

COMMITTEE OF THE WHOLE - APRIL 19, 2004

TESTON ROAD FROM WESTON ROAD TO JANE STREET INCLUDING PLANNED HWY. 400 INTERCHANGE TEMPORARY ROAD CLOSURE – TESTON ROAD

Recommendation

The Commissioner of Engineering and Public Works recommends:

1. That the planned temporary road closure of Teston Road, between Weston Road and Jane Street, for an estimated period of eighteen months as requested by the Region of York be endorsed by Council in order to facilitate the implementation of the new Hwy. 400 Interchange and reconstruction and widening of Teston Road;
2. That the Region of York, in conjunction with the Ministry of Transportation, undertake a comprehensive public notification process and work closely with City of Vaughan Engineering staff to inform the motoring public and all emergency service providers of the project schedule of events and detouring plan(s) related to this undertaking; and
3. That the project proponents be advised of the City of Vaughan's concurrence with the road closure scheme, as recommended.

Purpose

The purpose of this report is to seek Council's approval of a request to temporarily close Teston Road between Weston Road and Jane Street for a period of up to eighteen months in order to facilitate planned roadworks within these limits including the reconstruction of Teston Road by the Region of York and the replacement of Hwy. 400 underpass by the Province.

Background - Analysis and Options

The Region of York is proceeding with detailed design for Teston Road from Weston Road to Jane Street, including a new Interchange at Hwy. 400. They anticipate design will be completed in Summer of 2004 with a possible late Fall 2004/early Winter 2005 tender call providing all property requirements, permit approvals and funding is in place.

The Teston Road works include major reconstruction and widening to a five-lane urban cross-section, the replacement of the Cold Creek culvert, and the removal and replacement of the existing Hwy. 400 underpass structure. Attachment No. 1 is a key plan showing the limits of the works. City planned works within the project limits include provision for concrete sidewalks and streetlighting (full illumination) throughout. Timing of these works will be subject to demand/growth in the area. Given the scope of the works, construction and traffic staging have become an integral part of the project planning process. The primary objective is to construct both undertakings as one complete project.

To ensure constructability, the project team (Region of York Transportation and Works staff, MTO Highway Engineering Branch, and Engineering Consultants McCormick, Rankin Corporation) have undertaken a detailed analysis of different construction and staging scenarios, reviewing the various requirements and opportunities regarding temporary detours/widenings within the existing/proposed roadway footprint and right-of-way to determine the most practical scheme. As part of this process, both the Hwy. 400 PDR (Preliminary Design Report) for the interchange/widening and the Class EA (Environmental Assessment) and PDR for reconstruction of Teston Road between Bathurst Street and Pine Valley Drive have been used as reference documents. Attachment No. 2 as correspondence from the Region of York and MTO provides

the details of the alternative schemes assessed for the project staging and recommendations from the respective staff in terms of the requested road closure.

It is important to note that both the MTO study and York Region report recommended and were approved based on the approach that Teston Road would be temporarily closed for some period of time in order to facilitate the works involved. York Regional Police Services, EMS staff, City of Vaughan, and Vaughan Fire Department have all been involved in the consultation process and are supportive of the extended road closure alternative.

Current project planning would see any associated road closure likely to commence in the Spring, 2005 and continue for the anticipated eighteen month period, terminating in the Fall, 2006.

Relationship to Vaughan Vision 2007

The project is consistent with Vaughan Vision 2007 in that the proposed works ensure that growth does not outpace the road network infrastructure (3.2.3).

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

Conclusion

Based on the detailed assessment of the alternatives and recommendations provided from the project proponents (Region of York and MTO), City engineering staff concur with the scheme for a full closure of Teston Road between Weston Road and Jane Street for a period of approximately eighteen months. We note that the Region has committed to maintaining local access at all times.

The Region of York and MTO, in their own fashion, are requested to keep all stakeholders, including the City of Vaughan, Emergency Service providers, and Others, fully informed of the project schedule and workplan as it progresses so that all parties can modify their operations as necessary to respond to any road closures.

Staff are further requesting the project proponents embark on an extensive public notification process prior to, during, and subsequent of the planned undertakings.

Attachments

1. Location Map - Key Plan – Lighting Limits, Structures
2. Correspondence - Region of York and Ministry of Transportation

Report prepared by:

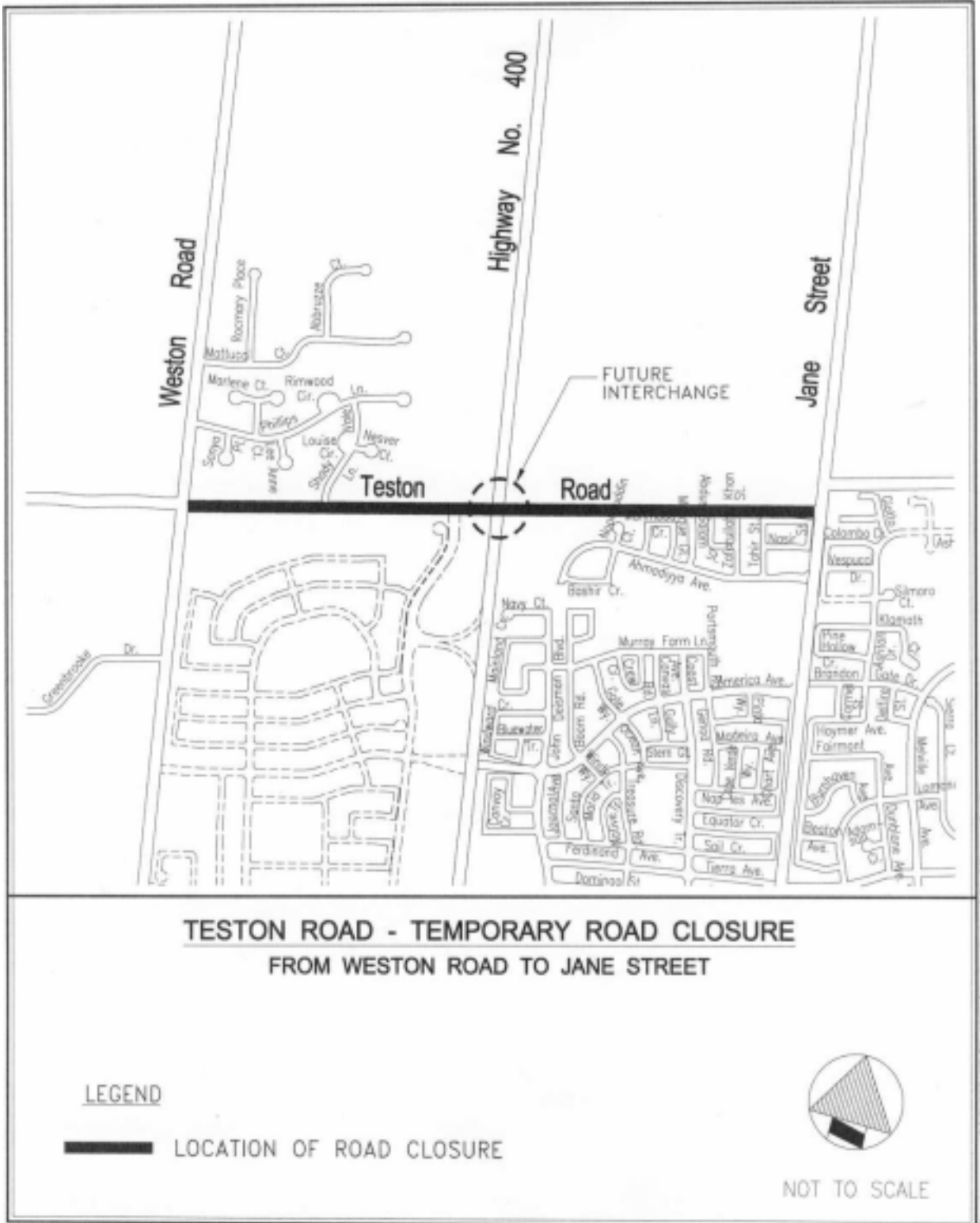
Gary P. Carroll, P. Eng. – Director of Engineering Services, ext. 3101

Respectfully submitted,

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

Gary P. Carroll, P. Eng.
Director of Engineering Services

ATTACHMENT No. 1



CITY OF WALGHAM - ENGINEERING DEPARTMENT

DRAFTSPERSON: SIM

Drawing name: R:\LINGOHW\1\ENCL020\W\Design\Engineer\10m\Teston Rd Closure.dwg



Transportation and Works

Fax: 905-836-4590

MEMO

To: Paul Jankowski

File: 9861

Copy: Dino Basso
Daniel Kostopoulos
Bill Robinson – City of Vaughan

From: Stephen Collins, ext. 5142

Date: March 5, 2004

**Re: Teston Road from Weston to Jane, Including Highway 400 Interchange
Temporary Road Closure – Teston Road**

<input type="checkbox"/> URGENT	<input type="checkbox"/> FOR REVIEW	<input type="checkbox"/> PRIVATE AND CONFIDENTIAL
<input type="checkbox"/> PLEASE REPLY	<input type="checkbox"/> AS PER YOUR REQUEST	<input type="checkbox"/> FOR YOUR INFORMATION

York Region is proceeding with the detail design for Teston Road from Weston Road to Jane Street, including the new interchange at Highway 400 and Weston Road from Street 'E' (500m north of Major Mackenzie Drive) to Teston Road. At this time, we are approaching the 30% completion stage and anticipate the design will be completed by Summer 2004. Provided that property, permits and funding are in place, we anticipate a construction contract can be tendered as early as fall 2004.

The work on Teston Road between Weston Road and Jane Street includes major reconstruction and widening, including profile changes, the replacement of the existing Cold Creek concrete box culvert with a new longer span bridge and the removal and replacement of the existing Hwy 400 underpass structure. As such, construction and traffic staging are an integral part of the project.

To ensure the proposed design is constructible, the project team has analyzed different construction and traffic staging scenarios. Analyses of traffic requirements and opportunities to construct temporary detours/widening within the existing/proposed roadway footprint and York Region right of way were carried out to determine the most practical scheme. As part of this work, we have reviewed the Hwy 400 PDR prepared by MTO for the interim (8-lane) and ultimate (10-lane) widening and the EA and PDR prepared by York Region for Teston Road between Pine Valley Drive and Bathurst Street.

Based on this review it has been concluded that:

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1. Teston Road between Hwy 400 and Weston Road must be closed in order to facilitate construction of the Teston Road improvements, profile changes and new Cold Creek bridge.
2. There are two alternatives for constructing the new Hwy 400 underpass structure, interchange and Teston Road improvements from Hwy 400 easterly
 - Alternative 1 – Close Teston Road and remove the existing bridge before constructing the new bridge
 - Alternative 2 – Teston Road remains open and the existing bridge is removed after constructing the new bridge

The PDR prepared by MTO for the interim and ultimate widening of Hwy 400 recommended a full closure of Teston Road between Weston and Jane during construction. A single season closure would allow for the removal of the existing Hwy 400 underpass bridge, construction of the new Hwy 400 underpass bridge and realignment of Teston Road. It should be noted that **this approach was reviewed and accepted by York Region staff participating in the MTO Hwy 400 EA and PDR.**

Conversely, it was York Region's intention to maintain Teston Road open to thru traffic during construction of the new interchange by constructing the new Hwy 400 underpass structure prior to removing the existing structure. However, Teston Road from Hwy 400 to Weston Road must be closed anyways during construction of the profile changes and new Cold Creek bridge.

MTO has expressed interest in the construction/traffic staging of the new interchange, including all necessary Hwy 400 lane closures, lane and shoulder width reductions, temporary signing and carryover operations. MTO has raised significant concern regarding construction of the new Hwy 400 underpass bridge while the existing bridge remains in place and open to traffic (MTO correspondence dated March 5, 2004). This approach was initially considered feasible by York Region during the Preliminary Design phase of the project, however, additional survey data, design information and liaison with MTO has indicated otherwise.

MTO's primary concerns are as follows:

- Reduced lane and shoulder widths - will decrease traffic capacity and increase congestion.
- Reduced vertical clearance for lanes 2 and 3 (temporary lanes) at the existing structure – The soffit of the existing structure is arched with lower vertical clearance at the abutment walls than at mid-span. Truck traffic will have to be directed to lane 1 (median lane) resulting in increased lane changes and occupation of lane 1 by slower moving trucks. This will in turn lead to reduced capacity and increased congestion.
- Restricted work zone width - will reduce efficiency and productivity of contractor. In addition, the restricted work zone width may require a caisson type pier foundation instead of spread footing. The caisson is a more costly foundation type and MTO has greater level of comfort with a spread footing foundation.

To resolve the preferred staging method, the advantages and disadvantages of each alternative were assessed.

Alternative 1 – Remove Existing Bridge BEFORE Constructing New Bridge

Close Teston Road to thru traffic – Weston Road to Jane Street

Stage 1

Remove existing Hwy 400 underpass bridge
Construct new bridge and Teston Road from Hwy 400 easterly
Access to property in NW quadrant of Hwy 400 and Teston Road via Weston Road

Stage 2

Remove existing Cold Creek culvert
Construct new Cold Creek bridge
Construct Teston Road from Hwy 400 westerly
Access to property in NW quadrant of Hwy 400 and Teston Road via Jane Street

Advantages

- Lower cost for new Hwy 400 underpass bridge and interchange resulting from:
 - Median pier founded on spread footing vs. caisson
 - Reduced traffic staging requirements
 - Increased productivity resulting from larger work zone within median area and better access for all Hwy 400 work
- MTO endorsement of this alternative.
- No reduction in Hwy 400 lane and shoulder configuration/geometry which will maintain traffic capacity and lessen congestion resulting from construction activities.
- Consistent traffic configuration on Teston Road and within the network during all phases of construction.
- No Restricted vertical clearance at the existing structure during construction.

Disadvantages

- Approximately 18 month (instead of 8 month for Alternative 2) full closure of Teston Road from Weston Road to Jane Street

Alternative 2 – Remove Existing Bridge AFTER Constructing New Bridge

Stage 1

- Construct new Hwy 400 underpass bridge
- Construct Teston Road from Hwy 400 easterly
- Access to property in NW quadrant of Hwy 400 and Teston Road via Weston Road or Jane Street

Stage 2

- Open new Teston Road from Hwy 400 easterly
- Remove existing Hwy 400 underpass structure
- Access to property in NW quadrant of Hwy 400 and Teston Road via Weston Road or Jane Street

Stage 3

- Close Teston Road from Weston Road to Hwy 400
- Remove existing Cold Creek culvert
 - Construct new Cold Creek bridge
 - Construct Teston Road from Hwy 400 westerly
 - Access to property in NW quadrant of Hwy 400 and Teston Road via Jane Street

Advantages

- Approximately 8 month (instead of 18 month for Alternative 1) full closure of Teston Road from Weston Road to Jane Street
- Hwy 400 crossing at Teston Road maintained throughout construction

Disadvantages

- Higher bridge structure and construction/traffic staging costs
- MTO opposes this alternative
- Restricted vertical clearance at existing Hwy 400 structure
- Reduced Hwy 400 lane and shoulder widths during construction of new structure that may impact traffic capacity, safety and increase congestions

Consultation

Alternative 1 has been reviewed with York Region Roads Transportation staff, York Region Police staff, York Region EMS staff, City of Vaughan staff and Vaughan Fire Department staff. During the review some comments regarding the duration of the closure were raised; however, there was no significant opposition.

A commitment was made to Roads Transportation, the City of Vaughan and the emergency service providers to keep them fully informed of the project schedule and ensure that all parties have sufficient time to modify their operations as necessary prior to any road closure.

Recommendation

Based on the above and the assessment of the two alternatives, it is recommended that Alternative 1 be implemented. Therefore a full closure of Teston Road from Weston Road to Jane Street for approximately 18 months will be required. It should be noted that local property access will be maintained at all times.

We have assessed the construction and traffic staging approach that may be used to complete the work:

TRAFFIC	CONSTRUCTION
Stage 1 – Seq 1 (March)	
<ul style="list-style-type: none">• Close Teston to through traffic from Weston to Jane• Close Hwy 400 for one overnight• Maintain access to Smith property via Weston	<ul style="list-style-type: none">• Remove existing Hwy 400/Teston bridge
Stage 1 – Seq 2 (March-May)	
<ul style="list-style-type: none">• Shift lanes on Hwy 400 towards median and maintain 3-lanes NB and 3-lane SB at all times	<ul style="list-style-type: none">• Construct Hwy 400 widening for Auxiliary lanes and temporary pavement to accommodate Stage 1 – Seq 3.
Stage 1 – Seq 3 (April-August)	
<ul style="list-style-type: none">• Shift Hwy 400 lanes out at new structure location to provide work zone for pier	<ul style="list-style-type: none">• Construct east and west abutment for new Hwy 400/Teston bridge

TRAFFIC	CONSTRUCTION
and median construction	<ul style="list-style-type: none"> Construct new Hwy 400/Teston bridge pier and superstructure Construct Hwy 400 median transition to existing
Stage 1 – Seq 4 (July-October)	
<ul style="list-style-type: none"> Hwy 400 lanes in final configuration 	<ul style="list-style-type: none"> Complete Hwy 400 widening and ramps Complete Teston from Hwy 400 to Jane
Winter Shutdown – November to February	
Stage 2 – Seq 1 (Mar-May)	
<ul style="list-style-type: none"> Teston Road closed to through traffic from Weston to Jane Open new Hwy 400/Teston Road bridge to provide access to the Smith property from Jane 	<ul style="list-style-type: none"> Construct Teston from Weston to Hwy 400 (no in-water work)
Stage 2 – Seq 2 (Jun-Aug)	
<ul style="list-style-type: none"> Traffic as in Stage 2 – Seq 1 	<ul style="list-style-type: none"> Remove existing culvert at Cold Creek (in-water work allowed June 1 to Sept 15) Construct new Cold Creek crossing Construct new retaining walls, grading and creek realignment as necessary
Stage 2 – Seq 3 (Apr-Aug)	
<ul style="list-style-type: none"> Traffic as in Stage 2 – Seq 2 	<ul style="list-style-type: none"> Complete Teston from Weston to Jane

Regards,
steve

Encl.

Stephen Collins, P.Eng.
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March 5, 2004

Region of York
Transportation and Works Department
Infrastructure Design and Construction Branch
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Attention: Stephen Collins, PEng
Project Manager

Re: **Construction Staging**
Highway 400 and Teston Road Interchange
WP 192-00-00

Dear Mr. Collins:

The ministry strongly endorses the proposed closure of Teston Road to remove the existing bridge over Highway 400 before the new bridge construction. This is the preferred method of staging the interchange work. It will permit the Highway 400 lanes of traffic to be shifted in accordance with design guidelines to create an enlarged median work zone. The work area will provide for conventional bridge footing construction using typical worker and vehicle safety measures.

Construction of the new bridge while leaving the existing bridge in place would create a highly constrained construction zone. The existing Teston Road underpass provides insufficient vertical and lateral clearance to Highway 400 traffic. The median work zone, lane and shoulder widths would be narrower than usually permitted, even for temporary conditions. This would result in undesirable traffic operations impacts and increase the potential for collisions.

Yours truly,

A handwritten signature in black ink that reads "David Clarke".

David C Clarke, PEng
Senior Project Engineer

DCC/
cc S. Boot