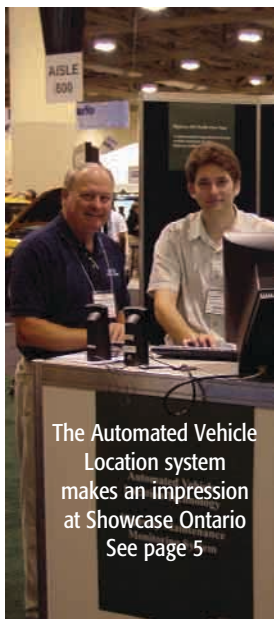


RoadTalk

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The Automated Vehicle Location system makes an impression at Showcase Ontario
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Winter Technology Testing, 2004-2005 MTO's Winter Artillery



Pre-wet sand: one of the technologies MTO is testing to improve winter driving conditions.

Now that winter is here, the Ministry of Transportation will be testing new innovations to improve the quality of service and reduce costs in maintenance operations. Road Talk highlights what's being evaluated for the 2004-2005 testing season. This season, testing is being done at selected locations in all five of MTO's Regions.

1. Direct Liquid Application (DLA)

DLA is the use of liquids on roads to prevent snow and ice from bonding to the pavement. This technology is applied before any precipitation starts, postponing or reducing the requirement for repeated salt applications during a long storm or under drifting conditions. DLA has been in trial implementation since 2002 (see "Liquid Relief," Road Talk, November 2002). The 2004-2005 season's evaluations will directly compare costs and service levels on

roads with and without DLA. The results of these evaluations will assist MTO in further refining DLA implementation in Ontario.

2. Pre-wetting of Granular Salt

According to controlled tests and narrative field accounts, when granular salt has been pre-wetted, its effectiveness is improved. MTO is studying pre-wetting of granular salt to determine how it reduces overall salt use when the pre-wet rate is increased, or when different types of liquid or granular material are used. The study will help determine how MTO can maximize efficiency of material distribution at lower costs under different environmental and traffic conditions.

3. Pre-wet Sand

Sand has been a regular feature of winter maintenance operations in virtually all jurisdictions, as it creates traction when packed snow cannot be removed. >

Southwestern Region is assessing a new utility location/identification process to ensure project employees have all the information they need on the job. This process, called Subsurface Utility Engineering (SUE), identifies utility infrastructure buried underground, and is intended to help keep projects on-time and on-budget, minimize work-related delays, and improve safety. The interchange upgrade at Homer Watson Blvd. and Highway 401 in Kitchener is the first MTO project to use this process. This pilot will help MTO determine the benefits of SUE for future detail design projects.

In a SUE investigation, utility line information can be identified to four increasing levels of quality. Staff must determine the potential impact of each utility and decide what quality of information is critical to safety and efficiency. Utilities that have only minor impact need only minimal investigation. Quality level D, the level of least detail, entails information about a utility gathered only from existing records and oral accounts. Quality level C supplements this with a visual survey of the aboveground indicators of utilities, such as manhole covers. The engineers then determine how this data fits in with the information from quality level D. Generally, a utility in a non-critical area of a project will suffice with only level D or C information. The higher the quality level, the more time and resources required.

When utility lines can have a crucial effect on a project's progress, quality level B or A is essential. Quality level B is achieved by using geophysical prospecting techniques, such as electromagnetic cable locate equipment and ground-penetrating radar, to determine the horizontal position of utilities. This creates a two-dimensional map for engineers. Quality level A involves installing test holes to gather data about the utility's size, orientation, material type, and depth, thus creating a precise, three-dimensional map of the utility.

Why is utility data so vital in a project? Inaccurate utility data, during the design stage, is typically one of the leading causes

of cost increases and construction delays on projects. In addition, an accidentally cut utility line can cause major inconveniences for the people it services, and can also endanger personal safety and lives. It is imperative that both the designer and labourers can get the best information they can when working on a project.

Southwestern Region selected the Homer Watson Blvd./Highway 401 interchange upgrade for this SUE trial because of the nature of the project. The scope of this project is extensive, including bridge replacement, building new ramps, reconstruction and realigning some of the existing ramps, and expanding the commuter parking lot. This interchange has a variety of utilities, a high volume of traffic, and a limited right-of-way for construction, making it a good candidate for a pilot use of the SUE process.

SUE is a part of MTO's effort to prepare contract packages with more accurate information. It also shows MTO's continuing efforts to mitigate construction conflicts, delays, and claims. Construction on this project is expected to begin in spring 2005. ●

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Subsurface Utility Engineering

A Process Named SUE



A: Vacuum excavation equipment at the Hwy 401/Homer Watson Blvd. project.
B: A test hole installed on a utility structure.
Photos courtesy of Lawrence Arcand, TSH/TBE Subsurface Utility Engineers.