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SNC·LAVALIN

Hamilton Rapid Transit Preliminary Design and Feasibility Study

B-LINE

TRAFFIC LANE WIDTHS

Version:1.0

METROLINX

An agency of the Government of Ontario

RAPIDTransit
moving HAMILTON forward

Hamilton
Public Works

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DIALOG

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1.0 Introduction

The City of Hamilton is proposing to develop a 5-line rapid transit network. The first route is identified as the 'B-Line' and will be from McMaster University to Eastgate Square. The Preliminary Design and the Environmental Assessment for the B-Line is currently underway.

The proposed B-Line alignment extends through several different urban environs that range from Central Business District (CBD) to light density residential areas. As part of development of the outline design there has been some debate on the lane width's which can be provided within the available space, the acceptability of these and how they relate to relevant standards. However, it has been agreed that a reduction in lane widths is acceptable in order to minimise the impact on land and property.

This report therefore defines the lane widths which it is suggested should be utilized under these restrained conditions as design work on the alignment now moves forward. It is the objective to standardize lane widths throughout the corridor to provide acceptable conditions for through and local traffic without compromising the operational requirements of the LRT or pedestrians.

Lane width policies of different agencies such as the Ministry of Transportation of Ontario (MTO), the Transportation Association of Canada (TAC) and the Federal Highway Administration of the U.S Department of Transportation (USDOT) were reviewed to inform the recommendations on lane widths to be adopted. The proposed lane widths to be utilized have also been compared against the cross sections developed in Work Book 2 and it was observed that most of the alignment could comfortably fit a standard lane width without significant impacts.

2.0 Lane width – Urban Environment

a) Through and special purpose lanes

The three agencies reviewed define lane widths for urban environment which are tied to speed and capacity. It is certainly known that in urban environments wider lanes do provide more capacity as they do encourage higher speeds to be developed. TAC identifies that most of the research on the effect of lane width on safety is mainly focused on rural roads and that little is known of the effect in the urban environment, although, based on empirical evidence widening beyond 3.3m provides little safety benefits.

TAC and the USDOT define their applicable lane widths in increments of 0.3m, the MTO defines it applicable lane widths in 0.25m increments. The MTO guideline is found to mostly benefit the development of the system in Hamilton as 3.25m rather than 3.3m lanes can be applied.

The following table summarizes the recommendations of the consultant's team and the suggested posted speeds.

Table 1: Lane widths

Left Turn Lane	Through Lane	Posted Speed(1)	Right Turn Lane
3.0m	3.0m	<40km/h	3.25m
	3.25m	<50km/h	
	3.5m	<60km/h	
	3.75m	<60km/h	

(1) Final decision on posted speed should be made by the City of Hamilton.

b) Lanes adjacent to LRT platforms

Lanes adjacent to LRT platforms should have an offset from platform edge of 0.5m to keep the same side clearance requirements from fixed objects similarly to the curb. The most beneficial treatment of such width shall be defined in consultation with the city. The minimum recommended lane with adjacent to a raised LRT platform is 3.5m

c) Lane Taper

Tapering will be required when transitioning between lane widths or when bringing the travel lanes closer to the transit way after passing a side platform. In this cases it is recommendable that a taper ratio be 1:20 be used to safely allow larger vehicles to adjust to changing widths and trajectories.

In the case of left-turn lane, taper shall be developed according to the following table as per the applicable design speed and available space for each sector along the corridor.

Table 2: Taper ratios for left turn at Intersections.

Design Speed	Design Domain for Taper Ratio
50	8:1 – 30:1
60	15:1 – 36-1
70	15:1 – 42.1

Source: TAC, Sept 1999, Table 2.3.8.1

d) Maximum lane widths

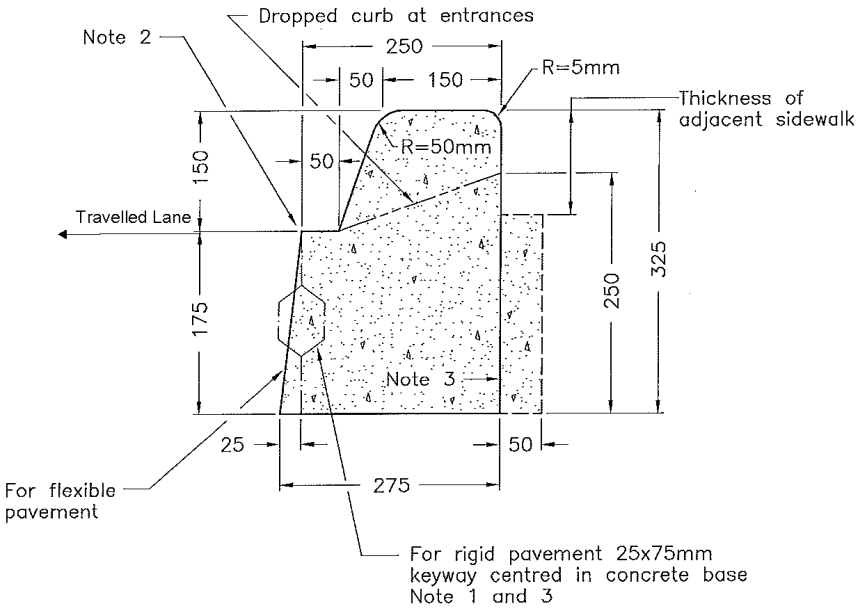
Lane widths should not exceed 4.0m as wider lanes may lead to confusion or improper use. Where the remaining space for a travel lane exceeds 4.0 metres the excess shall be given a road marking treatment to discourage use of the space in excess of 4.0 metres.

e) Lane widening

Pavement widening shall be evaluated in the design for all non-tangent sections as per the joint requirements of the Geometric Design Standard of the MTO and section 2.1.2.5 of the Geometric Design Guidelines for Canadian Road (TAC).

3.0 Lane Width measurements

It is the general understanding that lane widths are normally measured excluding the gutter. It is the understanding that the city of Hamilton uses the following as their standard curb-gutter arrangement.



NOTES:

1 When curb and gutter is adjacent to concrete pavement or base, this drawing is to be used in conjunction with OPSD–552.010 and 552.020.

2 Flexible and composite pavement shall be placed 5mm above the adjacent edge of gutter.

3 For slipforming procedure, a 5% batter is acceptable.

A Treatment at entrances shall conform with OPSD–351.010.

B Outlet treatment shall conform with OPSD–610 Series.

C The length of transition from one curb type to another shall be 3.0m, except in conjunction with guide rail, it shall conform to OPSD–900 Series.

D All dimensions are in millimetrs unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	April 1999	Rev
CONCRETE BARRIER CURB WITH NARROW GUTTER		
	OPSD – 600.080	

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