Chloride Reduction

Best Management Practices

2018 Lake Champlain Watershed Deicing Conference

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The Good Old Days

- 1941-First direct application of salt in US was on NH roads
Statewide Snow and Ice Training- 3 Year Cycle
Spreader Calibration
Spreader Pre Wet System
% Salt Retrieved from 24 ft. pavement:

- Prewet Salt: 78%
- Dry Salt: 46%

Unretrieved Salt:

- Inside 1/3: 9%
- Center 1/3: 12%
- Outside 1/3: 9%

Benefits of Pre-Wetting:

- Cost savings of up to 1/3rd over dry salt
- Less damage to environment

Source: Michigan Highway Department
Brine Truck/Underbody Plow
Flexible Plow Blades

Blades are produced in 3' and 4' lengths. These lengths can be combined to fit most front mounted or underbody plows.

Mounting Bushings Are Spaced At 12" Centers. This is done to get maximum oscillation.

Directly adaptable to standard highway punched (3, 3, 12") plow
Note: For applications, such as 8" centers, an adapter blade might be required.

Blades are approximately 7/8" thick and 6" wide.

Steel segmented blade with carbide insert encased in rubber.

Segment blade “ears” sandwiched between a clamping bar and the mold board.

Each blade segment articulates separately.

.955" carbide insert.
Much more than a standard carbide insert blade.
Salt Storage- Then
Salt Sheds- Now (3,600 ton capacity)
Road Weather Information System (RWIS)
Shade Removal- Before
Shade Removal- After
Other Efforts
Questions of the Day

- Can you determine proper salt usage given the fact that every winter can be different?

- Can you reduce salt usage by 20% while continuing to maintain safety and remain within budget?
Winter Severity vs. Salt Usage

Derry - PS 528

Winter Severity and Salt Use

Winter Severity

Salt Tons

Winter by FY
Trend line- 1993 through 2005

Salt Usage vs. WSI for FY93 through FY05 (excluding FY99)

\[ y = -95.273x + 669.66 \]
\[ R^2 = 0.9667 \]
Winter Severity vs. Salt Usage

Derry- PS 528

Winter Severity and Salt Use

Winter Severity

Salt- Tons/LM

Winter- by FY
# Salt Reduction Due to Best Practices

Derry - Patrol Shed 528

<table>
<thead>
<tr>
<th>FY</th>
<th>Average WI</th>
<th>Salt Usage-Total Tons</th>
<th>Salt Usage-Tons/LM</th>
<th>Predicted Usage/LM</th>
<th>% Diff/LM</th>
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</thead>
<tbody>
<tr>
<td>2008</td>
<td>-33.89</td>
<td>3480</td>
<td>33.7</td>
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<td>2009</td>
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<tr>
<td>2010</td>
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<td>2953</td>
<td>22.4</td>
<td>30.9</td>
<td>-27.6%</td>
</tr>
</tbody>
</table>
Conclusions

• Salt use can be reduced from previous levels, using the previous described methods

• Maintenance personnel must understand that the only way for the NHDOT to achieve this goal is thru their actions and commitment
Any Questions?

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