



Milestones

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IN THIS ISSUE:

Goderich Rebuilds

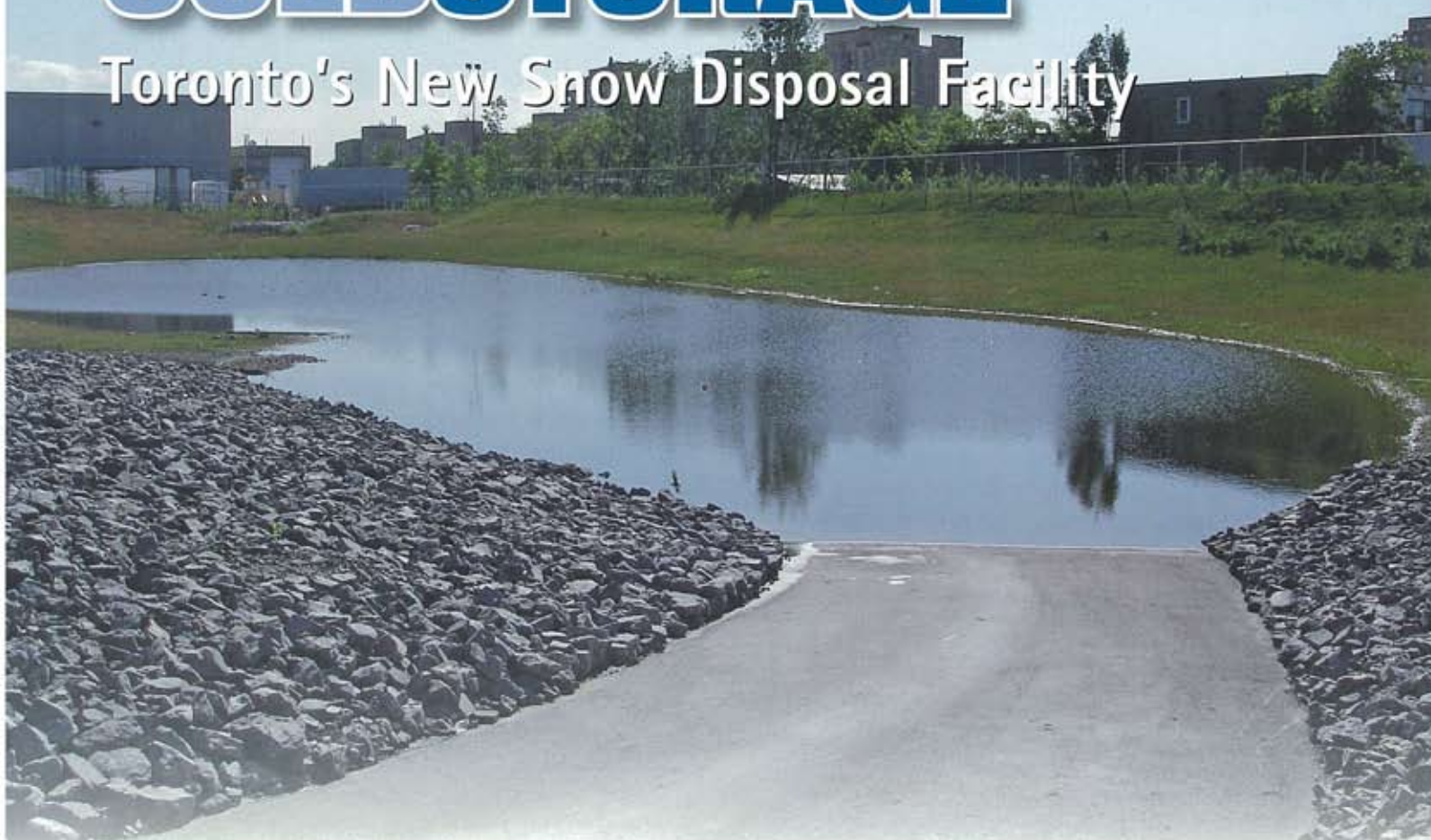
ALSO INSIDE:

- Interaction with Berry Vrbanovic
- Salt - Great For Roads / Not So Good for Water



COLDSTORAGE

Toronto's New Snow Disposal Facility



It was the year the snow never stopped. In 2008, Toronto was buried by more than 200 centimetres of snow, the most in 70 years. Getting the snow off the streets was difficult enough. Where to put it after it was picked up was just as challenging.

In December 2010, the City of Toronto opened a new snow disposal facility, increasing its storage capacity by about 20 percent.

Featuring a paved storage pad, a paved containment pond for run-off and more than 5,000 trees and plants, the facility was completed at a cost of less than \$2 million – a relatively modest sum, says Bill Mason, for a much needed snow disposal site that meets the highest level of environmental standards.

InSight

Toronto's New Snow Disposal Facility

Location: New Toronto Street, Etobicoke

Size: 6 hectares

Capacity:

22,000 loads (storage)

17,000 loads (melted)

Features:

Paved Storage Pad – 26,000 square metres

Paved Containment Pond – 2,000 square metres

Berms – 1.5 to 4.5 metres high

Planting – 5,000 trees and plants

Construction Cost: \$1.75 million

Completed: December 2010

In today's non-stop world, keeping the streets clear of snow and ice is a challenge for any municipality but no more so than for the City of Toronto. Faced with a never-ending stream of traffic, narrow streets, sidewalks and a network of streetcar tracks, simply pushing the snow aside is not always an option. Snow banks may be a picturesque part of the winter landscape in the country. In the city, they are an inconvenience at best and a hazard at worst.

According to a study in 2002, Toronto needs about 150,000 loads of snow storage capacity. In fact, its seven disposal sites can only store about 108,000 loads, something that became painfully apparent in the year of the big snow. The disposal areas were soon filled to capacity.

With its snow disposal site on Bloor Street slated for development, the city had already started work on a new facility in south Etobicoke and by May 2008, it had acquired six hectares

continued on next page

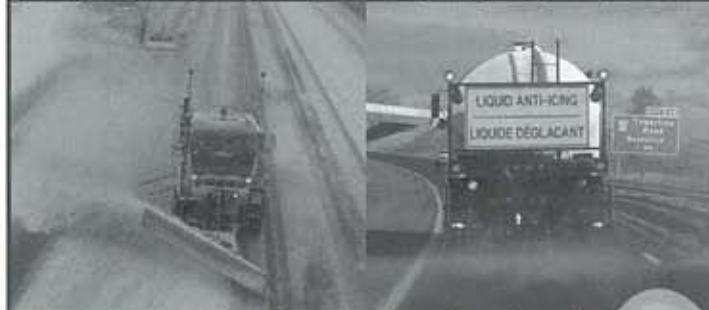


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Cold Storage *continued from page 35*

of disused industrial land free of environmentally contaminated soil.

Transportation Services' plan called for development of a new storage facility over the next few years but, recalls Bill Mason, a senior engineer with the City of Toronto's Transportation Services, council planning events overtook them. In February 2009, with the Bloor Street site no longer available, the city asked the Ministry of the Environment for permission to use the New Toronto site for temporary snow storage.

Thankfully, Mason says, permission was given but it came with conditions. To prevent soil contamination, the snow had to be melted on site and the run off channelled through the twin catch basins on the property to an oil grit separator connected to the storm system. The city completed the arrangements in a matter of weeks and from February to May used a 100-ton per hour melter to get rid of almost 10,000 loads of snow.

"It was a one-off accommodation," says Mason. "Our challenge was to have a fully functioning snow disposal site ready for the 2010 / 2011 winter season."

Design and Construction Underway

In the country, winter storms blanket the fields with a fresh

clean coating of white powdery snow. Those same storms provide a somewhat less picturesque view in a city. The snow soon turns to a grey slush contaminated by salts, heavy metals, oil, grease, and general dirt, most of which ends up in catch basins after the spring thaw. Some contaminants, such as salt, eventually make their way to nearby rivers and lakes.

"It's one thing to dump snow on a vacant piece of land as a temporary stop gap measure, quite another to design a full-scale state-of-the-art snow storage facility," says Bill Mason. "We had two key challenges to meet to ensure that this facility met environmental standards. We had to contain the runoff from the snow disposal site to stop it getting into the groundwater and we had to meet some stringent requirements to manage stormwater discharges."

Ministry of the Environment and City of Toronto standards limited the annual run-off from the new snow disposal site to the same amount of runoff that the site experienced prior to development. All run-off had to be held on site for at least four hours and the runoff from a 25-millimetre storm had to be detained for at least 24 hours. Finally, eighty percent of all suspended solids had to be removed before any snowmelt was discharged into the storm water system.

In order to comply with environmental standards, the city's engineering staff added two features to the site: a 26,000 square metre asphalt pad large enough to hold 22,000 loads of snow and a 2,000 square metre, two-metre deep paved con-



tainment pond, where many of the contaminants will settle out before the runoff goes into the existing storm sewer system. The pond has two containment areas: the first where most of the settlement occurs and the second for secondary settlement. The entire site is surrounded by high berms that shield the site from view and help contain the noise. Gabion rocks are used on the inside of the berms to prevent scour as the snow melts.

Confident that the Ministry of the Environment would approve the plans, the city started site preparation work throughout 2009. Carillon Construction levelled the site and then spread and compacted more than 40,000 tonnes of millings (old asphalt recovered from road rehabilitation projects) as the subbase. It excavated a temporary pond so that the site could be used as a temporary dump site and built most of the berms using for the most part recycled material from other city land development operations.

In April 2010, the Ministry of Environment issued a certificate of approval and final construction started almost immediately.

Building the pond, says Mason, was the biggest challenge. It took four months to install the subdrains and finish dewatering the pond site. In August, Gazolla Paving completed the pond with an impervious layer of asphalt, 100 millimetres thick. Gazolla also paved the snow storage pad with 140 millimetres of asphalt, an extra thick layer of pavement to take the heavy truck traffic. Considering that this was far from a typical

paving job, it was, notes Mason, "some of the best asphalt placement and compaction I have seen in years."

As a finishing touch, the City's Forestry Department planted more than 5,000 trees and plants on the site, which Mason says, not only vastly improves the overall look of the facility but will also, in years to come, help muffle the snow disposal operations.

The new storage site was completed in December 2010 and ready for operation. As it turned out, Toronto lucked out. It was a relatively snow-free winter and the city only stored about 500 loads of snow at the new facility, well below capacity. That is certain to change in the future. Given the variability of snowfall that the city experiences, says Mason, "we know the New Toronto storage facility will be well used."

The city is, in fact, already planning for the future. Using a 350 tonne per hour snow melter at the site will increase its capacity by an additional 17,000 loads.

As part of the requirements of its Certificate of Approval, the city has started monitoring the groundwater and effluent, checking for suspended solids, phosphorous, and ammonia nitrogen on a monthly basis at various locations. So far, values are all within standard levels.

The final cost to build the new facility was \$1.75 million - a relatively modest sum, Mason claims, for a much needed snow disposal site that meets the highest level of environmental standards. **M**

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