

1.0 INTRODUCTION

1.1 BACKGROUND

The Regional Municipality of York is located in the heart of the Greater Toronto Area (GTA) in Southern Ontario. York Region is composed of nine area municipalities covering 1,756 square kilometres, stretching from the City of Toronto in the south to Lake Simcoe and the Holland Marsh in the north, and bounded by Peel Region to the west and Durham Region to the east. The Region has more than quadrupled from 166,000 people in 1971 to 873,000 in 2004, and is expected to reach 1.3 million by 2026. Meanwhile, the employment is expected to increase from 400,000 jobs in 2004 to 696,000 jobs in 2026.

With the rapid growth in both population and employment, the Region's transportation system is under considerable strain, particularly in the five urban municipalities that comprise "Urban York". These trends in population and employment growth are expected to continue over the next decade. However, it is recognized that growth in automobile traffic cannot be sustained at the same rates as growth in population and employment, requiring a balance between acceptable levels of congestion and mobility.

Beyond accommodating traffic movements, the demands on Regional streets are changing in that they also need to address multiple roles related to other users such as transit riders, cyclists, pedestrians. Regional streets are also an integral element in promoting high quality urban design, serving as gateways to communities and encouraging the development of pedestrian-friendly, transit-oriented neighbourhoods.

The Regional Municipality of York is on the threshold of widening approximately thirteen sections of Regional streets to six lane cross-sections between 2005 and 2014, as per the 2005 – 10 Year Road Construction Program. Before doing so, this study presents an opportune time to review the Region's existing six lane cross-sections, as well as the best practices of other jurisdictions in this regard. This review also critically examines both existing and emerging requirements with a view to implementing a consistent cross-sectional treatment and appropriate accommodation for the various elements within the cross-section. The expectation is that not only would the findings be applicable to the 6/7 lane cross-sections, but also for the 4/5 lane cross-sections.

1.2 STUDY PROCESS

This study commenced with a thorough review of all relevant policies, guidelines and practices to understand the planned function of the major regional streets as corridors supporting land use intensification and transit. This work assisted the team in understanding the intended role of Regional streets in facilitating growth management and community building, including the varying expectations for different urban and rural conditions.

At the same time, best practices research was being conducted related to the various elements/components on the streets, such as lane widths, median alternatives, pedestrians, cyclists, and landscaping, among others.

The findings were then brought forward for discussion with Regional staff in a Visioning Workshop. Design priorities were assessed. Many Regional staff in attendance indicated that the continuous two-way centre left-turn lanes are unsightly and result in excessive unused pavement that is not required. They also reinforced the idea that the street cannot be treated in isolation of adjacent land uses. Based on the discussions, they indicated that if six lane streets are to be built, landscaped medians should be integral elements. Also, they indicated that the two additional lanes should be for high occupancy vehicles such as dedicated transit rather than mixed traffic. Subsequent to the Regional Visioning Workshop, two local discussion forums were held. Participants included staff from the Town of Markham, Town of Richmond Hill and City of Vaughan. They expressed similar concerns and expectations.

The need for all of the proposed widenings of Regional arterials has also been questioned. The requirement to widen Regional streets from an existing four/five lane cross-section to a six or seven lane cross-section should be critically reviewed on a link by link basis, as the needs are identified. In some cases, there may be other viable alternative solutions, for example to widen a parallel collector street instead, where sufficient right-of-way is available to do so, and where the abutting land uses would not be unduly impacted. However, in many cases, other viable alternatives may not exist. In these cases, the Regional street may need to be widened. Without these widenings, extreme levels of congestion could have serious repercussions on the movement of goods, and therefore the economy. Other requirements such as quick emergency response (police, fire, ambulance) would also be jeopardized. The widening to six/seven lanes should generally not be undertaken for mixed traffic (i.e. continuation of the status quo), but rather to accommodate HOV lanes in order to help encourage ridesharing and to be supportive of transit initiatives. However, it may be necessary to allow mixed traffic in the short-term, with a clear understanding that over the longer term the curb lanes would be dedicated to HOV or transit exclusively.

Besides the need to accommodate HOV or transit lanes, there are in the order of 20 cross-sectional elements that are needed, or desirable for inclusion within the right-of-way. If all needed and desirable functions of the roadway are to be included within the right-of-way, using today's design standards including pavement width, a 44.2 metre right-of-way would be needed. However, for most of the 4 lane Regional streets that are proposed to be widened to 6 lanes, the available space is limited to a 36 metre right-of-way. All the various cross-sectional elements are competing for this limited right-of-way. At minimum, the basic functions of streets, related to movement of people and goods, as well as allocation of space for services and public and private utilities, must be accommodated within this right-of-way. Within the 36 metre right-of-way, there are significant trade-offs between space for mixed vehicular traffic, versus pavement for other modes of travel and streetscape amenities. One of the major trade-offs is reduced lane widths for mixed use vehicular traffic in order to allocate more space for other elements which are also viewed as being equally important. Another trade-off is the recognition that although it is desirable to locate trees at least 3 metres from the edge of the curb to support their long term viability, there is not enough space to do it within the 36 metre right-of-way. As a result, higher costs would need to be incurred with respect to how the trees are to be planted initially, as well as costs associated with maintaining and replacing trees.

Within the 36 metre right-of-way, 12 alternative cross-sections were developed. These alternatives were evaluated against various criteria in the categories of transportation functionality, mobility and safety; cost; and community needs and values. Those alternatives featuring on-street bikeways were found to generally have higher scores than those which did not include on-street bikeways, given that they attempt to accommodate all modes of travel in a safe and efficient manner within the limited right-of-way. The alternative which includes a 6 metre wide median and an exclusive on-street bikeway as well as exclusive HOV/Transit Lanes, is recommended as the preferred alternative. It is viewed as being able to accommodate all modes of travel in a safe and efficient manner. It is recognized however, that the implementation of HOV/Transit and bike lanes will need to be implemented in a logical, staged manner, so as to result in a logical network of those facilities, rather than discreet, discontinuous segments.

Recognizing the strong relationship between land use and transportation planning, five typologies were developed. These five typologies represent different contexts, reflecting various land use/transportation characteristics which need to be considered when applying the preferred cross-section to actual situations. The five typologies are residential, urban mixed use, commercial, employment campus and industrial.

This preferred design alternative was then applied to segments of five case study corridors, representing the five typologies. Graphical representations of the case study corridors were prepared. The appropriateness of the proposed design concept was examined along the case study corridors. It was found that some modifications and refinements needed to be made with respect to some typologies. For example, given the spacing constraint between intersections, the length of taper for left turn lanes would generally need to be reduced as compared to that which is typically provided for this design speed. This is required in order to achieve a reasonable length and width of median which can be landscaped, rather than simply being used to provide a buffer between opposing traffic lanes. Another example of a refinement is the provision of a 5.2 metre wide median at mid-block locations for the residential typology which is constrained by the adjacent developments (typically reverse frontage), as compared to a 6 metre wide median for other typologies where landscaping and sidewalks could be extended through appropriate agreements onto private property to complement landscaping which is placed within the public right-of-way.

It is clear that the 36 metre right-of-way imposes many spatial constraints to the inclusion of some desirable cross-sectional elements. As noted, in order to accommodate all the basic and desirable functions of the roadway, a 44.2 metre right-of-way is required. However, acquiring additional right-of-way in many existing urbanized areas where land uses are set and not expected to be redeveloped, is not feasible (e.g. stable residential areas). In these situations, the best use must be made of the limited 36 metre right-of-way, recognizing that some trade-offs will be required (e.g. public and private utility placement, reduced lane widths, landscaping locations). As noted, in some typologies, some features will need to be shared between the Regional right-of-way and private property in order to accommodate a double row of trees and/or a wider sidewalk. However, in newly developing areas where land uses have not been set as yet, ideally a wider right-of-way (e.g. 43 to 46 metres), should be protected, in order to avoid these

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spatial constraints 30 or 40 years from now when consideration is being given to widening these Regional streets.