TRANSPORTATION ASSOCIATION OF CANADA

2002 ENVIRONMENTAL ACHIEVEMENT AWARD SUBMISSION

submitted by

LEDCOR ALBERTA LIMITED

February 3rd, 2003

ENVIRONMENTAL ACHIEVEMENT

Ledcor has a 5-year contract with Alberta Transportation to maintain approximately 8,500 km of the Provincial Highway Network in central Alberta, including the very busy Highway 2 corridor between Edmonton and Calgary. As part of this contract, we provide winter snow and ice control, which requires the application of pickled sand to the roadway surfaces. Pickled sand is a homogenous mixture of abrasive sand and sodium chloride (NaCl) at a salt concentration of about 8%. This road salt is presently being considered for toxic designation by Environment Canada – leaching of road salt is harmful to aquatic life in lakes and rivers, kills vegetation at fairly low concentrations and contaminates aquifers and other sources of potable water. However, salt application to road surfaces is vital to maintain safe winter driving conditions for Alberta motorists – there is no known environmentally friendly equivalent that is remotely affordable for highway transportation agencies.

Prior to outsourcing highway maintenance to the private sector, this work was done by Alberta Transportation. Residual pickled sand piles remaining at the end of the winter season were left exposed to the elements until the following winter – rainfall over the course of the spring and summer seasons leached salt out of the piles and the resulting saline solution was free to soak into the ground and/or run onto adjacent properties. Sand piles were re-pickled (salt added) in the fall to replace salt leached from the piles and restore the desired salt concentration.

Ledcor presented a value engineering proposal to Alberta Transportation to provide covered storage to the residual pickled sand piles at 28 highway maintenance properties. This would prevent leaching of salt from the piles and eliminate the need for re-pickling the piles every fall. In addition to the obvious environmental benefit, there was a considerable cost saving as well. An annual reduction in salt usage of approximately 2,500 tonnes was achieved at a net saving of over $100,000. This annual saving was split between Ledcor and Alberta Transportation. This shared savings approach allowed Ledcor to offset some of the cost of providing covered storage structures. Total cost of the 28 individual storage buildings was $1.3M. Building sizes ranged from 55 x 50 ft. (1,000 tonnes capacity) to 72 x 110 ft. (4,000 tonne capacity). These structures were designed to house 30% of the total pickled sand produced – this is the typical residual amount remaining in stockpile at the end of the winter season. In certain environmentally sensitive locations (Drumheller, Nordegg, etc.) we elected to provide 100% covered storage – our effective covered storage for the entire contract area is approximately 50%.

ENVIRONMENTAL ACHIEVEMENT CONTINUED

To ensure the tent type storage structures were totally effective in preventing moisture infiltration, two special steps were taken. All voids in the concrete lego-block foundations were filled with expandable foam insulation and asphalt fillets were constructed at the base of the concrete blocks around the total building perimeter.

Ledcor has taken other steps to contain and control salt contamination at the maintenance facilities:

1). Residual piles which cannot be accommodated in the structure are covered with tarps weighted down with tires to shed rainfall, during the spring and summer seasons.

2). Annual pickling activities are deferred until the late fall after the end of the rainfall season. The large stockpiles of pickled sand required at the start of each winter season are, therefore, not susceptible to salt leaching.

3). Sand and salt mixing and storage areas are covered with a layer of asphalt concrete pavement – this prevents saline solution from seeping into the subsoil. Asphalt curbs were installed around the perimeter of all mixing / storage locations to contain saline solution on the asphalt pads. In total, over 3 km of asphalt curbing was installed. Drainage to an underground tank located adjacent to the pad was established to capture and store any saline solution. This solution will be used for dust abatement on nearby gravel roads or taken to downhole well sites for disposal.

4). Salt offloading from transport units was changed from a pneumatic process to one utilizing small conveyors (salt is being hauled in from Saskatchewan). This virtually eliminates airborne salt during the offloading process and prevents it from escaping through holes or cracks in the salt storage structures.

5). Historical practice had been to haul in the entire sand inventory prior to the onset of winter conditions and pickle it in September and October. This typically left large pickled sand piles exposed to the elements for extended durations. Ledcor revised arrangements with its sand suppliers to a more “supply on demand” approach. Sand will now be delivered to more closely suit the severity of the particular winter. Pickling activities are now deferred to the October / November time frame. This approach will reduce costs for un-needed sand material in milder winters and also reduce the potential for salt leaching from the pickled sand piles.

ENVIRONMENTAL ACHIEVEMENT CONTINUED

<u>Summary</u>

The continued use of road salt for highway snow and ice control is vital to the safety of the travelling public. There is presently no other alternative which is remotely affordable or which has the proven effectiveness of sodium chloride. However, legitimate and increasing environmental concerns will require a whole new approach to application and management practices. Ledcor has taken several major and costly steps to deal with these issues. An independent environmental consultant (EMS Millennium Solutions, Mr. Larry Brocke, President, Phone (780) 496-9048) has been engaged to assist in preparation of our environmental management plan and conduct spot audits to evaluate our performance. Our program continues to be a work in progress – recent audits have identified areas where there is room

for improvement. We are presently working to address all issues identified by the spot audits and further improve our performance.

At the start of our contract, we were using the Salt Management Guide prepared by the Transportation Association of Canada (TAC). We have since produced our own Sand/Salt Materials Guideline 2002 to govern our activities (document included as supplementary information). This document complements the TAC Guide, but also contains more stringent and area specific provisions. An integral part of our Environmental Management Plan (EMP) is the annual appraisal for all supervisors (Foremen and up). This measures their commitment to our environmental protocol – financial incentives are tied to their performance in this area.

Ledcor is committed to being an industry leader in the provision of environmentally friendly highway maintenance services. Attached as supplementary information is our Health Safety & Environmental Policy and the Environmental Section of our Program.

2002 TAC Environmental Achievement Award Submission

1). Sand and salt storage structures at Lacombe. Yellow material between blocks is expandable foam insulation to prevent water infiltration. Asphalt fillets at base of blocks provide positive drainage away from structures.

2). Asphalt curbing around asphalt pad with gap at low point for water to drain into buried storage tank (white tank lid visible in centre of photo).

3). Pickling operation in progress at Drumheller. Pickled sand is being conveyed into the storage structure.

4). Typical site condition as shown in December, 2001 at Rocky Mountain House. Salt storage building with roll-up door shown on right of photo.

The entire winter's pickled sand quantity is shown here – most of the pile will be used up by the end of the winter season. The residual quantity will be totally enclosed inside the building over the spring and summer seasons.

5). Front view of Red Deer Sand Structure – showing perimeter curbing.

6). Red Deer Site – showing outlet pipe in foreground – drainage swale directs run-off to underground storage tank.

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