



Hamilton

CITY OF HAMILTON

PUBLIC WORKS DEPARTMENT
Corporate Assets and Strategic Planning Division

TO: Chair and Members Public Works Committee	WARD(S) AFFECTED: CITY WIDE
COMMITTEE DATE: October 7, 2013	
SUBJECT/REPORT NO: Standardization of Traffic Signal Control Equipment and Materials (PW13071) - (City Wide)	
SUBMITTED BY: Gerry Davis, CMA General Manager Public Works Department	PREPARED BY: Martin White Manager, Traffic Operations and Engineering (905) 546-2424, Extension 4345
SIGNATURE:	

RECOMMENDATION

- (a) That in accordance with the City of Hamilton’s Procurement Policy #14 - Standardization, ALDIS brand intersection related vehicle detection systems and software be approved as a standard through December 31, 2018. Single source supplier - Electromega Ltd.;
- (b) That in accordance with the City of Hamilton’s Procurement Policy #14 - Standardization, ITERIS brand long distance, temporary conditions and expressway monitoring vehicle detection systems and software be approved as standard through December 31, 2018. Single source supplier - AE Traffic Technologies Ltd.;
- (c) That in accordance with the City of Hamilton’s Procurement Policy #14 - Standardization, Fortran brand Traffic Signal Heads and Pedestrian Signal Heads and components parts including LED modules be approved as the Standard through December 31, 2018. Single source supplier - Fortran Traffic Ltd.;
- (d) That in accordance with the City of Hamilton’s Procurement Policy #14 - Standardization, Eltec School Zone Flashers single source supplier be changed from Tacel Ltd to Innovative Traffic Solutions Inc. through December 31, 2017;

- (e) That the General Manager of Public Works, or his designate, be authorized and directed to negotiate all prices, quantities, terms and conditions with the identified single source suppliers.

EXECUTIVE SUMMARY

The Traffic Operations and Engineering section of the Public Works Department maintains and operates approximately 550 traffic signals and procures significant quantities of specialized electronic parts and materials which are highly technical and often proprietary in nature. These parts and materials must also be compatible with technologies and equipment currently in use in the City.

Traffic Operations and Engineering is in the process of upgrading the City's Traffic Signals System. The upgrade will include the use of new traffic management technologies which will make Hamilton more current with today's traffic industry trends. The changes will place Hamilton alongside other progressive municipalities in Southern Ontario which is essential in developing regional solutions to address traffic congestion in the large urban areas of Ontario. The use of new traffic management technologies such as video detection will enable the City to install, maintain and operate a modern, cost efficient Traffic Signal System. The replacement of antiquated inductive loop technology is expected to have significant return in investment.

Traffic Operations and Engineering adheres to the Procurement Policies and Procedures for the purchasing of parts and materials. Under the Procurement Policies and Procedures the preferred process is to seek multiple vendors whose products meet the technical specifications and to encourage an open and competitive bidding process. In certain situations parts and materials essential to the operation are proprietary to a specific vendor and are technically unique. The use of Standardization Policy #14 will improve Traffic Operations business practices and provide the ability to procure highly specialized technical equipment to meet operational requirements.

This report recommends and seeks approval to standardize on the following highly specialized technical equipment to be used by Traffic Operations and Engineering through December 31, 2018.

1. ALDIS brand intersection related vehicle detection systems and software

Traffic Operations and Engineering staff conducted a two-year video detection pilot project to test video detection systems from various suppliers which are currently available in the market.

Field testing and data analysis revealed that the ALDIS brand intersection related vehicle detection system is significantly easier to install, less time consuming and have added functions that cannot be found in other competing products. This product's unique functions/capabilities are essential to the operation of the City's Traffic Management Centre. Based on pilot project results staff concluded that the ALDIS brand intersection related vehicle detection systems and software have unmatched capabilities for intersection stop-bar, left turn set-back and traffic

responsive applications within signalized intersections and up to a maximum distance of 85 meters from the intersection's stop bar.

The ALDIS camera system software also provides a rich set of traffic management features/options which cannot be found in other competing products. The traffic management software provided with ALDIS systems will be a critical component of the City's future traffic management strategies.

The ALDIS line of video detection products is also fully compatible with technology and equipment currently used in the City. For these reasons Traffic Operations and Engineering staff have recommended that the ALDIS brand intersection related vehicle detection systems and software be designated as a standard.

2. ITERIS brand long distance, temporary conditions and expressway monitoring vehicle detection systems

Traffic Operations and Engineering staff conducted a two-year video detection pilot project to test video detection systems from various video detection suppliers which are currently available in the market. In this category the video detection systems had to be capable of long distance vehicle detection, temporary conditions and expressway monitoring.

Field testing and data analysis revealed that the ITERIS brand long distance, temporary conditions and expressway monitoring vehicle detection systems are significantly easier to install, less time consuming and have added functions/capabilities that cannot be found in other competing products. The ITERIS wireless capability is particularly useful for long distance, temporary conditions and expressway monitoring applications since expensive cable runs are not needed. The ITERIS wide angle camera lens is also critical to the installation of cameras for temporary applications as a result of greater flexibility for camera placement.

Long distance applications refer to permanent vehicle detection zones that are located at or beyond 60 meters from the intersection's stop bar. Temporary applications refer to intersections where the current loop technology has partially failed or during road construction. Expressway monitoring refers to the use of video detection technology to collect incident and traffic data from expressways. Each of the above noted scenarios is a distinct video detection application that the ITERIS brand can successfully perform.

Based on pilot project results, staff have concluded that ITERIS brand long distance, temporary conditions and expressway monitoring vehicle detection products have unmatched capabilities for long distance, temporary conditions and expressway monitoring applications. The ITERIS line of products is also fully compatible with technology and equipment currently used in the City. For these reasons Traffic Operations and Engineering has recommended that the ITERIS brand long distance, temporary conditions and expressway monitoring vehicle detection systems be designated as a standard.

3. FORTRAN brand Traffic Signal Heads and Pedestrian Heads

L.E.D. Signal Heads and L.E.D. Pedestrian Signal Heads were first installed in the City of Hamilton in January of 2004. From 2004 to the present time, we have installed and tested various traffic signal heads manufactured by other suppliers and through the continuous improvement process, field testing has shown that the Fortran brand Signal Head and Pedestrian Head has a superior lifespan and reduced maintenance requirements. Traffic Operations and Engineering has experienced significant backboard tape failure over the past 9 years, on all other manufacturers signal heads. The Fortran brand signal heads, component parts and L.E.D. modules have proven to be a superior product.

4. ELTEC brand School Zone Flashers

Council at its meeting of December 12, 2012 approved Report 12-014 of the Public Works Committee as presented authorizing the Traffic Operations Section to purchase as a standard, the Eltec School Zone Flasher, distributed by Tadel Ltd. City staff has now been advised that as of August 31, 2013 the Eltec School Zone Flasher is no longer being distributed by Tadel Ltd. Innovative Traffic Solutions, (ITS) is now the distributor of the Eltec brand of School Zone Flashers.

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FINANCIAL / STAFFING / LEGAL IMPLICATIONS

Financial: The recommended products have been tested and proven superior in performance and deliver functions/capabilities that are unmatched by other products in the market today. These products are expected to have longer life spans as they are installed overhead as opposed to being embedded into the road surface like inductive loops. Overhead installation protects video detection systems from roadway damage and construction activities. It is anticipated that these products will reduce future installation and maintenance costs while delivering new traffic management capabilities. These systems are also fully compatible with existing technology and equipment used in the City today. The traffic management capabilities will help Traffic Operations and Engineering staff improve traffic signal system efficiency and thus reducing traffic congestion and vehicle emissions while improving safety. Designated Traffic Operations staff will negotiate all costs to ensure fair market value of goods. There is sufficient funding available in the capital and operating budgets for Traffic Operations and Engineering Section to support the purchase of the above noted products. Estimated annual expenditure for the ALDIS and ITERIS vehicle detection systems and software is \$400,000. The Estimated annual expenditure for the Fortran brand Traffic Signal Heads and Pedestrian Signal Heads and components parts including LED modules is \$200,000, while it is estimated that approximately \$160,000 annually will be spent on the Eltec School Zone Flashers.

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Staffing: There are no staffing implications.

Legal: The installation and operation of traffic control devices is dictated by the Highway Traffic Act and the Municipal Act. The use of the defined products will assist in maintaining a traffic infrastructure that meets all legal requirements.

HISTORICAL BACKGROUND

In the past Traffic Operations and Engineering submitted Policy # 11 - Non-competitive Procurement requests on an annual basis to secure procurement of proprietary and technically unique products as and when required. As a continuous measure for improvement, Traffic Operations reviewed the use of Policy 11 procurements and the use of specialized single source items. The review has resulted in a recommendation to designate specified traffic products and parts as standards.

POLICY IMPLICATIONS/LEGISLATED REQUIREMENTS

The recommendations contained in this report meet all conditions of City of Hamilton By-Law No. 11-297 Procurement Policy or such other similar policy currently in force.

RELEVANT CONSULTATION

Public Works, Corporate Assets & Strategic Planning, Traffic Operations & Engineering
Corporate Services, Financial Services, Procurement

ANALYSIS / RATIONALE FOR RECOMMENDATION

The Traffic Operations and Engineering section of the Public Works Department maintains and operates approximately 550 traffic signals and procures significant quantities of specialized electronic parts and materials which are highly technical and often proprietary in nature. These parts and materials must also be compatible with technologies and equipment currently used in the City.

Traffic Operations and Engineering is in the process of updating the City's Traffic Signals System. The upgrade will include the use of new traffic management technologies which will make Hamilton more current with today's traffic industry trends. The changes will place Hamilton alongside other progressive municipalities in Southern Ontario which is essential in developing regional solutions to address traffic congestion in the large urban areas of Ontario. The use of new traffic management technologies such as video detection will enable the City to install, maintain and operate a modern, cost efficient and self-sustainable Traffic Signal System. The replacement of antiquated inductive loop technology is expected to have significant return in investment.

Traffic Operations and Engineering adheres to the Procurement Policies and Procedures for the purchasing of parts and materials. Under the Procurement Policies

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and Procedures the preferred process is to seek multiple vendors whose products meet the technical specifications and to encourage an open and competitive bidding process. In certain situations parts and materials essential to the operation are proprietary to a specific vendor and are technically unique. The use of Standardization Policy #14 will improve Traffic Operations business practices and provide the ability to procure highly specialized technical equipment to meet operational requirements.

Traffic Operations and Engineering staff evaluated a variety of video detection products for adherence to traffic industry technical standards and City technical specifications. The systems were tested for video detection performance, ease of installation/maintenance, traffic management functionality, wear and reliability. The products tested were ALDIS, ITERIS, TRAFICON, PEEK and CITILOG video detection systems. The evaluation was conducted over a number of years which included adherence to traffic industry technical standards and City technical specifications, bench testing, experimental installations and full field testing and data analysis of results.

The ALDIS brand intersection related vehicle detection equipment and The ITERIS brand long distance, temporary conditions and expressway monitoring vehicle detection equipment are products that performed favourably compared to their competitive products. These products outperformed the competition in their respective detection applications and provided functions/capabilities that cannot be matched by the competing products. In both cases there are no known alternative products available that meet the City's technical specifications. ALDIS and ITERIS products are fully compatible with existing signal system technology and equipment. Both brands were rigorously tested during a two-year pilot project which provided staff with the experience/knowledge required to make the recommendations contained in this report.

L.E.D. Signal Heads and L.E.D. Pedestrian Signal Heads were first installed in the City of Hamilton in January of 2004. From 2004 to the present time, we have installed and tested various traffic signal heads manufactured by other suppliers and through the continuous improvement process, field testing has shown that the Fortran brand signal head and pedestrian head has a superior lifespan and reduced maintenance requirements. The Fortran brand signal heads, component parts and L.E.D. modules have proven to be a superior product.

Standardizing on the above products allows for reduced stock levels of spare parts. Furthermore these products all require product specific knowledge and training for their use and installation. Standardization will result in reduce training and improved staff knowledge of these products. Traffic Signal crews participated in the testing and evaluation of these products and have provided their feedback and support for the use of these video detection products. Follow through on the staff observations and recommendations will improve staff morale and provide an opportunity for an engaged work force. The standardization on these recommended products will improve the operation and maintenance of the City's Traffic Signal assets while providing new tools to improve signal system efficiency, reduced traffic congestion and reduce vehicle emissions.

Traffic Operations staff will continue to review via a continuous improvement process, the procurement and use of traffic parts and materials. Staff will continue to monitor the market should equivalent products become available. Traffic Operations will provide an update report at the end of December 2018.

ALTERNATIVES FOR CONSIDERATION

The continued use of existing outdated vehicle inductive loop technology rather than using Traffic Cameras for vehicle actuation, would be more costly and deliver far less functions/capabilities, and is not compatible with the technology to be used in the Traffic Management Centre, currently being constructed. Another alternative for consideration would be to seek competitive bids accepting approximately comparable products. However, after conducting testing of these products and the available comparative brands all the products recommended are superior in performance cost and maintenance and this is not the recommended method to procure these highly technical Traffic related products. Both ALDIS and ITERIS products deliver functions/capabilities that cannot be matched by other competing products in the market today. Therefore, the use of other competing products would result in inferior video detection performance and more expensive equipment installation and maintenance and therefore is not the preferred process. The use of the recommended products also facilitates the implementation of a number of traffic management initiatives that Traffic Operations and Engineering is currently working on. The use of inferior products will have a significant negative impact on these initiatives. It is anticipated that standardizing on the Fortran Traffic Signal Heads will provide significant financial savings due to compatibility to existing Traffic Signal Heads in the field, parts availability, familiarity and reduced trouble calls due to improved performance of equipment. Each of the selected products for Standardization has been tested against competing products in the market today. These products have proven to perform in a superior fashion, they are being recommended for purchase and use in Hamilton. These products are manufacturer owned proprietary products and each is only available from one designated vendor. There are no legal or staffing implications.

ALIGNMENT TO THE 2012 - 2015 STRATEGIC PLAN

Strategic Priority #2

Valued & Sustainable Services

WE deliver high quality services that meet citizen needs and expectations, in a cost effective and responsible manner.

Strategic Objective

- 2.1 Implement processes to improve services, leverage technology and validate cost effectiveness and efficiencies across the Corporation.

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2.4 To deliver video vehicle detection equipment that improves traffic signal system efficiency and thus reducing traffic congestion and vehicle emissions

APPENDICES / SCHEDULES

None