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REQUEST FOR GRADE-SEPARATED PEDESTRIAN UNDERPASS CROSSINGS OF LESLIE STREET AND ST. JOHN'S SIDEROAD TOWN OF AURORA

The Transportation Services Committee recommends the adoption of the recommendations contained in the following report dated January 24, 2011, from the Commissioner of Transportation Services.

1. RECOMMENDATIONS

It is recommended that Regional Council:

1. Approve the at-grade pedestrian/cyclist crossings of Leslie Street (Y.R. 12), between Wellington Street (Y.R. 15) and Mulock Drive (Y.R. 74), and St. John's Sideroad (Y.R. 26), between Bayview Avenue (Y.R. 34) and Woodbine Avenue (Y.R. 8), as the preferred alternative for accommodating pedestrian and cyclist movements across the Regional corridors in this area.
2. Approve the inclusion of the at-grade pedestrian/cyclist crossings on Leslie Street as the preferred alternative in the Environmental Study Report for the widening of Leslie Street (Y.R. 12), from Wellington Street (Y.R. 15) to Mulock Drive (Y.R. 74), and in the detailed design of St John's Sideroad (Y.R. 26), from Bayview Avenue (Y.R. 34) to Woodbine Avenue (Y.R. 8).

2. PURPOSE

This report provides information to Regional Council related to the Town of Aurora's request to construct grade-separated pedestrian underpass crossings of Leslie Street in the vicinity of St. John's Sideroad and of St. John's Sideroad, west of Leslie Street. A Regional context plan is appended (*see Attachment 1*).

3. BACKGROUND

The Town of Aurora has requested York Region fund and build grade-separated pedestrian underpasses as part of the Leslie Street and St. John's Sideroad projects

In August 2009, the Town of Aurora submitted a letter requesting York Region to consider including grade-separated pedestrian underpasses in the ongoing Class Environmental Assessment (EA) for Leslie Street improvements and the ongoing detailed design project for St. John's Sideroad improvements.

A grade-separated pedestrian underpass crossing is typically a culvert or bridge structure constructed below the elevation of the pavement. The structure facilitates pedestrian movements from one side of the Regional right-of-way to the other without pedestrians having to walk across the pavement.

The four pedestrian underpasses requested by Town of Aurora are generally located:

- Crossing Leslie Street approximately 260 m north of State Farm Way
- Crossing Leslie Street approximately 160 m south of St. John's Sideroad
- Crossing Leslie Street approximately 380 m north of St. John's Sideroad
- Crossing St. John's Sideroad approximately 325 m west of Leslie Street

The locations of these crossings are appended to this report (*see Attachment 2*).

These underpasses are located in the vicinity of the Aurora 2C Lands, where municipal planning is currently at the Secondary Plan stage.

These pedestrian underpass crossings were not identified as being warranted in York Region's Pedestrian and Cycling Master Plan (2008) because of the lack of need for the grade separated crossing and that pedestrian movements could be accommodated at signalized intersections.

Town of Aurora staff are currently completing a Trail Master Plan project and the recommended concept is expected to provide justification and more detailed information regarding the proposed trail network and the requested underpasses. This Trail Master Plan is planned to be presented to the Council of the Town of Aurora in 2011, for consideration.

York Region has three separate infrastructure projects underway in the vicinity of Leslie Street and St. John's Sideroad

York Region has three separate infrastructure projects, at different phases of delivery, in the vicinity of Leslie Street and St. John's Sideroad.

Staff are now completing the Class Environmental Assessment for Leslie Street improvements between Wellington Street and Mulock Drive

This section of Leslie Street is in the final stages of preparation of a Class EA for the road improvements. The Environmental Study Report (ESR) is anticipated to be finalized in the spring 2011. This report will recommend Leslie Street be widened to four lanes with left and right turn lanes at intersections, and centre left turn lane, where appropriate. The construction of this work is scheduled to start in 2015 based on the draft 2011 Ten Year Roads Construction Program.

Detailed design is also underway for upcoming improvements to St. John's Sideroad between Bayview Avenue to Woodbine Avenue

This section of St. John's Sideroad is currently in the detailed design phase, with this work approximately 60% complete. The Class EA was completed in August 1999 from Yonge Street to Woodbine Avenue. The recommended improvements included widening between Yonge Street and Bayview Avenue and upgrading St. John's Sideroad to York Region standards, with left and right turn lanes being added at intersections, between Bayview Avenue and Woodbine Avenue. The construction of this work is scheduled to start in 2014 based on the draft 2011 10-Year Roads Construction Program.

Construction of a new Regional watermain along Leslie Street is well underway

York Region is presently constructing a 750 mm diameter watermain along Leslie Street from Wellington Street to Mulock Drive. The construction began in September 2010, and is scheduled for completion in fall 2011.

Consultation with Town of Aurora staff has been ongoing

Discussions with Town of Aurora staff have been ongoing since September 2009 with formal responses submitted to Town of Aurora staff on June 28, 2010 and August 30, 2010. The response letters suggested a number of potential underpasses options, identified other elements that should be considered when determining the appropriate underpass concept, and the approximate construction cost of each underpass. This information is discussed in greater details in the following sections.

At their meeting on September 13, 2010, the Council of the Town of Aurora adopted General Committee Report No. IES10-043 recommending the underpasses

Senior Regional staff attended the September 13, 2010, meeting of the Council of the Town of Aurora. During this meeting staff agreed to defer the completion of the Leslie Street Class EA Study until York Region's Transportation Services Committee has had an opportunity to consider the Town of Aurora's request.

4. ANALYSIS AND OPTIONS

York Region staff have completed a preliminary assessment of the pedestrian crossings of Leslie Street and St. John's Sideroad

As part of the technical work completed on the Leslie Street Class EA and St. John's Sideroad detailed design, a preliminary assessment of the options, benefits, impacts, constructability and costs were undertaken.

Three options for grade-separated pedestrian underpass crossings were reviewed and assessed

Three options were reviewed and assessed to provide grade-separated pedestrian underpasses. These options are:

Option 1 – Combining the requested pedestrian underpass structures with already planned watercourse crossing structures.

Option 2 - Providing separate structures for the pedestrian underpasses, at the preferred crossing locations, at the elevation of the valley floor

Option 3 – Providing separate structures for the pedestrian underpasses, at the preferred crossing locations, at an elevation just below the pavement surface

In addition, two other options for accommodating pedestrian movements in this area were considered

Two additional options were reviewed and assessed to accommodate pedestrian movements in this area. These options are:

Option 4 – Providing grade-separated pedestrian overpass crossings. These crossing would be bridge structures over top of Leslie Street and St. John's Sideroad.

Option 5 - Providing at-grade pedestrian crossings, at the preferred locations, completed with separate pedestrian activated signal system.

On balance, the benefits associated with Option 1 through Option 4 are relatively equal

The benefits associated with the grade-separated options, Option 1 through Option 4, are relatively equal. The common benefits of these options are:

- Grade separated options do not require pedestrians to cross the pavement.
- They may be perceived as minimizing pedestrian delays or effort of walking up and down between the elevations of the trail and the roadway, therefore encouraging more people to consider active forms of travel thereby reducing vehicle travel.
- Promote Regional initiatives of providing healthy and walkable communities, and linking green spaces.

Option 1 and Option 2 have the additional benefit of maintaining the connection for pedestrians between the trail system and the natural environment during the crossing of the Regional right-of-way. That is, pedestrians do not need to leave the natural environment area to cross the Regional right-of-way. They will continue through the right-of-way along the valley floor.

Option 5 does provide many of the same benefits as Options 1 through 4

Option 5 does provide many of the same benefits as Option 1 through Option 4. That is Option 5 promotes the Regional initiatives of healthy and walkable communities, it provides a location specific link between the green spaces on opposite sides of the roadway.

In addition, an at-grade crossing is significantly less expensive to implement and maintain, therefore increasing the ability of the Region to plan, fund, construct and operate such an option.

The incremental impacts of the Options have been assessed

The incremental impacts resulting from each of the options have been assessed at a very preliminary level of detail. These impacts are presented in Table 1.

Table 1
Incremental Impacts of Options

Option	Description	Incremental Environmental Effects	Relative Impacts	Relative Costs
1	Combine underpass crossings with watercourse culverts	• Significant grading and vegetation removal • Significant long-term operational, maintenance and future replacement costs • Significant pedestrian safety and security concerns through a long tunnel (60-80 metres) structures • Must be constructed as part of road improvements • Extremely high capital cost (over \$1M per crossing)	High	High
2	Separate underpass crossings at the Valley floor elevation	• Significant grading and vegetation removal • Significant long-term operational, maintenance and future replacement costs • Significant pedestrian safety and security concerns through a long tunnel (60-80 metres) structures • Significant constructability issues if not constructed as part of the road improvements • Extremely high capital cost (over \$1M per crossing)	High	High
3	Separate underpass crossings just below the elevation of the pavement	• Moderate grading and vegetation removal • Significant long-term operational, maintenance and future replacement costs • Pedestrian safety and security concerns through a tunnel (40-60 metres) structures • Moderate constructability issues if not constructed as part of the road improvements • High capital cost (over \$1M per crossing)	Medium	Medium

4	Overpass crossings	• Significant grading and vegetation removal required in order to construct the approach ramps - to meet AODA standard these ramps will be at least 80 metres long and would be required at both ends of each structure • Additional property required to accommodate structure supports and approach ramps • Poor aesthetics and integration between overpass structures and surrounding natural and built environments • Significant long-term operational, maintenance and future replacement costs • Significant difference in grade for pedestrians between the trail and overpass elevations • Moderate constructability issues if not constructed as part of the road improvements • Extremely high capital cost (over \$1M per crossing)	High	High
5	At-grade crossings	• Difference in grade for pedestrians between trail and pavement elevations • Low long-term operations, maintenance and future replacement costs • Moderate capital cost (\$100K-\$200K per crossing)	Low	Low

Building grade-separated crossings (underpass or overpass) as part of the initial road construction would be easier than retrofitting these later

The construction of the watercourse crossing structures pose significant constructability challenges, including the length, depth relative to the roadway elevation, significant excavation requirement and traffic management during construction. Therefore, in light of these challenges, the incremental issues associated with incorporating the pedestrian crossings during construction of the road improvements are minor.

The risks of constructing in the vicinity of York Region's 750 mm watermain would necessitate significant protection measures.

The incremental challenges associated with building the grade-separated pedestrian crossings following York Region's road improvement projects are significant. These will include access, traffic control on a wider and busier roadway, restoration, etc.

While Option 3 is the preferred grade-separated alternative, a preliminary estimate of the initial capital construction cost for it, is approximately \$4.4M

From the grade-separated options, Option 3 is preferred. This option has similar benefits to the other grade-separated options; however, the incremental environmental effects, relative impacts and relative costs are the lowest, of the grade-separated options.

As part of the technical analysis a preliminary estimate of the initial capital costs of the preferred grade-separated option, Option 3, concurrently with the road improvements is approximately \$4.4M of which, \$3.2M is for the crossings of Leslie Street and \$1.2M is for the crossing of St. John's Sideroad.

This represents the initial capital costs of constructing the structures and does not include the ancillary work of building the trail system, lighting and security measures, special requirements, if any, to satisfy *Accessibility for Ontarians with Disabilities Act* (AODA) requirements, etc. Further, in order to fully understand the total lifecycle costs of these grade-separated pedestrian crossings, a fulsome review of the long-term operation and maintenance costs should be undertaken.

It must be noted that the Region has not included the extremely high capital costs of such crossings in the 10-Year Roads Construction Program. In light of the greater environmental impacts, these options are not considered to form part of the technically-preferred solution to be advanced through the Region Class EA submission. Furthermore, it is suggested that Regional funding options not be considered further in the absence of a comprehensive policy review.

Overall Option 5, is the preferred alternative for accommodating pedestrian movements and trail use in the vicinity of Leslie Street and St John's Road because it achieves the same benefit for pedestrians and cyclists and is significantly less expensive

When considering the overall balance of impacts and benefits, Option 5 is the preferred alternative. There are Regional benefits of providing at-grade pedestrian crossings separate from the signalized intersections, as noted above. On a balance of impacts, the at-grade crossings are significantly less impact than any of the grade-separated crossings and could be accommodated within the Region's 10-Year Roads Construction Program in the future.

Further, Option 5 does have significant additional benefits over the grade-separated options, some of which include:

- Limited incremental impacts from a natural environment perspective.
- Removes the safety and security concerns with directing trail users to a tunnel structure.
- Provides better connectivity between the proposed on-road bike lanes on Leslie Street and St. John's Sideroad and the perpendicular trail system.
- Nominal incremental capital costs and operation and maintenance costs.
- Potential for York Region to fund both the capital construction and operation and maintenance costs of at-grade pedestrian crossings.
- Nominal incremental cost of constructing the at-grade crossings as a retrofit following the road improvements.

Regional staff are now moving forward to submit the Class EA for the Leslie Street improvements with the at-grade crossings forming part of the technically-preferred solution and completing the St. John's Sideroad detailed design improvements including as at-grade crossing

As part of the technically-preferred solution for Leslie Street, at-grade pedestrian crossings will be included in the final Environmental Study Report (ESR). The ESR will document the need and justification for the pedestrian crossings and will include an analysis of the options considered and the final recommendation.

As part of the St. John's Sideroad detailed design project, Regional staff will incorporate at-grade pedestrian crossing to accommodate future pedestrian movements in the area.

5. FINANCIAL IMPLICATIONS

The capital construction cost of four at-grade pedestrian crossings has been estimated to be approximately \$300K

The estimated initial capital costs of constructing four at-grade pedestrian crossings in the vicinity of Leslie Street and St. John's Sideroad is approximately \$300K; the timing of the expenditure is unknown because it is dependant on the construction of the trail system planned by the Town of Aurora.

6. LOCAL MUNICIPAL IMPACT

The Town of Aurora will benefit from having a connected trail system between the residential land uses west of Leslie Street with the employment land uses east of Leslie Street. Providing safe and efficient means for pedestrians and trail users to cross the Regional Roadways while using the trails will provide benefit not only to the Town of Aurora but also York Region.

7. CONCLUSION

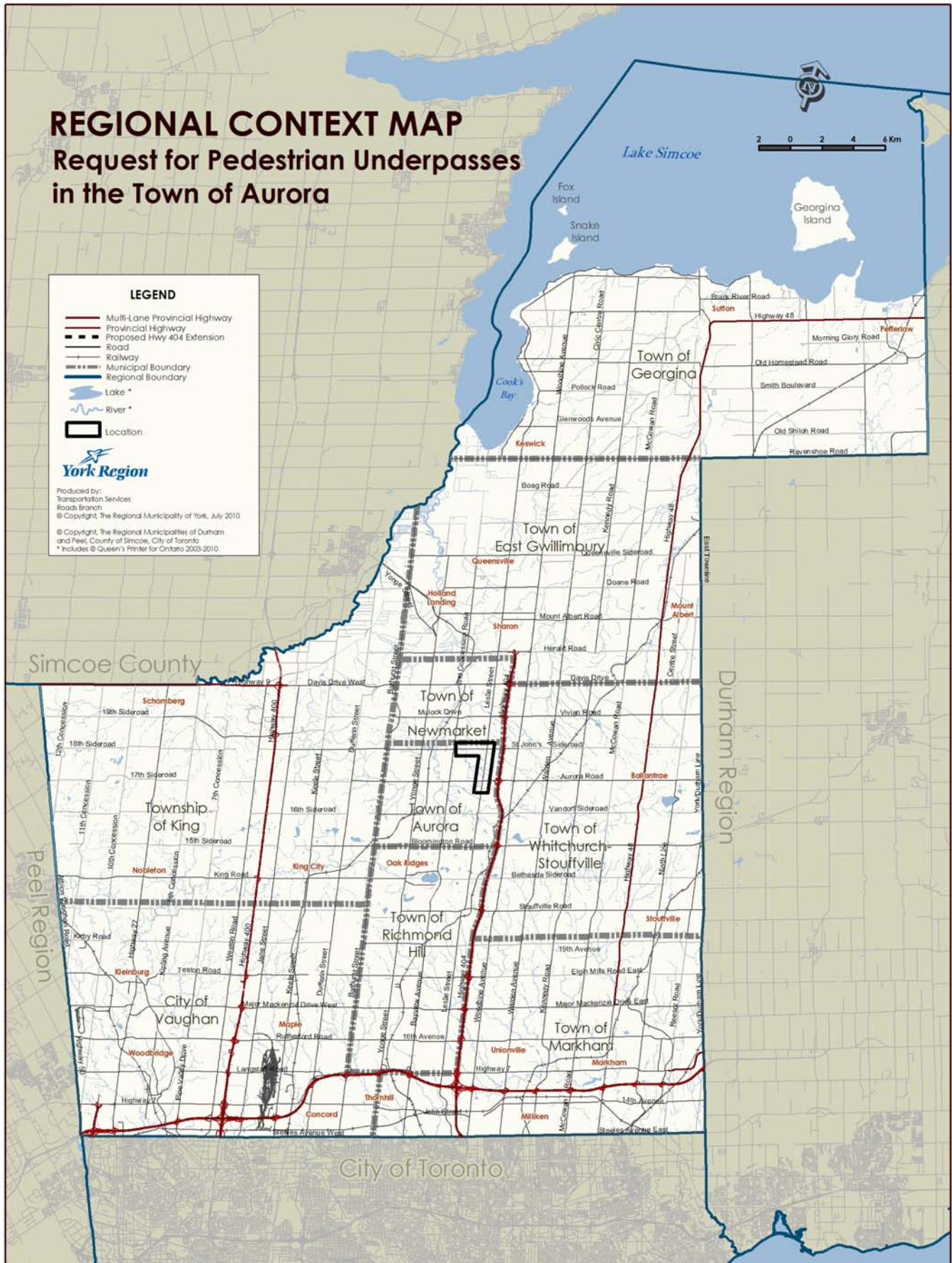
Based on their safe and secure accommodation of pedestrians and cyclists and their low cost, at grade crossings are the preferred solution for trail-user crossings of the Regional roadways and will be documented in the Environmental Study Report for York Region's Class EA for Leslie Street from Wellington Street to Mulock Drive.

For more information on this report, please contact Mr. Paul Jankowski, General Manager, Roads at Ext. 5901.

(The 2 attachments referred to in this clause are attached to this report.)

REGIONAL CONTEXT MAP

Request for Pedestrian Underpasses in the Town of Aurora





PEDESTRIAN UNDERPASSES

ST JOHN'S SIDEROAD from Bayview Ave to Leslie St
LESLIE ST from Wellington Street to North of St John's Sideroad
TOWN OF AURORA



250 125 0 250 Meters

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