# 9
# TOWARDS GREAT REGIONAL STREETS – A PATH TO IMPROVEMENT DRAFT REGIONAL STANDARD FOR SIX-LANE ROADS

**The Transportation and Works Committee recommends:**

**1. The presentation by Paul Jankowski, General Manager, Roads be received; and**

**2. The recommendations contained in the following report, February 22, 2006, from the Commissioner of Transportation and Works and the Commissioner of Planning and Development Services be adopted:**

## 1. RECOMMENDATIONS

It is recommended that:

1. Committee and Regional Council endorse the Draft Regional Standard for Six-Lane Roads as identified in this report *(see Attachment 1).*

2. The Regional Clerk forward copies of this report to the Clerks of all York Region local municipalities with a request for comments by April 30, 2006.

3. Upon receipt of comments from stakeholders, staff be directed to finalize the Regional Standard for Six-Lane Roads and report back to Committee and Regional Council with recommendations for adoption of the principles and guidelines for future implementation through the roads capital program.

## 2. PURPOSE

The purpose of this report is to update members of the Transportation and Works Committee and Regional Council on the progress to date on one of the elements of a Towards Great Regional Streets – A Path to Improvement initiative and to seek approval in principle of a Regional Standard for Six-lane Roads and authorize consultation with local municipalities prior to finalization of the document.

## 3. BACKGROUND

In response to Regional Council's desires for more streetscaping on Regional roads, staff are pursuing several potential improvements under the theme "Towards Great Regional Streets – A Path to Improvement". The initiative includes the following studies, standards, policies and guidelines:

- Street tree planting and maintenance program (reported to committee January 2006).
- Regional standard for six-lane roads (the subject of this report, March 2006).
- Policy guidelines for lay-by parking on Regional roads (expected report in April/May, 2006).
- Guideline/Policy for cost-sharing of enhanced local municipal streetscaping initiatives on Regional roads (expected report in April/May, 2006).

These initiatives build upon Council's earlier efforts to implement streetscaping on Regional Road widening contracts. Currently, streetscaping implementations vary by location as follows:

- Regional Road contracts in Regional Centres include street trees at 10M spacing, a concrete splash strip, and a two tiered raised landscape median.
- Regional Road contracts on other sections of Regional Corridors include street trees at 10M spacing, a concrete splash strip, and a one tiered landscape median.
- Regional Road contracts on other Regional Roads in urbanized areas receive street trees at 10M spacing.

Rapid growth in population and employment has put York Region's road system under considerable strain. These trends in population and employment growth are expected to continue, particularly in the three southern municipalities forming the urban portion of York Region: the Town of Markham, Town of Richmond Hill and City of Vaughan. The demands on Regional streets are changing, in that they need to be more accommodating to other users such as transit riders, cyclists and pedestrians.

Historically, Regional streets have catered to car and truck traffic, and have been relatively high speed facilities. There is a need to shift the role the Regional street plays in accommodating other transportation choices including auto, transit, walking, cycling, and increasing pedestrian activity along urban roadways.

The approved 10-Year Roads Capital program anticipates the widening of a number of road sections to six-lane cross-sections. The draft Regional Standard for Six Lane Roads presents an opportunity to review current practices as well as the best practices of other jurisdictions to determine a consistent cross-sectional treatment.

The Region identifies numerous road sections to be widened to six-lanes in the current 10-Year Capital Plan:

| | | |
|---|---|---|
| • Dufferin Avenue | Steeles – Glen Shield | 2006/07 |
| • Bayview Avenue | 407 – 16th Avenue | 2007 |
| • Highway 7 | Sciberas – Rouge River | 2007 |
| • Keele Street | Steeles – Hwy 407 | 2008 |
| • Kennedy Road | Steeles – Hwy 7 | 2009 |
| • Leslie Street | Steeles – Hwy 407 | 2009 |
| • 16th Avenue | Woodbine – Bayview | 2009 |

| | | |
|---|---|---|
| • Major Mackenzie | Weston – Hwy 27 | 2009 |
| • Bayview Avenue | John Street – Hwy 407 | 2011 |
| • McCowan Road | Steeles – 16th Avenue | 2011 |
| • Weston Road | Steeles – Hwy 7 | 2011 |
| • Bathurst Street | Hwy 7 – Rutherford Road | 2012 |
| • Jane Street | Steeles – Hwy 7 | 2012 |
| • Major Mackenzie Drive | Bayview – Woodbine | 2012 |
| • Bathurst Street | Rutherford – Major Mackenzie | 2013 |
| • Bathurst Street | Steeles – Hwy 407 | 2014 |

## 3.1 Consulting Team Developed New Standards for Six-lane Roads

In July 2003, the Transportation and Works Committee and Regional Council authorized award of the consulting assignment to Marshall Macklin Monahan and the MBTW Group in association with the Texas Transportation Institute to carry out the study.

The Terms of Reference and the Request for Proposal for the Study required the Consultant to complete the following Scope of Work:

Part One – Regional Roads In The Context Of Change – a background analysis and summary of functional issues and potential options.
Part Two – Development of Policy Options for Regional Roads – achieve consensus around functional approaches for regional roads.
Part Three – Design Concepts For Three Regional Road Case Studies – summarize technical guidelines for six-lane road studies for three sections of road that are intended for widening in the next few years.

## 3.2 Consultation

An important part of the study was consultation with stakeholders, which included Regional staff and local area municipalities.

### 3.2.1 Regional Staff Visioning Workshop

The workshop held with key Regional Staff resulted in consensus on two key conclusions:

- Continuous two-way centre medians are unsightly, not always necessary, and result in excessive amounts of asphalt.
- If six-lane roads were necessary the two additional lanes should be considered for high occupancy vehicles (HOV) and/or transit.

### 3.2.2 Local Municipal Consultation

All local municipalities were invited to two discussion forums, staff that attended expressed the following as their major concerns:

- Continuous two-way centre medians are unsightly and result in excessive amounts of asphalt.

- If six-lane roads were necessary the two additional lanes should be for high occupancy vehicles HOV and/or transit.
- Bicycle facilities should be contemplated on Regional Roads.
- Streets should reflect the local character and preserve the established identity where possible.
- Alternatives to widening should be considered where possible.

### 3.3 Regional and Local Policy Review

A review was undertaken of various documents describing the planned function of arterial streets in York Region.

Official Plans:
- York Region Official Plan.
- Town of Markham Official Plan.
- Town of Richmond Hill Official Plan.
- City of Vaughan Official Plan.

Secondary Plans:
- Central Area Planning District (Markham Centre), July 1997.
- Bayview Glen Secondary Plan, Town of Richmond Hill.
- Secondary Plan for the Vaughan Corporate Centre.

Vision Documents:
- A Vision for Highway 7.
- Yonge Street Vision.

Urban Design Guidelines:
- North Yonge Street – Richmond Hill Urban Design Study.

A review of the above-noted documentation determined that the Official Plans of both the Region and the three southern municipalities clearly indicate the need to maintain arterial roads as vital corridors for people and goods. However, emphasis is also placed on expanding their functions to include greater integration of transit facilities, and encourage pedestrian and cyclist use.

Secondary plans and Urban Design Guidelines call for:
- Mixed land uses.
- Building siting, massing, design and higher density criteria.
- Medians, service lanes with parking.
- Sidewalks, crosswalks, tree plantings, landscaping, pedestrian-scale lighting.
- Cycling lanes and paths.
- Improved transit systems, high occupancy vehicle lanes.
- Transit passenger amenities such as indoor and covered waiting areas.

Therefore, the existing policies of York Region and the three southern municipalities support preserving the functional aspects of arterial streets, but suggest new ways of integrating these streets into the built environment to create an improved environment for transit, pedestrians, and cyclists.

### 3.4 Best Practices Research

The issues and opportunities related to the various elements that can affect the design of the cross-section were examined through a literature review of best practices in Canada, the United States and elsewhere. Summaries for each of the indicated items below are given in the draft policy document and further elaborations for each are given in separate papers in Appendix B of the Draft Policy Document:

- Lane Widths
- Public Transit
- Need for Access versus Control
- Medians
- 'U'-Turns
- Pedestrians
- Frontage Streets
- Cyclists
- Parking
- Urban Design
- Landscape Design Planting Principles
- Barrier Aesthetic Treatments
- Design Speeds

### 3.5 Streetscaping Considerations

The 2001 York Region Streetscaping Policy requires the aesthetic and landscape component of a street be considered during the implementation of a road widening capital project, but there remains opportunity to improve the street environment so that it provides facilities to promote pedestrian, cyclist and transit users, as well as contribute to community character. There is now a need to shift the role the Regional street plays to provide transportation choices and to address the pedestrian scale while developing landscape strategies to improve the aesthetics and character of the street.

## 4. ANALYSIS AND OPTIONS

Three critical components of the six or seven lane (including the continuous left-turn lane) cross-section were considered:

1. The actual geometry of the cross-section
2. Improved streetscaping in the boulevards and medians.
3. An implementation strategy.

First, the actual geometry of the cross-section, given the constraint of a 36 metre right-of-way (ROW) and the various items competing for space within the ROW was examined. What would the actual geometry of the cross-section be and how much space would be allocated for each item?

Second, the document speaks to the creation of boulevards which accommodate deciduous trees and landscaped traffic medians which serve to break up the expanse of the cross-section. Strategies and locations for the landscaping are provided and the Region continues to explore ways to improve the sustainability of Regional street trees in partnership with local municipalities.

Third, based on the preferred cross-section, how would the new road section be implemented, would its various components be phased in, or completed 100% at the time of construction?

### 4.1 Geometry of the Cross-Section

Initially and in view of the large scope of cross-sections possibilities, 12 alternatives were analyzed.

The process of evaluating these alternatives is documented in the draft standard document in "Section 7-Development of Cross-Sections". The alternatives were evaluated against criteria based on; transportation functionality, mobility, safety, cost, and community needs and values. Each alternative was given a numerical ranking based on the criteria and the two top ranking cross-sections were then evaluated against each other looking closer at the cost and functional implications of each proposal before the preferred cross-sectional treatment was selected.

Cross-sections that included on-street bike lanes, scored higher because they attempted to accommodate all modes of travel. The on-street bike lanes not only accommodated cyclists, but provided extra width between transit vehicles and the curb and enhanced the safety of pedestrians walking on the sidewalk.

Cross-sections that included a wider and continuous median scored higher since medians are preferred for arterial road functionality, safety and aesthetics. The widened median also provided a larger area for sustaining plant material and improved the character of the overall road by breaking up the expanse of asphalt.

Using a slightly reduced lane width of 3.3m for general purpose lanes also allowed for additional space in the boulevard to make tree planting possible, while limiting excessive asphalt and helping to address chronic speeding.

Alternative 2.1, which includes: a 4-6m wide median, a dedicated bicycle lane, and a curb lane as an HOV lane, emerged as the recommended cross-section, as shown in Figure 1.

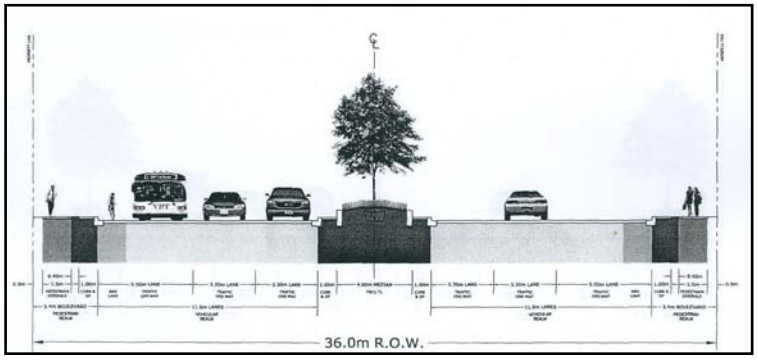


Figure 1

### 4.2 Land Use Typologies

Due to the varying conditions of the street environment across York Region, five different typologies were developed to dictate how the preferred cross-section would be applied in these different locations. The five typologies are residential, urban mixed use, commercial, employment campus and industrial. Recognizing specific differences in the character and usage of each of these areas, a varying approach to applying the preferred cross-section and the associated landscape treatment is given.

### 4.3 Landscape Treatment

The landscape treatment of each typology varies in each case; for example, the urban mixed use environment is treated in a "harder" fashion than the residential environment, which can be characterized as "soft". Appropriate landscape design approaches for each typology are provided in the document. There is an increased cost in installing and maintaining this new landscaping in the boulevards and medians. Phasing in the landscape works was considered, but not recommended, due to the cost of the installation after construction, because the road would appear incomplete, and the important establishment period that vegetation requires before it begins to mature, would be delayed.

### 4.4 Implementing the New Six Lane Cross-Section

After determining the cross-section that was preferred, an implementation strategy needed to be determined. The preferred cross-section included two all purpose travel lanes at 3.3m, an HOV lane at 3.5m, and a dedicated cycling lane at 1.5m in each direction. The question arose as to whether or not it was time to implement a cross-section that immediately incorporates the HOV and bicycle lanes or whether there was a need to assess them separately to determine an appropriate future implementation strategy.

## 4.5 Issues for Consideration

- ROW Width: The existing 36m ROWs in York Region provide a very restricted amount of land for implementing the six or seven lane cross-sections with medians, enhanced boulevards, and bike lanes, therefore consideration should be given to widening the ROWs at the next Official Plan Review.

- A complete HOV strategy needs to be prepared: Is the public ready to embrace HOV and bike lanes on Regional Roads? Is the Region prepared to deal with the potential negative response resulting from low usage of the HOV lane until the public has accepted and is using the HOV lanes efficiently? Are the police and the Region prepared to develop and implement enforcement strategy to monitor the proper usage of HOV lanes?

- Access Control Issues: Continuous landscape medians and the future transit-way along regional corridors will create access issues that may concern adjacent property owners; a Regional Policy will be required.

- Initial and long term costs: Six-lane Capital Road project costs will increase up to 30% from current cost and there will be additional cost implications for the maintenance of the increased landscape material in medians and boulevards.

- Network Development Challenges: The current 10-year Capital Plan was not set up chronologically to develop an integrated HOV network, a review of the Capital Plan and a strategy of HOV lanes is required.

- Bike Network: A Bicycle Master Plan is now being prepared for York Region; the bicycle lanes proposed in this document should be required to be supported by that study.

- Street Tree Health: The new cross-section relies on street trees heavily to achieve the community character goals of our new street. Like all urban environments York Region struggles to keep its inventory of street trees healthy. New technologies are emerging for planting and maintaining trees that will increase the cost of managing this Regional asset in the future.

### 4.6 Phasing Alternatives

Four methodologies for the phasing of the draft Regional standard for new six or seven lane cross-sections were considered, see figure 2.

Level One – Status quo, do not change the way the Region constructs now, the preferred solution would be implemented in the future, build three all-purpose lanes and a continuous centre left-turn lane.

Level Two – Build a road that can be converted to the preferred cross-section by; building a continuous centre median planted with grass wherever possible and build the three lanes as all-purpose lanes which could be converted to the preferred cross-section by simply painting the HOV and bicycle lane delineations in the future.

Level Three - Build a road that can be converted to the preferred cross-section by constructing a continuous centre median planted with landscaping or trees, and build the

three lanes as all-purpose lanes which could be converted to the preferred cross-section by simply painting the HOV and bicycle lane delineations in the future.

Level Four – Build the complete preferred road cross-section including the planted median and the designated HOV and bicycle lanes.

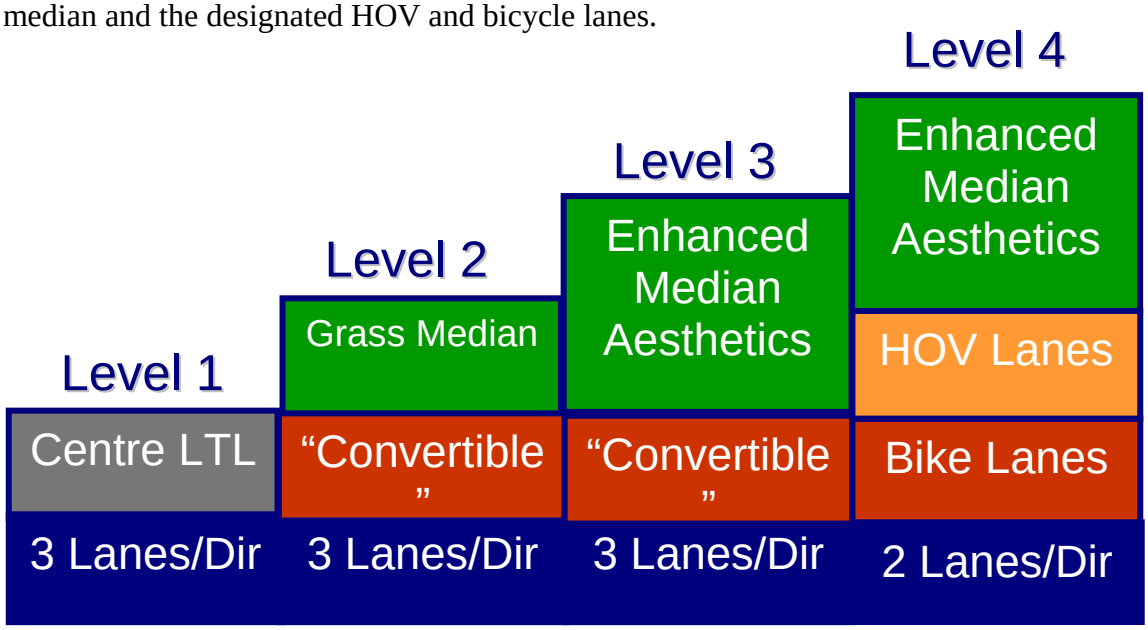


Figure 2

### 4.7 Conclusions

In considering each of the implementation strategies noted above the "status quo" option was eliminated early. The strategy of installing as much as possible of the landscape material appeared most desirable because the roads would appear incomplete until this installation was done and because vegetation benefits from an earlier installation by having more time to mature. With regard to bicycle and HOV strategies the project team concluded that further study would be required prior to implementation of these cross-section components. A "convertible" curb lane that would require only paint to change it from a general-purpose lane to a dedicated HOV lane with a 1.5m bike lane was preferred by the study team.

The conclusion therefore was to implement Level Three wherever possible as the new Regional standard for all new six-lane sections. This will provide York Region with a completed landscape median and a completed roadway cross section requiring only paint to implement the new cycling and HOV strategies. Capital cost estimates will be required to be adjusted in future Roads Capital Program submissions.

### 4.8 Next Steps

Develop a ten-year implementation strategy for HOV and bike lanes where appropriate (in conjunction with Master Plan Update and Regional Bicycle and Pedestrian Master Plan).

In order to facilitate Level Four implementation, revisit Regional Policies for:

- Access Control
- Enforcement of HOV facilities
- As part of next Official Plan (OP) Review, consider wider ROW widths for select roads.
- Maintain flexibility to balance mobility and community needs in unique situations.

## 5. FINANCIAL IMPLICATIONS

The cost of building six-lane Regional streets will increase with this policy.

The financial implications of each alternative were considered and the chart below provides the estimated cost of construction per kilometre of road.

**Table 1**
Cost Implications of Different Implementation Strategies
*(based on 2005 cost estimates)*

| Level | Description | Road | Bike | Blvd. | Median | Total | Approx % Change |
|---|---|---|---|---|---|---|---|
| 1 | 2006 cost widening 4 to 6 lanes. | 3.0M/km | 0.00M/km | 0.11M/km | 0.00M/km | $3.11M/km | **Status Quo** |
| 2 | Widening 4 to 6 lanes with grass median. | 3.0M/km | 0.15M.kn | 0.11M/km | 0.25M/km | $3.51M/km | **13%** |
| 3 | Widening 4 to 6 lanes with planted median. | 3.0M/km | 0.15M/km | 0.11M/km | 0.77M/km | $4.03M/km | **30%** |
| 4 | Widening 4 to 6 lanes, curb lanes are HOV with bike lanes and planted median. | 3.0M/km | 0.15M/km | 0.11M/km | 0.77M/km | $4.03M/km | **30%** |

The cost difference between Level Two, versus Level Three and Level Four, is the cost of the installation of the additional landscaping in the medians and the bike lanes.

To respond to the additional costs associated with landscaping features, the recommendation is to construct shorter sections of roadway within the allocated budget rather than constructing partially completed longer sections.

Based on the 2006 10-Year Roads Capital Budget Program, the following chart provides a synopsis of the cost implications to build the road sections recommended in the Draft Standard for Six-lane Roads as compared to York Region current practices.

**Table 2**
Construction Costs / Year - 4 to 6 Lane Road Conversions

| Year | Estimated Cost 10 Year Capital Plan | Estimated Cost Level 3 Implementation | Estimated Cost Increase |
|---|---|---|---|
| 2006 | $0 | $0 | $0 |
| 2007 | 24,200,000 | 31,460,000 | 7,260,000 |
| 2008 | 5,194,000 | 6,752,200 | 1,558,200 |
| 2009 | 36,060,000 | 46,878,000 | 10,818,000 |
| 2010 | 0 | 0 | 0 |
| 2011 | 40,171,000 | 52,222,300 | 12,051,300 |
| 2012 | 26,881,000 | 34,945,300 | 8,064,300 |
| 2013 | 5,872,000 | 7,633,600 | 1,761,600 |
| 2014 | 8,640,000 | 11,232,000 | 2,592,200 |
| **TOTAL** | **$147,018,000** | **$191,123,400** | **$44,105,400** |

The improvements to the six lane cross section referenced in this report will only be constructed as part of the 10-Year Roads Capital Program. Therefore, the funding will be provided 76.5% through Development Charges and 23.5% through Tax Levy.

Those improvements will help York Region to expand the Regional road network in a manner that incorporates landscaping and other attractive streetscaping features, helps to integrate transit facilities, and encourage pedestrian and cyclist use.

It is also important to recognize that the increased costs of building 6 lane road sections consistent with this study will increase the usage of alternate forms of transportation; cycling, transit, and pedestrian and therefore limit the need for additional future road widenings

**Table 3**
Cost Increase Breakdown

| Year | Development Charges Level 3 Implementation | Tax Levy Level 3 Implementation |
|---|---|---|
| 2006 | $0 | $0 |
| 2007 | 5,517,600 | 1,742,400 |
| 2008 | 1,184,232 | 373,968 |
| 2009 | 8,221,680 | 2,596,320 |
| 2010 | 0 | 0 |
| 2011 | 9,158,988 | 2,892,312 |
| 2012 | 6,128,868 | 1,935,432 |
| 2013 | 1,338,816 | 422,784 |
| 2014 | 1,969,920 | 622,080 |
| **TOTAL** | **$33,520,104** | **$10,585,296** |

The Region currently maintains 3300 lane km of roadway within an operating budget of $29.9m (excluding debt, principle and interest). The additional, incremental operating roads budget implications are set out in Table 4

**Table 4**
Maintenance Cost /km/year

| Cost | Widening To Standard 6/7 Lane Cross-Section | Widening To Recommended Cross-Section |
|---|---|---|
| Road Operations | 48k | 48 k |
| Aesthetics | 2 k | 12 k |
| **TOTAL** | **$50 k** | **$60 k** |

By the end of the 10-year capital forecast, operating costs are estimated to increase by approximately $2.8m per year based on the revised Standard for Six-lane Roads.

## 6. LOCAL MUNICIPAL IMPACT

Adoption of the principles outlined in the Standard for Six-lane Roads will result in significant improvements in the character of six-lane Regional Streets within local municipalities.

The new standards recommended in this report are in keeping with Local Urban Design Initiatives, Secondary Plans and Official Plans. The new street cross-section will provide an enhancement to the pedestrian and cycling environment of the street, be transit supportive and make an effort to reduce the impact of the required widenings by providing a larger and continuous planted landscape median wherever possible.

Local municipalities have provided initial input into this study, the draft document will be circulated for comment prior to the final document being released and distributed.

## 7. CONCLUSION

The study which has now resulted in the draft Regional standard for Six-lane Roads was undertaken to review the manner in which York Region will construct future road widening to accommodate expected traffic and transit needs. A review of our current practices suggested that improvements could be made to better address pedestrian and cyclist needs as well.

It is acknowledged that York Region needs to maintain arterial roads as vital corridors for people and goods. But that increased emphasis needs to be placed on expanding their functions to integrate transit facilities, and encourage pedestrian and cyclist use.

Following Transportation and Works Committee's endorsement of this report it will be circulated to the local area municipalities for comment after which the final document will be brought before Council in Summer/Fall 2006.

The Senior Management Group has reviewed this report.

*(The attachment referred to in this clause was included in the agenda for the March 1, 2006 Committee meeting.)*