



## MINUTES

### Clear Roads 2017 Technical Advisory Committee Fall Meeting:

Pooled Fund Project #TPF-5(353)

**Monday – Tuesday, September 11-12, 2017**

**DoubleTree Hotel, Pittsburgh, Pennsylvania**

#### Attendees:

Tom Renninger, Alaska DOT	Melissa Longworth, Michigan DOT	Dan Varilek, South Dakota DOT
Mark Trennepohl, Arizona DOT	Tom Peters, Minnesota DOT	Brandon Klenk, Utah DOT
Russell Modrell, California DOT	Todd Miller, Missouri DOT	Todd Law, Vermont AOT
David Vialpando, Colorado DOT	Doug McBroom, Montana DOT	Allen Williams, Virginia DOT
John DeCastro, Connecticut DOT	Ty Barger, Nebraska DOT	James Morin, Washington State DOT
Ron Wright, Idaho TD	David Gray, New Hampshire DOT	Jeff Pifer, West Virginia DOT
Frank Sharpe, Illinois DOT	Mike Lashmet, New York State DOT	Chris Ohm, Wisconsin DOT
Craig Bargfrede, Iowa DOT	Larry Gangl, North Dakota DOT	Cliff Spoonemore, Wyoming DOT
Jim Frye, Kansas DOT	Scott Lucas, Ohio DOT	Rick Nelson, AASHTO
Brian Burne, Maine DOT	Patti Caswell, Oregon DOT	Wilf Nixon, APWA
Sandi Sauter, Maryland SHA	Jon Fleming, Pennsylvania DOT	Greg Waidley, CTC & Associates
Sam Salfity, Mass DOT	Joe Bucci, Rhode Island, DOT	

#### Materials Distributed

Agenda	Research In-Progress
Attendees List	2012 Clear Roads Admin RFP
TAC Contact List	Clear Roads Operating Procedures
Clear Roads Budget Overview	PDH certificates

### Monday, September 11, 2017

#### Welcome

Opening remarks – Rich Roman, PennDOT

#### Introductions and Meeting Objectives

Chairperson Brian Burne kicked off the day with introductions of all the attendees, a brief re-cap of the changes in TAC membership and affiliated personnel since the spring meeting, and a review of the objectives for day 1.

TAC Members and Affiliated Personnel Replaced

- Caltrans – Russell Modrell replaces David Frame
- Colorado – David Johnson replaces Kyle Lester (just for this meeting)
- Illinois – Frank Sharpe replaces Tim Armbrecht
- Kansas – Jim Frye replaces Clay Adams (just for this meeting)
- Michigan – Melissa Longworth replaces Justin Droste
- Nebraska – Ty Barger replaces Tom Renninger/Tom Sands
- Texas – Michael Lee (new member state)
- Wisconsin – Chris Ohm replaces Michael Sproul (just for this meeting)
- APWA – Wilf Nixon replaces John Scharfbillig (just for this meeting)

## Business Card Roundtable

TAC members were given an open forum to present the challenges they deal with. The following is a list of those challenges which were discussed.

- Connecticut: Well contamination from Chlorides.
- Wyoming: Using carbide blades (high performance blades), yet only received 2.3Xs the life of regular blades. Training may help with this.
- Pennsylvania: Not enough winter operators. Also, many operators are retired and don't want a career, so there is no career ladder available.
  - MN – a couple Districts partnered with another state agency (MN Department of Natural Resources) to have employees split their year working for each agency as a driver between the winter and non-winter months.
  - VA – uses drivers who typically haul asphalt. VA is coordinating with industry who have drivers they use during the summer, which typically go on unemployment in the winter. VA hires them during the winter months if possible. Some states say they can't pay more than unemployment.
  - OR – Fire and Ice Agreement may provide some helpful guidance.
  - IA – employs an extensive advertising campaign to use farm and construction workers.
  - ME – entering into a contract with First Vehicle via a straight rate. The contracted company then pays their own employees.
  - AK – considering only hiring those who already of CDLs.
- Pennsylvania: Needs help with plow routing
  - WI – has software that can help.
- Nebraska: Reduction in workforce while maintaining LOS.
  - ID – Transportation Tech Operations (TTO). The Transportation Technician Operations positions were created within Idaho to help provide more money and to create a more dynamic winter maintenance operator.
    - Job Descriptions from the HR website: <http://itd.idaho.gov/careers/>
    - ME – pays municipalities where contracts are already in place and they hire the operators.
- Delaware: Working on a sensor at the back of truck that tells the operator when there is/isn't salt coming out of the v-body. They have a prototype developed in house but wasn't sure if anyone else had something. The issue is that their operators can't see the actual spinner, so it is hard to know for sure if they are applying material.
- Missouri: Budget reduction has increased the average age of vehicles from 8 to almost 13 years.

- RI – no innovations for old equipment. The executives saw the impact after severe winter and decided to make the investment but it's important to stagger the investments so that the fleet doesn't age at the same time.
- AZ – fleet management group tracks lifetime maintenance costs. When the lifetime maintenance costs exceed the purchase price, then the decision-makers tend to purchase new vehicles.
- CA – uses a Vehicle Acquisition Methodology (VAM).
- California: Snowblowers CA purchased from WI (Wassau) - traps are getting clogged and have to keep stopping to unclog.
- Minnesota: Transportation Research and Innovative Group (MnDOT committee) has requested a quantification of the benefit-cost of CR projects for justification.
  - IA – Provided to their leadership a list of Clear Roads projects and the collaboration (internal surveys) which occurs on a regular basis.
  - OR – mentions the PNS as a resource for CR membership.
  - MT – applies the savings in salt use to the lessons learned from CR membership.

**ACTION ITEM** CTC will collect from CR membership examples of “implementation” or “benefit-cost” to be put in a summary document for use by the whole group. Will do this via return to Implementation Survey in January 2018.

- Kansas: Use of AVL/GPS.
  - Need to ask the question of your own state – what do you really need this data for and how are you using it? Do you really need real-time data? Or, would it be just as valuable to be able to data dump when the vehicle reaches the garage?
  - CO – uses it for management/enforcement. Without good cell service, the data will be unreliable.
  - CA – dealing with separate needs for AVL and GPS, yet they want to avoid two separate systems/contracts.
  - NH – use their devices year round, including using it for summer painting and mowing. So long as a truck is properly wired, then the AVL can be moved from one vehicle to another in a plug and play manner. They don't receive cell bills as they have that included within their AVL service.
  - GPS for discipline – most state don't use GPS for discipline as a primary reason, yet it can be used if necessary.
  - CA: Electronic Vehicle Login (EVL) is going to be required as part of a federally mandated program.
- Maryland: how to you dispose of snow in highly urbanized areas?
  - ID – brought trucks in at night and haul it off. MA confirms.
- Oregon: Do states have a bare pavement LOS? Many states have that expectation but oftentimes they don't have a time constraint connected to that LOS.
- Wisconsin: Liquid Only Plow Routes.
  - Sent WI the finalized reference guides from CR 16-06.
- New York: Expectations of the traveling public related to LOS.
  - See upcoming CR project on Winter Preparedness website.
- Wisconsin: Mini Traffic Circles are difficult to navigate by large winter maintenance vehicles.
  - Though it doesn't refer to Mini Traffic Circles, CR 14-03 does have guidelines for how to navigate roundabouts.
- Illinois: Has questions regarding the use of pesticides.
- Washington: Chain enforcement for mountain passes.

- CA – trucks are required to be screened prior to transporting I-80 (Hwy 80). CA uses funds set aside by the DOT to pay law enforcement for services.
- Many states stage tow trucks/pusher trucks during heavy snow conditions. California Truckers Association pays for these pusher trucks.
- PA – Uses a Rented Equipment Invitation to Qualify

**ACTION ITEM** CTC will carry forward a potential project idea brought up during the discussion: *Best Practices Used by Transportation Agencies for Funding for Winter Maintenance Equipment.*

- AASHTO SCOM (equipment subcommittee) is proposing a project on this?

### **Pacific Northwest Snowfighters (PNS) Pooled Fund**

James Morin noted that there is doubt that the PNS should can continue as a pooled fund. Therefore, this may be an opportunity to discuss the current relationship between the PNS and Clear Roads and what the future may look like.

- The PNS pre-dates Clear Roads (circa 1998).
- Qualified Products List (QPL) is the main focus of the PNS pooled fund.
- The other arm is training (non-profit). Continue on at least an every other year process.
- Clear Roads has been contributing \$30k every three years. Most recent contribution was 2015, so Clear Roads is due to look at the funding situation again in spring 2018.
- Ron W. has been doing a lot of these tasks in-house, thus reducing the necessary costs to run the QPL.
- Pacific Northwest Snowfighters name is not necessarily an accurate depiction of the current scope. Yet, it is a strong and identifiable brand name.
- If the PNS does not continue on as a standalone pooled fund, another option may include –
  - Make the PNS a Clear Roads project.
    - If Clear Roads goes away, what happens to PNS?
    - Doug McBroom stated that Montana DOT would step up and perform the chemical analysis.
    - Should be multiple labs performing the analysis to lighten the load.
- Next steps:
  - Current PNS subcommittee will ask questions to find out the limitations of dealing with the funding currently residing within the PNS.
  - A proposal will be created for discussion at the spring meeting. This should include a budget proposal.

### **Clear Roads Budget**

#### **TPF-5(353)**

Total funds committed to date is \$2,150,000. Total funds expected for 2017 is \$1,000,000. Funds received to date is \$825,000 (still awaiting 8 member states to transfer their 2017 funds). Total expenses expected for FY2017 is \$810,170.

### **Synthesis Problem Statements**

None submitted for the fall meeting, yet a project on fleet management practices may be pursued in the spring.

## Research In-Progress Project Updates

For each active project, the TAC reviewed subcommittee members and assigned new members as necessary. Project champions are underlined. Non-TAC members will be kept on the list, but names will include an asterisk. They will still receive project communications at their DOT emails, if appropriate.

### Understanding the Chemical and Mechanical Performance of Snow and Ice Control Agents on Porous or Permeable Pavements (12-03)

- Subcommittee: Mike Lashmet, Cliff Spoonemore, Clay Adams, Paul Brown\*, Tim Croze\*
- The lab testing is complete and the draft white paper was submitted. The white paper focused on the analysis of the lab testing conducted on dense-graded, ultra-thin friction course, and open-graded friction course pavements. A summary of the results from the lab testing are:
  - Friction on porous and permeable pavements (PPP) is significantly greater than on densely graded pavements (DGP).
  - PPPs appear more snow-covered after scraping snow from the surface
  - Snow generally bonds stronger on PPPs than DGPs
  - Friction on PPPs was only slightly greater in tests with salt application (anti-icing or deicing) than on control tests with no salt.
- Tests were conducted on dense-graded and ultra-thin friction course pavements in a humidity chamber in the cold lab to assess frost formation on pavements. That data is being re-examined and will be added to the white paper.
- A synthesis of best practices for snow and ice control on PPPs is nearly drafted.
- Field testing is strongly recommended to assess friction during more realistic winter storm conditions, and recommendations for future field testing will be provided.

### Quantifying the Impact that New Capital Projects Will Have on Roadway Snow and Ice Control (RSIC) Operations (14-02)

- Subcommittee: Todd Law, Joseph Bucci, Kyle Lester, Larry Gangl, Brandon Klenk, Brad Darr\*
- Completed analysis for the second round of field data for four case study routes in New Hampshire and Minnesota. Continued development of the MS Excel decision-support tool. Due to a misplaced GPS device and longer than expected time to process the data, the research team applied for a no-cost time extension until January 2018. This project will also include a report which contains recommendations for incorporating RSIC operations and maintenance considerations into the AASHTO Green Book.

### Synthesis of Material Application Methodologies for Winter Operations (15-01)

- Subcommittee: Jeff Pifer, Paul Brown\*, John DeCastro, James Morin, Monty Mills\*, Rick Nelson\*, Max Perchanok\*, Mark DeVries\*, Wilf Nixon\*
- 26 interviews were conducted with DOTs, cities, counties, and international transportation agencies. An updated memo providing the methods and highlights of the results will be provided to the subcommittee for their review. The PI has almost completed the first draft of the handbook.

### Identification and Recommendations for Correction of Equipment Factors Causing Fatigue in Snowplow Operations (CR 15-02)

- Subcommittee: Allen Williams, Cliff Spoonemore, Patti Caswell, Tom Renninger, Todd Law, Todd Miller, John Scharbillig\*

- The project team submitted the Task 8 report which analyzed the survey (1900+) results. That document was approved. Task 9 (Developing a Prioritized Scale of Recommendations) and Task 10 (Final Recommendations and Tech Transfer Resources) are complete. Task 11 (Draft Final Report) will be submitted shortly after this fall meeting for subcommittee review.

#### **GPS/AVL Case Studies (16-01)**

- Subcommittee: Patti Caswell, Todd Miller, Mindy Heinkel (MnDOT), Craig Bargfrede, Mike Lashmet, Mark Trennepohl, David Gray, Scott Lucas, Todd Hanley\*, Gabe Guevara\*
- The literature search is complete. The survey is also complete and the subcommittee received a draft summary of those responses as well as the raw data. The subcommittee met with the research team in August to discuss these documents and their comments. The next steps will be to conduct interviews/case studies, which will be done on site at approximately 5 or 6 locations (recommendations for case studies was submitted in early August).

#### **AWSSI Enhancements in Support of Winter Road Maintenance (16-02)**

- Subcommittee: Brain Burne, Jon Fleming, Melissa Longworth, Mark Trennepohl, Tina Greenfield\*, Neal Hawkins\*
- This project has been scoped out and is undergoing the contracting process within MnDOT.

#### **Identification of Mobile Technologies for the Assessment of Winter Road Conditions (16-03)**

- Subcommittee: Kyle Lester, Cliff Spoonmore, Frank Sharpe, James Morin, Allen Williams, Dan Varilek, Jakin Koll\*
- Completed Task 1 - Literature Search, Industry Review and Synthesis.
  - From that 6 sensors emerged, Lufft MARWIS, Teconer RCM411, High Sierra Mobile IceSight, Metsense Metroad Mobile, Vaisala DSP310 and Universidad Carlos III de Madrid Sensroad.
- Task 2 - Survey and Interviews is completed
  - 7 state = Lufft MARWIS
  - 3 states = Teconer RCM411
  - 3 states = High Sierra Mobile IceSight
  - 4 states = Vaisala DSP310
  - No one = Metsense Metroad Mobiles
  - Late comer is Universidad Carlos III de Madrid Sensroad
  - 9 state use a variety of other sensors such as Roadwatch
- Task 3 - Test Methodology
  - SRF has developed a two phase approach for testing the sensors side by side. The sensors will be mounted on a trailer.
  - Phase 1 = will be complete on the MnDOT test track facility. If all the collaboration tests check out then on to phase 2.
  - Phase 2 = testing under live traffic on a pre-assigned route. Should this work out and there is still enough winter available they may add on to the route.
- Currently SRF Consulting is on schedule per the contract. Final deliverables for Task 3 is Sept 30th and they should have no trouble meeting this deadline.
- Conducting the tests will begin with the first snowfall here in fall 2017 and continue through spring of 2018. The project TAC should be able to give a draft report on the results of the winter testing at the 2018 Spring CR Meeting.

### **Emergency Operations Methodology for Extreme Winter Storm Events (16-04)**

- Subcommittee: Mike Lashmet, John DeCastro, Joe Bucci, Jon Fleming, Mike Sproul, Todd Law, Rick Nelson\*
- The project team has completed Task 1 (Literature Search) and Task 2 (Survey) and provided the deliverables associated with each task to the TAC. These two tasks jointly served to provide a framework for emergency response plans for extreme winter storms and to identify candidate agencies for inclusion in the detailed case studies (Task 3).  
In order to identify DOTs and other entities that had written emergency-response plans for severe winter weather, the survey was distributed to Clear Roads members, the AASHTO snow and ice listserv, and staff at state departments of emergency management in all Clear Roads' member states. After email follow-up with the 18 DOT respondents reporting that their agencies had a written plan, 8 respondents provided a copy of the written plan they referred to in the survey and these plans were featured in the literature review along with summarizes federal guidance and academic literature on best practices for emergency-response planning for winter storm events. This process identified 9 critical components for emergency-response plan for extreme winter-weather events ranging from trigger criteria through communication and coordination planning. On this basis of the survey and literature review, the project team is recommending developing in-depth case studies for Colorado, New York State, South Dakota, Georgia, New Jersey, Pennsylvania, Michigan and Texas, along with the I-95 Corridor Coalition.
- The project TAC is currently reviewing the deliverable for Task 1 which includes the set of recommended case studies for Task 3. Once the list of case studies agencies has been finalized we will begin the case study development process with these agencies. This process will provide the basis for the completion of Tasks 4 and 5. The project is currently on schedule.

### **Weather Event Reconstruction and Analysis Tool (16-05)**

- Subcommittee: Brian Burne, Patti Caswell, Alastair Probert, Todd Miller, Tom Renninger, Jeff Pifer, Joe Bucci
- The research team submitted a list of data requirements, produced a data source catalog, and just last week submitted a web tool proposal, which the subcommittee will review and meet with the research team to discuss in the next couple of weeks.

### **Training Video for the Implementation of Liquid Only Plow Routes (16-06)**

- Subcommittee: Jeff Pifer, Scott Lucas, Brandon Klenk, Clay Adams, Paul Brown\*, Anne Brown\*
- The research team has completed the literature search, the survey of practice, and the updated Quick Reference Guides. A video script concept and filming plan has been submitted for review as well. In the coming months, the research team will collect video footage, and finalize the video script. They will then begin producing the final video.

### **RFP for Clear Roads Administrative Contract**

Tom Peters and Brian Burne led a discussion of the need for a new RFP for the Clear Roads administrative contract to be posted in early 2018. Greg Waidley stepped out of the room during this time.

### **FHWA Report**

- Road Weather Management Stakeholder Meeting, Minneapolis, MN in June.

- EDC-4 initiatives (2 year program that started in January 2018). Contactor (ICF International) on board.
  - 2 solutions (Pathfinder, IMO)
    - Pathfinder – 18 states signed up.
    - IMO (instrumenting vehicles with mobile applications) – 25 states have signed up.
  - Divided country into 4 regions.
  - Identifying needs of the state DOTs via site visits or peer exchanges.
- WRTM, Raleigh
  - 22 states attended.
- Worked with 9 states to develop Capability Maturity Frameworks.
  - States capabilities are assessed and solutions are recommended.
- See also the FHWA update on the SICOP website.
- Kicked off new web-based course: Principals and Tools for Road Weather Management
  - To link to this course and others, see:
    - <https://ops.fhwa.dot.gov/weather/resources/training.htm>

### **APWA Report**

- 2017 North American Snow Conference; Des Moines, Iowa on April 23-26.
- 2017 PWX; Orlando, Florida on August 27-30.
- Winter Maintenance Supervisor Certificate – over 3,000 have been trained through this program.
- Future APWA North American Snow Conferences
  - 2018 – Indianapolis, IN; May 6-9.
  - 2019 – Salt Lake City, UT; May 19-22.

### **Tuesday, September 12, 2017**

#### **SICOP/PIARC Report**

- NWMPE items to be posted on the SICOP website include:
  - Pre-recorded consortia briefings
  - Agenda
  - State best practice reports
  - Breakout session flip charts
- At the SCOM meeting this past summer, a research needs statement for AASHTO Snow and Ice Guide was submitted. Also submitted was a Domestic Scan problem statement entitled, *Performance Measures for Winter Maintenance*.
- Facebook page: AASHTOSICOP
- Podcasts on iTunes: SICOP Talks Winter Ops.

#### **Outcomes of a Recently Completed Project**

##### ***CR 14-03 Developing a Training Video and Manual for Best Practices and Techniques in Clearing Different Interchange Configurations and Other Geometric Layouts***

- Scott Lucas provided a review of and displayed the following project deliverables:



- Practice Manual
- Reference Cards
- Training video
- NOTE: Make sure that the intro to the video does not state that CR includes local membership.

## **Future Meetings**

### Spring 2018

Phoenix, Arizona. Week of April 23, 2018.

### Fall 2018

Des Moines, Iowa. Week of September 10, 2018. Back up is Buffalo, NY.

TAC discussed the possibility of piggy backing with PNS and/or the AASHTO Equipment Group. In order to link up with PNS, CR may meet with PNS in Oregon in spring 2020. PNS meets every other spring.

## **Update of Operating Procedures**

Greg went through the operating procedures section-by-section. A majority of time was spent on...

- Membership – primarily who can be a member and how many members can attend meetings.
- TAC vote – Clear Roads membership will be limited to state DOTs.
  - Patti C. recommended that we propose travel invitations for foreign governments.
  - James M. recommended that we propose specific language for host state attendees.

**ACTION ITEM** Since we were not able to cover all aspects of the operating procedures in the time permitted, Greg will send a draft of the modified operating procedures to the TAC for review and comment.

## **No Boundaries: Roadway Maintenance Practices**

Mike L., Todd M., and Sandi S. gave a presentation on No Boundaries (summer maintenance pooled fund) and its benefits, including their experience at the latest No Boundaries meeting in Columbus, OH in August.

## **Select Research Development Groups for FY2018 Research**

The following are the research teams for 2018 research project development. The projects coming out of this process will be considered for funding at the spring 2018 meeting in Phoenix.

Group 1: Ohio, Indiana, Texas, Washington, Missouri, West Virginia, and Wisconsin

Group 2: Idaho, Colorado, North Dakota, Connecticut, Oregon, Vermont, and Virginia

Group 3: South Dakota, Nebraska, Wyoming, Utah, Maryland, Kansas, and Pennsylvania

Group 4: California, Michigan, Alaska, New Hampshire, Arizona, Iowa, and Rhode Island

Group 5: Massachusetts, New York, Minnesota, Illinois, Delaware, Maine, and Montana

## **Adjourn for tour of the Pittsburgh Incline and tunnels.**