

VAUGHAN METROPOLITAN CENTRE SUB-COMMITTEE - SEPTEMBER 13, 2012**VAUGHAN METROPOLITAN CENTRE AND
SURROUNDING AREAS TRANSPORTATION STUDY, AND
THE SUPPLEMENTARY TRAFFIC ANALYSIS IN SUPPORT OF THE HIGHWAY 7 / HIGHWAY
400 INTERCHANGE IMPROVEMENTS
WARD 4****Recommendation**

The Commissioner of Engineering and Public Works recommends:

1. THAT the presentation and preliminary findings of the Vaughan Metropolitan Centre and the Surrounding Areas Transportation Study, and the Supplementary Traffic Analysis in support of the Highway 7 / Highway 400 Interchange Improvements be received;
2. THAT staff report back to a future VMC Sub-Committee meeting on the results of the ongoing discussions with the Regional Municipality of York, the area developers and Ontario Ministry of Transportation (MTO) with respect to the final recommendations of the Vaughan Metropolitan Centre and the Surrounding Areas Transportation Study and the Supplementary Traffic Analysis; and
3. THAT a copy of this report be forwarded to the MTO and Region of York.

Contribution to Sustainability

The conclusions and recommendations of the Vaughan Metropolitan Centre (VMC) and Surrounding Areas Study and the Supplementary Traffic Analysis in support of the Highway 7 / Highway 400 Interchange Improvements will assist in advancing the following specific Green Directions Vaughan objectives to:

- Create a City with sustainable built form
- Develop and sustain a network of roads that supports efficient and accessible public and private transit
- Reduce single occupant vehicle (SOV) trips by supporting active transportation, carpooling and public transit

Economic Impact

There are no immediate budgetary impacts resulting from the adoption of this report and presentation. The City's share of the VMC and Surrounding Areas Transportation Study (Joint Study) and the Supplementary Traffic Analysis was funded from Capital Project DT-7070-11.

Additional operating and capital funding will be required in future years to successfully implement the recommendations of the VMC and Surrounding Areas Transportation Study and the Supplementary Traffic Analysis.

Communications Plan

The Study included a comprehensive stakeholder consultation program involving the MTO, CN Rail, affected landowners (SmartCentres and Bentall), and various City and Regional departments. Consultation included workshops and meetings to ensure that stakeholders had the opportunity to provide input throughout the study process. These workshops and meetings allowed the Study team to verify or identify issues or concerns, prepare alternatives for further discussions, review feedback, and identify infrastructure requirements that were feasible and supported by the stakeholders.

Purpose

The purpose of this report is to inform Council of the preliminary findings of the VMC and Surrounding Areas Transportation Study, and the Supplementary Traffic Analysis, which provides further details on the key elements of the proposed area transportation improvements, including the Highway 7 / Highway 400 interchange improvements.

Background - Analysis and Options

The Vaughan Metropolitan Centre is designated as a Regional Centre in the Regional Official Plan, and is identified in the Provincial Growth Plan for the Greater Golden Horseshoe (Places To Grow) as an *Urban Growth Centre* and a *Major Transit Station and Intensification Corridor*.

The VMC Secondary Plan was produced through a Focused Area Study conducted as part of the City's Growth Management Strategy and approved by Council in 2010. The boundaries of the VMC Secondary Plan are shown on Attachment No. 1. The goal of the VMC Secondary Plan is to create a vibrant and sustainable downtown that serves all Vaughan citizens. The extension of the Spadina subway to Vaughan and the Highway 7 rapidway, combined with the need to accommodate a balanced mix of residents and jobs in the VMC, sets the stage for building a more transit-oriented downtown. The subway extension and the Highway 7 rapidway also provide the basis for a new multi-modal transportation plan to support a vibrant and sustainable downtown.

The City's Transportation Master Plan identifies the key transportation improvements for the VMC Secondary Plan

A more detailed transportation analysis (VMC Transportation Plan Study) for the VMC area was completed as a component of the Transportation Master Plan and in conjunction with the development of the VMC Secondary Plan. The Plan was developed with considerations for the Toronto/York Spadina Subway extension and the Highway 7 Rapidway, and established a network of roads that will support efficient and accessible transit. A number of additional local road improvements to existing roads and new roads were proposed within the VMC to enhance connectivity with regional and provincial roads and accommodate travel demand for the future VMC population and employment growth.

Implementation of the VMC road network is contingent on a successful partnership with all levels of government and affected landowners

The road network identified to support the development of the VMC Secondary Plan includes roads under city, regional and provincial jurisdictions. Implementation is therefore contingent on a successful partnership with all levels of government and affected landowners.

The City and York Region jointly identified the need for further analysis to better define the transportation infrastructure needs in the VMC and surrounding areas.

City and Regional staff identified the need to undertake a more detailed analysis of the key elements of the VMC Transportation Plan in an effort to fully understand the broader VMC transportation improvement requirements and implementation triggers, and to address stakeholder input.

In December 2011, the City and York Region initiated the VMC and Surrounding Areas Transportation Study (Joint Study) with the primary purpose of:

- Undertaking a feasibility review of the planned infrastructure
- Developing an implementation strategy that identifies the type, timing and responsibility of transportation infrastructure improvements for the various planning horizons

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A number of local road improvements identified in the VMC Transportation Plan Study including Portage Parkway widening and extension, Credistone Road widening, and Millway Avenue alignment modifications were accepted as given and did not require further analysis as part of the Joint Study. The City will be initiating Environmental Assessment Studies in support of the Portage Parkway widening and extension in 2013. Improvements to Credistone Road are identified in the mid-term (2016-2021) as part of the VMC Transportation Plan Study.

The primary transportation improvements were reviewed in the Joint Study

The key transportation facilities that were examined further in the Joint Study include Highway 7 / Highway 400 access, Colossus Drive extension, Langstaff Road / Highway 400 interchange, and Langstaff Road extension across CN Rail Yard. These elements are shown on Attachment No. 2.

The VMC Secondary Plan and VMC Transportation Plan Study included the Highway 400 and Highway 7 interchange improvements as part of the future road network assumptions. These improvements were first identified in the Vaughan Corporate Centre Secondary Plan and were further analyzed in the Region of York Environmental Assessment (EA) for the Highway 7 to Highway 400 interchange ramps improvements. The VMC Transportation Plan Study carried forward these proposed improvements and identified a new road connecting the northbound Highway 400 off-ramp at Highway 7 to Applewood Crescent at Portage Parkway, as well as, a new northbound on-ramp onto Highway 7 from a new parallel road to Highway 7.

Through an EA process, the Region developed alternatives for Highway 400 and Highway 7 interchange improvements; however, consensus on the reconfigured interchange/connection was not achieved and the EA study was not concluded.

Stakeholder consultation was an important aspect of the Joint Study

Continuous and meaningful stakeholder engagement throughout the process of the Joint Study was considered paramount to addressing the needs of all the stakeholders and achieving a successful outcome. Key stakeholders included the MTO, CN Rail, affected landowners (SmartCentres and Bentall) and various City and Regional departments. Consultation included three workshops and numerous stakeholder meetings to ensure that stakeholders had opportunity to provide input throughout the study process. These workshops and meetings allowed the Study team to verify or identify issues or concerns, prepare alternatives for further discussion, review feedback and identify infrastructure requirements that were feasible and supported by stakeholders.

The draft VMC and Surrounding Areas Transportation Study, and the Supplementary Traffic Analysis was completed in August 2012

The following discussion provides an overview of the feasibility analysis undertaken to assess the opportunities, timing and capital cost estimates of the key transportation infrastructure examined in the Joint Study.

Highway 7 / Highway 400 Interchange

Based on the evaluation and stakeholder's feedback, the Joint Study narrowed the ramp improvements at Highway 7 and Highway 400 to two alternatives

The feasibility review of the road improvement opportunities associated with the Highway 7 / Highway 400 interchange NB off-ramp extension included the MTO position (as part of the VMC Transportation Plan) that any proposed ramp changes maintain the existing Highway 400 NB on-ramp configuration from Highway 7. Discussion between the study team and stakeholders resulted in the development of four functional design options that generally maintain the existing

Highway 400 northbound on-ramp configuration from Highway 7 westbound and provides for a northbound off-ramp extension that would connect with Applewood Crescent at Portage Parkway. The Study concluded that all options could be constructed, subject to specific design, property acquisition and approvals satisfactory to the City, Region and MTO. Based on evaluation and stakeholders' feedback, the Study narrowed the ramp improvements at Highway 7 and Highway 400 to two alternatives as described below and shown on Attachment No.3:

- Option 1 – Highway 400 northbound on-ramp from Highway 7 grade separated under the Highway 7 northbound off-ramp extension. The Highway 400 NB off-ramp extended northerly to connect with Applewood Crescent at Portage Parkway.
- Option 2 – Realigned Highway 400 northbound off-ramp approximately 60 m east with the northbound ramp access immediately west of the realigned Highway 400 NB off-ramp. An at-grade intersection allows the proposed Highway 400 NB off-ramp extension to extend northerly to connect with Applewood Crescent at Portage Parkway.

It is important to note that both options include a future Viva station at Commerce Street.

A further detailed Traffic Engineering and Preliminary Design Study for the Highway 400 NB Off-ramp and the Highway 400 WB to NB on-ramp was undertaken to respond to MTO's requirements

To address MTO's technical requirements with respect to queuing and impacts on Highway 400 ramp operations, a detailed Traffic Engineering and Preliminary Design Study for the Highway 400 NB Off-ramp and the Highway 400 WB to NB on-ramp (Supplementary Traffic Analysis) was undertaken, concurrent with the Joint Study.

The Supplementary Traffic Analysis was submitted to the MTO for review on August 21, 2012. The report reflected the direction and discussion of the various workshops / meetings held with MTO staff during the course of the study and included the necessary details for MTO to evaluate the ramp improvements options.

Both options provide good operations at the Highway 400 off-ramps and their associated intersections, and can effectively address MTO's concerns. City staff prefer Option 2 because it better accommodates the future urban context for pedestrians and cyclist in the VMC and allows for the creation of a strong gateway for visitors to the VMC as identified in the design principles of the VMC Secondary Plan, the York Region Official Plan and the Province's Places to Grow.

A meeting has been set-up with MTO and other stakeholders for September 7, 2012 to discuss any issues or concerns MTO may have on the Supplementary Traffic Analysis submission and to review the VMC and Surrounding Areas Transportation Study recommendations. A final response from the Ministry is expected by mid-September.

Langstaff Road / Highway 400 Interchange Improvements

Langstaff Road / Highway 400 interchange improvements would relieve the transportation network in the vicinity of the Vaughan Metropolitan Centre, however, Regional implementation will be subject to significant cost and property impact considerations

The interchange at Langstaff Road and Highway 400 is currently a partial interchange with ramps to and from the south. A full interchange was proposed in the VMC Transportation Plan Study to improve accessibility to the VMC and surrounding areas, assist in diverting traffic from the full movement interchanges at Highway 7 / Highway 400 and Rutherford Road / Highway 400, and provide an alternate truck route for the industrial lands located west of CN Rail Yard area. In the longer term, a full movement interchange will complement the traffic using the Langstaff Road Extension across the CN Rail Yard.

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Due to the proximity of Bass Pro interchange, a future ramp access to Highway 400 NB is constrained to the southeast quadrant of the interchange. The provision of this ramp access to Highway 400 would require the existing Highway 400 NB off-ramp to be shifted to the east on Langstaff Road allowing for the provision of an inner loop. Alternative functional designs were developed that provided for a single lane on-ramp or a dual lane on-ramp. Both options would require the widening of the Langstaff Road overpass on the east side. Such widening will have to be confirmed by a detailed bridge design study. The estimated cost associated with the Langstaff Road /Highway 400 inner loop ramp for northbound movements is approximately \$10M.

The provision of Langstaff Road /Highway 400 SB off-ramp would improve access to the VMC and surrounding areas and would complement the potential Langstaff Road extension across the CN Rail Yard. The implementation of the Highway 400 SB off-ramp can meet the MTO geometric standards; however, there are issues to be addressed regarding the storm water pond and existing development. The new Highway 7 / Highway 400 ramp would require traffic signals. The estimated cost the new ramp would be approximately \$4.3M.

Langstaff Road Extension across the CN Rail Yard

The planned development in the VMC is not dependent on the construction of the Langstaff Road Extension

A key network consideration of the VMC Transportation Plan Study was the potential connection of Langstaff Road between Creditstone Road and Keele Street across the CN Rail Yard. This proposed roadway connection would reduce the traffic volumes on both Highway 7 and Rutherford Road, provide alternate route for truck traffic, and provide better servicing options for the industrial lands located west of the CN Rail Yard area.

The Joint Study assessed various alignments and options for the Langstaff Road Extension to go over or under the CN Rail Yard. Options evaluated included a cast-in-place bridge, cable stayed bridge, suspension bridge, jacked boxed structure and twin-bored tunnel. Depending on the type of bridge structure constructed, the construction cost would range from \$200M for a cast-in-place design to over \$1.8B for a twin bored tunnel.

In discussions with CN, they indicated that any road crossing of the Yard must have no impacts to the tracks. CN expressed preference for a direct corridor alignment across the CN yard to limit the impact on the CN operations, provided it is tunnel underground or a high level bridge (suspension or cable-stay).

The transportation system benefits analysis of providing the Langstaff Road Extension across the CN would reduce traffic flows on major arterial roadways adjacent to the VMC including the Highway 7. However, the expected volume of traffic relief resulting from the crossing confirms that the planned VMC development is not dependent on the construction of the Langstaff Road extension. The Study indicates that the need and feasibility for the Langstaff Road Extension is a long-term (10-20 years) network improvement.

Colossus Drive Extension

Colossus Drive Extension will improve the transportation network in the longer term (beyond 20 years)

Another key network assumption as part of the VMC Transportation Plan study was an extension of the existing Colossus Drive located on the west side of Highway 400 easterly over Highway 400 connecting with Interchange Way on the east side. The purpose of this link would be to provide an east-west bypass route south of Highway 7 that would reduce traffic on Highway 7 and possibly divert truck traffic within the vicinity of Highway 400. The recommended timing for the

Colossus Drive Extension is long-term (beyond 20 years). The estimated construction cost for a cast-in-place multi-span bridge that can accommodate four traffic lanes is approximately \$ 95 M.

Even though, the Colossus Drive Extension is not required until the long-term, staff is proposing to undertake an Environmental Assessment Study in 2013 to provide some certainty with respect to the proposed alignment, design, property implications, and cost. This link has been identified as a potential additional transportation infrastructure associated with the forecast traffic threshold on the Highway 400 NB on-ramp from Highway 7 WB.

Preliminary Summary Findings

The table below provides a summary of the transportation infrastructure improvements, construction cost estimates and the associated planning horizon in which these should be considered to accommodate planned and future growth within the VMC and surrounding areas.

Transportation Improvement	Timing	Construction Cost Estimate (\$)
Highway 400 / Highway 7 Interchange NB off-ramp extension	0-5 years	\$6.2M
Highway 400 / Langstaff Road SB off-ramp	5-10 years	\$4.3M
Highway 400 / Langstaff Road NB on-ramp / off-ramp	5-10 years	\$9.9M
Langstaff Road Extension across CN rail yard	Longer term	
North Alignment – Multi-span Cast-in-Place		\$205M
South Alignment – Multi-span Cast-in-Place		\$190M
Central Alignment – Multi-span Cast-in-Place		\$195M
Colossus Drive Extension	Longer term	\$95M

The recommendations and findings of the Joint Study and the Supplementary Traffic Analysis will be incorporated in the Revised VMC Secondary Plan

The Policy Planning Department will be reporting to the VMC Sub-Committee on September 13, 2012 to present proposed modifications to the adopted Secondary Plan for the Vaughan Metropolitan Centre for discussion prior to bringing a more detailed report back to the Committee of the Whole (Public Hearing). The Revised Plan is the result of Council direction to review two specific areas of the Adopted VMC Secondary Plan, consider various modification requests from land owners within the VMC planning area, and review general refinements to the Secondary Plan as a result of ongoing studies.

The recommendations and findings of the VMC and the Surrounding Areas Transportation Study, and the Supplementary Traffic Analysis in support of the Highway 7 / Highway 400 Interchange Improvements will be incorporated in the Revised Plan.

In order to protect future corridor approaches to the Colossus Drive Extension and the Langstaff Road Extension, a transportation corridor protection policy will need to be included in the Region of York and the City of Vaughan Official Plans, and the VMC Secondary Plan.

Regional Implications

The Region of York is a vital stakeholder and an equal partner in the Joint Study. The Region of York staff is planning on reporting to the Regional Transportation Services Committee on October 3, 2012.

Relationship to Vaughan Vision 2020/Strategic Plan

This report is consistent with the priorities previously set by Council Vaughan Vision 2020 strategic initiatives:

- To enhance and ensure community safety, health and wellness;
- To pursue excellence in service delivery;
- To lead and promote environmental sustainability;
- To maintain assets and infrastructure;
- To ensure financial sustainability; and
- To plan and manage growth and economic vitality.

This report is therefore consistent with the priorities previously set by Council.

Conclusion

The VMC and Surrounding Areas Transportation Study and the Supplementary Traffic Analysis in support of the Highway 7 / Highway 400 Interchange Improvements provide preliminary findings with respect to the transportation improvements which would facilitate the planned development in the Vaughan Metropolitan Centre. The study process included continuous and meaningful stakeholder engagement in order to address the needs of all the stakeholders and achieve a successful outcome.

The Supplementary Traffic Analysis was submitted to the MTO for review on August 21, 2012, and a meeting has been set-up with MTO and other stakeholders for September 7, 2012 to discuss any issues. Staff will report back to a future VMC Sub-Committee meeting on the results of the ongoing discussions with the Regional Municipality of York, the area developers and Ontario Ministry of Transportation (MTO) with respect to the final recommendations of the Vaughan Metropolitan Centre and the Surrounding Areas Transportation Study and the Supplementary Traffic Analysis. The final recommendations of the Study will be incorporated in the Revised VMC Secondary Plan.

Attachments

1. Vaughan Metropolitan Centre Boundaries
2. Key elements of the proposed transportation improvements in the VMC and Surrounding Areas
3. Highway 7 / Highway 400 Interchange Improvements (Option 1 and 2)

Report prepared by:

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Respectfully submitted,



Paul Jankowski, P. Eng.
Commissioner of Engineering and Public Works



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

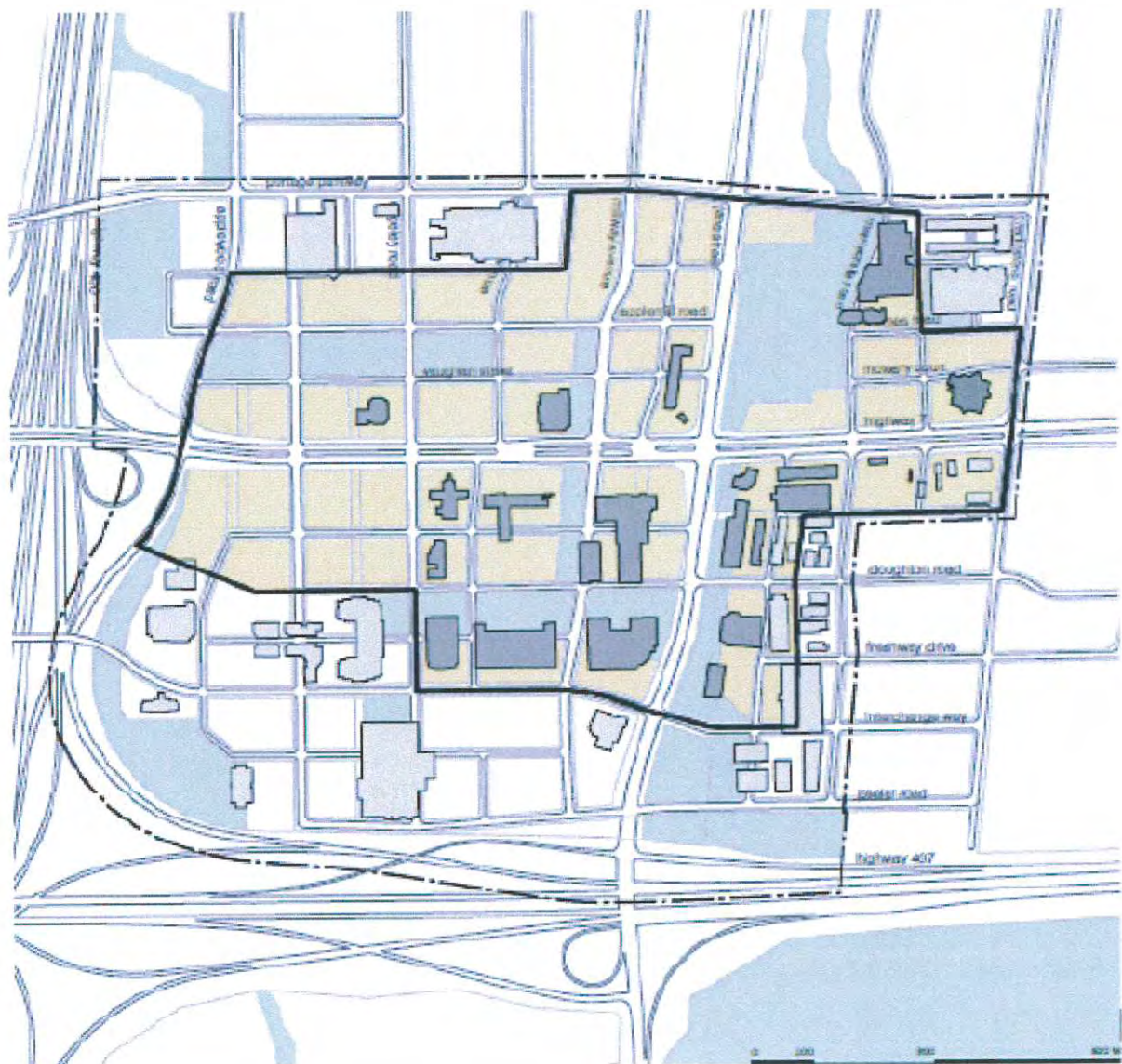
Vaughan Metropolitan Centre Boundaries

DRAFT REVISIONS AUGUST 31 2012

SCHEDULE A - VAUGHAN METROPOLITAN CENTRE BOUNDARIES

LEGEND

-  vaughan metropolitan centre boundary
 urban growth centre boundary
 existing buildings
 existing and planned streets
 major parks and open spaces

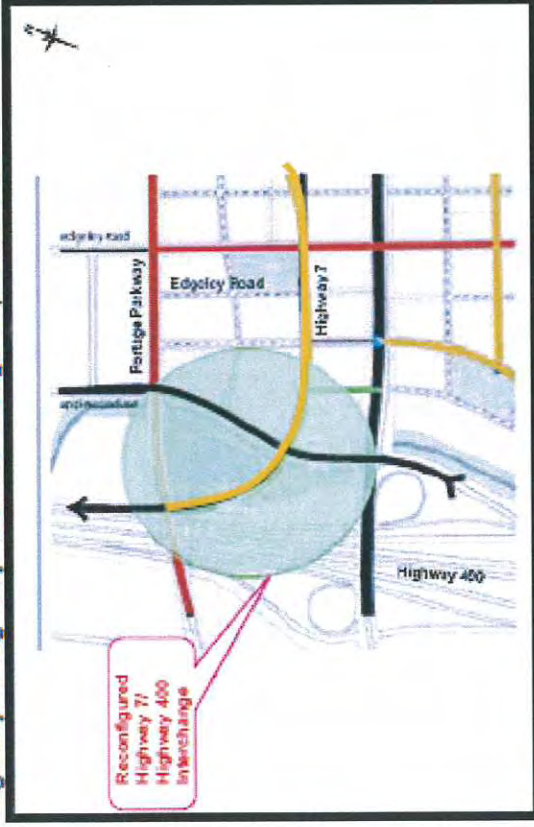


Attachment No. 2

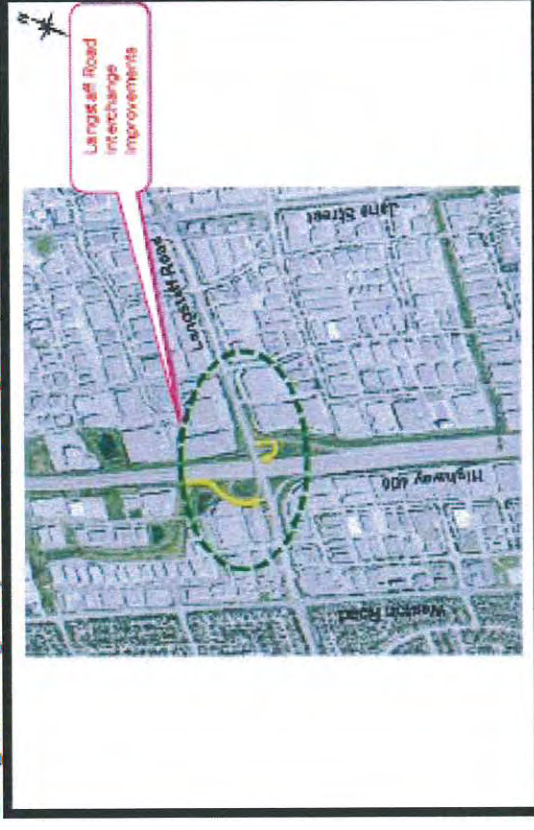
Key Elements of the Proposed Transportation Improvements in the VMC and Surrounding Areas

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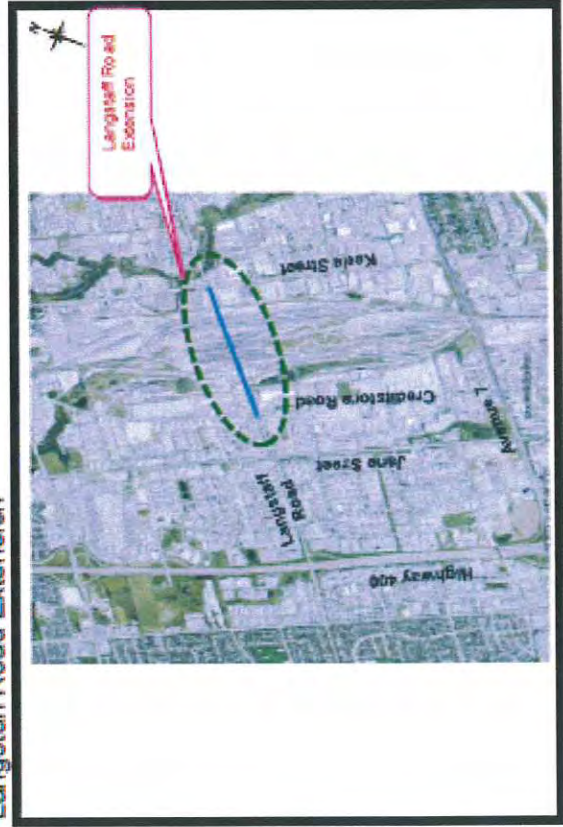
Highway 7/ Highway 400 Interchange Improvements



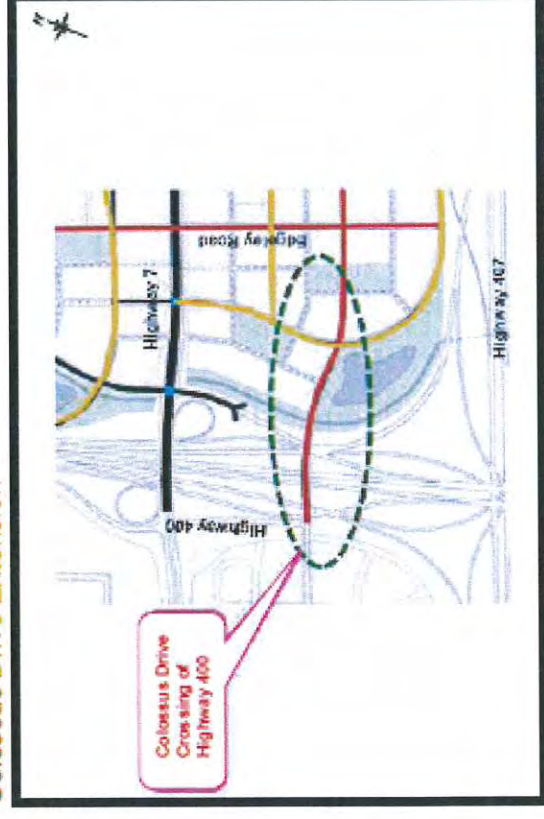
Langstaff/ Highway 400 Interchange Improvements



Langstaff Road Extension



Colossus Drive Extension



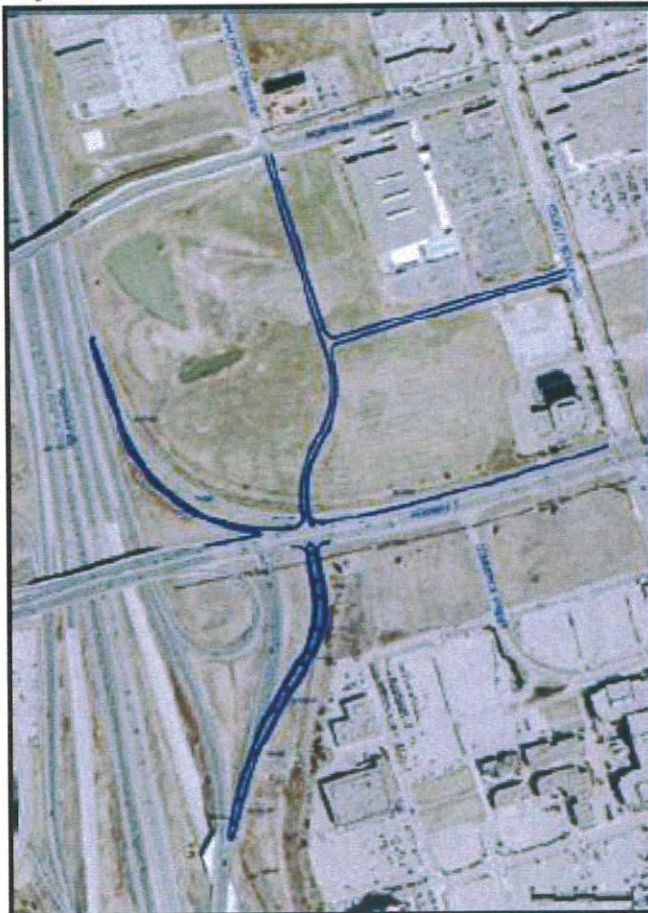
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Attachment No. 3

Highway 7 / Highway 400 Interchange Improvements

Option 1



Option 2





Update on VMC and Surrounding Areas Transportation Studies

Presentation of the Director of
Development / Transportation Engineering

VMC Sub-Committee of Council

September 13, 2012



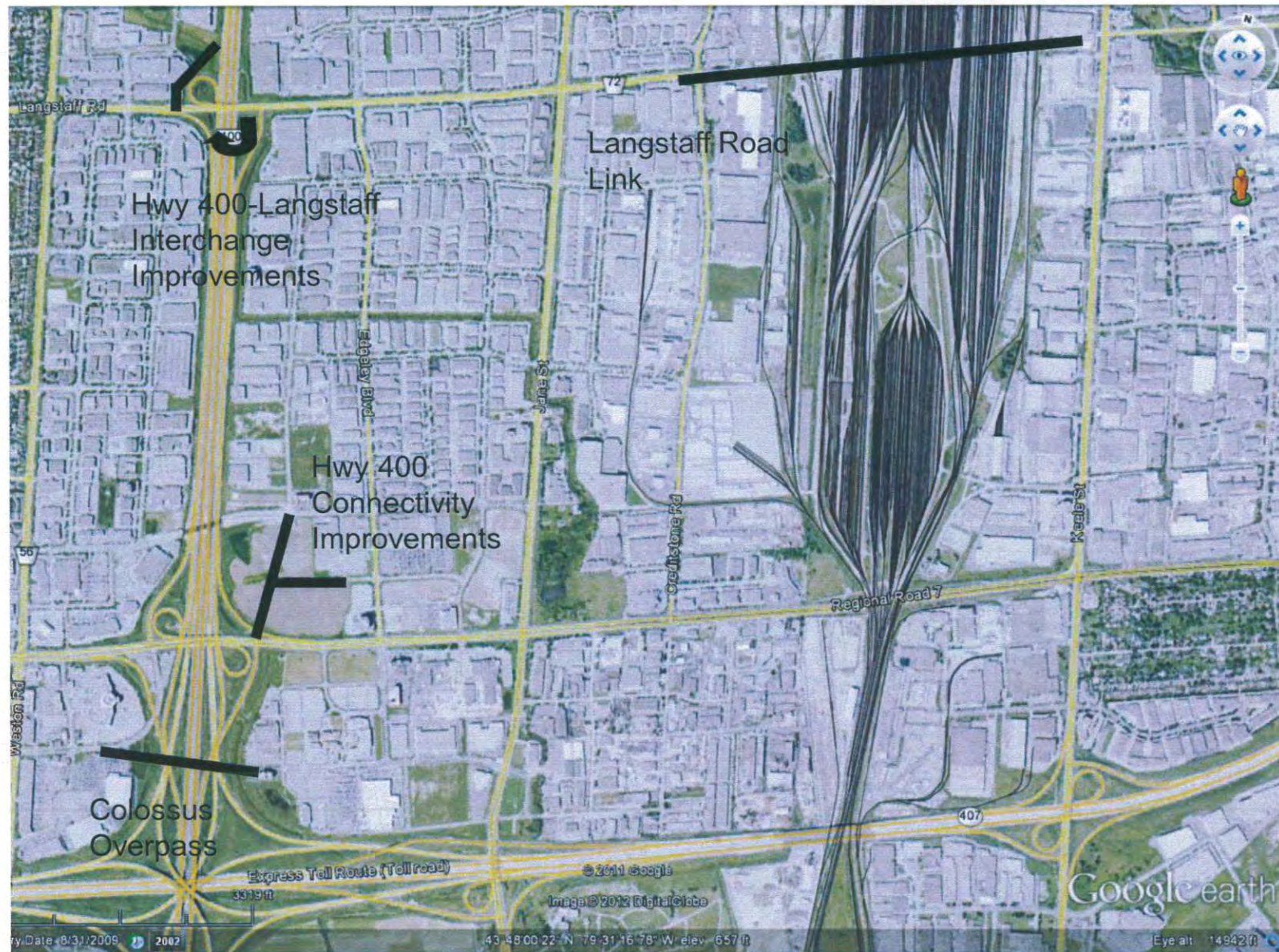
Background

- Original VMC Secondary Plan and VMC Transportation Plan was completed in 2010
- City Transportation Master Plan recommended improvements to the transportation network to support development of the VMC
- Further study required to address stakeholders need for additional information respecting the planned transportation network

Purpose

- In December 2011, City and Region partnered in a VMC and Surrounding Area Transportation Study
- Key objectives of the joint study included the review and development of consensus positions on:
 - traffic flows/patterns
 - feasibility of Infrastructure Improvements
 - infrastructure timing
 - Highway 400 Corridor integration

Key VMC and Area Transportation Improvements



Study Process

- Joint Study included:
 - 3 workshops and numerous stakeholder meetings
 - Draft prepared – May 2012
- Supplementary Traffic Analysis undertaken to establish consensus on integrated Highway 400/municipal road network solutions
- Funding shared by SmartCentres, Region & City
- All solutions evaluated with full collaboration of Region, MTO, Developer Representatives
- Commenced – June 2012
 - Technical Submission to MTO – August 21, 2012
 - Stakeholder workshop – September 7, 2012

Highway 400 Interface

- Two options evaluated:



**Option 1* – 400 / 7 Interchange -
Maintain Existing Intersection: NB
Off-Ramp Extension**



**Option 2* - 400 / 7 Interchange -
Realign Existing Intersection
Easterly: NB Off-ramp
Extension**

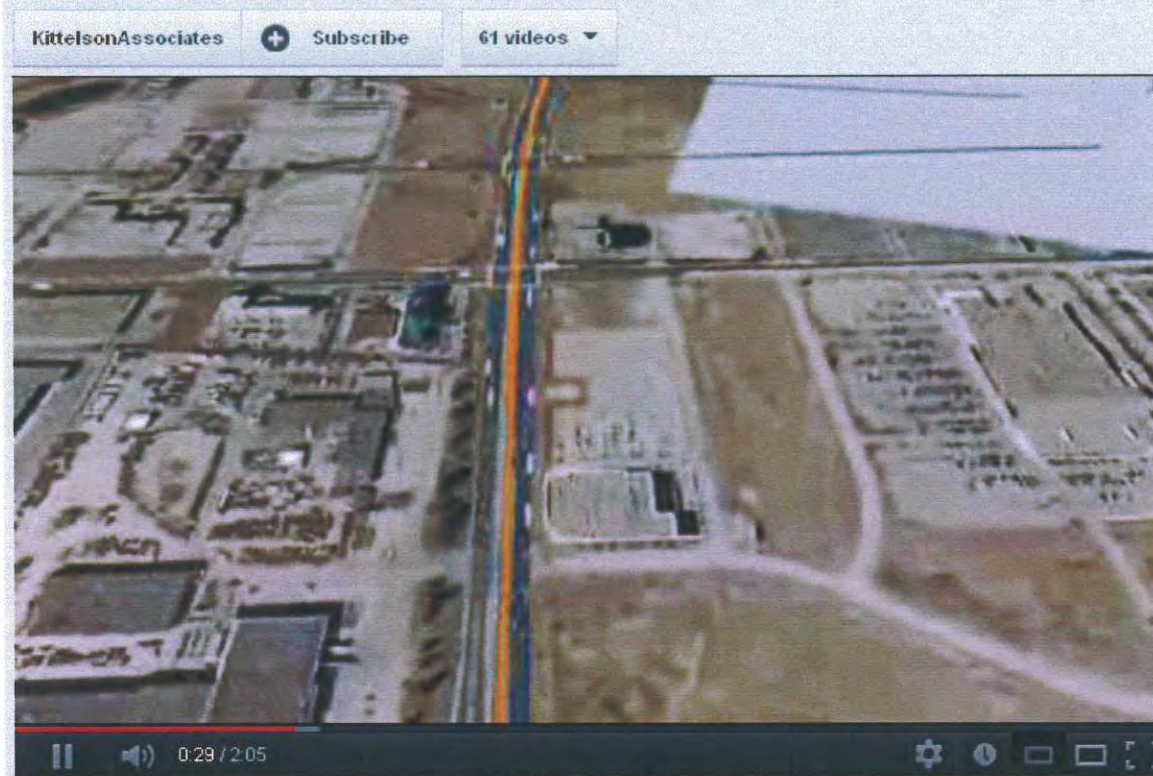
* allows for provision of SB right turn lanes evaluated for each option

Highway 400 Interface

Selected video capture of traffic simulation for each Option:

Option 1 (with SB left turns)

Highway 7 - Alt 2



Highway 400 Interface

Option 2 (with SB left turns)

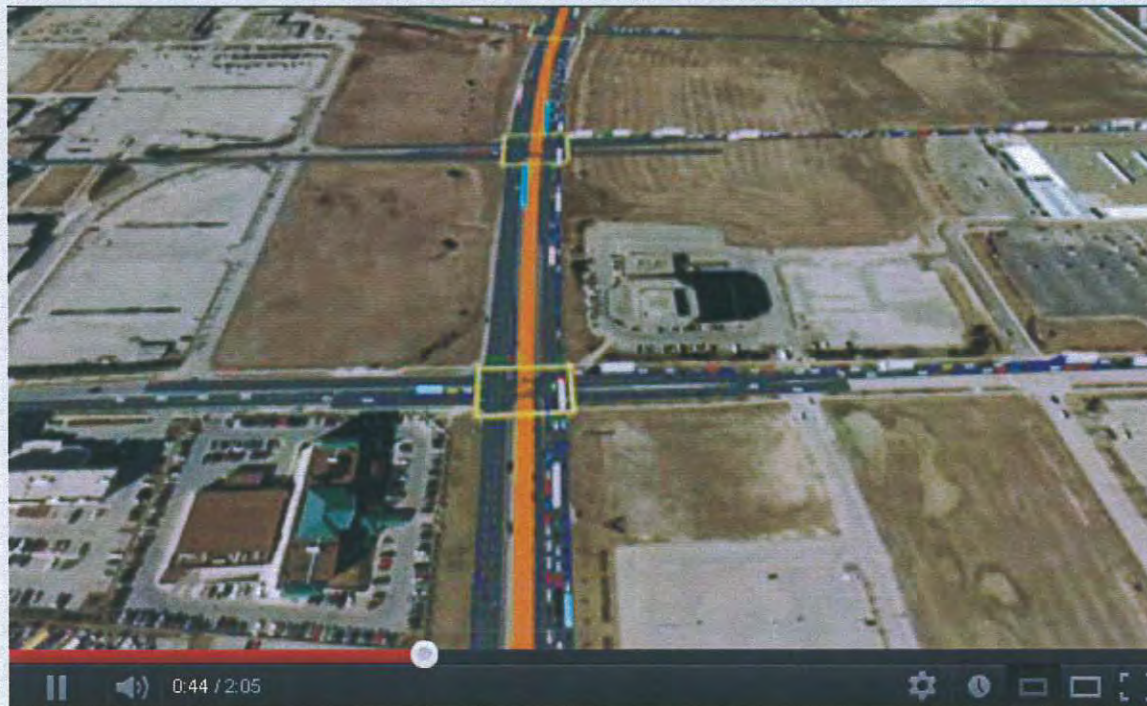
Highway 7 - Alternative 4

KittelsonAssociates



Subscribe

61 videos



Next Steps:

- Ongoing consensus solution development
- response to MTO's technical comments - Week of September 10, 2012
- Follow-up meeting with MTO -Week of September 17, 2012
- Working to achieve consensus position by end of September
- Integrate solution into VMC Secondary Plan & Policies

Langstaff Road / Highway 400 Interchange

NB On-ramp



**Estimated
Construction
Cost: \$10M**

SB Off-ramp



**Estimated
Construction
Cost: \$4.3M**

Langstaff Road / Highway 400 Interchange

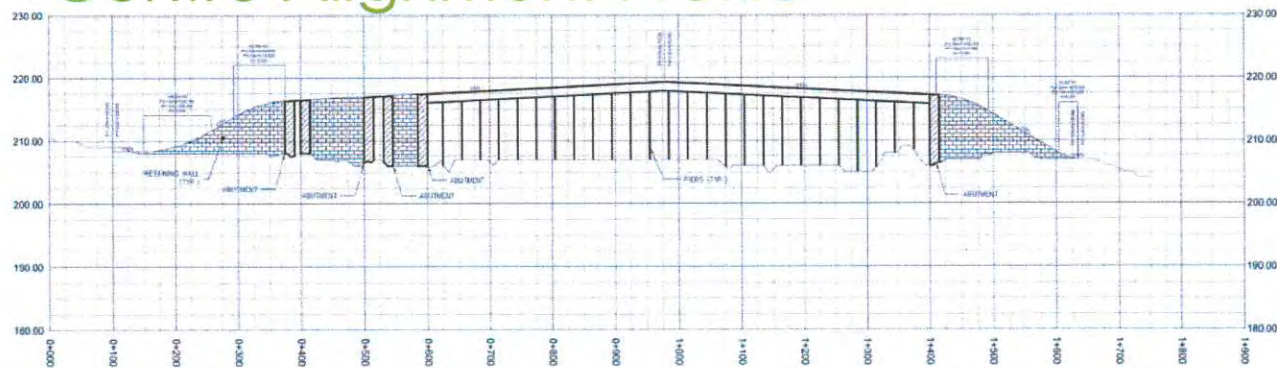
- Provide alternative access to Hwy 400 for surrounding employment lands
- Reduce future traffic on Hwy 7 through VMC
- Technically feasible but subject to significant cost (\$15 million) and property impact
- Required in mid-term (5-10 years) but subject to monitoring

Langstaff Road Extension

Alternative Alignments



Centre Alignment Profile

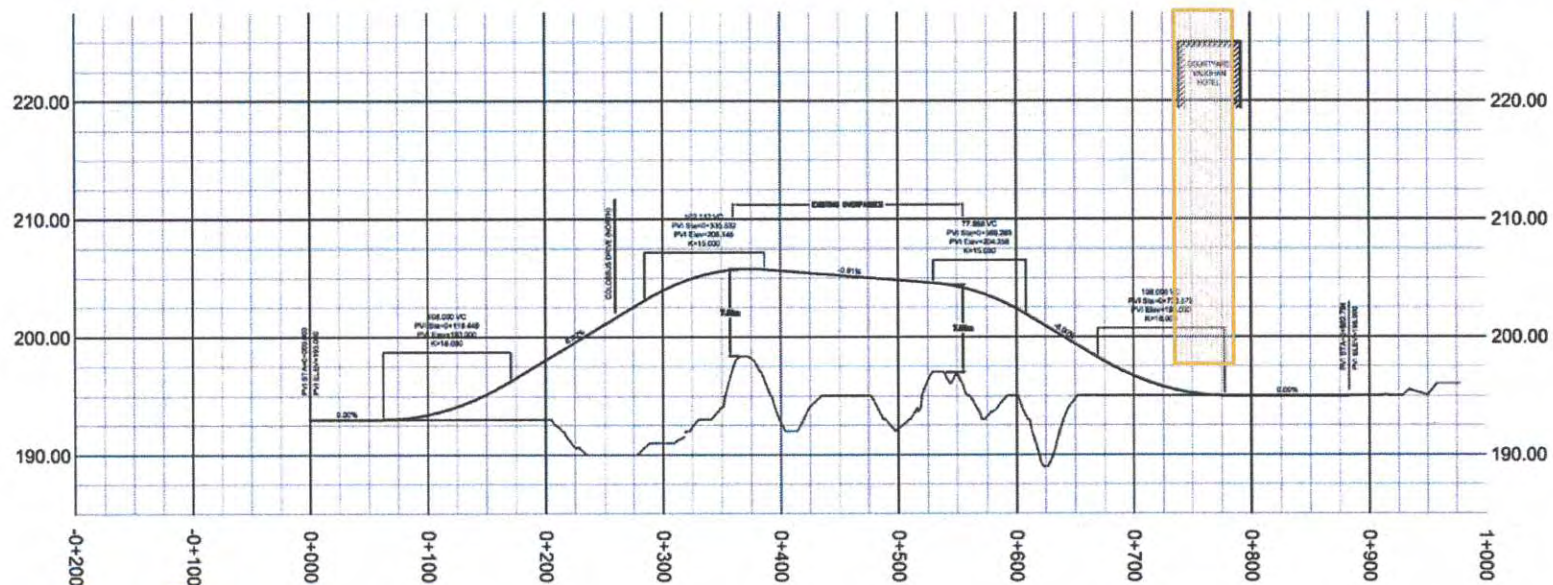
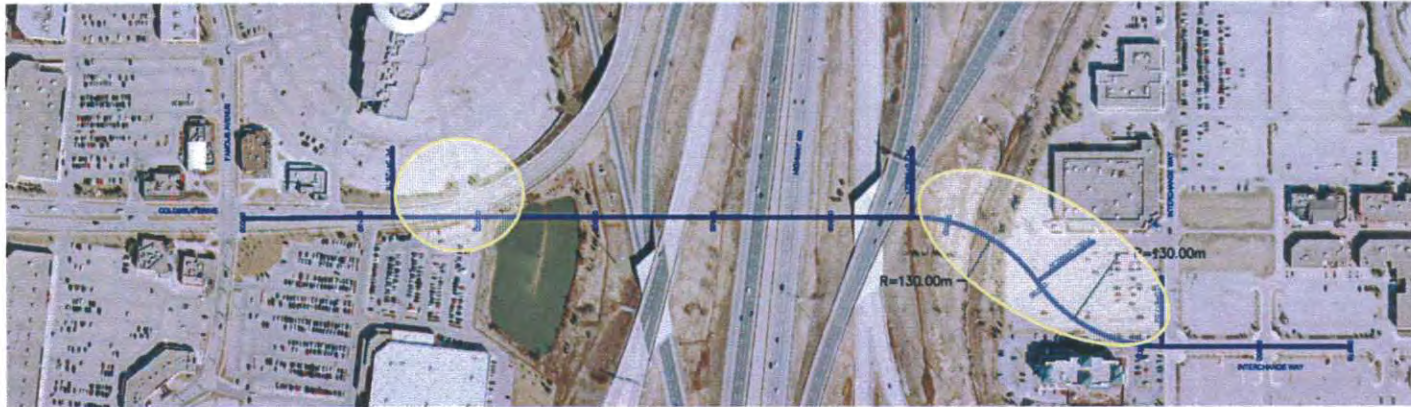


Langstaff Road Extension

- No ability to construct missing link without CN approval
- Centre alignment has the least impact on CN yard provided it is either a tunnel or high level bridge (suspension or cable)
- North and South alignments not supported by CN staff
- Estimated construction cost ranges between \$200M to \$1.8B depending on option
- Unlikely that the Link can be established until CN Yard redevelops
- VMC development not depended on the Langstaff Road Extension

Colossus Drive Extension

Preliminary Corridor Protection Area



Profile

Colossus Drive Extension

- Improves transportation efficiency in VMC and surrounding areas by providing a continuous local road network, offering additional access and transportation capacity
- Technically feasible at significant cost \$95M
- Recommended timing - long term (20+ years)
- Class EA required to define the preferred alignment and establish corridor protection area

Summary:

- **Hwy 7 / Hwy 400 Interchange Improvements**

Cost \$6.2M

Timing (0-5 years)

- **Langstaff Road / Hwy 400 Interchange Improvements**

Cost \$15M

Timing (5-10 years) subject to monitoring

- **Langstaff Road Extension**

Cost \$200M - \$1.8B

Timing (10—20 years)

- **Colossus Drive Extension**

Cost \$95M

Timing (20+ years)

Next Steps:

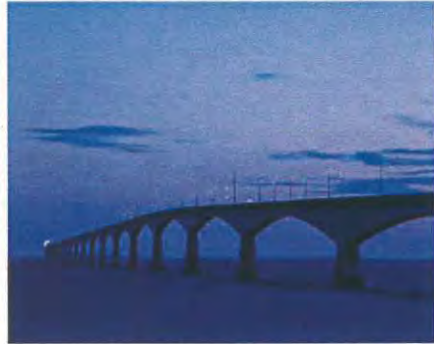
- Address MTO's comments on technical submission - Week of September 10, 2012
- Meeting with MTO - Week of September 17, 2012
- Finalize Study - End of September
- Report to York Region Council - October 3, 2012
- Final Study findings to be reported to VMC Sub-Committee – November 2012
- Final recommendations of the Study will be incorporated in the modified VMC Secondary plan

Discussion

- Questions, comments...

Alternative Bridge Structures – langstaff link

Cast-in-Place Bridge
Confederation Bridge, PEI



\$195M

Suspension Bridge
Golden Gate Bridge



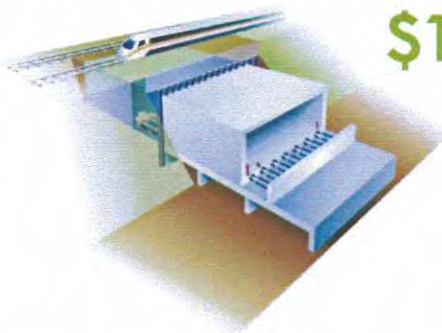
\$490M

Cable Stayed Bridge
Coast Meridian Overpass Port Coquitlam, BC



\$445M

Jacked Box Structure



\$1,355M

Twin Bored Tunnel



\$1,820B