



# MISSISSAUGA BUS RAPID TRANSIT



## RATHBURN ROAD TRANSIT PRIORITY MEASURES

Environmental Project Report  
February 2010

**DRAFT**





## TABLE OF CONTENTS

	Page
<b>1. INTRODUCTION.....</b>	<b>1-1</b>
1.1 Study Background.....	1-1
1.2 Study Process.....	1-2
1.2.1 Ontario Regulation 231/08.....	1-2
1.2.2 Canadian Environmental Assessment Act.....	1-2
1.3 Purpose of the Study.....	1-3
1.4 Planning and Policy Influences.....	1-3
1.4.1 City of Mississauga Planning.....	1-3
1.4.2 Provincial Policy Statement (2005).....	1-4
1.4.3 The Big Move.....	1-4
<b>2. DESCRIPTION OF THE TRANSIT PROJECT.....</b>	<b>2-1</b>
2.1 Alternative Design Methods Considered.....	2-1
2.1.1 Do Nothing.....	2-1
2.1.2 Alternative 1 - Curb Reserved Bus Lanes.....	2-1
2.1.3 Alternative 2 - Median Reserved Bus Lanes.....	2-2
2.1.4 Selection of the Preferred Design Method.....	2-2
2.2 Description of the Preferred Design Method.....	2-3
2.2.1 Traffic Operations.....	2-3
2.2.2 Transit Operations.....	2-6
2.2.3 Estimated Project Cost.....	2-8
<b>3. ASSESSMENT OF IMPACTS ON LOCAL ENVIRONMENTAL CONDITIONS.....</b>	<b>3-1</b>
3.1 Description of Natural Environmental Investigations and Findings.....	3-1
3.1.1 Watercourses / Fish Habitat.....	3-1
3.1.2 Surface Water.....	3-2
3.1.3 Groundwater.....	3-5
3.1.4 Natural Environment Inventory.....	3-5
3.1.5 Wildlife Habitat.....	3-7
3.2 Description of Socio-Economic Environment Investigations and Findings.....	3-7
3.2.1 Noise Conditions.....	3-7
3.2.2 Air Quality.....	3-8
3.2.3 Soil Contamination.....	3-8
3.2.4 Property Requirements.....	3-10
3.2.5 Utility Protection / Relocation.....	3-10
3.3 Description of the Cultural Environment Investigations and Findings.....	3-11
3.3.1 Communities.....	3-12
3.3.2 Heritage and Archaeological Resources.....	3-12
3.4 Description of the Transportation Network Investigations and Findings.....	3-13
3.4.1 Road Network.....	3-13
3.4.2 Traffic Analysis.....	3-13
3.5 Description of Proposed Mitigation Measures and Future Commitments.....	3-17
<b>4. CONSULTATION.....</b>	<b>4-1</b>
4.1 Consultation Overview.....	4-1

4.2	Conceptual and Preliminary Design .....	4-1
4.2.1	Potentially Affected Property Owners .....	4-1
4.2.2	Transit Operators .....	4-1
4.2.3	Internal Stakeholders .....	4-2
4.2.4	Ministry of the Environment.....	4-2
4.2.5	Ministry of Transportation.....	4-2
4.2.6	Aboriginal Consultation.....	4-2
4.3	Transit Project Assessment Process.....	4-3
4.3.1	Aboriginal Communities.....	4-3
4.3.2	Government Technical Review Team .....	4-3
4.3.3	Internal Stakeholders .....	4-4
4.3.4	External Stakeholders .....	4-4
4.3.5	General Public Consultation .....	4-5
4.4	Overview of Changes Resulting from Consultation .....	4-6
<b>5.</b>	<b>COMMITMENTS TO FUTURE WORK .....</b>	<b>5-1</b>
5.1	Approvals and Permits.....	5-1
5.1.1	Credit Valley Conservation Authority (CVC) .....	5-1
5.1.2	Ministry of Transportation.....	5-1
5.1.3	Utility Companies .....	5-1
5.2	Property Acquisition.....	5-1
5.3	Construction Issues .....	5-1
5.4	Canadian Environmental Assessment Act (CEAA) Triggers Monitoring.....	5-1
<b>6.</b>	<b>AMENDMENT PROCESS .....</b>	<b>6-1</b>

**LIST OF TABLES**

Table 2-1:	Comparison of Signal Phasing Alternatives.....	2-5
Table 2-2:	Cost Estimate.....	2-9
Table 3-1:	Existing and Proposed Drainage Conditions.....	3-4
Table 3-2:	Preliminary Property Requirement Estimates .....	3-10
Table 3-3:	Utility Protection Requirements.....	3-10
Table 3-4:	North-South Major and Minor Collectors.....	3-13
Table 3-5:	2023 PM Peak Hour Levels-of-Service.....	3-16
Table 3-6:	Proposed Mitigation Measures.....	3-18
Table 4-1:	Meetings with Property Owners <b>TO BE COMPLETED</b> .....	4-1
Table 4-2:	Meetings with Transit Operators <b>TO BE COMPLETED</b> .....	4-1
Table 4-3:	Meetings with Stakeholders / Technical Agencies.....	4-3
Table 4-4:	Comment and Response Summary Table .....	4-6

**LIST OF FIGURES**

Figure 1-1:	Mississauga Bus Rapid Transit Plan.....	1-5
Figure 1-2:	Study Area.....	1-6
Figure 1-3:	Transit Project Assessment Process.....	1-7
Figure 2-1:	Existing Road Network.....	2-11
Figure 2-2:	The “Do Nothing” Alternative.....	2-12
Figure 2-3:	Alternative 1 - Curb Reserved Bus Lanes.....	2-13

Figure 2-4: Alternative 2 - Median Reserved Bus Lane ..... 2-14  
Figure 2-5: Signal Phasing Alternatives ..... 2-15  
Figure 2-6: Existing Transit Services ..... 2-16  
Figure 2-7: Opening Day BRT Operating Plan ..... 2-17  
Figure 3-1: Cooksville Creek..... 3-20  
Figure 3-2: Existing Catchbasins on Rathburn Road..... 3-21  
Figure 3-3: Soil Contamination Investigation Study Area ..... 3-22  
Figure 3-4: Property Ownership and Requirements ..... 3-23  
Figure 3-5: Stage 1 Archaeological Investigation Results..... 3-24

**APPENDICES**

- APPENDIX A: NATURAL ENVIRONMENT IMPACT ASSESSMENT
- APPENDIX B: HERITAGE AND ARCHAEOLOGICAL ASSESSMENT
- APPENDIX C: TRAFFIC ANALYSIS
- APPENDIX D: CONSULTATION RECORD
- APPENDIX E: NOISE ASSESSMENT
- APPENDIX F: DRAINAGE AND STORMWATER MANAGEMENT

File: W:\7k\7644 Mississauga - City Ctr BRT Prelim. Design\7644.800 Transit\7644.XXX - Reports\Draft EPR\7644 - Draft EPR - Feb24-10.doc



## 1. INTRODUCTION

The City of Mississauga has prepared this Environmental Project Report (EPR) as required under the Transit Project Assessment Process (TPAP) to document the design, analysis, consultation, potential for impacts, and mitigation measures associated with the proposed Rathburn Road Transit Priority Measures project.

Infrastructure Canada, in the 2009 budget, has established a new \$4 billion fund to enable rehabilitation and construction projects that can be completed (substantially) prior to March 2011, in order to support the Government of Canada's Economic Action Plan. The Plan is intended to stimulate the Canadian economy during the current economic recession. The program included funding for the City of Mississauga to apply towards the implementation of transit priority measures on Rathburn Road in the Mississauga City Centre.

On December 8<sup>th</sup>, 2009, following substantial completion of the preliminary design for the project, the City of Mississauga initiated the TPAP for the Rathburn Road Transit Priority Measures Project. Results from the conceptual planning, preliminary consultation, and preliminary design served as the basis that defined the Transit Project.

### 1.1 Study Background

The City of Mississauga Bus Rapid Transit (BRT) Project is illustrated in **Figure 1-1**. Phase 1 of the project includes the following major elements:

- Winston Churchill Boulevard – Erin Mills Parkway
- Highway 403 Bus Bypass Shoulders (BBS) (existing)
- Hurontario Street – Renforth Drive

The undertaking was approved through an Individual EA in 1993, and subsequent modifications to the plan were approved through an Addendum to the EA in 2004. Funding for Phase 1 of the project was announced in 2007. The schedule for completion for Phase 1 of the project is 2013. The approved and funded sections of the BRT leave a gap in the BRT system in the City Centre area. A significant investment would be required to complete the BRT facility as envisioned in the Environmental Assessment study.

In addition, the future land use and urban design concept for the City Centre area is currently under review. The results of the planning studies are expected to be available within the next 24 months. The City is also currently examining the introduction of rapid transit within the Hurontario Street corridor. The integration of the Highway 403/Eglinton BRT facility with the future Hurontario rapid transit operations is part of this EA investigation scheduled for completion in 2010.

While these studies regarding the future type, magnitude and distribution of development and north-south rapid transit facilities will be complete within the next 24 months, material changes in the City Centre area are not expected for

perhaps 10 – 15 years. In the interim, the City recognizes that it would be desirable to enhance the investment in BRT through relatively modest transit priority initiatives to improve the reliability and speed of transit operations through the City Centre area and the Highway 403 /Mavis Road interchange.

It should be noted that the works within the City Centre and at the Mavis interchange are not physically or operationally dependent on each other. Therefore, the proposed approach would be to treat works in the different areas as separate projects, recognizing the different jurisdictions (City of Mississauga and Ministry of Transportation), stakeholders, and types of impacts anticipated.

The Study Area for this project therefore focuses on the section of Rathburn Road that connects the existing City Centre Transit Terminal to the proposed BRT East intersection with Rathburn Road immediately east of the Hurontario Street crossing. The Study Area is illustrated in **Figure 1-2**.

## 1.2 Study Process

The Ontario Ministry of the Environment (MOE) has implemented a new six-month assessment process for public transit projects in Ontario called the Transit Projects Assessment Process (TPAP). The goal of this regulation is to ease the regulatory burden on proponents of public transit projects by creating a time limited, clearly articulated process resulting in more certainty for the planning and completion of public transit projects. This expedited approvals process will enable transit projects to get off the ground more quickly so that all community members can realize the many benefits of public transit as soon as possible.

### 1.2.1 Ontario Regulation 231/08

The Rathburn Road Transit Priority Measures Transit Project Assessment Process is following Ontario Regulation 231/08, Transit Projects and Greater Toronto Transportation Authority Undertakings (2008). The environmental impact of this Transit Project has been assessed in accordance with the Transit Project Assessment Process as prescribed in Ontario Regulation 231/08. **Figure 1-3** illustrates the main activities that comprise the Transit Project Assessment Process.

### 1.2.2 Canadian Environmental Assessment Act

Funding for this project is being provided through Building Canada's Infrastructure Stimulus Fund (ISF), which qualifies as federal funding and therefore triggers the need for the project to satisfy the requirements of Canadian Environmental Assessment Act (CEAA). However, the CEAA Exclusion List Regulations, 2007 (SOR/2007-108) indicates the following in Item 5:

*The projects and classes of projects that are set out in Schedule 4 [which includes this project under Section 5], to be carried out in places other than a national park, park reserve, national historic site, or historic canal and funded under any of the following plans, funds, or initiatives, are exempted from the requirement to conduct an assessment under the Act:*

- a) *the Building Canada Plan;*
- b) ...

### **1.3 Purpose of the Study**

The purpose of this study was to identify the impacts and mitigation associated with the preferred Transit Project.

### **1.4 Planning and Policy Influences**

The following discusses briefly the public policy documents supporting and guiding the project.

#### **1.4.1 City of Mississauga Planning**

The City of Mississauga's Official Plan provides direction on the overall City objective of increasing the use of public transit, particularly in the City Centre area. In addition, the City of Mississauga is currently undertaking a planning study for the future development of the City, entitled "Building a City for the 21<sup>st</sup> Century". A focused planning study for the City Centre area is also underway, entitled Downtown 21. These plans formed the framework and provided guidelines for the development of the design. The details of each planning document and the guidance provided by each are discussed in the following sections.

##### **1.4.1.1 Official Plan**

The City of Mississauga Official Plan, in Schedule 2: Urban Form Concept identifies a future "Transitway" in the City Centre. While the long term plan for higher-order transit remains the implementation of the Mississauga Transitway, as envisioned in the Mississauga Transitway EA Addendum, this project is intended to function as an interim and economical means to implement transit priority measures in the City Centre, and to form the rapid transit link through the Mississauga City Centre.

Further, the Goals and Objectives outlined in the Official Plan include the following transit-specific goals:

- "to achieve an urban form which will support a high level of transit usage" (Section 2.2.2.6);
- "to encourage energy conservation and reduce air pollution and greenhouse gas emissions through site and community design, which supports alternative forms of transportation such as transit, cycling, and walking" (Section 2.7.2.10); and
- "to increase the use of public transit" (Section 2.10.2.7).

### 1.4.1.2 Building A City for the 21<sup>st</sup> Century

From the City's website

[www.mississauga.ca/portal/cityhall/backgroundercitycentretransitpriority](http://www.mississauga.ca/portal/cityhall/backgroundercitycentretransitpriority)):

*“According to the City of Mississauga's Strategic Plan, one of the City's strategic goals is to build and maintain its infrastructure for its citizens and for generations to come. A sound, functional and attractive infrastructure is integral in completing its neighbourhoods, as we build a City for the 21st century.*

*Re-allocation of existing road space between Hurontario Street and Duke of York Boulevard in the Mississauga City Centre will allow for installation of median reserved bus lanes on Rathburn Road. This project incorporates the existing Mississauga Transit City Centre Terminal as well as the GO Transit Station Gate Terminal.*

*Objectives/Benefits*

*This project improves efficiency of the transportation network specifically related to local and inter-regional public transit vehicles in the Mississauga City Centre. Providing priority to public transit will attract additional transit ridership and reduce automobile trips, with the aim of ultimately reducing greenhouse gas emissions.”*

### 1.4.1.3 Downtown 21

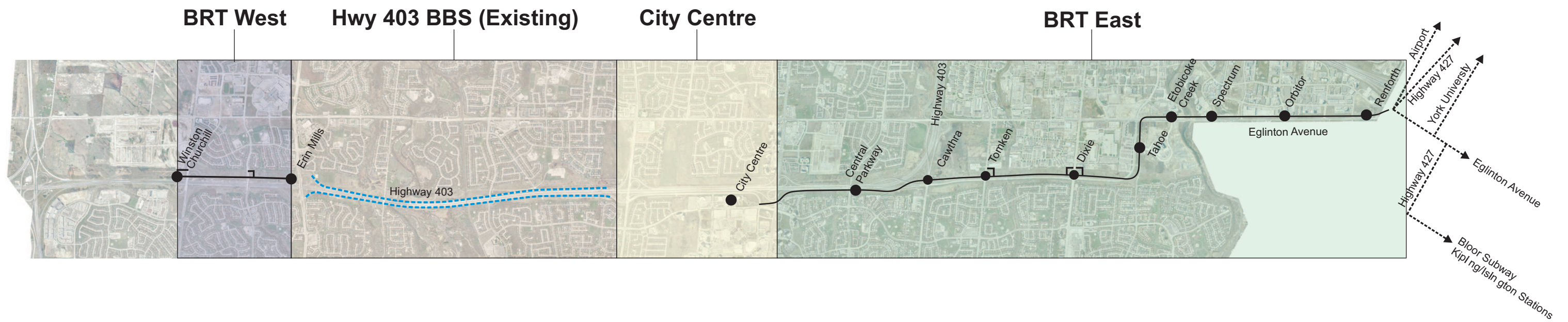
**TO BE COMPLETED**




### 1.4.2 Provincial Policy Statement (2005)

**TO BE COMPLETED**

### 1.4.3 The Big Move

**TO BE COMPLETED**



 <b>MCCORMICK RANKIN CORPORATION</b> A member of  <b>MMM GROUP</b>		DATE: December 2008	RATHBURN ROAD TRANSIT PRIORITY ENVIRONMENTAL PROJECT REPORT	FIGURE <b>1-1</b>
		SCALE: Not to Scale		



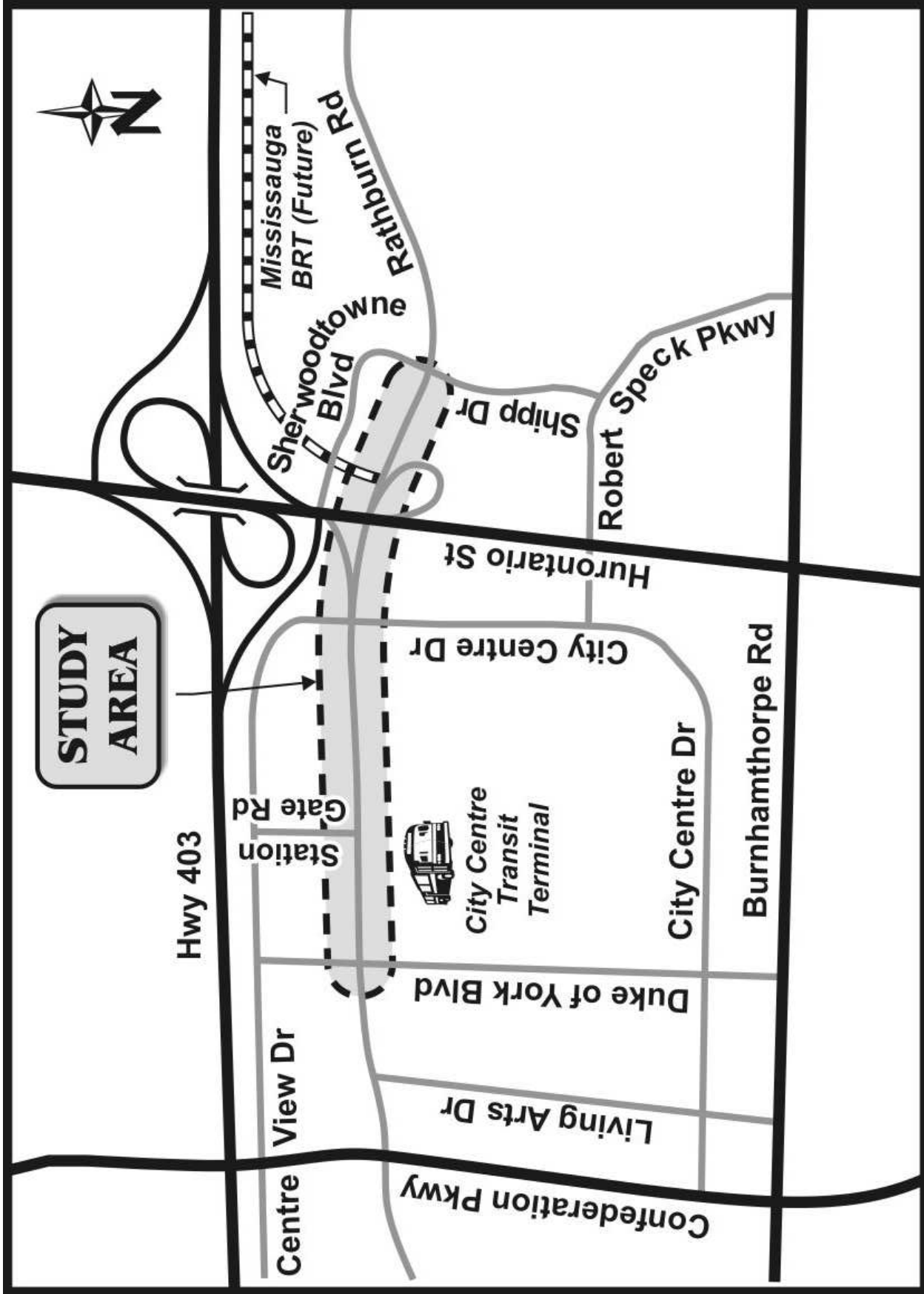


FIGURE  
**1-2**

RATHBURN ROAD TRANSIT PRIORITY ENVIRONMENTAL PROJECT REPORT

DATE: November 2009  
SCALE: Not to Scale



Study Area



FIGURE  
**1-3**

RATHBURN ROAD TRANSIT PRIORITY ENVIRONMENTAL PROJECT REPORT  
Transit Project Assessment Process Timeline

DATE: December 2009  
SCALE: Not to Scale



## 2. DESCRIPTION OF THE TRANSIT PROJECT

The general description of the transit project is to implement surface transit improvements / transit priority measures to facilitate movement of transit vehicles between Duke of York Boulevard and the Mississauga BRT connection on Rathburn Road east of Hurontario Street, approximately 1 km east of the City Centre Transit Terminal. The existing configuration of Rathburn Road within the study area is illustrated in **Figure 2-1**.

### 2.1 Alternative Design Methods Considered

This section discusses the alternatives considered to implement transit priority measures on Rathburn Road between the City Centre Transit Terminal and the BRT East connection to Rathburn Road east of Hurontario Street. The alternatives considered were:

- Do Nothing;
- Alternative 1 - Curb Reserved Bus Lanes (RBLs) on Rathburn Road; and
- Alternative 2 - Median RBLs on Rathburn Road.

The alternatives are discussed below.

#### 2.1.1 Do Nothing

The “Do Nothing” alternative would not introduce any transit priority measures on Rathburn Road – rather maintain the existing roadway configuration. Given that the nature of the study is to improve the existing conditions for transit operations in the City Centre, the “Do Nothing” alternative does not address the problem/opportunity as identified in **Section 1.1**, but it provides a basis for measuring the effectiveness of the other alternatives. In addition, recognizing that bus activity in the City Centre will increase (due to the implementation of the Mississauga BRT), the “Do Nothing” alternative would still require an expansion of the transit passenger loading/unloading capacity at the City Centre Transit Terminal, thereby resulting in limited impacts and costs.

The “Do Nothing” alternative is illustrated in **Figure 2-2**.

#### 2.1.2 Alternative 1 - Curb Reserved Bus Lanes

This alternative design concept would convert the existing curb lanes into exclusive Reserved Bus Lanes (RBLs), with new curbside bus stops on Rathburn Road to accommodate the increase in transit services resulting from the implementation of the Mississauga BRT. The conversion of these lanes to RBLs would simply be an operational change and accomplished through alternation of signage and pavement markings. The RBLs would be limited to use by buses and vehicles immediately accessing adjacent businesses. Right turns by general traffic would be allowed at intersections and accesses to private properties. This would provide an improvement over current transit operations by reducing the number of vehicles using the lane. However, the effectiveness of this alternative is dependant on the compliance of automobile users. Cyclist safety would be

slightly improved due to the fewer number of vehicles driving in the curb lane, however, conflicts with right-turning traffic would remain.

This concept is illustrated in **Figure 2-3**.

### **2.1.3 Alternative 2 - Median Reserved Bus Lanes**

This alternative design would implement a median bus facility comprised of two centre Reserved Bus Lanes separated from the general traffic by line painting only. At the Station Gate Road and City Centre Drive intersections, the intersection would be flared-out to accommodate far-side median bus-stop platforms. Pedestrians would access the median platforms at signalized intersections only, thereby providing controlled access points for transit users and maximizing safety for pedestrians.

This median facility would not affect access for right-turning operations. Unsignalized mid-block left-turning movements would be restricted due to safety concerns, however, the impact of this is considered minimal due to the low frequency of existing unsignalized accesses. Bus traffic would be largely segregated from the general traffic throughout the corridor, thereby minimizing the impacts of general traffic congestion on transit operations.

This concept is illustrated in **Figure 2-4**.

### **2.1.4 Selection of the Preferred Design Method**

The alternative design methods were assessed and compared based on the conceptual plans. The assessment took into consideration experience with similar facilities elsewhere, knowledge of the study area, anticipated effects on transit and traffic operations, ability to maintain access to adjacent developments, and the preliminary cost estimate of the two alternatives.

The assessment indicated that the Median Reserved Bus Lane Alternative was preferred, largely due to its ability to provide improved transit/traffic segregation over the alternatives. The following is a summary of the key points of comparison and why the Median RBL Alternative was selected as the preferred design method:

- **Transit Operations:**
  - Provides greater separation of transit and general traffic, thereby reducing potential conflicts with general traffic;
  - More reliable transit service;
  - Higher capacity;
- **Traffic Operations:**
  - Both options require reducing the general traffic capacity from 2 lanes per direction to a single lane. Impacts to traffic operations are expected to be similar among alternatives;
- **Access to Adjacent Development:**

- Access is maintained under both alternatives; and
- **Cost Difference:**
  - The capital cost of the Curb RBL alternative is estimated to be approximately 35% less than the Median RBL alternative.

## 2.2 Description of the Preferred Design Method

The preferred design method was based on Median Reserved Bus Lanes (RBLs) rather than Curb RBLs. This would remove the BRT vehicles from the general traffic stream and provide a direct connection between the City Centre Transit Terminal and the BRT facility east of Hurontario Street. Eastbound GO Transit buses would operate in the median RBLs. However, westbound GO Transit services are oriented towards the GO Transit stops on Station Gate Road, and therefore would operate in the curb lane between the BRT connection and Station Gate Road.

To facilitate westbound GO Transit access to Station Gate Road, a transit queue-jump lane/right-turn lane would be implemented on the eastern approach to Station Gate Road.

The existing City Centre Transit Terminal incorporates bus bays on Rathburn Road. These curbside bus bays would be maintained and supplementary capacity could be provided by implementing additional curbside bus bays east of the City Centre Transit Terminal on Rathburn Road. The City Centre Terminal itself would not be modified. Two bus platforms would be provided adjacent to the median RBLs on the eastern approach to the Rathburn Road/Station Gate Road intersection, each accommodating two buses. However, due to the limited right-of-way at the station there exists little opportunity to implement provisions for express buses to pass stopping buses at the station. Pedestrians would access these median platforms at the adjacent signalized intersection.

### 2.2.1 Traffic Operations

The following sections discuss the proposed operational characteristics of the proposed Transit Project. These form the basis for the operational impact assessment discussed in **Section 3.3**.

#### 2.2.1.1 General Traffic Lanes

The existing Rathburn Road cross-section provides two general traffic lanes in each direction, with a shared two-way left-turn lane in the centre. The current 40m roadway right-of-way is generally comprised of 18m (curb-to-curb) roadway width, sidewalks and boulevards. The northern boulevard is occupied by street lighting, fire-hydrants, and street foliage on the surface, and considerable subsurface utilities including Bell Telephone, Enbridge Gas, Rogers Cable, Peel Watermain, and Enersource Hydro Mississauga.

All of these features constrain the range of design alternatives for the project. Recognizing that the relocation of these utilities would be costly, disruptive, and unachievable within the funding schedule for the project, the ability to widen the

roadway to the north is limited to localized areas on intersection approaches for auxiliary lanes.

The ability to widen the road to the south is also constrained. The existing City Centre Transit Terminal forms the most notable constraint, as any widening to the south would further impact the terminal physically and result in a situation that does not meet the geometric requirements of transit access operations.

In addition, the City of Mississauga has taken the position that, under their “Downtown 21” plan, the City is going to provide a more pedestrian-friendly environment in the City Centre. This includes enhanced pedestrian and cyclists facilities. In order to provide an environment that encourages more pedestrian activity, Rathburn Road is to remain (as much as possible) within the existing roadway width under this Transit Project.

Recognizing these goals and constraints, the preferred design was determined to be to convert two of the existing general traffic lanes into Reserved Bus Lanes (RBLs), thereby removing transit vehicles from the effects of general traffic congestion, and providing the enhanced transit operations required to meet the objectives of the project.

#### 2.2.1.2 Signalized Intersections

During the traffic operational analysis conducted for morning and afternoon peak hours, signal timings at the Rathburn Road with City Centre Drive intersection and Rathburn Road with Hammerson Drive intersection were analyzed using the following criteria:

- Westbound left turns operate with Protected + Permitted phasing
- BRT lanes operate on a dedicated signal phase

To address additional technical issues with respect to the traffic signal operations for the intersections noted above, a sensitivity analysis was undertaken. The analysis utilized the Synchro software to compute average delays for the Background traffic (Scenario 5.1) at the Rathburn Road and City Centre/Centre View Drive intersection for the afternoon peak hour considering the two signal timing options described below:

- **Option 1:** Bus movements occur on a dedicated transit-only traffic signal phase. This is considered the “base case”, and was applied in the detailed traffic simulation discussed in **Section 3.4**.
- **Option 2:** Bus movements occur simultaneously with the general traffic through movements. General traffic left-turn movements are restricted to a protected phase.

The signal phasing options are illustrated in **Figure 2-4**. The average delays for the two options are presented below:

**Table 2-1: Comparison of Signal Phasing Alternatives**

Options	Calculated Average Intersection Delay
Option 1	54.3 Seconds
Option 2	45.1 Seconds

The Synchro signal timing plans and Synchro Results for average delay for Option 1 and Option 2 are presented in **Appendix C**.

The above results show that the signal timing plan without a dedicated phase for BRT (Option 2) reduced the average delay. Therefore the Background and Total (future) traffic operational analysis with the BRT network may experience a reduction in estimated delay if the signal timings used in Option 2 are considered. This signal timing option would be used for the Rathburn Road/ City Centre/Centre View Drive intersection and for the Rathburn Road/ Hammerson Drive intersection.

**2.2.1.3 Access to Adjacent Development**

Under the preferred design alternative, access to all developments fronting onto Rathburn Road will be maintained. However, in order to provide a safe and efficient median Reserved Bus Lane operation, some turning movements will be restricted. The following discussion summarizes the operation of the accesses on Rathburn Road between Duke of York Boulevard and Centre View Drive under the preferred design method.

**Playdium**

Under the preferred design method, the existing Playdium access, currently all moves, would be converted to a right-in/right-out operation to eliminate the potential for conflicts between traffic accessing the Playdium from the west and transit services operating in the median Reserved Bus Lanes.

**Square One Shopping Centre**

Access to the Square One Shopping Centre from Rathburn Road (via Hammerson Drive) will be maintained as an all-moves signalized intersection. It should be noted that the Hammerson Drive intersection is to be shifted approximately 10m to the west in order to accommodate planned redevelopment along the south side of Rathburn Road between Hammerson Drive and City Centre Drive.

**Station Gate Road**

Station Gate Road is to remain open to general traffic. However, due to limited right-of-way and intersection operational requirements, turning movements for general traffic to and from Rathburn Road will be limited to right-in/right-out only. This will maintain the ease of access to the Chapters/Sport Chek development

for westbound traffic on Rathburn. Traffic destined to the development from the west will be required to access via Duke of York Boulevard.

#### **2.2.1.4 Hurontario Ramp Configuration**

In order to effectively divert traffic from Rathburn Road to Centre View Drive, the concept removes the ramp connection from Hurontario Street to Rathburn Road and connects the ramp to Centre View Drive. Traffic destined for the City Centre area, would have two options either to use of the reconfigured ramp or to use the new Square One Drive connection to Hurontario Street further south.

Relocation of this ramp also simplifies the operation of the Centre View Drive / Rathburn Road intersection, which currently provides separate signal phases for ramp traffic and traffic on Rathburn Road. The additional green-time gained by removing the ramp traffic can be reallocated to optimize the phasing for the reconfigured intersection, reflecting the needs of transit and general traffic.

### **2.2.2 Transit Operations**

Transit services in the study area will be comprised of a mix of service types, including local and inter-regional all-stops and express routes. The Mississauga BRT Preliminary Design study included a transit operational analysis that identified the future transit demand and service requirements to meet that forecast demand.

#### **2.2.2.1 Current Bus Operations**

The existing bus services are illustrated in **Figure 2-6**.

Mississauga Transit operates 23 bus routes within the Rathburn Road corridor between Duke of York Boulevard and 50m east of Hurontario Street. There are two routes that primarily service Rathburn Road (Routes 9 & 20), with 11 additional routes that service the surrounding area but stop at the Square One Bus Terminal, running along Rathburn Road in order to do so.

GO Transit operates 6 bus routes within the Rathburn Road Corridor stopping on Station Gate Road. The Milton GO Bus (Route 21) and Waterloo GO Bus (Route 25) both run on weekdays, weekends and holidays. The University of Guelph Bus (Route 29) and Highway 407 West GO Bus (Route 46) both run on weekdays, Sundays, and holidays. The Pearson Airport GO Bus (Route 40) runs daily, 7 days a week and the Oakville/Highway 403 GO Bus (Route 19) runs only on weekdays.

#### **2.2.2.2 Future BRT Services**

A schematic representation of the service concept that has been developed for Opening Day of the Mississauga BRT Facility (Spring 2013) is shown in **Figure 2-7**. The main focus of the effort in developing the network has been to design a service concept for Mississauga Transit that would make the most effective use of the new facility in attracting commuters to transit. The following is a brief overview of the key future BRT services in the City Centre area.

### **BRT Core Service**

A core BRT route (Route 100) operating from Winston Churchill Station to Kipling Station was assumed. This would take 34 minutes to travel from Winston Churchill Station to Kipling Station, assuming a good transit connection between Renforth and Kipling Stations.

### **Express Services**

The two pre-BRT bi-directional peak express services would operate from Meadowvale to Kipling Station (Route 109) and from Clarkson to Malton, via UTM, City Centre Terminal and Renforth Station (Route 110). In addition, three new express services would be provided:

- Unidirectional service operating from the Meadowvale area west of Winston Churchill to Kipling, via Winston Churchill, accessing the busway at Winston Churchill;
- Unidirectional service to Kipling operating from Meadowvale, along Britannia Road West, Creditview Road, Rathburn Road West, and accessing the busway at City Centre; and,
- Bi-directional express service operating between Shoppers World and Kipling via Hurontario Street and accessing the busway at City Centre.

### **Employment Services**

Two employment routes offering direct service from and to Kipling Station in the AM and PM peak periods, respectively, are proposed:

- Unidirectional route operating in the AM peak period from Kipling to Dixie Road via the busway and then travelling north to Drew Road.
- Unidirectional route operating from Kipling to the Meadowvale Financial Drive area via the busway to City Centre, Mavis Road and Highway 401.

### **Hurontario Street Enhanced Services**

Service enhancements were assumed in the Hurontario Street Corridor. Significant improvements in frequency and operating speed were also assumed for the Hurontario Street express service from Port Credit GO Station to Shoppers' World. Again, some level of bus priority measures was implicit in the operating speed assumption (approximately 30 km/h). The route was also adjusted to serve City Centre Transit Terminal.

### **Services Operating on Arterials**

A variant of the Clarkson GO Station to City Centre Transit Terminal via Cawthra Road (Route 8) was assumed to operate between Port Credit and City Centre Transit Terminal in order to improve frequency along the well travelled Cawthra Road section of the route.

## **GO Transit Services**

GO Transit has ambitious plans for the BRT in the long term but, for Opening Day it was confirmed that the BRT would be used for their Guelph and Hamilton (407) to York University services, with a route to Union Station, as well as their Oakville, Mississauga, Yorkville and Finch services (Route 19). The Guelph and Hamilton services would travel the full length of the BRT, while the later would travel between Winston Churchill Station and City Centre. Although in reality, the Guelph and Hamilton services would have some trips terminating at Kipling Subway Station this was not included in the model as the details of this service were not known. A general increase of 25% in service frequency was assumed for GO Bus services on opening day.

GO Transit will serve Winston Churchill, Erin Mills, City Centre, Dixie and Renforth Stations. GO Buses are equipped with lifts to provide accessibility to the service for people using wheelchairs and scooters. Boarding a disabled customer takes about ten minutes. It is therefore critical that designated areas be provided for GO Buses at the stations they will serve.

### **2.2.3 Estimated Project Cost**

As discussed in **Section 1**, funding for the project is being provided by the Infrastructure Stimulus Fund. Funding was based on a cost estimate for the project at a conceptual design level and totalled of \$4.3M. The cost estimate included roadworks works between just west of Station Gate Road to just east of Hurontario Street, with a new median island station at Station Gate Road and protection for a future median island station at Centre View Drive.

The value of the construction totals \$4,833,000 (including contingencies and engineering allowance). The planned duration of construction is 12 months commencing in April 2010 with planned operations to begin April 2011. The cost estimate at the completion of the Preliminary Design Study is presented in the following table.

**Table 2-2: Cost Estimate**

Item	Includes	Cost
10 - Right of Way		\$0
20 - Roadworks	Removals, pavement structure, curb and gutter	\$1,417,000
20b - Concrete Busbay West of Mall Entrance	Removals, pavement structure, curb and gutter	\$74,000
20c - Left Bus Slip thru at City Centre	Removals, pavement structure, curb and gutter	\$146,000
30 - Stations (Architecture)	Shelter structure, glazing, lighting, heating, CCTV, amenities, installation, fabrication, engineered concrete pad	\$717,000
50 - Municipal Services	Removal and reinstatement of catch basins, lighting, new oil-grit separator	\$472,000
60 - Signals	Temporary and new signals at Station Gate Road and City Centre Drive, signal modifications at Duke of York Boulevard	\$600,000
<b>SUB-TOTAL</b>		<b>\$3,426,000</b>
Miscellaneous Items (10%)	Allowance for unspecified items, landscaping, utility protection, etc.	\$343,000
<b>SUB-TOTAL</b>		<b>\$3,769,000</b>
Project Management (0%)	Internal by City	
Engineering	Preliminary design and approvals	\$310,000
Project Contingency (20%)		\$754,000
<b>TOTAL</b>		<b>\$4,833,000</b>
60a - Signal Modifications at Mall Entrance		\$250,000*

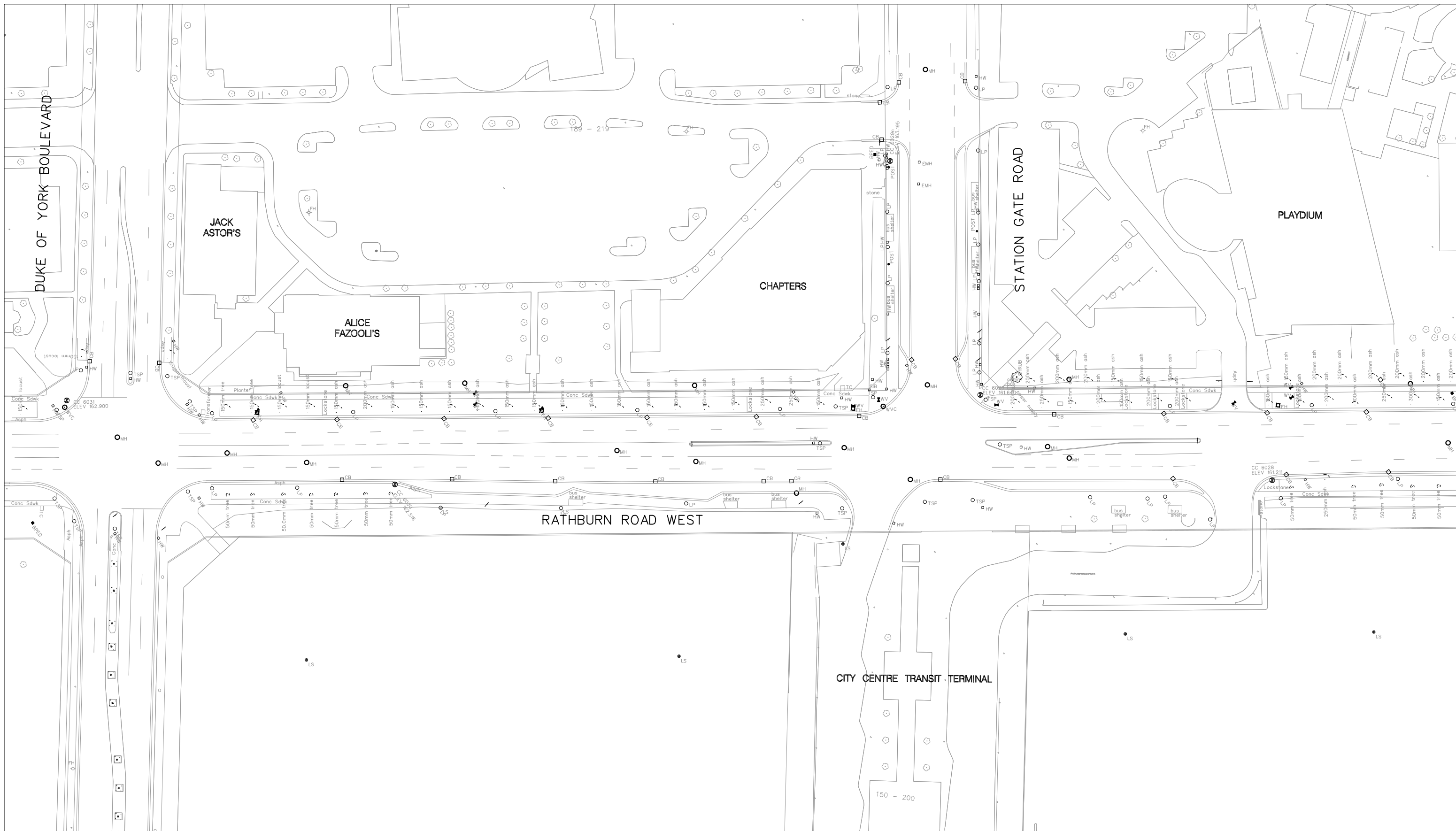
\* signal modification by others

Throughout the Preliminary Design Study, a number of changes were introduced / identified as a result of consulting with stakeholders, that affected the overall project cost, including:

- The introduction of concrete pavement for station areas where buses would be stopping regularly to load/unload passengers;

- The introduction of a bus-only slip-through to Rathburn Road from the Hurontario Street – Rathburn Road ramp per the direction of Mississauga Transit;
- Shift of the westbound median island station to the west side of Station Gate Road and associated roadworks / intersection modifications at the Rathburn Road / Duke of York Boulevard intersection to eliminate property impacts;
- Station Costs: The cost allowance for stations at the conceptual design stage of the project was based on the recently completed “Brampton AcceleRide” station design, which was \$130,000/shelter. These stations reflected the general scope and range of amenities to be incorporated into the Rathburn Road project. This is the cost applied in the funding allocation for the project. Following the preliminary design study, the cost estimate for the proposed design for the Mississauga shelters / stations was determined to be significantly higher (in the order of \$360,000/shelter) due to the 55m canopy design and associated engineered concrete pad, materials, and one-off fabrication costs.

Opportunities to reduce the overall cost to meet the funding allocation were investigated. Given that the roadworks have been constrained to fit within the available roadway width, there appears to be little opportunity to save costs on the roadworks. Rather, the investigation focused on the potential to reduce station costs. Reduction of the overall canopy from 55m (i.e. along the complete platform) to 30m would result in an estimated savings of \$91,000 (including contingencies).



DUKE OF YORK BOULEVARD

JACK ASTOR'S

ALICE FAZOOOLI'S

CHAPTERS

STATION GATE ROAD

PLAYDIUM

RATHBURN ROAD WEST

CITY CENTRE TRANSIT TERMINAL



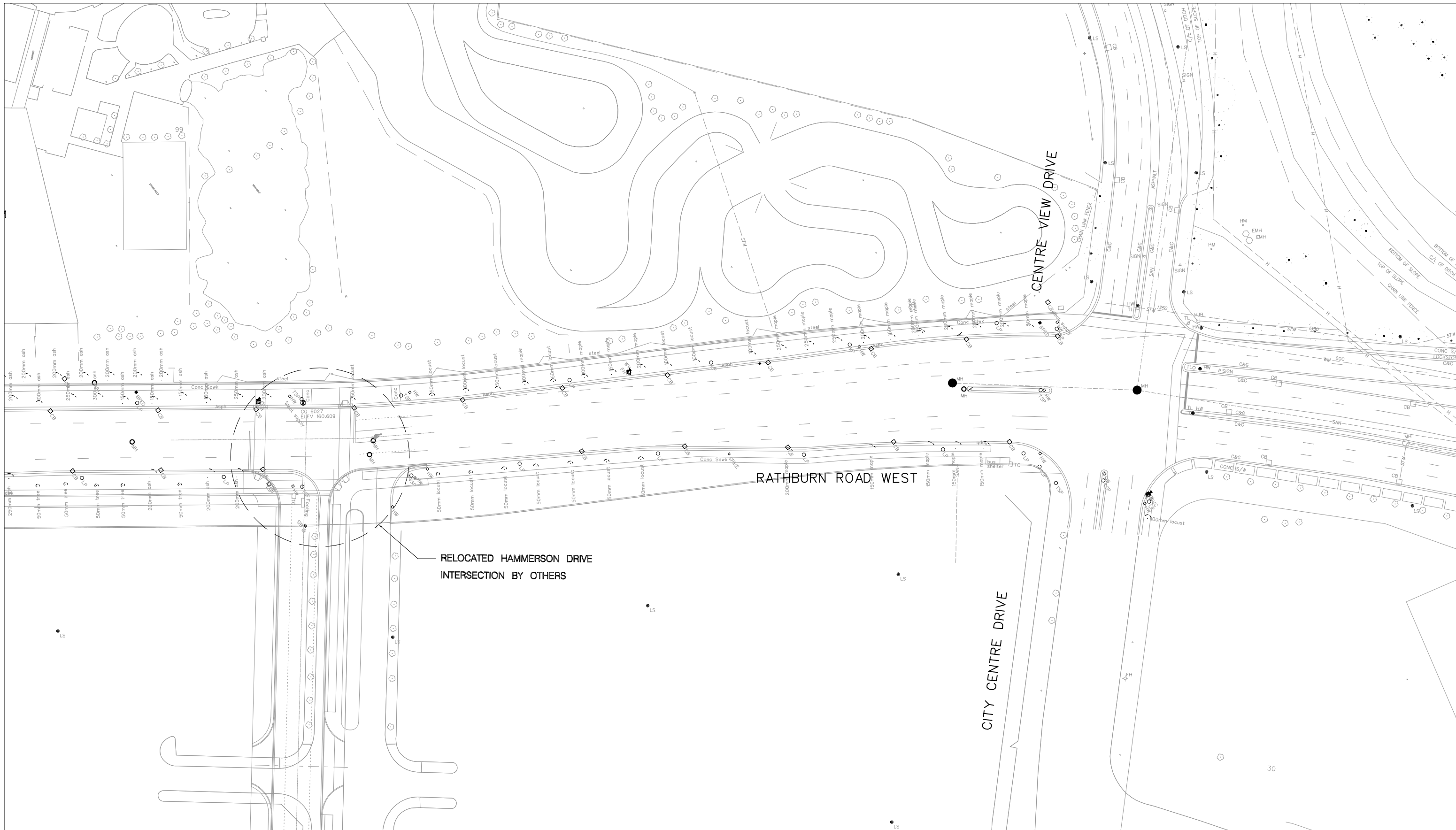
DATE:  
**FEBRUARY 2010**




SCALE:  
**1:1,000**

MISSISSAUGA CITY CENTRE BRT  
PRELIMINARY DESIGN REPORT

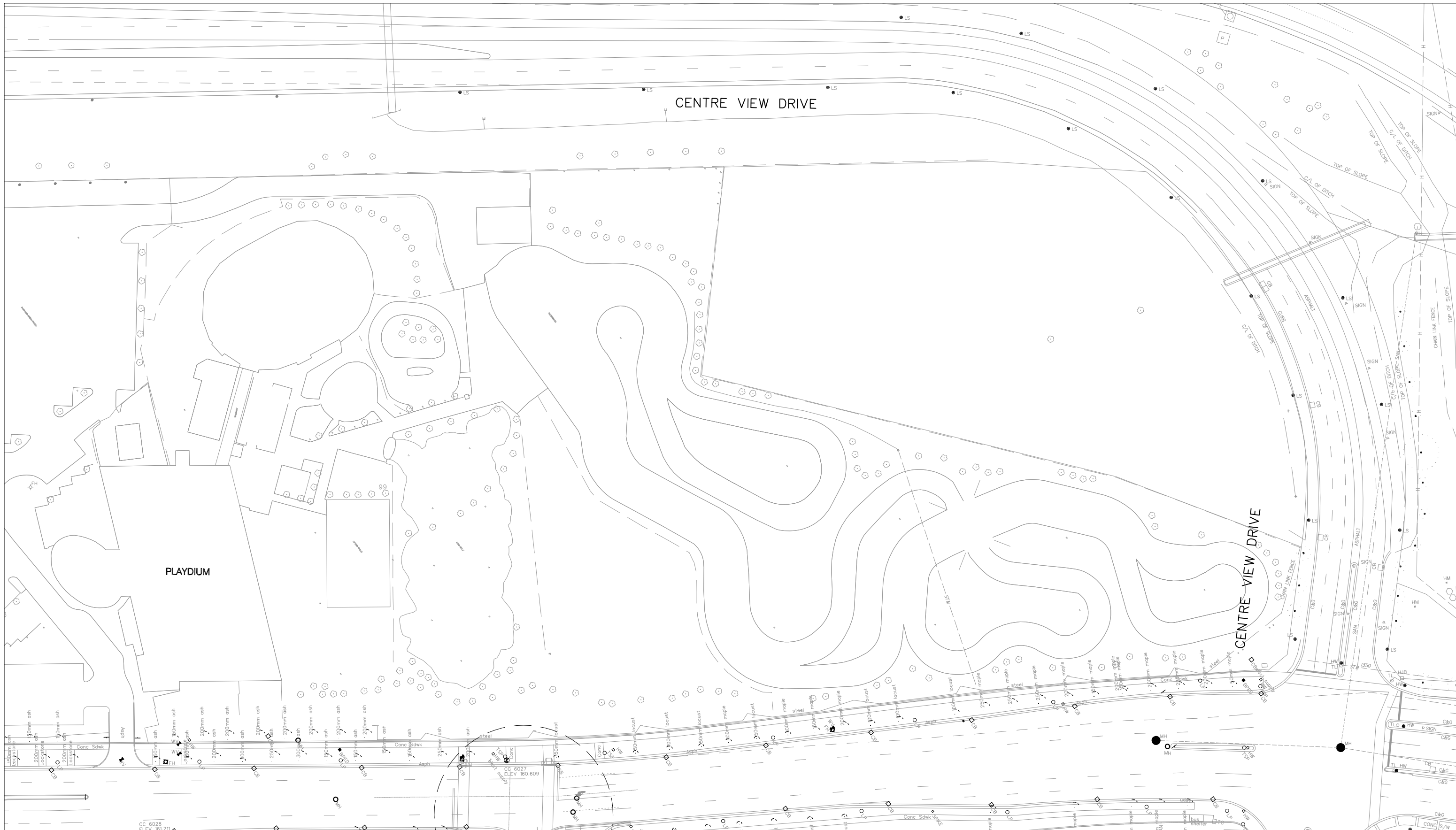
**EXISTING ROAD NETWORK**

FIGURE  
**2-1a**



 <b>MCCORMICK RANKIN CORPORATION</b> A member of  <b>MMM GROUP</b>		DATE: <b>FEBRUARY 2010</b>	MISSISSAUGA CITY CENTRE BRT PRELIMINARY DESIGN REPORT	FIGURE <b>2-1b</b>
		SCALE: <b>1:1,000</b>	<b>EXISTING ROAD NETWORK</b>	





PLAYDIUM

CENTRE VIEW DRIVE

CENTRE VIEW DRIVE



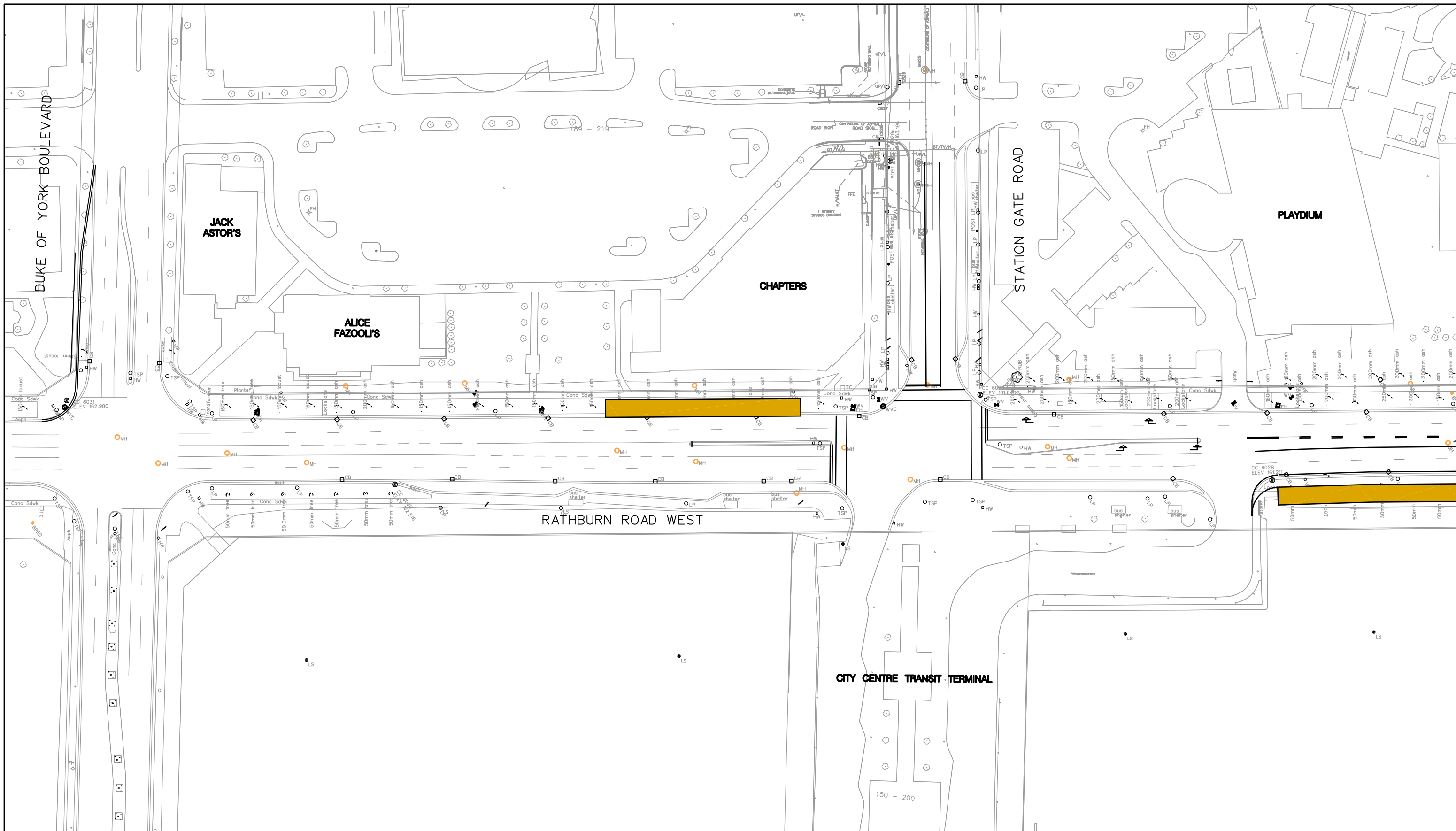
DATE:  
**FEBRUARY 2010**

SCALE:  
**1:1,000**



MISSISSAUGA CITY CENTRE BRT  
PRELIMINARY DESIGN REPORT

**EXISTING ROAD NETWORK**

FIGURE  
**2-1d**



**LEGEND:**

	TRANSIT ONLY
	PASSENGER PLATFORM

**MRC** McCORMICK RANKIN CORPORATION  
A member of **MMM GROUP**

**MISSISSAUGA** Transportation and Works

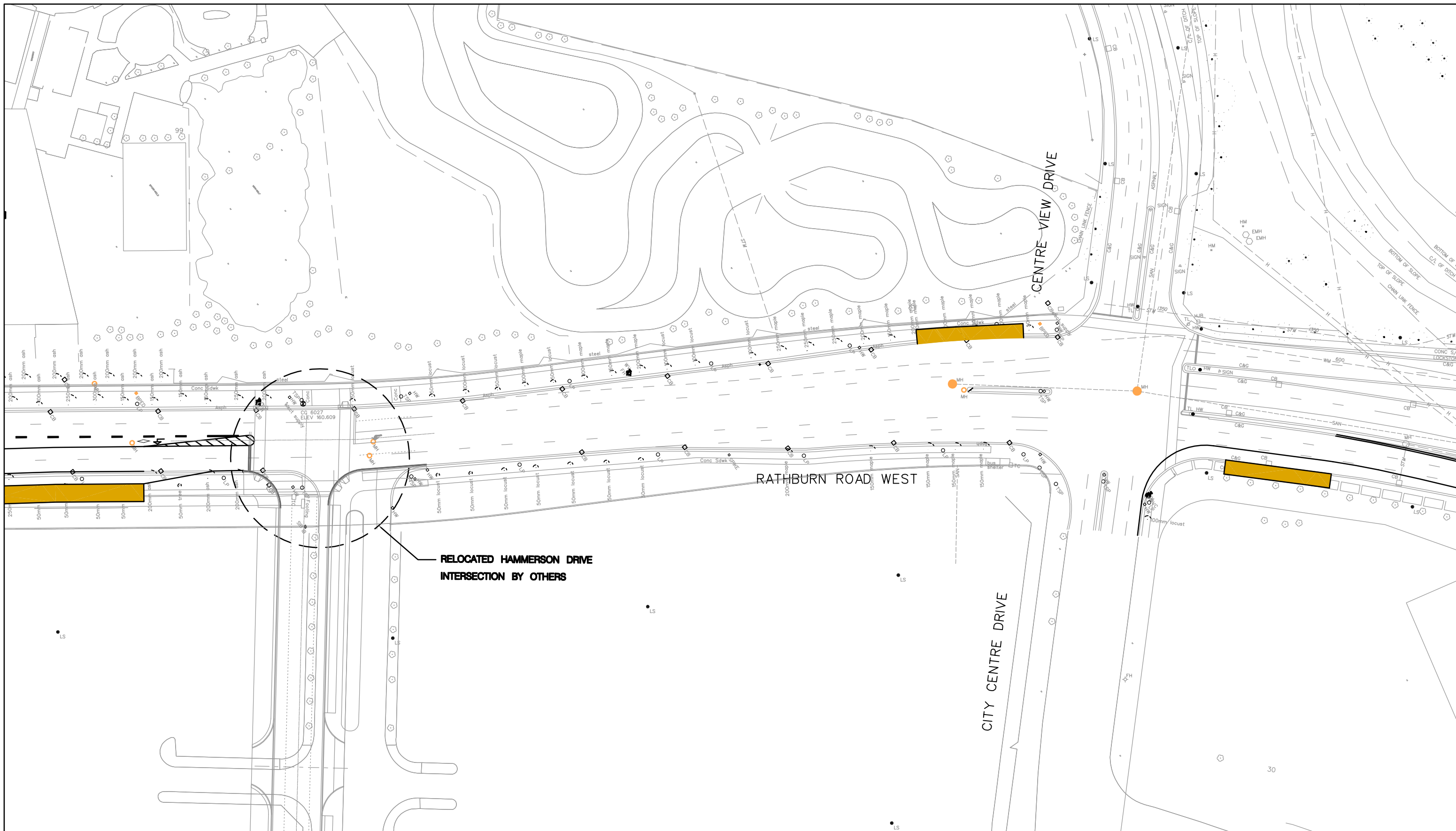
**DATE:**  
FEBRUARY 2010

**SCALE:**  
1:1,000

MISSISSAUGA CITY CENTRE BRT  
PRELIMINARY DESIGN REPORT

THE "DO NOTHING" ALTERNATIVE

FIGURE  
2-2a



<b>LEGEND:</b>	
	TRANSIT ONLY
	PASSENGER PLATFORM

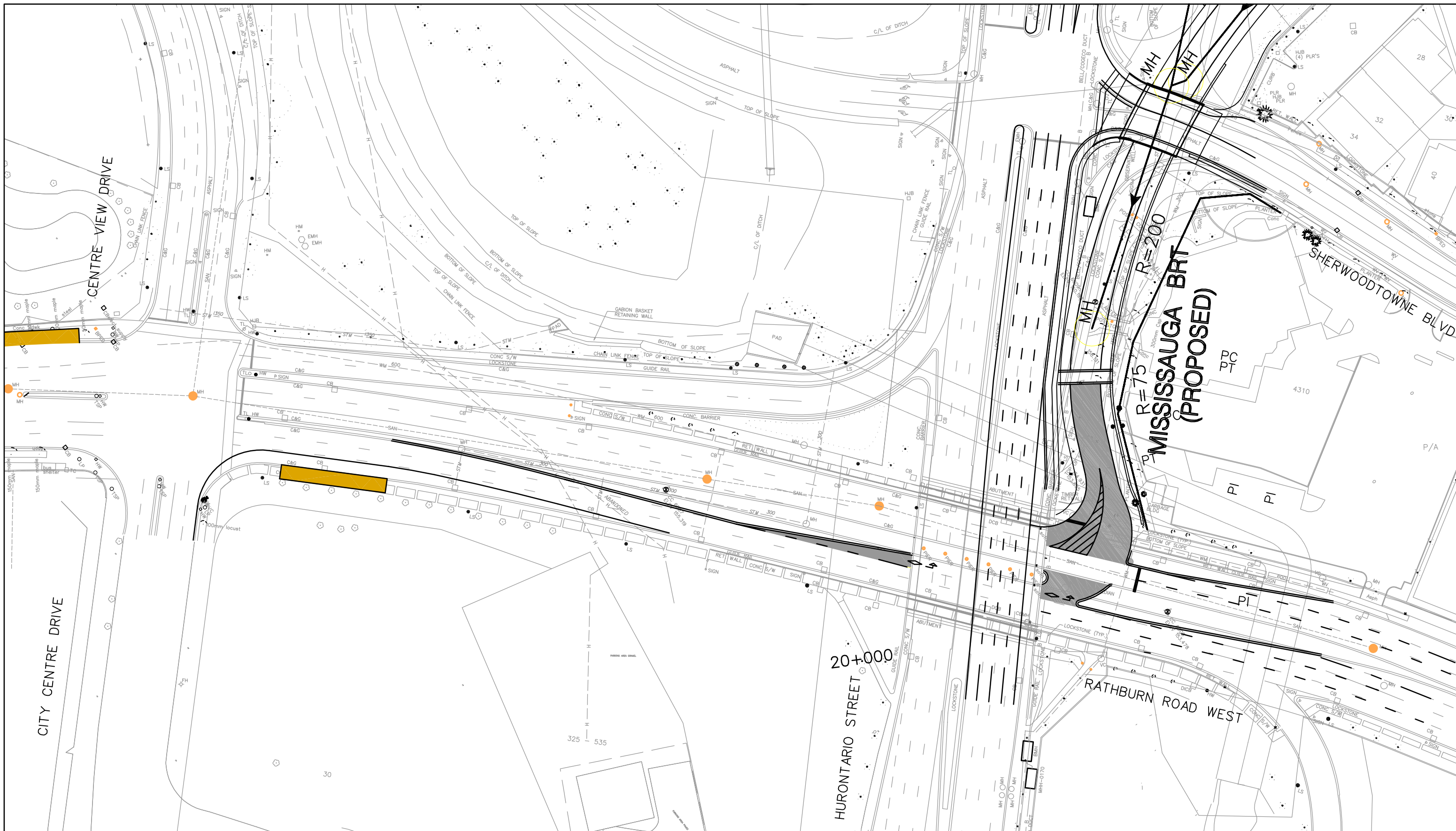

**MCCORMICK RANKIN CORPORATION**  
 A member of  **MMM GROUP**




**MISSISSAUGA**  
 Transportation and Works

<b>DATE:</b>	FEBRUARY 2010
<b>SCALE:</b>	1:1,000

MISSISSAUGA CITY CENTRE BRT  
 PRELIMINARY DESIGN REPORT  
 THE "DO NOTHING" ALTERNATIVE

**FIGURE**  
**2-2b**



	TRANSIT ONLY
	PASSENGER PLATFORM


**MCCORMICK RANKIN CORPORATION**  
 A member of  **MMM GROUP**


**MISSISSAUGA**  
 Transportation and Works

DATE:	FEBRUARY 2010
SCALE:	1:1,000

MISSISSAUGA CITY CENTRE BRT  
 PRELIMINARY DESIGN REPORT  
 THE "DO NOTHING" ALTERNATIVE

FIGURE  
 2-2c



**LEGEND:**

	TRANSIT ONLY
	PASSENGER PLATFORM

**MRC** **MCCORMICK RANKIN CORPORATION**  
A member of **MMM GROUP**

**MISSISSAUGA**  
Transportation and Works

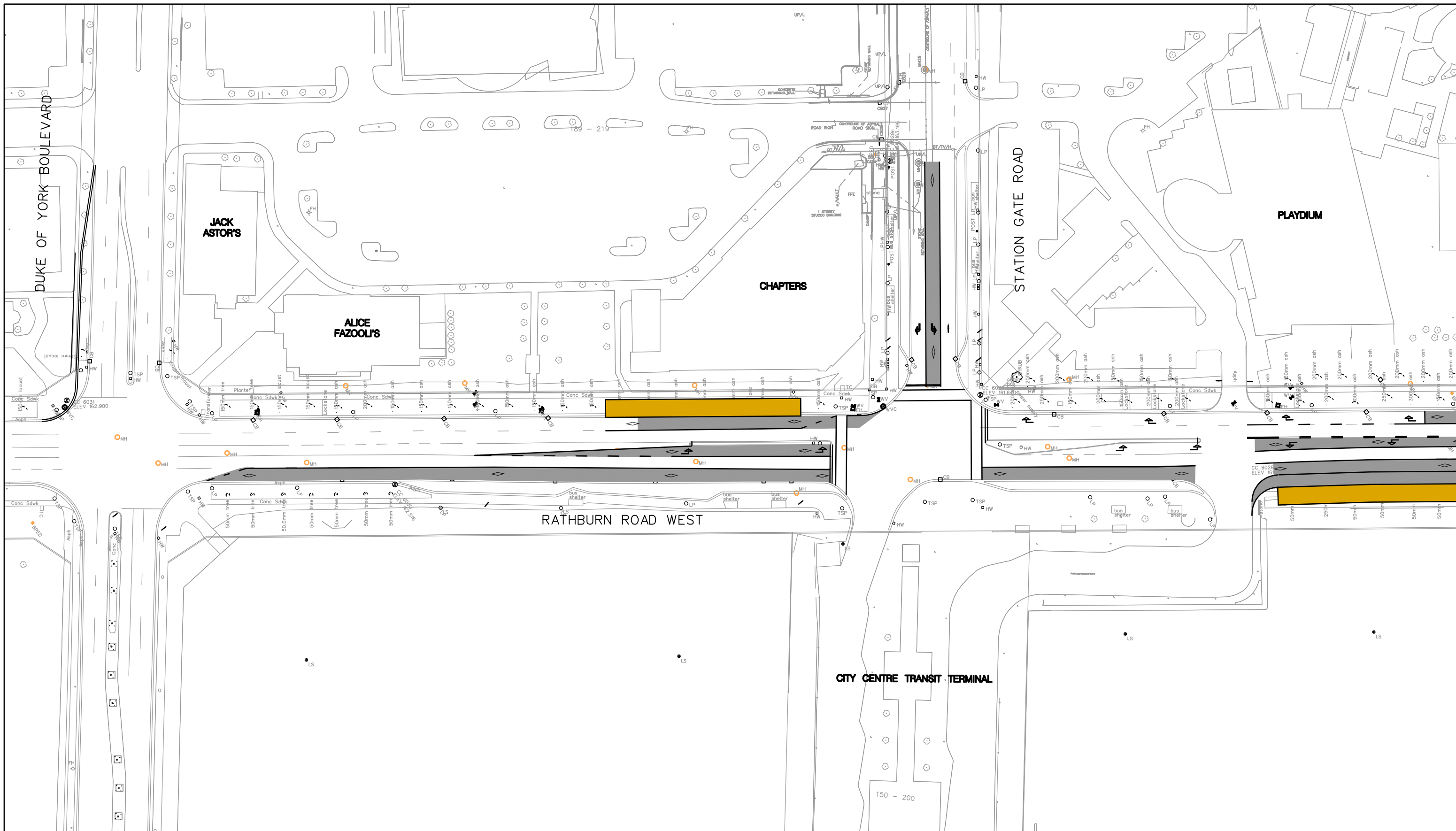
DATE:  
**FEBRUARY 2010**

SCALE:  
**1:1,000**


**MISSISSAUGA CITY CENTRE BRT  
PRELIMINARY DESIGN REPORT**

**THE "DO NOTHING" ALTERNATIVE**

**FIGURE  
2-2d**



**LEGEND:**

	TRANSIT ONLY
	PASSENGER PLATFORM

**MRC** McCORMICK RANKIN CORPORATION  
A member of **MMM GROUP**

**MISSISSAUGA** Transportation and Works

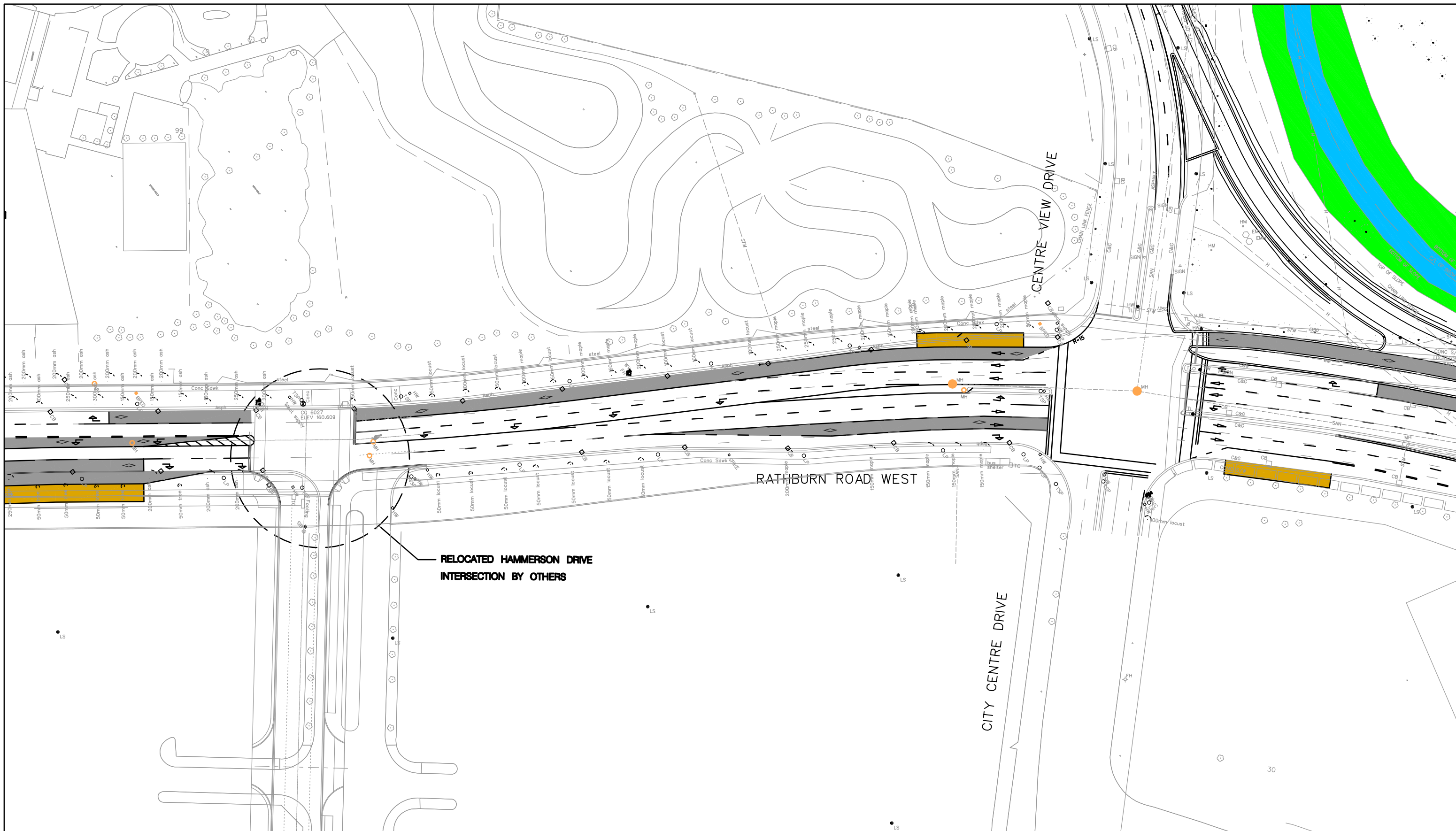
DATE:  
FEBRUARY 2010

SCALE:  
1:1,000

MISSISSAUGA CITY CENTRE BRT  
PRELIMINARY DESIGN REPORT

ALTERNATIVE 1 - CURB RESERVED BUS LANE

FIGURE  
2-3a



**LEGEND:**

	TRANSIT ONLY
	PASSENGER PLATFORM

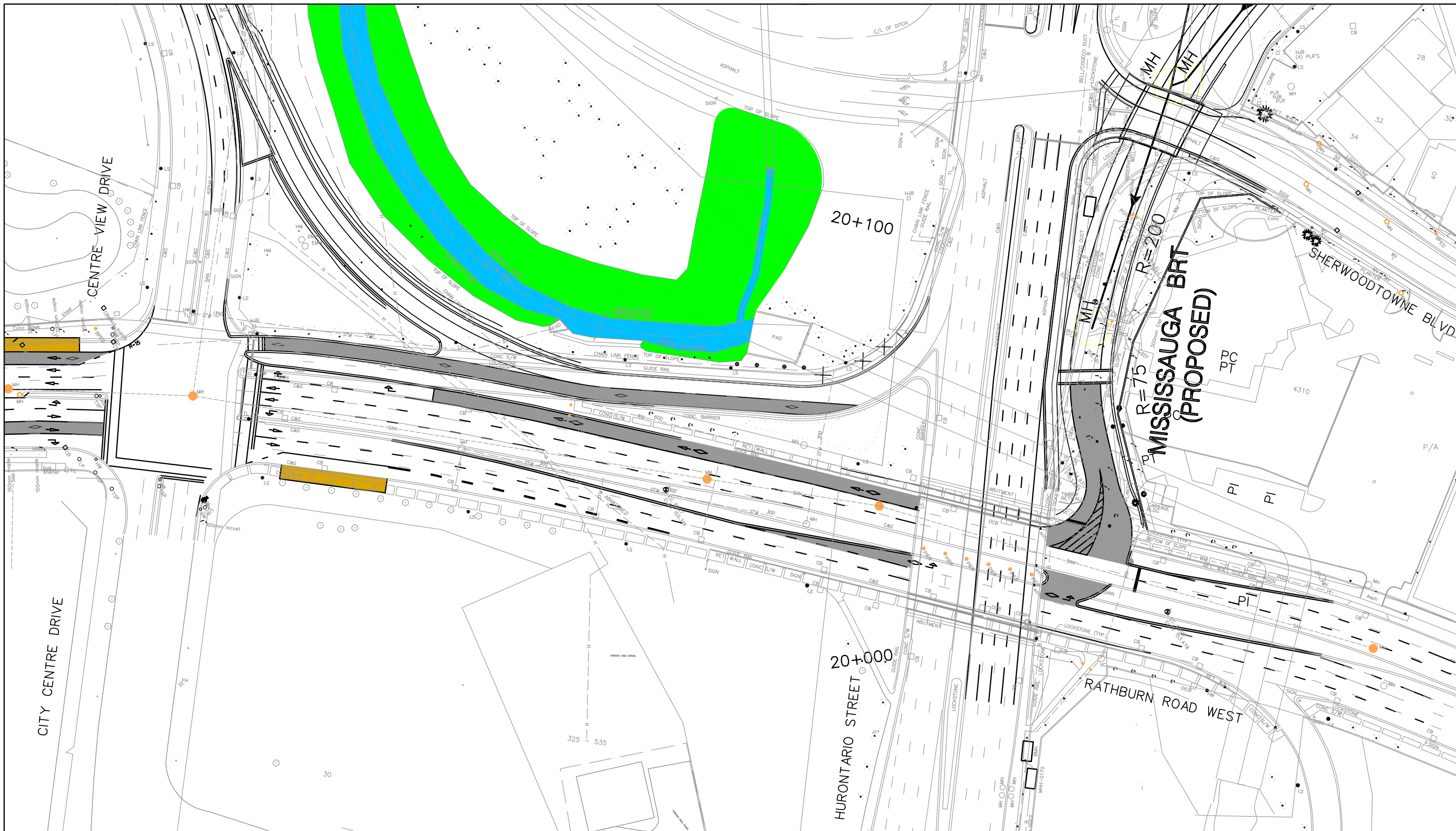
**MRC** McCORMICK RANKIN CORPORATION  
A member of **MMM GROUP**



**MISSISSAUGA** Transportation and Works

<b>DATE:</b>	FEBRUARY 2010
<b>SCALE:</b>	1:1,000

MISSISSAUGA CITY CENTRE BRT  
PRELIMINARY DESIGN REPORT  
ALTERNATIVE 1 - CURB RESERVED BUS LANE

FIGURE  
2-3b



<b>LEGEND:</b>	
	TRANSIT ONLY
	PASSENGER PLATFORM


**MCCORMICK RANKIN CORPORATION**  
 A member of  **MMM GROUP**


**MISSISSAUGA**  
 Transportation and Works

<b>DATE:</b>	FEBRUARY 2010
<b>SCALE:</b>	1:1,000

MISSISSAUGA CITY CENTRE BRT  
 PRELIMINARY DESIGN REPORT  
 ALTERNATIVE 1 - CURB RESERVED BUS LANE

FIGURE  
 2-3c



**LEGEND:**

	TRANSIT ONLY
	PASSENGER PLATFORM

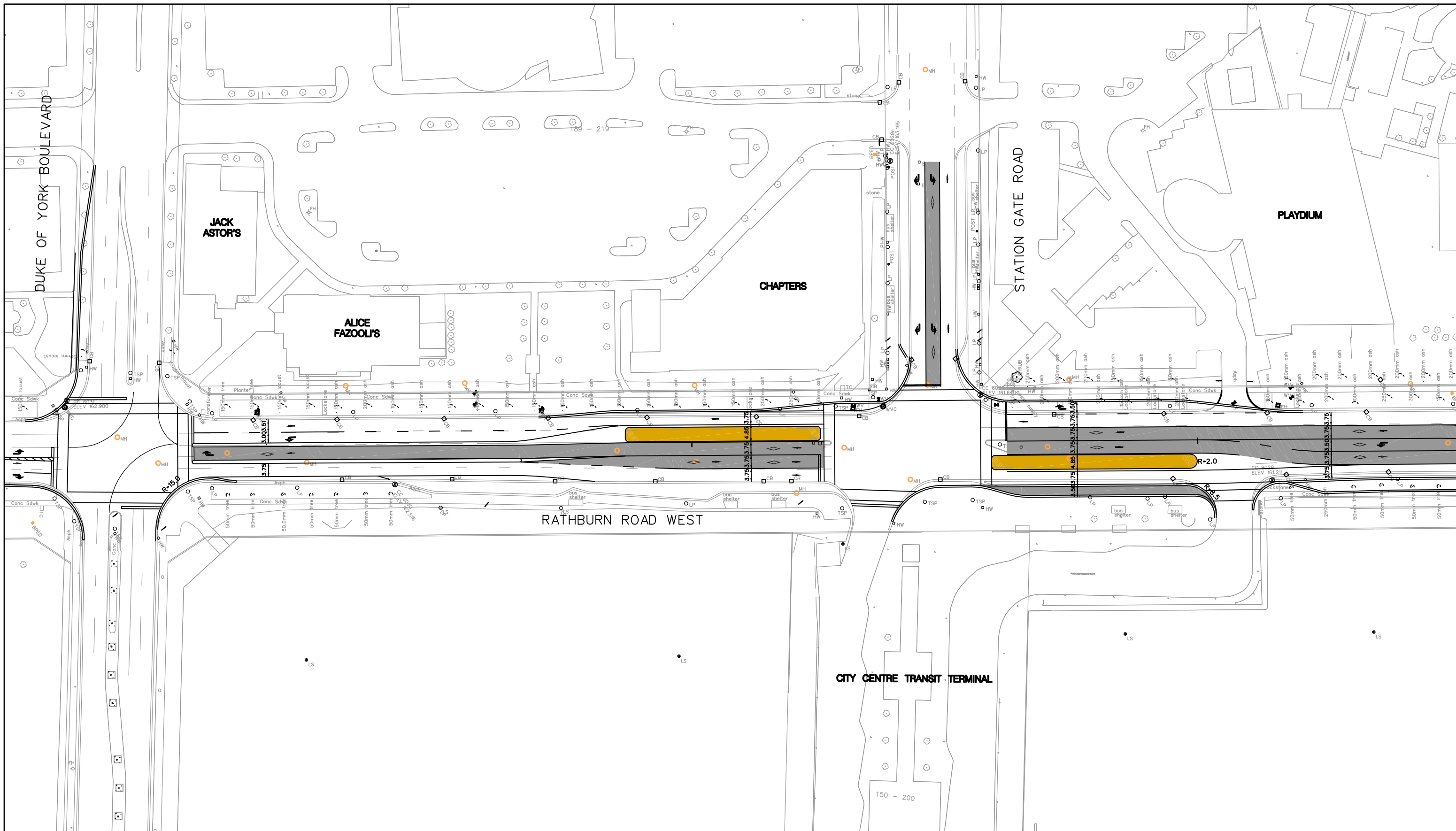
**MRC** McCORMICK RANKIN CORPORATION  
A member of **MMM GROUP**



**MISSISSAUGA** Transportation and Works

DATE: FEBRUARY 2010  
SCALE: 1:1,000

MISSISSAUGA CITY CENTRE BRT  
PRELIMINARY DESIGN REPORT  
ALTERNATIVE 1 - CURB RESERVED BUS LANE

FIGURE 2-3d



<b>LEGEND:</b>	
	TRANSIT ONLY
	PASSENGER PLATFORM

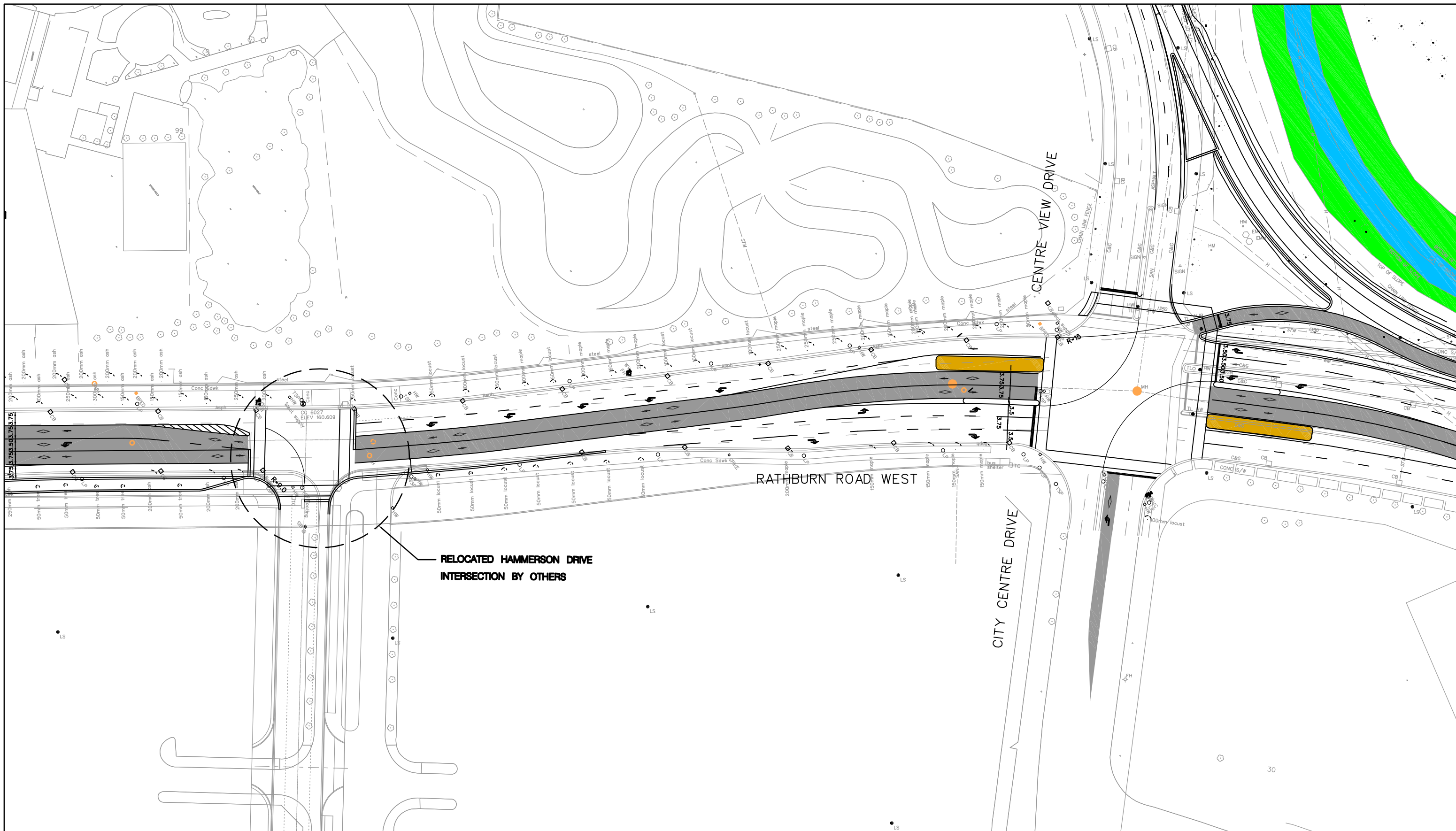
**MRC** McCORMICK RANKIN CORPORATION  
A member of **MMM GROUP**

**MISSISSAUGA** Transportation and Works

<b>DATE:</b> FEBRUARY 2010
<b>SCALE:</b> 1:1,000

MISSISSAUGA CITY CENTRE BRT  
PRELIMINARY DESIGN REPORT  
ALTERNATIVE 2 - MEDIAN RESERVED BUS LANE

FIGURE  
2-4a



**LEGEND:**

	TRANSIT ONLY
	PASSENGER PLATFORM

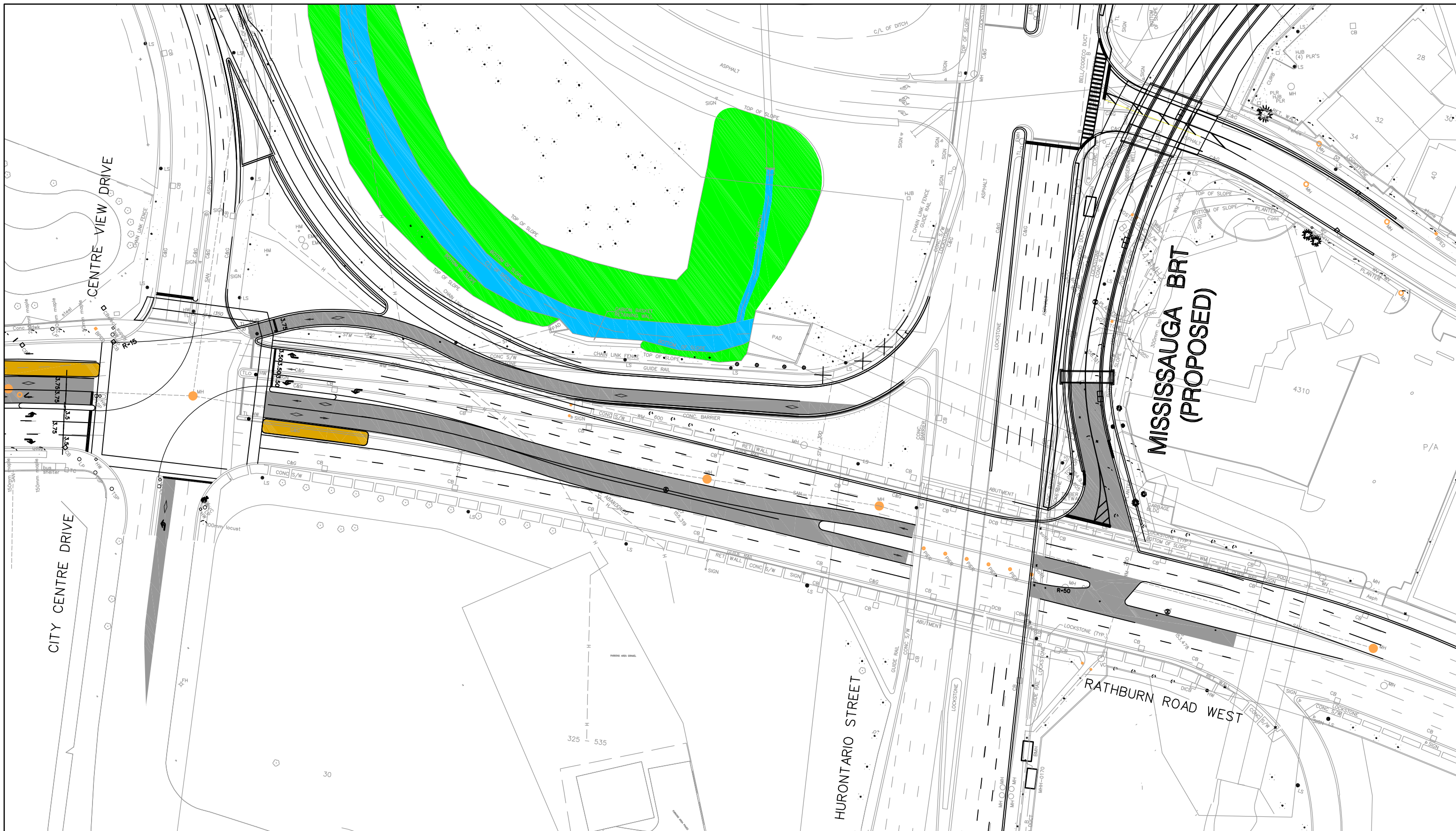
**MRC** McCORMICK RANKIN CORPORATION  
A member of **MMM GROUP**

**MISSISSAUGA** Transportation and Works



<b>DATE:</b>	FEBRUARY 2010
<b>SCALE:</b>	1:1,000

MISSISSAUGA CITY CENTRE BRT  
PRELIMINARY DESIGN REPORT  
ALTERNATIVE 2 - MEDIAN RESERVED BUS LANE

FIGURE  
2-4b



**LEGEND:**

	TRANSIT ONLY
	PASSENGER PLATFORM

**MRC** **MCCORMICK RANKIN CORPORATION**  
A member of **MMM GROUP**

**MISSISSAUGA**  
Transportation and Works

<b>DATE:</b>	FEBRUARY 2010
<b>SCALE:</b>	1:1,000

MISSISSAUGA CITY CENTRE BRT  
PRELIMINARY DESIGN REPORT  
ALTERNATIVE 2 - MEDIAN RESERVED BUS LANE

FIGURE  
2-4c



**LEGEND:**

	TRANSIT ONLY
	PASSENGER PLATFORM

**MRC** **MCCORMICK RANKIN CORPORATION**  
A member of **MMM GROUP**

**MISSISSAUGA**  
Transportation and Works

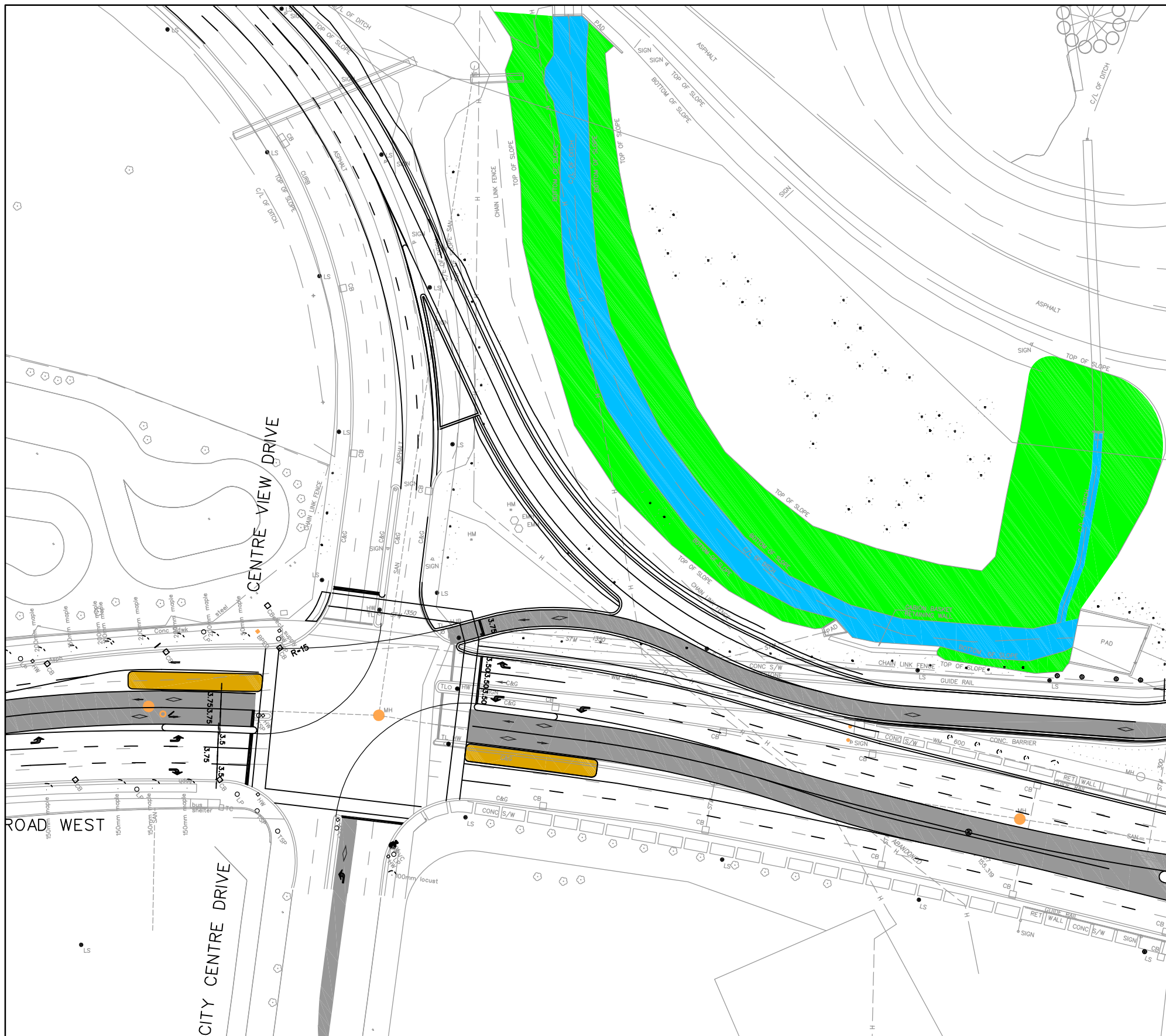
DATE:  
FEBRUARY 2010

SCALE:  
1:1,000

MISSISSAUGA CITY CENTRE BRT  
PRELIMINARY DESIGN REPORT

ALTERNATIVE 2 - MEDIAN RESERVED BUS LANE

FIGURE  
2-4d



SIGNAL PHASING ALTERNATIVE 1		SIGNAL PHASING ALTERNATIVE 2	
Phase 1		Phase 1	
Phase 2		Phase 2	
Phase 3		Phase 3	
LOS (HCM):	D	LOS (HCM):	D
AVG. DELAY:	54.35	AVG. DELAY:	45.1
MAX DELAY:	102.1 (SBT)	MAX DELAY:	70.7 (SBT)

**LEGEND:**

- TRANSIT ONLY
- PASSENGER PLATFORM

**MRC** McCORMICK RANKIN CORPORATION  
A member of **MMM GROUP**

**MISSISSAUGA** Transportation and Works

DATE: FEBRUARY 2010  
SCALE: 1:1,000

MISSISSAUGA CITY CENTRE BRT PRELIMINARY DESIGN REPORT  
SIGNAL PHASING ALTERNATIVES

FIGURE 2-5



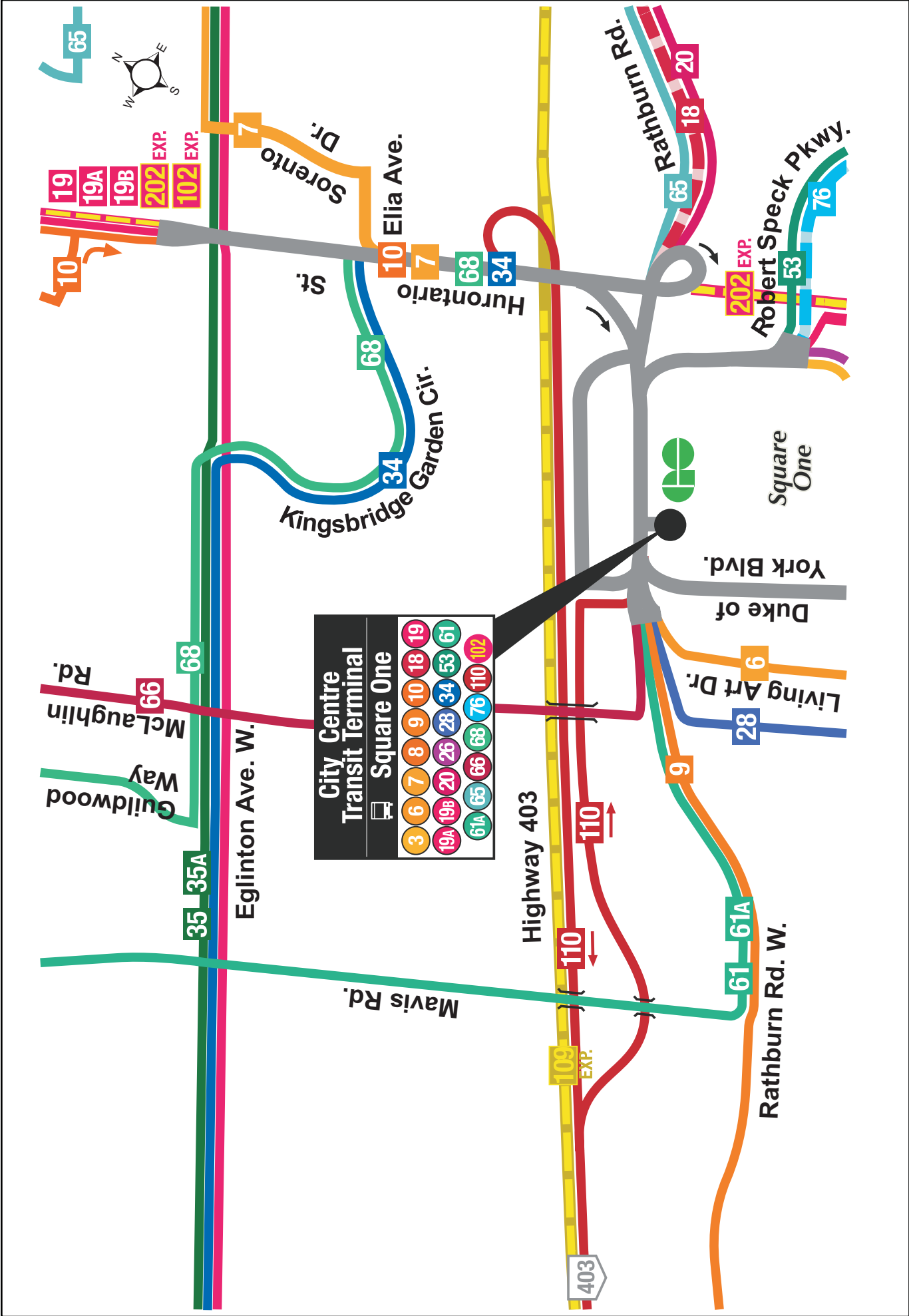


FIGURE  
**2-6**

RATHBURN ROAD TRANSIT PRIORITY  
ENVIRONMENTAL PROJECT REPORT

DATE: November 2009

SCALE: Not to Scale



Existing Transit Services

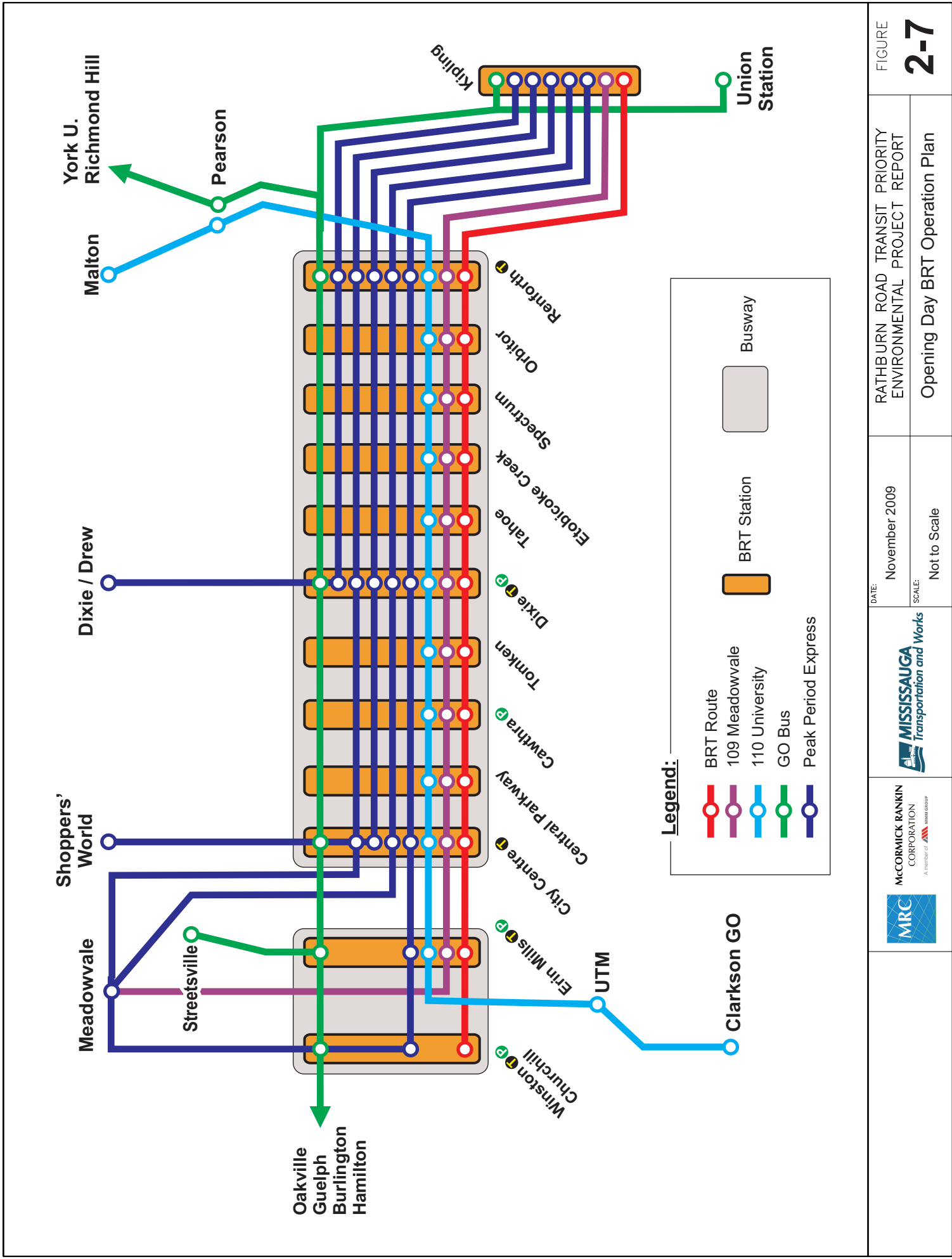


FIGURE 2-7

RATHBURN ROAD TRANSIT PRIORITY ENVIRONMENTAL PROJECT REPORT  
Opening Day BRT Operation Plan

DATE: November 2009  
SCALE: Not to Scale



### **3. ASSESSMENT OF IMPACTS ON LOCAL ENVIRONMENTAL CONDITIONS**

This section reviews the existing conditions within the Study Area. Existing conditions are highlighted with respect to the following areas:

- Natural Environment
- Socio-Economic Environment
- Cultural Environment

Detailed information for these factors is provided in the specialist and technical reports provided in the corresponding Appendices noted above.

#### **3.1 Description of Natural Environmental Investigations and Findings**

The Study Area is predominantly built, urban form, with the exception of the Cooksville Creek watershed. An inventory and analysis of existing and projected conditions in the Cooksville Creek area, along the project limits was completed from a secondary source data review and verified through site visits by Ecoplans Limited in 2008 as part of the Mississauga BRT Preliminary Design study. An assessment of the street foliage and natural features along the remainder of the study area was conducted by Ecoplans Limited in October, 2009.

In addition to reviewing pertinent secondary source information from the Toronto and Region Conservation Authority (TRCA), Ministry of Natural Resources (MNR) and Environment Canada (EC), LGL biologists undertook field assessments to characterize natural environmental features in 2003.

Excerpts from the Mississauga BRT Natural Environment Report addressing the Cooksville Creek area is provided in Appendix D, along with a memorandum summarizing the findings of the Rathburn Road natural environment assessment. Key existing conditions information is summarized in the following sections.

##### **3.1.1 Watercourses / Fish Habitat**

The following material is excerpted from the Mississauga Bus Rapid Transit Canadian Environmental Assessment Act Screening Report (January 2009). The material discusses the existing Cooksville Creek watershed in the City Centre area and is directly applicable to the Rathburn Road Transit Priority study.

Cooksville Creek is the only watercourse in the vicinity of the study area. The Creek is situated in the north-east quadrant of the Rathburn Road / Centre View Drive intersection, and crosses Hurontario Street (and the existing ramp from Hurontario Street to Rathburn Road) in a culvert north of Rathburn Road. The open reaches of Cooksville Creek upstream of the 'crossing', west of Hurontario Street and up and downstream of Highway 403, are not affected by the alignment. This is illustrated in **Figure 3-1**.

Upstream of Highway 403, the open section of creek channel appears to have been previously modified and/or straightened. It is confined in a narrow corridor

between the single and multi-family residential blocks north of the highway, draining through the open Parkway Belt/hydroelectric corridor and is then enclosed for approximately 150 m under the highway and west ends of the ramps. It then flows as an open but modified channel section between the ramp and Hurontario Street, and is then enclosed for another approximately 230 m downstream of Hurontario Street and Rathburn Road East. In that location a twin cell box culvert carries Cooksville Creek under Hurontario Street and Rathburn Road. That culvert is 2.7 m high and approximately 230 m long. The channel flows along the base of a retaining wall along Rathburn Road East. Grade control structures at and downstream of the Hurontario Street crossing act as permanent barriers to upstream fish movement.

The Credit Valley Conservation (CVC) considers the open portions of this watercourse adjacent to the project limits to have the potential to support a warmwater fishery (City of Mississauga 1994). However, no fish were collected at the sampling station near Rathburn Road (upstream of the grade control structures) in July, 1995. Although flow is permanent, there may be insufficient refuge habitat available in the short open reach to support fish, and the man made grade control structures downstream of the project limits and the long enclosed reaches preclude re-colonization from downstream reaches. Therefore, these reaches do not appear to support direct fish use within the BRT project limits. However, these reaches contribute to downstream habitat through conveyance of flow and some limited inputs of allochthonous materials (e.g., nutrients and detritus).

### **3.1.2 Surface Water**

#### **3.1.2.1 Drainage and Stormwater Management Strategy**

The drainage and storm water management strategy includes quality (Enhanced level) and quantity control for new pavement areas. Storm water management measures will be designed as per the 2003 Storm Water Management Planning and Design Manual, and the City of Mississauga design standards.

#### **3.1.2.2 Drainage and Stormwater Management Design**

##### **Rathburn Road Widening**

Under existing conditions, drainage from Rathburn Road discharges via catchbasins to the existing storm sewer system along Rathburn Road for events up to the 10-year storm. Flows from events in excess of the 10-year storm flow overland along Rathburn Road easterly and ultimately to the Cooksville Creek drainage system (see Exhibits 2a and 2b in Appendix ). Under proposed conditions, the increase in impervious area will result in a slight increase in flows to the existing drainage system, although the overall drainage scheme will remain unchanged.

The proposed works include the widening of Rathburn Road to accommodate additional turning lanes at Station Gate Road and Centre View Drive. The proposed widening of Rathburn Road will result in an increase in impervious area, which will discharge to the existing storm sewer system on Rathburn Road.

An assessment was carried out to determine if the proposed road widening will have impacts on the existing storm sewer system. Existing storm sewer design calculations were provided by the City. These design calculations were replicated in a storm sewer design spreadsheet for existing conditions. These were then revised to reflect the proposed road widening conditions. The storm sewer design spreadsheets incorporated the City of Mississauga IDF parameters for the 10-year storm event, as well as the City of Mississauga's minimum time of concentration of 15 minutes.

Under existing conditions, two sections of the sewer system are slightly over capacity (see MH24 to MH25 and MH25 to MH30 in **Appendix F**). Under proposed conditions, two lateral connections are over capacity (see 54 to Pipe and 70 to Pipe on attached spreadsheet). Since they are laterals, they do not need to be replaced.

The change in impervious area resulting from the proposed Rathburn Road widening results in a peak flow increase of only 2%, as shown on the storm sewer design spreadsheet included in **Appendix F**. However, the main sewers have sufficient capacity to convey the slight increase in flow rate.

Storm sewer design information for the 300 mm diameter sewer east of Centre View Drive was not available. A storm sewer design spreadsheet was created for the 300 mm diameter pipe section, and the slope of the pipes were estimated based on the road profile. The analysis indicates that the existing storm sewer on Rathburn Road east of Centre View Drive has capacity to convey the additional flows (see **Appendix F**).

### **Ramp Realignment Peak Flow Impact**

A realignment of the existing Hurontario to Rathburn Road ramp is also proposed. Under existing conditions, drainage from Centre View Drive discharges via catchbasins to existing ditches along both sides of Centre View Drive. The ditches ultimately discharge via a culvert to Cooksville Creek. Runoff from the majority of the ramp collects at a sag (low point) along the ramp. Catchbasins provide drainage to Cooksville Creek.

The proposed ramp realignment from Hurontario to Centre View Drive will result in a minor increase in pavement area from the realigned ramp to Centre View Drive. A hydrological analysis was conducted to assess the peak flow impact on the existing drainage infrastructure along the realigned ramp from Hurontario to Centre View Drive. The Rational method was used in the analysis for a 10-year design storm as per the City of Mississauga standards. **Table 3-1** summarizes the results generated for both existing and proposed conditions. The attached **Figure 3-2** illustrates the location of the existing catchbasins as well as the drainage areas to each of the catchbasins.

**Table 3-1: Existing and Proposed Drainage Conditions**

Catchbasin ID	Existing Condition		Proposed Condition		Actual Peak Flow Increase (cm/s)	% Flow Increase
	Catchment Area (ha)	Peak Runoff (cm/s)	Catchment Area (ha)	Peak Runoff (cm/s)		
DCB 19	0.18	0.038	0.22	0.046	0.009	23%
CB 20	0.0767	0.016	0.0903	0.019	0.003	18%
CB 21	0.0465	0.010	0.0465	0.010	0.000	0%

It should be noted that although the percent increase in peak flow of 23% is high at DCB 19 as a result of the ramp realignment, the actual amount of increased runoff of 0.009 m<sup>3</sup>/s is insignificant. The increase in runoff at CB20 is also insignificant. Therefore, runoff generated from the proposed ramp realignment will not cause any impact to existing hydraulic system.

Based on the above assessment, upgrade to the existing drainage infrastructure on Centre View Drive is not required.

**3.1.2.3 Ramp Profile Discussion**

As mentioned previously, the realigned ramp from Hurontario to Centre View Drive would largely maintain the existing ramp profile. The low point of the ramp will increase by approximately 0.1m. The current drainage design for the Regional Storm considers that the Cooksville Creek twin culvert under Hurontario Street / Rathburn Road may back up and allows for overtopping of the ramp and overland flow via Rathburn Road to Cooksville Creek downstream of Rathburn Road. The proposed ramp profile would maintain the spill area from Cooksville Creek to Rathburn Road during the Regional Storm. The small increase in elevation would allow marginally lesser spill from Cooksville Creek.

**3.1.2.4 Conclusions and Recommendations**

Based on the storm sewer system assessment, the following is concluded:

1. The proposed road widening of Rathburn Road will not have any impacts to the existing storm sewer system on Rathburn Road. Although the peak flow increased by 2% the existing sewer system has adequate capacity.
2. A Stormceptor STC-750 or approved equivalent would be required to treat the total increase in impervious area of 0.298 ha prior to discharge to Cooksville Creek, based on an Enhanced level of treatment. This oil-grit separator would be installed in the 1350 mm sewer prior to discharging to the creek.
3. The proposed ramp alignment will have no impacts to the existing storm sewer on Centre View Drive. The amount of increase in peak flow is insignificant.
4. The proposed ramp alignment will maintain the existing ramp profile with a small increase in elevation of approximately 0.1 m at the sag. This will maintain the spill area but will allow a lesser spill from Cooksville Creek to Rathburn Road.

It is recommended that the assessments be confirmed during the detailed design stage.

### 3.1.3 Groundwater

While the quantity increase of stormwater runoff resulting from the proposed roadworks is relatively minor, it is proposed to introduce a Stormceptor STC-750 or approved equivalent to treat the total increase in impervious area of 0.298 ha prior to discharge to Cooksville Creek, based on an enhanced level of treatment. This oil-grit separator would be installed in the 1350 mm sewer prior to discharging to the creek.

### 3.1.4 Natural Environment Inventory

The existing characteristics and sensitivities of the vegetation, associated habitat and wildlife along the project limits are described below.

Initial field surveys were conducted as part of the Mississauga BRT Preliminary Design Study (which included the Cooksville Creek area) on October 11th, 2007 with additional surveys carried out on January 29th, and June 18th and 26th, 2008. Additional surveys of street foliage along Rathburn Road were conducted on October 15th, 2009. The scope of the field work and terrestrial resources analyses included:

- Classifying or verifying previous classifications for vegetation communities, using the Ecological Land Classification (ELC) System for Southern Ontario (Lee et al. 1998);
- Evaluating the sensitivity and significance of vegetation communities, using the "Natural Heritage Resources of Ontario: Vegetation Communities of Southern Ontario" (Bakowsky 1996; NHIC 2008);
- Evaluating significance and sensitivity of flora and fauna recorded during field surveys, using Newmaster et al. (1998) and the NHIC website (2008) for provincial and national significance;
- Preparing a vascular plant species list; and
- Taking representative site photographs, a selection of which is included in **Appendix A**.

#### 3.1.4.1 Tree Inventory

Trees on site were assessed by species, size/age, and condition. The following defines the terms and assessment criteria used within this tree inventory report:

**Significant Tree:** Trees with sufficient cultural or environmental value to warrant special consideration regarding protection or preservation. Factors in this determination typically include (but are not limited to) species, age, health and rarity.

**Tree Group:** Trees growing within a specific area whose species composition and age are of a similar range.

<b>Species:</b>	The botanical and common names are provided for each tree.
<b>DBH:</b>	Abbreviation for diameter at breast height (recorded in centimeters), a measurement of the tree stem taken at 1.4 m above ground.
<b>Condition:</b>	Health assessment of the tree rated on a scale of good, fair and poor. Trees with good condition display less than a 20% defect/deficiency of tree structure and vigor, those in fair condition display less than 40% defect/deficiency, those in poor condition display an excess of 40% defect/deficiency.

Trees encountered on the north side of Rathburn Road are planted street trees consisting of four species. Inventoried trees were typically in fair to good condition and of intermediate age. No trees considered significant were found during the inventory. Six planting beds of rugosa rose (*Rosa rugosa*) were noted along Rathburn Road, outside the existing fencing adjacent to the Playdium property. Refer to **Appendix A** for specific information regarding tree species, size and condition.

Trees encountered on the south side of Rathburn road are planted street trees consisting of five species. Inventoried trees were typically in fair to good condition and of juvenile to intermediate age. No trees considered significant were found during the inventory.

Anticipated impacts are based on a preliminary review of the design drawings for the City Centre BRT route (drawing dated 28/10/2009). A number of existing trees are located in areas that are proposed for road widening, others are in close proximity and will interfere with, or be damaged by construction activities. At a minimum, the proposed work will require the removal of 12 Norway maples (10-20 DBH), 12 green ash (16-21 DBH), 4 green ash (22 DBH), 5 thornless honeylocust (4.5-6.0 DBH) and 3 Colorado spruce (10-15 DBH). Trees to remain should be protected as per City of Mississauga standards. It is not anticipated that tree removals will cause a significant environmental impact.

As compensation for the removals associated with the City Centre BRT, consideration should be given to replacing the removed trees with species proven to be hardy street trees within the Mississauga area. There are also trees that could be considered for transplant based on their size and condition. The thornless honeylocust (4.5-6.0 DBH) in particular, or any other newly planted tree of the 4.5-6.0 DBH range in good condition (i.e. maidenhair tree or ornamental pear) could be transplanted. In total there are 24 existing trees on site that could be considered for transplant. The Norway maples and green ash to be removed are not considered suitable for transplant. The Norway maples are too large or not of sufficient health to justify the procedure. Green ash should not be transplanted due to concerns regarding the emerald ash bore, a recent pest introduction that targets ash trees. No trees over 15 DBH should be considered for transplant. If any trees are transplanted they must be relocated outside of the work limits for this area, or to a new site entirely so the trees are only relocated

once. It is detrimental to the health of a tree if it is transplanted numerous times over a short period of time.

In summary, the site is a highly developed commercial area and trees on site are typically planted street trees composed of five species. Removals will be limited to those trees that are directly in the areas of road widening and those in close enough proximity to interfere with or be damaged by construction activities. No significant environmental impacts will result from the proposed tree removals.

### **3.1.5 Wildlife Habitat**

The study area is highly urbanized and does not include any notable or sensitive wildlife habitat. Proposed works will be contained largely within the existing Rathburn Road right-of-way or vacant land parcel in the northeast quadrant of the Rathburn Road / Centre View Drive intersection.

## **3.2 Description of Socio-Economic Environment Investigations and Findings**

The existing socio-economic environment is largely commercial in nature, with some single-family and multi-unit residential developments west of the Study Area. It is unlikely that the residential areas will experience any material changes. However, there is potential to affect the businesses along Rathburn Road by the potential implementation of turning restrictions, roadway, and overall traffic within the City Centre area.

The following sections summarize the key features of the existing Socio-Economic Environment that could potentially be affected by the implementation of the transit project.

### **3.2.1 Noise Conditions**

As part of the Transit Project Assessment Process, a review was carried out to determine if Noise Sensitive Areas (NSA) exist within the study area. The determination of whether or not a noise analysis needs to be carried out for the proposed project relies on the definition of a NSA as defined by MOE. The following references were reviewed:

- *MOE Noise Assessment Criteria in Land Use Planning Publication LU-131; and*
- *MTO Environmental Guide for Noise (April 2007)*

In general these documents identify the following land uses as potentially noise sensitive:

- Residential developments;
- Seasonal residential developments;
- Hospitals, nursing/retirement homes, schools, day-care centres, etc.

The lands adjacent to the Study Area are commercial in nature and include the following:

- Parking lots;
- Restaurants;
- Entertainment complexes;
- Bookstore; and
- Regional shopping centre.

No NSAs were identified within or immediately adjacent to the study area. No further noise analysis was conducted for the project.

### 3.2.2 Air Quality

The Rathburn Road Transit Priority Measures project involves the conversion of two existing general purpose lanes on Rathburn Road into Reserved Bus Lanes (RBLs). The roadworks proposed under the project are relatively minor (localized widenings only) and do not result in any increase in roadway capacity. The project is intended to improve operating speeds and efficiencies for buses, (both existing routes and future routes associated with the separate Mississauga Bus Rapid Transit project), which would otherwise be operating in mixed traffic on Rathburn Road within the study area. The volume of traffic in the corridor is not expected to increase as a result of the Rathburn Road Transit Priority Measures project, and given that air quality impacts are directly related to traffic composition and volume, the project will not result in any negative air quality impacts.

It should be noted that the air quality assessment prepared for the *Canadian Environmental Assessment (CEAA) Screening Report (2009)* for the Mississauga BRT Project, which provides an indication of the overall future air quality condition in the study area, confirmed that the overall BRT project did not pose significant adverse air quality impacts. A copy of the CEAA report is available for review through the City of Mississauga's website at the following:

<http://www.mississauga.ca/portal/residents/brt>

### 3.2.3 Soil Contamination

The proposed roadworks associated with the recommended transit project are entirely contained within the existing Rathburn Road right-of-way, with the exception of the relocated Hurontario Street – Rathburn Road ramp, which is to be situated within the vacant land adjacent to Cooksville Creek. Therefore, west of the Cooksville Creek area, there will be no significant excavation beyond the existing roadbed and therefore no potential for excavation of contaminated soils.

Regarding the potential for soil contamination adjacent to the Cooksville Creek area, a Contaminant Overview Study was undertaken for the Mississauga BRT Preliminary Design / Canadian Environmental Assessment Study, 2008 (which included the Cooksville Creek area) to identify areas/properties with actual and/or potential site contamination, which may affect future design and construction. The study was not intended to provide a full environmental liability assessment of actual or potential contamination, and it did not constitute a Phase I

Environmental Site Assessment (ESA) as prescribed by the Canadian Standards Association (CSA) Standard Z768-01.

Potential site contamination may exist within or surrounding the study area as a result of current and historical industrial/commercial land uses. The following is a list of typical chemical compounds associated with industrial/commercial activities and operations observed during the study area (illustrated in **Figure 3-4**) inspection, and noted during the background information review.

- Dry Cleaning Facilities – Volatile Organic Compounds (VOCs).
- Fuel Service Stations – petroleum hydrocarbons, lead and acid, and compressed gases.
- Industrial Facilities – solvents, petroleum hydrocarbons, heavy metals, and acids/bases.
- Registered Waste Generators – petroleum hydrocarbons, solvents, compressed gases, and hazardous solid, liquid and aerosol products.
- Waste Disposal Sites – petroleum hydrocarbons, heavy metals, solvents, and miscellaneous waste debris.

The fact that an activity or operation appears on the above list does not mean that hazardous substances are used or stored on all sites occupied by that activity or operation, nor that the land use will have hazardous substances present. The list merely indicates that such activities are more likely to use or store hazardous substances; and there is a greater probability of site contamination occurring than other uses or activities. Conversely, an activity or industry that does not appear on the list does not preclude it from having a potential for site contamination.

The study area was dominated by agricultural operations until the late 1960's. Since then, substantial development has occurred around the study area. The pesticides used in these agricultural operations can accumulate in the environment and remain for long periods of time. These contaminants can be transported through surface water runoff, wind and dust generation, and groundwater. However, due to a decrease in the intensity of the agricultural operations and the change in land use overall, there is a low potential for soil and groundwater contamination associated with historical agricultural operations.

A comprehensive records review was completed for the study area to collect available information on past activities that could have contributed to actual or potential contamination. In addition, a visual inspection of the study area was completed to properties/areas that pose the potential for contamination, either based on their nature of operations/land use (e.g. service stations, industrial areas) or by visual evidence of contamination (e.g. piles of waste debris, surface staining). The inspection was limited to a non-intrusive roadside inspection.

No areas of actual contamination were identified during the inspection based solely on observations for the Cooksville Creek area.

### 3.2.4 Property Requirements

The recommended design method is predicated on impacting as few properties as possible, while achieving the project’s base objectives. As such, the majority of the required roadworks will occur within the existing Rathburn Road right-of-way. The exception, however, is at the site of the relocated Hurontario Street - Rathburn Road ramp. The realigned ramp will be situated largely on lands managed by the Ontario Realty Corporation. In addition, there remains a small unused parcel of land in the northeast corner of the Rathburn Road / Centre View Drive intersection owned by Oxford Properties that will be required for the ramp construction. The property requirements and ownership are illustrated in **Figure 3-3**, and summarized in the following table.

**Table 3-2: Preliminary Property Requirement Estimates**

Property Owner	Location	Preliminary Estimate of Area Required (m <sup>2</sup> )
Oxford Properties Inc.	Northeast corner of Rathburn Road / Centre View Drive intersection	645 m <sup>2</sup>
Ministry of Government Services	Northeast corner of Rathburn Road / Centre View Drive intersection	2,080 m <sup>2</sup>

### 3.2.5 Utility Protection / Relocation

The proposed roadworks will not require significant utility relocations. However, electrical plant supporting street lighting and traffic signal facilities may require localized relocation to serve the relocated traffic signal poles and light standards where road widenings are proposed.

Existing subsurface utilities situated under the site of proposed localized widening – particularly those on the north side of Rathburn Road at the Station Gate Road intersection – will be protected per the requirements of their owner. Provision will be made such that, in the event that a utility owner needs to access their plant under the right-turn auxiliary lane at the Station Gate Road intersection, the auxiliary lane will be closed for the duration of utility works.

The following summarizes the requirements of the utility owners in the corridor to protect their existing facilities.

**Table 3-3: Utility Protection Requirements**

Utility Owner	Location of Potential Conflict	Potential for Impacts	Mitigation Scheme
Bell Canada	Northeast corner of Rathburn Road / Station Gate Road intersection.	Proposed auxiliary right-turn lane potentially on top of underground utilities	Bell has indicated that they have no issue with their plant being under the right-turn lane, but will need to be placed in a conduit if not already located in a conduit; to be confirmed by Bell and addressed in detailed design.
Enersource	Northeast corner	Proposed	Enersource to confirm location of

Utility Owner	Location of Potential Conflict	Potential for Impacts	Mitigation Scheme
Hydro Mississauga	of Rathburn Road / Station Gate Road intersection.	auxiliary right-turn lane potentially on top of underground utilities	facilities in field to identify if conflict exists. If so, mitigation scheme will be confirmed in detailed design phase of project. Options to be considered include: <ol style="list-style-type: none"> <li>1. relocate ducts</li> <li>2. encase ducts in concrete in existing location</li> <li>3. construct queue jump lane using concrete bus bay/lay-by type cross-section (preferred)</li> </ol>
	South side of Rathburn Road between Station Gate Road and Hammerson Drive, and on the east side of Centre View Drive north of Rathburn Road.	Street lighting to be relocated.	MRC/City will work with Enersource in detailed design phase of project to develop design to relocate lighting per Enersource requirements.
	Median bus platforms at Station Gate Road, Centre View Drive	Power services to be provided to passenger shelters on platforms.	MRC/City will work with Enersource in detailed design phase of project to develop design to provide power to shelters per Enersource requirements.
	Northeast corner of Rathburn Road / Centre View Drive intersection	Proposed realigned southbound Hurontario Street to Centre View Drive ramp crosses over underground Enersource facilities	Enersource to confirm location of facilities in field to identify if conflict exists. If so, mitigation scheme will be confirmed in detailed design phase of project. Options to be considered include: <ol style="list-style-type: none"> <li>1. lower ducts</li> <li>2. adjust profile of realigned ramp at crossing to maintain acceptable clearance (preferred)</li> </ol>
	Enbridge Consumers Gas	Northeast corner of Rathburn Road / Station Gate Road intersection.	No impacts anticipated.
Peel Region Sanitary and Watermain	No significant impacts anticipated	Minor impacts (e.g. manhole cover adjustments) only.	Detailed design drawings to be provided to Peel for review when available.

The locations of potentially affected utilities are illustrated in **Figure 3-5**.

### 3.3 Description of the Cultural Environment Investigations and Findings

In this section of the report, background information is provided on the existing social-cultural environment in the area. Both the historical background,

manifested in today's heritage resources, and the current context are reviewed. The focus is on existing conditions.

### **3.3.1 Communities**

The Study Area's community environment may be characterized by its commercial nature, recency of development and physical segregation by land use type. The commercial areas are either in retail plazas along major arterials or concentrated in the major City Centre node. The nature of the proposed development does not infringe on any residential development. The physical construction activities will be limited to within the existing Rathburn Road right-of-way, and in the undeveloped northeast quadrant of the Rathburn Road/Centre View Drive intersection.

### **3.3.2 Heritage and Archaeological Resources**

Heritage, historic, and archaeological resources associated with the area are mainly associated with nature trails and nineteenth century farms. The City Centre area affected by the proposed construction along Rathburn between Duke of York Boulevard and Shipp Drive is not adjacent to any heritage properties. Further, given that the proposed construction lies within or immediately adjacent to areas already disturbed by construction of major roadways, indicates that little heritage material is likely to be affected by the new work. This perspective is consistent with that expressed in the Mississauga BRT EA in 1992.

#### **3.3.2.1 Built Heritage Resources**

The following presents the results of a heritage review conducted by the City of Mississauga's Community Services Department - Culture Division in late October, early November 2009. The review was focused on identifying the presence of cultural heritage sites in or adjacent to Project Study Area. The review identified no Cultural Heritage sites in or adjacent to the Study Area on the City of Mississauga's records. A supplemental review of the Ministry of Culture's Heritage Properties database also indicated that there are no heritage properties along Rathburn Road within the study limits.

#### **3.3.2.2 Archaeology**

New Directions Archaeology Ltd. was retained to undertake a Stage 1 archaeological assessment of the Study Area. The purpose of this assessment was to determine whether there is potential for the recovery of any historic or prehistoric archaeological sites within this corridor.

A survey of the Ministry of Culture archaeological site registry database in Toronto revealed that there are no registered sites located within the Rathburn Road corridor.

A preliminary field assessment to examine the condition of this corridor was completed on November 9, 2009 as part of this Stage 1 assessment. The results of this examination are provided in **Figure 3-6**.

From Duke of York Boulevard eastward to Shipp Drive, the corridor runs through a previously constructed corridor. The entire corridor and the adjacent lands have been disturbed by construction; this disturbance was confirmed by a visual inspection. This section of the corridor is adjacent to numerous shopping plazas and parking, an obviously landscaped park and an interchange leading to Highway 10. Given the obvious disturbed nature of this section of corridor, a Stage 2 archaeological assessment will not be required.

### 3.4 Description of the Transportation Network Investigations and Findings

The following sections discuss the existing transportation network, including the local road network and traffic operations, the transit services within the study area, and pedestrian activity.

#### 3.4.1 Road Network

Rathburn Road, located within the City Centre District of Mississauga, is classified as a major collector according to the Official Plan of the City of Mississauga (2002). The major and minor collector north-south roadways from Duke of York Boulevard to east of Hurontario Street are listed in **Table 3-4**.

**Table 3-4: North-South Major and Minor Collectors  
 (Duke of York Boulevard to east of Hurontario Street)**

Major and Minor Collectors	Through Lanes on Rathburn Road	Through Lanes on Cross Street
Duke of York Boulevard	2E 2W	2N 2S
Stationgate Road	2E 2W	1N -
Entrance to Square One	2E 2W	2S
Centre View Drive/City Centre Drive	3E <sup>(1)</sup> 3W <sup>(2)</sup>	2N 2S

(1) East of Centre View Drive/City Centre Drive

(2) Becomes two lanes west of Centre View Drive/City Centre Drive

#### 3.4.2 Traffic Analysis

Traffic volumes for the base case were based on available 2006 turning movement counts (before opening of Confederation Parkway north of Rathburn Road), and supplemented with 2008 turning movement counts. The intersections were then balanced to the adjacent 2006 count locations.

The road network (as of 2006) was coded into a VISSIM model (German “Traffic in Cities” Simulation Model), therefore excluding the Confederation Parkway overpass north of Rathburn Road. 2008 transit operations in the City Centre were also coded into a VISSIM model. Signalized intersections were assessed using the existing signal timings, as provided by the City of Mississauga.

It should be noted that the traffic analysis was conducted for the design as of October 2009. While the design has changed since, the changes made are expected to have mitigated some of the traffic impacts, and therefore the

following analysis reflects a conservative estimate of the implications of the transit project on the traffic operations in the study area.

To confirm this expectation, the critical Opening Day PM Peak scenario was revised to reflect the updated design.

#### **3.4.2.1 Existing (2008) Scenario**

In this scenario, the traffic volumes were based on 2008 turning movement counts for the AM peak hour and were supplemented (where 2008 counts were not available) with 2006 turning movement counts. The counts were balanced according to adjacent 2008 turning movements.

The existing (2008) road network was coded into the VISSIM model, and included the recently-opened Confederation Parkway link over Highway 403 north of Rathburn Road. The 2008 transit operations in the City Centre were also coded into the VISSIM model.

The VISSIM analysis suggests that all intersections on Rathburn Road in the study are anticipated to operate at a good Level-of-Service (LOS 'A' to LOS 'D') in 2008 with the exception of the intersection with City Centre Drive, which is anticipated to operate with a LOS 'D/E'. The simulated LOS are consistent with intersection operations observed in October, 2008. At that time, it was noted that intersections along Rathburn Road appeared to operate well in the AM peak hour with little delay and minimal queuing.

The opening of the Confederation Parkway link north of Rathburn Road appears to have resulted in a decrease in traffic volumes on Mavis Road. Consequently, the intersection at Mavis Road and Rathburn Road appears to have improved from LOS 'D' in year 2006 to LOS 'C' in year 2008. The increased demand at the intersection of Confederation Parkway with Rathburn Road, however, has resulted in a decrease in LOS, with LOS 'C' in year 2008 from LOS 'A' in year 2006.

#### **3.4.2.2 Forecast of Future Demand**

For the assessment of future (2023) scenarios, traffic volumes were estimated by increasing the base case (2008) traffic volumes and turning movement counts by 30%, which represents 2% per annum simple growth for a period of 15 years.

#### **3.4.2.3 Existing (2008) Traffic Operations with BRT Facility**

In this scenario, the existing traffic volumes (discussed in Section 3.4.2.1) were redistributed to reflect the introduction of the proposed Transit Project. The lane reduction on Rathburn Road is anticipated to result in an increase in delay for southbound left turning vehicles at the Confederation Parkway and Rathburn Road intersection. In this case, 38 trips destined to Square-One from Confederation Parkway were assumed to use the entrance from the Prince of Wales Drive instead of Rathburn Road.

The proposed median BRT configuration has resulted in a lane reduction on Rathburn Road to a single lane for the general traffic between Duke of York

Boulevard and Hurontario Road in each direction. The proposed transit operations including BRT lines for opening day (2014) in the City Centre were coded into a VISSIM model for analysis purposes. These routes and schedules were identified in the BRT East Preliminary Design Study (2008).

Signal timings were optimized in the Synchro software and incorporated in the VISSIM model.

The results indicated that simulated intersection delays and LOS were expected to operate at a relatively good level of service. Per the proposed design, the removal of the ramp from Hurontario Street to Rathburn Road at the City Centre Drive intersection appears to reduce the average delay for the intersection and improve the overall LOS (from LOS 'E' to LOS 'D'). The details of the analysis are provided in Appendix C.

#### **3.4.2.4 Future (2023) Traffic Operations with BRT Facility**

In order to assess the impacts of the BRT facility on traffic operations in the horizon year (2023), it was assumed that the road network in the Study Area would not change significantly. This scenario also applied the same transit network as the current scenario discussed in **Section 3.4.2.3**. Traffic volumes were inflated to reflect growth in background traffic, as discussed in **Section 3.4.2.2**. Signal timings for the future traffic operations impact assessment were optimized in the Synchro Software and incorporated in the VISSIM model.

With the 30 percent growth in traffic in the future, all of the Study Area intersections are expected to operate with LOS 'D' or better in the AM peak hour, with the exception of the Rathburn Road intersection with Confederation Parkway, which is anticipated to operate with level-of-service 'E'. This intersection would likely require improvements to operate at an acceptable LOS in the future during the AM peak hour. The intersection of Rathburn Road and City Centre Drive is expected to operate with a LOS 'D/E'. This analysis also indicated that the intersection of Rathburn Road and Mavis Road will likely require dual left-turn lanes for eastbound traffic with a protected left turn signal for the eastbound and westbound left turns, to accommodate the growth in background traffic.

**Table 3-5** illustrates the estimated intersection PM Peak Hour levels-of-service for the future (2023) scenario with the transit priority measures in place.

**Table 3-5: 2023 PM Peak Hour Levels-of-Service**

Intersection	Overall Intersection		Critical Movement		
	Average Delay	LOS	Movement	LOS	Queue Length 95%
Rathburn Road at Duke of York Blvd.	44.2	D	WBT	D	186
Rathburn Road at City Centre Transit Terminal	35.1	D	EBT/ NBL	C/F	188/ 69
Rathburn Road at Square One North Entrance	26.0	C	WBL	E	67
Rathburn Road at City Centre Drive	69.7	E	WBT	F	128
City Centre Drive at Square One West Entrance	31.5	C	EBL	E	83
Centre View Drive at Station Gate Road	0.8	A	NBL	D	7
Centre View Drive at Duke of York Blvd.	17.4	B	NBL	C	74
Square One West and Duke of York Blvd	15.0	B	WBL	D	49

**3.4.2.5 Conclusions**

The PM peak hour analysis for year 2008 indicates that all the intersections in the network operate at good levels of service (LOS 'C' or better), except for the Rathburn Road and City Centre Drive intersection, which is estimated to operate at a LOS of 'E'.

The proposed BRT facility is planned to be built in an area which is undergoing rapid development. The analyses and conclusions for the proposed network were solely based on the conceptual design plans. The median BRT design is proposed to be implemented on Rathburn Road between Duke of York Boulevard and Shipp Drive within available road allowance. The proposed transit project would yield results of reasonable levels of service along Rathburn Road between Duke of York Boulevard and Shipp Drive with 15 year traffic projections provided the expected traffic diversion is realized. The exception to this is the intersection of Confederation Parkway and Rathburn Road, which is anticipated to operate at LOS 'E' without aid of any major diversion of traffic. The intersection of Centre View Drive and Rathburn Road is anticipated to operate at LOS 'D', and the intersection of Mavis Road and Rathburn Road is anticipated to operate at LOS 'D' with the addition of left turn lane at the eastbound approach and network-wide optimization of signal timing plans for the peak period. It is recommended that this minor improvement to this intersection is warranted taking into consideration the planned projects in the near vicinity.

The traffic analysis as undertaken provides a reasonable level of comfort that, given the expected level of traffic diversion associated with the roadworks and turning movement restrictions, the proposed Median BRT facility between Duke of York Boulevard and Shipp Drive will not unduly impact the traffic flow and service along Rathburn Road.

### **3.5 Description of Proposed Mitigation Measures and Future Commitments**

The following table discusses the future proposed methods / means of mitigating residual impacts of the project. The residual impacts are discussed below, along with the City's commitment to mitigate the specific impact.

DRAFT

**Table 3-6: Proposed Mitigation Measures**

Impact	Description	Proposed Means of Mitigating	Proposed Monitoring Process
<b>Street tree (i.e. aesthetic / landscaping) removal</b>	Estimated 36 street trees affected, none of which are considered "significant".	Consider relocating candidate trees (24 in total) to outside of construction work zone.	
<b>Archaeology</b>	While the Stage 1 investigation recommended that a Stage 2 assessment was not required, construction activities may reveal additional potential for archaeological finds in the study area.	Should deeply buried archaeological remains be found on the property during construction activities, Ministry of Culture should be notified immediately.  In the event that human remains are encountered during construction, the proponent should immediately contact both Ministry of Culture, and the Registrar of the Cemeteries Branch of the Ministry of Government Services.	
<b>Property Acquisition</b>	While the majority of the proposed works along Rathburn Road will remain within the existing roadway right-of-way, the realignment of the southbound Hurontario Street to Rathburn Road ramp will occur on lands currently owned by Oxford Properties and the Ontario Realty Corporation.	The City of Mississauga will continue to liaise with the property owners throughout the detailed design process to obtain an agreement for either the transfer of property or an easement agreement for lands on which the realigned ramp will be situated.	
<b>Construction Impacts</b> Traffic Staging		The City will continue to liaise with adjacent property owners throughout the development of the construction staging plan in the detailed design phase of the project. TBD	
<b>Stormwater Management</b> Cooksville Creek	Additional stormwater runoff generated by project to be treated for quality prior to distribution into Cooksville Creek.	Introduction of a Stormceptor 750 (or equivalent) oil-grit separator in the 1350mm storm sewer north of Rathburn Road east of Centre View Drive.	
<b>Noise</b>	No noise sensitive areas in or adjacent to study area.	No noise mitigation measures are required.	
<b>Air Quality</b>	No negative air quality impacts resulting	No air quality mitigation measures are	

	<p>from project.                  Potential for buses on realigned Hurontario Street – Centre View Drive ramp to queue back to Hurontario Street.</p>	<p>required.                  The City will include in its operating protocol the requirement for buses to stay in the general purpose ramp lane and use Centre View Drive to get to the City Centre Transit Terminal in the event of a problem at the intersection that hampers buses' ability to use the bus link or if there is a backup onto the general purpose ramp lane for any reason.</p>	
--	---	--	--

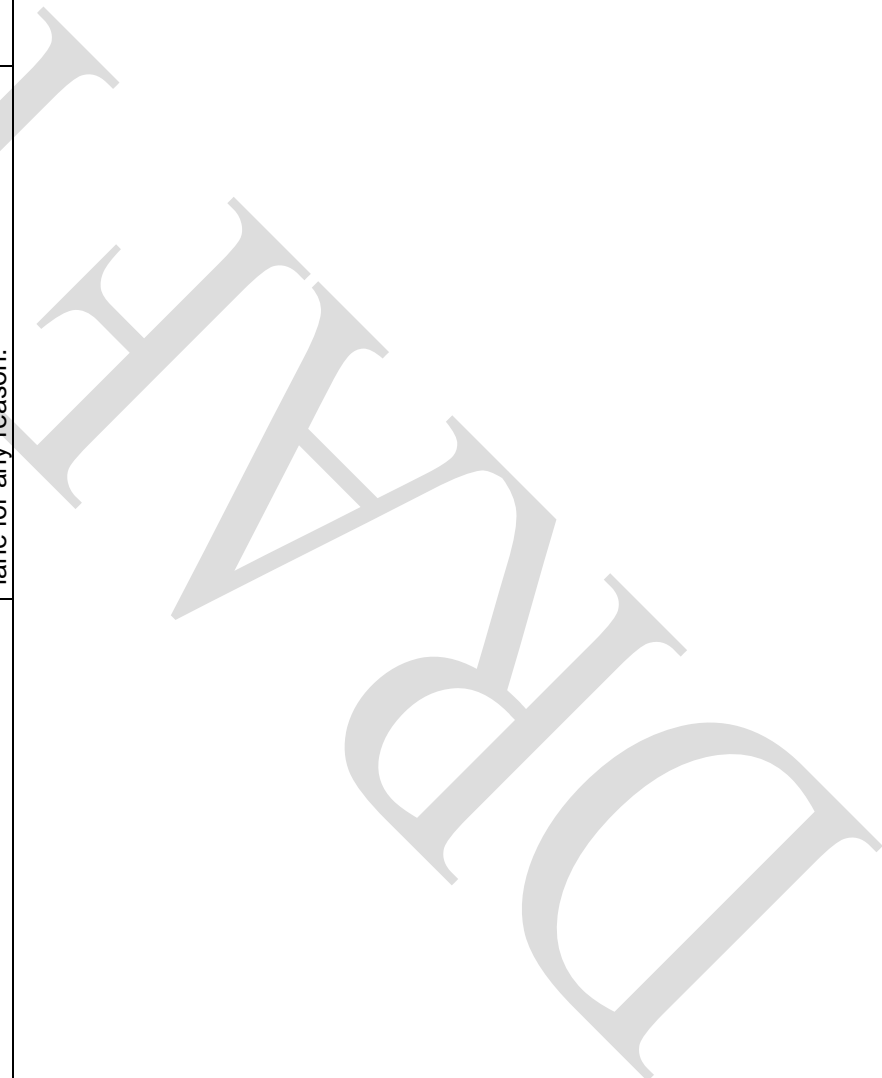
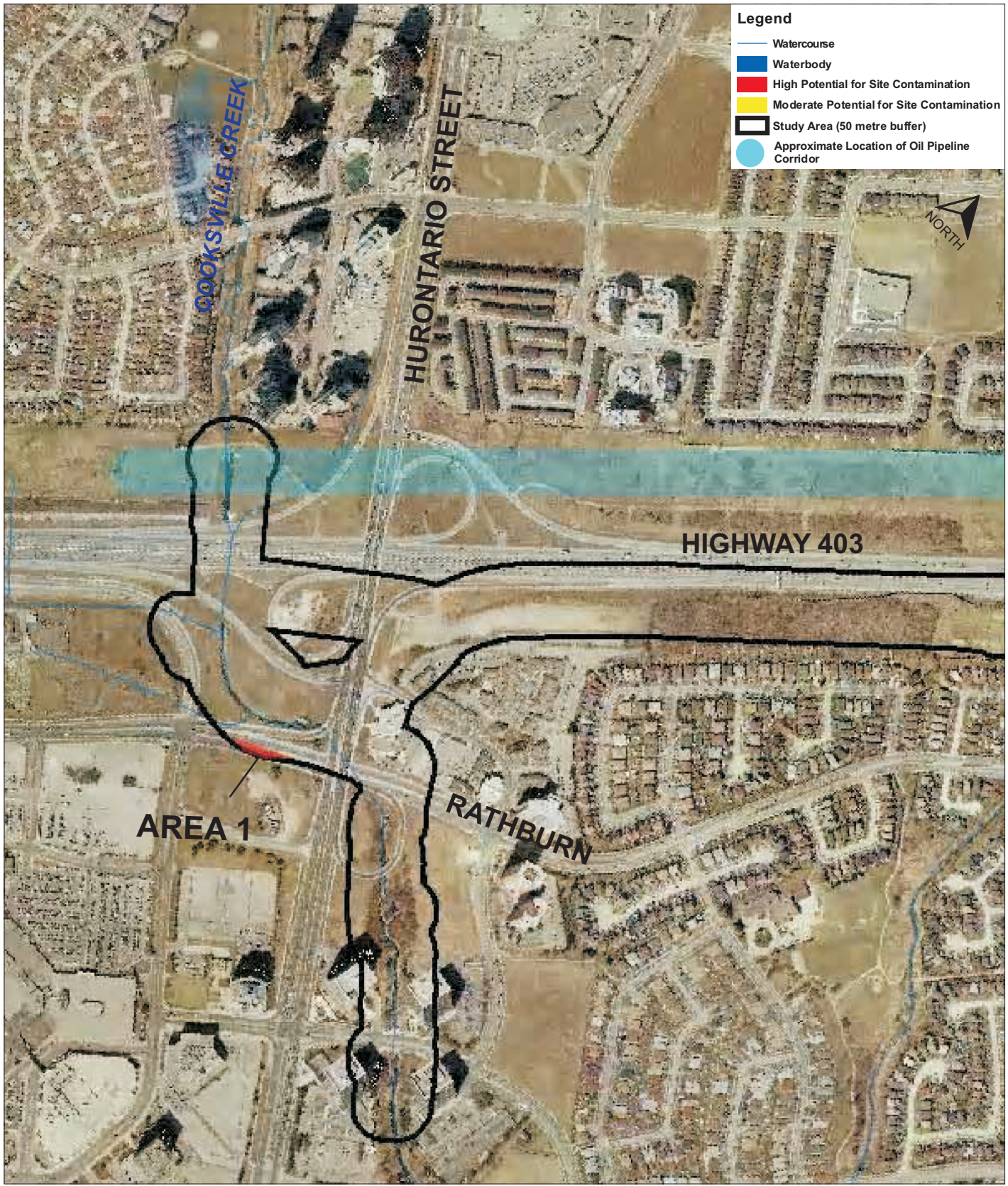


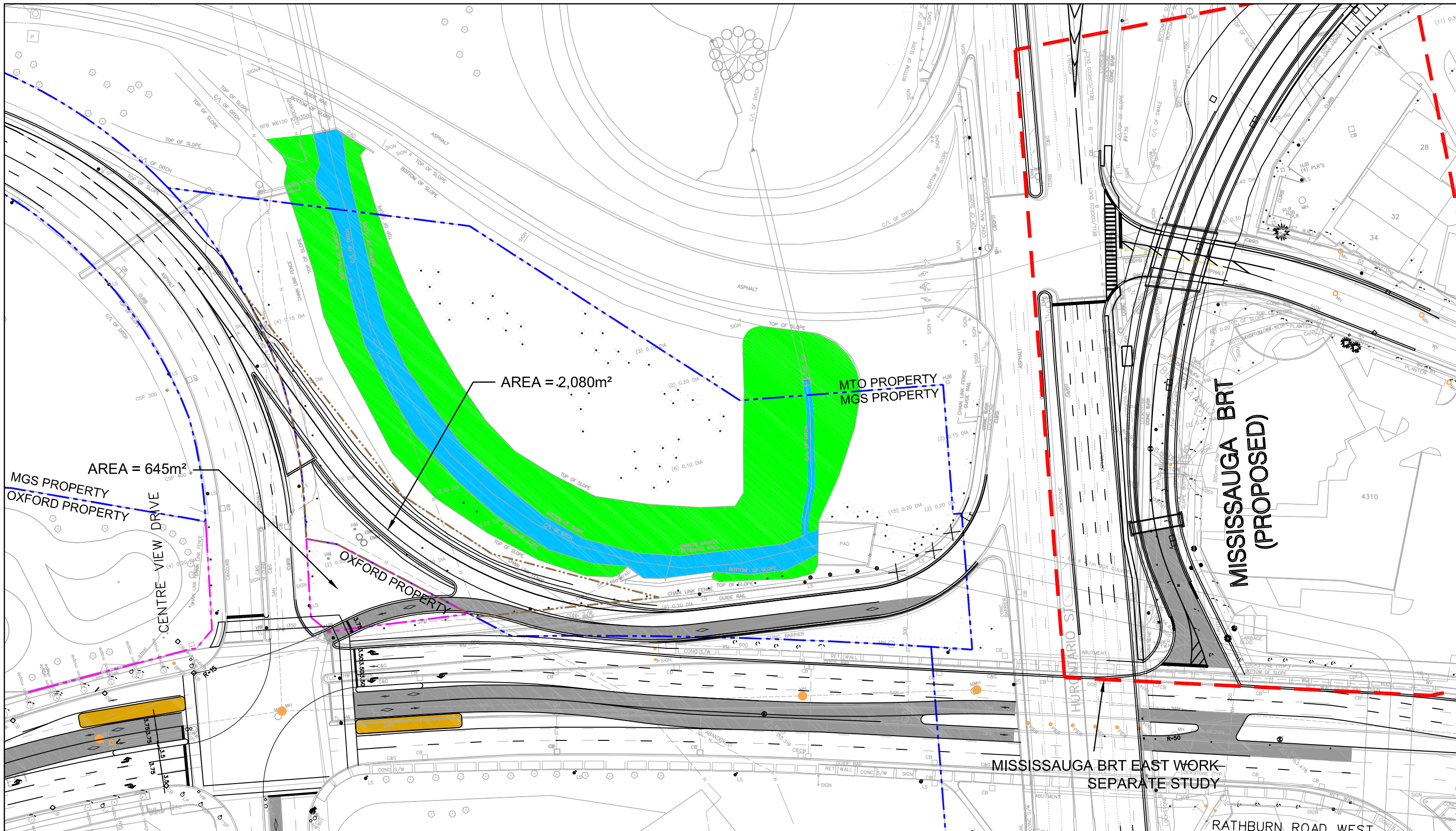




Figure 3-2 : Under Development







**LEGEND:**

	TRANSIT ONLY
	PASSENGER PLATFORM

**MRC** McCORMICK RANKIN CORPORATION  
A member of **MMM GROUP**

**MISSISSAUGA** Transportation and Works

<b>DATE:</b>	FEBRUARY 2010
<b>SCALE:</b>	1:1,000

MISSISSAUGA CITY CENTRE BRT  
PRELIMINARY DESIGN REPORT

PRELIMINARY PROPERTY  
REQUIREMENT EASEMENTS

FIGURE  
3-4

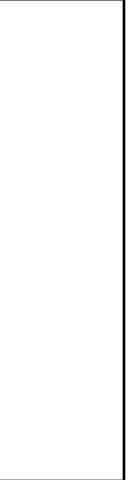




FIGURE  
**3-5**

RATHBUN ROAD TRANSIT PRIORITY  
ENVIRONMENTAL PROJECT REPORT  
Stage 1 Archaeological Investigation  
Results

DATE: November 2009  
SCALE: Not to Scale





## 4. CONSULTATION

### 4.1 Consultation Overview

This section focuses on summarizing who and how various stakeholders were consulted. A summary of the major comments received and how they were addressed as part of the project is included in **Section 4.2**. In addition, Appendix D includes a tracking table which summaries how the issues noted in Schedule 2 of *Ontario Regulation 231/08* were addressed.

The consultation program is presented in two sections. The first (**Section 4.2**) discusses consultation activities that occurred prior to triggering the Transit Project Assessment Process for the project, the results of which shaped the definition of the preferred Transit Project. The second (**Section 4.3**) discusses consultation activities that occurred throughout the Transit Project Assessment Process, the results of which identified concerns and, where impacts (or perceived impacts) were identified, helped determine the appropriate mitigation measures to be applied.

### 4.2 Conceptual and Preliminary Design

#### 4.2.1 Potentially Affected Property Owners

The Mississauga City Centre is almost entirely owned by a single property owner. The City met with the owner during the development of the preferred design to obtain input, comments, and concerns regarding the recommended design. The following is a summary of the meetings held / correspondence between the City and the property owner:

**Table 4-1: Meetings with Property Owners TO BE COMPLETED**

Date	Purpose of Consultation

Concerns raised by the property owner and responses from the proponent are presented in **Table 4-3**.

#### 4.2.2 Transit Operators

Meetings were held with facility and service planning staff from the Mississauga Transit and GO Transit to discuss each operator's current and potential future transit operations within the Rathburn Road corridor, and their functional requirements. These meetings are listed in the following Table.

**Table 4-2: Meetings with Transit Operators TO BE COMPLETED**

Date	Purpose of Consultation
October 30 <sup>th</sup> , 2009	Meeting with Mississauga Transit to review alternatives to provide a transit-only connection from the Hurontario Street – Rathburn Road ramp.

#### 4.2.3 Internal Stakeholders

##### 4.2.3.1 Steering committee

**TO BE COMPLETED**

##### 4.2.3.2 Community Services – Pedestrian and Cycling Group

The City’s Community Services department requested that the project team investigate the potential to accommodate 1.5m bicycle lanes on Rathburn Road (in addition to a single GPL, reduced to 3.75m) throughout the study area. Cross-sections were developed illustrating the potential property impacts of introducing the cycle lanes. The investigation concluded that the introduction of cycle lanes would require an additional 3-4m of pavement width in the Rathburn Road corridor. This would in turn affect street lighting, underground utilities, etc, and the costs were deemed unjustifiable at this stage. Consideration will be given, under a separate study, to introduce an off-street multi-use path in the City Centre.

##### 4.2.3.3 Mississauga Transit

**TO BE COMPLETED**

#### 4.2.4 Ministry of the Environment

The Ministry of the Environment was consulted with on several occasions throughout the study. Prior to triggering the Transit Project Assessment Process, the Ministry was approached for guidance regarding the formal study process, stakeholders, direction regarding consultation with aboriginal communities, and the overall study scope. Following triggering the TPAP, the MOE was consulted with regarding consultation with stakeholders and to review preliminary material.

#### 4.2.5 Ministry of Transportation

**TO BE COMPLETED**

#### 4.2.6 Aboriginal Consultation

In addition to consultation with the Director of the EAAB Branch, a number of government agency representatives at the Ontario Ministry of Aboriginal Affairs, Indian and Northern Affairs Canada, and the Ministry of the Environment were contacted as part of the conceptual and preliminary design study. The intent of this consultation was to confirm the status of potentially affected Aboriginal

communities / groups in the project study area and who may hold an interest in this study and should be directly consulted. See Appendix D for an overview of Aboriginal Consultation for the transit project.

No concerns were expressed by the Aboriginal Communities regarding the project.

### 4.3 Transit Project Assessment Process

The following outlines how the various stakeholders were involved during the TPAP, their concerns and how they impacted the proposed impact mitigation plan for the Transit Project.

#### 4.3.1 Aboriginal Communities

**TO BE COMPLETED**

#### 4.3.2 Government Technical Review Team

The involvement of the government agencies, technical agencies and municipal staff outlined in **Section 2.3.1** continued into the Transit Project Assessment Process. Agencies were invited to participate in the public consultation centres and were provided with material for review relevant to their area of interest/expertise. Copies of the material circulated are provided in **Appendix D**.

##### 4.3.2.1 Meetings

Separate meetings were held with key technical agencies / stakeholders to discuss issues related to the Transit Project that were specific to their jurisdiction and concerns, as required/requested. These meetings are listed in **Table 4-2**.

**Table 4-3: Meetings with Stakeholders / Technical Agencies**

Ministry	Date	Nature of Consultation
<b>Ministry of the Environment</b>		
Ministry of the Environment	February 23 <sup>rd</sup> , 2010	To discuss the status of the Transit Project Assessment Process and obtain guidance on proceeding through Notice of Study Completion.
Oxford Properties Inc.	February 23 <sup>rd</sup> , 2010	To discuss the potential traffic implications of the proposed design, and the associated effects on the commercial developments within the City Centre.
<b>TO BE COMPLETED</b>		

##### 4.3.2.2 Circulation of Review Material

As part of the technical agency consultation, technical specialist reports were circulated to key agencies for their review/comment regarding the potential for impacts and recommended mitigation measures. These are discussed below:

- **Ministry of Culture (MCL)** – a copy of the draft Stage 1 Archaeological Report was submitted by New Directions Archaeology Inc. to the MCL on [date] for review.
- **Credit Valley Conservation Authority (CVC)** – a copy of both the Stormwater Management Technical Memorandum and the Impact Assessment Report for Street Foliage were circulated to the CVC for their review on February 8<sup>th</sup>, 2010.
- **GO Transit** – a copy of the plans for the Transit Project were circulated to GO Transit for review/comment on February 18<sup>th</sup>, 2010.
- **Ministry of the Environment (MOE)** – a draft copy of the Environmental Project Report was circulated to the Ministry of the Environment for preliminary review on February 23<sup>rd</sup>, 2010.
- **Ministry of Transportation (MTO)** – a copy of the plans for the proposed ramp realignment were circulated to the MTO for their review/comment on February 8<sup>th</sup>, 2010.

A copy of the material circulated, responses, and subsequent correspondence is presented in **Appendix D**.

#### 4.3.3 Internal Stakeholders

##### 4.3.3.1 City of Mississauga Planning

**TO BE COMPLETED**

##### 4.3.3.2 Transit Authorities

###### Mississauga Transit

**TO BE COMPLETED**

###### GO Transit

**TO BE COMPLETED**

##### 4.3.3.3 City of Mississauga Traffic

**TO BE COMPLETED**

#### 4.3.4 External Stakeholders

##### 4.3.4.1 Oxford Properties

The City held a meeting with Oxford Properties on February 23<sup>rd</sup>, 2010 to follow-up on pre-TPAP consultation regarding the potential impacts and potential mitigating measures. It should be noted that the final Rathburn Road Transit Priority Measures design included a number of modifications from the original plan to address concerns expressed by Oxford Properties during the pre-TPAP consultation. These modifications are discussed in **Section 4.4**.

A record of the meeting is provided in **Appendix D**.

It should be noted that, to date, concerns raised by Oxford Properties have been related to commercial access as a result of traffic impacts. These issues do not constitute or affect a Provincial interest under the guidelines of the Transit Project Assessment Process, and as such will be addressed at the municipal level, outside of the Transit Project Assessment Process.

#### 4.3.5 General Public Consultation

This is to be carried out during the design, construction, and operation stages of the project. The program employs a number of means of informing the public of study developments and opportunities for interested members of the public to provide their input on the project, including:

- Project website ([www.mississauga.ca/brt](http://www.mississauga.ca/brt));
- Project newsletters; and
- Public Information Centres (see below).

The following is a summary of the key consultation activities undertaken for the project.

- *April 2009-October 2009*: Pre-Planning consultation with internal stakeholders, utility owners, and adjacent property owners likely to experience effects;
- *December 9<sup>th</sup>, 2009*: Notice of Study Commencement released, as follows:
  - Published in the Mississauga News on December 9<sup>th</sup>, 2009;
  - Posted on City website on December 9<sup>th</sup>, 2009; ([www.mississauga.ca/portal/residents/rathburnroadtransitpriorityproject](http://www.mississauga.ca/portal/residents/rathburnroadtransitpriorityproject))
  - E-mailed to the Ministry of the Environment, Aboriginal Communities, municipal stakeholders, and adjacent property owners on December 8<sup>th</sup>, 2009;
  - Mailed to members of the Government Technical Review Team on December 8<sup>th</sup>, 2009; and
  - Mailed to utility companies with plant in the study area on December 8<sup>th</sup>, 2009.
- *December 2009 – February 2010*: Transit Project Assessment Process consultation with public, technical agencies, stakeholders (internal and external), and adjacent property owners
- *January 28<sup>th</sup>, 2010*: Public Information Centre for the Transit Project Assessment Process, including invitations sent directly to members of the public on the project mailing list, technical agencies, stakeholders (internal and external), and adjacent property owners. Notification for the meeting was provided as follows:
  - Published in the Mississauga News on [date];

- Posted on City website on January 20<sup>th</sup>, 2010;  
([www.mississauga.ca/portal/residents/rathburnroadtransitpriorityproject](http://www.mississauga.ca/portal/residents/rathburnroadtransitpriorityproject))
- E-mailed to the Ministry of the Environment, Aboriginal Communities, municipal stakeholders, adjacent property owners, and to interested members of the public on January 20<sup>th</sup>, 2010, 2009;
- E-mailed to all members of the Government Technical Review Team on January 25<sup>th</sup>, 2010; and
- Mailed to utility companies with plant in the study area on January 25<sup>th</sup>, 2010.
- **[date]:** Release of Notice of Study Completion, distributed as follows:
  - **TO BE COMPLETED**

#### 4.4 Overview of Changes Resulting from Consultation

As summarized above, and documented in the consultation record in **Appendix D**, the input received from the consultation process undertaken during the conceptual and preliminary design study and the Transit Project Assessment Process indicates that there is general public and stakeholder support for the Transit Project.

Few members of the public, affected property owners and stakeholder agencies raised comments and concerns regarding the Transit Project. The key comments raised and how they were addressed are outlined in **Table 4-3**.

**Table 4-4: Comment and Response Summary Table**

Agency	Comment	Response
Mississauga Transit	Concern that the diversion of transit services due to the realigned southbound Hurontario Street to Rathburn Road ramp would result in unacceptable travel time implications.	The design was modified to include a bus-only slip-through from the realigned ramp to the Rathburn Road / Centre View Drive intersection to allow southbound buses on Hurontario Street direct access to Rathburn Road.
	Concern that buses approaching Rathburn Road from northbound City Centre Drive would have difficulty accessing the median Reserved Bus Lanes due to conflicts with northbound left-turning general traffic at the intersection.	The design was modified to convert the northbound left-turn lane to bus-only use. This conversion also helps divert general traffic away from the section of Rathburn Road where general traffic capacity is reduced.
Oxford Properties	Concern that the conversion of Station Gate Road to bus-only use south of the Playdium/Chapters access would have a significant negative effect on business.	The design was modified to allow general traffic to use the curb lanes on Station Gate Road, however, left-turns for general traffic are to be prohibited at the Rathburn Road / Station Gate Road intersection.
	Concern over the consideration of converting the existing Rathburn Road / Hammerson Drive intersection into a	The design was modified to reflect Oxford's proposed development, including the proposed shifted Rathburn

	right-in/right-out operation in order to improve transit operations through the corridor, particularly in light of Oxford's planned development of the lands south of Rathburn Road, west of City Centre Drive.	Road / Hammerson Drive intersection.
Ministry of Transportation	Concern that buses on realigned Hurontario Street – Centre View Drive ramp may queue back to Hurontario Street while waiting for dedicated signal phase.	The City will include in its operating protocol the requirement for buses to stay in the general purpose ramp lane and use Centre View Drive to get to the City Centre Transit Terminal in the event of a problem at the intersection that hampers buses' ability to use the bus link or if there is a backup onto the general purpose ramp lane for any reason.
<b>TO BE COMPLETED</b>		

DRAFT



## **5. COMMITMENTS TO FUTURE WORK**

### **5.1 Approvals and Permits**

This section highlights the additional approvals, permits, and activities required to implement the recommended transit project.

#### **5.1.1 Credit Valley Conservation Authority (CVC)**

The City will continue to work with the CVC to obtain any necessary permits and approvals required for the implementation of the proposed transit project.

#### **5.1.2 Ministry of Transportation**

The relocated ramp may require minimal works within the Ministry of Transportation right-of-way (within the Highway 403 / Hurontario Street interchange) where the ramp connects to Hurontario Street. The proponent will be required to obtain an MTO Encroachment Permit for any works within the Ministry's right-of-way. While it is proposed that all permanent works for the Hurontario ramp realignment be contained outside of the MTO's right-of-way, any temporary construction activities or pavement tie-in works occurring at the Hurontario Street end of the ramp may trigger the need for an Encroachment Permit.

An application for encroachment permit was submitted to the Ministry of Transportation by McCormick Rankin Corporation (on behalf of the City of Mississauga) on December 16<sup>th</sup>, 2009 for the works based on the preliminary design and the potential for works within the MTO right-of-way.

#### **5.1.3 Utility Companies**

The detailed design plans at utility crossings will have to be circulated to potentially affected utilities to confirm that the design does not negatively affect their facilities.

### **5.2 Property Acquisition**

The City will continue to liaise with the affected property owners (Ontario Realty Corporation and Oxford Properties) to gain rights to construct the realigned Hurontario Street – Rathburn Road ramp within the ORC property on the northeast quadrant of the Rathburn Road / Centre View Drive intersection.

### **5.3 Construction Issues**

**TO BE COMPLETED**

### **5.4 Canadian Environmental Assessment Act (CEAA) Triggers Monitoring**

**TO BE COMPLETED**



## 6. AMENDMENT PROCESS

The Transit Project Assessment Process allows proponents to make changes to a transit project after the Environment Project Report (EPR) has been completed. This addresses the possibility that in implementing a transit project certain modifications may need to be made due to circumstances unforeseen during the initial assessment process.

If a proponent wishes to make a change to a transit project that is inconsistent with its EPR, the proponent must prepare an addendum to the EPR with the following information:

1. A description of the change.
2. The reasons for the change.
3. The proponent's assessment and evaluation of negative impacts that the change might have on the environment.
4. A description of any measures proposed by the proponent for mitigating the negative impacts that the change might have on the environment.
5. A statement of whether the proponent is of the opinion that the change is a significant change to the transit project, and the reasons for the opinion.

If the proponent is of the opinion that the proposed change to the transit project is significant, then the proponent must publish a Notice of EPR Addendum in manner similar to a notice of commencement (if a newspaper exists), as well as a notice on its website (again, if one exists). The notice must also be provided to the Director of the EAAB, every assessed owner of land within 30 metres of the site change, aboriginal communities that were given a Notice of Commencement, and every person who has made a written request for notices about the project. The Notice of EPR Addendum must contain the following:

1. A description of the change to the transit project.
2. The reason for the change.
3. Information as to where and how members of the public may examine the addendum and obtain copies.
4. A description of the process for making objections.

The process and timelines for making objections and for the Minister to make decisions on objections are the same in the addendum process as in the process leading to the notice of completion, prior to identifying the need for a change in the transit process.