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TRANSIT / HIGH OCCUPANCY VEHICLE (HOV) LANE AND BIKE LANE BY-LAWS

The Transportation and Works Committee recommends the adoption of the recommendations contained in the following report dated March 25, 2009, from the Commissioner of Transportation Services.

1. RECOMMENDATIONS

It is recommended that:

1. Regional Council approve:
   (a) The designation of a nominal 1.5 metre wide curb lane on Dufferin Street (Y.R. 53), from Steeles Avenue to Langstaff Road (Y.R. 72) as a bike lane.

   (b) The designation of the newly constructed lanes immediately adjacent to the bike lane on Dufferin Street (Y.R. 53) from Steeles Avenue to Glen Shields Road as Transit/High Occupancy Vehicle lanes for buses, taxis and private vehicles with two or more occupants.

   (c) The designation of a portion of the existing outside traffic lanes immediately adjacent to the bike lane on Dufferin Street (Y.R. 53), from Glen Shields Road to Langstaff Road (Y.R. 72) as Transit/ High Occupancy Vehicle lanes for buses, taxis and private vehicles with two or more occupants.

   (d) The continued designation of the curb lanes on Yonge Street (Y.R. 1), from Steeles Avenue to Clark Avenue for buses, taxis, bicycles and private vehicles with three or more occupants.

2. The existing Transit/HOV By-law, By-law R-1203-0999-110 be repealed.

3. The Regional Solicitor be directed to present new By-laws to Regional Council for consideration to implement the above recommendations.

4. The Regional Solicitor be directed to apply to the Regional Senior Judge for approval of a set fine of $85 for violation of the by-laws.

5. The Regional Clerk circulates this report to the Clerks of the City of Vaughan, Town of Richmond Hill and Town of Markham.

2. PURPOSE

This report seeks Regional Council adoption of a new by-law for the operation of Transit/High Occupancy Vehicle (HOV) on certain Regional roads.

3. BACKGROUND

Transit/HOV lanes have been operating in York Region on Yonge Street since 1999

Transit/HOV lanes have been operating in York Region on Yonge Street from Clarke Avenue to Steeles Avenue since 1999. In 1994, the City of Toronto installed HOV lanes on Yonge Street from north of Finch Avenue to Steeles Avenue primarily to provide a benefit to the significant number of transit vehicles using this section of Yonge Street to access Finch Subway Station including York Region Transit, TTC and GO Transit. Given that a number of these services extended north of Steeles Avenue, and a short section of six lane road was already available along Yonge Street north of Steeles Avenue, York Region implemented an HOV lane on Yonge Street from Clarke Avenue to Steeles Avenue.

In 2007, Regional Council approved Transit/HOV lanes on future 6 lane roads

In March 2007, Regional Council approved the implementation of Transit/HOV lanes and bicycle lanes for capital projects that involve a road widening from four to six lanes. At the March 7, 2007 Transportation and Works Committee meeting (Clause 2 of Report No. 3), staff outlined a number of key operational issues related to the implementation and operation of these new lanes. This report provides additional operational information and seeks Council adoption of a by-law prior to the opening of Transit/HOV lanes and bicycle lanes on Dufferin Street, from Steeles Avenue to Langstaff Road, this summer.

The current by-law needs to be updated

By-law R-1203-1999-110 currently governs the operation of Transit/HOV lanes on Yonge Street from Steeles Avenue to Clarke Avenue. In order to update this by-law to reflect current best practices, it is recommended that by-law R-1203-1999-110 be repealed and replaced with a new by-law.

4. ANALYSIS AND OPTIONS

Transit/HOV lanes have been successfully operated in cities worldwide

Transit/HOV lanes are designed for the exclusive use of vehicles that carry a minimum number of occupants. These lanes are implemented to encourage and promote the use of transit and other vehicles with more than one person. Published reports and studies undertaken by others confirm the successful operation of arterial Transit/HOV lanes in other cities. They move more people than general purpose lanes and promote more sustainable transportation modes with acceptable operating conditions. Based on these reports, there are over 80 arterial roads with Transit/HOV lanes in operation in over 20 urban centres such as Vancouver, British Columbia; Calgary, Alberta; Seattle, Washington; Houston, Texas; Auckland, New Zealand and Brisbane, Australia. In Toronto, there are 65 kilometres of HOV lanes in operation.

4.1 OPERATING DETAILS

There are options for key Transit/HOV operating parameters

In many of these cities, arterial HOV lanes have been operational for over 20 years. For the most part, the operating parameters for arterial Transit/HOV lanes are similar in many cities. However, there are a few options with respect to operating conditions that can be modified to suit the needs of a particular city or region based upon transit utilization, the extent of the network and its connectivity to key centres and freeway systems. The following sections outline some of these key operating parameters that are proposed for the Transit/HOV lanes in York Region.

4.2 NUMBER OF OCCUPANTS PER VEHICLE

A minimum occupancy of two (2) or more persons strikes the right balance between lane utilization and travel time savings

Options

While there is some variety amongst municipalities regarding the minimum number of persons per vehicle, the majority of Transit/HOV lanes are designated as HOV two plus persons. There are a few examples, where the vehicular occupancy is set at four or six people. In these jurisdictions, Transit/HOV lanes have been established for a long time and they have very good utilization. The higher occupancy requirements are intended to promote vanpooling and continue to provide the travel time benefits to transit.

Recommendations

While the City of Toronto has identified the minimum requirement for using Transit/HOV lanes as three people, staff recommend an initial minimum occupancy of two or more persons per vehicle for any new York Region Transit/HOV lanes in order to promote and encourage carpools.

Rationale
Based on vehicle occupancy studies, the two plus designation will better promote use of the Transit/HOV lane while still providing travel time savings for transit. In the early stages of implementation, it is important to ensure that the lane is not empty or under used to avoid potential public backlash and increased misuse of the lanes. In the future, when the number of eligible HOV vehicles on a specific corridor increases to a point that the time savings advantage for transit is diminished due to congestion in the Transit/HOV lane, York Region could consider increasing the minimum occupancy for those corridors from two to three occupants per vehicle to preserve the enhanced transit benefits that these lanes provide.

The lanes on Yonge Street in York Region are designated for at least three occupants to match the minimum occupancy requirements for the portion of Yonge Street in City of Toronto south of Steeles Avenue. In order to maintain this consistency, it is recommended that the minimum occupant designation in York Region on Yonge Street remain at three persons. It is not uncommon to have an arterial Transit/HOV network with different designations for the minimum number of occupants. Over time, some corridors will experience changes in transit demand and multi-occupant vehicle demand as result of changing development patterns, transit facilities and growth demands.

4.3 TYPES OF VEHICLES PERMITTED

Transit/HOV lanes give priority to transit and vehicles carrying more than one passenger

Options
There are a range of vehicles permitted to use Transit/HOV lanes in other jurisdictions. For the most part, most cities allow taxis and private vehicles with a minimum number of passengers in addition to buses, to use the Transit/HOV lanes. There are a few cities that do not allow taxis unless they meet the minimum number of persons in the vehicle. Some cities, notably, Toronto, have allowed motorcycles to use the lanes.

Recommendation
The intent of the Transit/HOV lanes is to provide priority for transit and multi-occupant vehicles, to improve the person-moving capacity of our roads. In this regard, it is recommended that only vehicles carrying at least two persons, buses and taxis be permitted to utilize the Transit/HOV lanes.

Rationale
Buses and taxis should be allowed to use the Transit/HOV lanes at all times as they are usually either carrying passengers or on their way to pick up a fare. Allowing taxis to use the Transit/HOV lanes will improve the efficiency of taxi service which promotes lower auto ownership and thus potentially eliminates vehicular trips. Unless they carry the minimum number of persons, motorcycles should not be allowed to use the Transit/HOV

lane. As single-occupant, motorcycles do not promote less vehicle usage, or help to reduce emissions; therefore, they should not be permitted in the Transit/HOV lanes.

4.4 HOURS OF OPERATION

A 24/7/365 operation will provide travel time savings to transit and carpoolers at all times and simplify enforcement.

Options
There is a significant variation in the hours of operation of Transit/HOV lanes. Peak period operations (i.e. 7:00 – 10:00 am and 3:00 – 7:00 pm) are common in many municipalities including the City of Toronto. Other options include 12-hour (daytime), 24 hour and changeable hours marked by electronic signs. The hours of operation are dictated by the traffic volumes for the corridor and the level of congestion.

Recommendation
It is recommended that the Transit/HOV lanes be operational at all times (i.e. 24 hours, 7 days a week).

Rationale
As a minimum, the Transit/HOV lanes are most effective at providing advantage for transit during the weekday peak periods. Single-occupant vehicles would therefore operate in the four general purpose lanes during the busiest hours of the week since the two curb lanes on a new six lane road will be dedicated as Transit/HOV lanes. As a result, there is little technical justification to open up the Transit/HOV lanes for single-occupant vehicles when demands during the non-peak periods will be less than the peak periods.

York Regional Police and the Prosecutors Office have stated a preference for 24/7 operations. It simplifies the decision for motorists, and makes it easier to enforce the lanes and eliminate court challenges related to hours of operation.

4.5 ENTRY/EXIT AREAS FOR GENERAL TRAFFIC

Providing 100 metres to accommodate single-occupant right turning vehicles to and from the Transit/HOV lanes is reasonable

Options
Curb lane Transit/HOV facilities must accommodate vehicles that turn right to exit or enter the road. As a result, right-side arterial Transit/HOV lanes, unlike median Transit/HOV lanes on freeways, accommodate right turning vehicles to and from intersections and driveways.

There are three main options to manage right turning vehicles that are used in other municipalities. The first option is to direct vehicles to enter and exit the roadway from the

lane adjacent to the curb lane. However, Ontario's *Highway Traffic Act* requires a vehicle to use the curb lane to make a legal right turn and therefore this option is not legal. The second option is to prohibit single-occupant vehicles from travelling through an intersection in the curb lane unless they are turning right at the next available driveway. While this option is simple and may be easy to enforce, there is a concern that with longer blocks, single-occupant vehicles may weave in and out of the Transit/HOV lanes between intersections. The third option, which is used in a number of municipalities, is to allow single-occupant vehicles to use the Transit/HOV lane for a specified distance to make right turns to and from the road with Transit/HOV lanes.

Recommendation
It is recommended that York Region allow single-occupant vehicles to use the Transit/HOV lane for a specified distance (100 metres) to make right turns to and from the Transit/HOV lanes.

Rationale
Toronto's by-law allows motorists to use the Transit/HOV lane for a distance of 45 metres to make right turns. This distance was based upon a by-law for reserved bus lanes when they were initially introduced more than 35 years ago. It is recommended that the Region increase this distance to 100 metres to allow a more reasonable distance for motorists to negotiate a right turn. This option strikes the best balance in allowing reasonable accessibility for single-occupant right turning vehicles while protecting the integrity of the Transit/HOV lanes. The distance of 100 metres is also easy to note using the odometer and it is also typically the distance between two light standards which make it easier for enforcement purposes. York Regional Police have advised that they will typically follow a violator for several hundred metres before issuing a ticket. It is recommended that the Transit/HOV lane be marked with distinctive lane markings to demarcate the locations where right turning vehicles can use the Transit/HOV lane as shown in *Attachment 1*. Given the number of private driveways and smaller non-signalized intersections along a Regional road, it is recommended that only major signalized intersections be marked and signed to show where single occupant vehicles can use the Transit/HOV lanes for right turns. Ongoing education and marketing will also be an important tool to communicate this rule to motorists.

4.6 SIGNS AND MARKINGS

Transit/HOV lanes should be designated with a limited number of overhead signs complemented with pavement markings and road side signs

Options
Basic signs and markings for Transit/HOV lanes are outlined in the Manual of Uniform Traffic Control Guidelines and the Ontario Traffic Manual. These manuals outline the diamond symbol as the basic symbol to indicate a reserved lane. Using these as the basis, other municipalities have introduced changes to further enhance the designation of these lanes to all users. Variations in signage include displaying the eligible users of the lane,

the size and spacing of signs and the combination of overhead signs and road side signs. Some municipalities have used additional flashing beacons on signs and in a few cases, fully electronic signs have been used where the conditions for use of the lane can change (i.e. hours of use). Pavement markings also play an important role to clarify that the lanes are designated for only those users shown on the signs. There is a considerable variety of pavement markings that are used to mark Transit/HOV lanes. These range from various colours and include full lane colouring to partial colouring at intersections.

Recommendation
It is recommended that overhead signs be limited at key intersections and that road side signs combined with enhanced pavement markings at mid-block locations be used to help distinguish the Transit/HOV lanes.

Rationale
In addition to clearly communicating who can use the lanes, the effective use of signs and markings also play a role in helping to promote and market the Transit/HOV lanes. In the initial stages, clear, distinguishing signs and markings help to demonstrate a new product to road users and shows that these lanes can provide a benefit to multi-occupant vehicles. The importance of signs must also be balanced with the impact on streetscape and urban design. York Region's six lane standards were developed to promote a more urban, pedestrian friendly environment. While the fully coloured lane looks attractive initially, ongoing maintenance issues related to crack repairs, pothole repairs and utility cuts will have a negative impact on aesthetics over time. For this reason and given the long term impact on maintenance costs, it is recommended that York Region implement markings at mid-block locations as shown in *Attachment 2*. These markings will help to distinguish the Transit/HOV lanes at mid-block locations and provide guidance for single-occupant vehicles at major intersections.

4.7 BIKE LANES

Dedicated bike lanes will be implemented as part of the six lane design standard

The Pedestrian and Cycling Master Plan adopted by Regional Council in 2008 outlines a network of bike lanes on the Regional road network connected with off-road pathways and trails. The primary purpose of York Region's cycling network is to provide a network to encourage and promote utilitarian cycling by providing the facilities for active transportation. In this regard, York Region's six lane design guidelines include a dedicated on-street bike lane. The bike lane will be segregated from the adjacent Transit/HOV lane by a solid white line. The solid line will be dashed at intersections and bus stops to inform the cyclist that these are locations where vehicles may cross into the bike lane. When travelling on the road, the cyclist is treated as a vehicle under the *Highway Traffic Act*. As such, other motorists are required to ensure that their path is clear before making lane changes. Similarly, cyclists that may need to travel around stopped buses or other vehicles will also have to either wait in the lane or make a safe

lane change to travel around the stopped vehicle. The bike lane will be marked with a bike symbol in the pavement and a separate road side sign as shown in *Attachment 2*. Providing a separate colour for the bike lanes is not recommended due to the practicality of paving a narrow strip of asphalt and concerns with long-term maintenance and aesthetics when asphalt repairs are required.

4.8 DUFFERIN STREET FROM GLEN SHIELDS AVENUE TO LANGSTAFF ROAD

The existing six lane roadway along this section should be converted to provide Transit/HOV lanes and on-street bike lanes

The 2.5 km long section of Dufferin Street, from the north end of Glen Shields Avenue to Langstaff Road is currently a six lane road. The 1.5 km long section of Dufferin Street, from Glen Shields Avenue to Steeles Avenue is currently under construction to widen it from a four lane road to a six lane road with Transit/HOV lanes and on-street bike lanes that will be ready to open this summer. It is recommended that the curb lanes on the northerly portion of Dufferin Street, from Glen Shields Avenue to Langstaff Road also be signed and marked to provide Transit/HOV lanes and on-street bike lanes. This will provide a continuous Transit/HOV lane and an on-street bike lane from Steeles Avenue to Highway 7. This is an important link as it will provide improved travel times and service for transit along Dufferin Street from the proposed Highway 7 rapid transitway directly to Steeles Avenue and a continuous dedicated on-street bike lane. In addition to improving transit times, York Region is also actively involved in promoting carpooling with an investment in Smart Commute initiatives. A continuous Transit/HOV facility from Highway 7 to Steeles Avenue will provide increased travel time savings for carpoolers and act as an incentive to encourage and promote carpooling.

The transit/HOV/bike lane will have sufficient use by carpoolers, transit vehicles and cyclists

In the AM peak hour, Dufferin Street between Centre Street and Langstaff Road carries in the range of 1,400 – 1,800 vehicles per hour in the peak direction; in the order of 22%, or between 300 and 400 veh/h, fall in the HOV two plus (2+) category. This translates to one HOV, on average, every 9 – 12 seconds and exceeds the threshold observed elsewhere for public perception that an arterial lane is being reasonably well used. The expansion of Dufferin Street to six lanes north of Steeles Avenue (2009) is expected to attract new users from parallel corridors, and the introduction of HOV lanes will also draw HOVs from parallel alternatives. Initial (short term) growth to the 400 – 500 HOV/h level would not be unexpected. HOVs (buses and two plus (2+) carpools) currently carry between 30% and 44% of the total person-movement on Dufferin Street during peak hours, with well over one third of the people in the peak direction; this correlates to a single HOV lane (occupying one third of the road space) carrying at least as many people as the adjacent general purpose lane, thereby meeting a key technical criterion for HOV lane feasibility.

In terms of transit use of Dufferin Street, TTC Route 105 offers 54 trips per weekday, operating at 14 minute (scheduled) headways during peak periods (6:00 – 9:00 am, 3:00 – 7:00 pm), and half-hour headways at other times. Service runs from 6:15 am to 11:15 pm. Peak hour bus volume is therefore four (4) buses per hour per direction. With respect to cycling, there is no specific data available for Dufferin Street. However, the 2006 Transportation Tomorrow Survey states an overall walk/bike percentage of approximately 5-7% in York Region. If 2% is conservatively assumed to be cycling, this would result in approximately 15-20 cyclists per hour in the bike lane.

4.9 COMMUNICATION PLAN

A communication plan will be developed to educate and market the new Transit/HOV lanes

Transit/HOV lanes have been in operation on Yonge Street, from Steeles Avenue to Clarke Avenue since 1999. The portion of Dufferin Street, from Steeles Avenue to Glen Shields Road is the first section of road to be constructed in accordance with the Region's six lane design guidelines which include Transit/HOV lanes. The Transit/HOV lanes will be a new feature for existing motorists on Dufferin Street and for adjacent business owners. Although about 65 lane kilometres of Transit/HOV lanes are in operation in Toronto, many road users in the Dufferin Street corridor may not be familiar with the rules for using these lanes. Although the signs and markings are designed to inform drivers about how to use the lanes, additional communication is proposed to enhance the message. Furthermore, the communication plan will also promote the opening of the first road constructed as part of York Region's transit priority network that also promotes walking, cycling and enhanced streetscape. These features are illustrated in *Attachment 3* which shows a rendition of Dufferin Street near Glen Shields Avenue. The communication plan will include but not be limited to newspaper ads, roadside message boards, a community flyer insert, media outreach including press releases and press kits, and a formal public launch.

4.10 BY-LAWS AND ENFORCEMENT

An updated by-law reflecting best practices will provide for efficient enforcement

York Regional Police have recently reported difficulty in effective enforcement of the Transit/HOV by-law. Police officers have routinely issued tickets under the *Highway Traffic Act* for improper use of the designated lane. It appears, however, that the signs designating Transit/HOV lanes have not been included in the relevant provincial regulation. Charges laid under this provision have been successfully challenged as lacking the requisite authority. In order to avoid unnecessary court costs and time, it is recommended that a set fine be introduced for disobeying the municipal by-law for the use of Transit/HOV lanes. It is recommended that the set fine be introduced at $85 to be

consistent with the penalty for "improper use of Transit/HOV lane" as outlined in the *Highway Traffic Act*. This is the penalty currently in place for the transit/HOV lanes on Highway 404. The total payable by the defendant will be approximately $110 when the court costs and victim surcharge costs are included. In order to have a set fine, the Regional Solicitor must make an application to the Regional Senior Justice of the Ontario Court of Justice.

4.11 RELATIONSHIP TO VISION 2026

This report conforms to the following goals of Vision 2026:

- Infrastructure for a Growing Region
  - Exploring and implementing innovations and technologies to reduce congestion.
  - Planning our road system to work efficiently with provincial and inter-regional infrastructure.
- Managed and Balanced Growth
  - Co-ordinating the timing of infrastructure and service development (such as schools, community facilities, all utilities and roads) with the development of new growth areas.
- Enhanced Environment, Heritage and Culture
  - Promoting alternative transportation methods that improve air quality, such as public transit and cycling.

5. FINANCIAL IMPLICATIONS

There are no immediate financial implications with this report since HOV lanes are proposed on road widening projects already identified in the approved Roads Capital Budget. The funding for HOV lanes were approved as part of Regional Council's endorsement of the Capital Budget and 10-Year Roads Construction Program.

6. LOCAL MUNICIPAL IMPACT

Implementation of Transit/HOV lanes and bike lanes as part of York Region's Transit Priority Network will enhance service levels for transit and encourage cycling on Regional roads. These components are an important part of the Region's Sustainability and Growth Management initiatives. The current and draft update of the Transportation Master Plan, the approved Pedestrian and Cycling Master Plan and 10-Year Roads Construction Program includes six lane road widening projects for providing Transit/HOV lanes and bike lanes in the City of Vaughan and in the Towns of Markham and Richmond Hill. Regional staff have met with key staff from these three municipalities to outline the operational details. There are no major concerns regarding the operational details. The Town of Markham has requested additional analysis with

respect to the planned Transit/HOV lanes proposed in their municipality. In response to this, York Region is moving forward with a consultative process to engage key stakeholders in Markham which is expected to be completed in 2009. Notwithstanding the outcome of this consultative process, York Region must move forward to develop the operational details for the opening of the Dufferin Street Transit/HOV lanes in the summer of 2009 and these operational details will also be used for other future projects across the Region.

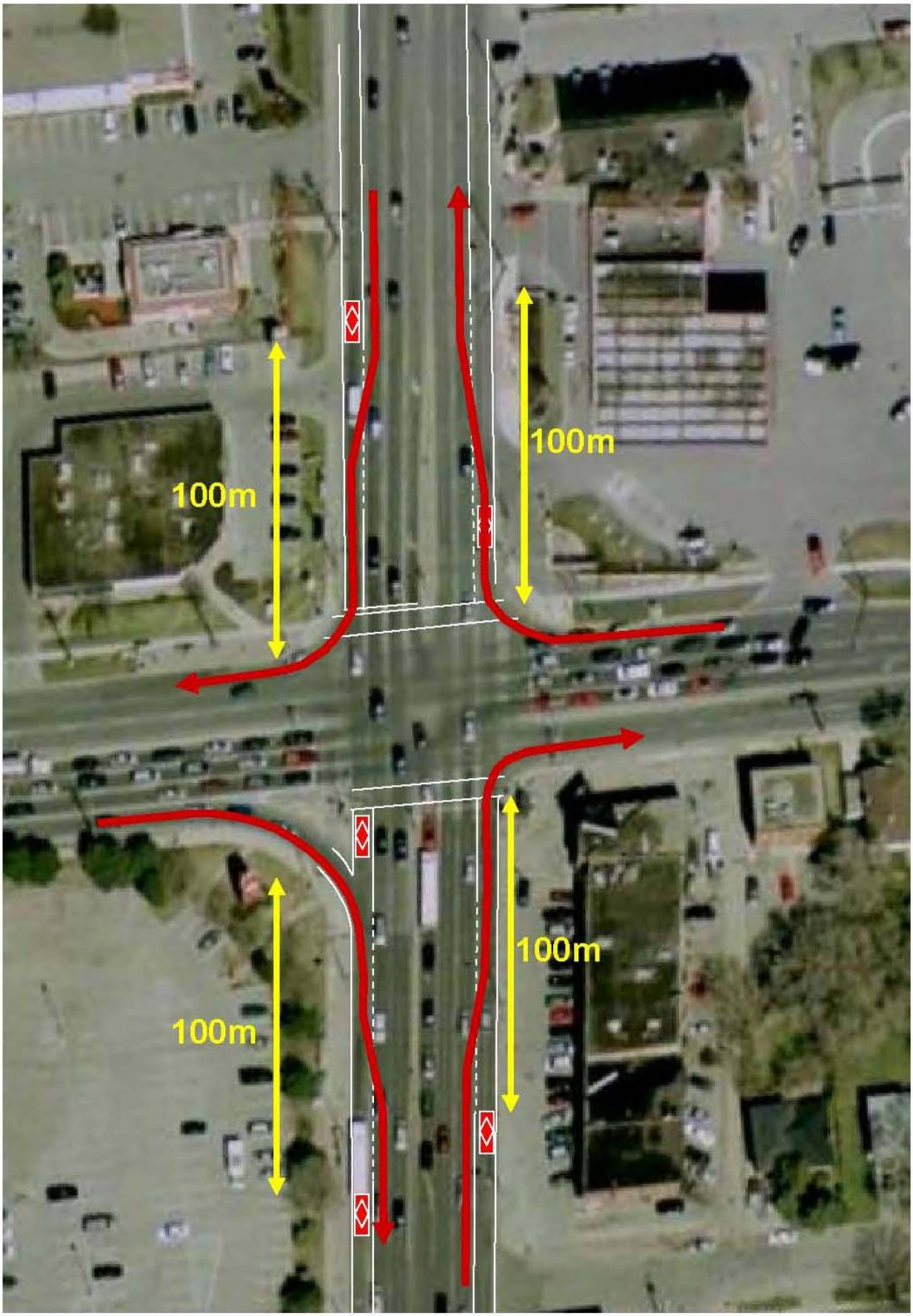
7. CONCLUSION

Since Regional Council approved the implementation of new Transit/HOV lanes and bike lanes for capital projects that involve four to six lane road widening, there is now a need to address the operational details as York Region prepares to implement the first project on Dufferin Street, north of Steeles Avenue. Transit/HOV lanes have been in operation in many cities for over 20 years and in York Region for 10 years. Based on this experience, there are several standard operating parameters that are required to ensure the efficient operation of the Transit/HOV lanes and bike lanes. The implementation of the operating parameters as outlined in this report will help to provide safe and efficient operating conditions for the imminent opening of Transit/HOV lanes and bike lanes on Dufferin Street, from Steeles Avenue to Langstaff Road and other planned Transit/HOV lanes and bike lanes in York Region.

For more information on this report contact Paul Jankowski, General Manager, Roads Branch at extension 5901.

The Senior Management Group has reviewed this report.

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



Generic HOV Treatment at Intersections

Generic HOV and Bike Lane Treatment at Intersections and Interchange Ramps

Generic Signing for HOV and Bike Lanes