

**Minutes**  
**Winter Maintenance Policy Coordinating Committee Meeting**  
**AASHTO/APWA/NACE**

October 16-17, 2000  
Coeur d'Alene, Idaho

Attendees

Pat Hughes, Chairman—AASHTO WMPCC (Minnesota DOT)  
Lee Smithson, SICOP Coordinator—AASHTO (Loaned Staff from Iowa DOT)  
Mujeeb Basha—AASHTO Staff  
Paul Pisano—FHWA  
Dave Jones—AASHTO Subcommittee on Maintenance (Idaho DOT)  
Rick Nelson—Lead States Program (Nevada DOT)  
Wilf Nixon—TRB Committee A3C09 Winter Maintenance (Professor-University of Iowa)  
Clayton Sullivan—AASHTO Western Region (Idaho DOT)  
David Gravenkamp—National Association of County Engineers (Siskiyou County, California)  
Larry Frevert—APWA (Kansas City, Missouri)  
Joe Doherty—AASHTO Northeast Region (New York State DOT)

Guests

Ron Tabler—University of Wyoming

Chairman Hughes called the meeting to order at 8:00 AM on Monday, October 16, 2000 and had everyone introduce himself. Since there were two new members to the WMPCC, Pat explained the purpose of the Committee and its winter maintenance capstone mission.

Work Plan Reports

#1—RWIS/Anti-icing Training Package (Rick Nelson)—Rick Nelson and Lee Smithson reported that 23 RFP responses had been received and the proposals are in the hands of the TWG for evaluation and selection. A TWG conference call will be held November 1, 2000 and a meeting of the TWG to select the successful contractor will be held later in November. A total of 14 States have now joined the funding pool, plus the \$35,000 Aurora contribution, APWA has committed to \$5,000, and the \$60,000 from FHWA is being processed. The WMPCC discussed extending an offer to participate in the project to the Canadian Provinces. Lee will contact Ken Kobetsky to get an AASHTO invitation letter to them and the Transportation Association of Canada (TAC).

#2—Equipment and Facilities for RWIS and Anti-icing (Rick Nelson and John Blacker)—Rick discussed the details of how to develop and maintain a self-sustaining SICOP web site for this project. The up front costs are estimated to be \$20,000 to \$40,000 for a commercial web site which would include advertising, then the annual up keep would only be a few hundred dollars a year. If AASHTO decided later to not continue the project, the web site might then be turned over to a publication group like “Roads and Bridges” or “Better Roads”. There may be the

possibility of partnering with APWA. Mujeeb will discuss with the appropriate people at AASHTO if a commercial web site with advertising would be acceptable. The time frame for resolving this issue should be before the spring AASHTO meeting.

WMPCC approved having the University of Iowa's Institute for Hydraulic Research continue hosting and upgrade the present web site to allow document and minutes posting, password protection, etc. \$12,000 to \$15,000 is needed for annual updating.

A new AASHTO web site will be unveiled at the December meeting. There will be a spot for each AASHTO committee so Mujeeb will find out if there is an appropriate place for WMPCC. LTAP is an important link in this process, especially for the local governments.

Need to start transitioning users from the TTI Lead State Web site to the WMPCC/SICOP web site. The easy way is to put that message on the snow-ice list serve and ask TTI to put a link to the WMPCC/SICOP web site.

Subscription web pages are more useful and more active since they prompt the subscriber when new things are posted. WMPCC wanted to continue the SICOP web site and use administrative SICOP funding to support it. New items would be posted by Wilf. Idaho DOT and PNS have a listing of chemicals not to mix and the experience with liquid chemicals which under certain conditions precipitate out the salts and create a slurry will be identified. Dave will provide those for posting to the WMPCC/SICOP web site. Dave and Rick will also send information on anti-icing and RWIS equipment specifications.

#3 Road Condition Information to Customer (Lee Smithson)--Reported the results of the TRB Fifth International Symposium on Snow Removal and Ice Control held in Roanoke, Virginia, September 5-8, 2000. Several papers were presented on the growing use of friction measuring devices for snow and ice control operations and traffic safety in Europe and Japan. During the discussion periods the international practitioners question how the United States can adequately address or use service levels without friction measurements. The Finnish Road Administration has a friction measuring device on every supervisors vehicle. New technology on cars also has friction detection associated with their braking systems. It is a matter of being able to persuade the automobile manufacturers to share that information with us. Iowa DOT will do further SALTAR field testing during the winter of 200-2001. The NCHRP 6-14 contractor is nearing completion on Phase I. Based on this progress, Lee will update the work plan and schedule and set the future direction for the project.

#4. Driver Education (John Blacker)—John was hospitalized and unable to attend so Lee will set a conference call, as soon as John is able to participate, with Dave Jones/Pat Hughes/Lee to determine project scope/direction and write a problem/project statement. Dave will continue to champion the project.

#5. Anti-icing Chemical Specifications (Clayton Sullivan)--Discussed the possibilities and associated problems of making the PNS specifications an AASHTO specification. The PNS specification is constantly being modified so flexibility is an advantage for proactive specification development. Clayton's recommendation is to leave it as a PNS specification. WMPCC agreed. Idaho DOT is the materials tester of PNS specification revisions. With 35 states and 5 provinces they had to contract much of the work to outside labs. Some PNS specifications have now been proven and turned over and made ASTM specifications and associated protocols. Quality assurance is needed to insure the product being delivered is

meeting the specifications. Idaho DOT has high penalties for loads not meeting specifications and as a result got many free loads last winter.

#6. Anti-drifting (Clayton Sullivan)—Ron Tabler discussed “Design Guidelines for the Control of Blowing and Drifting Snow” and how to get a wider dissemination of the material. Mr. Tabler has no problem with wider dissemination and stressed the only reason he copyrighted the material was so he didn’t have to continually ask for permission from TRB to use and copy his work. He will write a letter to us so stating this. All the principles and how to apply them are contained in the manual, but it is not well organized and for that reason, one has to work at digging out all the details. There are 50 pages in the manual that address how to design snow free roadways. Mr. Tabler held many training courses on the design principles, but in five years most of those people moved on to other jobs and the expertise got lost.

Recently, NYSDOT decided to put together a design training course to be accomplished by a committee. The project called SNOWMAN (Snow Management) got started in 1997 and will soon be completed. Joe Doherty discussed the NYSDOT project using Tabler’s work and help from Brookhaven National Laboratory & SUNY-Buffalo. They are about 90% complete and have spent \$200,000. Joe sees the possibility of partnering with them to finish the project and adapt it for a national application. Minnesota has also been monitoring the project and will be using it in their design process. This work should eventually be incorporated into the AASHTO Green Book, but for now, a presentation consisting of photographs will have a greater appeal to a broader design audience. Photographs can illustrate the basic principles.

In justifying the cost of drift mitigation, one needs to consider both the cost savings associated with snow capturing and the safety benefits. The “blower snow fence” design works well in Japan for narrow right of way, but would not be feasible in the United States because of clear zone requirements. The feeling of WMPCC would be to post the field guide and few photographs on the web. Ron will digitize some of his photographs and send to the WMPCC and we can select what should be placed on the web. Clayton will call Kathryn Harrington-Hughes to locate other material she might have filed from SHRP and “Focus”. Clayton and Rick Nelson submitted key word recommendations that should be made to Green Book to draw designers attention to snow drifting mitigation techniques. Minnesota prepared a video that draws attention to including snow drifting mitigation techniques in design.

Joe Doherty will take the lead on this project when Clayton retires. Ric will follow up on Green Book revisions since he has regular contact with Susan Martinovich of Nevada DOT who is on the Green Book committee. No need to put together a TWG at this point.

There was further discussion about the several living snow fence and constructed snow fence installations that DOT’s are now in place. WMPCC should keep track of those success stories and get them posted on the web. WMPCC also needs to explore partnering opportunities for completion of SNOWMAN and get anti-drifting guidelines incorporated into the AASHTO Green Book.

#7. Urban Winter Maintenance Practices Guide (Larry Frevert and Wilf Nixon)—Larry distributed a progress report. The intent of this project is to have APWA publish a “Local Government and Urban Areas Supplement to the ‘AASHTO Guide for Snow and Ice Control’ ”. Target audience will be local governments and state agencies that have urban winter maintenance responsibilities. A variety of methods are being used to identify issues and snow and ice control strategies employed. “APWA Reporter” is soliciting to submit ideas on

appropriate content for the manual and help identify experts in the field. APWA will hire a technical writing consultant to flesh out content and prepare the draft manual.

#8. Automatic Fixed Remote Chemical Distribution Systems (Paul Pisano and Andy Bailey)—Paul distributed an Excel spreadsheet that summarized the state of the practice for 23 users of fixed, automated anti-icing spraying systems. Wilf Nixon will post this on the SICOP web. Discussed the accident potential of spot treatments that track out from installation sites. Tabler has done some evaluation on the Denver International Airport roadway system and observed a chemical concentration gradient due to track out from the fixed installation sites. As a result, accident patterns concentrate as the gradient gets lower and roadways become slicker. It is desirable to have uniformity on the entire route. Spot applications on bridges should be followed by entire route treatment as soon as possible. Another area of discussion was the environmental aspects of these systems since they are over waterways. Minnesota DOT has encapsulated delivery hoses to safeguard against breakage that could dump chemical directly into the river. There also needs to be a wholistic approach to application and intermingling of chemicals (CMA combines with Mag Cl to form a gypsum surface). More evaluation is needed—don't have a best practices yet. May need to go to agencies to solicit their best practices methods and include them in a similar spread sheet. Do we need a workshop, survey or working paper?

#10. State of the Practice AVL Technology (Andy Bailey and Lee Smithson)—Lee distributed a project update. Iowa DOT has 18 AVL equipped trucks that are participating in a Tracking Resources with Automated Capabilities (TRAC) project. Virginia DOT has 80 units in service. Southeast Michigan Snow and Ice Management (SEMSIM) placed 20 AVL units in service in February 2000. Project reports for all these projects should be available by late fall 2000. Each project is experiencing difficulties in determining benefit/cost analysis. California DOT is utilizing embedded magnets and Minnesota DOT is using magnetic tape to guide snow plow trucks during zero visibility operations.

#11. On Board Freezing Point Measurement (Wilfrid Nixon and Lee Smithson)—Sweden and Canada are field testing devices that will measure the freezing point of wet road surfaces. Iowa DOT is bench testing the Swedish device and as soon as bench testing has been completed will mount the unit on their Concept Truck and field test it.

#### Round Robin

- Recommendations are needed by mid-December for future scanning tours. WMPCC agreed to recommend a January 2002 winter maintenance scanning tour to Japan which would also include attendance at 11<sup>th</sup> International Winter Road Congress, January 28-31, 2002 at Sapporo. Lee will prepare and submit a Scan Proposal Topic Form. Other suggestions were E-18 in Finland to learn more about their use of winter friction in road condition reporting for ITS traveler information and performance management. Another suggestion was the UK's use of RWIS (active and passive sensors) in anti-icing operations (Dave was to gather some addition information and submit more specifics to Pat Hughes).

- Minnesota has completed its 87 RWIS installations. The data is sent to the University of North Dakota for forecast operations. It is anticipated that the system would be sold and data privately managed.
- Minnesota has its automated remote bridge anti-icing system (Boschung) operational over the Mississippi River. The chemical being used is potassium acetate.
- Idaho has developed a CD ROM based interactive training program for beginning level snow removal operators. Clayton will send a copy to each WMPCC member.
- Idaho will prepare a brief article for posting on the SICOP web concerning the problems they have had with certain chemicals forming undesirable sludge and solids.
- The University of Utah's research project for avalanche detection and mitigation is complete and will be implemented for evaluation this winter. Should have a report for WMPCC on that and the Wind Sails project after Spring 2001. House building on the slopes is changing wind and drift patterns.
- Siskyou, CA sent a group of public works employees to site visit the Nevada DOT and exchange snow and ice technologies.
- The 2001 PNS Snow Conference will be May 29-31, in Kelowna, BC, Canada.
- Mujeeb inquired about snow plowable pavement markers. It was the general consensus that Stimsonite units have some problems. Plow blades don't immediately return to the pavement, thus leave unplowed patches. Also some cast iron is removed with each pass and ultimately there isn't enough material left for replacement of reflectors. There also is a build up of materials against the reflectors cracking and breaking the plastic lenses. Nevada is evaluating and had some success with a 3M prototype consisting of a reflectorized compressible "doughnut" which deforms under the plow blade. New York State DOT has a field test underway in its second winter, but no statistics to report at this time. Bottom line appears to be that plowable markers are too expensive and not durable enough for widespread use in the snow-belt states.
- Larry reported on his presentations to the APWA Congress and the North Carolina APWA Streets Division Conferences. Also, he reported the moving of APWA's Subcommittee on Winter Maintenance's web site to [www.apwa.net](http://www.apwa.net) site. He also reported on Kansas City, MO efforts with AVL and investigation of an automated remote bridge anti-icing system.
- Wilf reported on the TRB quadrennial snow and ice control symposium in Roanoke, VA (140 attendees, nearly half were from outside the United States). The symposium was collocated with the Eastern States Snow and Ice Exposition (1,500 attendees). Wilf also reported that the Winter Highway Maintenance Class being offered at the University of Iowa has gone international with students from Chile, Argentina and Canada.
- Paul discussed FHWA's efforts to bring people together at the national level to create a common vision of a Road Weather Management Program. The goal of the program is to facilitate the deployment of integrated road weather information systems that meet the needs of all users of the transportation system. Efforts will be focused on making weather and road condition information fully accessible in decision support applications. Many of the agencies involved in this effort will be participating in the second WIST Symposium scheduled for December 4-6, 2000, Rockville, MD. The Maintenance Decision Support System (MDSS) project, which is part of the Road Weather Management Program began prototype development in September 2000. The MDSS project is a multi-year development effort to prototype and field test advanced decision

support components for winter road maintenance. Paul reported that FORETELL, the multi-state initiative integrating ITS with advanced weather prediction systems, is operational as of this month for the states of Wisconsin, Minnesota, Iowa and Missouri. Paul also reported that FHWA is pursuing a more coordinated weather related research program. Aviation related weather research has been very successful and FHWA would like to see surface transportation benefit similarly.

- Paul showed a CD-ROM on the ARTS program (Advanced Rural Transportation Systems). The ARTS Query Page was useful and had good interest and activity when it was current, but the information posted now is not current. Paul would like to see this get updated and brought back into use. WMPCC needs to be aware of the ARTS program and see if parts of it should be referenced on the SICOP Web Site. Since ARTS Query Page isn't current, it would take effort on our part to keep what we needed up to date.
- Nevada has finished its fourth thermal-mapping project, completing the entire state. Five more RWIS sites are now operational with 8 to 12 more to be added. Nevada is working on traveler advisory systems. In a move to emphasize snow compatibility in road design, Nevada has put CH2M Hill designers in the snow plows to familiarize them with snow removal operations. Rick reported that the Lead State Team he was leading in snow and ice control, officially sunset and the final report was presented in September in St. Louis. Many of those responsibilities have now been transitioned to SICOP and the AASHTO Highway Subcommittee on Maintenance, Safety & Winter Operations Task Force. The NCHRP Project 20-7 final report on benefit/cost on RWIS and anti-icing will be finished this year.
- New York State DOT has contracted with SSI for installation of 25 RWIS sites.

### Outreach Activities

- AASHTO Highway Subcommittee on Maintenance Summer Meeting
- APWA North American Snow Conference
- Eastern States Snow Conference
- Western States Snow Conference
- APWA International Congress and Exposition
- North Carolina APWA Streets Division Conference
- *FOCUS* and *APWA Reporter* Magazine articles
- Winter maintenance technology exchange in Chile and Argentina

### Budget

Mujeeb reported as of June 30, 2000 there was \$46,000 in the SICOP admin budget. HR Green billed \$5,600 which will be vouchered to the RWIS/AI account. May need to ask for more funding (\$4,000 each state?) Need to hear from the project champions any funding they might need for their projects. It was suggested that SICOP might want to help sponsor and staff a booth at Sapporo. The RWIS/AI CBT might have some appeal for international marketing at Sapporo.

## Next Meeting

Next meeting in April. Need to miss AASHTO management training Dave will be taking in April. Need a site in New York or Virginia. Lee will work with Joe and Andy to select time and site.

## Future Directions

Environmental Issues—develop a proposed scope of work for a future project addressing the environmental effects of snow and ice control. Processes/methods to better control the materials being used. Identify best practices for the materials being used. SICOP role should be to monitor on going research and determine how to market best practices and help raise the awareness on the damage misuse causes.

Customer Input—Wilf will put a mission statement on the web along with a description of the eleven SICOP projects and an additional category soliciting ideas from site visitors on what future projects SICOP should consider.

Traveler Information—511 is now a reality and now we need consistency in describing road conditions. ITS has gone through the standards process, and the working group has presented a set of standards (ASTM and data dictionary). How can SICOP help this ongoing process? AASHTO needs to take the lead in advocating the standards. Lee/Mujeeb/Pat will do follow up (Pat with Dave Ekern, Lee/Mjueeb with Ken and Dave Hensing).

WMPCC involvement with APWA and NACE—what focus do local governments need to improve their winter maintenance operations? Need suggestions for programs to disseminate the information from the “Guide for Snow and Ice Control” or the RWIS/AI CBT.

How to build a working relationship with the insurance industry such as being done with ICBC? There may be possibilities to begin immediately with the Insurance Industry for Highway Safety. They should be especially helpful with the driver education project.

Provide continuing input to the “A Draft Strategy for a Coordinated Surface Transportation Weather Research Program in the United States”.

Summarize the progress being made with proofing infra-red thermometers. A best practices recommendation is needed for mounting the units as well as where the measurement will be off due to emissivity of surface being measured.

Quality control is needed in winter maintenance. This should be integrated with performance based management. Past experience is that even if the methodology is available, the quality of the data is an issue. The quality of forecasting services should also be considered. Wilf will try to put together a problem statement on this.

(Idaho will publish a report on reduced labor, materials and accidents in one area when they used anti-icing)