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DATE: May 15, 2012

REPORT TITLE: **AUTOMATED VEHICLE LOCATOR (AVL) AND GLOBAL POSITIONING SYSTEM (GPS) TRACKING AND REPORTING SOLUTION - ROAD OPERATIONS AND MAINTENANCE CAPITAL PROJECT 11-4008 DOCUMENT 2009-074P**

FROM: Dan Labrecque, Commissioner of Public Works

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#### **RECOMMENDATION**

**That the contract (Document 2009-074P) for the supply of Automated Vehicle Locator (AVL) and Global Positioning System (GPS) Tracking and Reporting Solution for the Roads, Operations and Maintenance Fleet, Stage Two, be awarded to Delcan Corporation in the estimated amount of \$750,000 (excluding applicable taxes), under Capital Project 11-4008, in accordance with Purchasing By-law 63-2008;**

**And further, that authority be granted to extend the contract for five optional 12-month periods for the purchase of related goods, services, and maintenance and support in the estimated amount of \$120,000 annually (excluding applicable taxes);**

**And further, that the required documents be executed by the Regional Corporation's duly authorized signing officers.**

#### **REPORT HIGHLIGHTS**

- The project to install an automated vehicle locator and global positioning system (AVL/GPS) technology in the Roads, Operations and Maintenance winter vehicles supports Region's Strategic Plan Goals related to protecting the environment and demonstrate accountability by measuring performance.
- Stage One of the project was testing the AVL/GPS technology of tracking material use and vehicle location in four combination plough vehicles and two patrol trucks.
- Stage Two being the full implementation of the AVL/GPS technology into all remaining Roads winter fleet.
- Request for Proposal 2009-074P was competitively bid and Delcan Corporation was awarded Stage One and is being recommended for Stage Two.

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## **DISCUSSION**

### **1. Background**

Roads Operations and Maintenance has implemented an automated vehicle locator, global positioning system (AVL/GPS) wireless technology solution for reporting and tracking winter maintenance activities, as well as the year round road patrol.

Provincial regulations indicate that municipalities must monitor and keep records of all road patrol activities and winter operations. This project is part of the Region's Salt Management Plan endorsed by Regional Council in 2007 and the implementation of best salt management practices which can be considered enhancement to the road operations.

AVL/GPS technology can assist the Region through enhanced record keeping. These records provide more accurate documentation to confirm adherence to the Minimum Maintenance Standards and Peel's Performance Standards, allow more accurate tracking of salt usage and optimization of equipment deployment.

The Region issued a Request for Proposal (RFP) Document 2009-074P and awarded Stage One, a pilot test to Delcan Corporation to install Mobile Data Collector (MDC) units in six of the Region's vehicles, to determine software and hardware integration capabilities with Region's IT infrastructure and test the AVL/GPS technology. Upon a successful pilot test, the intent was to continue to Stage two, full implementation of the AVL/GPS) technology into all remaining roads operations and maintenance winter fleet.

The vendor was to provide a solution which would enhance the current tracking of activities and material usage by adding additional elements of data. Staff tested the equipment, technology and reports for accuracy and quality and worked directly with Delcan Corporation to make adjustments where required.

The pilot project Stage One was evaluated based on:

- system functionality;
- data quality;
- durability of system components;
- integration to Peel Information Technology (IT) network infrastructure, and;
- vendor customer service and response time.

### **2. Findings**

The equipment installed has met the system functionality required for the project by providing electronic data that replaces paper records with real-time data, multiple reporting and map options of vehicle activity.

The system electronically records data from each vehicle and actively tracks the vehicles real-time on a map which aids with route optimization and supervision. The data that has been inputted, appears on a report at the end of the shift and is viewed real-time by office staff. Evaluation of the recorded data proved to meet the data quality expected by staff.

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Vehicles have a touch screen unit mounted in the cabs which the driver can use to input data, when safe to do so. The unit has the ability to capture other data automatically through sensors mounted on the vehicle. The drivers of the combination plough units enter what material is being applied to the road, while the unit collects the spreading rates from the trucks. Additionally, the patrol vehicles can document road deficiency details and observations that are time stamped and GPS position recorded. Overall, the equipment installed for this project demonstrated durability and accuracy towards the extreme environmental elements that vehicles are exposed to.

There have been opportunities for integration to Peel IT network infrastructure to interface the data into other systems such as Hansen and Geographic Information Systems (GIS), where staff are utilizing data to map and query truck activity. Staff have already expanded the functionality of the equipment in the patrol vehicle beyond the original intended use. Staff made use of the electronic patrol program to collect the annual night time Sign Reflectivity Inspection data, which is a requirement of the Minimum Maintenance Standards. The equipment captured the GPS coordinates of any deficient traffic signs and generated work orders for sign replacement. These records are used to update the asset inventory in the Hansen system and confirmation the sign inspection was completed.

The vendor was responsible for the installation, maintenance, repair and replacement of all hardware during the project. The vendor worked closely with the Region's Information Systems and Technology Services (ISTS) staff to house the data on Regional servers. All data is owned by the Region, there is no third party hosting. The vendor has trained ISTS staff on troubleshooting techniques so they can provide internal technical support to maintenance staff. The vendor proved their dedication to the project through their customer service and response time to troubleshoot and resolve issues throughout the pilot stage.

After the full implementation of equipment in the winter maintenance vehicles staff will utilize the data to document accurate salt usage and confirm that the Region is meeting the Minimum Maintenance Standards. The data is useful for trending, budgeting for winter activities and route optimization. By having real time information, staff can enhance their winter event response by determining the rate of the material which is supported by observed weather and road conditions.

### **3. Proposed Direction**

Given the results of Stage One, staff are seeking authority to implement the AVL/GPS technology into the remaining Roads winter fleet to enhance reporting and tracking of winter maintenance activities, for the estimated cost of \$750,000.

### **FINANCIAL IMPLICATIONS**

Sufficient funding is available under Capital Project 11-4008, in the 2012 budget year to fund Stage Two of the project.

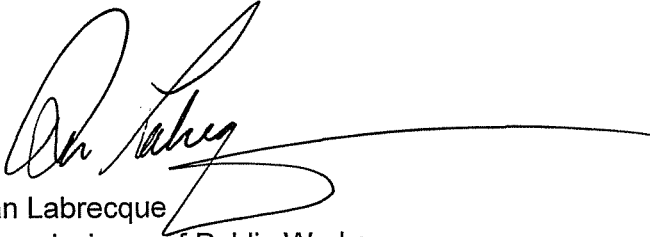
### **CONCLUSION**

The hardware and software capabilities and suitability with the Regions business process have been fully evaluated and it has been determined that Stage one, the pilot test is a success. Staff recommends proceeding to Stage two, the full implementation to install the AVL/GPS technology in the roads fleet.

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Dan Labrecque  
Commissioner of Public Works

**Approved for Submission:**





D. Szwarc, Chief Administrative Officer

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