



Committee Report

Report TR-TAPS-46-14

To: Chair Barfoot and Members of the Transportation and Public Safety Committee
From: Ron Parkin, Maintenance Manager
Meeting Date: June 5, 2014
Subject: **Treated Salt**
Status: Recommendation adopted by Committee as presented per Resolution TAPS78-14; Endorsed by County Council July 8, 2014 per Resolution CC87-14;

Recommendation(s)

WHEREAS Grey County has a contract with Cargill to supply white salt for winter maintenance;

AND WHEREAS there is a new product called treated salt that the Transportation Services Department experimented during the winter of 2013/2014 and had very positive results;

AND WHEREAS there are cost and operation advantages to completing a change order to replace the white salt with treated salt for the 2014/ 2015;

AND WHEREAS Cargill is willing to enter into a change order to convert the white salt to treated salt and have provided an acceptable unit cost for the treated salt;

NOW THEREFORE BE IT RESOLVED THAT TR-TAPS-46-14 regarding Treated Salt be received;

AND FURTHER THAT the Transportation Services Department be authorized to enter into a change order with Cargill to replace the white salt with treated salt for the 2014/2015 winter.

Background

Current Winter Maintenance Salt Applications

Applying salt to roads is a significant component and cost for winter maintenance operation in Grey County. Salt is applied at the outset of the storm to create a brine mixture that will reduce the possibility of snow sticking to or packing on the road surface. It also helps to prevent the build-up of ice and snow and allows the plow to remove the snow easier.

As the temperature decreases, the effectiveness of salt reduces. Salt should not be applied when the temperature is below minus 12 Celsius. However, in the presence of sun and/or traffic, which create a higher road surface temperature, salt can be effective to a temperature of minus 18 Celsius.

Several years ago Grey County implemented the procedure of spraying the salt with a liquid deicer that had chemical properties that works as a catalyst for the salt to be effective at lower temperatures and react quicker. In addition salt that is sprayed with liquid will not bounce as much when it was dropped onto the road surface and as a result there was a higher percentage of the salt that would stay on the road surface. All Grey County Trucks have been equipped with pre-wet systems that are capable of spraying salt as it is being applied to the road surface. This process has resulted in a more efficient and effective winter maintenance operation.

Even though the pre-wetting of salt is very effective, the process does not totally saturate the granular salt particles. It is estimated that only 50 – 60% of the salt particles are coated with liquid during this process. Additionally, the pre-wetting of salt requires additional maintenance both by the operators and mechanics that are often required to repair and keep these systems functional.

Some of the challenging issues surrounding the use of liquids and the systems used to apply it are as follows:

- 1) The nozzles that dispense the liquid can become plugged and require constant monitoring by the operator.
- 2) The filters and the pumps used for pre-wetting require continuous maintenance as well as periodical mechanical repairs.
- 3) Not all the liquid that is dispersed is actually absorbed by the salt, resulting in wasted liquid material.

Treated Salt

Treated Salt is white salt that has had pre wetting liquid material absorbed into white salt in a controlled environment before it is delivered to the patrol yards. As a result the spaying the pre wetting material on the white salt during the spreading operation is redundant.

Currently Cargill and Sifto manufacture Treated Salt. During the 2013/2014 winter Grey County experimented with Treated Salt from both manufactures and the following advantages were experienced:

- 1) There is less bounce and scatter as the salt leaves the truck, resulting in more salt staying near the centerline of the road where it is needed the most.
- 2) The salt chutes do not become plugged as often, which provides a more consistent distribution of salt onto the road surface.
- 3) Salt particles are 100% coated with liquid deicer which maximizes the benefits of the liquid. The results are a more effective and efficient melting reaction at lower temperatures as well as the ability to reach service levels much sooner.
- 4) Current application rates of liquids and salt can be reduced.
- 5) There is less apparatus to be purchased and placed on the plow/ spreader trucks.
- 6) Eliminates the cost of repairs and maintenance to the liquid application apparatus.
- 7) Treated salt similar to pre-wet salt, leaves a residual on the road surface that helps to minimize the adhesion of snow to the road surface.

Pre-Wet Salt Versus Treated Salt

Pre-wetting white salt on the truck effectively coats only 50 – 60percent of the granular salt particles and the Treated Salt is 100 percent.

Treated Salt deliveries arrive on site already treated with liquids, which ensures that the blending of liquids with white salt is complete before the product is delivered optimizing the benefits of the liquid.

There are constant repairs required to the Pre-Wet devices (pumps, filters) on the trucks that result in additional cost.

It cost approximately \$20,000 to retrofit a new truck with Pre-Wet devices.

There are times when the Pre-Wet Salt clogs the salt chute which causes application difficulties. There is less probability that the chutes will plug when using Treated Salt.

A higher percent of Treated Salt adheres to the road and as a result the quantity of salt required and the number of applications can be reduced.

A number of Counties and Cities are currently using treated salt with much success and have found the benefits of using this product.

Studies have proven that the usage of treated salt can reduce the overall consumption of white salt by 20 – 40 percent.

Trials using treated salt during the winter of 2013 / 2014 provided positive results. Standard pre-wet salt application rates were reduced by as much as 29% without compromising service levels. The results were very evident during a period of extreme cold in February 2014.

With less salt being applied, there is a benefit to the environment.

Cargill Salt Contract

In the spring of 2012 Cargill was the successful bidder for the Grey County white salt contract. The contract has a three year term with the option to extend the contract for two additional one year extensions. The contract also includes a fuel escalation clause which adjusts the unit price of the salt based on the increase or decrease of fuel. The contract unit price of salt in March 2014 was \$70.61 per tonne.

In the 2013/2014 winter season Cargill supplied some Treated Salt to Grey County for a trial at the same price as white salt.

Cargill has offered to replace the tendered white salt with Treated Salt for the 2014/2015 winter season for \$81.07 per tonne.

Pre-Wet Liquid Contract

In 2011 Innovative Solutions was the successful bidder to supply liquid deicers to Grey County. The tender is for three years with the option of two additional one year extensions. Therefore the County could retender for a reduced amount of liquids if it did not wish to spray liquids on the white salt at this time without any contractual obligations.

Financial / Staffing / Legal / Information Technology

Considerations

Cargill has agreed to the execution of a change order for the salt contract that would convert the supply of white salt to treated salt for the winter of 2014/2015. The cost of the treated salt would be \$81.07 per tonne compared to the current price of white salt of \$70.61 per tonne. However it is estimated that the conversion from white salt to treated salt will result in a cost savings of at least \$ 25.15 per tonne (see Cost Comparison Pre-Wet versus Treated Salt attached). Therefore the net cost savings would be at least \$14.69 per tonne. Assuming that 10,000 tonnes of Treated Salt was used during the winter this would result in an overall savings of at least \$146,900.

Link to Strategic Goals / Priorities

Within Goal 5 of the County's Strategic Plan, section 5.3 states that staff shall explore innovative ways to more effectively and efficiently deliver services.

Attachments

Cost Comparison Pre-Wet Versus Treated Salt

Respectfully submitted by,

Ron Parkin
Maintenance Manager

Director Sign Off: *Michael Kelly, Director of Transportation Services*

Cost Comparison Pre-Wet versus Treated Salt

TR-TAPS-46-14

Liquids

Pre-Wet requires liquid application

30 litres/per tonne @ \$0.29/ litre \$8.70/ tonne

Repairs

In 2013/2014 the Pre-Wet truck system

Required \$31,200 of repairs for

13,400 tonnes of salt (\$31,200/13,400 tonnes) \$2.33/tonne

Reduction of salt usage by 20 %

\$70.61/ tonne x 0.2 \$14.12/tonne

Total identified savings as a result of Treated Salt \$25.15

Other Savings

- No need to purchase Pre-Wet apparatus savings of about \$2.40/ tonne
- Reduce chute plugging that would result in additional circuits on a route
- Reduce the number of circuits that will reduce the staffing and equipment costs
- Expect that the salt reduction is more than 20%
- More consistent service to the roads.
- More efficient in lower temperatures
- Environmental advantages.