4. ROAD WEATHER INFORMATION SYSTEM NETWORK EXPANSION

COMMITTEE RECOMMENDATION

That Council approve the purchase of two Road Weather Information Stations to be added to the Regional Road Weather Information System (RWIS), and the appointment of Mark F. Pinet & Associates Limited, Nepean, to coordinate and supervise the installation of the above mentioned RWIS stations, for a total contract provision of $145,000.00.

DOCUMENTATION

1. Environment and Transportation Commissioner's report dated 16 Aug 00 is immediately attached.

REGION OF OTTAWA CARLETON | REPORT

RÉGION D'OTTAWA CARLETON | RAPPORT

Our File/N/Réf. **50**-60-00-0101
Your File/V/Réf.

DATE 16 August 2000

TO/DEST. A/Coordinator
Corporate Services and Economic Development Committee

FROM/EXP. Environment and Transportation Commissioner

SUBJECT/OBJET **ROAD WEATHER INFORMATION SYSTEM NETWORK EXPANSION**

DEPARTMENTAL RECOMMENDATION

That the Corporate Services and Economic Development Committee and Council approve the purchase of two Road Weather Information Stations to be added to the Regional Road Weather Information System (RWIS), and the appointment of Mark F. Pinet & Associates Limited, Nepean, to coordinate and supervise the installation of the above mentioned RWIS stations, for a total contract provision of $145,000.00.

BACKGROUND

The Region of Ottawa-Carleton installed and has been operating a Road Weather Information System (RWIS) since 1996. The system was started with a set of two complete roadside and surface weather stations and three surface-only stations. The system has been expanded with three more stations through partnership and contributions from agencies such as the Ministry of Transportation of Ontario (MTO), and through some Roadway and Transitway capital projects, taking advantage of the project during construction stages.

The system is a network of micro-weather stations utilizing sensors embedded in the pavement and beneath the road surface; all connected through a network of telephone lines feeding back to a central server that energizes the stations, collects and archives readings from the road surface, subsurface and atmospheric sensors. The near-live information on road and weather conditions from the stations is used as input to develop specialized forecasts by meteorologists for pavement conditions for the next 24 hours, issued twice a day by Environment Canada, through a partnership agreement to provide the specialized service along with customized atmospheric and precipitation forecasts. The server in turn, makes the information available for display through an interface software that allows access to the

information and the system over the Regional Local Area Network (LAN) and Wide Area Network (WAN). Furthermore, in addition to the forecasts being made available over the local area network, they are also made available through alternate means of delivery such as fax, email, and other notification devices as they become more accessible.

The system will be made available to all the area municipalities within the Region of Ottawa-Carleton as part of the amalgamation process of the new City of Ottawa.

The system serves as a decision support tool that allows Regional staff to monitor pavement temperatures, a critical element in the effectiveness of winter snow and ice control operations, that allows maintenance operations staff to make informed decisions on material application and frequency. The pavement forecast facilitates better preparation and more responsive mobilization of maintenance equipment and resources, all of which results in a more efficient and cost effective winter maintenance operation.

The Road Weather Information System has become the backbone of advanced winter maintenance operations. A properly functioning RWIS is critical to the successful implementation of advance winter snow fighting technologies that include de-icer pre-wetting, and anti-icing. In fact, RWIS, and the supporting technologies implemented by the Infrastructure Maintenance Division to date, have resulted in no significant increase in the amount of salt used on an expanded Regional Road network that was affected in 1999 as a result of provincial downloads of road maintenance responsibilities to municipalities, while at the same time, in conjunction with computerized route optimization and equipment modifications, increasing the levels of service. The routes are completed in a shorter time period than the prescribed Regional standard, without increases in labour and equipment.

DISCUSSION

The concentration of the RWIS sites requires balancing across the Region, coverage is less in the east, however, with the downloading of Provincial highways, currently including former Highway 17, the necessity for additional road weather information has become apparent.

In order to expand coverage for the RWIS network, it is necessary that stations be installed toward the east and southeast areas of the Region, thus the recommendation to install two RWIS stations, one to be installed in the vicinity of Trim Road (RR 57 & RR 174 intersection) and the second in the area of Vars (RR 33 & Hwy 417 intersection). The two stations will have a full complement of roadway and atmospheric sensors.

The initial system was purchased and installed based on technologies developed by Surface Systems Inc. (SSI) of St. Louis, Missouri (USA). However, more advance sensor technology is now commercially available which includes active sensors with more intelligent applications relating to different chemicals used for de-icing and anti-icing. It is recommended that the station at Trim Road be purchased from SSI, similar to the remainder of the existing system, and the second station at Vars be purchased from Boschung Company Inc. of Saint Simons, Georgia (USA) for testing purposes. Both

vendors are considered to be leading providers of road weather information systems and both vendors' equipment is manufactured outside of Canada.

The addition of the Boschung technology, which is based on European winter innovation, will allow the department to be able to adopt versatile technologies that facilitate the advancement of its anti-icing operations and exercise more control of salt application. The integration of both systems has been proven to be successful in states such as Pennsylvania and Minnesota, and in European countries such as Denmark. In the Ottawa area, Environment Canada has been successful in integrating various designs by several venders to achieve maximum benefits for the winter maintenance operations.

After careful analysis of pricing structure for both companies, the result was very comparable for similar functionality from either vendor. The cost of the equipment compared to the original equipment is not of great significance and prices for the core elements of the system have remained very much the same. However, the installation cost is expected to follow current market trends.

This combination of information provides the essential data for informed decision making and has proven to be successful in supporting the implementation of an anti-icing approach, as well as, a more precise de-icing operation, which will significantly reduced the cost of winter maintenance, while improving the safety to the motoring public. This installation will enhance the coverage for the east and southeast quadrant of the Region, in addition to the further enhancement of the integrity of the system.

Mark F. Pinet and Associates (MFPA) are to be retained for their expertise in RWIS integration and installation. The firm was retained for the initial installation of the system in 1996, and subsequent additions, vendor evaluation and analysis. Mark F. Pinet and Associates is well recognized for their work in road weather information system implementation with the Ministry of Transportation of Ontario (MTO) and Environment Canada.

The recommendations in this report are based on a study and analysis by MFPA under a separate undertaking. This assignment includes the facilitation of the purchase of the equipment for the assigned vendors, evaluation and hiring of contractors under MFPA's authority and the installation and responsibility to meet the specifications of the system.

The project total cost is broken down as follows:

Equipment purchase	$82,716.00
Construction	$31,495.00
Project Management	$13,894.00
GST	$8,967.00
Contingency	$7,928.00
Total	$145,000.00

The Supply Management Division was contacted for their input.

The work associated with the addition of the two RWIS stations shall be completed by 30 November 2000.

CONSULTATION

Public consultation process is not required for procurement of operational equipment and services.

EXPENDITURE JUSTIFICATION

This expanded RWIS network will further assist staff in reducing the costs of ongoing winter maintenance operations across the Region and in particular, the eastern portion of the Region. If these funds are not approved, past practices for winter operations will continue and opportunities for future cost savings will not be realized. Further decreases to the winter operations budgets, or increases to the regional road network size without additional funding, will affect the approved levels of service. Risk to public safety is expected to increase without reliable pavement condition forecasts.

The system currently in place, coupled to the specialized road weather forecasting services by Environment Canada, has proven to be a valuable tool in the delivery of efficient and cost effective winter maintenance operations. The addition of the two stations to the system will complete coverage of the network to the eastern and southern portions of the Region. Also, the added stations will help increase overall system reliability, and availability of the system.

FINANCIAL STATEMENT AND APPROVAL

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Approved Budget to Date	505,447
Total Paid & Committed	(346,577)
Balance Available	158,870
This Request	(145,000)
Balance Remaining	13,870

Funds have been provided in the 2000 Capital Budget, Order No. 900100, Ice and Snow Control Technologies (Reference page 200), Purchase Requisition No. 10071528.

Approved by
M.J.E. Sheflin, P. Eng.

MMA/mhb

SUPPLY MANAGEMENT COMMENT

I concur,

Glen Ford
Director, Supply Management Division