

Mayo Clinic Grounds Maintenance

and St. Marys Grounds Maintenance, Historic Properties Grounds Maintenance

After two winters as Grounds Maintenance Supervisor for Mayo Clinic, Nick Queensland was proud of what his crews had accomplished in terms of productivity and safety but was very troubled by the amount of salt applied to their paved surfaces to get these results. Following that second winter of 2017-2018, he determined to maintain Mayo Clinic's excellent level of service while reducing salt use.

While researching snow removal methods that conserve salt, Queensland repeatedly came across Smart Salt training promoted by the Minnesota Pollution Control Agency. He talked with Fortin Consulting, who created and trains this course, and decided to have all his in-house grounds maintenance staff members attend this training together, including the leadership. After learning about the detrimental effects of salt to our environment, his crew was energized about reducing salt use and learned about some fresh alternatives to current practices. The day after the Smart Salting class, Queensland gathered his crew and they made a list of salt-reduction methods they could implement on the Mayo Clinic campus, which includes 15 miles of sidewalk, 300 doorways, and 120 acres of parking lot and roadway. Queensland focused primarily on parking lots and roadways, which he thought could realize the greatest tonnage reduction and had the most room for improvement.

The first thing he did was calibrate the salt application equipment used on the property. Mayo Clinic had never done this in the past and he was surprised that nobody knew the rate of salt application. Knowing the rates of the spreaders was an important tool. When they directed the contractors to apply salt they could specify a rate instead of applying a moderately heavy blanket every time.

The other important thing Mayo Clinic did was to incorporate liquid salt brine into their ice control toolkit. They had experimented with liquid salts in the past with limited success and had abandoned this method. Salt brine applied correctly allowed them to plow snow and avoid rock salt for several storms.

Calibrating contractor equipment and incorporating liquids in their practice along with Smart Salt training resulted in a 60% salt reduction for Mayo Clinic during a winter where they received a record amount of snow and a normal amount of ice. This number exceeded expectations! Though the change was not easy, Queensland found the efforts well worth it for the reduced environmental impact and budget savings.

Douglas County Public Works

Steve Johansen

Steve Johansen is the Maintenance Superintendent at Douglas County Public works in Alexandria, Minn. Johansen has been with Douglas County for two years, and in coordination with his employees and the Public Works Director, has taken its salt reduction program to the next level.

Douglas County does not have a bare pavement policy. The county will clear the roads enough so they are safe for motorists and avoid using the amount of salt needed to achieve bare pavement.

When Johansen joined the County, it was already using a drip system on the sander plates, which helps keep the material on the road. Johansen then had all the sanders calibrated. He installed the latest sanding controllers and GPS in the new trucks, which also have installed ground speed controllers to keep the application rates efficient but not extreme.

The County also purchased a brine-making system and set up its water truck and water tank trailer with a brine application spray bar for anti-icing. Johansen has also added brine application systems in three pickups for pretreating in the outer parts of the county.

As with any new initiative, educating the operators was key to its success. As their supervisor, Johansen made clear his expectation of reduced salt use. He found the operators were more than willing to join the effort, which was also a priority for County Commissioners.

The winter of 2019 was challenging in Douglas County, with a lot of snow and wind. Despite the tough conditions the County used 30 percent less salt with few complaints from residents. Johansen intends to continue the program this winter and send more operators through training.

City of Edina, Engineering Department

The City of Edina staff and leadership were humbled to receive an environmental leadership award. The City has been supporting regulatory controls, building knowledge, and investing in technology and tools. The progress they made is a reflection of community interest in protecting its natural resources and they give credit to their local champions, decision-makers, and implementers.

Edina was the first city to pass a Resolution of Support for limited liability legislation. Private and public winter maintenance providers face different barriers when it comes to using less salt. Through hosting training events and talking to private applicators, it became apparent that risk allocation played a large role in decisions about salt use and choice of best practices. City staff also engaged with local Master Water Stewards who were particularly concerned about chloride pollution and who initiated and championed development of a Model Contract for Snow and Ice Management. The City convened a diverse advisory committee of service providers, property managers, and other interested representatives to develop a model contract that embraces best practices to minimize environmental impacts from sand, chlorides, and other chemicals, while also maintaining safety and addressing liability risk allocation.

The City of Edina also helped create a collection of model ordinances for cities to use regarding chloride pollution, along with the MPCA, Nine Mile Creek Watershed District, and several other cities and watershed organizations. They include topics such as required training for winter maintenance professionals, salt storage regulations, chloride management plan requirements, and sweeping regulations for excess deicers.

Additionally, the City partnered with researchers at the University of Minnesota to study Adaptive Management for Deicing Operations. The study, which is in its final stages, was funded by the Local Road Research Board and included workshops with operators where researchers provided data, empowering operators to use that information to inform their own operations. Conversations also led to creative ideas about storage, equipment, data availability, and accountability. One outcome of the workshops was a recommendation to experiment with articulated plow blades, hypothesizing that they would be more effective at physical removal of snow and ice, requiring less salt. These were installed on several trucks this past winter with the support of operators.

MnDOT Road Weather Technology Team

Doug Bakker | Jon Bjorkquist | Alex Bruch | Dan Flatgard | Joe Huneke
Jeff Jansen | Jakin Koll | Tracy Olson | Jay Pierzina

Minnesota Department of Transportation's (MnDOT) Road Weather Technology (RWT) Team is made up of a cross section of professionals that bring a great deal of knowledge and experience to MnDOT's Salt Sustainability effort. The team's responsibilities include: Road Weather Information Systems, Automated Vehicle Location System, Maintenance Decision Support System (MDSS) Salt Sustainability Project, Pathfinder, and many other projects associated with these programs.

MnDOT's RWT Program is focused on the most responsible use of winter resources using technology to enhance decision making. Each RWT Coordinator brings skills that provide valuable input and experience, to form a comprehensive well-rounded team approach to the Salt Sustainability effort.

As snow and ice control technology evolves, MnDOT tries to stay on the cutting edge by developing new strategies and techniques. By using expertise gained in Integrating Mobile Observation projects, in conjunction with Federal Highway Association and partnering states, MnDOT has moved forward with innovative applications such as Web MDSS. MDSS has been valuable in predicting weather and road conditions and providing operators with a tool for better decision-making during winter events. MnDOT, along with its contracted weather provider, Iteris, have developed a matrix within the MDSS application. This Matrix disseminates usage data and recommendations, to help MnDOT gauge how they are doing. It has provided MnDOT with a sustainability goal measure to help determine areas that need improvement.

Overall the goal of RWT is to provide data-driven decisions that help operators in the field meet sustainability goals. RWT provides information and training on the right material, the right amount, at the right time, in the right place. By using the latest technology, the expertise of the RWT Team, good data, and proper training, MnDOT strives to efficiently manage its snow and ice operations by using resources effectively.