Local Edition: Vol.15, No. 6
December 2009

LHTAC

LOCAL HIGHWAY TECHNICAL
NEWS

Local Highway Technical
Assistance Council
3330 Grace St.
Boise, ID 83703
344-0565/800-259-6841
www.lhtac.org

Edited by: LHTAC Staff

SALT MANAGEMENT PRACTICES

FHWA, ROAD WEATHER MANAGEMENT TEAM

The following actions can help a state or local agency manage salt use. Some of these solutions can be implemented fairly quickly while others will take time and cannot be done in time for the coming winter. In addition, some, such as #11, will have additional considerations to think about, such as storage and procurement (i.e., taking delivery of premade solutions could require more storage facilities or increased costs for short loads). Finally, this is not meant to be an exhaustive list, but it certainly provides a number and variety of options.

Management, Policies & Personnel

1. Write a Snow Removal Plan. Include rules of practice that specifically address the use of chemicals including salt (e.g., timing, amount, conditions). For agencies that have one, review to see that rules optimize material use.

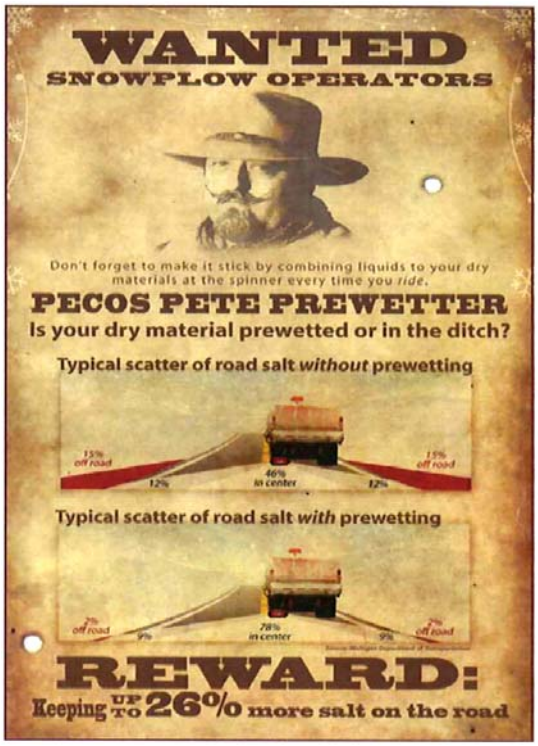
2. Train to the plan.

3. Review/confirm the logic behind existing Level of Service policies. Consider modifying this in a manner that reduces the use of salt.

4. Encourage proactive supervision of snow removal operations.

5. Track salt usage on a storm-by-storm basis and compare to agency Snow and Ice Plan recommended application rates.

6. Look at innovative contracting with salt suppliers. Innovation in hauling, i.e., barging up the Mississippi River or back hauling has proven effective for several states. Washington DOT saved 20% in salt prices by using innovative contracting.



Information Management

7. Connect your Environmental Sensor Stations to the *Clarus* system.

8. Deploy a Maintenance Decision Support System (MDSS).

9. Contract for Road Weather Information services from a weather service provider to improve regional/route specific forecasting.

Anti-icing/Pre-treating/Pre-wetting

10. Anti-ice prior to frozen precipitation hitting the pavement (based on recommendations from MDSS and other road weather information systems). Such practices improve effectiveness of both mechanical snow removal operations and follow-up chemical applications during the storm. They also reduce the amount of time and material required to recover bare pavement conditions after the storm passes.

11. Consider, in addition to homemade salt brine, (using own resources) using alternative prewetting/anti-icing agents (e.g., calcium chloride, magnesium chloride) as a method of preserving salt stockpile. Alternative agents may enhance the effectiveness of the salt that is applied.

Equipment

12. Make sure application equipment is properly calibrated. Calibration should allow for different gradations of salt being applied.

13. Deploy truck-based technologies (e.g., Automatic Vehicle Location, spreader controllers) that track/control material usage.

14. Increase deployment of in-situ and mobile sensors that provide a better handle on actual pavement conditions.

15. Electronic Spreader Controls can help substantially reduce wasted material.

16. High speed or zero velocity spreaders can place material more effectively.

Materials Management

17. Consider using straight salt or straight sand (that has been minimally treated with salt to prevent freezing/clumping) in lieu of mixing sand with salt. See link below to article entitled "The Truth about Sand and Salt for Winter Maintenance" by Professor Donald Walker, P.E., for pros and cons related to this practice. This may be misleading for many states that blend their salt and sand piles. Most Western States blend at ratios between 1:1 and 25:1. Recommend agencies examine raising current ratios to ensure unnecessary "hot" loads are not used.

18. Pre-wet initial applications of salt.

19. Identify environmentally sensitive areas and switch from salt to appropriate alternatives.

20. Use alternative treatments on bridge decks.

21. Ensure salt stockpile is properly stored, maintained, and secured. Impermeable pads made of concrete or asphalt, can reduce loss. Covered stockpiles are recommended. Proper loader operation can reduce material loss.

Resources

Here are just a few of the many resources available that will aid in the deployment of these practices:

Websites:

•FHWA Road Weather Management, Best Practices:
http://www.ops.fhwa.dot.gov/weather/mitigating_impacts/best_practices.htm

•Snow & Ice Cooperative Program (especially the Snow & Ice List-Serve):
www.sicop.net

•Salt Institute:
www.saltinstitute.org

•Pacific Northwest Snowfighters (especially for specifications on materials):
www.wsdot.wa.gov/partners/pns/

•Aurora pooled-fund program:
www.aurora-program.org

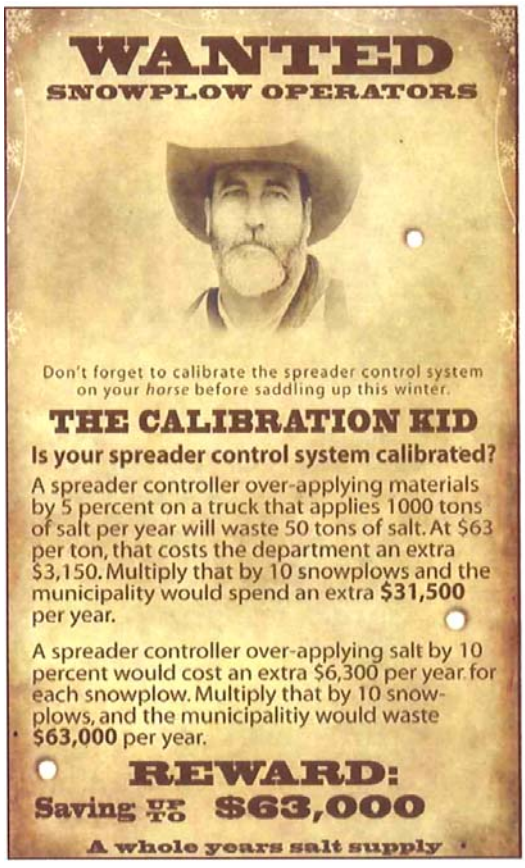
•Clear Roads pooled-fund program:
www.clearroads.org

•MDSS Federal Prototype website:
www.rap.ucar.edu/projects/rdwx_mdss/

•The *Clarus* Initiative: www.clarusinitiative.org and *Clarus* System:
www.clarus-system.com

Training:

•Anti-icing/RWIS Computer-based Training program.
Most State DOTs already own this program. If not, a generic version can be purchased from APWA:
http://www.apwa.net/bookstore/detail.asp?PC=PB.X407



Reports & Articles:

•AASHTO Guide for Snow & Ice Control:
http://bookstore.transportation.org/item_details.aspx?ID=188

•Manual of Practice for an Effective Anti-icing Program:
http://www.fhwa.dot.gov/reports/mopeap/eapcov.htm

•Article about mixing salt and sand, "The Truth about Sand and Salt for Winter Maintenance"
http://www.saltinstitute.org/publications/shd/shdjune-2005.pdf

Reference: Vermont Local Roads, December, 2008