



STAFF REPORT ACTION REQUIRED

One Person Train Operation - Procurement Authorization Amendment

Date:	October 16, 2017
To:	TTC Board
From:	Chief Executive Officer

Summary

The purpose of this report is to obtain procurement amendment authorization for Contract C31PA15794, Train Door Monitoring (TDM) Equipment, for the supply of video transmission and display equipment needed to outfit all Line 1 stations and trains in support of One Person Train Operation (OPTO).

OPTO removes the need for a guard by allowing the operator to drive the train as well as monitor passengers boarding/exiting, control door operations, address customer and equipment incidents. Operating OPTO involves new procedures and new equipment installations on train and platform.

The TDM system consists of equipment that combines and transmits video from the station platform cameras to the train, where it is displayed to the operator. This contract amendment is to procure equipment to outfit all 38 stations on Line 1, 76 TR trains and two maintenance yards.

Recommendations

It is recommended the Board:

1. Authorize staff to exercise the contract specified option, as set out in contract C31PA15794, for train door monitoring equipment relating to the implementation of OPTO on Line 1 and authorize any necessary amendments to increase the total contract price of Contract No. C31PA15794, Train Door Monitoring Equipment with System Integrated, L.P., in the amount of \$3,882,334.39 plus \$301,073.32 in self-assessed taxes for a net increase of \$4,183,407.71, increasing the total authorized amount from \$2,283,176.59 to \$6,466,584.30.

Financial Summary

Funds for this expenditure are included in the TTC's 2017-2026 Capital Budget, under the State of Good Repair category 2.3 Communications - Train Door Monitoring project, as approved by City Council on February 15, 2017.

Under PTIF, capital projects that commenced after April 1, 2016 and completed by March 31, 2019 may receive up to 50% funding of eligible costs. The Train Door Monitoring project meets the criteria for funding eligibility under the program and as such \$4.2 million in costs less HST rebate reductions are eligible for funding under the PTIF program, as reflected in the approved Capital Plan.

The targeted revenue service of OPTO on Line 1 is Q1 2020. Net annual operational savings of approximately \$20 million and workforce savings of 120 positions will be realized in 2020 onward.

The Contractor, Systems Integrated L.P., is an American company and is not licensed to collect Canadian taxes (HST). Therefore, TTC is self-assessing and remitting all taxes to the appropriate government agency, with the exception of 5% GST on equipment and documentation remitted by the contractor at the time of import as part of customs clearance.

The Chief Financial Officer has reviewed this report and agrees with the financial impact information.

Accessibility/Equity Matters

Although the recommendations have no accessibility ramifications, active consultations with the Advisory Committee on Accessible Transit (ACAT) will be continued whenever significant operational changes are made to the subway.

Decision History

A competitive bid process was conducted in early 2015 for the design and supply of Train Door Monitoring equipment. As a result of this competitive bid process, contract C31PA15794 was awarded to Systems Integrated L.P. on July 15, 2015 for the design and supply of the equipment to outfit all Line 4 stations and four TR trains, with specified options to supply equipment for Line 1 and Line 2. The contract price of \$1,429,489.32 includes 5% GST on the equipment and documentation portion of the work, payable by the contractor, and an amount of \$140,735.40 was authorized for remaining applicable taxes to be self-assessed by the TTC.

Contract Amendment No. 1, in the amount of \$203,347.68 was issued to Systems Integrated L.P. contract on October 14, 2016 to supply additional equipment to equip two additional TR trains plus standby parts. Additional internal authorization of \$15,493.15 was obtained for the applicable taxes self-assessed by TTC.

Contract Amendment No. 2, in the amount of \$439,846.40 was issued to Systems Integrated L.P. contract on January 17, 2017 to allow for supplemental engineering and software development required to implement additional functionality identified during the design and prototyping phases of the contract that was extra to the original contract scope. Additional internal authorization of \$54,264.63 was obtained for the applicable taxes self-assessed by TTC.

Contract Amendment No. 3 was issued on June 26, 2017 to extend contract completion date to October 31, 2017 to allow completion of contract Phase 1 activities including system training, supply of test equipment and monitoring system.

Issue Background

OPTO is a multiphase project, in alignment with the CEO's Five Year Corporate Plan, to modernize subway operations. Phase 1 entered revenue service on Line 4 on October 9, 2016 as a pilot project to prove the operating concept and system technology. In phase 2, OPTO is scheduled to begin revenue service on Line 1 in 2020 and finally in phase 3, a rollout to Line 2 at a future date to be determined. (Note: Line 3 is already operated under OPTO mode).

Since entering revenue service the early technical issues have been resolved and the TDM system has proven to operate reliably and safely. Initial reluctance on the part of the operators has been overcome and is now accepted as the preferred method of operation over the traditional guard/operator model.

Throughout the pilot, the system was evaluated and new requirements were identified that will improve the system's reliability, maintainability and performance. The new requirements include modifications to the train board equipment to support the ability for the maintenance personnel to fully troubleshoot the system, an upgraded on-board computer, and general software update.

In order to implement OPTO on Line 1 by the end of 2019, an amendment is needed to Contract No. C31PA15794, Train Door Monitoring Equipment to exercise the contract's specified option, in the amount of \$4,183,407.71, including self-assessed taxes, for the supply of additional equipment required to outfit 38 stations and 76 TR trains. Equipment is also required for installation at Wilson and Davisville Yards to support maintenance and testing activities.

The TDM equipment supplier, Systems Integrated L.P., has provided a quotation for the supply of the equipment and system enhancements. TTC staff has evaluated this quotation and consider it both technically and commercially acceptable.

Comments

Currently, on Lines 1 and 2, subway trains are operated with a crew of two, both an operator and a guard. The operator is responsible for controlling the train's movement (watching for staff, customers, or obstructions at track level) and following the routing and timing signals. The guard is responsible for customer movement while the train is stationary (open and close the doors of the train ensuring that customers are clear of the train as it moves off). Both members of the crew are able to assist in customer and/or equipment related incidents.

OPTO is the reduction of the train operating crew from two down to one – just the operator. This provides the efficiency of having the operator doing the guard duties while they would have otherwise been waiting for the guard to handle the door controls. With newer video transmission technology, the operator will have a more comprehensive view of the platform and train doors. With the onset of Automatic Train Control, the operator's driving responsibilities will be even less.

The main benefit of OPTO is to utilize TTC forces more efficiently. This will allow a shift from a train presence to that of an increased station presence to provide better customer support.

In order to implement OPTO, the single train operator must be able to view the entire length of the train from the operator's chair to ensure that it is safe to close the train doors and begin moving away from the platform. To be able to view the entire length of the train, the TDM system was developed that utilizes station platform mounted cameras, platform based transmission equipment, train cab mounted video monitors, and on-board receiving equipment.

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