

COMMITTEE OF THE WHOLE SEPTEMBER 8, 2009

HIGHWAY 400 IMPROVEMENTS - MAJOR MACKENZIE DRIVE TO KING ROAD KING-VAUGHAN ROAD BRIDGE WIDENING –DESIGN ASSIGNMENT WARD 1

Recommendation

The Commissioner of Engineering and Public Works, in consultation with the Director of Reserves and Investments and the Director of Purchasing Services recommends:

1. That the Ministry of Transportation be requested to design and construct the new King-Vaughan Road/Highway 400 Overpass with a wider deck cross-section to accommodate a sidewalk on the south side and bike lanes on either side, and to overbuild the sub-structure (piers and abutments) in order to accommodate the widening of the bridge deck to four lanes with a sidewalk and bike lane on both sides in the future;
2. That SNC-Lavalin Inc. be retained to provide consulting engineering services in connection with the additional design work associated with the widening/overbuilding of the King-Vaughan Road Bridge at an estimated cost of \$65,000;
3. That staff be authorized to negotiate and finalize related agreements with the Ministry of Transportation and SNC-Lavalin Inc. within the approved budget for Capital Project DT-7038-09; and
4. That the Mayor and Clerk be authorized to sign the related agreements.

Contribution to Sustainability

The recommended widening of the King-Vaughan Road Bridge Structure contributes to sustainability by providing for the planned growth in the City and the provision of the Pedestrian and Bicycle Master Plan.

Economic Impact

The current City-wide Development Charges By-law, under Appendix H, Tables 27 and 28, identifies funding in the amount of \$5,551,700 for the purpose of undertaking the detailed design and widening of the King-Vaughan Road overpass and Kirby Road underpass structures on Highway 400 to provide for the planned City transportation network requirements. The approved 2009 Capital Project DT-7038-09 allocates \$750,000 to undertake the necessary design work associated with these projects in conjunction with the planned highway improvements. The Ministry of Transportation has advised that the additional design and construction costs associated with the widening/overbuilding of the King-Vaughan Road Overpass is estimated to cost approximately \$65,000 and \$1,200,000, respectively. Accordingly, if the recommendations of this report are adopted, additional future funds will need to be allocated to this project to fund the construction component of the works.

Communications Plan

The Highway 400 widening project is being carried out by the Ministry of Transportation and includes a public notification/awareness plan.

Purpose

The purpose of this report is to inform Council of the scope and timing of the planned widening of Highway 400 between Major Mackenzie Drive and King Road, and to seek authorization to award

a single source contract to SNC-Lavalin Inc. to provide consulting engineering services in connection with the additional design work associated with the recommended widening/overbuilding of the deck and substructure of the King-Vaughan Road / Highway 400 Overpass.

Background - Analysis and Options

In 2002, the Ministry of Transportation (MTO) received approval through a Transportation Class Environmental Assessment for Highway 400 improvements from Major Mackenzie Drive to south of the South Canal Bridge. The first phase of the project, as shown on Attachment No.1, includes the reconstruction of the King Road/Highway 400 interchange, which is currently under construction. The second phase of the project generally includes the following works:

- Widening of Highway 400 from 6 to 8 lanes to accommodate new high occupancy vehicle (HOV) lanes;
- Widening and rehabilitating the Highway 400 bridge over Kirby Road to accommodate the ultimate 10 lane cross-section of Highway 400;
- Replace the King-Vaughan Road bridge over Highway 400 with a new 2-lane structure;
- New median storm sewer and upgrade drainage facilities;
- Full illumination from Major Mackenzie Drive north to Teston Road and partial illumination further north.

MTO has retained the consulting engineering firm of SNC-Lavalin Inc. to complete the detail design and tender process for the Highway 400 improvements listed above with the plan to commencing construction in the fall of 2010.

As part of the second phase of the project, MTO is proposing to demolish the existing King-Vaughan Road Bridge and replaced it with a new bridge to accommodate the future expansion of Highway 400 to its ultimate ten (10) lane configuration. The bridge will be replaced "in kind" to accommodate the existing two lanes of traffic on King-Vaughan Road as per the existing structure. The approved MTO Transportation Class Environmental Assessment (Class EA) for the Highway 400 widening provided for the option of widening the King-Vaughan Road structure to accommodate a 4 lane cross-section if required and funded by the City.

The MTO Class EA also recommends that the existing reinforced concrete rigid frame over Kirby Road be lengthened on both ends to accommodate the ultimate 10 lane cross-section. To accommodate a minimum vertical clearance required under the bridge structure, Kirby Road must also be lowered. MTO has also advised that the widening of the Kirby Road structure beyond 2 lanes was not included in the Class EA. In addition, since Kirby Road crosses under Highway 400, the replacement/widening of the structure would be a significant civil undertaking with long term traffic detouring. At this point, any changes to the proposed scope of the work on the Kirby Road structure would have a significant impact to the design and construction schedule for the Highway improvements. For these reasons, MTO is unable to accommodate any requests from the City to increase the span (cross-section) of the Kirby Road underpass at this time.

MTO has advised that the additional design and construction costs associated with expanding the new King-Vaughan Road Bridge to accommodate additional lanes and sidewalks would be the responsibility of the City.

King-Vaughan Road and Kirby Road are currently two lane rural roads. Official Plan Amendment No. 600 identifies both these roadways as arterial roads with an ultimate right-of-way width of 35 metres.

In 2006, Council approved OPA 637 which re-designated the lands bounded by Teston Road, Jane Street, King-Vaughan Road and Weston Road for employment uses. The Region of York recently approved ROPA 52, which has been appealed to the Ontario Municipal Board by the Province.

A transportation report was prepared in support of development in OPA 637 that identified the need for certain road network improvements including the widening of King-Vaughan Road to 4 lanes. The report also concluded that the existing two lanes on Kirby Road would provide adequate capacity for the proposed development.

In May 2009, the Region of York released its draft Transportation Master Plan (Regional TMP) which identifies the road network improvements that are necessary to address Provincial initiatives and the additional planned growth in the Region. The draft Regional TMP identifies the need to widen King-Vaughan Road to four lanes after 2021 in order to provide the capacity needed for an effective road network as well as to complete the strategic connection between an anticipated new provincial road and municipal roads. The Regional TMP doesn't identify the need for additional lanes on Kirby Road before 2031.

The City is currently undertaking a comprehensive Transportation Master Plan (City TMP) as a component of the Official Plan Review process, which is scheduled for completion by Q2-2010. The City's TMP study will evaluate in detail the road network, develop a long-term transportation vision for the City and identify the overall infrastructure needs to efficiently accommodate the City's future allocation of population and employment growth to the year 2031. Given the conclusions of the draft Regional TMP, it is anticipated that the City's TMP will also conclude that King-Vaughan Road will need to be widened to 4 lanes in the vicinity of Highway 400.

The City's Pedestrian and Bicycle Master Plan recommends the establishment of a community signed bike route on King-Vaughan Road and paved shoulder bikeway on Kirby Road. Generally, it is expected that over time that signed bike route and paved shoulder bikeways will be upgraded to a wider curb lane or a bike lane in order to better accommodate motorists and cyclists.

Accordingly, it is expected that the King-Vaughan Road Bridge will need to accommodate four lanes with sidewalks and bike lanes on both sides between 2021 and 2031, and the Kirby Road structure will need to ultimately accommodate two lanes with sidewalks and bike lanes on both sides.

King-Vaughan Road Overpass

MTO has advised that the existing King-Vaughan Bridge structure will be replaced with one of like kind; two lane structure with shoulders. The cost to widen the structure to accommodate additional travel lanes and sidewalk would be the responsibility of the City.

Recognizing the need for four lanes on King-Vaughan Road is a number of years away, it is recommended that MTO be requested to reconstruct the King-Vaughan Bridge structure with a deck that can accommodate two lanes of traffic, two bike lanes and a 1.5 m sidewalk on the south side at this time. Since there is a need for four lanes on King-Vaughan Road in the future, it is also recommended that the sub-structure (pier and abutments) be designed and constructed to accommodate the future widening of the bridge deck to four lanes. The incremental capital cost to the City to overbuild the King-Vaughan bridge structure is estimated to be about \$1,265,000 including engineering.

Kirby Road Underpass

Based on recent transportation studies, there is no foreseeable need to widen Kirby Road to accommodate additional traffic lanes but there is a long term need for bike lanes and sidewalks.

MTO has advised they can not widen the proposed Kirby Road structure at this time because it would severely impact the design and construction schedule for the Highway 400 improvements. Accordingly, staff has requested MTO to design and construct the proposed lengthened structure with the intent to minimize future structure modifications to facilitate the possible widening of Kirby Road in the future.

Design Assignment

MTO has advised that the City would be the responsible for the incremental capital cost associated with the widening and overbuilding of King-Vaughan Road Bridge structure plus any additional design fees. MTO has retained the firm of SNC-Lavalin Inc. to provide consulting engineering services in connection with the design of the Highway 400 widening. Accordingly, it will be necessary for the City to engage SNC-Lavalin Inc. to undertake the additional design work associated with the widening/overbuilding of the King-Vaughan Road structure. The cost for the additional design work is estimated at about \$65,000. The final fee estimate will be determined once the full scope of the work has been established.

Relationship to Vaughan Vision 2020/Strategic Plan

This report is consistent with the priorities previously set by Council and the necessary resources have been allocated and approved.

Regional Implications

The recommended overbuilding of the King-Vaughan Road bridge structure to ultimately accommodate four lanes is consistent with the recommendations of the Region's Draft Transportation Master Plan.

Conclusion

The Ministry of Transportation is proposing to widen Highway 400 from 6 to 8 lanes between Major Mackenzie Drive and King Road beginning in the Fall of 2010. As a component of this road widening work, MTO is proposing to replace the existing King-Vaughan Road Bridge with a two lane structure, and lengthening the existing Highway 400 Bridge over Kirby Road to accommodate the future expansion of the highway to the ultimate 10 lane cross-section. Recent transportation studies conclude that there will be a need to widen King-Vaughan Road to four lanes in the foreseeable future to accommodate further development in the City, in particular OPA 637. Accordingly, it is recommended that the new King-Vaughan Road/Highway 400 Overpass be designed and constructed with a wider deck cross-section to accommodate a sidewalk on the south side and bike lanes on either side at this time, and to overbuild the sub-structure (piers and abutments) in order to accommodate the widening of the bridge deck to four lanes with a sidewalk and bike lane on both sides in the future.

MTO has advised that the City is responsible for the cost associated with the redesign of the King Vaughan Road Bridge, and the incremental cost for the construction works. For reasons of timing and efficiency, it recommended that SNC-Lavalin Inc be retained to undertake the necessary design work. The approved 2009 Capital Project DT-7038-09 allocates \$750,000 to undertake the necessary design work associated with this project. MTO has advised that the additional design and construction cost associated with the widening/overbuilding of the King-Vaughan Road Overpass is estimated to cost approximately \$1,265,000. Accordingly, if the recommendations of this report are adopted, additional future funds will need to be allocated to this project to fund the construction component of the works.

Attachments

Attachment No. 1 – Location Plan

Report prepared by:

Andrew Pearce, Director of Development & Transportation Engineering

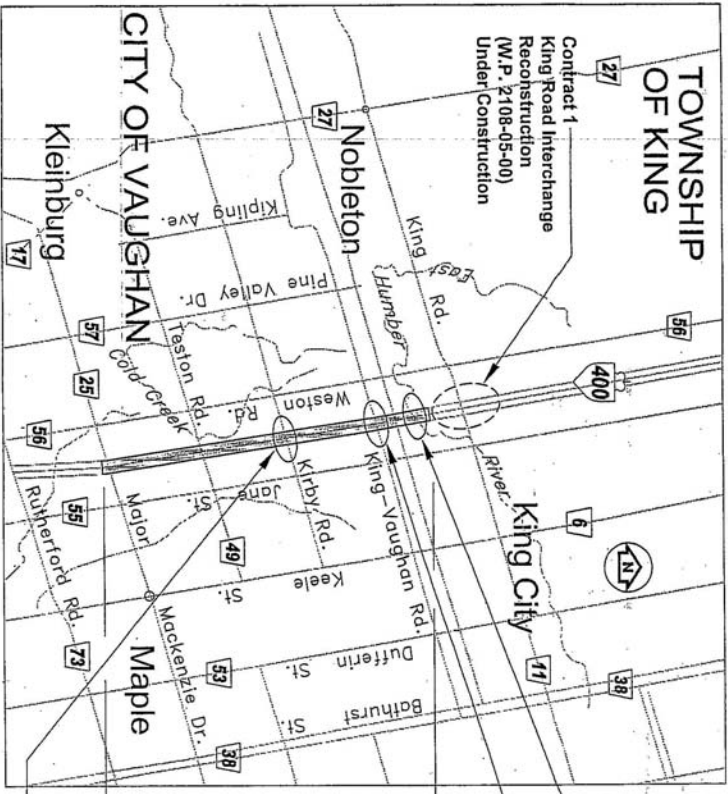
Respectfully submitted,

Bill Robinson, P.Eng.,
Commissioner of Engineering & Public Works

Andrew Pearce, C.E.T.,
Director of Development &
Transportation Engineering

ATTACHMENT NO. 1

KEY PLAN



Contract 1
King Road Interchange
Reconstruction
(W.P. 2108-05-00)
Under Construction

East Humber River Arch Culvert
Site No. 37 - 94
King - Vaughan Underpass Bridge
Site No. 37 - 271

Contract 2
Widening from Major Mackenzie Drive
to King Road
(W.P.s 192-00-00 and 2539-04-00)

Kirby Overpass Bridge
Site No. 37 - 95/1, 37 - 95/2

