



The Corporation of the Town of Milton

Report To:	Council
From:	M. Paul Cripps, P. Eng., Commissioner, Engineering Services
Date:	August 12, 2019
Report No:	ENG-025-19
Subject:	Construction Staging for 16 Mile Creek Structure Replacement on Bronte Street.
Recommendation:	THAT Council approve a full road closure of Bronte Street North at 16 Mile Creek for the replacement of the 16 Mile Creek structure (Option One).

EXECUTIVE SUMMARY

It is currently estimated that the construction of Tremaine Road, including the Tremaine Road / Highway 401 interchange, will be completed by late 2022 or early 2023. The timing and staging for the reconstruction of Bronte Street may overlap with the timing for the construction of Tremaine Road, including the Tremaine Road / Highway 401 interchange. Due to the potential overlap, Engineering staff requested the project's engineering consultant to review alternative staging possibilities for the replacement of the 16 Mile Creek structure due to concerns related to the potential traffic impacts of closing Bronte Street for a construction season prior to the completion of Tremaine Road and the Tremaine Road / Highway 401 interchange.

Option One – Replace the 16 Mile Creek structure under full road closure

Option Two – Staged replacement of the 16 Mile Creek structure (skewed road transition approaches)

Option Three – Staged replacement of the 16 Mile Creek structure (wide structure)

Due to the physical constraints and environmental restrictions at the 16 Mile Creek crossing, in addition to the financial impact to the project, it is recommended that the bridge structure be replaced under a full road closure for approximately one construction season (approximately April to December).



The Corporation of the Town of Milton

REPORT

Background

The Town of Milton retained WSP (formerly MMM / WSP) to conduct an Environmental Assessment of Bronte Street between Main Street and Steeles Avenue. The Environmental Study Report (ESR) was approved for filing with the Ministry of the Environment in June 2017.

The reconstruction of Bronte Street from Main Street to Steeles Avenue was divided into two phases. Phase One construction from Main Street to Victoria Street, including the reconstruction of the intersection of Main Street and Bronte Street, was recently completed. Phase Two from Victoria Street to Steeles Avenue is currently scheduled to start construction late 2020 or early 2021 (subject to property acquisition, project permits and utility relocations).

Highlights of the overall project include:

- Reconstruction of the road to an urban three-lane cross section.
- Reconstruction of the intersection of Main Street and Bronte Street.
- Replacement of the 16 Mile Creek bridge structure.
- Removal of the 'jog' in the roadway south of the CPR crossing.
- Watermain replacement from approximately 104 Bronte Street to Steeles Avenue (Halton Region).
- Storm sewer installation.

Discussion

The first phase of Bronte Street from Main Street to Victoria Street was recently completed and the second phase of Bronte Street from Victoria Street to Steeles Avenue is currently scheduled to start construction in late 2020 or early 2021 (subject to project permits, property acquisition and utility relocations). The second phase of Bronte Street is anticipated to be a three-year construction project. The ESR identified reconstructing and widening Bronte Street to a three-lane urban cross section as well as replacement of the existing 16 Mile Creek bridge structure. Due to the physical constraints and environmental restrictions at the 16 Mile Creek crossing, it was recommended that the bridge structure be replaced under a full road closure for approximately one construction season (approximately April to December).

Bronte Street North is currently utilized by motorists as a travel route to Highway 401 from the residential developments located south of Main Street. Heavy traffic volumes are experienced during the morning peak hours northbound and the afternoon peak hours



The Corporation of the Town of Milton

southbound along Bronte Street North. It is anticipated that once Halton Region completes the construction of Tremaine Road (including the Tremaine Road / Highway 401 interchange) that traffic volumes will drop along Bronte Street as Tremaine Road will become the preferred route for access to and from Highway 401.

It is currently estimated that the construction of Tremaine Road including the Tremaine Road / Highway 401 interchange will be completed by late 2022 or early 2023. The timing and staging for the reconstruction of Bronte Street may overlap with the timing for the construction of Tremaine Road including the Tremaine Road / Highway 401 interchange. Due to the potential overlap, Engineering staff requested the project's engineering consultant to review alternative staging possibilities for the replacement of the 16 Mile Creek structure due to concerns related to the potential traffic impacts of closing Bronte Street for a construction season prior to the completion of Tremaine Road and the Tremaine Road / Highway 401 interchange. Three options, outlined below, have been considered. It should be noted that multiple road closures of Bronte Street for the phase two construction will be required. These closures are expected to be of shorter durations (approximately two weeks each) than the anticipated eight-month closure required for the bridge structure replacement. Due to requirements to maintain access to properties and businesses along Bronte Street, these required closures cannot be combined into one large closure and must be staggered and staged throughout the duration of the construction project. Access to the Bronte Street properties and businesses during closures will be maintained north and south of the closures via Steeles Avenue and Main Street respectively.

Option One – Replace the 16 Mile Creek Structure Under Full Road Closure

The existing bridge structure would be removed and replaced with a 21m long structure and maintain the centerline of reconstructed Bronte Street.

The proposed construction of the structure will require the full closure of Bronte Street at 16 Mile Creek for approximately one construction season (approximately April to December). Access to properties and businesses on Bronte Street will be maintained from Steeles Avenue to north of the bridge and from Main Street to south of the bridge. It is anticipated that through traffic would have to be detoured from Main Street to Tremaine Road to Steeles Avenue.



The Corporation of the Town of Milton

The estimated construction cost for replacement of the bridge structure under this option is approximately \$2.6 million.

Option Two – Staged Replacement the 16 Mile Creek Structure (Skewed Road Transition Approaches)

The replacement of the bridge structure would be staged. The existing bridge would be maintained while the equivalent of two lanes of the new bridge would be constructed west of the existing bridge. Once two lanes of the new bridge are constructed, traffic would be shifted to the new bridge so that the existing bridge could be removed and the remainder of the new bridge constructed. Due to the physical geometry of the existing bridge, the existing road alignment and physical characteristics of 16 Mile Creek, the replaced structure would need to be extended to a 25m long structure with slightly thicker bridge girders. In addition to the longer bridge structure, the road transition approaches both north and south of the new bridge structure will result in a skewed road alignment of approximately 2.1m.

The proposed construction of the structure will not require a long-term full closure of Bronte Street at 16 Mile Creek; however shorter term closures maybe required to facilitate specific construction activities such as bridge girder erections and construction of road transitions.

The estimated construction cost for replacement of the bridge structure under this option is approximately \$3.26 million.

Option Three – Staged Replacement the 16 Mile Creek Structure (Wide Structure)

This option is similar to Option Two. The replacement of the bridge structure would be staged. The existing bridge would be maintained while the equivalent of two lanes of the new bridge would be constructed west of the existing bridge. Once two lanes of the new bridge are constructed, traffic would be shifted to the new bridge so that the existing bridge could be removed and the remainder of the new bridge constructed. Due to the physical geometry of the existing bridge, the existing road alignment and physical characteristics of 16 Mile Creek, the replaced structure would need to be extended to a 25m long structure with slightly thicker bridge girders. In order to remove the skewed road alignment illustrated in Option Two, two additional bridge girders would be required to be added to the bridge structure in stage two, resulting in not only a longer bridge structure (25m vs 21m) but also an overall wider bridge structure.



The Corporation of the Town of Milton

The proposed construction of the structure will not require a long term full closure of Bronte Street at 16 Mile Creek; however, shorter term closures may be required to facilitate specific construction activities such as bridge girder erections and construction of road transitions.

The estimated construction cost for replacement of the bridge structure under this option is approximately \$3.8 million.

After a review of the details provided for all three options to replace the bridge structure, staff are recommending that Council approve Option One (full road closure of Bronte Street) to facilitate the replacement of the 16 Mile Creek bridge.

Financial Impact

Option One was the anticipated method of bridge replacement considered during the ESR and preliminary design stages for the project. Included in the 2020 forecast, as presented through the 2019 Budget, were construction costs of \$2.6 million for replacing the 16 Mile Creek Structure (as part of the \$6.3 million identified for capital project C330108) which is in line with the current estimated construction costs.

Options Two and Three would add a further estimated \$0.73 million to \$1.32 million respectively to the overall cost of replacing the bridge structure. These figures consider the additional costs of construction as well as contingency and would be funded 78% from Development Charges and 22% from Town source funds as determined through the development and Council approval of the 2020 budget.

Respectfully submitted,

M. Paul Cripps, P. Eng.
Commissioner, Engineering Services

For questions, please contact: Patrick Charron

905-878-7252 x2510

Attachments

None



The Corporation of the Town of Milton

CAO Approval
Andrew M. Siltala
Acting Chief Administrative Officer