Ministry of Transportation Update

ORGA
Meeting October 18, 2018
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Ministry of Transportation
Maintenance Management Office

Outline

• Innovation Trials

• RWIS (Road Weather Information System)
  • Lite RWIS stations
  • MRWIS Pavement Temperature Forecasts
  • Winter Severity Index

• Ontario 511
  • Track my plow
  • Forecasted Road Conditions
  • Seasonal Load Restrictions

- Test new products, procedures and materials
  - Compared dry, pre-wet and pre-treated salt
  - Testing pre-wet sand
  - Testing Snow Lion ice breaker and Raiko
- Highway 401 & 6
  - Test sections with biomass filters to capture salt from the highway
  - Highways 407 East
  - Western University Continuous Ion Exchanger
  - Removes salt from water

Snow Lion and Raiko

<table>
<thead>
<tr>
<th>Icebreaker</th>
<th>Snow Lion</th>
<th>Raiko</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drum</td>
<td>Consists of eight drums, allowing more flexibility and follow road contour</td>
<td>One single piece that doesn’t follow road contour</td>
</tr>
<tr>
<td>Attachment</td>
<td>Loader (front)</td>
<td>Spreader (front/Rear)</td>
</tr>
<tr>
<td>Plow</td>
<td>Part of the unit</td>
<td>Extra installation (~ $8K)</td>
</tr>
<tr>
<td>Operating Speed</td>
<td>15-25 km/h</td>
<td>25-40 km/h</td>
</tr>
<tr>
<td>Cost</td>
<td>~ $300 K</td>
<td>$65 K (Installed)</td>
</tr>
</tbody>
</table>
Road Weather Information System (RWIS)

- Accurate road weather information critical for effective decision making for winter maintenance operations
- 151 RWIS stations across the province to provide road and weather information for maintenance contractors to make effective winter maintenance operations decisions
  - Apply Direct Liquid Application before the storm
    - Temperature, humidity, precipitation timing, precipitation type
  - Plow when 2cm of snow
  - Salt / sand
    - Temperature needed for application rates and material choice
MTO’s RWIS Network

- 11 Mini Station Trial
  - Camera
  - Non-intrusive pavement sensor
  - Atmospheric sensors
  - 2 year evaluation

- 6 Mini Station with spring load Restriction
  - Thermistors

- Provincial RWIS Expansion
  - Location determined by:
    1. Theoretical analysis
    2. Meteorological perspective
    3. Field knowledge
  - Potential Sites have been reviewed
  - Contract package being prepared
  - Timing is dependant on available funding

Southern Ontario RWIS Network
Northern Ontario RWIS Network

RWIS Website Main Screen

- RWIS stations (colour indicates road condition)
- Radar Precipitation Type
- Weather watches / warnings
RWIS Station Current Conditions Data

- RWIS stations (colour indicates road condition)
- Atmospheric and pavement data
- Camera images (Colour)

Testing of Lite RWIS Stations

- 11 Lite RWIS Stations are being tested in the Ontario NE and NW Regions
  - Low cost; basic instrumentation; include a camera; polled only once per hour;
  - Collaboration with Campbell Scientific and Wood plc
Testing of Lite RWIS Stations

- As a supplement to the Full RWIS Network
  - Locations in remote areas with no power (solar powered);
  - Temporary locations and/or for a lower cost (potentially movable).

Additional Pavement Temperature Forecasts

- 4 additional pavement temperature forecasts
  - Along Highway 401 between Kingston and Brockville;
  - Showing differences for localized micro climates;
  - Interpolated between 2 or more existing RWIS stations;
  - Providing supplementary pavement temperature forecasts.
Additional Pavement Temperature Forecasts

- Mobile RWIS data is integrated to improve the quality
  - Highway is monitored by mobile RWIS mounted on patrol vehicles;
  - Mobile data is collected (light and dark blue) for investigation and validation;
  - Pavement temperature profiles are developed over time;
  - Cold patches are identified: ramps, water edge, sheltered and wind exposed sites;
  - Localized micro climates are analyzed in more detail.

Winter Severity Index

- Winter severity calculated by RWIS service provider
  - Temperature (14 day average, cold days <-12°C)
  - Precipitation (snow, ice, rain)
  - Wind
  - Blowing snow
  - Adjustment factors for transition periods
  - Snow accumulation sensors are planned to be added as an additional factor final results.
RWIS Access

- **Municipal access**
  - Data sharing agreements
  - Training
- **Mobile Access Available**
- **Contact**
  James Brouwer
  (905) 704-3255
  James.Brouwer@ontario.ca

Ontario 511

- Ontario 511 is a pre-trip planning tool that lets you know about events that may impact your travel on provincial highways.
- Ontario 511 traveller information can be accessed via Twitter (@511Ontario), phone (dial 5-1-1), or web (ontario.ca/511).
Using 511 to Plan Travel in the Winter

- Plan your travel in the winter by visiting Ontario.ca/511 and checking out highway road conditions, cameras, weather, and the newly integrated Track My Plow layer.

- Ontario 511 also offers Forecasted Driving Conditions that are based on weather forecasts and pavement temperatures – these forecasts are a prediction and do not take into account maintenance activities. Therefore, we encourage you to check out multiple layers of information on the Ontario 511 website when planning your travel.
Winter Driving Condition Forecast for Ontario 511

- Based on Weather Forecasts with Threshold Values
  - Interactive map
  - Alerts the public of any inclement weather affecting drive
  - Based on weather forecasts with threshold values
  - Categorized Driving Conditions: Good / Fair / Caution / Poor

Ontario 511: Spring Load Restrictions
Track My Plow on Ontario 511

Questions?

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