



MINUTES

Clear Roads 2010 Technical Advisory Committee Winter Meeting:

Pooled Fund Project #TPF-5(218) - Test and Evaluation of Materials, Equipment and Methods for Winter Highway Maintenance

Tuesday - Thursday January 26 - 29, 2010

Ramada Inn (Lacey, Washington) - (<http://www.ramada.com>) - Rainier Room

Attendees:

Paul DeJulio, Colorado DOT
Jim Dowd, Iowa DOT
Kevin Marchek, Illinois DOT
Paul Brown, Mass Highway
Brian Burne, Maine DOT
Tim Croze, Michigan DOT
Tom Peters, Minnesota DOT

Tim Jackson, Missouri DOT
Caleb Dobbins New Hampshire DOT
Mike Lashmet, New York DOT
Brad Darr, North Dakota DOT
Lynn Bernhard, Utah DOT
Allen Williams, Virginia DOT
Monty Mills, Washington DOT

Mike Sproul, Wisconsin DOT
Cliff Spoonemore, Wyoming DOT
Rudy Persaud, FHWA – D.C.
Mark DeVries, McHenry County
Max Perchanok, Ontario Ministry of Transportation
Colleen Bos, CTC & Assoc.

Materials Distributed:

Agenda
Clear Roads Budget Overview
Clear Roads Budget Overview
Clear Roads Project Management – Roles and Responsibilities
Projects and Subcommittee Membership
2010 Research Problem Statements
Aurora Status Report
Aurora Wiki Project Summary
APWA Winter Maintenance Subcommittee Business Plan
APWA Subcommittee on Winter Maintenance – Task Force Committee Rosters
APWA Snow Conference – Winter Maintenance Committee Meeting (April 26, 2009)
Performance Measures Questions
Performance Measures Power Point
State Winter Statistics Spreadsheet
Video Proposal
Peer Exchange Research Needs Statements 2007
Peer Exchange Research Needs Statements 2009
Development of Standardized Test Procedures for Deicing Compounds – Quarterly Report

Development of Standardized Test Procedures for Carbide Insert Snowplow Blade Wear – Quarterly Report
Development of a Toolkit for Cost-benefit Analysis of Specific Winter Maintenance Practices, Equipment and Operations – Quarterly Report
Development of Interface Specifications for Mobile Data Platforms – Quarterly Report
Developing and Evaluating Safe Winter Driving Messages
Missouri State Report
New Hampshire State Report
New York State Report
Illinois State Report
North Dakota State Report
Wisconsin State Report
Wyoming State Report
AASHTO Winter Maintenance Technical Service Program (WMTSP) Draft Agenda
Washington DOT Winter Operations GPS Location and Automatic Data Collection Power Point

January 26, 2010

Introductions and Meeting Objectives

Chairperson Paul Brown kicked off the day with introductions of all attendees and a review of objectives:

- to get updated on current Clear Roads research and
- to select new projects for RFP development.

Introductions included some new faces:

- One new member joined Clear Roads: Caleb Dobbins from New Hampshire.
- Several first-time guests joined the Clear Roads members for the winter meeting: James Collier from the Washington state office of the FHWA, Max Perchanok from Ontario Ministry of Transportation representing Aurora, Mark DeVries from McHenry County, Illinois representing the APWA, and Chris Christopher and Jay Wells from the Washington DOT.
- Tom Peters from the Minnesota DOT and Brad Darr from the North Dakota DOT were attending their first Clear Roads meeting.

Chris Christopher made some opening remarks regarding the current state of winter maintenance operations and research.

Clear Roads Budget

Colleen Bos provided an overview of the Clear Roads budget, including amounts committed and obligated, amounts contracted, and estimated planned expenses. Clear Roads has approximately \$462,807 to spend on research this year, although we are still awaiting transfers from states for 2010 and the transfer of the remaining balance from Wisconsin DOT for TPF-5(092).

Research Project Selection

Prior to the meeting, Clear Roads members participated in two teleconferences to review the projects proposed for funding in 2010. Refer to the end of these minutes for notes on the discussions that took place on January 19 and 20, 2010.

Colleen shared the combined rankings submitted by TAC members for discussion. At the end of the discussion the group approved three projects for funding:

- **Snow and Ice Control Operations True Cost Phase I and Phase II**
 - Funding: \$150,000 for Phase I and \$100,000 for Phase II (to be discussed at the Summer 2010 meeting, since the TAC wants Phase II to start later, but thinks it can overlap somewhat with Phase I).
 - Subcommittee: Paul Brown (project champion), Brian Burne, Allen Williams, Mike Sproul, and Jay Wells. Lynn Bernhard also has a member of his Budget office who may be willing to join this subcommittee.
- **Best Management Practices for Reducing Corrosion on Maintenance Equipment Phase I**
 - Funding: \$100,000; 18 months.
 - Subcommittee: Cliff Spoonemore (project champion), Monty Mills, and Jim Dowd. Cliff will ask Ron Wright to join this subcommittee, we may also try to get NACE involved and Lynn Bernhard will see if Steve McCarthy from the Utah DOT is willing to join the subcommittee.
- **Enhance AI/RWIS CBT**
 - Funding: \$25,000
 - This is an AASHTO initiative and we will contribute funding. No subcommittee was necessary to guide the project.

>>Action Items

- *CTC & Associates*: Work with the subcommittees to develop RFPs for the True Costs of Snow and Ice Operations Phase I project and the Best Management Practices for Reducing Corrosion project.
- *CTC & Associates*: Follow up with Lynn Bernhard, Ron Wright and others to identify all subcommittee members for the selected projects and send out the document that outlines the roles of subcommittee members to any new members.
- *CTC & Associates*: Draft a letter outlining Clear Roads financial commitment to the AI/RWIS project.
- *Paul Brown*: Serve as project champion for the True Costs of Snow and Ice Operations project.
- *Cliff Spoonemore*: Serve as project champion for the Best Management Practices for Reducing Corrosion project.

Missouri State Report

Tim Jackson shared an overview of his agency's activity for the last year. Here are a few highlights:

- There was a good match between expenditures and severity in past winter seasons.
- Installing more RWIS in the interstate corridors, especially the I-44 corridor.
- Adding more GPS/AVL units in statewide implementation.
- Gained great efficiency from their use of tow plows and received a Technology Implementation Group award (TIG) from AASHTO for the tow plows as well.
- They also won Missouri's 2009 Governor's Award for Quality and Productivity in Customer Service.

RFP Development

The TAC worked as a group to begin drafting the scope for the selected projects.

Snow and Ice Control Operations True Cost

- **Phase I**

The goal is to determine what it costs to do maintenance via a variety of different methods using internal or external resources. The idea is to help legislatures see the real long-term costs of the decisions they make about snow and ice operations.

The objective is to develop a tool that is a repository of information on costs that includes an algorithm to help complete the calculations, so that comparisons can be made within the agency (between different locations) or between agencies. The algorithm should help complete the calculations based on cycle time, life cycle of equipment, labor costs, geography/winter severity, cost of materials and other variables and will deliver calculations as a cost per hour or per lane mile.

The TAC also began outlining specific tasks for the project, although the subcommittees will develop the scope and tasks in more detail after the meeting.

- **Phase II**

The goal is to basically validate and update the Salt Institute research that documented the costs to and impact on society when roads are not accessible. It would also include a literature search to identify additional studies on costs and impacts.

Phase II is not sequential but should reference the findings of Phase I. Phase II needs to start about 6 or 12 months after Phase I, so it can build off the findings, therefore we will discuss Phase II at the Summer 2010 meeting.

BMP for Reducing Corrosion on Maintenance Equipment

The goal is to identify best practices for reducing corrosion of equipment.

- **Phase I**

The goal will be to conduct a very thorough multi-modal literature search and a survey of what others are doing to synthesize the known, effective practices for reducing corrosion. For Phase I the synthesis should include other industries that deal with corrosion, such as the armed forces, trucking, shipping, and others. The research will focus on the biggest expenses, such as the lifecycle cost of equipment, equipment downtime and repair costs. The results should identify the practices or materials that have the biggest impact on corrosion.

The objective will be to document best practices that include not only recommendations but specifications as well. The deliverables would include a user's guide (including specifications), recommendations on both procedures and materials to address needs with both existing trucks and ordering new trucks. These could be separate documents for New Truck Guidelines and Existing Truck Guidelines.

The TAC also began outlining specific tasks for the project, although the subcommittees will develop the scope and tasks in more detail after the meeting.

- **Phase II**

Phase II would be field research to back up the findings of Phase I, but the TAC would like to wait on that until they see the results of Phase I. Phase II may not be necessary if other industries already have completed thorough research.

Enhance AI/RWIS CBT

AASHTO already has an effort to update the AI/RWIS CBT, so we would contribute funding to their project rather than scope something out ourselves. The group agreed that a letter should be sent to SICOP conveying the TAC's decision to fund the project to make it a web-based system, as well as our interest in seeing it separated into smaller units.

There was some discussion of whether the larger snow and ice community should pay a fee for using this system to support its on-going maintenance.

>>Action Items

- *CTC & Associates*: Develop a letter to send to AASHTO/ SICOP conveying Clear Roads support for this project.

Colorado State Report

Paul DeJulio shared an overview of his agency's activity for the last year. Here are a few highlights:

- MDSS Implementation is underway.
- Starting to make and use salt brine. Colorado has developed three plants including one that can produce 30,000 gallons of brine in four hours.
- Some challenges in terms of environmental concerns and their 30-day corrosion tests.
- Began some GIS reporting to track level of service performance.
- Rewrote snow and ice policy to address budget concerns and finally implemented it.
- Using Howitzer rounds used to clear the mountain snow at some passes.

Aurora Update

Max Perchanok presented an Aurora update:

- He gave some background on Aurora and Chris Albrecht joined us via a Web meeting to share an update on their "Wiki" project, which was a hot topic at the 2009 Peer Exchange.

- Max also reviewed the Aurora project on Friction Detection Technologies, which focuses on looking for a rational way to see the impact of getting to bare pavement in various time scenarios.

>>Action Items

- *CTC & Associates*: Coordinate with Chris at Aurora to help share Clear Roads feedback on the Wiki project.

SICOP and APWA Update

Mark DeVries presented updates on both on APWA and SICOP:

- The APWA has 30,000 members representing states as well as cities and municipalities.
- APWA goals include education, outreach, and training.
- Clear Roads is presenting at the April 2010 conference.
- Mark noted that there may be opportunities to publish articles about Clear Roads research in the APWA Reporter.
- APWA is also considering a certification for snowplow operators, which could be a good way to reach out to private contractors.
- Mark shared the agenda for the upcoming SICOP meeting in Quebec as well as describing their new strategic plan and structure which includes a big focus on the CBT and Aurora's Wiki project.

January 27, 2010

Welcome

Paul reviewed yesterday's accomplishments with project selection and previewed our agenda for the day, including the plan to end the day with a Salt Brine facility tour in Chehalis.

New Hampshire State Report

Caleb Dobbins shared an overview of his agency's activity for the last year. Here are a few highlights:

- Tried to get private operators to discuss snow removal operations at parking lots, but only one operator showed up. However, 15% of the Chloride used is from private companies.
- Starting to use the Joma blades, which people have liked and noted are very quiet.
- Implemented penalties for moisture in the salt they receive.
- Challenges with dispatch issues as they try to determine how staff at the capital can dispatch accurately when many calls come in using local jargon or landmarks.

New York State Report

Mike Lashmet shared an overview of his agency's activity for the last year. Here are a few highlights:

- Challenges with diminishing budgets and higher expectations for level of service. Their goal is bare roads within 2 hours after the storm ends.
- New York is putting more focus on environmental issues, such as salt usage.
- Increased use of anti-icing liquids like Salt Brine; retrofitting government surplus equipment for liquid application.
- Adopted a no-idling policy on trucks.
- They are doing more spot-check calibrations.
- MDSS initiative, started with a pilot and they are now looking to secure funds for statewide implementation.

Determining Effectiveness of Deicing Materials and Procedures

Colleen provided background on the original project to develop a portable test method, which was cancelled.

- Dennis Burhkeimer developed a field guide that reflected the goal of the project and last summer the TAC voted to fund a video to help with technology transfer of the field testing procedures in the guide.
- University of Massachusetts has submitted a proposal to Paul Brown for the video.
- Paul presented some information on the University of Massachusetts, their proposal and a DVD with examples of their work.

The TAC voted to approve the additional funds to meet the \$30,000 requested in the proposal. Both the written guide and the video will be made available on the Clear Roads Web site.

>>Action Items

- *CTC & Associates*: Will put an interagency agreement in place with the University of Massachusetts so they can complete the DVD for Clear Roads.

Carbide Insert Snowplow Blade Wear Project Update

Lynn Bernhard reviewed the project goals: coming up with tests to predict carbide blade wear, including both laboratory and field tests.

- This project had languished due to delays in obtaining blades for field testing.
- Field testing was completed in December.
- The project should be wrapped up by April and will have a report for the summer meeting, which could include some recommendations for specifications.

Standardized Procedures for Evaluating Deicing Chemicals Update

Cliff Spoonemore reviewed the goals and status of this project. The goal is to develop a set of standardized lab tests so that we can evaluate the latest and greatest deicing chemicals being sold.

- The TAC received the draft Final Report from WTI and had significant feedback, so we are now reviewing a revised draft of the Final Report.
- The subcommittee has recruited Ron Wright from Idaho DOT to help us review the current draft and provide feedback for WTI, because the current report is highly technical and hard for the subcommittee to read and assess.
- The project results overall are not as straightforward as we'd hoped and it seems like they've forgotten who their audience is in terms of the technical level at which it is written.
- WTI seems to lean towards DSC Thermogram although they aren't as firm and direct about it in the report as the subcommittee would like.
- The TAC understands that the results may not be as straightforward as expected, but thinks the report could be better written and the recommendations more unequivocally stated.

>>Action Items

- *Allen Williams, Kevin Marchek and Tom Peters*: Develop an evaluation process to share feedback with Clear Roads Principal Investigators and solicit suggestions from them on how we can improve as well.
- *CTC & Associates*: Get Ron Wright's feedback and share it with WTI and also ask them to rewrite the report for readability with the Clear Roads audience in mind with more clear executive summary and conclusions.
- *CTC & Associates*: Follow up with TAC members to solicit the names of additional researchers to whom we should be sending our RFPs.

Cost-benefit Analysis Project

Paul Brown gave an update and reviewed the goals of this project. The goal is to develop a cost-benefit analysis toolkit that will help winter maintenance professionals to communicate operational needs to accounting and other non-winter maintenance staff within our agencies. The toolkit will help provide the information Clear Roads technical representatives need to demonstrate the value of the materials and equipment to do their jobs effectively.

- Paul demoed the prototype of the CBA toolkit.
- The group discussed the need for additional data from our members to help develop the back end of the toolkit.
- The TAC also discussed the ongoing support for the kit: the numbers that drive the toolkit can be tweaked and Clear Roads will host it on the Web site to make it available to the winter maintenance community.

>>Action Items

- *CTC & Associates*: Will follow up with Clear Roads members to solicit the additional data for the toolkit.

Snowplow Design Project Update

Jim Dowd provided an update on this project. The goal was to develop a different type of blade with multiple edges on it for one-pass plowing. The idea is to remove as much snow and ice as possible in a single pass. Testing of the designs continues this winter season.

Interface Specifications Project

Tim Jackson provided an update on this project. The goal of this project is to try to get a set of specifications to help identify a standard communication format and protocols. The background is that everyone who has dealt with GPS understands the challenges of getting various components to work together seamlessly.

- Thompson Engineering was selected and they have made good progress. We expect the project to be complete this spring.

Deicing Chemicals Testing Phase 1

Monty Mills provided an update on this project. The goal is to develop a tool or method to evaluate the performance and friction coefficient of de-icing chemicals in conditions that replicate the actual roadway.

- The contract was awarded last summer but it has been very challenging to get a contract in place between WisDOT and WTI.
- There appears to have been a recent breakthrough in terms of finding compromise on the contract language, so we hope to get started soon.

GPS and Automated Data Review

Washington DOT provided a review of their GPS Location and Automated Data Collection systems, including technology, equipment, costs, etc.

Hot Button Topic: Performance Measures

The TAC had agreed last summer to discuss performance measures. Tim Croze had prepared questions in advance and also started the group off by reviewing the Transportation Authorization Act of 2009, which focused on performance measures.

The discussion focused on the following:

- Most agencies seem to be looking at two basic types of performance measures: how long after a storm event it takes to get the average speed of traffic back up to the level prior to the event or how long it takes to regain a bare lane after it's lost during an event.
- Ontario and Virginia use performance measures to assess the performance of contractors and can fine the contractors if they do not meet their performance measures.
- Some agencies, like Iowa, do not have performance measures per se, but they look at their winter statistics and try to share information with their districts.
- Colorado has twelve categories of road classification and is funded based on the return time to bare pavement.

- Utah and Washington give a letter grade based on the condition of the pavement after the storm/treatment.
- Most states reported that performance measures help them to get management or the legislature to look at the cost/ value of the winter maintenance investment and it often encourages the agency to cut back on material usage.
- For those who have to contract out work, it helps ensure that the agency can accurately request and track what they need done.
- Washington, Iowa and Utah reported that they publish performance measures in-house as a feedback mechanism. Utah also uses them to determine the next year's funding or staffing.
- Utah, Washington and Massachusetts all noted that they publish this information publicly. Utah also compares their own grades with the public perceptions and finds they are usually pretty comparable.
- Ontario also uses them to try to understand where it's harder to meet the goals that have been set.
- Washington DOT's GMAP (Government Management and Accountability Plan) was recently recognized for a global achievement award. They've found it provides a tool for credibility with public and the legislature to demonstrate how they are doing and where the funding needs are.
- Storm severity is a key issue to track in addition to the performance measures. Various states have different approaches to monitoring storm severity:
 - some do not track it at all;
 - others look at severity on a winter basis rather than looking at each storm;
 - Washington looks at a frost index.

January 28, 2010

Welcome

Paul reviewed yesterday's accomplishments and previewed the agenda for the day.

Meeting Location and Planning

The group discussed the Summer 2010 Clear Roads meeting and agreed that Wyoming (either Jackson Hole or Cheyenne) should be the first choice. Colleen will research the feasibility of each one from a cost perspective and identify the most cost-effective option. The meeting will be held during the second week in August.

Virginia is also suggested as a first choice for the Winter 2011 meeting, so that we can hold the meeting at and tour the Smart Road facility. The meeting will be held the third week in January.

Michigan was identified as a back-up option if either Wyoming or Virginia are not possible.

>>Action Items

- *CTC & Associates*: Will follow up with Mn/DOT to begin the RFP and contract process for the summer meeting.

Winter statistics

The group discussed the project led by Tim Croze to gather winter statistics from as many snow and ice states as possible.

- It was agreed that Clear Roads should continue to gather this information.
- Clear Roads will post it on the Members Only section of the Clear Roads Web site and shared the data with participating states, though not posted publicly.
- If anyone outside the participating states requests information from Clear Roads regarding the responses, Clear Roads will direct them to contacts at each individual state.

- Clear Roads will ensure that the plan for posting and distribution of the data is stated clearly when we solicit information.

>>Action Items

- *Tim Croze*: Will continue to collect each states updated data
- *CTC & Associates*: Will post the updated statistics on the Clear Roads Web site.

Aurora

The members discussed the value in sending a Clear Roads member to the Aurora meeting planned for Utah around April 13th.

- Lynn Bernhard agreed to attend on behalf of Clear Roads, given his proximity.
- Wyoming is also willing to attend if funding for an additional attendee is possible.

Bringing in Expertise

Paul Brown suggested that Clear Roads begin to develop a pool of experts who can be brought in to assist with the guidance of projects.

>>Action Items

- *CTC & Associates*: Will develop and maintain a list of experts who can be brought in on projects. She will send out an email garnering suggestions.

Website and Project Tracking

Colleen presented a spreadsheet that will be posted in the Members Only section of the Web site that she has developed to assist Clear Roads members in keeping track of projects and their status, including any necessary follow up items. She received the following suggestions:

- Add action items from the Clear Roads meetings in a separate tab.
- List other subcommittee members in the contacts column (not just the Project Champion).
- Use color-coding to help people see at a glance where they may have follow up activities.

The TAC members also discussed the Web site overall and made the following suggestions:

- To add a photos section, so that members can access and utilize each other's pictures and see each other's new equipment as well.
- Post all PowerPoint presentations and videos in the Members Only section after each Clear Roads meeting.
- Add a legislative section to the Members only section to help advise each other on legislative issues that are developing or becoming common in the US.

>>Action Item

- *CTC & Associates*: Will update the project tracking spreadsheet and the Web site to reflect the discussion.
- *Caleb Dobbins*: Will take the lead as a clearing house for the articles or information on legislative matters that will be posted on the Web site.

Identifying the Parameters for Effective Implementation of Liquid-only Plow Routes

Allen Williams described the goal of this project, which looks at the use of liquid-only routes for snow and ice removal. The focus of this study would be to identify parameters for the safe and effective use of liquid-only routes during winter storm events.

- EVS has been selected as the vendor and Colleen is working on the contract.
- Mark DeVries offered to work as a member of that subcommittee and will help make sure that other localities get the survey for the project.
- Mark also suggested that next summer, he could present some information on his agency's use of liquid routes at the Clear Roads meeting.

Developing and Evaluating Safe Winter Driving Messages

The goal of this project was to study crash data and identify the most high-risk drivers to target for safe winter driving messages. Once the demographic is known, the project will try to determine the best method to reach the target audience.

- The project is making good progress, although there was some confusion over the expectations for the final deliverables.
- The PI has been very responsive in working with the subcommittee to make sure the final deliverable meets our needs, even though the contract language was not clear to all involved.
- The final deliverable will be a 30-second PSA spot that reflects the research on how best to reach our target demographic.

Illinois State Report

Kevin Marchek shared an overview of his agency's activity for the last year. Here are a few highlights:

- Emphasizing training at all levels to address some bad habits.
- Reduced level of service as well (mostly a reduction in how quickly they return the pavement to bare road).
- They've had challenges with the quality of salt received.
- Heated windshields have been popular with their drivers.

Wisconsin State Report

Mike Sproul shared an overview of his agency's activity for the last year. Here are a few highlights:

- WisDOT experienced record salt use as well as higher prices.
- There were challenges with staffing because the overall maintenance budget has been slashed and only winter maintenance is funded, so it's hard to make it worthwhile for the counties to maintain the staff necessary in winter throughout the year.
- Trying to focus on the use of ground speed controllers, though there has been some resistance to it by the counties.
- Received federal IT money, which has made it possible to implement of some new technologies, such as AVL/GPS and MDSS.
- Tow plows and calibration scales are being implemented.

North Dakota State Report

Brad Darr shared an overview of his agency's activity for the last year. Here are a few highlights:

- There is an initiative to build more salt buildings, since much of their salt is still tarped right now.
- Involved in MDSS implementation.
- Doing some internal research on the Tow plow, AVL, and MDSS.

Massachusetts State Report

Paul Brown shared an overview of his agency's activity for the last year. Here are a few highlights:

- Merged with Mass Turnpike, Division of Conservation Resources and MassPort, so they are now a DOT.
- Due to privatization, they have only 250 trucks for 20,000 lane miles, so the contractors have been very much dictating costs to them.
- Moving back away from private contractors to using more of their own personal and equipment.
- Their new vendor contract includes larger equipment, pre-wetting units on material spreaders and other specifications that are more tailored to their needs.

- They have a research program current focused on GPS/AVL, water testing with the EPA, and use of a slurry salt-spreading system.
- Goals for the future include: reducing salt, educating the vendors they hire, certifying the materials spreaders for calibration by MassDOT, and establishing a salt brine facility.