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**TO:** GENERAL COMMITTEE

**SUBJECT:** COORDINATION OF CITY REQUIREMENTS WITH MTO McKAY ROAD OVERPASS REPLACEMENT

**WARD:** 7/8

**PREPARED BY AND KEY CONTACT:** S. PATTERSON, P. ENG. *SP*  
MANAGER OF INFRASTRUCTURE PLANNING (Ext. 4481)

**SUBMITTED BY:** J. WESTON, M.A.Sc., P. Eng., PMP *JWeston*  
DIRECTOR OF ENGINEERING

**GENERAL MANAGER APPROVAL:** R.J. FORWARD, MBA, M.SC., P.ENG. *RJForward*  
GENERAL MANAGER OF INFRASTRUCTURE & GROWTH MANAGEMENT

**CHIEF ADMINISTRATIVE OFFICER APPROVAL:** C. LADD *C.Ladd*  
CHIEF ADMINISTRATIVE OFFICER

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**RECOMMENDED MOTION**

1. That the McKay Road Overpass Replacement project be added to the 2014 Business Plan in the amount of \$46,100 with funding from the Tax Capital Reserve Fund (13-04-0440) for the City's share of preliminary design costs for the Ministry of Transportation's McKay Road Overpass Replacement project.

**PURPOSE & BACKGROUND**

2. The purpose of this report is to secure funding to allow the Ministry of Transportation (MTO) to direct URS Engineering (URS) to undertake additional work as part of the preliminary design study for the MTO's planned replacement of the McKay Road overpass structure to ensure compatibility with the proposed widening and interchange required for McKay Road as indicated in the Multi-Modal Active Transportation Master Plan (MMATMP).
3. The MMATMP endorsed by Council in December 2013 included a recommendation to construct a new interchange at McKay Road and widen the overpass structure to four through lanes, buffered bicycle lanes and sidewalks on both sides of the roadway by 2022 and the potential for 6 through lanes on McKay Road sometime after 2031. The MMATMP completed Phases 1 and 2 of the Municipal Class Environmental Assessment (Class EA) process for the proposed interchange and bridge widening and identifies the need to complete Phases 3 and 4 of the Class EA process prior to the City proceeding with the construction of the widened overpass and highway interchange.

**ANALYSIS**

**MTO McKay Road Overpass Replacement Project**

4. In April 2014, MTO sent the City of Barrie a Notice of Study Commencement for the replacement of the Highway 400 overpass structure at McKay Road.
5. The replacement project is occurring concurrently with MTO's Transportation Environmental Report Study (TESR, approved 2004) update that is examining Highway 400 improvements (including additional lane widening potential) between Highway 89 and the Highway 11 junction.

6. City staff have had a number of meetings with MTO to discuss the planned replacement project since becoming aware of their timelines. The planned MTO replacement will be completed by utilizing a Design-Build (DB) procurement process and MTO has started the first step by retaining URS to undertake the preparation of the preliminary (30%) design and DB procurement package.
7. MTO's current project scope is for the McKay Road structure to be replaced in-kind with no additional length to accommodate the City's planned interchange and no additional width to accommodate the City's planned widening of McKay Road. MTO has started the design of this project and the preliminary timeline is as follows:
  - Initiate Detailed Design – October, 2014
  - Completion of Preliminary (30%) Design and DB Procurement Package – May 2015
  - MTO Awards DB Project to Contractor – Aug/Sept 2015
  - MTO Project Construction Commences – Spring 2016
  - Construction Completed – Late 2016/Early 2017

Future Widening of McKay Road Overpass and Interchange Construction

8. As previously mentioned, the MMATMP recommended the requirement to widen the McKay Road structure to four through lanes (plus additional lanes to accommodate the interchange) and lengthen the structure for an interchange by 2022. The Infrastructure Implementation Plan projected the next step of Phases 3 and 4 of the Class EA process for the McKay interchange would be completed in 2016. The projected City timeline for construction was planned as follows:
  - Environmental Assessment (Phases 3 and 4)– 2015/2016
  - Detailed Design – 2017/2018
  - Property – 2019
  - Utilities – 2020
  - Construction – 2021/2022
9. Once the City received notice of the MTO's plans to replace the existing structure in 2016, City staff requested that the MTO defer their replacement project to allow the City time to complete Phase 3 and 4 of the Class EA process for the City's planned McKay Road widening and interchange. However, the MTO identified that delaying the project was not possible for the following reasons:
  - a) funds for the construction of the project are committed in 2015/2016 and cannot be reallocated;
  - b) MTO has indicated there is a structural need to replace the structure under the proposed timeline and the construction cannot be pushed out to a subsequent year (specific structural condition ratings have not been provided); and
  - c) There are extensive Highway 400 improvements scheduled in the Simcoe area in the upcoming years and the MTO is indicating that if the McKay Road bridge improvements were delayed, it would cause significant issues to the timing and schedule of other planned projects in subsequent years in the area.
10. As an alternative, City staff requested that the MTO include an evaluation of the City's future interchange requirements (additional length of structure) in their current project. The MTO requested a quotation from their consultant URS to do this work as a scope change. The quotation from URS is attached as Appendix "A". As part of the alternative approach, the City would pay for only the elements related to the longer structure across Highway 400 required for

the interchange. The City would then proceed to complete the Class EA requirements and return after the MTO project is complete to construct the widening for McKay Road and the interchange. This alternative approach minimizes costs for the taxpayers of Barrie.

11. City staff are therefore recommending that the City fund the scope change to the MTO's preliminary design assignment with URS. This scope change would include determining the required overpass length (across Highway 400) to accommodate an interchange, incorporate design elements to allow the structure to be cost effectively widened (additional lanes on McKay Road) and minimize potential throw-away costs (culverts, utility relocations, connections to structural elements).
12. Subject to Council's approval of the funds required for this additional study, MTO would instruct URS to complete the investigation and incorporate the design requirements in MTO's preliminary (30%) design and DB procurement package. The City's share of the construction funding for the MTO's structure replacement project will be considered through the 2015 Business Plan process.

#### Coordination with MTO

13. During the development of the MMATMP, the MTO was an active participant at the MMATMP subcommittee meetings since 2011. Also, the City and the MTO have been meeting biannually to coordinate projects. Unfortunately, MTO's plans for the McKay structure replacement were not discussed with the City until after the timing had already been fixed in the Province's five year plan. Moving forward, City staff have created a table identifying timing for both City and MTO infrastructure improvements for the Highway 400 structures in Barrie and this will be a standing item for the bi-annual liaison meetings between the City and the MTO to ensure better alignment of project schedules.

#### ENVIRONMENTAL MATTERS

14. There are no environmental matters related to the recommendation.

#### ALTERNATIVES

15. There is one Alternative available for consideration by General Committee:

**Alternative #1** General Committee could choose not to approve the funds to investigate the alternatives to ensure that the planned structure replacement under the MTO project contract will not preclude the construction of an interchange and ensure that their planned replacement structure can be cost effectively incorporated as part of a future widening of McKay Road.

This Alternative is not recommended as the City would be responsible for 100% of the costs to widen the overpass structure (including potentially significant modification costs for the newly installed structure) when the City proceeds with construction of the interchange and widening of McKay Road. This would have a much greater cost to the City than cost-sharing with the current MTO project.

**FINANCIAL**

16. The McKay Interchange Project is included in the Fiscal Impact Analysis (FIA) and the Infrastructure Implementation Plan (IIP) for the annexed lands. In order to accommodate the schedule for the MTO McKay Structure Replacement Project, design funds are required to be advanced to 2014 as outlined in this report, in the amount of \$46,100 including the following:
- |   |                 |
|---|-----------------|
| • URS Proposal                            | \$36,320        |
| • <u>Staff time and Contingency (20%)</u> | <u>\$ 9,780</u> |
| • Total                                   | \$46,100        |
17. It is recommended that the preliminary design costs be funded from the Tax Capital Reserve Fund (13-04-0440).
18. Approximately 50 hours of City staff time is estimated to be required to coordinate the work. It is not anticipated that this work will impact the current 2014 Business Plan, however staff will work overtime if necessary to complete this work.
19. The balance of the costs required to complete the City's McKay Road interchange project in accordance with the Infrastructure Implementation Plan will be considered through the 2015 Business Plan process. The total project cost is estimated at \$37.5 million over an eight year duration. The City's share of the construction of the MTO's project will be accelerated to 2015 (currently estimated at approximately \$2.5 million). MTO has indicated that they will require the City funding approval by April 2015 to proceed with the completion of the DB procurement package incorporating the City's requirements. The City will minimize throwaway costs by coordinating with MTO's overpass structure replacement project to include compatibility with the planned interchange and widened overpass structure.
20. The majority of the City costs (for both the preliminary design study and share of construction costs) would be recovered through Development Charges (85%) with the balance paid from tax based revenues (15%) to cover the benefit to existing residents of the new McKay interchange.

**LINKAGE TO 2010 – 2014 COUNCIL STRATEGIC PLAN**

21. The recommendations included in this Staff Report support the following goal identified in the 2010-2014 City Council Strategic Plan:
- Manage Growth and Protect the Environment
22. Widening the McKay Road overpass structure will allow for future population growth and provide improved infrastructure for pedestrian and bicycle safety.

**APPENDIX "A" – URS Engineering Proposal**

**URS**

September 9, 2014  
*Our Ref. No.: 33017551*

Ministry of Transportation  
Central Region, Planning and Environmental Office  
4th Floor, Building 'D'  
1201 Wilson Avenue  
Downsview, Ontario M3M 1J8

Attention: Mr. Justin White

**Re: W.O. 06-20016, Highway 400 Improvements from Highway 89 to the Junction of Highway 11, Including the Design Build Ready Design of the 10<sup>th</sup> Line (McKay Road) Underpass Replacement**

Dear Justin:

This letter documents additional work for the above-noted project to support the potential future interchange at Highway 400 and McKay Road. We appreciate your consideration of this work, which will result in additional costs that were not included in our original scope of work.

The additional scope of work generally includes:

- Development of a preliminary interchange layout (Parclo A4) to determine the requirements for a bridge that can be expanded in the future for a new interchange; and
- Structural Design (30% Design-Build Ready) of a bridge that can be expanded in the future to accommodate the potential interchange instead of a simple underpass.

Key tasks and fees associated with this additional scope of work include:

**General/Project Management**

1. **Additional meeting and liaison with the City of Barrie** – A meeting and additional follow-up liaison will be held to discuss the interchange requirements and obtain relevant information for the interchange. **Associated fee: \$4,640.**

**Highway Engineering**

2. **Interchange layout** – A preliminary Parclo A4 interchange layout will be developed to identify reasonable future bridge sizing and clearance requirements. This will include a review of sight distances and optimization of McKay Road profile to accommodate the future interchange ramp terminals. The preliminary layout and profile information will be provided to the structural team to support the bridge design (see below). **Associated fee: \$8,630.**

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APPENDIX "A"

**URS**

3. **Identify conflicts between interim design and potential future interchange** – Future conflicts between the proposed Highway 400 widening design elements (utilities, drainage, ATMS, electrical) and the potential interchange will be identified and documented in the PDR. **Associated fee: \$2,040.**
4. **Modification of utility relocations** – Utility relocation requirements determined for the McKay Road structure replacement will be reviewed with consideration for the potential future interchange configuration to avoid repeated relocations to the extent practical. **Associated fee: \$1,820.**

Bridge Engineering

5. **Bridge alternatives** – Bridge alternatives to provide future flexibility for expansion will be developed and assessed. Cost premium for cost sharing arrangements will be determined. **Associated fee: \$6,770.**
6. **Additional design and documentation** – additional effort on the 30% Design-Build Ready design and documentation (GA, SDR) will be required to reflect the larger structure or future provisions for expansion. **Associated fee: \$5,260.**

Drainage Engineering

7. **Optimize drainage design** – Drainage design for the proposed structure replacement will be reviewed to consider the future interchange features to avoid throw-away costs of culverts, etc. For this purpose, drainage sketches will need to be developed for the potential future interchange to identify areas of conflict and opportunities for optimization. **Associated fee: \$3,460.**

Environmental

8. **High-level identification and documentation of potential environmental implications of future interchange** – Using the available specialist information gathered as part of the current scope, a high-level review and assessment of potential environmental issues associated with the future interchange will be undertaken and documented in the TESR. This exercise will be for information purposes only as it is understood that the Environmental Assessment for the interchange will be undertaken by the City of Barrie. No additional specialist studies are included in this scope. **Associated fee: \$3,700.**

Assumptions

Other assumptions and limitations of this change request include the following:

- Traffic analysis for the future interchange and lane requirements on McKay Road will be provided to URS by MTO or the Municipality. This will support the interchange layout and any changes to pavement structure associated with higher volumes.
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APPENDIX "A"

**URS**

- Any additional base mapping and DTM required to support the potential interchange layout will be supplied by MTO or the Municipality.
- It is assumed that the proposed horizontal alignment of McKay Road will remain on the existing roadway alignment. If the McKay Road horizontal alignment is revised, additional foundations and pavements investigations will be required.
- It is assumed that the proposed structure will be a 2-span structure. Additional foundation elements or retaining walls at the abutments will trigger the need for additional foundations investigations and analysis not included within this scope.

Summary

The total lump sum cost for the additional work listed above is \$36,320.

Please advise if the terms and conditions noted in the above proposal are acceptable to the Ministry. If you have any questions, or require additional information on the above, please contact myself at 905-882-3522 or Karen Cooper at 905-747-1854.

Yours very truly,

URS Canada Inc.



*Karen Cooper*  
for

Tim Sorochinsky, P.Eng.  
Senior Project Manager  
Manager, Planning and Preliminary Design  
Sustainable Transportation Group