

Clear Roads Progress on Past Peer Exchange Research Needs



September, 2013

2007 RNS Assigned to Clear Roads Ranked High to Low

- **Anti-icing and Deicing Guidelines**
- **Vehicle to Center Communications**
- **Concept Vehicle**
- **Post-Storm Meetings**
- **Cost-Benefit for Equipment**
- **Training**
- **Blade Inserts**
- **Collision Avoidance**
- **Snow Fences**





Problem



Most Agencies rely on the following for information on application rates:

FHWA TE 28 Project (1996)

NCHRP Report #526 (2004)

NCHRP Report #577 (2007)

With new materials on the market, these studies needed an update





Project: Establishing Effective Salt and Anti-icing Application Rates

- Update the existing guidelines with the latest research
- Develop an updated, user-friendly guide similar to TE-28





The Approach



- **Survey the industry: vendors and practitioners**
- **Identify updated practices**
- **Develop an updated guide and other outreach tools**





Project Timeline



- **Surveys were conducted in Summer 2013**
- **Project should be complete by October 2014**





Expected Results



- Updated guidelines, flowcharts and reference tools that are user-friendly

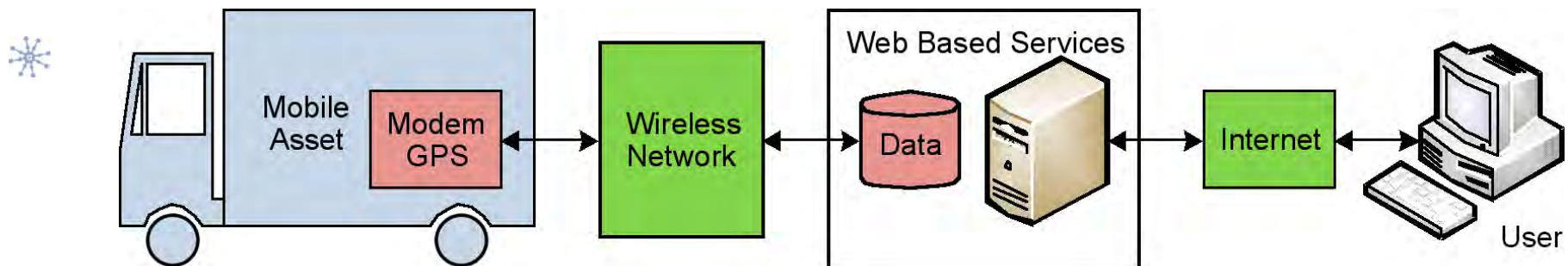


Problem

In-cab electronics used on DOT vehicles are often provided by different vendors

Each vendor has their own proprietary communication protocols and data formats

Costly and time intensive to integrate the different systems into one data stream





Project: Plug and Play Initiative



- The goal was to develop specifications that would support a “plug and play” approach to integrating electronic devices and sensors on plow trucks.
- Clear Roads developed an initial specification and then engaged the vendor community to get their support and input.



The Approach



- **Specify a universal bi-directional communications protocol for in-cab electronics**

Examples of in-cab electronics include spread controllers, temperature sensors, plow up/down indicators, etc.

- **The protocol will be configurable and dynamic**

To provide the end user with the maximum available data at the lowest cost

- **Wherever possible it will be backwards compatible to support legacy equipment**





Protocol Development Timeline



- A collaborative group of spreader and AVL vendors are currently developing the protocol
- It will be posted publicly for review by all interested stakeholders when it's fully drafted
- Testing and validation will take place in the 2013-2014 winter season at an alpha site
- Revisions will be made based on alpha testing
- Beta testing will take place in the 2014-2015 winter season
- The protocol should be final by 2015





Expected Results





A standard protocol that each state can specify in procurement to facilitate a “plug and play” approach to sharing operational data from electronic devices on modern winter maintenance vehicles.





2009 RNS Assigned to Clear Roads Ranked High to Low

- **Best Management Practices for Reducing Corrosion**
- Comparative Study to Report on Blade Types, Inserts and Fasteners
- True Costs of Snow and Ice Control Operations
- Develop BMP Synthesis for Low Temperature Pavement Surface Management 
- Quantify the Consumer Cost Associated with Delays Caused by Winter Weather 
- MDSS Minimum Data Elements
- Development of a Granular Product Flow Monitor
- Optimize Ergonomics for Snow Plow Operators

Problem



- Corrosion to maintenance equipment from deicers is a problem for most agencies
- A final report for *Best Practices and Guidelines for Protecting DOT Equipment from the Corrosive Effect of Chemical Deicers* was recently released
- There was a need to develop Best Practice Guidelines based on the results



Project: Best Practices for the Prevention of Corrosion to DOT Equipment: A User's Manual

- Synthesize all available research
- Develop a user-friendly guide to the best practices





The Approach



- **Survey snow and ice professionals and other industries impacted by corrosion**
- **Synthesize the results**
- **Compile a Best Practices Guide**





Project Timeline



- **RFP posted Summer 2013**
- **Project should be complete by Summer 2014**





Expected Results



A guide to practical, cost-effective solutions, written in laymen's terms for maintenance staff





2011 RNS Assigned to Clear Roads Ranked High to Low

- **Effective Application Rates for Salt**
- GIS Based Route Optimization
- Mechanical Snow Removal Strategies and Opportunities
- **OGFC Applications**
- Salt Brine Primer
- Cathodic Protection of Maintenance Vehicles to Reduce Corrosion 
- Chip Seal Effects to Plow Blades
- Synthesis of Best Practices for Pass Operations
- TowPlow Training
- Pre-Season Preparation Plan
- Determine the Effect of CDL Medical Card Requirement and Criminal Background Checks





Problem



Agencies are experiencing issues with pavement performance when applying snow and ice control agents on porous or permeable asphalt pavement surfaces (such as OGFC).



Project: Understanding the Chemical and Mechanical Performance of Snow and Ice Control Agents on Porous or Permeable Pavements

- Determine the optimum strategies for dealing with porous and permeable pavement types



The Approach



- **Categorize the pavement types of interest**
- **Interview winter maintenance professionals**
- **Conduct lab tests and analyze results**
- **Identify optimum strategies for treating these pavement types**
- **Develop recommendations for field testing**





Project Timeline

- Project began in April 2013
- Project should be complete by Fall 2014





Expected Results



- A white paper explaining the chemical and mechanical interactions
- A Synthesis of best practices
- Recommendations for field testing





For more information:



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