

SALT &**Highway Deicing™**

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for the WINTER MAINTENANCE PROFESSIONAL

THE CHALLENGE OF OPERATING WINTER ROADWAYS

Words make a difference. They often impart an entire perspective or philosophy. Even a single word.

Are we engaged in winter mainte-
nance or winter operations, for
example?

Winter maintenance is roadway-focused. Maintaining a winter road involves understanding the threat of ice and snow to safe driving conditions, whether cars, trucks and buses can travel safely and reliably. Winter maintenance involves pre-season and pre-storm planning and training, having the right equipment and keeping it in reliable operating condition, having the appropriate winter maintenance materials on hand – and, finally, orchestrating the snowfighting crews, equipment and materials in the battle to preserve safe highways.

That's what we do, right? Anything missing? Nope, that nails "winter maintenance."

So, what changes if we substitute "operations" for "maintenance"? What are "winter operations"? How are they different?

Winter operations are user-focused. The question becomes how can we make sure that roadway users have reliable access to roads, how can we know that when they go "over the river and through the woods" they'll

precious cargo on time and without injury?

Winter maintenance is converting inputs such as workers, equipment and salt into outputs of lane-miles cleared. Winter operations include preserving personal and commercial mobility and safety – outcomes, not outputs. Those who provide winter roadway service should be measuring congestion and crash rates, not the speed of mobilizing the snowfighting workforce or how fast the salt is spread.

More and more, transportation researchers and upper management are working on congestion management and performance metrics. They are learning how to value travel time savings, to understand the important differences between recurring congestion like the daily rush-hour commute and

non-recurring congestion resulting from snowstorms and traffic incidents. More than half of all congestion is of the more frustrating and costly non-recurring variety. And the challenge is accelerating.



end up safely at Grandma's house in time for a family holiday dinner? How confidently can we assure drivers that the pavement they drive on will be free of ice and snow or that the school bus driver who collects their children on early winter mornings will be able to deliver this

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Urban freeways today are carrying traffic volumes 20% more than their theoretical maximums.

WHAT GETS MEASURED GETS MANAGED.

New technologies are making possible data-driven strategies to replace “the art of snowfighting” as practiced a generation ago. We have much more real-time data available on traffic speed, flow and density and on roadway surface conditions. And far more accurate road weather data and forecasts.

And the new data aren’t going only to highway agency managers. More and more, they’re available to the public directly. Traffic cams and Internet maps convey real-time traffic flow. Tools like the Washington State DOT’s “Calculate your Commute” algorithm enable drivers to calculate their travel time reliability. The Salt Institute maintains a web page with links to roadway travel conditions throughout North America: (<http://www.saltinstitute.org/travel.html>).

That we need a broad focus on transportation operations is no longer much debated. In the U.S., President Eisenhower launched the construction of the Interstate system. President Reagan added a major focus on maintenance and reconstruction of an aging highway infrastructure. It was in ISTEA, under the first President Bush, that Congress responded to charges that the federal highway program seemed aimed at “paving over America” and, rather than simply adding more lane-miles, the federal government shifted focus into better managing the use of the limited system. Thus, lane miles have increased only 1% since 1990, while vehicle-miles have surged 22%. And more goods than ever are moving by



truck. Between 1992 and 1997, truck miles increased by 35% as just-in-time deliveries have converted trucks transiting our highways into the nation’s storehouses rather than buildings along the road network.

President Clinton promoted the concept (his operations honcho, Gloria Jeff, currently serves as Michigan’s Secretary of Transportation) and the Bush DOT/ FHWA Office of Operations (<http://ops.fhwa.dot.gov>) has maintained the federal momentum. The new federal highway program, SAFETEA-LU, is heavily weighted towards safety improvements. Strategically, in any case, the direction is in reducing the estimated \$78 billion annual cost of congestion and the morally-indefensible slaughter of 43,000 citizens every year.

Enabling this strategy is the development of new “intelligent” technologies, linked together into Intelligent Transportation Systems (ITS). Because of the significant investments in these ITS systems, they are being deployed first in large ur-

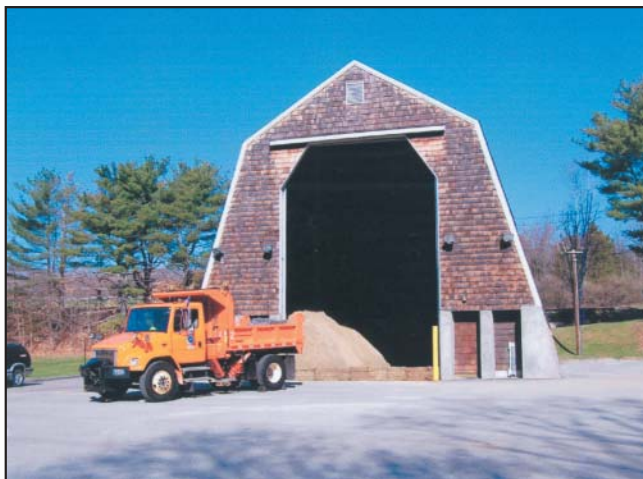
ban regions. The concepts, however, apply throughout North America. “Regions” is the key word here, since the data-sharing capabilities of these systems create win-win synergies.

Winter operations are a piece of that puzzle. One area of most significant technological development is road weather. Road Weather Information Systems (RWIS) make possible higher levels of winter service, particularly in providing real time pavement temperatures – the key to understanding the likelihood of an ice-pavement bond that creates treacherous driving conditions. New methods of friction measurement and vehicle locating technology (see S&HD Spring 2005, <http://www.saltinstitute.org/publications/shd/shd-mar-2005.pdf>) tie these key data into a real-time database and enable rapid, often pro-active, roadway treatment.

Developing a metric to judge the efficiency and effectiveness of winter operations is a critical component of shifting to an operations perspective. What represents success? Is it a visual standard as in bare pavement? Is it a coefficient of friction above a certain “safe” minimum? Level of service now means more than treating a road within a certain number of minutes or hours. Obviously, the metric must reflect available budget, but these investments are proving to repay themselves relatively quickly.

OPERATIONS.

One word difference, but what a difference it can make. The “boss” is no longer the route supervisor, maintenance engineer or public works director. The customer is king and our job is to keep the king safe – and on schedule.



Above all, while maintenance is about roadways, winter operations is about meeting customer expectations. Years ago, big government simply provided services, but today's empowered consumers expect responsive service from government just as they do from businesses. And new technology has encouraged the trend. Pollsters consistently find rising concern among roadway users with congestion and traffic flow; one survey finding a jump in dissatisfied drivers from 23% to 43% in just five years, 1995-2000.



EXCELLENCE IN STORAGE AWARD WINNERS

Ten provincial and local government transportation facilities in the U.S. and Canada earned the 2005 Excellence in Storage Award from Salt Institute. The award recognizes high standards of environmental consciousness and effective management of winter materials storage.

City of Barrie, ON

City of Calgary, AB

CT DOT East Lyme Satellite Storage Facility (Rt. 161), East Lyme, CT

CT DOT Plainfield Satellite Storage Facility (Rt. 14A), Plainfield, CT

CT DOT Putnam Satellite Storage Facility (Rt. 12 & Industrial Rd), Putnam, CT

CT DOT Westbrook Satellite Storage Facility (Rt. 145), Westbrook, CT

PennDOT, Callensburg Stockpile, Callensburg, PA

PennDOT I-80 Stockpile, Knox, PA

PennDOT New Bethlehem Stockpile, New Bethlehem, PA

PennDOT Tylersburg Stockpile, Tylersburg, PA

In addition, thirty-seven winners from the 16 previous competitions were recognized for "Continuing Excellence In Storage." These include:

Village of Addison, IL; Village of Arlington Heights, Arlington Heights, IL; Village of Buffalo Grove, Buffalo Grove, IL; Town of Clifton Park, Clifton Park, NY; Columbia County, Wyocena, WI; Connecticut DOT Litchfield Salt Storage Facility, Litchfield, CT; Connecticut DOT Middletown Salt Storage Facility, Middletown, CT; Connecticut DOT Miller Avenue, Meriden, CT; City of Elgin, IL; Village of Hanover Park, Hanover Park, IL; City of Houghton, Houghton, MI; Village of Lake Zurich, IL; Lockport Township, IL; City of Lynchburg, Lynchburg, VA; City of Marquette, MI; McHenry County, Woodstock, IL; Mount Prospect Public Works, Mt. Prospect, IL; Macomb County, MI (Warren facility); New Jersey DOT Berlin Yard - # 415 Salt Storage Facility, Berlin, NJ; New Jersey DOT Cherry Hill Yard - #411 Salt Storage Facility, Cherry Hill, NJ; New Jersey DOT Cumberland County Complex, Bridgeton, NJ; New Jersey DOT Cumberland Yard - #426, Maurice River, NJ; New Jersey DOT Deepwater Yard - #425 Salt Storage Facility; New Jersey DOT, Deepwater, NJ; New Jersey DOT Elmer Yard - #420, Pittgrove, NJ; New Jersey DOT Glassboro Yard - #417, Glassboro, NJ; New Jersey DOT Mount Laurel Yard #468, Mt. Laurel, NJ; New Jersey DOT Red Lion Yard, - #434; South Hampton Township; NJ DOT West Deptford Yard #413, West Deptford, NJ; Village of Northbrook, IL; Town of North Salem, NY; Town of Orangetown, Orangeburg, NY; Village of Orland Park, IL; City of Springdale, Springdale, OH; City of West Des Moines, IA; Wright County, Buffalo, MN; Town of Yorktown, NY; and City of Zion Public Works, Zion, IL.

"The single salt management investment with the greatest cost-to-environmental benefit is proper salt storage," explained Salt Institute president Richard L. Hanneman, in announcing the award winners. "These agencies are not only exemplary environmental stewards, they have demonstrated a commitment to cost-conscious spending of tax dollars and promoting safe working conditions for their employees."

The awards were announced during the American Public Works Association Congress in Minneapolis in September.

The Excellence in Storage Award is part of the Salt Institute's Sensible Salting Program – an educational program for salt customers on how to store and apply salt in an environmentally sound manner. Over the award competition's 17 years, just 107 excellent programs have been recognized. Among the thirty-seven facilities cited for continuing excellence Buffalo Grove, IL, has won the excellence designation 17 times; Arlington Heights, IL has won 14 times.

Want to see your agency earn recognition for its quality storage program. Review what it takes to be great at <http://www.saltinstitute.org/40.html>.

Q&A

Q. I know Louisiana produces more highway salt than any other state. Did Hurricanes Katrina and Rita interfere with our salt supplies this winter?

A. The three large salt mines in Louisiana were closed only for the storm and immediate aftermath/clean-up. A larger problem was the disruption caused by Katrina's devastation of the port facilities in New Orleans and consequent interruption of barge traffic on the Mississippi. If we don't get an early freeze in the Upper Mississippi and the Illinois Rivers, we hope to avoid a supply interruption.

Q. The U.S. and Canada seem to take winter operations very seriously, with snowfighting often being the number one public works budget line item. Is this the same in snowy parts of Europe and Asia as well?

A Western Europe understands the safety and commercial imperative of reliably available winter roads, and Japan's northernmost island, Hokkaido, has dealt with winter roadways conscientiously for many years. Eastern Europe and mainland Asia and Honshu in Japan are discovering the potential for treating winter roadways. A recent conference in Latvia, for example showed the progress being made in the Baltic nations including those of the former Soviet Union.



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You just enjoyed another electronic **Salt and Highway Deicing** Newsletter! It helps you make better decisions in your winter maintenance responsibilities and gives even more information by active links to www.saltinstitute.org <<http://www.saltinstitute.org>> with specific pages to further snowfighter information. Feel free to forward this newsletter to other interested persons so they can also enjoy this informative free quarterly. Be aware Salt Institute never sells or distributes any of your contact information to any outside source. Please sign up at: <http://www.saltinstitute.org/subscribe/index.html>