

**AASHTO Subcommittee on Maintenance  
Technical Working Group Breakout Session Minutes  
Providence, RI  
July 31 – August 2, 2017**

**Note:** Additional information on many of the presentations are available at the following website: <https://maintenance.transportation.org/meetings-2/meetings/2017-scom-meeting/>

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**Bridge Technical Working Group Minutes**

**Monday – July 31, 2017**

Jeff Milton, VA DOT Presiding

- Updates on coordination with the AASHTO Subcommittee on Bridges and Structures. David is Liaison to Section T9 and the subcommittee is appointing more liaisons.
- Review of last years' meeting highlights and accomplishments in safety, asset management, environmental, workforce development, communication, and research.
- The 2018 SCOM Annual Meeting will be held in Charlotte, North Carolina. Discussed the idea of membership beyond the 3 official members (chair and two co-chairs). This would provide an opportunity for attendees to be more involved during the year. These new "official" members would not have to be the designated state delegate (voter). Two or three year terms were proposed by Jon Wilcoxson. George Connor remarked that a member of the regional partnership would be ideal to be an official member on the Bridge TWG. The regional partnerships may also have a nomination process for who to send to SCOM. A process is needed to nominate TWG membership. Comparisons were made with SCOBS: for example, no one can be a TWG member unless they are a SCOBS member. Folks interested in becoming an official member should email Jeff.
- Amir Hanna asked the group for input on how to implement and advance NCHRP research into AASHTO guidelines, and suggested this be a regular TWG agenda item.
- Amir further indicated that two NCHRP projects need attention at this meeting:
  - Bridge Joints, project complete with set of guidelines (NCHRP 12-100).

- Highway structures in emergency situations: coding / marking (NCHRP 14-29).
- David Miller mentioned how multisubject initiatives get reviewed by other TWGs, and SCOM leadership.
- Jeff asked if there were any objections to publishing these two NCHRP studies into AASHTO guide documents—a question was then asked if there would be a charge from AASHTO for the documents? The consensus was “yes”. The report is presently free through the NCHRP website, and the report would stay there even if published through AASHTO. Any future updates would only be initiated through AASHTO publications, or through a TWG decision to do it. Resolution: move to bring to full committee (business meeting on Thursday) to advance these two reports to AASHTO documents.
  - Action item for TWG: Determine best method to inform local agencies that this report is available through NCHRP at no cost.
- Draft committee purpose charge statement for SCOM—solicited for suggestions to change proposed draft language. Comments related to condensing, revising and adding relevant language will be shared with the SCOM Chair tomorrow morning. The document will likely be heavily changed and will be finalized by December 2017.
- Bridge Scour Domestic Scan (15-02): Rick Marz gave an update on this. The overall goal was to document how owners reduced the risk of scour. The teams approach was noted and how they prioritized topics to investigate. AASHTO should put all of this information together in one spot for future scans and disseminate the information. The states should establish collaborative relationships with USGS and other agencies that deal with scour. States should also work with FHWA for using sonar in conjunction with dyes/divers. There is a need of measures for inspecting countermeasure construction, and an AASHTO body to disseminate countermeasure information. States should consider more information for their plan of action (POA), and to develop emergency protocols. The final report will be available on [www.domesticscan.org](http://www.domesticscan.org). Topic wish list items include: establishing a committee of SMEs, national coordination with many agencies, establishing a clearinghouse for research and new procedures, having a place to share countermeasure successes, and establishing a body to advance state of the art practices.
- Research Endorsements: Brief discussion and re-endorsement for duplex coatings project from last year. David Miller explained some possibilities as to why it did not advance last year. Everyone agreed to move the project forward again. A second endorsement was discussed for a 20-07 project regarding LED lighting use for tunnels. The project is supported by PIARC, BTWG, SCOBS T-20, and others. The TWG endorsed the project and sent it forward to the Thursday Business Meeting for a vote.
- Proposed Research Statements: John Hooks talked about several topics: “protecting bridge approaches during flooding events”, “Benefits of bridge cleaning and washing effect on service life and cost effectiveness”, “pooled fund study for development of accelerated tests for high performance coatings of structural steel”, “Deck sealers and overlays—treatments and requirements for use”, “synthesis of standardized maintenance and best practices”, “Test protocols for small movement bridge joints”, and “Overcoming Obstacles to and Quantifying benefits of bridge cleaning and washing programs”.

## Tuesday – August 1, 2017

- Rhode Island Bridge Program: Georgette Naheed described how bridge preservation is administered every year in RI. Bridge washing has been extracted from bridge preservation activities and put into an “immediate need” category. Prioritization of bridge washing is based on need. Rhode Island currently is washing all elements of bridges, utilizing multiple contracted forces. Emergency repair is also performed by contract, but design is normally done in-house on elements such as beam ends.
- TSP2 Western Regional Partnership Update: Chris Keegan noted that leadership changes were made at the Colorado meeting and the presentation is available on the website. Asset Management Plan requirements were presented. Lots of work to do nationally, except Utah. Also need local city/county participation. The next meeting will be in Reno. Change in phone meetings-new format for identifying discussion topics. Topics: Keeping bridge decks serviceable when there’s lots of spalling. Unsuccessful in moving new groups forward. Working on “intelligent tasks”, need data and persistence. Group is surveying for new topics to work on.
- TSP2 Northeast Regional Partnership Update: Ben Foster discussed leadership challenges, aging infrastructure, freeze-thaw, salt priority, and short construction seasons. Held monthly conference calls: topic of the month, beam ends (steel fixes, jacking details), bridge washing, and FAST Act. Topics discussed at 2016 meeting in Baltimore: deck preservation, paint, Maryland practices, and Bobby Mead’s presentation. 2017 annual meeting to be in New Brunswick, NJ. Topics: peer exchanges, I-276 emergency repairs, panel discussions (walls, scour), Rutgers BEAST (bridge testing technology).
- TSP2 Midwest Regional Partnership Update: Nancy Huether discussed leadership structure and successes in finding officers. Hold monthly web meetings with state report-outs, various working group meetings, annual meeting set for November 6-8 2017, Minneapolis, MN (put out call for presentations, 4 sessions-case studies training deck preservation bridge preservation), engage local agencies, and possible tech tour. Outreach to local agencies, preservation matrix, deterioration modeling, regional specs and product evaluation database, and bridge preservation research. Current \$64K treasury, 100% of regional states contributed to voluntary program, and the 2018 national bridge partnership meeting will be in Orlando, FL in April.
- TSP2 Southern Regional Partnership Update: Dan Muller went over their leadership structure, monthly conference calls, planned 2017 meeting, monitored status of AASHTO voluntary contributions, monitored national training and research, and supports attendance at SCOM. Monthly calls should include information from what the other partnerships are doing. Working groups: bridge preservation, annual meeting, TSP-2 website. Members are active in coatings and preservation. 2017 meeting in Charleston, WV extended meeting to 2.5 days, extra .5 day networking. Meeting was a net loss of \$8.64K. Sessions at the meeting included: deck preservation, emerging tech, emergency response, research needs, and tying inspection to preservation roundtable. Mentioned the national bridge performance measurement working group, and the formation of a new bridge management system working group. Some discussion on BRM/BMS usage and management. Leadership will solicit membership.

- Bridges to Prosperity and Engineers Without Borders Program Updates: Rex Pearce gave a presentation on his involvement with a project in Estancia de la Virgin, Guatemala. He explained what Engineers Without Borders does as an organization in international settings and emphasized that bridges are key for basic access to medical care, economic markets, education, and work. He assisted with designing a 100 meter suspension bridge using Bridges to Prosperity design specs and very basic tools and materials. The bridge design was constructed in six weeks at a cost of \$12k-\$15k and provided a very large social benefit for its users.
- NCHRP Research Project Updates:
  - Work Complete: 14-24, 14-27, 14-29 (Move forward as an AASHTO Document), 14-32 (AASHTO published revised manual), 12-100 (Move forward as AASHTO guide document), 14-28 (Report 848), 20-07/task 378 (Report submitted to SCOBS), 20-07 task 379 (Workshop conducted 7/9-10/15), 20-07 task 387.
  - Research in Progress: 14-30, 10-97, 14-36, 12-104, 12-108, 20-07/task 380, 20-07/task 397, 20-07/task 399
  - Research Terminated: 14-23
  - Domestic Scans: 15-03 (Compete, report on TRB website), 17-01 (team is being formed), Pending project, funded by SCOR, project under F-07. Suspension cables.
- Re-endorsement to move forward with two research projects: Duplex coating work, and LED tunnel lights.
- Chris Keegan mentioned a meeting in DC with OSHA regarding bridge fall protection (issue brought up in 2014 by Chris Christopher at SCOM meeting).
- Reviewed the Bridge TWG Report Out slides for Thursday and made minor tweaks based on group feedback. Some highlights: Asset Management, Ed Welch suggested supporting the creation of a TSP2 national bridge management system working group. FHWA BPETG is updating the definition of bridge preservation, along with the bridge preservation guide. It was brought up that this group should be somehow involved to change the definition of bridge preservation and guide. The definition should better reflect the state of the agency practices. Workforce Development, it was suggested to work through organizations such as LTAP to promote bridge maintenance training for local agencies. There was some discussion regarding the need for big improvements in communicating non-misleading bridge condition information through the media and to perhaps even develop a media guide. David Miller requested a task force from the group be formed to take on this effort, Dan Muller and Ed Welch, and Paul Kultzch volunteered for this effort.
- New research titles to be proposed: “Protecting bridge approaches during flood events”; re-publish completed research into AASHTO format.

### **Wednesday – August 2, 2017**

- Jeff and Steve went over domestic scan regarding UAS. Steve elaborated on some very interesting tunnel-inspecting technology. Presently, the scan is in the preliminary stages, with first meeting in DC in October. States will come to DC for interviews. TX is doing research on UAVs, but not bridge specific. Overall, DOTs are struggling with regulation of UAVs. State DOTs can regulate land use, but not airspace.

- Morgan Kessler provided a FHWA research update on Bridge Preservation research project, and various changes happening with LTBP (LTPP and LTBP are merged into Long-Term Infrastructure Performance Program).
- Chris Keegan gave update on OSHA bridge maintenance fall protection
  - 5 states were notified of violations, 9 had discussions with OSHA
  - Many states have state-run OSHA programs
  - OSHA can fine private companies but not states
  - It's ok to be in the fall zone to set up fall protection
  - Some jurisdictions have put up higher rails to be in compliance
  - Options for moving forward: letter of interpretation, OSHA variance request, rule change, or manage individually. No evidence of any bridge maintenance related falls/accidents. Chris went over fall protection survey, received 39 responses.
- NCHRP Project 12-100: Tripp Shenton gave a presentation regarding evaluating and maintaining small bridge deck joints. Project was finished in 2016. It was presented in two parts: one is standalone document, the other is a project culminating document which is looking to get published by AASHTO.
- Microsoft HoloLens Product Update: Eric Hall and Ted Dinsmore introduced the product. It uses mixed reality technology, overlaps virtual reality with physical reality, and is a standalone computer. Eric did a demonstration involving Skype and described the various modes of use. He also mentioned an ongoing project with VDOT.
- SCOBS T9 Meeting – June 2017 (Spokane, WA): Randall Mullins gave presentation on the SCOBS T9 meeting and discussed the committees strategic plan. He talked about: NCHRP 12-108, SHRP R-19A, 100-year service life implementation; NCRHP 14-36 by George Hearn; Domestic Scan 15-03; TSP2 regional updates; Supporting ongoing NCHRP Research, LTBP (now LTIP), and BPETG; the Business Meeting; and next year's meeting in Burlington, VT.
- AASHTO TSP2 Update: Ed Welsh and John Hooks gave an overall update. Things are going well with partnerships. There are two big initiatives: database build and participation, and research roadmaps. What does the group want to do with the roadmap? Partnership meetings, research initiatives, and involvement with local agencies were also mentioned. The database was set up to assist with virtual networking. NCPP offers trainings to local agencies on an a la carte basis. John mentioned the research roadmap website TSP2, SCOBS is interested in updating this. He showed the features of the website, including the ability to do searches. They discussed uses of the database and possible improvements. Suggested minimizing the number of studies and focusing more on preservation. The database could also be used for doing a better job of categorizing the subjects or for culling out projects, use a state committee.

## Equipment Technical Working Group Minutes

Tim Cunningham, KS DOT Presiding

**Monday – July 31, 2017 to Wednesday – August 2, 2017**

- Recap of the Purpose of the Equipment TWG: Tim started off with a recap of the purpose of the Equipment TWG and thanked everyone for their good participation.
- AASHTO SCOM Changes: Bruce Erickson and Lisa Kunzman discussed new changes being proposed by the AASHTO SCOM. Some changes include: Changing the name from SCOM to the Committee on Maintenance (COM); Promoting participation in the various TWG's by creating an official list of members who want to be part of the TWG; and possibly establishing "members or friends" from the TWG like TRB.
- Voting as Members Discussion: Concerns were raised about having a state select a person for a TWG who may not be able to fully participate since they have a need to be in other TWG's as well or who weren't established voting members. Discussed possible voting procedures and reasons to have a "vote". Tim discussed the difference between the TSP working groups and the Equipment TWG working group. A list was created from the Equipment TWG on July 31, 2017 for creating an Equipment TWG Roster of participants.
- Draft AASHTO Charge Statement for SCOM: Discussed draft AASHTO Charge Statement for SCOM and noted points of concern about the submitted draft document.
- Tim discussed the format for creating and submitting Resolutions.

Completed Research Activities for the Past Year- Presenter: Tim recapped the projects listed here and a progression of completion status known at this juncture.

- Equipment TWG: NCHRP Project Updates NCHRP Project Updates
- NCHRP Project 13-04, FY2014 - Guide for Optimal Replacement Cycles of Highway Operations
- NCHRP Project 13-05, FY2015 - Guidelines for the Development of Highway Operations Equipment Utilization Measurement and Management
- NCHRP Project 13-06, FY2017 Development of an Automated Tool to Assist in the Formulation and Maintenance of Long Range Equipment Replacement Plans

Implementation Strategies for Completed Research Projects – Discussion

- Discussed implementation strategies and next steps. Research may be done but work is still needed to get the word out. Members of the Equipment TWG and EMTSP are the key individuals to advocate and promote implementation of completed research projects within our industry and profession.
- Discussed possibly sending out a "global" email announcement pertaining to the research.
- Ideas such as having webinars to train and explain the completed research or making the research an AASHTO Guide.
- TRB could possibly host webinars after the research programs are out and in publication.
- NCHRP could possibly set up training classes especially on a regional basis.

Equipment Management Technical Services Program (EMTSP)

- Update status of 2017 Triennial Plan

- Update of content developed for the 2017 EMTSP Triennial Report given in May and the unanimous decision by AASHTO leadership to approve the TSP's petition and continued operation going forward
- Financial Update – FY2017 Contributions as of 07/12/17, provided a recap of who is current with payments. This information can also be found on the EMTSP website.
- EMTSP Strategic Plan was recently updated and can be found on the “Administrative” page of the EMTSP website. <http://www.emtsp.org/about-emtsp/>
- 2017-2019 EMTSP Work Plan was recently updated and can be found on the “Administrative” page of the EMTSP website: <http://www.emtsp.org/about-emtsp/>

Updates from the 96th Annual TRB Meeting in Washington, D.C., January 8-12, 2017

- John Hildreth, Ph. D, discussed what was presented at the 96th annual TRB meeting. He described the process of reviewing the equipment related papers and the need for State DOT's to participate on that process and AHD60. Dr. Hildreth discussed new research ideas, along with ideas and research needs driving the present research. A discussion ensued on new research topics, such as cutting-edge technologies being developed for maintenance equipment for the future. This would make a good topic to present at the 2018 National Conference.

Research Updates: Tim Cunningham and Amir Hanna, Presenters

- Guidelines for the Selection and Application of Vehicle and Equipment Warning Light Configurations, Colors, and Marking
- Guidelines to Calculate Total Cost of Ownership for Fleet Operations
- Update status of SCOR vote
- Update status of NCHRP actions
- Update status of AASHTO-BOD decision, if necessary

Develop New Research Problem Statement | Tim Cunningham and Jim Chupas, Presenters

- Develop New NCHRP 20-7 Research Problem Statements | Tim Cunningham and Selected Authors, Presenters
- A long discussion followed on new problem statement for 2018. Statement will be worked on throughout the week. Title of research statement is – “Guidelines for Decision Making for Repair vs. Replacement of Highway Maintenance Equipment”

Colorado's Autonomous Attenuator Project | Kyle Lester, Colorado DOT, Presenter

- Kyle gave a presentation on the Autonomous Attenuator project in Colorado

Updates on the VW Settlement Funds and How to Access these and Other Grants and Incentives: Lisa Kunzman and Joe Annotti, Gladstein, Neandross & Associates

- The presentation included how to access these funds and other grants and incentives. Much was learned on funds available for clean air incentives.

A short discussion ensued from the SICOP Chair looking for support from the Equipment TWG to include equipment related items in the revised Snow & Ice Guide. This would be a new addition for this guide. The Equipment TWG agreed on the concept of working with SICOP for revising the present Snow & Ice Guide.

Review of Working and Pending Research Projects | Tim Cunningham, Presenter

Discussed the new and refreshed research topics listed in the Research Problem Statement Ballot polled at the general session meeting during the June 2016 Joint AASHTO-EMTSP/TRB National Conference and Trade Show in Columbus, Ohio.

Noted below is the current Research Topic working status:  
(Highlighted items have been/ are being worked on)

Status/ Challenges

On-Going	Fleet Performance Measurement (Michigan DOT)
Accepted by SCOR 2017	Cost of Service Analysis
NCHRP 13-05	Equipment Utilization Measurement
NCHRP 13-04	Replacement Cycle Guideline Development
2018 Working	Repair/Rebuild vs Replace Decision Making
Accepted by SCOR 2016	Equipment Replacement Planning – NCHRP 13-06, FY 2017
Accepted by SCOR 2017	Updating Emergency Lighting Study

- Projects submitted in 2016 and approved for 2017 research
- Previously submitted 2014, Revised in 2015 and accepted by SCOR for funding in March 2016 – Scope of work to be developed so research can start.
- Research Project being developed for 2018
- All current research topics (Challenges) were identified in NCHRP PROJECT 20-7/ TASK 309 – Challenges and Opportunities: A Strategic Plan for Equipment Research projects were discussed. Two research projects will be started this year. Some projects are in process or complete and implementation needs to be discussed.

Development and Finalization of New 2018 Research Problem Statement: Tim Cunningham and Jim Chupas, Presenters

- Review Current Problem Statement
- Discussion, development and finalization of the 2018 research problem statement: Guidelines for Equipment Rebuild/Repair or Replace Decision. See attached draft, current as of August 29, 2017;
- Present the final version of 2018 Research Problem Statement during the Thursday SCOM Business Meeting

Development and Finalization of Proposal for 2018 Scan Tour: Tim Cunningham and John White and Selected Presenters

- Discussed drafting and submitting a SCAN proposal on State DOT Equipment Management. Mr. White stated that synthesis reports and research has already been done which makes a “SCAN” tour to various states the best approach to learn more about Equipment management. Discussion followed with approval to move forward with the SCAN proposal to AASHTO.
- A draft Scan tour proposal was presented to the SCOM at the Thursday close out session – “Innovative Organizational Approaches In Equipment Management At State Transportation Agencies”

National Performance Measurement Working Group Updates: Scott Ratterree, Michigan DOT, Webinar - Presenter

- EMTSP Oversight Panel and the National Performance Measurement Working Group collaboration of action items going forward
- New Performance Measures under development
- Scott presented a webinar on updates from the National Performance Measurement Working Group. This presentation contained activities from 2016 to present including the new added measurement. Letter of Appreciation was awarded to Scott Ratterree and others on the committee for the work they have done to keep this important work moving forward. "Job Well Done".

Discussion and Development of New 2018 NCHRP 20-7 Problem Statements: Tim Cunningham, Moderator and Doug Burke and John White, Presenters

- Best State DOT Fleet Management Organizational Structures and Business Models
- Synthesis purpose – informs state DOT management as to what Equipment Management is and answers the questions in the summary below.
- Potential Synthesis Outline: Introduction - What is Equipment Management; Equipment Management at State DOTs; How is it structured within each state DOT; What are its current roles and responsibilities within the agency; How long has it been part of the agency; Has it always been structured/roles/responsibilities as it currently is; if not, how else was it structured/roles/responsibilities; and General fleet statistics snapshot – use national performance measures
- Summary – Of all the components of Equipment Management, are there any state DOTs that have a centralized equipment management organization and structure doing all of them? What state DOTs come closest to this and are furthest from this? How does the performance measures, primarily the % within or past desired replacement cycle, compare between these states and the above? Do they correlate/compare?
- John gave a presentation on the 20-7 project statement which was developed and approved by the Equipment TWG to be submitted for 2018
- Some articles include:  
<https://www.constructionequipment.com/hexagon-g1-0>  
<https://www.constructionequipment.com/focus-equipment-management-functions>

Best Practices for Maximizing Used Equipment Values – Auction, Trade-in, Guaranteed Repurchase Programs - Doug Burke

- Standing Committee on Highways (20-07 projects), the responsible AASHTO committee meets twice a year during the AASHTO meetings (generally in May and November).
- 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).

Update on the EMTSP/NCPP Web-Based Training Course Development and Going Forward: Neal Galehouse, NCPP, Presenter

- Provided an update on the EMTSP/NCPP Equipment Management Training and Certification Program. What should be done when courses have been completed? Discussed the selection of future course topics. It was proposed to keep working on the present list and to re-ballot training topics and prioritize them during the 2018 National conference.
- A follow-up ballot will be issued to the member states requesting them to prioritize the next two training models to be worked on. The ballot was sent out to the State DOT Fleet managers and closes in early August.
- Discussed how this program evolved from the NCDOT Fleet Management Training Program into the AASHTO EMTSP/NCPP Equipment Management Training program
- During the 2014 National Conference each DOT completed a survey prioritizing their 10 most critical training modules.
- Dec. 02, 2014 the Oversight Panel voted upon and selected two (2) course topics to be proposed for TC3 consideration for Web-Based course development: Preventive Maintenance Concepts for Fleet Management and Benchmarking and Best Practices within Fleet Management
- The web-based topics were deemed suitable by the panel for their overall application to all levels of management and were submitted to TC3; TC-3 approved the proposed EMTSP WBT Courses - February 2015; What remaining or new courses are next?

New or Updated Website Activities, Enhancements and Publications: Dick Baron, NCPP, Presenter

- Dick gave a live internet driven presentation as to what website enhancements have been made and asked for audience input on other and new enhancements wanted. Many ideas to enhance the website were presented and will be addressed. The possibility of a webinar on the use of the website and to add some better search engines will be addressed by NCPP and the EMTSP Oversight Panel.

Activities for the Coming Year: Tim Cunningham, Presenter

- Continue overseeing EMTSP and maintaining the Strategic Plan
- Continue to update the EMTSP website with reference materials, equipment specifications, surveys and news articles
- Continue monthly and bi-monthly regional conference calls
- Continue other activities as listed in the TWG Work Plan
- Resolution #2 – Establish an Increase of AASHTO-EMTSP Annual Contributions. Resolution is currently on hold. What are the next actions to be taken?
- Discussion of the requirement to develop an approved Fund Management Plan for each Regional Partnership

TRB AHD60 - Committee on Maintenance Equipment Updates: John Hildreth, Ph. D, Chair  
AHD60 Subcommittee on Maintenance Equipment, Presenter

- 2017/2018 Updates for AHD60 Subcommittee on Maintenance Equipment
- New Research Needs Statements (RNS) identified
- 2018 TRB AHD60 Meeting

Review of Regional Partnership Accomplishments: Tim Cunningham, Moderator

- Discussion - Revisit Resolution to Increase Annual EMTSP Contributions

#### EMTSP 2017-2019 Work Plan

- Review current document
- Tim discussed that the 2017-2019 EMTSP Work Plan was updated by the Oversight Panel this past spring and urged those interested to review in on the website.
- Review of the EMTSP website for new ideas / enhancements (Connected to Website)
- Review Strategic Plan (Connected to Website)

#### 2017 Joint EMTSP Midwest/Northeast Regional Conference and Equipment Tradeshow: Tim Cunningham and Jim Chupas – Presenters

- Provided program highlights of the 2017 Joint EMTSP Midwest/Northeast Regional Conference and Equipment Tradeshow. The event was hosted by the Maine DOT and held in Portland, Maine on June 26-29, 2017.

#### 2017 Southeastern States Equipment Management Conference (SSEMC) Regional Conference and Equipment Tradeshow: John White, Presenter

- Provided program highlights of the 2017 (SSEMC) Regional Conference and Equipment Tradeshow. The event was hosted by the Georgia DOT and held in Jekyll Island on July 24-27, 2017.

#### 2017 Western States Highway Equipment Managers Association (WSHEMA): Lisa Kunzman, Presenter

- Provided a conference overview of the 2017 WSHEMA Regional Conference and Equipment Trade Show to be hosted by Caltrans on October 02, - 05, and 2017 in San Diego, California. Lisa likewise provided details associated with the equipment tradeshow and the agenda content and focus of the educational and technical agenda.

#### 2017 Highlights and Overview - WSHEMA Winter Maintenance Equipment Domestic Scan Tour: Lisa Kunzman, Greg Hansen and Dennis Halachoff and others, Presenters

- Gave an overview, comments, take-a-ways and provided educational highlights gleaned from the domestic scan which visited the DOT Equipment Fleets of MN, MI, OH, and PA during June 11-15, 2017.
- Summary Report is due September/October 2017 and will be posted on the EMTSP website along with the presentation files of the aforementioned states.
- Surveyed group on how many work with a Centralized Equipment Management business model. Some states are fully centralized and some are partially centralized. It was clear that the business models between state DOT's is very different.

#### 2018 National Equipment Management Conference and Equipment Tradeshow: Tim Cunningham and Jim Chupas, Presenters

- Joint conference venue with TRB
- Conference suggestions/comments
- Establishment of Conference Committees
- Provided and update of the work completed and yet to do in preparation for the 2018 National Equipment Management Conference and Equipment Tradeshow. The

Connecticut DOT will be hosting the event. The work in establishing conference committees will begin in a couple weeks

#### Closing Remarks:

Tim Cunningham reported that AASHTO is presently working on projects involving autonomous vehicles and other features for automation in equipment. The EMTSP panel needs to keep them in the loop when we are aware of any topics of this subject matter being presented at future conferences. John White discussed concerns about the future of DOT Equipment Fleet Managers. The concern is getting people to move into this field and to keep good fleet managers.

As discussed above one research problem statement and one scan tour were proposed to the voting membership and presented during the closing session.

## **Maintenance Operations Technical Working Group Minutes**

Brad Darr, ND DOT Presiding

**Monday – July 31, 2017 to Wednesday – August 2, 2017**

#### Introduction and Overview:

- Workplan recap, Projects completed, Liaison/liasing opportunities with other TWGs, Projects submitted but not selected, and Signing up for the TWG

#### Proposed Draft Charge Statement – SCOM:

- The charge had already been discussed at earlier TWG meetings where a number of participants at this TWG were present. Comments noted include: Document is too long/verbose, Needs to better align with SCOM's Strategic Objectives, What is the point, and Do we need this Charge document

#### Research Proposals:

- Snowplow Route Optimization – Kyle Lester (project champion) led the discussion
  - Dynamic nature of the tool – real-time routing recommendations to the plow Operators; it should take advantage of emerging CV technologies
  - Ideally, states would implement this tool after having gone through more routine (“static”) snowplow route optimization implementations
  - Action: Kyle will work on the RNS Submittal

#### Updates to the 1999 FHWA S & I Guide – Brad and Rick Nelson led the discussion

- While Chapter 8 of the Maintenance Handbook was updated relatively recently, the focus was primarily on environmental issues and, by and large, the overall document still contains a lot of dated information
- Amir Hanna is supportive of the effort and pointed out that a potential update to the S & I Chapter need to be budgeted appropriately (\$\$\$)

#### Clear Roads PFS Update – Clay Adams

- Presently 34 member states; Focuses on Practical Research Needs; synthesis and full-blown research projects; Evaluation of Winter Maintenance Chemicals and Winter Maintenance Equipment; Clay walked us through recently completed projects as well as ongoing projects; Website: <http://clearroads.org>; Any State DOT can join the PFS; contribution is \$25K / year

#### Aurora PFS Update – Tina Greenfield

- Just less than 20 current members; Annual contribution from member states is \$25K; Focus is weather-monitoring sensors and systems as well as the data outputs; Shifting focus from winter weather to comprehensive/year-round weather monitoring sensors and sensor systems; year-round adverse weather monitoring; Collaborative nature of the member states and information sharing
- Aurora was established over 20 years ago; Friends of Aurora event: members of the private sector are invited to the meeting in order to have candid discussions on DOT needs, perceptions of instrumentation and systems currently available, etc.; Recently completed projects and ongoing projects were highlighted like “Storm Simulator” project.
- Aurora, Clear Roads, and SICOP are sponsoring the 2017 Winter Maintenance Peer Exchange to be held in Pittsburgh, PA

#### TRB Winter Maintenance Policy Coordinating Committee Update – Tina Greenfield (Chair)

- Recent Committee sessions and events: joint SIRWEC/TRB meeting, April 2016, @ Fort Collins, CO; all presentations were pre-recorded and are now available online
- 2017 TRB meeting recap
- Upcoming January 2018 meeting; Call for papers under the theme “Sustainable De-icing Practices”; deadline for submittals is August 1st, 2017
- Research Needs Statements: C & AV Data for Winter Maintenance; Sustainable De-icing

#### Surface Weather Transportation Committee – Kathy Ahlenius (Chair)

- Eighty-five (85) members from 8 different countries
- Explained the scope of this committee, i.e., broader than just winter weather issues and structured with permanent committee members as well as friends of the committee
- Eighteen research papers were submitted last year, from which four presentation sessions were held at the 2017 TRB meeting in Washington DC; three (3) papers were published in the Transportation Research Record (TRR) #2613; two papers dealt with snow-fence issues and the third with micro-simulation parameters
- Committee collaborates with TSMO efforts and issues

#### SICOP Update – Rick Nelson (Program Coordinator)

- Highlighted the content and work that went on to update SICOP’s Strategic Plan, Program’s goals revolve around optimization / improvements of winter maintenance methods and practices; environmental protection and sustainability; and minimization / elimination of adverse winter weather impacts on safety and mobility
- Underpinning activities of SICOP: Build relationships with other AASHTO Committees; Promote national and international research activities; Promote BMP’s; Provide

technical assistance to those in need; Promote sustainable practices and methods; and Workforce development

- Discussion on the upcoming Winter Maintenance Peer Exchange to be held in Pittsburgh; SICOP will pay for one state dot employee to attend the meeting
- Rick explained the genesis of the defined seven most pressing/strategic winter maintenance issues faced by State DOT's and the coordination/collaboration with other (AASHTO and other) groups also grappling with these issues.
- Social media outreach efforts: [facebook.com/aashtoSICOP](https://facebook.com/aashtoSICOP)

FHWA Update: Gabe Guevara, FHWA

- EDC4 Weather Savvy Roads; Pathfinder; IMO Road Weather – Connected Vehicles; Work Zone Data Initiative and other Program Highlighes

Kentucky Route Optimization Project: Eric Green, KTI

- Discussed route tree optimization and breaking “invisible” barriers; noted background in Kentucky related to County Maps being prioritized by traffic volumes. All state routes: ESRI Arc GIS was used to optimize the routes. Plow Route Priorities. Salt Sheds. Time windows for each priority route: interstates are highest priority, Priority A = 2 hours, Priority B = 4 hours, and Priority C = 6 to 8 hours. This process looks to simplify the network as much as possible. Input from the drivers is key to verify model outputs. Simplify the network thru recharging in the middle of the flow route.
- Do we want the most efficient route, probably not? We should be looking for the most efficient / cost effective route. A Montgomery County example was shared. Discussion noted that there is no give for the truck operator, no consideration of compaction issues, and that the plow speed should be kept at 30 mph or less.

## Roadway Roadside Technical Working Group Minutes

Jerry Hatcher, TN DOT Presiding

### Monday – July 31, 2017

- Jerry talked about the draft charge statement and passed around a copy for everyone to read and mark up. Jerry collected comments from everyone who had them.
- There is a desire to have SCOM members aligning with an individual TWG
- A signup sheet was passed around for participants who would like to align with the Roadway Roadside TWG
- Presentations:
  - State Property Damage Cost Recovery Contract
  - No boundaries Pooled Fund Update

### Tuesday – August 1, 2017

- Presentations:
  - Maintenance of Roadside Safety Devices
  - Right of way as a Pollinator Reservoir

- Asset Management for Large Diameter Culverts – A Georgia DOT Case Study

### **Wednesday – August 2, 2017**

- Asked participants about ideas for research needs statements or proposed resolutions
- Presentation:
  - NCHRP Synthesis 493: Practices for High-Tension Cable Barriers | Richard Powers KLS Engineering, LLC
- Roadside Maintenance Issues / Best Practices Open Discussion
- Discussion on Guardrail Crash Investigation (Who/How are you collecting info)
  - FL: 3 phases, inventory, after crash data points, then researchers do analysis, program information is on the web under e-maintenance
  - NC: Does inventory, has regional traffic engineers that investigate crashes
  - TX: Maintenance employees take pictures, fill out checklist, but do no formal analysis
- Discussion on who has a mowing strip under cable guardrail (Do you know how many of each type of End Treatments do you have)
  - LA: Spend time and \$ on collecting data, looking at ways to collect critical data and maintain an asset data base. LA has a committee which collects the following data: (does it already exist, Cost/Benefit Analysis, what will the ownership plan be, and what do you want/need out of the data)
  - RI: It's a cultural thing, it has to be important to someone to keep it maintained
  - WA: Had to get a directive to have more happen in the design process that then carries over into construction (i.e. Bridge Load Ratings, Drainage Structures)
  - TN: Uses a contractor to photo log and Lidar, then use the combination of photos and point cloud to extract inventory data from: (Update interstates and NHS every year; Update other state routes every other year; Photo logging and lidar cost about \$50 per mile; and Another \$50-\$60 per mile for point cloud and extraction of data)
- Discussion on Safety Innovative work zone traffic control devices / interlock system.
  - MO: You will need an additional vehicle because of the weight
  - KS: Use some on 2-lane roads and in combo w/ cones. Used HSIP funds to purchase one set of 6 for all crews, looking for a better method to deploy/cover
  - FL: Use in advance of flagging operations
  - WA: Doing a pilot w/ 3-piece striping crews because they are lighter

## **Pavement Technical Working Group Minutes**

Anita Bush, NV DOT Presiding

### **Monday – July 31, 2017**

Welcome and Introduction:

- Covered the overview of the PTWG, its vision, mission, strategic goals and focus areas.

- Share NCHRP white paper and gray paper for research topics.
- Each State is allowed 3 delegates to AASHTO SCOM; recommending one delegate per state (minimum) for PTWG membership; discussion on Membership of the PTWG, asking attendees to consider membership in the TWG; Support members with guidance for the maintenance operations of the evolving transportation system, and addresses new challenges through leadership and innovation.

#### Review of SCOM Strategic Goals, Draft Charge Statement, and Focus Areas

- Statement is a little too wordy and doesn't flow well; AASHTO explained that the charge statement was written to quickly allow CEOs to identify potential members; Mainly driven by the reorganization and to create consistency in AASHTO; General discussion to maybe get rid of sample and create a new one from scratch; and Pavements should be more clearly used along with operations

#### 2017 Work Plan Goals and Accomplishments

- GOALS
  - Support effort to quantify pavement preservation to safety.
  - Support effort to quantify pavement preservation to risk based asset management
  - Support development of contractor and agency pavement preservation certification programs
  - Support TC3 in development of training
  - Review and provide recommendations for NCHRP 14-31
  - Need people to read the report and provide feedback
  - Recommended rewrite to make the goals more active and getting rid of support
  - Reiterate the point that we need a person to work on these goals
  - Discussion of TSP2 program and whether it lives in Materials or Maintenance or both
  - Discussion that asset management is an agency program
  - Clarifying that PTWG works on routine and preventive preservation work
  - Discussion on FHWA Pavement Preservation memo as to being funding driven in context and not as a technical document for treatment definitions
- ACCOMPLISHMENTS
  - IDIQ Webinar
  - TWG hosted conference calls
  - Promoted development of contractor and agency pavement preservation certification program
  - Use of Thin-Lift asphalt surface for pavement preservation tech brief review and comment
- ONGOING RESEARCH
  - Review of ongoing research
  - NCHRP 14-33 - Pavement Performance Measures that Consider the Contributions of Preservation Treatments

- NCHRP 14-37 – Guide Specifications for the Construction of Chip Seals and Micro surfacing
- NCHRP 14-38 - Guide for Timing of Asphalt-Surfaced Pavements Preservation
- NCHRP 20-07/380 – Review and Update of the AASHTO Maintenance Manual for Roadways and Bridges
  
- PTWG Annual Business Meeting
  - Completed Research – Implementation; Review of completed research (8 slides listing projects)
  - 2018 Work Plan: Quantifying the safety benefits of pavement preservation; Webinar on High Friction Surface treatments; Webinar on rut filling to reduce hydroplaning; Other treatments explicitly for safety; Identify agencies that considers safety alone as the trigger for a pavement preservation program (Todd Shields as potential lead); and Look at operational safety between preservation and rehabilitation projects and/or safety of pothole patching operations vs. preservation projects.
  - Support efforts to emphasize the importance of pavement preservation to asset management: Provide examples for how pavement preservation has worked in other States; Look at the ability to link pavement preservation to the lowest life-cycle cost; Note that this might come at the 11th hour for most states to utilize; and Note to reconsider the word benefits as there is a need to consider the drawbacks for pavement preservation as well
  - Support the implementation of a contractor and agency pavement preservation certification program
  - Support TC3 and other groups in the development if various training and certification programs (combine with contractor certification)
  - NCHRP 14-31: Look for commonality between this and EDC-4; and Look for points of synergy between ETG, EDC, TWG, others?
  
- 2018 Research Problem Statements
  - Prioritized prior to this meeting; Comment that the TAMP one is likely obsolete at this point; Focus on top three; and Recommend that the top one be reviewed for similarity with NCHRP 14-33 or 14-38
  
- 2018 Resolutions
  - Discussion of membership; and Support for Pavement Preservation Certification Program
  
- Technical Presentation
  - Round Table Discussion on Pavement Preservation Certification Programs: Discussion that a main driver of issues are related to workmanship and that is the reason for a certification program; Beta test shows that many contractors were unable to pass the certification test; and Discussed that this is in compliment to the AASHTO pavement preservation design standards

**Tuesday – August 1, 2017**

- PTWG Annual Business Meeting
  - Completed Research – Implementation: 5 volunteers for review of NCHRP 14-31 who will recommend whether or not to make it an AASHTO publication
- 2018 Work Plan
  - Dave from Transtec (High Friction) and John Roberts (Diamond Grinding) Volunteered for Safety: Larry Scofield addressed that operational safety should be workzone safety; Todd Shields and David Peshkin will look into safety as a trigger for preservation; NCHRP looking into rut filing to reduce hydroplaning and network level friction measurements; WASHDOT will lead asset management work plan item; and Change TC3 to TSP2 for support of certification program
- 2018 Research Problem Statements
  - TOP 3: 2017 PPETG Determining Pavement Preservation Treatment Lives and Related Pavement Life Extension; 2016 Guide Construction Specifications for Cold In-place Recycling (CIR) and Cold Central Plant Recycling (CCPR); and 2015 Development of Protocols and Procedures for Selecting, Monitoring and Reporting on Pavement Preservation Treatments for Performance Evaluation
- 2018 Resolutions
  - Pavement Preservation Specifications should be routed through SCOM to be an AASHTO specification; and Thanking Marc Hoelscher for his service to SCOM
- Technical Presentations / Industry Updates
  - Pavement Preservation Industry Update – Tim Harrawood, FP2: FP Mission Elements are Advocacy, Research, and Communications; FP2 has been a full funding partner in the NCAT/MN Road preservation group of experiments; Working with NCAT on a preliminary report; Participate in the Expert Task Group and the Emulsion Task Force; Publish the Pavement Preservation Journal; and Developing comprehensive information for distribution to legislators, contributors, and the general-public
- SHRP2 R26 Preservation on High Volume Roads: Tools and Implementation Update
  - David Peshkin, Applied Pavement Technology: SHRP2 R26 Completed in 2011; Guidelines and Report; Subsequent deployment a joint effort of AASHTO and FHWA; Based on knowledge transfer and implementation workshops: heard what agencies want and how they'd like to receive it; SHRP2 R26 Completed in 2011; Guidelines and Report; Subsequent deployment a joint effort of AASHTO and FHWA; and Based on knowledge transfer and implementation workshops: heard what agencies want and how they'd like to receive it
- FHWA and Pavement Preservation Expert Task Group Update - James Gray, FHWA
  - FHWA EDC-4 Pavement Preservation: Peer to Peer exchanges for Pavement Preservations practices; Updated specifications to be collected during these peer exchanges; Updated Pavement Preservations checklist and add video element;

Develop and deliver web based training; and Develop of best practice technology briefs

- PPETG
  - Developing article on the 10 features of a world class pavement preservation program; Creating a program to calculate the benefits of a pavement preservation program; Updating and combining research roadmaps; Developing performance measures for pavement preservation; and Looking at State preservation practices

### **Wednesday – August 2, 2017**

Discussion and review of proposed resolution to have the Committee on Maintenance responsible for the pavement preservation construction specifications

#### Technical Presentations

- Low-Cost Pavement Treatments to Improve Roadway Safety – David Merritt, The Transtec Group: Retrospective study on pavement performance: looking at crash data before and after pavement treatments were installed. Treatments applied to existing pavements that may effectively change the surface properties (texture, friction, smoothness, noise, etc.) Typically used for pavement preservation purposes (generally non-structural treatments). Also used to restore/enhance friction, smoothness, etc.
- DCMF Task B9: High Friction Surface Treatments: Develop reliable Crash Modification Factors (CMFs) and Benefit/Cost (B/C) ratios for High Friction Surface Treatments (HFST). Rigorous statistical analysis of before and after crash data from HFST treatments and Reference Sites. Provide guidance on the use of HFST to reduce roadway departure crashes. Site Types: curves, ramps, intersections; Focus on states with large HFST programs; States with systemic deployment; and States with numerous sites in place and planned.
- DCMF Task B9: High Friction Surface Treatments: Friction data collection is a large component of the data collection effort. Before and After friction for new sites (2017 installations). Friction data for existing HFST sites and lead-in/lead-out pavement. Monitor friction change for sites with historical friction data. Crash Data Collection; 3 years (minimum) before and after HFST installation; Roadway Information; Existing/underlying pavement; and Geometric information (curvature, cross-slope, etc.)

#### Concrete Pavement Preservation Training Update – Larry Scofield, IGGA

- Discussed the historical need and market pressures that make preservation viable and necessary. Some specific treatments discussed in detail: Diamond Grinding or Diamond Grooving; Partial Depth or Full Depth Patching; Dowel Bar Retrofit; Joint Sealing or Resealing; Slab Jacking; Longitudinal Crack Stitching; and Developing web based training and best practices guides.

Emulsion Task Force Update – Colin Franco, Chair AASHTO TSP-2 Emulsion Task Force

- To advance and improve the state of the practice for pavement preservation. Working collaboratively with: Federal, State, Local Agencies, Industry, and Academia. Develop SPG Spec and complete drafting of AASHTO STDs for remaining Emulsion treatments; QA Protocols for Emulsion treatments starting with microsurface and chip seals; Research, Studies, and Update PP Research Roadmap

Pavement Management Systems – Rick Hatheway, Agile Assets

- Pavement Management System Functions; Maintenance Management System Functions; and Integration between PMS and MMS

Maintenance Leadership Academy Update – Greg Duncan, Applied Pavement Technology

- Provided overview of the Maintenance Leadership Academy, along with who should attend along with where the next Regional training will be held.

North Carolina Chip Seal Best Practices – Scott Caps, NCDOT

- Aggregates: Coordination with Materials and Test; Coordination with Quarries; Compatible – anionic; Shape – cubical; Flat tends to bleed; Hardness – granite or slate; Doesn't fracture from rolling; Cleanliness – minimum fines; Dust tends to bleed and ravel; Uniform size – single or gap graded; and Surface properties – crushed face
- Emulsion: Emulsions are mixture of liquid asphalt, emulsifying agent, and water, with additives for stability; Durable, long lasting, rapid setting, good aggregate retention; Specifications require cationic rapid set emulsion; CRS-2L or CRS-2P – proven reduction in loose aggregate; Emulsion will have a slightly positive charge; Do not mix emulsion grades; and Application temperature 160-170 Degrees F