracking Assets Within a Transportation Asset Management Plan”**--Cost/benefit impact on system performance of the amount/type of assets tracked in an agency’s TAMP. Investigate the resource impact of not being tracked within an asset management plan has on assets, and the subsequent impact on system performance.
- **National Historic Covered Bridge R&D Program.** Emphasis is on historic preservation but applicable to newer structures, especially timber.

**Ben Rabun**, Georgia State Bridge Engineer, provided a synopsis of the T-9 AASHTO Technical Committee for Bridge Preservation meeting on April 21, 2015. Ben went over VDOT’s use of corrosion resistant reinforcing steel (number one cause of bridge deterioration is corroded steel). Jeff Milton said that any needed replacement steel in VA for repairs will use corrosion-resistant still reinforcement. The meeting covered the service life design NCHRP project. Also discussed was the new FHWA rules about truck loadings. FHWA must post all bridges with SHV that do not pass load rating analysis. MUTCD sign regulations are problematic for new regulations. There is a need to develop SHV posting

signs that work. Q: There is a company about to make pre-galvanized steel that can be bent after galvanization.

**Jeff Milton** gave a presentation for the National Bridge Preservation Partnership (NBPP) Coatings Group. He explained briefly the history and makeup of the group, and indicated that it has a strategic plan. They are presently doing a domestic scan called “Bridge Recoating Best practices”, and this will happen in 2016. The scan will collaborate with many different preservation agencies. Jeff also briefly talked about current membership.

**Amir Hanna** presented on the NCHRP research program. He went over a handout showing Bridge Maintenance projects completed, in-progress, and anticipated/pending. Amir emphasized that any writeup for new projects must be as clear as possible, as there is lots of competition for this funding source.

**Chris Kavers** presented an intro and overview for structural health monitoring of bridges using sensing technology. He described the scalability of the application where multiple organizations are using a technology for more and more things. Most measuring systems came over from industry and we have lots of this; their meanings and results are less robust. He discussed the scaling of SHM programs. Substructure monitoring, deck and support monitoring are common uses. There are three requirements for a structural monitoring program: 1) risk analysis has to show need and, 2) Parameters that assessment can be based upon and, 3. Owner must have response plan. Chris talked about a case study from LADOT at the Bayou Corne Sinkhole. A problem sinkhole necessitated the structural monitoring of bridges. The structures were monitored with equipment measuring three axes, tilt, and temp very accurately. The system is sensitive, and spots early movement. The system can be used for detection of an undesirable event or behavior of bridge. **Questions:** Q: Are the monitoring stations connected to mobile device? A: Yes. Q: Is there predictive methods of measurement? A: Yes, you can predict trends.

**Todd Thompson** provided a Bridge Management (BrM) AASHTO software update. He described how AASHTOWare is owned by AASHTO. The current software, Bridge Management, used to be called PONTIS. Forty one state DOTs, Manitoba, FHWA, Puerto Rico, and cities own licenses. The latest version is BM 5.2. The presentation covered the AASHTO approach to introducing subsequent software versions. Q: Will MAP-21 requirements be addressed with software? A: Yes, next year’s version will do this. Todd provided recent history of releases, and showed examples of deterioration modeling. The next software version will have planning preservation actions. Version 5.2.3 will conclude rewrite of whole system. The development contractor is working on white papers and these will be posted on BrM website. For the future, the software will expand into tunnel inspection elements. Todd provided contact information. **Questions:** Q: Does the current version have automation for dollar value for maintenance inspections? A: Not at this time. **Meeting Adjourned at 4:15**

## AASHTO, SCOM - July Conference

### EQUIPMENT TECHNICAL WORKING GROUP (TWG)

July 20-23, 2015

**July 20, 2015:** The Equipment TWG session was opened by Equipment TWG Chair Tim Cunningham at 3:30 pm.

The TWG was opened with introductions and Tim Cunningham discussed his new role as the Equipment TWG Chair. Tim explained the situation with Erle Potter and his difficulties in getting approval to travel to meetings. As a result, a change was made to the Equipment TWG chair position per SCOM leadership.

Tim Cunningham discussed the completed activities for the past year. The following items were reported on and discussed:

#### A. Current Research:

1. NCHRP Project 13-04, Guidelines for the Development of Highway Operations Equipment Replacement Lifecycle Criteria has a project panel selected; RFP has been written, solicited, evaluated and awarded to a research agency – Dye Management Group, Inc. Project start date was May 1, 2015. Projected completion date – March 2017.
2. NCHRP Project 13-05, Guidelines for the Development of Highway Operations Equipment Utilization Measurement and Management is on-going. A project panel has been staffed, RFP has been written, solicited, evaluated and awarded to a research agency – Washington State University. Projected start date was June 1, 2015. Projected completion date – May 31, 2017.

#### B. The Equipment Management Technical Services Program (EMTSP):

1. Received contributions of \$117,000 from 39 states (75%) in Fiscal Year 2015 as of June 23, 2015. This is 1 state and \$3,000 short from this time last FY.
2. Updates to the EMTSP Strategic Plan have been completed, which can be found on the “Administrative” page of the EMTSP website at the following link: <http://www.emtsp.org/about-emtsp/>.
3. 2015-2017 EMTSP Work Plan is being updated and should be ready to post on the website after the next EMTSP panel meeting at the end of July. The revised work plan can be found on the “Administrative” page of the EMTSP website at the following link: <http://www.emtsp.org/about-emtsp/>. Tim Cunningham reported that everyone should visit the website, “very informative”.

#### C. Regional Partnership Conference Updates:

1. The joint Northeast Equipment Management Partnership and the Midwest Equipment Management Partnership met jointly in St. Louis, Missouri on June 15-18, 2015. Jim Smith provided an overview on the Northeast/Midwest Conference.

2. Southeastern States Equipment Managers Conference met in South Carolina on June 21-25, 2015. Ron Pruitt provided an overview on the Southeastern States conference.

3. Overview of future Western States Highway Equipment Managers Association meeting in Anchorage, Alaska on August 23-27, 2015.

Tim Cunningham reported that the 2016 National Conference will be held in Columbus, Ohio on June 27 – 30, 2016. Ron Pruitt reported that the 2017 Southeastern States regional conference will meet in Georgia. No dates for this conference have been set. No location set for the Northeast Regional states for 2017 but Connecticut is looking to host the 2018 National Conference. No location reported for the 2017 Western Region states.

A group discussion took place on DOT equipment with GPS/AVL locating equipment. Ron Pruitt reported that Arkansas and Alabama are using AVL with considerable savings in fuel usage estimated to be over \$1,000,000.00. Alabama reported that they have over 2,300 units equipped with AVL. Lisa Kunzman reported that CalDOT has equipped some winter region equipment with GPS/telematics. Other states reported on this subject as well.

D. TRB Update:

Lisa Kunzman provided an overview of the 94th Annual TRB Meeting in Washington, D.C., Jan 11- 15, 2015. Ms. Kunzman reported that there is space on the present voluntary committee for new members and thanked the EMTSP for funding the video taping of the speakers from this meeting which can be found on the EMTSP website. Report on current research projects.

E. New Research:

Tim Cunningham reported on the Problem Statement, Guidelines for the Development of Highway Operations Equipment Multi-year Replacement Plans was submitted and voted the #2 priority by AASHTO SCOM in 2014

- Problem Statement was not approved
- Equipment TWG considering to revise and resubmit

Ron Pruitt reported that the reason it was not funded was that the committee felt it was too close by title to a previous awarded research award. Mr. Pruitt recommended to the group that we need to review and revise the title of this problem statement if it is going to be re-submitted.

Tim Cunningham provided a history of research priorities and showed the present research priorities from the balloted results at the 2014 National Equipment Management Conference as polled from all of the regions represented. Jim Stevenson from Federal Highways reported that this Equipment TWG will have to select a problem statement and submit during the business meeting. Tim Cunningham handed out a copy of a proposed new research problem statement titled; Guidelines for the development of Highway Operations Equipment Fleet management Cost of Service, Analysis, Measurement and Management. Mr. Cunningham discussed the various methods that can be used to do the research depending on the estimated cost of the research. Mr. Cunningham showed and discussed the results of the 2014 ballot taken at the National Conference in Orlando. 42 states voted on the present research projects.

Tim Cunningham reported on the discussion, development and finalization of the two (2) NCHRP 20-7 research problem statements to be submitted at the 2015 SCOM;

- NCHRP full research processes (generally more than \$100K and more than a year in length to complete).
- NCHRP 20-7 research process (generally less than \$100K and less than a year to complete).
- Research concepts were developed by the regional partnerships in Orlando at the 2014 National Conference
- Regional Partnerships are encouraged to develop and submit as many NCHRP 20-7 research topics as wished

Those NCHRP 20-7 research priorities selected to move forward will have the Problem Statement and all related documentation written and developed by a member of the submitting Regional Partnership. The documents were to be submitted to the EMTSP Oversight Panel NLT 06/01/15 for review.

Tim Cunningham reported on the Multiple Regional Partnership priorities (excluding those considered by the partnership for NCHRP 20-7 project consideration) must identify a primary selection and be noted as such. Mr. Cunningham showed the present Research Roadmap Priorities submitted to the EMTSP panel in December of 2014.

During the next National Meeting in 2016 – these candidate priorities will be evaluated and voted upon in general session. Those selected will augment the previously identified full NCHRP research projects remaining.

The meeting closed at 5:15 pm.

**July 21, 2015:** The Equipment TWG session was opened by Tim Cunningham at 10:00 am.

Tim Cunningham, Chair of the Equipment TWG requested all in attendance to sign the attendance sheet followed by introductions by all in attendance.

Amir Hanna spoke on research projects that have been completed and in progress. Mr. Hanna passed out a report pertaining to Equipment Management on the completed and in progress research projects. Mr. Hanna stated that a research project needs to have a very specific request so the evaluating panel and vendors have a good understanding on what is being requested. Research needs to be done to make sure that the requested research is not duplication from a past or on-going project. There could be similarities in a title of the Research Problem Statement but the project must be very different from other past research.

Tim Cunningham opened the discussion of the new research problem statements. Mr. Hanna reported that 20-7 projects are for research, not synthesis. A 20-5 project is not really research but more like best practices. Lisa Kunzman reported on CalDOT synthesis requests that were submitted to TRB which are highly competitive. Mr. Hanna responded to a question about a completed research project such as Warning Lights and what would be the best course of action to have it updated due to new technology. The answer to the question would depend on how much of an update is required which could be a complete re-write of the document. This would require a new Research Problem Statement. Mr. Hanna also provided the basis for funding from NCHRP for the various projects.

Tim Cunningham showed the new Research Problem Statement “Guidelines for the Development of Highway Operations Equipment Fleet Management Cost of Service, Analysis, Measurement and Management”. Tim Cunningham opened a general discussion on this proposed research problem statement. There was a great deal of discussion on this with many different views being taken. In the end, it was voted that by majority to move away from this research problem statement and to re-submit last year’s research problem statement “Guidelines for the Development of Highway Operations Equipment Multi-year Replacement Plans with revisions. The group spent a considerable amount of time doing revisions to this research problem statement to make sure that it showed as a stand-alone project and not part of a previous project. In the end revisions were made including the title and a majority vote was taken to move forward and present this research problem statement during the business meeting.

Tim Cunningham asked the group if there were any other NCHRP 20-7 projects that a state had to present, none reported.

Tim Cunningham opened the discussion on the proposed resolution to increase the EMTSP voluntary contributions from \$3,000.00 to \$5,000.00 per year. An open discussion followed and there were no negative comments on the increase since it did cover the budgeted amount that is presently not covered by AASHTO. No state in attendance opposed with moving the resolution forward at the business meeting.

The meeting closed at 2:30 pm.

**July 22, 2015**: The Equipment TWG session was opened by Tim Cunningham at 1:00 p.m.

Tim Cunningham, Chair of the Equipment TWG requested all in attendance to sign the attendance sheet followed by introductions by all in attendance.

Larry Galehouse reported on the Fleet Management Training Program. The top 10 prioritized training modules were shown based on the EMTSP Training Survey. A teleconference call was set up with Kevin Managhan and Christie Anderson from TC3’s contracted provider to discuss what is needed or required from the EMTSP panel to move forward with the web based training modules. Discussed were aspects of web based training such as needing slides and notes from subject matter experts. TC3 will pay for the development of the course but will need subject matter experts to assist in gathering information needed to create training modules. These people will take in the data, create subject tests and make outlines for the modules. Christie Anderson spoke on the creation of the slides and narratives from the EMTSP group. Recommended time per module could range from 90 minutes to 2 hours. They reported that their average time for creating the training programs for review can range from 6 to 12 weeks once they receive the materials. They will provide multiple reviews from the 1<sup>st</sup> draft through completion including dubbing in the voice for the narrations. There does not seem to be a problem if it would take 6 to 9 months to provide TC3 with the training materials from the subject matter experts. They reported that throughout the process they will be working with the EMTSP panel which could include having teleconference calls while building this program.

Larry Galehouse discussed what NCPP is doing at this time in creating some pavement training programs. The real “in depth” work needs to come from the subject matter experts, which is really the EMTSP panel. Mr. Galehouse discussed what “hurdling test” do and the different ways you can accomplish this, including providing a final exam. Mr. Galehouse provided a brief overview on how NCPP could work with subject matter experts to draft the training modules and then submit them to the EMTSP panel for approval. A group discussion took place on this subject. Bruce Erickson requested an estimate from NCPP for what the cost would be for their part in creating the training modules. A proposal needs to be written and submitted to the EMTSP panel for review to get an estimated cost to do this work. It was suggested to create a sub-panel for reviewing course content and to make recommendations back to the EMTSP panel for approval. Ron Pruitt suggested that the sub-panel talk with Newell Brooks and Scott Capps from NCDOT on creating this web based program on Preventative Maintenance for their input. Greg Hanson volunteered to oversee a sub-panel to look into the training content. Tim Cunningham requested that we get representation on the sub-panel from each region. Regional representatives from the Midwest and Northeast will try to find someone to participate in this sub-panel. The volunteer sub-panel will be the “sounding board” for NCPP to draft a proposal and then forward it to the EMTSP panel. It was discussed and suggested to also move forward with the 2<sup>nd</sup> web based course for the development of Benchmarking and Best Practices with Fleet Management with this sub-panel.

Larry Galehouse provided a presentation on certification and independent programs. Mr. Galehouse reported on the differences of assessment based certificates versus professional certifications. Mr. Galehouse proposed an assessment based certification program through the EMTSP for the web based training programs. Mr. Galehouse also reported that generally an assessment based certification program is good for a certain amount of time in which case some type of renewal is required.

Sonya Scheurer from Michigan DOT reported via teleconference call on updates from the National Performance Measurement Working Group. Some of the changes included definition changes to Retention and to Replacement was explained in the presentation. The National Performance Metrics as shown in the EMTSP website was shown and discussed.

Dick Baron provided an update to the EMTSP website showing portions of the website on the screen. Many enhancements found from the onset of the website.

Lisa Kunzman reported on TRB AHD60, Committee on Maintenance. A power point presentation on the updates of the Committee on Maintenance was shown and discussed. Ms. Kunzman reported on the 2014/2015 meeting and emphasized the need for new members.

Dennis Halachoff recommended too add Amir Hanna to next year’s Equipment TWG agenda so he can provide updates from NCHRP.

Tim Cunningham asked the group if there was any other topics to discuss or if there was any further exploration or work by the Equipment TWG or EMTSP panel and there were no requests.

### **EMTSP Oversight Panel Meeting**

Tim Cunningham reported on how the replacement of Erle Potter, Past EMTSP Chair came about. Tim Cunningham reported that he has asked Jim Smith who is one on the senior members of the present EMTSP panel to move up into a Vice Chair position. Mr. Smith will inform Mr. Cunningham shortly with his decision.

Tim Cunningham discussed the future status of Erle Potter on the EMTSP panel and it was unanimously agreed to look into have him stay on the panel in some sort of “Ex-Officio” role. It was thought that this was covered in the by-laws but into looking into this further, it was found that this does not exist in the EMTSP panel set of Officers. This will be researched and reported on during the next EMTSP teleconference call.

Tim Cunningham discussed the activities for the coming year of the EMTSP Oversight panel. This included the following items:

- A. The updates to the EMTSP Work Plan almost completed and hopefully will be finished during the next EMTSP teleconference call.
- B. The filling of vacancies to the EMTSP panel was discussed and Tim Cunningham will be looking to the procedure to do this and will report on this during the next EMTSP teleconference call.
- C. Due to time constraints, no further actions were taken during the EMTSP Oversight Panel Meeting.

The EMTSP Oversight Panel meeting closed at 4:45 p.m.

**July 23, 2015:**

The SCOM business meeting opened at 8:00 a.m.

Tim Cunningham reported on the Equipment TWG and on the proposed Research Problem Statement and proposed Resolution.

26 attendees of the conference participated at the Equipment TWG during the conference.

## Highway Safety and Reliability (Maintenance and Operations) TWG

(High-level minutes of the proceedings)

### Monday, July 20, 2015

- Note: 1. Steve Lund, Chair of the TWG was unable to attend the conference. Vice chairs Jim Feda and Brad Darr ran the proceedings
2. For a list of meeting attendees, please see attached sign-in roster

#### Jim Feda

- Welcoming remarks
- Maintenance and Operations (M&O) TWG Work Plan over-view. Focus areas:
  1. Promote and implement performance
  2. Improve and promote highway safety by providing support and guidance for safe and efficient work areas for maintenance stationary and mobile activities
  3. Improve reliability of traffic flow
  4. Promote accountability and transparency through performance management
  5. Strengthen workforce development
  6. Promote environmental stewardship
  7. Develop an effective research, outreach and collaboration programs for the six focus areas listed above
- Accomplishments of the TWG Over the past year (in collaboration and/or coordination with other partner entities such as Clear Roads, Aurora, etc.)
  - Liaising with Clear Roads, Aurora, and other research groups and efforts as appropriate, such as the Salt Institute; FHWA's INVEST Tool, NCHRP, SHRP 2 NDS. Some areas of interest include winter weather, work zones, Traffic Incident Management (TIM), Flooding, Hurricane Preparedness, and more ...
  - Collaborate in the preparation activities for the 2015 Peer exchange
  - Jim called out some specific accomplishments in the areas of
    - Workforce Development
    - Research
    - Performance Measures
    - Environment
- Jim pointed out the process to submit research need statements (RNS's) to the miscellaneous NCHRP Programs (synthesis, national and international scanning...) for funding consideration, along with relevant deadlines. The expectation is that the miscellaneous AASHTO TWG's feed those RNS's to NCHRP. The RNS's are to follow a certain template and it is advised that they be submitted along with the results of a thorough literature search.
- Jim went over the definitions proposed by Bryan Cowley concerning *Maintenance* and *Preservation*. A motion was called to accept the definitions the definitions but with a minor

modification for the Preservation definition (take out the word “contracted”). Clay Adams made the motion; the motion was seconded, and supported unanimously by the attendees.

- Jim proceeded to explain the “Resolutions” process; the expectation that the TWG pass resolutions aimed at resolving or fixing some type of deficiency; the resolutions can fall under the Policy, Administrative, “Courtesy” areas. Seven resolutions were proposed last year.

### Partner Entity Reports

**Clear Roads:** the report was provided by Mr. Justin Droste, P.E. MDOT; current Chair of the Pool Fund [TPF 5(218)]. Justin covered the following areas:

- Membership: currently 30 states
- Fee: \$25 G’s / year; states commonly use SP&R funds to cover the membership dues
- Membership benefits (access to research, peer advice and reviews, etc.)
- Minnesota DOT currently serving as the Contract Administrator Agent
- CTC Associates (Greg Waidley) day-to-day administrative contractor
- Area of emphasis: Materials and Equipment
- Projects completed: S & I Control Environmental Best Practices; Mapping Weather Severity Zones, Cost Benefit Analysis Tool Kit...
- Ongoing Projects: Roadway Salt BMP’s; Identification and recommendations for Correction of equipment Factors Causing Fatigue on Snow-plow Operators; Synthesis of Material Application Methodologies for Winter Operations, more...
- Justin pointed out that some projects are conducted in partnership with the private sector and others, such as the Plug-and-Play project, where equipment manufacturers have been at the table.
- Website: <http://clearroads.org/>
- Contacts: Justin Droste, Chair (MDOT); Greg Waidley (CTC Associates); Tom Peters & Linda Taylor (MNDOT)

**Aurora SPR-3(042):** update given by Mr. Max Perchanok, Ontario Ministry of Transportation

- Website: <http://www.aurora-program.org>
- Membership: ~15 states + 1 Canadian Province (Ontario)
- Contacts:
  - Chair: Travis Lutman, ND DOT
  - Administrative Entity: Iowa State University, Neal Hawkins
- Purpose of the committee: Identify, propose, and conduct relevant research
- “Sister” program to Clear Roads. Area of emphasis is Weather Forecasting and pertinent systems, sensors and applications (RWIS, ESS’s, Wx Forecasting Models, etc.)
- Summary of ongoing projects:
  - RWIS /MDSS Training Tool
  - Measurement of Residual Salt on the Pavement

- Winter Severity Index: web-based application
- Seasonal Weight Restriction Decision Support Tool
- Supporting the National 2015 Winter Maintenance Peer Exchange
- More...
- Completed Projects:
  - RWIS System Optimization / Rules of Thumb
  - Outcome-based Standards for Winter Maintenance
    - Safety benefits
    - Mobility benefits
    - Performance Measures and Measuring Tools (equipment, application rates, etc.)
- Planned Projects:
  - AVL Data Quality Assurance
  - Best Practice for Data Storage and Retention
  - Non-traditional Road-weather Data Sources, i.e., Drones, etc.
  - Best Practices for Remote Power Supplies

**TRB AHD 65:** Update given by Mr. Max Perchanok, Chair of the committee

- Membership: ~15 US States; 7 International Reps
- Purpose: Identify, propose, and coordinate research of interest relevant to the committee
- Summary of 2015 Research Needs Statements:
  - Performance and selection of winter maintenance materials
  - Performance Measures and Surface Condition Monitoring
  - Technics, Technologies, and Operations
  - Prevention and control of S&I contamination
- Other issues of Interest:
  - Travel reliability during winter
  - Dashboards/Management tools for Wx-weather
  - Connected and Autonomous Vehicles
- Practice Ready Papers: 12 papers covering 4 topics:
  - Video Monitoring
  - Measurement of pavement surface conditions
  - Data Mining for Winter Performance Measures
  - Strategic Location of Storage Yards
- Upcoming Events:
  - TRB webinar July 29: Using Wx-severity Index for Weather Management
  - Sept 16-18: Surface Transportation System Resilience to Climate and Extreme Weather Events
  - January 2016: TRB Annual Meeting
  - 1<sup>st</sup> Qtr. 2016: TRB Winter Maintenance + SIRWEC
- Recommended Research Areas/topics
  - Best practices for patrol yard design and operation
  - Setting performance benchmarks appropriate to winter climates

- Winter-weather and transportation resilience; resilience and LOS
- Automated vehicle applications to improve safety of winter maintenance operations

### **SICOP and PIARC**

Update given by Mr. Rick Nelson, SICOP coordinator and PIARC's English Secretary

- SICOP: handout
- PIARC: handout
- Organization structure of SICOP
- PIARC TC 2.4 overview; PIARC Cycles; meetings and workshops
- Snow and Ice Data-book
- Cooperation and Collaboration Activities: participation in CEDR- Wx-maintenance Policy and Practice Survey; Top 10 items for world class Wx-maintenance Program; Rumble Strip Survey, etc.
- Strategic Projects
- North Korea World Congress 2015
- Next Cycle Strategic Themes:
  - Transportation Management During Wx-weather Events / compilation of BP's
  - Deicing and Brine Treatments: Interventions and BP's
  - Updating the S&I Data Book: web-based; living document
  - Preparation of 2018 Wx-weather World Congress, Gdansk, Poland
  - Planning for future webinars and workshops

### **Meeting adjourned promptly at 5:00 PM**

### **Tuesday July 21, 2015**

8:00 - 9:30 AM **Safety and Reliability TWG-Sponsored Papers Session.....**Salon E

- Presiding: Jim Feda and Brad Darr / FHWA Liaison: Gabe Guevara
- Meeting was very well attended- over 70 people signed up the roster
- After some brief welcoming remarks and explanations regarding the purpose of the meeting, three presentations were given:
  - *Comparing Risk Factors for Crash Injury Severity of West Virginia and Montana Rural Freeways*- Presenter: Charles \_\_\_\_\_;  
 The study used an analytical model using dependent and independent variables, and coefficients, where vehicle speed was one of the main criteria to compute probability of crash occurrence under certain conditions (pavement surface condition, weather, daylight, etc.) The presentation was very well received
  - *Traffic Incident Management and the Role of Public Works/Transportation Agencies*.  
 Presenter: Dave Bergner. Dave covered important issues such as the definition of a "traffic incident"; how incidents are categorized according to the MUTCD; effects of traffic

incident on the transportation system and on society; challenges posed by traffic incidents; Dave talked about current public agencies assessment of capabilities to respond to incidents; the role of TMC's, and the need for the appropriate personnel to be trained on incident response- Dave highlighted the ICS course series (100, 200, 300, 400.) Jim Austrich, from FHWA's TIM Group was cited as a great training resource. This presentation was very well received.

- *Virginia's Experience with High Friction Surface Treatments.* Presenter: \_\_\_\_\_
  - These type of projects fall under the EDC (Every Day Counts) initiative of the USDOT
  - Virginia drafted a "special provision" to be used in contracts to deploy HFS
  - Sites were selected considering geometrics (horizontal alignment); crash history, etc. Friction measurements were taken prior to and after the application of the HFS treatment using either a Grip Tester or a locked wheel device.
  - Success of the HFS treatments depends greatly on the original condition of the pavement's surface and subsurface. Bond strength is good and the friction it provides is well above the minimum standard for Virginia. This presentation was also well received.
- *End of Traffic Queue Protection Initiatives and Practices in Tennessee.* Presenters: Brad Freeze and \_\_\_\_\_
  - End of the traffic queue is the most vulnerable when traffic comes to a stop due to an incident. Focus should shift to this area ASAP to prevent secondary crashes that, often times, end up being more serious than the primary incident.
  - TN drafted Special Provisions for the provision of End of Queue Protection vehicles in all construction contracts that will result on lane closures and other activities that may result on the formation of a queue.
  - Two vehicles seem to respond better to the dynamic nature of the changing queue.
  - Queue protection activities are eligible for HSIP funding.
  - This presentation was VERY WELL Received.

#### 10:00 AM - Noon **Safety and Reliability TWG Breakout Session**

Presiding: Jim Feda and Brad Darr; FHWA Liaison: Gabe Guevara

Jim Feda Opening Remarks:

- Meeting purpose and objectives
- Presentations
- Resolutions- this group may not propose any this year...
- Research Topics
  - Two research topics were proposed from the mid-west Peer exchange in Saint Louis:
    - Roadway Grip Factor
    - Making a Business Case for Winter Maintenance Operations. This study would correlate maintenance actions (or lack thereof) on the economy. The study would also look at cost of "doing nothing" as well to graduated levels of effort's impact on the economy.

- Another research idea stemmed from the SE Peer Exchange in Rawlings:
  - How Customer Surveys could be used to determine LOS; this study would result in the development of standard survey templates. Perhaps approach this need with a Synthesis?

Bob Younie pointed out that both RNS's would resonate well with the IA/DOT's Director Mr. Paul Trombino.

Other RNS's that came up for discussion at this meeting were:

1. Research for the ideal location of maintenance patrol yards- Max Perchanok
2. Dealing with disruptive/major weather events (hurricanes, floods, etc.)- Jim Feda
3. Max Perchanok: AVL/GPS Data Mining (crowd sourcing, citizen reporting, Inrix...) and effective uses for the data (applications). This issue spun a study need on the collection and use of GPS/AVL data- data collection frequency, storage, and retention issues; how the data is transformed into useful/actionable information (Jim Bane). **Action: Kyle, Max, and Gabe will cooperate on the formulation of a synthesis proposal.**

### **Presentations**

#### ***Trucker Assisted Reporting and Multi-state Capability Levels*** - Presenter: Jim McGee

Jim spoke about transportation agency resiliency; fundamental/core capabilities of an agency; need for a systematic/organized way (a ConOps) to generate data and applications; Capability Maturity Model-critical capability dimensions; etc.

#### ***Paint Reflectivity Analysis for Decision Making*** – Presenter: Shawn Bleasing-Thompson

Shawn covered issues such as cost-effective allocation of Paint Program dollars; pavement markings assessment: reflectometers, laser-lux van, data collection (AVL/GPS); data analysis maps; striping techniques and longevity/service life (grooving), etc.

#### ***TRB Surface Weather Committee AH010 Update*** – Kathy Ahlenius

- TRB 95<sup>th</sup> Annual Meeting call for papers/ criteria/submission deadline Aug 1<sup>st</sup>, 2015
- Committee membership: 21 members representing state dot's, academia, foreign countries, etc. and people can participate by being a "friend of the committee."
- Kathy pointed out a number of relevant upcoming events

#### ***Synthesis Topic 46-17: Training and Certification of Highway Maintenance Workers***

Wilf Nixon gave an update on the status of this Synthesis:

- Work is ongoing; expected completion date is autumn 2015.
- Focuses on Highway Safety and Reliability TWG training topics: what training is out there; what are the gaps; what are the levels of certification, when they exist; on-the job training vs. instructor-led/classroom settings; need to document training efforts, etc.

### **Meeting Adjourned at 11:50 AM**

### **Wednesday July 22 – Concurrent Paper Sessions 8:00- 9:30 AM**

Presiding: Jim Feda, Vice Chair; Brad Darr, Vice Chair. FHWA Liaison: Gabe Guevara

Jim Feda: Opening remarks and meeting objectives/agenda

#### **Presentations:**

- 1) *“Measuring the Impact of Training on the use of Chlorides in Winter Maintenance”* Dr. Wilf Nixon
- 2) *“Road Weather and Connected Vehicles: Integrated Mobile Observations”* Gabe Guevara
- 3) *“Estimation of Normal Condition Recovery Time with Traffic Flow Data for Efficient Winter Snow Maintenance Operations”* Dr. Eil Kwon
- 4) *“Effective Winter Weather Operations Plans for Snow and Ice Control”*

### **Afternoon Session 1:00 -5:00 PM**

Presiding: Jim Feda and Brad Darr; FHWA Liaison: Gabe Guevara

#### **Presentations:**

- 1) *“A Comparison of Maintenance Options for Traffic Sign Retroreflectivity”* Dr. Paul Carlson
- 2) *“Smart Work Zones and TIM Training Update”* Gabe Guevara

#### **Round Table Discussion**

Jim solicited comments/opinions on the recent winter 2014-2015 season, particularly in light of the experience in the north-east part of the country. The following comments arose:

- The EMAC (Emergency Management Assistance Compact) works very well and was of great help; detail information on the EMAC program is available from AASHTO
- Ran by the Department of Homeland Security
- Border States usually have formal/informal agreements of their own; works very well particularly on events such as hurricanes, flooding, etc.

#### **Discussion on Research Statements**

Jim elicited comments on the following proposed RNS's for the upcoming year:

- 1) AVL/GPS-sourced Data and Data usage Synthesis- Kyle, Max, and Gabe will cooperate on this one. Project was well supported by the group.
- 2) The proposal dealing with pavement “grip” was dropped and will be handled via S&I ListServe; a synthesis may follow the findings

- 3) Making a Business Case for Snow & Ice Maintenance Operations. A suggestion was made to include LOS in the title or RNS description. Project was supported by the group.
- 4) Synthesis of Methods States Have Used to Obtain Public Input on the Establishment of Levels of Service (Surveys). This project also generated good support.

#### **Additional Presentations**

- 3) ***“Salt Best Management Practices”*** Wilf Nixon and Mark DeVries
- 4) ***“Freezing of Anti-icing Solutions on Road Surfaces”*** – Taisto Haavasoja
- 5) ***“Winter Highway Maintenance Operations in Connecticut – Balancing Concerns and Safety”***  
- Charles Drda
- 6) ***“The progression of Anti-icing Operations in North Carolina”***- Scott Capps

Jim Feda: Round Robin and Closing Remarks

Meeting adjourned a few minutes prior to 5:00 PM.

## **Roadway Roadside Breakout Session Minutes**

**Monday 20 July 2015**

### Roadway/Roadside Breakout Session #1

Opening remarks and intro from Jerry Hatcher, TDOT

- Discussed webinar this fall
- Asked for research ideas
- Asked for Scan ideas

Jim Ritter CONNDOT talked about the Occupational Health and Organization of Safety

North American Association of Transportation Safety Officials

### Presentations

1. Beth Ann Perkins, GDOT, Outdoor Advertising Manager,  
Presentation: “Vegetation Management and outdoor Advertising”

2. Russ Yurek, MDOT, Director Office of Maintenance  
Presentation: “Environmental Issues in Maintenance Operations”

Closing Comments

**Tuesday 21 July 2015**

### Roadway/Roadside Breakout Session #2

Opening and Intro Jerry Hatcher TDOT

- Research
- Domestic Scan

### Presentations

1. Robbie Prezioso, VDOT and Eric Brooks, Pillar, Inc.  
Presentation: “VDOT Optimized Work Planning Tools”

2. Erany Robinson-Perry, GDOT and Dr. Zhaohua Wang, Georgia Tech

Presentation: “Accelerated Sign Inventory and Management

Closing Discussion

Research needs:

- The benefits of Green infrastructure and the effects on water quality (or the cost of construction and maintenance)  
Bradley –MsDOT  
Russ – MdDOT  
Dan –Pillar and Associates
- Safety Rest Areas –The effectiveness of, proposed Synthesis follow up  
Robbie –VDOT
- A discussion about interest in developing Common MQA Measures  
Thomas Lyden –ODOT  
  
Chris Harris –TnDOT
- Mobile Devices – best practices mobile devices and data collection, GPS-AVL, proposed Synthesis
- Safety Have TMA around Maintenance Operations, proposed Synthesis of who is doing what  
“Best Practices of the use of TMA’s in maintenance Operations”  
Russ –MDOT

-It was put forward that the group wanted to ask SCOM Leadership to add a bullet promoting worker safety to the Subcommittee strategic plan

-Question on if anyone is using driving simulators

**Wednesday 22 July 2015**

Roadway/Roadside Breakout Session #3

Opening remarks, Jerry Hatcher

Jerry went over the research statements

Presentations

1) Will Longstreet, FHWA

Presentation: “FHWA Roadside Hardware Mentoring Program for Maintenance and Design Staff”

2) Pasco Bakotich, WSDOT

Presentation: “WSDOT’s Gray Book: Performance Measures and Accountability”

3) Shawn Blaesing-Thompson, Iowa DOT

Presentation: “The Use of Tablet Technology for Roadside Feature Condition Reporting and Decision Making”

4) Danny Lane, TNDOT and Greta Smith, AASHTO

Presentation: “Overview of the NTPEP and APEL AASHTO Technical Service Programs/How TN DOT Utilizes NTEP Data”

## **SCOM 2015 Pavement TWG Breakout Session Notes,**

### **Monday, July 20<sup>th</sup>**

Chair: Anita Bush, Nevada, Vice Chair: Scott Capps, North Carolina, Vice Chair: Jon Wilcoxson, Kentucky, FHWA Liaison: Marc Hoelscher

Scheduled Meeting Time – 3:30 to 5:00

Anita welcomed the group  
Introductions

Anita - Covered the agenda for the afternoon.  
Went over structure and purpose of membership  
Covered past and future meetings, SCOM Mission, Vision and Focus Areas  
Covered recent PTWG accomplishments, Top 5 Goals and additional work plan goals.

A webinar was conducted this year with Larry Galehouse on Certification Program for preservation treatments from a Contractor and STA perspective.

Amir provided an update of the AASHTO Maintenance Manual for Roadways and Bridges.

Anita covered other ongoing and new research

- 2013 NCHRP 14-31 - Developing a Pavement-Maintenance Database System Completion date of 10/30/2015
- 2014 NCHRP Synthesis 20-05/Topic 46-17 - Training and Certification of Maintenance Workers First Panel Meeting: September 19, 2014 Teleconference with Consultant: October 15, 2014 Second Panel Meeting: July 16, 2015
- 2014 NCHRP 14-33 - Pavement Performance Measures that Consider the Contributions of Preservation Treatments. Completion date of 6/1/2016
- 2015 NDOT/FHWA – Microsurfacing, Slurry Seals and Chip Seal Quality Assurance Best Practices Tech Briefs ETG Task Group No. 2: Sustainable Infrastructure and Maintenance

Discussion on other completed NCHRP research.

New proposed research statements were handed out.

Anita asked for the group to think about research topic ideas for the next meeting.

Katie - Asset management research topic on life cycle costs.

Curt – Spoke to the focus areas and common themes that may emerge from all TWG's.

### **SCOM 2015 PTWG Breakout Session Notes, Monday, July 20th**

Larry – Spoke about the research gaps in the Research Road Map.

#### **Presentations**

Updates from AASHTO Partners

- FHWA PPETG Update – Marc Hoelscher, Operations Engineer
- Updates on NCPP, TSP2 and Regional Partnerships (including National Conference and International Conference) - Larry Galehouse, Executive Director, National Center for Pavement Preservation
  - Two PPP meetings held so far, two more scheduled.
  - Councils are being formed in states to help out preservation efforts with LTAP.
  - Agency certification or certificate programs for preservation treatments, pilot states are willing to try.
  - ISSA is willing to have contractor certified as a company.

#### Technical Presentation

- Pavement Preservation Roadmap Review Update - Larry Galehouse
  - Larry provided a demo on the Pavement Preservation Research Roadmap - <https://creator.zoho.com/codarl/library-management/#Page:Homepage>

Adjourn 5:00 pm

Marc Hoelscher – FHWA Liaison

#### **SCOM 2014 PTWG Breakout Session Notes, Tuesday, July 21st**

Chair: Anita Bush, Nevada, Vice Chair: Scott Capps, North Carolina, Vice Chair: Jon Wilcoxson, Kentucky, FHWA Liaison: Marc Hoelscher

Scheduled Meeting Time - 10:00 to 12:00

#### Updates from AASHTO Partners

- Industry Update – Jim Moulthrop, Executive Director, FP2 Inc.
  - Advocacy Effort – FP2 has contract with a firm to represent the Pavement Preservation Industry
  - Highway reauthorization – goal is 6 years at funding levels comparable to MAP-21
  - Committees are engaged and focused on how to finance a new 6-year reauthorization bill
  - User fee – increasingly unlikely
  - General fund transfer (increasing more probable)
  - Communication Effort – Pavement preservation journal and FP2 Inc. website
  - NCAT/MnROAD Research Partnership
- 2012 Preservation Study
  - Crack sealing
  - Route/fill and blow/band
  - Scrub seals exhibit both crack & chip seal benefit
  - Chip seal slowed oxidation rate
  - Treatments reduce scrub
- NCAT soliciting more partners for the 2015 preservation group experiment
- ADOT has located a four lane road facility for future research

## Technical Presentations

- Precast Concrete for State-of-the-Art Pavement Infrastructure Maintenance – Kirsten Stahl, Senior Transportation Engineer/District Materials Engineer, California Department of Transportation
  
- Challenges – Aging Infrastructure, heavy traffic, worker exposure, short & limited time, limited budgets, durable or temporary, willingness to innovate
- Distress – faulting, spalling and base erosion.
- Alternative strategies and benefits – longer lasting, shorter windows of construction
- Open to traffic sooner
- Better slab replacement using Sulfo-aluminate (Belite) Cement and Precast Concrete
- Slab Replacement
- Precast open to traffic in >1 to 3 hours lasting 20 to 40+ years
  - Durable
  - Open to traffic quickly – 300 to 375 lane-feet in three hours
  - Adverse weather installation
- Reduced thickness (reinforcing and/or pre-stress for in-kind thickness & handling stresses) and reusable.
- Covered installation details
- Panel innovations – load transfer and curved panels
- Durability testing with heavy vehicle simulator and falling weight deflectometer.
- Precast concrete pavement offers many solutions
  
- Guidelines for the Preservation of High-Traffic-Volume Roadways (R26) - David Peshkin, Vice President, Applied Pavement Technology, Inc.
  - The following was covered by David
    - Project Objectives
    - Implementation Objectives
    - Implementation Accomplishments
    - Implementation opportunities
  - Sharp 2 R26 - possible Round 7 funding
    - Stay the course or develop some additional tools/guidance etc.
    - Keep an eye on objectives and implementation of preservation.
    - Discussion on ADT and preservation treatments such as chip seals
- Optimizing Pavement Maintenance and Rehabilitation Funding Through use of the Rolling Wheel Deflectometer – Curt Beckemeyer, Manager of Transportation Infrastructure and Environmental Sector, Applied Research Associates, Inc.
  - Innovative FHWA study in collaboration with Oklahoma DOT.
  
- Case study presented
  - RWD – innovative device that efficiently measures structural response
    - Laser based system
    - 18-kip, single –axle, dual tire
    - Operation at posted speed
- Study Purpose

- Evaluate the benefits
- Compare PM analysis with and without the use of the RWD
- 1,000 mile, primarily flexible pavement
- Software – dTIMS
- Performance Modeling
- Decision Models
- Treatment matrix for low, medium and high volume roadways
- Budget scenarios – Target PQI analysis and Unconstrained Funding

Adjourn – 12:00

Marc Hoelscher – FHWA Liaison

### **SCOM 2015 PTWG Breakout Session Notes, Wednesday, July 22nd**

Chair: Anita Bush, Nevada, Vice Chair: Scott Capps, North Carolina, Vice Chair: Jon Wilcoxson, Kentucky Transportation Cabinet, FHWA Liaison: Marc Hoelscher

Scheduled Meeting Times - 1:00 to 3:00 and 3:30 to 5:00

1:00 to 3:00

PTWG Annual Business Meeting

- Discussion and Approval of:
  - 2015 Priorities
  - 2015 Research Problem Statements
  - Develop guidelines for the use of marginal aggregates in chip seals. Priority 1
  - Develop guidelines for including maintenance costs and needs in a transportation asset management plan. Priority 2
  - Scan Tour/Peer Exchange on current practices on determining the performance and life extending benefits of pavement preservation treatments.
- 2015 Resolutions - none
- 2015 Work Plan
- Finalized work plan for next year

Other Business

3:30 to 5:00

Technical Presentations

- NCAT/MnROAD Partnership – Buzz Powel, NCAT Assistant Director & Test Track Manager & Ben Worel, MnROAD Operations Engineer
- NCAT/MnROAD partnership
- National Road Research Alliance – Pooled Fund Minnesota DOT Lead (Road Agencies, Industry and Consultants). Technology Transfer and Training.
- Performances Measures for MAP-21 - Jon Wilcoxson, Maintenance, Transportation Engineer Director, Kentucky Transportation Cabinet
- Provided an overview of comment themes

Adjourn 4:45

Marc Hoelscher

**AASHTO Subcommittee on Maintenance  
Regional Breakout Session Minutes  
Des Moines, IA – July 21, 2015**

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**AASHTO SCOM Northeast Region Discussion (NAASHTO)**

**3:00-5:00**

**Chuck Gerda (alternate for Joe Baker) called meeting to order at 3:00 and made welcoming comments**

**Self-introductions were made around table**

**Roadside maintenance:** The discussion began with the topic of graffiti. Connecticut has lots of graffiti on highway infrastructure, and its removal receives a low priority unless the markings are racial or gang-related in nature. Connecticut maintenance forces actually do graffiti paint-overs, not removal from surface. Connecticut has done limited experimentation with setting aside specific areas (wing walls, etc) for graffiti artists to do their work legally under a permit, and they are currently further refining criteria for permit issuance. The DOT is also looking at allowing the projection of images on structures as part of the permitted program. Maine indicated it is looking at graffiti-resistant coatings for its structures. Pennsylvania has had some trouble with sorting out what graffiti is acceptable and what isn't.

**Roadside memorials:** These impromptu memorials become problematic sometimes, and the Connecticut DOT usually removes them after a couple weeks. Connecticut has also experimented with legal rest area memorials. Maine indicated it does not have a roadside memorial policy.

**Grass mowing:** Connecticut mows twice in summer once in fall, all with in-house workers. Maine contracts out all of its mowing work and does not strive for aesthetics, rather only function. Maine made the decision that its in-house skilled laborers were best used on functions other than mowing. Maine indicated they are using a large amount of herbicides, and are actively experimenting with growth inhibitors. Maine also expressed that they were receiving lots of complaints about fuel use during mowing, and this prompted the use of herbicides and growth inhibitors. For roadside vegetation maintenance, Connecticut pays \$4500/day for chipper and crew, and said they do a huge amount of

work, 50-60 trees a day, 30-40 feet back from road. Connecticut seems to be getting lots of car-tree hits per year. Maine wraps litter removal into mowing contracts (once a year).

**Rest Areas:** Maine has privatized rest area operation and maintenance completely. Contracts are sub-regional, but transitioning to 1 or 2 contracts per year statewide. Connecticut is partnering with GEICO to sponsor safe pull over text areas near rest areas.

**Superpave:** Connecticut has been getting a very dry asphalt mix lately, with lots of oxidation and cracking in short order. What is in binder that is causing this? Maine is looking at surface aggregate loss. Bryan Cawley indicated that Midwest asphalt has a lot of recycled shingles in the asphalt mix.

**Winter Operations:** Rhode Island ran out of salt last year mid-winter. Connecticut expressed that they keep 30% reserve of salt all winter long. Maine uses 110,000 ton/year of road salt. Connecticut indicated that some of their salt is imported from Canada and Chile on barges. Maine said they use mostly salt, with some sand mixed in with varying ratios. Maine also pre-wets their roads with salt brine. Some of their trucks are still parked outside during winter. Connecticut said their brine makers are automated, and fairly new (five year or less), so they have seen no problems in their brine production equipment. The conversation shifted to liquid salting. Pennsylvania indicated they were performing all-liquid in a couple areas (slurry). Maryland performs slurry only on four routes, with great success. Maryland stated that their brine is effective in temperatures down to 9 degrees with no refreeze, using 1.5 to 2 hour cycle times. Connecticut is paying \$55-60/ton for their salt, while Pennsylvania is paying \$75/ton. Connecticut manages salt delivery by boat directly onto trucks, and the indicated that finding enough trucking is a problem. Because the plow operator cannot see the salt spreading directly, Connecticut is looking at putting cameras on slurry spreaders to detect when a spreader clogged. Pennsylvania put pipes with holes to provide good brine mix, and uses “Iowa” spinners with good results. A short discussion of truck bodies indicated that aluminum & stainless materials work best. Discussing water quality, Connecticut has had some well water contamination claims that have been problematic. Pennsylvania’s biggest problems with well water have historically been near stocking locations. Consequently, Pennsylvania has since put in covers to mitigate runoff. Connecticut stated that they have all salt covered. Connecticut indicated that their friction courses are causing refreeze issues, and are problematic. Connecticut also uses inlaid thermoplastic for striping in lieu of RPMs.

**Fleet:** There was a general consensus that there is not enough money put forth for fleet replacement and maintenance. Maine has trouble getting equipment orders filled, and the ones they receive have technical issues from the start. Connecticut had problems with International vehicles, however they stated that their current equipment contract is with Freightliner. Pennsylvania had 16 International truck engines only 4 years or younger literally blow up this year—the manufacturer investigated the cause and subsequently found that there was such dramatic heat cycle variation associated with certain emission equipment that it was melting the EGR cooler, allowing water in the crankcase. Antifreeze was then diluting the motor oil. Pennsylvania and Connecticut indicated they were also having significant problems with the equipment dealer.

Connecticut said they are 280 trucks overdue for replacement, and they use equipment typically for 14-15 years. Pennsylvania is 109 pieces behind in equipment replacement. Connecticut issues 20 year bonds for to pay for equipment, and gets \$20M/year. Connecticut tried to cut back on equipment options (like A/C), but subsequent meetings with the operator's unions resulted in some of these feature being installed after all. Pennsylvania has found more engine idle time in summer than winter. Overall, Pennsylvania's idle time is 33% state-wide; their goal is 20%.

**Asset Management & Performance Measures:** Connecticut hired a consultant to do their transportation asset management plan (TAMP), and are looking at doing their asset inventories starting from scratch. Maryland indicated they don't have any real MMS, but does have data warehouse although it is more on the planning side of the agency. In Maryland, department directors are all looking at what asset management should look like. Maine is doing a cross-department approach, where TAMP is being driven by a results and information team, but works across departments. Their bridge inspection program is within the maintenance division. Maine's maintenance division works with planning closely, and is going from using PONTIS to a Bentley application. Connecticut said they use Inspectech. Maine indicated they are doubling their bridge maintenance program through bonding. Connecticut said they have run into capacity issues with preservation contractors not being able to ramp up to new demand associated with increased preservation activities.

Connecticut is going with Assetworks for their fleet management. It was Connecticut's opinion that the market seems to be split between Agile Assets and Assetworks.

Bryan Cawley asked the group if they liked the regional discussions, and should the breakout session continue next year?

The group generally responded "yes" for regional discussions to continue in the future, but requested that the agenda be circulated beforehand next time.

The meeting adjourned at 4:58.

## **AASHTO SCOM SASHTO Regional Meeting**

Topic #1, #2, & #3 (General Highway Safety)

### **AL**

- Have an office of Highway safety that reports to the chief engineer

Signs conform to MUTCD Standards

Speed Limits

Roundabout Design

-Occupational Safety effort for employees heavily influenced by TXDOT is acting as a department resource

-Working on a study to standardize work zones

-Have a safety stand down

-Having trouble with sinkholes

### **AR**

- Right now the challenge is heat

-Training & safety section is part of HR

-Crew Briefings

-Employee Orientation

-Accident Review

-Developing Training Packages

-Sending supervisors ATTSA training

### **FL**

- Work zone design program

-Training

-State safety office who handles training

Question:

Does FL require contractors to have training?

Answer:

Yes they have to have some training

- Have a database of certified trained people
- Asset management contractors have to submit a safety plan

### **GA**

- Has safety dashboard
- Have a safety camp week
- Have an office providing training

### **KY**

- Has an office of safety and health
- Provides training before acceptance of responsibilities
- Have a print of all employees KIA in each district and in central office

### **LA**

- Safety office (less prevention office) in each district
- Purchased a flagging unit
- Doing a JSA every day (Safety brief)

### **MS**

- Currently borrowing from NC & SC
- Taking NC safety manual & merging it with field ops manual
- Leadership program
- Just got a safety coordinator

### **NC**

- 1995 Developed a safety program from DuPont manual
- Just started ORM (Operational Risk Management) is more of a day long workshop and lecture

- Gave each supervisor a calendar with safety information and ORM process in it
- NC requires a TMA behind when Slope Mowing

## **SC**

- Have an office of occupational safety
- Each district and county has an OSHA (Safety Officer)
- Conducting a job risk analysis before each job is mandatory
- Work zone training for maintenance employees
- Have a manual being developed that tells about traffic control setup for a given activity
  - Training on how to use manual (decision tree on internet)
  - Want to put it on the supervisor's tablet
- Have a quarterly safety meeting in the central office many times the Chief Engineer comes to show support and the importance
- Performance manual has a safety using OSHA Standards
- Is anyone replacing non-NCHRP 350 compliant now or waiting until they get hit

## **TN**

- Has a state coordinator and 4 regional coordinators
- Have training courses
- Have regional training (coordinators track and ensure that employees stay current)
- Obtaining TAM and requiring their use on certain jobs
- Using HSIP funds to help with their purchase

## **VA**

- Requires certifying of employees
- Has a safety and health division
- Have safety people
- Occupational health section that can test confined spaces

- Provide training
- Monthly accident reports
- Work units have daily safety meetings
- Rear stripes on all equipment rolling stock
- Class 3 vests for daytime, pants for nights, provide up to 5 t-shirts, 3 long sleeve shirts
- The best practices manual has a safety section
- Their Rodeo is part of the safety program
- Districts have annual safety meetings
- All new employees get safety manual
- Requiring annual safety certification
- Electronic bulletin boards
- Attenuators
- Have an on call contract to setup work zones where they are required
- Have a safety dashboard
- Leave incentive for having no accidents
- VA requires a cushion on Interstate routes

## **WV**

- Equipment and flagger training
- Provide high visibility uniform
- Provide 11 uniforms co employees can come to work in a clean uniform everyday
- Have had 4 work zone fatalities in last 2 years
- Have a work zone safety billboard and radio campaign

The group sees a need for the SE Regional Maintenance meeting to continue

## **AASHTO SCOM WASHTO Regional Meeting Notes**

Presiding: Lonnie Hendrix, Arizona, FHWA Liaison: Marc Hoelscher  
Scheduled Meeting Time - 3:00 pm to 5:00 pm

### Introductions

Funding and budgets, Performance Measures and Level of Service, Staffing and Training, Asset Management/Integrated Maintenance Management Systems, Safety, Equipment Fleet Management and Maintenance, Winter/Emergency Maintenance Operations, Innovative Products and Practices, Environmental Stewardship.

### **Equipment/Fleet Discussion**

ID - Fleet management policy use or lose it under certain criteria (minimum utilization), reduction of fleet by 5%, may reduce another 5%. \$11.3 million to \$8.3 million budget reduction. Funding is transferring from fleet budget to roadways.

WA - Fleet budgets losing ground

CA – Executive order cut about 10% of the fleet. Establishing utilization guidelines and statewide pool. Two major air quality mandates causing 853 pieces of equipment would need to be replaced, but if not being utilized would not be utilized

NE – Question to Idaho - some milling machines in half lane size

TX – Got rid of 4,500 pieces of equipment not sure of the total fleet size

### **Cross Training and Blended Work Force**

ND – Blended workforce, was able to bump some maintenance folks, reduced temporaries

ID – Transportation/Technician TTO, in place twenty years plus

WY – Goal is to reach 100 blended workforce maintenance/construction positions with some bump in pay

ND – Week long training course

NE – Construction utilized for snow removal

ND – Problem filling the plows with operators

NE – On call method for winter maintenance

### **Formal Process of Escalating a Good Idea**

ID – Good ideas are mandatory to bring forward

NE – Mentioned Missouri's best practice on good ideas brought forward – See MidWest MPN

TX – Quota, two innovations per quarter

### **Tow Plows**

ID – two on order

WA - one

### **Winter Preparation**

NE – Snowplow simulator gets sent around to the units. Bring construction folks into go over routes

CO - One full day of classroom, two days riding with the driver, two days being the driver, first time out someone will be with a new driver

### **Winter Storm Performance Measures**

ID – Keeps raising the bar on their winter performance measures. Mobility Index, roadway being liquid using ARWIS. Scheduling around events that are coming, split shifts, reduced 12 snow plow trucks. \$30 million to \$21 million buy using performance measures. Lessons learned – continually learning, complete AVL, integrated AVL, NOAA is used for the weather forecasting, conference calls, good working relationship. AWRIS placed in worst locations, ARWIS represents from two miles to thirty miles based on location and understanding the locations

### **Asset Management - Culverts**

CA - Team inspection and use of cameras

WA – Rate the top ten that needed to be watched, may not be getting a true picture

WA – Use of technology in culvert inventory

### **Maintenance Training**

TX – Issues with training being English only when folks that are Spanish. Allot of online training in TX for various aspects of the maintenance program

AZ – Certifying that learn has occurred is difficult at times

CA – Post training evaluation

AZ – Happy with heavy equipment operator training?

ND – Senior operators training other operators

WY – Full time trainers that are certified. Heavy equipment operator training is an issue, crane training and other pieces of equipment

### **LED Lighting**

WY – Statewide

WA – Pilot projects to move to LED conservation measures. Pilot in state capitol, run LED's at 80% power, remotely controlled, flat rate hook ups converted to meters, saved energy but when meters were installed electric bill increased

Removal of sign lighting and meeting illumination requirements

Need to hit up AASHTO Technical committee on auto lighting

### **Guardrail End Treatments**

TX – End treatment replacement issue at the contractor level

WA – If hit replace with SKT

### **Job Order Contracting**

AZ – Use on limited bases

CA – Concrete panel replacement

### **Hydro-Vac Trucks**

WA, ID, TX will keep

CA – Only place we do it is in LA and Ventura

WA – AVL on Hydro-Vac trucks

AVL – Hit and miss on usage

CA – GPS on light duty fleet, fob in and fob out

AZ – AVL usage has corrected issues

**Correcting Idle time**

AZ – Has had issues

WA – The grip system auto shut off and restarts, voltage, hot & cold in the cab

WA – Damaging diesel engines with idling

**Naturally Occurring Asbestos (NOA)**

NV – Naturally occurring asbestos (NOA) in the western states, storm water, natural aggregates, and decorative rock

ND – Erionite aggregate, working condition concerns

The group sees a general need for the Regional Maintenance meeting to continue

Adjourn 4:45

Marc Hoelscher – FHWA Liaison

## **AASHTO SCOM MAASTO Regional Meeting Notes**

Steve Cook from the Michigan Department of Transportation presided over the meeting. During the introduction Steve asked everyone to discuss at least one topic that they would like to learn more about or have information to share that the others in the region may find valuable. The following are some of the topics that were discussed:

- 1) How do states manage lower levels of service (LOS) as budgets, staff and resources are reduced? How do you get your employees to recognize that good is good enough and they don't have to obtain that preferred LOS? Everyone agreed this is a growing issue with reduced staffs, resources and most importantly funding.
- 2) Snow and ice route optimization – What are different states doing with reduced manpower and changing LOS and managing those expectations? Most states have varying levels of service based on traffic and types of roadways. Ohio uses a performance metrics that uses speed and time. The concept is to have traffic speeds back to normal within a given timeframe. Some states currently don't use a performance metric or end result but have established priority roads.
- 3) Asset Management – Where are the states at with their asset management plans, and what items is everyone including in those plans? Most of the states agree in principle with the need for asset management plans. The struggle for some is with the constraints of the federal requirements.
- 4) Work force development – Everyone agreed that training and work force development is a growing concern with reduced funding. So states have gone to the transportation worker concept. The pros and cons of this were discussed.
- 5) Use of UAV's for various maintenance activities – example bridge inspection. Michigan DOT discussed their use and problems associated with using UAV's. Research is needed on how best to use UAV's and what are the regulations and problems associated with their use.
- 6) Use of GPS/AVL – Iowa is currently researching the use of GPS/AVL equip for maintenance. The AVL technology is linked to a global positioning system (GPS) receiver to allow the unit to collect data about the truck's spreader controller, plow position, engine status, pavement temperature, vehicle location and speed and friction associated with the roadway.

At the close of the meeting everyone was surveyed to see if the regional meeting breakout session should become a regular part of the SCOM meeting agenda and everyone agreed.