Minutes
AASHTO Winter Maintenance Technical Service Program (WMTSP)
Committee Meeting

July 12-13, 2008
San Diego Room, Monterey Marriott
Monterey, CA

Attendees
Rick Nelson, NV DOT, AASHTO Region 4, Chair of WMTSP
Ken Kobetsky, AASHTO Staff
John Burkhardt, IN DOT, TRB Winter Maintenance Committee Chair
Roemer Alfelor, FHWA
Bill Hoffman, NV DOT, AASHTO HSCOM Snow & Ice Task Force Leader
Wilfrid Nixon, U of Iowa, TRB Surface Transportation Weather Committee Chair
Greg Parker, County Engineer, Johnson County, IA, NACE representative
Mark DeVries, McHenry County, IL Engineer, APWA representative
Lee Smithson, AASHTO SICOP Coordinator

Chairman Rick Nelson opened the meeting with a review of the agenda. No additional items were added or none deleted or deferred.

Outreach & Discussion of Outside Projects That WMTSP Members Are Involved In
• NCHRP 6-15, Testing & Calibration Methods for RWIS Sensors and Aurora Project 2006-02. Currently, most transportation agencies using ESS sensors rely on vendor-developed testing methods, or they accept the sensor data without regular testing. NCHRP determined that practical guidelines were needed for testing ESS sensors to evaluate whether the sensor is accurately representing actual conditions at the installed site. The NCHRP 6-15 research project was undertaken to develop standard field test procedures for in-place pavement sensors. Stakeholders were surveyed to determine their accuracy requirements for pavement temperature and surface condition data. The survey also provided information about the types of sensors used. Laboratory tests were performed on six passive ESS sensors and one active ESS sensor. Field tests were conducted in Minnesota, Nevada and Pennsylvania. The research project developed test protocols, conducted tests and analyzed and documented the results of laboratory and field validation testing to measure various performance parameters of pavement sensors. The 331 page final report for this project is available at the TRB web site www.trb.org/TRBNet/ProjectDisplay.asp?ProjectID=882. Aurora has programmed $70,000 for Project 2006-02 “Pilot Test of ESS Sensor Testing Guidelines”. The strategy was to create and acquire six kits for field testing ESS surface and atmospheric sensors and pilot test the 6-15 guidelines in up to three Aurora member states and publish the results and findings. The project champion retired and the project is currently on hold. A conference call of the remaining project team will be held this summer to determine future directions for the project. Rick Nelson asked Bill Hoffman to be a liaison for WMTSP on this project. Rick advised
that one of the problems the project team had with this project was it required the
closing of a lane of traffic for about two days to run through all the protocols. Part of
that was getting familiar with the procedures, so it was estimated the testing will go
faster but it will still take about half a day even with an experienced crew. The project
status can be followed at the Aurora web site www.aurora-program.org.

- NCHRP 6-17, *Performance Measures for Snow & Ice Control Operations* has been
completed. The objective of the research was to recommend methods and measures
for assessing agency and contractor performance in snow and ice control operations.
The project is complete and the final report was mailed to state DOTs on May 1, 2008.
Bill Hoffman received a copy of the report and read it prior to the meeting. He felt
NCHRP 6-17 report did an excellent job of summarizing the survey information from
their international and national sources. The report also did a good job of
summarizing Bob Blackburn’s work using the 7 pavement snow and ice conditions
(PSIC) found in NCHRP Report 526. The difficult part will be convincing States to
adopt a uniform set of condition or performance standards. WMTSP needs to follow
the progress on NCHRP 20-74A, “Development of Service Levels for the Interstate
Highway System” which is currently underway and scheduled for completion
September 30, 2010. The objectives of this research are to develop a standard way to
describe the service level of Interstate System assets and a process that agencies can
use to prepare a template for describing service levels. Service levels and their
indicators will be uniformly defined for the Interstate System as a whole, but service-
level measures (how indicators are consistently assessed), could vary from one state to
another. The results of the research would be utilized by agencies for assessing and
benchmarking the performance of their Interstate Highways. WMTSP discussed the
difficulties in getting the service levels and their indicators defined and approaching
the problem of uniformity. It will likely be more difficult than getting agreement
when developing the MUTCD. Each state already has their own standards, their
climate varies dramatically, and the different climate regions have a wide range of
equipment and preparedness. The type of winter storms will also affect inputs and
outcomes. Some winter storm indexes have been developed, but they need to be
tested. The Midwest has developed an index that is showing promise. Bill Hoffman
volunteered to take that index and see if it would work in the Nevada/Utah interstate
corridor. The level of funding available will also be another issue. There will be many
legal issues to be addressed in examining the uniform level of service concept.
WMTSP then discussed that level of service was ranked very high (#3) by the
National Winter Maintenance Peer Exchange attendees and what outcomes were they
looking for. Most felt the attendees were looking for a yardstick to measure their
performance in comparison to their neighbor and also that the public wants to be able
to go from state to state and have winter maintenance to be fairly consistent. The
SHRP 2 focus on reliability will likely add more knowledge and process to bringing
these issues together. WMTSP also discussed the lack of an experienced winter
maintenance person on the 20-74A panel. Contact will be made with the NCHRP
Project Manager to express our concern and see if an additional member can be added.
Ken Kobetsky will make this contact. WMTSP will continue to follow the progress
on NCHRP 20-74A and the follow work underway to develop winter severity indexes.
• FHWA MDSS Deployment and Technical Assistance—Roemer provided an update of the MDSS program. Version 5.0 of the MDSS Functional Prototype was released in November 2007. Several MDSS Product Demonstration Showcases have been conducted to date. The last one was held in Omaha, Nebraska in May with upcoming showcases to be held in August in Pennsylvania just preceding the Eastern Snow Expo and another one in Idaho in September. AASHTO TIG has developed a MDSS video and brochure as part of the marketing effort. An MDSS Deployment Guide has been written and should be posted on the ITS Electronic Document Library (EDL) by the end of July. The “Lessons Learned” evaluation of MDSS deployment in Maine was completed by Battelle and is available on the EDL at www.its.dot.gov/library.htm. FHWA wants to continue with some quantitative analysis so two additional MDSS Benefit/Cost studies are underway: one in South Dakota being conducted by Western Transportation Institute and the other in Denver, Colorado being conducted by Battelle. The next MDSS Stakeholder meeting will be August 6 and 7 in Reno, Nevada. John Burkhardt reported that their director would like to go statewide with MDSS. Wilf cautions that MDSS has to be kept simple and likes the Iowa DOT approach with a laminated guidance card in each truck for operator reference.

• FHWA Clarus Initiative—Roemer says 18 states, 3 provinces and McHenry County, Illinois are up and running providing data to the system. McHenry County is web based through SSI. Phase 1 of the Multi-State Regional Demonstrations to develop Concepts of Operations of Clarus-base applications was completed in February and posted on the Clarus Initiative website at www.clarusinitiative.org. Phase 2 of the Regional Demonstration, providing grants to state DOTs to connect to Clarus, will be available on the web through September 2008. The RFP for Phase 3 of the Regional Demonstration, to build, deploy and evaluate Clarus-based services is on the street now. The RFP closes on August 1, 2008. The Clarus Stakeholder meeting will be August 4 and 5 in Reno, Nevada.

• Other FHWA Initiatives—Roemer discussed the following other initiatives:
  o VII Weather Data Translator development is underway, but delayed due to lack of probe data. Two VII and Weather reports have been published; Weather Applications and Products Enabled Through Vehicle Infrastructure Integration (VII): Feasibility and Concept Development Study and Vehicles as Mobile Sensing Platforms for Meteorological Observations: Volume 2 Research During a Summer Season (report compliments Volume 1 which focused on Winter Season characteristics.
  o RWIS ESS Siting Guidelines—implementation and evaluation of guidelines are scheduled to be completed this summer. FHWA completed an evaluation in Idaho and New Hampshire DOTs. Michigan DOT is implementing the guidelines in the Upper Peninsula Region. Revised Siting Guidelines will be published later this year.
  o NHI Course—Principles and Tools for Road Weather Management classroom version is still available from NHI. A web-based version was developed and a blended version (web-based with teleconference discussions) was held in April 2008 with 26 participants. The course will be refined/updated and held again this Fall.
New course—Introduction to RWIS Equipment and Operations has been developed by ITS American and ITS Rocky Mountain. They are currently exploring delivery options.

Upcoming Computer-based Training Courses to train transportation professionals about National Weather Service (NWS) products and services has been developed and will soon be available from the Cooperative Program for Operational Meteorology (COMET) at www.meted.ucar/dot. Also a computer-based course to educate NWS forecasters about surface transportation is under development by the NWS, Warning Decision Training Branch. This CBT should be available in late summer.

Road Weather Resource Identification Tool, Version 2 is downloadable from the RWM website www.fhwa.dot.gov/weather. More resources will be added (from 600+ to 900+) and links to the documents will be improved.

Road Weather Management Performance Measures—a Performance Measures project was completed earlier this year. More than 160 potential performance measures that related to SAFETEA-LU objectives were identified and narrowed down to 11. Work is underway to quantify the 11 measures and relate them to the RWMP products and activities. Another on-going study, Baseline Road Weather Information, will characterize the quality and availability of current road weather information to serve as baseline for enhanced weather information due to advanced weather products and technologies. A survey and analysis of existing weather data sources has been completed.

Weather-Responsive Transportation Management—the TMC Weather Integration Self-Evaluation and Implementation Planning Guidelines was developed and evaluated in the Sacramento and Milwaukee TMC’s. Follow on work is planned to promote the guide and deploy it in at least 4 TMC’s and to help Sacramento TMC in implementing its weather integration plan that resulted from self-evaluation. Considerable research is underway. The final report entitled Empirical Studies on Traffic Flow in Inclement Weather is available and can be downloaded from the RWMP website. An ongoing research study, Microscopic Analysis of Traffic in Inclement Weather is looking at how weather affects car following, lane changing and gap acceptance behavior and will incorporate microscopic models in existing traffic simulation models. Another research study, Incorporating Weather Impacts in Traffic Estimation and Prediction Systems is looking at how weather and weather information affects pre-trip and en-route driving decisions. The goal is to incorporate this knowledge in dynamic traffic assignment models like DynaSmart and DynaMIT. Another research project anticipated to be awarded shortly is Human Factors Analysis of Road Weather Advisory and Control Information. This project will identify the requirements of travelers and drivers for road weather information, develop and implement procedures for evaluating the effectiveness of road weather information and dissemination methods, and recommend the best strategies for communicating road weather information. A TMC Pooled Fund meeting was held July 15-16, 2008 in Nashville, Tennessee. WMTSP discussion centered around the fast
pace that is underway and believe the technology and applications that are coming will be amazing!!

• Aurora—Bill discussed some of Aurora’s 26 on-going projects. Surface weather training was a top priority issue. Bill had evaluated FHWA’s web-based version of Principles and Tools for Road Weather Management and thought it was very good. The problem with much of this training is that training programs are available, but very few are utilizing what is there. He had asked at a recent WASHTO Subcommittee on Maintenance meeting if people were using the AASHTO AI/RWIS CBT and no one was using it. It seems that if a state has a champion, the CBT gets used, if not it lays dormant. Salinity sensing is the next priority and use of friction was the third. Incorporation of MDSS into Winter Weather Forecasting, a 2007 project is underway with 15% completion. Also the Development of a National Road Weather Testing Facility, a 2008 project is underway with 15% completion. Aurora is working on a white paper to define the Winter Maintenance Testing Program (scope, mission, processes, etc). Nevada is teaming up with Utah on an FHWA project to use data and forecast sharing for winter maintenance operations on an Interstate corridor. Project is in the forming an agreement stage.

• Clear Roads—Bill reported he had received a letter from Clear Roads to work with the AASHTO Snow and Ice Task Force to develop a nationwide snow and ice condition reporting system. This support fits well with a similar WMTSP project (see page 13 of these minutes) and the emphasis that the Task Force will be stressing in the National 511 Coalition Presentation in the General Session of the Highway Subcommittee meeting on Tuesday. Bill also reported on current projects for Clear Roads. See the Clear Roads attachment at the end of the minutes for more details about each project.

• PNS—Bill had an e-mail from Monty Mills, Washington DOT about Pacific Northwest Snowfighters program. One PNS project of high interest to the snow and ice community is a pooled fund research entitled, “Inhibitor Longevity/Field Performance”. Contributors to the pooled fund include, Washington, Idaho, Montana, Oregon, Colorado, Utah, North Dakota, Minnesota, Iowa, Indiana, and Virginia DOTs, Ontario Ministry of Transportation plus several private companies. The project will use the recently established Lewistown Cold Regions Test Bed, officially known as Transcend, and WTI will do the testing. They plan to test Geomelt C, Ice Slicer Elite, Freezgard Zero C1 Plus, Salt Brine w/GLT, and sand-salt mix. Progress on this project and other information can be found on their website www.wsdot.wa.gov/partners/pns/default.htm and click on “Research”.

• TRB Winter Maintenance Committee—John reviewed the #2 priority Research Needs Statement (RNS) from the National Winter Maintenance Peer Exchange entitled “Staffing” that had been assigned to Transportation Research Board (TRB). Since the scope of the RNS was better suited to the TRB Maintenance Personnel Committee, John met with that Committee at their January 2008 meeting in Washington DC. The Personnel Committee thought the project was very worthwhile and fit closely with a NCHRP Project 20-81, entitled “Challenges and Successes in Attracting and Retaining a Skilled Transportation Workforce”. This project is funded for NCHRP’s FY 2009 program, progress can be followed on www.trb.org/news/blurb_detail.asp?id=9026. The Personnel Committee Chair will contact the NCHRP project manager to insure
maintenance is represented on the NCHRP 20-81 Project Panel. John also discussed RNS #4 entitled “Funding” which had been assigned to TRB. John met with the TRB Maintenance Operations and Management Committee in January 2008 in Washington DC to discuss the RNS. The Committee agreed the RNS fit their scope and prepared a TRB Research Problem Statement entitled, “Relationship Between Maintenance Cost and Level of Service” which addresses most of the elements in the RNS. Also a NCHRP 14-18 entitled “Determining Highway Maintenance Costs” www.trb.org/TRBNet/ProjectDisplay.asp?ProjectID=1638 will address some of the needs in this RNS. WMTSP will continue to monitor progress on the NCHRP 14-18 and 20-81 to insure the needs expressed in the RNS are being met. Also John discussed the research needs statements that were generated at the TRB 4th National Conference on Surface Transportation Weather and the 7th International Symposium on Snow Removal and Ice Technology that were held in Indianapolis in June 2008. A total of 23 research needs statements were written and submitted to the TRB Winter Maintenance Committee which John chairs and the TRB Committee on Surface Transportation Weather which Wilf Nixon chairs. These RNS are currently being reviewed for inclusion into future research programs.

• TRB New Committee on Surface Transportation Weather. Wilf reported that this committee was just approved by the TRB Technical Activities Council and is in the process of selecting committee membership. The Committee will have a very diverse membership from all modes of transportation and the meteorological community. The Committee will be co-sponsoring a Spotlight Session at the TRB Annual Meeting in January 2009 dealing with looking at weather events and their impacts on transportation. The TRB Committee and WMTSP will have high interest in the contract that FHWA will be award soon on “Human Factors Analysis of Road Weather Advisory and Control Information” and the performance measures FHWA is quantifying to meet the objectives of SAFETEA-LU.

• American Public Works Association—Mark DeVries, new chair of Winter Maintenance Committee passed out the APWA update. He noted that the Louisville Conference was well attended, but not a high as the Saint Paul conference last year. Full registration was up, but the day attendance from local field maintenance people was down. Had the best talk shows ever with news media talk-show host. The 2009 Call for Speakers flyer is available at their website www.apwa.net/meetings/snow/2009/CallforPresentations/speaker.asp . Snow plow operators and supervisor certification program is still under discussion by the APWA Winter Maintenance Subcommittee. Agencies have expressed an interest in the certification program however, the fleet managers program cost was considerable and not many people have used it. The Subcommittee will look at what the private sector is using. Mark is pleased with the outreach to local and regional conferences and seminars that the APWA Winter Maintenance Subcommittee members are making. The APWA Bookstore reports they sold nine Equipment Maintenance CBTs, one Deicing CBT (only been available about two weeks) and twenty AI/RWIS CBTs. Mark prepared an article for the APWA Reporter that will likely spur sales. APWA gets articles on aviation, but doesn’t have a mechanism to use them and share the knowledge, so Mark is looking for ideas on how to get aviation involved in a meaningful way. This fall APWA will be offering a webinar on best practice for salt
storage. Regional salt storage is becoming a high interest subject. Clear Roads offered APWA Winter Maintenance Subcommittee a seat at the table. APWA is looking for funding to make this happen for APWA and LTAP. Kathy Schafer, MN LTAP, and member at APWA Winter Maintenance would bring experience from both APWA and LTAP to the table.

• National Association of County Engineers—Gregg discussed the impact that travel restrictions is having on their liaison and networking. NACE is still providing distribution of the CBTs to LTAP.

• 13th Annual Eastern Snow Expo is being held August 27-28, 2008 at the Valley Forge Convention Center, King of Prussia, Pennsylvania. The FHWA MDSS Showcase is being held in an adjoining hotel on Wednesday, August 26, 2008. It was felt that by holding the Showcase the day before the Expo a larger crowd would be attracted to the Showcase and that those people would also remain one more day to participate in the Expo. Lee distributed copies of the Eastern Snow Expo website www.transportation.org/meetings/178.asp to show the linkage AASHTO had provided to get visitors to register for both programs. The website also has the program agendas for both the Showcase and the Expo. The Expo will feature three concurrent technical tracks, Track 1, Environmental & Safety, Track 2 Management & Operations and Track 3 Technology and Research. Exhibit Hall booth sales have been excellent. So far 55 companies have purchased 149 booths. 80% of the companies are returning exhibitors from previous Expos. Feedback from the exhibitors is they are impressed with the quality of attendees that are attracted to the Expo.

• 4th National Surface Transportation Weather Conference—Need to follow through with exploring the partnership possibilities with NOAA’s Office of the Federal Coordinator for Meteorology (OFCM). The National Surface Weather Conferences have been held annually. However, with the extreme cutbacks in budgets every agency is facing, setting up web conferences will likely be a necessity. The joint conference with the TRB Winter Maintenance Committee on a 3 or 4 year cycle may provide the necessary communication and technology transfer to the wider audience. Regular web conferences using Committee members as the subject matter experts need to be explored. The TRB Committee on Surface Transportation Weather had one “practice-ready paper” that they will be considering how to make implementation and technology transfer happen.

• 7th International Symposium on Snow Removal and Ice Control Technology—the TRB Winter Maintenance had six “practice-ready papers” which they will be considering how to make implementation and technology transfer happen.

• 2010 PIARC Update—Rick passed out Permanent International Association of Road Congresses (PIARC) Technical Committee (TC) B.5 Winter Service Issues paper. Issue B.5.1 “Improve winter maintenance and operation information” has two activities underway: 5.1.1 to investigate information systems, including two-way communications with road users, (Desired outputs are case studies of best practice in design and implementation of information/management systems); 5.1.2 to study winter service management systems (Desired outputs are case studies of best practice in design and implementation of information/management systems). Issue B.5.2 “Provide sustainable winter maintenance” also has two activities: 5.2.1 to study the full slate of social (safety), environmental and economic (cost-benefit) aspects
required to achieve ‘sustainability’ in winter maintenance, (Desired outputs are
identification of what optimum sustainability means in terms of winter maintenance,
and strategies to achieve it); 5.2.2 to identify impacts of climate change (changes in
winter severity) on winter services and on road infrastructure, (Desired output is report
on the impact of climate change on winter service and propose actions as preventive
measures). Issue B.5.3 “Share knowledge via the Winter Road Congress” has one
activity: 5.3 to identify which priority issues and knowledge World Road Association
members would find it useful to share, and in what format they would like to receive it
(Desired output is to produce a knowledge-sharing tool to suit the needs of the winter
operation community). Issue B.5.4 “Communication with road users” has one
activity; 5.4 to identify innovative approaches to inform and influence road users
about winter operations and safe winter driving (Desired outputs are case studies
illustrating best communication practice). Rick reported he introduced PIARC to the
SICOP Listserve. Topics for the 2010 conference in Quebec City have been approved
and the call for papers will be posted soon on their website. AASHTO will post a link
on their website and Lee will put an e-mail on the SICOP Listserve to alert the snow
and ice community.

• Other WMTSP Input—Rick and Wilf hosted a group from Argentina. These were
upper level managers and knew what they wanted to explore. They drove by bus from
Iowa to California on two lane routes during winter stopping at points that would
show maintenance facilities and equipment. Discussions were continuous as they
drove the routes. Topics included operations, stripping, roadside, and legal
discussions. Argentina has set up working groups and has similar function as the
AASHTO HSCOM Snow and Ice Task Force.

Project Review of SICOP Program

• CBT Revisions & Development—Lee provided a short history of the project. The
original AI/RWIS CBT, Version 1, was completed and distributed on May 1, 2003.
As the CBT was utilized many suggestions were submitted to make improvements.
Also as new snow and ice control research was completed and a method to achieve
technology transfer and implementation was needed, the AI/RWIS CBT seemed a
good mechanism to achieve those goals. Version 2 of the AI/RWIS CBT therefore
was prepared and distributed on July 9, 2007. Version 2 contained inputs from the
field received during the four years Version 1 was used and also the research results
from NCHRP 6-13, Snow and Ice Control: Guidelines for Materials and Methods and
NCHRP6-16, Guidelines for the Selection of Snow and Ice Control Materials to
Mitigate Environmental Impacts. Then in June 2006, AASHTO and Clear Roads
joined forces to develop five Computer-base Training Programs titled: Equipment
Maintenance; Proper Plowing Techniques; Blowing Snow Mitigation; Deicing; and
Winter Maintenance Management. The first four CBTs are finished and have been
distributed. The last CBT will be finished and distributed about September 1, 2008.
The AI/RWIS CBT has received awards in both National and International training
methods competitions. The distribution has been accomplished to the 34 Snow Belt
state DOTs who joined the pooled fund effort and distribution to local governments is
taking place through APWA bookstore sales. NACE made the CBTs available to the
LTAP centers for their use. Mark wants to explore if additional training is needed on spreader calibration and performance measures.

• ESS Guidelines Implementation & Evaluation—FHWA in 2004 published the ESS Siting Guidelines in partnership with Aurora and SICOP. FHWA did a survey to determine if the siting guidelines were working and to determine if changes needed to be made. Nine of the fifteen states responded to the survey. The overall impression of the Guide was positive. Idaho used the guidelines for ESS deployment. New Hampshire reported they didn’t use the FHWA guidelines when they installed their ESS because they weren’t yet published. However, the guidelines they used were consistent with what FHWA published. Michigan was in the process of deploying and asked their contractor to use the FHWA Guidelines. Working with Michigan revealed sensing technology has changed which needs to be changed in the revised guidelines. The metadata requirements identified in the guide were also evaluated and made consistent with Clarus metadata requirements. Ken asked if FHWA would like to ESS Guidelines be an AASHTO guide since AASHTO currently has all the ITS standards. Roemer will explore that with Paul.

• Promote Anti-drifting Measures With Proactive Road Design Consideration—Filling in for the project champion Mike Lashmet, Lee gave a short history of this project that New York State DOT (NYSDOT) worked with Ron Tabler and SUNY Buffalo to develop a CADD Expert System for considering mitigation of blowing snow in the design of a roadway. The NYSDOT project is titled “SNOWMAN”. Prior Winter Maintenance Scans to Japan discovered the Japanese were putting much effort into the design of their roadways to mitigate the adverse affects of blowing snow, to improve visibility and minimize snow removal from the roadway. The Japanese were using some mathematical modeling and considerable wind tunnel testing of roadway cross-section reduced-scale models. Tabler’s work used models and full scale field applications to build a variety of mathematical models. The SNOWMAN project status is that the software was installed nearly a year ago on their MicroStation design platform and does very useful snowdrift simulation modeling. Much of the success for this work is likely due to the NYSDOT Program Manager who did his master’s degree work on blowing snow at SUNY Buffalo. SUNY Buffalo just this past week submitted the 1) Developer’s Manual, 2) Journal Paper and 3) Final Report. These documents are now under review by NYSDOT. WMTSP will continue to monitor the SNOWMAN roll out to NYSDOT in-house design and operation personnel. WMTSP should also look for opportunities to work with NYSDOT in long term maintenance, upgrading and technical support. WMTSP might also help with marketing by supporting a webinar for showcasing SNOWMAN to interested winter maintenance engineers and designers. Mike will continue to keep WMTSP current with progress being made at NYSDOT.

• Road Condition Information—Lee provided some background information on this project since the project champion, Dan Roosevelt has now retired from Virginia DOT. The purpose of this project is to document the state-of-the-practice of winter road condition reporting for travelers and promote the development of friction measurement to the point where it can be shared in real time with road operations decision makers (snow and ice control operations, traffic management centers, etc) and travelers. Use of friction was discovered on prior winter maintenance scans to
Japan and Europe. Use of friction in these countries was state-of-the-practice. The Ohio DOT and the Ontario Ministry of Transportation have ongoing pilot projects using a rolling wheel to measure contact friction. The Vehicle Infrastructure Integration (VII) initiative is evaluating incorporating traction information from the automobiles braking system to determine road condition. The Aurora project 2006-04, “Evaluation of Vaisala Spectro Pavement Sensor” which is 85% complete and Aurora project 2007-02, “Cold Weather Testing of the Halliday Road Grip Unit” which is 80% complete will add more knowledge to measuring road conditions. More information on these two projects can be found at www.aurora-program.org. A technical session entitled “Role of Surface Friction in Winter Maintenance” was held on Wednesday, June 18, 2008 at the 4th National Conference on Surface Transportation Weather and 7th International Symposium on Snow Removal and Ice Control Technology. Technical papers can be found in TRB Circular E-C126 at web site www.trb.org. WMTSP will continue to monitor the development of the state-of-the-art as new technologies and applications are discovered and assist with technology transfer and promote marketing efforts where appropriate. Wilf believes the state DOTs will need to see a return on investment such as it reduces snow and ice control cost or that it improves level of service before they will make the rather high initial investment to equipment the fleet.

- Outreach to Local Government—Mark pointed out that APWA has several mechanisms for helping the local governments. The APWA has an array of snow and ice control CBTs and books for sale to the local governments. Members of the Winter Maintenance Subcommittee participate in local and regional seminars and conferences and LTAP conferences and workshops. They also get questions from local governments about groundwater issues and alternatives for chemicals. Mark did an article for magazines on being proactive. Mark made an eleven day trip to Europe to show them the proactive ways we do operations and chemical storage. He went to yards and walked the ground with them. Bret just completed a similar trip to Austria. APWA moves the Snow conference around to get different local audiences. The LTAP conference begins next week and members of the APWA Winter Maintenance Subcommittee will be there. The LTAP training program has many snow and ice control power points which trainers can download and use for their training presentations www.ltap2.org/resources. Mark is working with LTAP in Illinois to develop web cast for snow and ice control. Duane Collet has developed a website, www.wintermaintenance.com and current has 34 Podcasts on a variety of winter maintenance subjects. Lee has reviewed the latest one entitled “Multi-Agency Salt Storage Facilities with Bret Hodne and Larry Schneider” and found it very informative. Duane is using the Snow and Ice Listserve to promote these free Podcasts. Duane is donating his time to organize these Podcasts and would like to have presentations from WMTSP

- Communications Standards and Winter Maintenance—Roemer reported that Version 3.0 of NTCIP 1204 – Object Definitions for Environmental Sensor Stations (ESS)—is developed and currently being balloted, while Version 3 of the Joint ITE/AASHTO TMDD 2.1 – Traffic Management Data Dictionary and Message Sets for External TMC Communication – is still under development.
• Integrated ITS Corridor—following up from the minutes of the December 6, 2007 WMTSP meeting, the TMC Weather Integration Self-Evaluation and Implementation Planning Guidelines were published and the progress was reported earlier in these minutes on page 4, “Weather-Responsive Transportation Management”.

• Report on 2008 Domestic Scan—Rick reported the Scan is moving forward. They now have a subject matter expert, Rod Pletan. The team is small in number but if needed Rick will ask for more representation and provide for their justification. The team will be scoping out the scan and developing a schedule in the next few months.

• Report on 2010 International Scan—Ken will follow up and see where this is for 2010. Lee will contact Ken and get the information to WMTSP.

• Update 1999 AASHTO Guide for Snow and Ice Control—problem statement was submitted last year at the AASHTO HSCOM Madison meeting and was funded by NCHRP as Project 20-7, Task 250. Amir Hanna is the NCHRP project manager. Completion date is scheduled for December 30, 2008.

• Update on 2007 National Snow & Ice Peer Exchange Research Needs Statements—Western Transportation Institute has been hosting the website for the Peer Exchange. They are contributing their efforts on maintaining the site, but do not have any funds for web site upkeep. Lee has been preparing the electronic updates for WTI so all they need to do is transfer post them to the web. The largest update has been the July 2008 progress update for the Research Needs Statements (RNS). Lee provided those updates to WMTSP prior to the meeting. Those RNS that have been assigned to WMTSP will be discussed later in the minutes.

• Develop best method practices, NCHRP 25-25(4), Task 29, Reduced Salt—Lee reviewed the background for this project. The Compendium of Environmental Stewardship Practices for Highway Construction and Maintenance was produced from NCHRP 25-25(4) in September 2004. It was the initial step in expanding awareness of environmental stewardship in terms of specific practices and procedures as well as general policies and programs. The primary intent of the 2004 Compendium was to enable transportation agencies to more fully benefit from one another’s experience and to help them more fully integrate stewardship into all aspects of their work. The 2004 Compendium was well received as an encyclopedic compilation of current practice. The NCHRP 25-25(4) Task 29 project was designed to “mine” the compilation of current practices in the 2004 Compendium and develop a process for screening Best Practice within the 2004 Compendium to develop a comprehensive library of Best Practices. NCHRP 25-25(4) Task 29 is now complete and the final report is posted on the NCHRP Project web site. The report details a process for screening Best Practices for the Compendium and keeping it current. The suggested approach is to engage the Center for Environmental Excellence to sponsor the efforts of a program leader and chapter leaders knowledgeable in the subject area to oversee Working Groups comprised of experienced practitioners, a facilitator and administrative support staff. In addition to screening, continually updating the Compendium and managing the efforts of chapter leaders, the program leader would manage the data, suggestions, and volunteer resources that users offer through the Compendium newly created links. These newly created links allow viewers to make comments on existing Best Practices, suggest new Best Practices and volunteer to help work on a Best Practice. The 2004 Compendium currently has eleven chapters. Chapter 8 is entitled “Winter
Operations and Salt, Sand and Chemical Management”. Chapter 8 has six sections: Section 8.1 “Selecting Snow and Ice Control Materials to Mitigate Environmental Impacts” is 7 pages; Section 8.2 “Reducing Sand Usage and Managing Traction Materials” is 2 pages; Section 8.3 “Strategic Planning for Reducing Salt Usage” is 6 pages; Section 8.4 “Stewardship Practices for Reducing Salt and Other Chemical Usage” is 31 pages; Section 8.5 “Winter Operations Facilities Management” is 4 pages and 8.6 “Training for Salt Management and Winter Operations” is 9 pages. Section 8.4 underwent the intensive review as part of NCHRP 25-25(4) Task 29 which accounts for the added length of this Section. The other Sections need to be evaluated and rewritten. Although there has not been any guidance to the Snow and Ice Task Force, to undertake these needed revisions, it is likely guidance will be forthcoming at the AASHTO Joint Meeting, General Session, on Monday, July 14, 2008 when Shannon Eggleston, Director, Center for Environmental Excellence, gives his update. Lee circulated a copy of Chapter 8. WMTSP needs to monitor progress on this project and determine how best to support the ongoing effort.

• Guidelines for A/I & Deicing RNS #1(note RNS refers to Research Needs Statements # from the National Winter Maintenance Peer Exchange website www.wti.montana.edu/TechnologyTransfer/2007PeerExchange.aspx )—Short title, “Guidelines for anti-icing and deicing” covers three research needs statements which read: How to determine the proper timing and frequency of anti-icing and deicing; Develop anti-icing deicing and pre-wetting implementation guidelines; and, Are the FHWA TE-28 anti-icing guidelines accurate, appropriate and effective. Discussion at the December 6, 2007 WMTSP meeting was that some details could be improved upon there is generally sufficient research on the subject for an agency to implement an anti-icing program. The current research covers most situations, but there are some situations that aren’t covered in the storm scenarios and more research to increase the number of weather events would be helpful as well as add value to the basic research. A working group consisting of Wilf Nixon, Dennis Burkheimer and Rick Nelson was appointed to form a work plan to address the: 1) research needs and 2) technology transfer, work culture and institutional issues. The working group will identify resources already available, identify any research gaps ie are more storm scenarios needed?, summarize the resources and gaps and look for ways to better communicate with the snow and ice community to improve technology transfer.

• National Winter Test Facility #13—Short title, “Field Testing” covers three research needs statements: Build a test facility to provide objective data regarding the effectiveness of various winter maintenance treatments; Pursue objective testing to verify the effectiveness of innovative maintenance treatments; Standardized tests for winter maintenance equipment. In an effort to locate winter maintenance testing facilities, Lee put together a survey and sent it to all the National Peer Exchange attendees on April 18, 2008. The survey asked the attendees to list winter maintenance testing facilities they knew of, listing the name of the facility and location and any contact information they might have. The survey also asked each attendee to describe what they felt there organization needed tested or evaluated. The survey form asked them to list each product, equipment or technology to be tested and the desired testing they felt would be needed or outcome they desired. Nine state DOTs responded, (Illinois, Iowa, Maine, Maryland, Minnesota, Nebraska, Ohio,
Pennsylvania, Tennessee). Responders listed the following: **WINTER MAINTENANCE TESTING FACILITIES** (Cold Regions Research and Engineering Laboratory (CRREL), Virginia Tech Smart Road, University of Iowa, Iowa State University, University of Northern Iowa, Honda Transportation Research Center (Marysville, Ohio) and then their own state DOT Materials and Testing Labs). They listed the following needs for testing: **EQUIPMENT** (RWIS chemical sensors and other surface sensors; snow plow cutting blades; and vehicle tracking devices.) **PRODUCTS** (Agricultural products blended with salt brine and other traditional anti-icing and deicing chemicals; all types of deicing chemicals performance at different temperatures using both laboratory tests and correlation with field tests; and test and evaluate different products that can be added to salt to reduce corrosion.) **TECHNOLOGY** (How to install and operate the FHWA MDSS application; determine if the TE-28 results and current MDSS treatment recommendations are sound guidance; what is the best way to reach drivers with safety messages about winter driving safety; develop a standard procedure and method to measure the accuracy of weather forecasts; can route optimization or other technology help move the fleet around to help combat winter storms?; and what is an effective fence that can be used along the right-of-way to control near snow and also serve as access control?.) A project that relates to this project is the Clear Roads project, “Development of Standardized Test Procedures for Evaluating Deicing Chemicals” which is scheduled for completion in 2009. WMTSP needs to monitor this project to avoid duplication of efforts and identify possible gaps in research that will exist even after the project is finished. Another effort related to this project and currently underway is an Aurora project that was approved in August 2007 to investigate the options for a national testing facility. In an effort to coordinate the various research consortiums Tina Greenfield past chair of Aurora took the lead for Aurora Project 2008-01 “Development of a National Road Weather Testing Facility” and conducted a teleconference call with representatives from Aurora, Clear Roads, Pacific Northwest Snowfighters, WMTSP (Bill Hoffman, Dennis Burkheimer and Lee Smithson), and FHWA to discuss existing and emerging testing facilities, and the possibility of creating a coordinated national plan for meeting all of the various winter maintenance testing needs. A white paper is being prepared entitled, “Winter Maintenance Testing Program”. This is currently a work in progress. Wilf and Rick will review the white paper as soon as it is ready for circulation and determine what assistance WMTSP should providing.

- Consistent descriptions of road conditions#15—short title “Consistent descriptions of road conditions” covers two research needs statements: Develop standard rating and descriptions for road conditions; and Develop acceptable dynamic messages for snow and ice. The need for uniform road condition reporting was also reported as research needs statement #8 from the TRB 7th International Symposium on Snow Removal and Ice Control Technology in June 2008. Also research needs statement #9 from that symposium sited the problem motorists have with some states that are using the copy righted 511 to direct motorists to commercial sources in their state which charge subscription fees for road conditions. These states are linked to the 511 web pages in other states, but do not provide the motorists any help in getting to the free official government road condition sites they are accustomed to finding in other 511 states.
There will be problems with standard descriptions and requirements such as the chain control in western states is not needed in the Midwest but once all the states sign on to 511, these problems can be resolved. Bill says he has been working with Utah for a Nevada-Utah interstate corridor managing and reporting project that may help guide the 511 project. Bill will bring the 511 issue to the Snow and Ice Task Force meeting later this week for their consideration.

- Future National Peer Exchanges #18—short title “Peer Exchange” covers just one research needs statement to support more meetings similar to the 2007 meeting for further peer exchanges. This problem was discussed at the combined Aurora and WMTSP meeting December 5, 2007 and recommended another exchange be considered in 2009 or 2010. Clear Roads will be discussing this topic at their next meeting July 30, 2008 and the possibility of providing funding. WMTSP discussed developing a newsletter to report progress but decided to go with using the SICOP List serve to alert the snow and ice community as progress is made and the WTI website is updated.

- Boiler Plate Legal Language #26—short title “Boilerplate legal language” covers just one research needs statement to develop standard language that could serve as a starting point for states to address legal issues that may be involved with data sharing. FHWA is working with the National Conference of State Legislatures (NCSL) on the disclaimers the states are using as a first step in the project.

**WMTSP Program**

- Presentation of New Projects
  - LOS Determination #3—short title “LOS determination” covers seven research needs statements: Road prioritization formula for winter maintenance LOS; Case studies on ensuring consistency in winter maintenance practice across state borders; Establish seamless boundaries for winter information across states; Develop a national LOS to better transition motorists across boundaries without sudden change in conditions; Is there a defensive way to determine or establish LOS nationwide (corridor management) and seamless LOS across state Boundaries?; FHWA develop pilot/demonstration projects for seamless winter operations (NCHRP 20-74A problem statement) This would include LOS, winter messages, RWIS, and other technologies; and Determine an appropriate wintertime LOS for specific areas. A concern of WMTSP was there were no maintenance members on the NCHRP. Ken will contact the NCHRP Project manager and ask him to consider this concern.

  - Communication/Public/Legislators#5—short title “Communication with public and legislators” covers five research needs statements: Need effective ways to communicate and explain level of service, expectations, and costs on various road systems to motorists, management, and politicians; Best practices for balancing politics and performance; Synthesis of how to effectively relay and communicate winter maintenance budget needs to upper management and legislature; How to most effectively communicate performance measures and associated costs to internal staff, operators and stakeholder; and the image of maintenance workers needs to be improved and
the critical activities they do needs to be communicated to the public so they understand how maintenance impacts their daily lives. AASHTO’s Director of Communications and Publications, Sunny Schust, has been contacted to ensure the current marketing initiative that the AASHTO Public Affairs Committee has undertaken to heighten the awareness in both the legislative and the public sector about all that DOTs do includes the importance of winter maintenance. Lee will follow through with this.

- Practice Ready Papers TRB E-C126. The following papers were selected as practice-ready papers and need to be evaluated to determine how proceed with implementation: SNOW 08-001 “Guidance for Creating and Maintaining Written Snow and Ice Control Plan and Policy Documents”; SNOW 08-008 Eutectic Depressants: Relationship of Eutectic, Freezing Point, and Ice Melting Capacity in Liquid Deicers; SNOW 08-019 “Providing Winter Road Maintenance Guidance: An Update of the Federal Highway Administration Maintenance Decision Support System”; SNOW 08-021 “A Study on the Expression of Winter Road Information and Its Effects on Drivers’ Travel Decision Making”; SNOW 08-029 “Maintenance Decision Support System is Not Just for State Departments of Transportation”; SNOW 08-038 “Overview of Implementation and Deployment of the Pooled Fund Study Maintenance Decision Support System”; WEATHER 08-005 “Integrating Weather into Transportation Operations: A Utah Department of Transportation Case Study”. WMTSP needs to work with TRB and determine how we can help with the practice-ready process. MDSS is very important and FHWA has stakeholder meetings scheduled for MDSS and Clarus. The stakeholder guidance coupled with the proposed Regional Demonstrations are probably moving the technology along as fast as can be expected. When the two Benefit/Cost studies are completed, WMTSP can probably help disseminate the results through the SICOP Listserve. WMTSP should also explore how APWA and LTAP might help. TIG can also help with marketing success stories.

- Evaluation of WMTSP program
  - SICOP 4 Year Program—the Draft Proposed Four Year Program 2009-2012 for the Winter Maintenance Technical Service Program was reviewed, revised and a final Program was approved. That program is attached to these minutes.
  - SICOP 4 Year Program Resolution was prepared and approved for presentation at the July 17, 2008 Highway Subcommittee on Maintenance business meeting.

- Budget Considerations—the annual voluntary contribution solicitation is working well. About 30 states respond to the solicitation and that brings in sufficient funding to support the program.

Next meeting—explore meeting in conjunction with Clear Roads. Legislatures begin meeting after Martin Luther King day and TRB also meets in January. Decided to monitor activities and other consortium meetings and identify need and opportunities.

Minutes as of August 6, 2008
Clear Roads Status Report

Clear Roads is a pooled fund research program (Wisconsin is the Lead State) aimed at rigorous testing of winter maintenance materials, equipment and methods for use by highway maintenance crews. It responds to a need for research based on practical experience.

Primary activities include:

- Evaluating winter maintenance materials, equipment and methods under real-world conditions
- Developing specifications and recommendations
- Studying and promoting innovative techniques and technologies that will save agencies money, improve safety and increase efficiency

OUR PARTNERS

Colorado Department of Transportation  Missouri Department of Transportation
Illinois Department of Transportation  New York Department of Transportation
Indiana Department of Transportation  Ohio Department of Transportation
Iowa Department of Transportation  Utah Department of Transportation
Massachusetts Highway Department  Virginia Department of Transportation
Michigan Department of Transportation  Wisconsin Department of Transportation
Minnesota Department of Transportation  Wyoming Department of Transportation

COMPLETED PROJECTS

Synthesis of Best Practices for Eliminating Fogging and Icing on Winter Maintenance Vehicles (September 2006)

Results: The report compiles a range of solutions, both long-term and short-term, for keeping snow plow glass and mirror surfaces clean of winter precipitation inside and out.

Calibration Accuracy of Manual and Ground-Speed-Control Spreaders (January 2008)

Results: Guidelines to help snow plow operators establish and maintain accurate calibration of ground speed controllers, resulting in reduced salt usage and improved efficiency.

RESEARCH IN PROGRESS
Determining Effectiveness of Deicing Materials and Procedures
Expected results: A portable test method for determining the effectiveness of deicers that could be used by any interested state in a variety of locations under a variety of winter conditions.
Expected completion date: December 2008

Development of Standardized Test Procedures for Carbide Insert Snowplow Blade Wear
Expected results: Testing procedures that could be used by an independent testing laboratory to determine life expectancy of any carbide insert snowplow blade.
Expected completion date: July 2009

Development of Standardized Test Procedures for Evaluating Deicing Chemicals
Expected results: Standard tests that will help simplify the deicer evaluation process for state DOTs.
Expected completion date: April 2009

Development of Interface Specifications for Mobile Data Platforms on DOT Vehicles
Expected results: Communication and data format specifications that would support a “plug and play” approach to integrating sensors and other devices with mobile data platforms used by State DOT’s.
Expected completion date: November 2009

Expected results: A standard tool, manual and training for cost-benefit analysis of specific winter maintenance practices, equipment and operations.
Expected completion date: February 2010

PARTNERSHIP PROJECTS

National Winter Maintenance Peer Exchange
In collaboration with Aurora, SICOP, FHWA, and PNS, Clear Roads helped plan a national winter maintenance peer exchange conference dedicated to information sharing and research coordination among winter maintenance professionals. The conference took place in Columbus, Ohio on August 28 and 29, 2007. Thirty-five states plus Washington D.C. attended. Work continues on the 70 research problem statements developed.

National Winter Safety Campaign
Clear Roads initiated a national multimedia campaign designed to educate drivers about the importance of driving safely in winter conditions. “Ice and Snow… Take it Slow”

Computer-Based Training
Clear Roads supports the efforts of the Snow and Ice Pooled Fund Cooperative Program in developing additional computer-based training modules related to winter maintenance. Proper Plowing Techniques was released last Fall. Mitigating Blowing Snow, Deicing Chemicals, and Snow and Ice Management should be available early in 2008.
Snowplow Design
Clear Roads is working with the Winter Concept Vehicle Pooled Fund to conduct research on optimum snowplow design.

TECHNOLOGY TRANSFER LEADERSHIP

Winter Maintenance E-Newsletter
Clear Roads publishes a quarterly e-newsletter that highlights applications of winter maintenance research and technology and the latest transportation research reports.

Product Evaluation Survey
In an effort to encourage the informal evaluation of products related to winter maintenance, Clear Roads created a Product Evaluation Survey for use by any interested organization. The survey allows states to share experiences with new or existing products.

For more information on any Clear Roads project please visit the Web site at:

www.clearroads.org