



REPORT FOR ACTION

Non-competitive Contract with MMM Group for Engineering Design Services for the Deck Replacement of the F.G. Gardiner Expressway from Jarvis Street to Cherry Street, including Associated Public Realm Improvements

Date: February 15, 2017

To: Public Works and Infrastructure Committee

From: Executive Director, Engineering and Construction Services
Director, Purchasing and Materials Management

Wards: 28

Reference: P:\2017\Cluster B\TEC\PW17003 (AFS #24352)

SUMMARY

The purpose of this report is to request authority for the Executive Director of Engineering and Construction Services to negotiate and enter into a non-competitive contract with MMM Group. The contract is for professional services for the detailed engineering design of the Deck Replacement of the F.G. Gardiner Expressway from Jarvis Street to Cherry Street, including the design of associated public realm improvements, as well as for construction liaison. The estimated amount of the non-competitive contract is \$3,000,000 net of HST, \$3,052,800 net of HST recoveries. This price represents an engineering cost of approximately 1% of the total capital project cost, which is lower than the cost typically expected with this type of undertaking, and is therefore considered fair and reasonable.

There is an urgent need for the award of this contract as a delay will jeopardize the City's ability to construct the infrastructure upgrades needed to maintain the elevated section of the Gardiner Expressway between Jarvis and Cherry Streets, currently at the end of its service life, in a safe and operable condition, without additional cost; and to adhere to the accelerated rehabilitation schedule recently approved by Council. Entering into a non-competitive contract with MMM Group will enable the City to maintain the aggressive rehabilitation schedule for the Gardiner Expressway and proceed with the required reconstruction work on the most critical portion of the elevated section starting in 2018.

City Council approval is required for this contract award in accordance with Municipal Code Chapter 195-1 Purchasing, where the current request exceeds \$500,000 under

Section 1 of the Purchasing By-Law and allowed under staff authority as per the Toronto Municipal Code, Chapter 71- Financial Control, Section 71-11A.

RECOMMENDATIONS

The Executive Director of Engineering and Construction Services and the Director of Purchasing and Materials Management recommend that:

1. City Council authorize the Executive Director of Engineering and Construction Services to negotiate and enter into a non-competitive agreement with MMM Group on terms and conditions satisfactory to the Executive Director, Engineering and Construction Services and in a form satisfactory to the City Solicitor for detailed engineering design and construction liaison for the Deck Replacement of the F.G. Gardiner Expressway from Jarvis Street to Cherry Street, including the design of associated public realm improvements. The estimated amount of this non-competitive contract is \$3,000,000 net of HST, \$3,052,800 net of HST recoveries, including disbursements, provisional allowances and contingencies.

FINANCIAL IMPACT

The total contract award recommended in this report is \$3,000,000 net of HST, \$3,052,800 net of HST recoveries.

Funding for this non-competitive contract is available in Transportation Services' Approved 2017 Capital Budget and 2018-2026 Capital Plan for the F.G. Gardiner Expressway (CTP122-08), with forecast expenditures as shown below (net of HST recoveries):

Year	Cost Centre / WBS Element	Cost Element	Net of HST Recoveries
2017	CTP122-08	4078	\$2,289,600
2018	CTP122-08	4078	\$254,400
2019	CTP122-08	4078	\$254,400
2020	CTP122-08	4078	\$254,400
Total			\$3,052,800

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

DECISION HISTORY

At its meeting of October 10, 2012, Bid Committee granted authority to award Request for Proposal 9117-12-5067 for Professional Engineering Services for F.G. Gardiner Expressway from The Don Roadway to Jarvis Street Deck Replacement to MMM Group Limited. The Bid Committee decision can be found at:

<http://www.toronto.ca/legdocs/mmis/2012/bd/bgrd/backgroundfile-50737.pdf>

At its meeting of May 29, 2013, Bid Committee granted authority to award Tender No. 139-2013, Contract 13SE-18S, to Grascan Construction Ltd./Torbridge Construction Ltd. for F.G. Gardiner Expressway Interim Repairs - Jarvis Street (Bent 252) to Don Roadway (Bent 341). The Bid Committee decision can be found at:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.BD126.5>

At its meeting on April 1 to 3, 2014, City Council, adopted as amended, PW29.1, the Strategic Rehabilitation Plan for the F.G. Gardiner Expressway, which included a number of recommendations including the approval of the Accelerated Bridge Construction approach as the method of construction for implementation of the Plan, based on maintaining the Expressway in its current configuration. The Council decisions can be found at:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2014.PW29.1>

At its meeting of February 23, 2015, Public Works and Infrastructure Committee approved an amendment of \$2,135,162 (net of all taxes and charges) to the Purchase Order for the F.G. Gardiner Expressway Interim Repairs, Jarvis Street to Don Roadway, Contract No. 13SE-18S to provide for additional emergency repairs to minimize risks to the structure and public safety. The Committee decision can be found at:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.PW2.6>

At its meeting of September 30, 2015, Bid Committee granted authority to award a contract for Tender Call No. 262-2015, Contract No. 15ECS-TI-05BE, to Grascan Construction Ltd./Torbridge Construction Ltd. for the 2015 Interim Repair of the F.G. Gardiner Expressway – Jarvis Street to Don Roadway (Bents 252 to 341), valued at \$9,470,000.00 net of all applicable taxes and charges. The Bid Committee decision can be found at: <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.BD50.2>

At its meeting on March 31 and April 1, 2016, City Council approved the Hybrid Alternative Design 3 as the Preferred Design for the Gardiner East Environmental Assessment. The preferred design included a package of recommended public realm improvements along Lake Shore Boulevard, including a pedestrian and cycling network, intersection improvements, new hard and soft landscaping and public art. The Council decision can be found at:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2016.PW11.1>

At its meeting of December 13 to 15, 2016, City Council adopted EX20.14, "New Approach for Implementation of the Revised Strategic Rehabilitation Plan" and granted authority to the Executive Director, Engineering and Construction Services to proceed with the new approach for the implementation of the Revised Strategic Rehabilitation Plan for the F.G. Gardiner Expressway. The Council Decision can be found at: <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2016.EX20.14>

COMMENTS

The concrete deck and barrier (parapet) walls on the elevated sections of the Expressway are in poor condition and considered to be at the end of their service life. Asphalt deterioration, concrete spalling of the deck soffit, and the risk of potential localized deck failures exist today throughout the elevated section of the F.G. Gardiner Expressway as shown in Attachment 1.

Of particular concern is the main deck of the Expressway between Jarvis Street and The Don Roadway, which is in poor to very poor condition, requiring complete replacement.

The replacement of the bridge deck from Jarvis Street to The Don Roadway (referred to as the East Deck) was originally planned to begin in 2013 through to 2018. The contract for design work on the above deck replacement was awarded to MMM Group in October, 2012, via a competitive procurement process, with a planned completion date for the design to allow construction to proceed in the summer of 2013. However, the resumption of the Gardiner East Environmental Assessment (EA) in early 2013 necessitated a deferral of the original design work for the replacement of the East Deck in favour of advancing interim repairs to keep the East Deck in a safe and operable condition until 2020, pending the outcome of the EA and the implementation of the preferred option

In 2013, a construction contract valued at \$7.1 million was awarded to undertake the most urgent interim repairs, along the elevated section of the Expressway from Jarvis Street to The Don Roadway. As construction on the interim repairs progressed, the scope of the necessary repairs was determined to be much greater than was originally estimated and a Purchase Order Amendment valued at \$2.1 million was subsequently issued in early 2015. Later that same year, a new contract valued at \$9.5 million was awarded to undertake additional interim and emergency repairs to the Expressway between Jarvis Street and The Don Roadway. In total, over \$18 million has been spent in interim and emergency repairs, where the scope of work has included the installation of temporary timber bracing under the deck (shown in Attachment 2); localized concrete deck repairs; and, the replacement of severely deteriorated parapet walls.

In December 2016, City Council authorized the Executive Director of Engineering and Construction Services to proceed with implementation of the Revised Strategic Rehabilitation Plan for the F.G. Gardiner Expressway using multiple contracts under an accelerated design-bid-build approach for the "elevated" section west of Cherry Street and the entire "at-grade" section of the Expressway.

The aggressive schedule approved by Council begins with the rehabilitation of the elevated section of the Expressway from Jarvis Street to Cherry Street in 2018 as an immediate first priority (shown in Attachment 3). The schedule is based on the use of an Accelerated Bridge Construction (ABC) approach, where feasible, which could reduce the implementation schedule by 15% to 40% in comparison to the conventional, build-in-place approach to bridge deck rehabilitation. The ABC approach can also result in better construction quality because the replacement components are fabricated in a quality and climate controlled environment.

Under normal circumstances, the design-bid-build approach involves procuring the necessary professional services to undertake a detailed engineering design and for the preparation of the tender package for the required construction work. For a conventional engineering design, this process will typically take a minimum of 18 months to complete; additional time is required when non-conventional designs, such as the Accelerated Bridge Construction approach, are advanced. The cost of engineering for detailed design and tender preparation related to large scale bridge and structure projects, when estimated as a percentage of the cost to construct the works, generally ranges between 2% and 3%.

Current Situation

Time is of the essence in order to maintain the elevated section of the Expressway between Jarvis and Cherry Streets in a safe and operable condition so as to ensure public safety and meet the Council approved implementation schedule for the rehabilitation of this section. The construction is planned to begin in 2018 and be completed by 2020.

In order to meet these very tight timelines, a detailed engineering design of all the works must be ready by September 2017, so that a tender for the construction work can be released in October 2017, and a construction contract can be awarded through the Public Works and Infrastructure Committee by the end of the year. This will provide for a construction start in early 2018.

The Ontario Traffic Manual (OTM) Book 7 specifies that work zones on expressways must begin 2 kilometres before the active construction area to give road users sufficient distance to reduce speed and / or exit the Expressway. Given that the Ontario Occupational Health and Safety Act states that no two contractors can occupy the same work zone at the same time, a delay in the schedule for work within the Jarvis Street to Cherry Street section would effectively delay the 2021 planned start of rehabilitation work immediately to the east (i.e., Cherry Street to Logan Avenue) and to the west between Bathurst Street and York Street.

Given the time constraints, staff recommend that the City negotiate and enter into a non-competitive contract with MMM Group for the detailed engineering design and preparation of tender documents for replacement of the F.G. Gardiner Expressway bridge deck from Jarvis Street to Cherry Street using an ABC construction approach; this work will include the design of associated public realm enhancements identified in the recently completed Gardiner East EA.

Staff propose MMM Group for the following reasons:

- In 2012, MMM Group was retained to develop the detailed design for the rehabilitation of the Expressway between Jarvis Street and the Don Roadway through a competitive procurement, and had begun work on the preliminary engineering design for this section before the project was put on hold upon resumption of the Gardiner East EA. As such, MMM Group is able to draw on work previously completed for the detailed engineering design for the elevated section between Jarvis Street and Cherry Street.
- MMM Group was retained to develop the Strategic Rehabilitation Plan for the Rehabilitation of the Gardiner Expressway. To do this, MMM Group completed a comprehensive condition assessment of the entire Expressway, drawing on detailed investigations and available condition assessment data for both the “at-grade” and “elevated” sections, which included: compiling and reviewing existing reports; visual inspection of major components and detailed inspections of some key components (mostly the bridges and elevated section); reviewing other available sources of information on the existing condition such as previous maintenance and rehabilitation reports and studies; and using ground penetrating radar surveys to assess the condition of the deck along the elevated section. As a result of the work done to develop the Strategic Rehabilitation Plan, MMM Group has considerable familiarity with the condition of the entire structure.
- MMM Group has expertise and experience applying the Accelerated Bridge Construction approach to bridge rehabilitation through past work experience. An example is the replacement of the Highway 406 Bridge at Glendale Avenue in St. Catharines. This project was undertaken for the Ontario Ministry of Transportation and MMM Group relied on an ABC approach called jack-and-slide that allowed the bridge to be replaced within hours over a single weekend, instead of months which would have been required if a traditional construction approach had been used.
- Based on the knowledge gained about the condition of the Gardiner Expressway during development of the Strategic Rehabilitation Plan combined with experience using innovative bridge replacement construction methods, gives MMM Group the ability to advance the completion of an ABC design for the deck rehabilitation work within the required timelines.

The following activities will be undertaken by MMM Group as part of the detailed design and tender package preparation services:

- Perform surveys and subsurface investigations required as input to the structural design.
- Analyze traffic staging, develop plans to mitigate traffic disruption, and formalize traffic management plans.
- Conduct Value Engineering workshops to ensure innovative measures are incorporated into the design to help reduce traffic impacts on the Gardiner Expressway and Lake Shore Boulevard.
- Develop a preliminary design for review by the City and produce the detailed engineering design and associated engineering drawings for the deck replacement and associated public realm elements.
- Review and identify additional best management practices and contract clauses to further accelerate construction and reduce the construction cost and schedule risks.

All of the above services are planned to be completed in 2017. Staff also propose retaining MMM Group, through this contract, to be available for consultation during the construction phase (from 2018 to 2020) to ensure the deck replacement conforms to planned design parameters.

Entering into a non-competitive contract with MMM Group will enable the City to maintain the aggressive rehabilitation schedule for the Gardiner Expressway approved by City Council and proceed with the required reconstruction work on the most critical portion of the elevated section from Jarvis Street to Cherry Street starting in 2018. A delay to the schedule will push completion of construction on the elevated section of the Gardiner between Jarvis and Cherry Streets past 2020, which would ultimately delay the rehabilitation schedule of other critical elevated sections of the Expressway.

Furthermore, the price quotation of \$3,000,000 net of HST submitted by MMM Group for the detailed engineering design, tender preparation and construction liaison services represents an engineering cost of approximately 1% of the total capital project cost, which is lower than the cost typically expected with this type of undertaking, and is therefore considered fair and reasonable. This reflects MMM Group's past work on, and existing knowledge of, the Expressway, and direct experience with the ABC construction approach.

The Fair Wage Office has reported that MMM Group has reviewed and understood the Fair Wage Policy and Labour Trades requirements and has agreed to comply fully.

CONTACT

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SIGNATURE

Michael D'Andrea, M.E.Sc., P.Eng., Executive Director, Engineering and Construction Services

Michael Pacholok, JD, Director, Purchasing and Materials Management

ATTACHMENTS

- Attachment 1. Photos showing the existing poor condition of the bridge deck and soffit
- Attachment 2. Photo showing the timber bracing that was installed as part of interim repairs on the F.G. Gardiner Expressway
- Attachment 3. Table showing the schedule for implementing the Revised Strategic Rehabilitation Plan for the F.G. Gardiner Expressway

Attachment 1. Two photographs showing the existing poor condition of the bridge deck and soffit on the eastern section of the F.G. Gardiner Expressway. The first photograph is an aerial view of the bridge deck, and the second photograph shows exposed rebar on the underside of the bridge.



Attachment 2. Photograph showing the timber bracing that was installed as part of interim repairs on the elevated section of the eastern part of the F.G. Gardiner Expressway.



Attachment 3. Table showing the schedule for implementing the Revised Strategic Rehabilitation Plan for the F.G. Gardiner Expressway, including the 2018 start date for construction on the elevated section between Jarvis Street and Cherry Street. This table was originally contained in the staff report considered by Council as part of the decision to proceed with the new implementation approach (see <http://www.toronto.ca/legdocs/mmis/2016/ex/bgrd/backgroundfile-98727.pdf>)

New Implementation Schedule (2018 to 2024)

