

**AASHTO Subcommittee on Maintenance Meeting, Clark County, Nevada
General Session & Business Meeting Minutes
Monday – Wednesday, July 18-21, 2016**

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

MONDAY – JULY 18, 2016

SCOM General Session: Mark McConnell, MSDOT

Call to Order / Color Guard: Mark McConnell, MSDOT

Welcome to Nevada and thanks to Nevada DOT for putting all of this together. A Nevada Military Quartet Honor Guard Team started off the conference with a nice flag ceremony and Pledge of Allegiance.

Welcome: Rudy Malfabon, Director NVDOT

Welcome to the Silver State and Las Vegas. Today we face plenty of challenges in which we are expected to do things quickly and more efficiently. We are losing knowledge and experience but continuing to make improvements. Our main focus is on doing preservation the right way with safety in mind while managing our assets and risks. We are also putting pavements, bridges, and ITS assets into our Asset Management Plan and contracting out a number of our regional ITS services. NVDOT is multi-modal with mag-lev and pods to transport goods and services. CV/AV is very important and we are attracting new businesses. We had a lot of growth in the past but our budget is tight and we don't have enough to do everything. Spending rescissions may also be looming. What we do supports economic development through safety, pedestrian, behavioral, and infrastructure improvements. Maintenance taps into people with a can do attitude. We have a lot of great ideas for moving traffic and for protecting our employees and the public. We welcome you again to Nevada and to Las Vegas.

AASHTO SCOM Update: Mark McConnell, MSDOT

Welcome and thanks to our vendors and sponsors for their support. As Chair of the Subcommittee on Maintenance I am honored to be here. We are all challenged to do the best we can with what we have. During natural disasters our dedicated staff is out there cleaning up the roads. Last year we updated and approved our strategic plan and provided support to our members through innovation and meeting our customer's expectations. Our goals are challenging but important things that we need to focus on. We need more funding to maintain our expanding highway and bridge networks and can't afford to continue to kick the can down the road. There is a great need to better communicate our maintenance budget shortfall with our legislators. Workforce development and communication are key initiatives with less experienced and younger staff coming on board. Our TWG's are tasked with working on various strategic focus areas, preparing research statements, resolutions, and work plan initiatives. Please participate. AASHTO is currently updating its strategic plan and committee structure

through its Draft Scenario for Revised Committee Structure which includes: Transportation Round Table, Councils, Special Committees, Coordinating Committees, and a Managing Committee. A recent Subcommittee on Highway's update presented the development of proposed round table topics and regional meetings and issues at its business meeting and received lots of comments. SCOM TWG participation is very important and is where the work gets done year round. We encourage you to please participate. Worker and driver safety is extremely important and people are expecting more from us. Thanks again for what you do to maintain our nation's infrastructure.

FHWA Welcome / FAST Act Maintenance Update: Bryan Cawley, FHWA
Various objectives and other activities of the FAST Act are very important to the maintenance community. Overall funding for all modes is approximately \$305 billion dollars. Many people are concerned about the possibility of an upcoming FAST Act funding rescission. This is a pulling back of some of the money that was promised to the States that has not already been obligated. Currently our highway and bridge contract authority is scheduled to grow each year from \$41 billion in year one to \$47 billion in year six subject to appropriations. Funding growth varies across all programs from 0% to 15%. Changes to NHPP and STP programs include shared program changes to the federal lands and tribal programs. Research, development, training, education, highway design, and other provisions were also included. FHWA is proceeding forward with its Every Day Counts initiative and other activities. Pavement Preservation (When, Where, and How), and Road Weather Management – Weather Savvy Roads. Pavement and Bridge Preservation ETGs each have key initiatives to work on. Unmanned Aerial Vehicle (UAV) and Strategic Implementation Team (SIT) activities are being focused on. The Work Zone Management Clearinghouse has been very useful in getting the safety message out to our customers. We plan to continue our research efforts in support of highway and bridge maintenance. FHWA is also leading a new initiative to update the NHI Maintenance Leadership Academy training course (NHI-134063) and we look forward to working with you on this initiative.

AASHTO Update: Gummada Murthy, AASHTO
As a result of the FAST Act reauthorization bill, AASHTO is currently focusing on reorganizing to include an AASHTO Policy Division and working to secure stable funding. As such, AASHTO is evolving from a more traditional focus on highways and bridges to being multi-modal. We are updating our strategic plan to include new strategic goals and restructuring opportunities where we plan to look for cross cutting themes leading to a reduction in duplication of effort. As part of AASHTO's updated strategic objectives the CCR Steering Committee developed nine evaluation criteria to assist with rating the proposed restructuring scenarios. This includes an updated AASHTO Committee Structure and Draft Restructuring Scenario with Councils, Special and Coordinating Committees, and a Managing Committee. A lot of discussion is ongoing regarding the proposed draft restructuring scenarios including how does this affect our members? Our next steps include reviewing feedback from the various regional and steering committees and developing an implementation plan in 2017. As part of our next update of the AASHTO Green Book we plan to focus on flexibility in

design. SHRP2 updates continue and will also include an implementation assistance program. Resources are available on the AASHTO website.

Connected and Autonomous Vehicles on Maintenance: Gummada Murthy, AASHTO (Panel Discussion: Paul Pisano – FHWA, John Barton – Texas A&M University, Tracy Larkins – NVDOT, Andrew Roberts – Royal Truck & Equipment, and Dean Deeter – Athey Creek Consultants) CV/AV is moving very fast and has already taken roots in several of our AASHTO maintenance applications.

(Paul Pisano, FHWA) NHTSA and the ITS Joint Program Office have a history and connection to the maintenance community and provide a national perspective to CV/AV initiatives related to research, policy, rulemakings, and promotion of deployments. What are the opportunities we have ahead of us related to management strategies, data needs and sources, and what's next? Many of these activities are related to our road weather, traffic, pavement, and asset management systems.

(John Barton – Texas A&M) We must focus on strategic initiatives which lead to cross cutting and collaborative research between automated vehicles, human factors and connected vehicles. Connected vehicles are making their way into the market very quickly and are sharing information more effectively. Sharing our road weather information is important. We also see platooning as being a great opportunity. Initial implementation of CV/AV initiatives has also allowed us to see the importance of policy research. In order for all this to work we have to prove that it will work.

(Tracy Larkins – NVDOT) In Nevada we were the first to create AV regulations and a Testing Program which includes AV, Commercial Vehicle, and UAV testing. Nevada Senate bills allowed us to test and operate AV active controls and monitoring. In 2016 the governor established the Center for Advanced Mobility. National policy related to CV/AV has also been established through AASHTO and AAMVA workshops. An Integrated Mobile Observation project has also allowed us to connect our snowplows through vehicle to infrastructure initiatives and integration. It's all about communication and our reliance on real time data.

(Andrew Roberts – Royal Truck & Equipment) We are currently developing a pilot program for a self-driving Autonomous TMA (ATMA) where no driver is needed. This is an aftermarket technology built on three premises, GPS waypoint navigation pre-programmed, remote control driving, and leader/follower aspect. There is a lot of strong interest in removing the driver from the vehicle.

(Dean Deeter – Athey Creek Consultants) We are currently working on an 18 month study to create an Introduction to V2I Deployment Coalition. It's organized into five working groups which are working on various initiatives, research, partnerships, guidance, and standards. Sixteen deployment issues were identified along with initial goals and focus areas related to intersections, end of queue warnings, work zone management, and curve warning systems. Seven policy perspectives are also being addressed. Early findings include results related to standards context drawing, deployment guidance feedback, definition of research activities, increased interaction with automobile manufactures, and a survey of planned and most beneficial V2I deployments.

TUESDAY – JULY 19, 2016

Technical Service Program Updates:

SICOP TSP Program Update: Rick Nelson, SICOP

SICOP is a product of SCOM from back in 1992. We had 33 member States last year and growing. The SICOP Steering Committee manages everything for us and we have representation from each AASHTO Region. SICOP assists with implementation and specialized support on winter maintenance activities for member states. We are also a communication conduit into the other groups. Some of our flagship activities include: RWIS/AI computer based training, list serve, best practices, and peer exchanges. Through the Strategic Winter Maintenance Program we promote best practices and perform various surveys of which responses are posted to the SICOP website. The website has recently been retooled, <http://SICOP.transportation.org>. Four case studies were shared for PIARC Winter Service (2012 – 2015) and (2015 – 2019).

TSP2 Program Update: Larry Galehouse, NCPP

TSP2 is a product of SCOM from back in 2003. Our oversight panel is linked with the Subcommittees on Highways, Bridges, Design, Maintenance, Materials, and Asset Management. The purpose of the TSP was shared in video format. Additional information is available on our website at www.tsp2.org. Our Regional Bridge and Pavement Preservation Partnership meetings have been well attended. We have also adopted several FHWA Task Forces.

EMTSP Program Update: Lisa Kunzman, CalTrans

EMTSP is a product of SCOM from back in 2008. This is a fabulous resource and a great value for our members. Our Vision and Mission Statements summarize our desire to provide materials and support to our members. Our Oversight Panel is made up of a diverse group of individuals. Additional information is available on our website at www.EMTSP.org. All four of our partnerships are active. With our NCHRP Research in Progress, three of these are in progress. We typically receive voluntary contributions, \$3,000 from each member state. Member contributions help us to maintain the EMTSP website, contact list, video library, presentations, performance measures, and minutes from various conferences. The result of our research voting allows us to provide a prioritized list of research projects to our roadmap. Performance measures are up and coming. With our workforce development initiatives we have provided training to fleet managers. Come and join us at our Equipment TWG breakout sessions.

TC3 TSP Program Update: Jim Feda, SCDOT

TC3 is AASHTO's training TSP and was originally established in 2000 through a pooled fund program. We are focused on a national approach to training. Our membership contribution is \$20K per year from each member state. In 2013 TC3 transitioned to an AASHTO TSP. We have a broad curriculum of over 110 courses, half of them being applicable to the maintenance community. Most of them are web-based and available 24/7, even with mobile applications. TC3 products and services are developed through a collaborative process. Benefits include free access to on online training, State Sharing Program, and the TC3 Counsel. Since becoming a TSP we have seen new tools and

resources, curriculum growth, a new curriculum hosting system, increased use of our courses, expanded partnerships on new projects, and updates and new courses being developed and hosted on a new AASHTO Ware LMS. Goals for the future include increasing the following: support, volunteers, promotion, technology, and private contributions. Additional information can be found at: <http://tc3.Transportation.org/>

TRB & NCHRP Update: James Bryant, TRB and Amir Hanna, NCHRP
(James Bryant, TRB) TRB is part of the National Academies of Sciences, Engineering, and Medicine. In its simplest form we do research, convene, and advise. TRB is a Cooperative Research Program. The next annual TRB Meeting will be hosted in Washington D.C. on January 8-12, 2017. Our webinar program hosts numerous webinars of interest to the maintenance community. There is also a Practice Ready Papers Database for your use: <http://prp.trb.org>. TRB is using a new meeting format which is very successful where a majority of meeting is devoted sharing new ideas.
(Amir Hanna, NCHRP) AASHTO's research program started in 1962. Today there are eight fields of research and twenty five subject areas. Annual funding is about \$40 million. NCHRP has a goal-oriented research program which responds to the needs of the states with applicable research results. My goal is to share an update of a range of approaches and products with you and an overview of NCHRP projects completed, in progress and anticipated... Additional information can be found at: <http://www.trb.org>.

WEDNESDAY – JULY 20, 2016

Nevada DOT State Maintenance Update: Anita Bush, NVDOT
I would like to take a minute to introduce our NVDOT Leadership Director, Deputy Directors, and Assistant Directors... Nevada is a very rural state with 4,782 rural highway miles and 618 urban highway miles. We also maintain 1,952 bridges. Nevada's maintenance expenditures are approximately \$100 million per year for materials and supplies. Contract payments by type of work and by district are tracked. We have a Maintenance Achievement Program which began 3 years ago. Our 2012-2014 Scorecard is used to track performance levels, set targets, and make adjustments based on requirements. Our Maintenance and Asset Offices consist of architecture, asset management, betterment contracts, emergency management, maintenance contracts, maintenance management systems, open term contracts and maintenance research. Anita closed by thanking her supporting staff for putting together this conference.

Current Status of Performance Management (Data, Analysis, and Reporting):

Nathaniel Coley, FHWA

As part of preparing for today's presentation I did the economic analysis of MAP-21 and the current FAST Act reauthorization bills. I also plan to provide an update and principles on the current rule makings. MAP-21 included TPM requirements and states are at different levels of being able to meet them. Safety was first and states are doing a good job measuring this already. Pavements and bridges came next and then CMAQ and freight on the interstate. The heaviest lift is for areas we are not already measuring. We also included the statewide and metropolitan planning processes. Asset

management guidance is underdevelopment. Today we are reporting differently and at a level of transparency not seen before. System performance measures and the MPO Coordination NPRM is open until late August 2016. The final rule for asset management is in late December 2016. For all of these performance measures we need achievable targets, reporting rules we can meet, and an annual assessment of progress. Proposed minimum performance condition levels and targets on the NHS will be tracked as part of our transparency requirements. For additional information on infographics and performance reports see: <http://www.regulations.gov/docket?D=FHWA-2013-0054>.

AASHTO NTPEP Update: Enray Robinson-Perry, GADOT

NTPEP was established within AASHTO in 1994 and focuses on cost effective evaluations for State DOTs related to common product evaluations and plant inspections / auditing. NTPEP is a public private partnership whose main goal is to reduce duplication of effort. NTPEP has 4 regions and an executive committee. Products are evaluated according to nationally recognized test methods related to various focus areas and technical committees which include maintenance products. Industry participation is also included which is a part of developing the work plan. NTPEP helps industry by providing an equal playing field for lab to lab comparisons. There are 25 technical committees where various products are evaluated and audited. Thus far over 340 products have been evaluated during 2016. Its DataMine 3.0 website with improved search features is the nucleus of NTPEP and is accessible to everyone. Incorporating NTPEP into your QA program can help with reviewing work plans, DataMine, and evaluation of cost savings. NTPEP does not develop new products or give pass-fail assessments. It also does not do QA evaluations or replace state evaluations. Annual meetings are held for contributing states to assist with travel and networking. The next meeting is scheduled for March 2017. www.Ntpep.org.

NCHRP Domestic Scan 14-01: Katie Zimmerman, AP Tech, Mark McConnell, MSDOT (Mark McConnell, MSDOT)

Today I would like to discuss leading management practices in determining funding levels for maintenance and preservation. We all know what we need to do but if we don't have enough funds how do we do it? I want to start by giving an overview of the NCHRP Domestic Scan and its findings and recommendations. Which states are successful in getting funding for their maintenance programs? How did they determine funding levels and distribute them to regions and tasks? How did they optimize budgets with performance measures data and assessments tied to their maintenance needs budgets? We have the information to get to the level of need but we don't get the funding even when we share our finds and goals. We did a desk scan first to identify who had the best practices and we determined that FL, UT and WA were our leaders. States participating included: (WA, UT, CO, AZ, WI, AR, MI, TN, NC, VA, FL, VA, ME). (Katie Zimmerman, AP Tech)

We organized our findings and recommendations into five different areas. Findings: 1) Agency culture; 2) relationships with elected officials; 3) performance measures and targets; 4) data; and 5) program support. Many agencies had varying levels of confidence in the data. In most states Maintenance had a seat at the table to defend their needs and was held accountable for meeting goals and providing continuous

improvement and feedback. QA reviews are taken very seriously. We need a strong relationship with elected officials built on trust and regular communication. FL DOT has a government liaison position in each district to educate and inform the legislature on what their needs are. Achievable targets are being used to support investment levels based on available funding and resources. Manage to the targets don't just go for the A's. Data has to be accurate and reliable or you can't compete for dollars. No data in the inventory can be older than 5 years with new assets being added within 90 days. Some states have rater training programs which are performance based and have established business processes, implemented software tools, and use available resources creatively to support their programs. Recommendations: 1) Establish PM and targets that drive the development of a unified agency culture. 2) After establishing agency PM and targets, allow regions and districts flexibility in planning work activities. 3) Develop customer-driven targets to convey need and achievable targets for accountability. 4) Develop national guidance on data quality, governance, and utilization. By adopting these recommendations States will be better qualified to help get the budgets they desire. Implementation activities include disseminating information, posting products, webinars, presentations, technology showcases, peer exchange, clearinghouse, guides, and research statements on data quality and auditing the review process. www.domesticscan.org. Google "Scan 14-01" for additional information.

Use of UAV's for Maintenance/Bridge Inspections (Steve Cook, MIDOT)

I would like to begin by discussing Unmanned Aerial Systems (UAS) for transportation purposes. When I saw this piloted it caught my eye and we did an RFP. We must care about the data and how it is used. Could sensing devices get into the air, look at the platforms and what could be done? Michigan Tech is doing another RFP to look closer at the data. Videos are being used to show us what these UAV's can do. Ford secured a license agreement to use a UAV to map out through Lidar and find its way back up to a mile away and bring data back in real time. Hunting drones have been attached to eagles to capture video. UAVs are used to map out ice fields and determine where ships should go. The popularity and proliferation of UAV's is exponentially increasing, however all of these must be registered as of 12/21/15 because air planes can hit them and accidents can happen. For the most part people don't know what they can and cannot do with them. There are safety concerns and the need for ensuring accountability. Owners need to acquire an FAA Certification of Authorization (COA) and it takes about 9 months to get certified. UAVs are not allowed to fly within 500 feet of moving objects. FAA has lightened up some on the exemptions. The UAV process of needing a pilot and a spotter is no longer necessary. You need to pass an exam, get the COA, and apply for a 333 registration. We can stop them from being flown in and around our ROW. There are challenges for public sector use with FAA regulations, state legislation, internal policies and procedures, public perception, and liability. We don't know how to manage these now. By using UAVs we can take people out of harm's way, eliminate work zones, see huge cost savings and efficiencies, legacy liability, and economic development. This is a game changer and will happen with or without us. We have looked at aerial bridge maintenance assessments and asset management inventories and confined space inspections, traffic operations monitoring, photo imaging, and Lidar. Some UAVs can float on water and fly out again. These are non-

destructive for bridge evaluations and transportation infrastructure forensics. They can be used for traffic operations and construction site imaging. UAV thermal infrared scanning needs sunlight to help determine concrete delamination and varies on time of day. MI State Police is using them for crash reconstruction which eliminates a total station and a body to do this. There are close proximity and night and weather limits to consider but there are huge benefits to do this. Manual surveys vs Unmanned Ariel System cost comparisons have been done. Manual costs are about \$4,600 and UAVs fall between \$250 and \$500. MIDOT began a two year UAS Phase II research project in April 2016. Results will be shared when complete.

Dalton Highway Flood Response Disaster in the Artic (Michael Coffey, Alaska DOT)

When this flood occurred in 2015 we had to close 25 miles of roads. It cost \$17 million to manage the event and make repairs. From Fairbanks you have to go north to Prudhoe Bay and it's called the road to the bank. When the road closed it was a bad thing for Alaska because this is an important road. The first flood was in March 2015. Earlier rainwater runoff contributed to the flood event and when temperatures dropped to 40 degrees below zero we had up to 14 feet of ice in some locations. We used Synthetic Aperture Radar (SAR) images to help recreate the roadway alignment. Our crews did a valent effort but nobody had ever dealt with something like this. We tried to keep the trucks moving and were off the road overnight due to weather and we lost the road again. 1,100 trucks were backlogged on both sides of the closure and essential commodities like fuel, food, and chemicals could not be delivered. Oil companies increased their emergency operation in an effort to get their vehicle across the tundra, one load a day. Gas prices shot up from \$5 to \$10 dollars a gallon. Many were asking, where is the Dalton Highway? We built dams along the side of the road with a trenching operation to get water away from the road and put a channel in where the river was supposed to be. We did aerial sanding to try and melt channels so that the water could flow again. We set up a Unified Incident Command Center in April to assist with communications. This was very successful. People were asking is the road safe for trucks? We had limited re-openings for preauthorized traffic and loads. When spring break up occurred the highway closed again due to spring melt off. Snow became water as far as the eye could see. We did an after action review and raise the level of the road by 10 feet that summer and we didn't have any problems this year.

NCHRP Project 14-29 Assessing, Coding and Marking of Highway Structures in Emergency Situations (Dr. Michael Olsen, Oregon State University)

As part of NCHRP Report 833 I'll be addressing project objectives, how to develop a process for assessing highway structures in emergency situations, guidelines, training and implementation materials, facilitating acceptance and adoption, and how to improve coordination with other agencies involved in emergency response. We first did a literature review and then looked at available assessment procedures for doing building assessments, postings, and evaluation stages. We reviewed assessment procedures for DOTs related to emergency situations for bridges and earthquakes. The team sent out a questionnaire on what are your needs, training and implementation materials. Guidelines were prepared to help fill in the gap while looking at desired features which are practical, cost effective, easy to use, multi-tiered, and with redundant flexible.

Products included: Assessment Process Manuals, and a Smart App Developer's Guide. The manual addressed various issues related to infrastructure, types of events, damage matrix and scale, coordination, developing emergency plans, prioritization, and assessing, coding, and processing guidelines. Data infrastructure and asset management is key to prioritizing limited resources. After the event you need to do rapid assessments and MBE inspections to get a quick big picture look at what's occurred. You may want to have agreements with other agencies to help with these assessments. Your coding and marking system needs to be common and communicate the status of the structure. This product was developed as a flip book with picture photos to be used in the field. The more information you can quickly gather helps you to get a better funding assessment. Categories should include: no damage, minor, moderate, and severe damages. Install structure placards and decals with general information and who did the assessments. There are a lot of training materials for generalist, managers, engineers, and basic responders and PDA quick refresher. Mock scenarios and drills are helpful for testing technologies and smart app and functions for particular apps for data gathering and developing routes.

Maintenance Peer Network – MQA Library Update (Jennifer Brandenburg, Volkert & Lacy Love, Volkert)

(Jennifer Brandenburg, Volkert) What if you had your own personal advisor to help you with highway maintenance problems? Someone you could ask, how much would you be willing to pay and what if it were free? The Maintenance Peer Networks have assisted in collecting this type of information. The first MPN was held in Seattle, WA in 2014. This helped us to understand that we need to continue dialogue more than once a year. These workshops were done in four different locations. We brought leaders together to talk about maintenance and foster relationships. It also reviewed the purpose and goals and research needs. The MQA Library was one of the big things that came out of these workshops.

(Lacy Love, Volkert) What's next for us? Regional Reports from each of the MPN will be posted to the AASHTO website. Report contents will include: key takeaways from the peer exchange. Lessons learned are broken into six topics for each of the regional reports. There are discussion notes, next steps, attendee lists and exchange presentations as well. We need to have detailed data to back things up. What are the key research ideas we can put forward? AVL and GPS were hot topics during the exchanges. What features are best to use? We need to do research on setting levels-of-service and performance measures. There are also public expectations transferring this into metrics. The reports and presentations are available on the AASHTO website. The MQA Library initiative with NCDOT is about reestablish this library. Website features include: leading edge technology, open to everyone, search engine, and search by multiple key attributes. This is scheduled to be up and running by the summer of 2017. Please send us any documents related to MQA within the last 3 to 5 years you would find useful if posted on the website. Our budget will allow us to maintain the MQA Library for up to 3 years.

NCHRP Project 14-31 Framework for Pavement Maintenance Database System (George White, Pavia Systems Inc.)

As part of this effort we are sharing our research results and collecting more data to answer additional questions on which maintenance treatment will be effective. What was done and why it's important to look at the research results? Our infrastructure is aging and our streets and highways are 28 years old on average and we need to find a way to maintain and preserve our assets. Was this the right treatment at the right time to extend my pavement life effectively? Do we have the data to help answer this question and what does it look like? Where are the tools I should put in my tool box? Key objectives include developing a database system to include uniform descriptions of maintenance activities. 1. Define common data elements and terms. 2. Develop the database framework. We need examples of desired analysis to help us answer the big questions like pre-treatment vs post-treatment. What are my most effective options? How do you evaluate performance of your treatment choices? What data should be captured, when, and by whom? A list of data typically collected and not collected was shared. Where does your data currently reside, in a pavement maintenance database? We need consistent data collection for our database framework and it needs to accommodate different size segments which maps back to the source data. Cluster data can be used to perform data aggregation and workflows for query and extraction. Key takeaways; wide range of data collection practices, questions demand consistent data, and database framework provides to help with the other things. Looking ahead more research is needed. We need to implement and explore the results of the database framework. Having guidance for how to collect the data and working with others on key performance data for other activities is important.

Nevada I-15 Corridor and Bypass Projects (Dale Keller, NVDOT)

Project Neon in Las Vegas is a \$1.6 billion program along I-15 in downtown Las Vegas which has been 20 years in the making. The project limits stretch from Sahara Blvd. to the spaghetti bowl and has over 300,000 vehicles and 3 crashes per day. The project goals are to improve safety, reduce congestion, provide better connectivity, and improve the HOV system. Five key elements are being implemented but no new lanes. We are looking at other transportation modes and options and at maintainability of what we currently have. Also we plan for no irrigation, low maintenance, vandal resistant, drought tolerant, and native species. Emerging technologies include active traffic management with an ATM system which collects and disseminates data to help commuters make better decisions. The worst incident is not the first one it's the second one. It's our goal to provide consistent and reliable data using 3D visualizations. It's a very unique project and early on it's difficult to tell what the annual maintenance cost of this system will be.

THURSDAY, JULY 21, 2016

SCOM Business Meeting: Mark McConnell, MS

Thank You: Mark McConnell, MS

Roll Call: Steve Lund, MN; Determination of a quorum. (Approximately 29 States were present); without a quorum this resolution was reviewed and no official ballot taken. This

will officially be done later by email vote. AL, AZ, CO, CN, DE, GA, IL, IN, IA, KS, KY, ME, MD, MI, MN, MS, MT, NE, NV, NC, ND, OH, OK, RI, SC, TN, TX, VA, WA.

Resolution History and New: Steve Lund, MN; 2016: One Resolution to Support the Update of the FHWA Maintenance Leadership Academy – 12 Week Course.

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

TWG Reports: Russ Yurek, MD; Bridge, Pavement, Equipment, Roadway/Roadside, & Maintenance Operations TWGs; See report out slides for details. All TWG Chairs reported out on their 2016 Work Plan Accomplishments and 2017 Work Plan Proposal (Safety, Asset Management, Environment, Workforce Development, Communication, & Research), Research Implementation Recommendations; New Research Problem Statements, and Proposed Resolutions.

TWG Chairs/Presenters for Report Outs:

Bridge TWG: Jeff Milton, VA

Pavement TWG: Anita Bush, NV

Equipment TWG: Tim Cunningham, KS

Roadway/Roadside TWG: Jerry Hatcher, TN

Maintenance Operations: Brad Darr, ND

Collect Research Ballots: Jon Wilcoxson, KY

Regional Reports: Russ Yurek, MD; See report out slides for details. Regional Meeting minutes are also available.

- NASTO – Russ Yurek, MD
- SASHTO – Heath Patterson, MS
- MAASTO – Steve Cook, MI
- WASHTO – Lonnie Hedrix, AZ

TRB and NCHRP Update: Amir Hanna, NCHRP; NCHRP Overview, 2018 Problem Statements & Moving Research into Practice.

Future AASHTO SCOM Meetings: 2017 Rhode Island Subcommittee on Maintenance Update: Joe Bucci, RI – Subcommittee Meeting. Joe gave an overview and invited everyone to come to Providence next year. Additional SCOM meetings are scheduled for 2018(NC), 2019(MI), 2020(CO), and 2021(ME).

Other Business: Steve Lund & Russ Yurek, Thank you everyone for your assistance and for being here this morning.

End of Minutes