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UPDATED DRAFT

PAVEMENT ENGINEERING FOR PLANNING REPORT
AREA OF CONTINUED ANALYSIS
DETROIT RIVER INTERNATIONAL CROSSING
WINDSOR, ONTARIO

Submitted to:

URS Canada Inc.
75 Commerce Valley Drive East
Markham, Ontario
L3T 7N9

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March 14, 2008

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March 14, 2008 05-1140-003-1

URS Canada Inc.
75 Commerce Valley Drive East
Markham, Ontario
L3T 7N9

Attention: Mr. M. Thompson, P. Eng.

**RE: PAVEMENT ENGINEERING FOR PLANNING REPORT
AREA OF CONTINUED ANALYSIS
DETROIT RIVER INTERNATIONAL CROSSING
WINDSOR, ONTARIO**

Dear Sirs:

This updated draft report presents the results of the review of the readily available geotechnical information for the pavement engineering component of the Detroit River International Crossing project together with the results of the analyses of the traffic data provided and planning level pavement design recommendations. The location of the Area of Continued Analysis for the project is shown on the Location Plan, Figure 1.

The purpose of this report is to provide pavement engineering input in support of the Detroit River International Crossing transportation corridor study. A group of consulting firms, lead by URS Canada Inc., is completing the work on behalf of the Ontario Ministry of Transportation (MTO). The MTO is one of the four principal members of the international partnership organized to study potential transportation corridors to permit more efficient transit of travelers and goods between the highway systems in the Windsor and Detroit areas.

We trust that this updated draft report provides all of the information that you presently require. If you require any additional information, or when you wish us to finalize this report, please contact this office.

Yours truly,

GOLDER ASSOCIATES LTD.

Michael E. Beadle, P. Eng.

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MEB/PRB/MLJM/cr
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1.0 GENERAL DATA

1.1 Project Description

Current and projected cross-border traffic conditions in the greater Detroit and Windsor areas are such that a new crossing of the Detroit River is required. The pavement component of the project will generally consist of the upgrading of existing transportation routes and/or the construction of new roadways to connect Highway 401 in Ontario with the interstate highway system surrounding Detroit. The connection of the highway systems will require a new bridge crossing of the Detroit River and has the potential to include multiple overpass or underpass bridge structures and associated interchanges and/or grade separations along the connecting routes. Consideration may also be given to depressed pavement sections constructed between retaining structures to achieve grade separations. The Area of Continued Analysis (ACA) for the project is shown on the Key Plan, Figure 1.

At this time, six preliminary alternative transportation corridor configurations for the Ontario portion of the project have been established and are summarized as:

- Alternative 1a – one way service roads on either side of six lane freeway, at grade;
- Alternative 1b – one way service roads on either side of six lane freeway, below grade;
- Alternative 2a – six lane freeway at grade adjacent to Huron Church Road/Highway 3;
- Alternative 2b – six lane freeway below grade adjacent to Huron Church Road/Highway 3;
- Alternative 3 – cut and cover tunnel below reconstructed Huron Church Road/Highway 3 corridor; and
- Parkway Alternative - six lane freeway generally below grade between Highway 401 and Huron Church Road/E.C. Row Expressway interchange and at or above grade between Huron Church Road/E.C. Row Expressway interchange and Ojibway Parkway including 1.86 kilometres of short tunnels.

These alternatives are briefly discussed below:

1.1.1 Alternative 1A

Alternative 1A includes an at-grade freeway with below grade sections and one-way service roads on each side of the freeway. Interchanges are proposed at Highway 3, St. Clair College and Huron Church Road.

1.1.2 Alternative 1B

Alternative 1B includes a below grade freeway with one-way service roads on each side of the freeway. Interchanges are proposed at Highway 3, St. Clair College and Huron Church Road.

1.1.3 Alternative 2A

Alternative 2A includes an at-grade freeway with below grade sections which is predominantly aligned west of the existing Highway 3 and Huron Church Road. This section of Highway 3 and Huron Church Road would function as a service road to the freeway. Interchanges are proposed at Highway 3, Howard Avenue, Todd Lane/Cabana Road and Huron Church Road.

1.1.4 Alternative 2B

Alternative 2B includes a below grade freeway which is predominantly aligned west of the existing Highway 3 and Huron Church Road. This section of Highway 3 and Huron Church Road would function as a service road to the freeway. Interchanges are proposed at Highway 3, Howard Avenue, Todd Lane/Cabana Road and Huron Church Road.

1.1.5 Alternative 3

Alternative 3 is a cut and cover tunneled freeway with service roads (Highway 3 and Huron Church Road) constructed on top of the tunnel box. Interchanges are proposed at Highway 3, St. Clair College and Huron Church Road.

1.1.6 Parkway Alternative

The Parkway includes a below grade freeway with 1.86 kilometres of short tunnels. The freeway is predominantly aligned south of the existing Highway 3 and Huron Church Road. Existing Highway 3 and Huron Church Road would function as a service road to the freeway. Interchange ramps are proposed at Highway 3, Howard Avenue, St. Clair College, Todd Lane/Cabana Road and Huron Church Road.

1.2 Background Information

During the initial phases of the planning study, Golder Associates Ltd. (Golder Associates) compiled, reviewed and summarized the background geotechnical information available for the whole study area and the results were summarized in Golder Associates Draft "Interim Report on Pavements Engineering, Detroit River International Crossing, Windsor, Ontario" dated August 2005 which is attached in Appendix A.

The relevant information has been included in this report together with the pertinent information from Golder Associates Report No. 04-1111-060 entitled “Preliminary Foundation Investigation and Design Report, Detroit River International Crossing, Bridge Approach Corridor” Geocres No. 40J6-18 and dated June 2007.

1.3 Scope of Work

The scope of work to complete the Pavement Engineering Planning Report consists of:

- Concentrate the remainder of the Field Review in the Area of Continued Analysis (ACA).
- Assemble and compile borehole data, including information from the ongoing foundation investigations for the ACA.
- Analyze the traffic data provided by URS Canada Inc.
- Review the concept pavement designs, both rigid and flexible, provided by MTO in the Request for Proposal (RFP) for the project and suggest modifications, as appropriate. Emphasis has been placed on the Highway 401 extension with consideration also being given to the major City of Windsor streets.
- Carry out Life Cycle Costing of the pavement options.
- Prepare a Pavement Engineering Planning Report and submit in draft format for review and input.
- Finalize the report following receipt of comments from URS and MTO.

2.0 GEOTECHNICAL ENGINEERING CONDITIONS

2.1 Subsurface Data Review

Existing subsurface data was compiled and used to develop the soil classification maps attached in Appendix A for the whole study area. The information presented was gathered from Ministry of Transportation Ontario files (through the GEOCRES system), Golder Associates project files, Ontario Ministry of Natural Resources (MNR), and published papers and texts. These data were used to assist in constructing an electronic database of subsurface information and to map the soil classification throughout the Windsor area at the following approximate intervals of depth: 0.3, 1.5, 3.0, and 6.0 metres below existing ground surface at the borehole locations.

Subsurface data existing in Golder Associates and the Ministry of Transportation Ontario (MTO) GEOCRES library files for projects completed in Windsor and surrounding areas over the last 40 years were reviewed for this project using the following criteria:

- Available boreholes and test pits drilled or excavated from ground surface to a minimum depth of 3 metres, and
- One representative borehole or test pit per minimum area of 0.25 square kilometres, where available, within the City of Windsor and Towns of LaSalle and Tecumseh.

For the purposes of this report, the database has been adjusted to reflect the conditions within the Area of Continued Analysis. The database for the Area of Continued Analysis is provided in Appendix A.

2.2 Geology of the Windsor Area

The subsurface conditions in the Windsor area are characterized by regionally extensive, flat-lying soils including:

- Surface layers of miscellaneous fill materials in localized areas, generally associated with industrial and urban growth;
- Native deposits of sand and silt present at or near the surface in some locations, particularly in the west end of the City of Windsor and the Town of LaSalle;
- Beneath the sand, where present, extensive deposits of clayey silt to silty clay; and
- Bedrock throughout the study area is generally encountered at depths of 20 to 35 metres.

Figure 2 illustrates the Quaternary geology and outlines the general surficial sedimentary geology of the study area based on geologic interpretation of widely-spaced sample locations and an understanding of geomorphologic processes. It should be noted that only the natural sediments encountered closest to the surface are identified, and that other sediments may underlie these layers.

2.3 Sedimentary Geology

The study area is located in the physiographic region of Southwestern Ontario known as the St. Clair Clay Plains[1]. Within this region, Essex County and the southwestern part of Kent County are normally discussed as a subregion known as the Essex Clay Plain. The clay plain was deposited during the retreat of the ice sheets during the late Pleistocene Era when a series of glacial lakes inundated the area. In general, the ice sheets deposited till in the area of Windsor and Detroit. Depending on the locations of the glacial ice sheets and depths of water in the ice-contact glacial lakes, the till may have been directly deposited at the contact between the ice sheet and the bedrock or, as the lake levels rose and the ice sheets retreated and floated, the soil and rock debris within and at the base of the ice may have been deposited through the lake water as lacustrine deposits. Glacial till, in its common usage, often indicates a very dense or hard condition resulting from consolidation and densification under the weight of the ice sheet. The mineral soil particles typically have a distribution of grain sizes ranging from cobbles to clay. However, in many areas of Windsor and Detroit, the soils described as "glacial till" were deposited through water and, as a result, have a softer consistency. A large end moraine of glacial till is mapped in the area of Windsor-Detroit, generally trending northwest to southeast near the outlet of Lake St. Clair as illustrated throughout Essex County near the terminus of Highway 401. In other areas, the lacustrine deposits overlie the hard glacial till. The major clay stratum, typically ranging in thickness from about 20 metres to 30 metres, exhibits a till-like structure exemplified by a random distribution of coarser particles within the primarily fine-grained silt and clay deposit.

Surficial layers or pockets of more typical layered lacustrine silty clay, silt or sand may be encountered overlying the extensive stratum of "till-like" silty clay. Silt and sand deposits, on the order of 2 to 4 metres thick, are often found near the ground surface in areas near the western side of Windsor and the southwestern limits of the Area of Continued Analysis.

[1] Chapman, L. J. and Putnam, D.F., The Physiography of Southern Ontario, 1984.

2.4 General Subsurface Conditions

The following sections describe the general subsurface conditions in the Area of Continued Analysis (ACA) at intervals of depth of approximately 0.3, 1.5, 3.0 and 6.0 metres below existing ground surface. The information was gathered from previous geotechnical investigations carried out by Golder Associates and others using the sources outlined in Section 2.1. The following descriptions of the subsurface conditions are generalized and should not be interpreted to be exact, nor used in the detail design of the pavement structure of the proposed corridor. Further detailed, site specific geotechnical investigation is required once the preferred corridor has been selected.

The subsurface database is provided in Appendix B and the locations of the previous boreholes summarized in the database are shown on Figure 3.

Beneath the existing pavement structure(s), topsoil and/or surficial fill materials, granular materials consisting of sand and gravel, sands and silty sands were identified at a depth of approximately 0.3 metres below existing ground surface in the E.C. Row Expressway/Ojibway Parkway area. More localized areas of sands and silty sands were also identified, predominantly adjacent to the E.C. Row Expressway between Ojibway Parkway and Huron Church Road. Elsewhere in the ACA, the subsurface conditions at approximately 0.3 metres below ground surface generally consist of silty clay to clayey silt with localized areas of surficial granular soils.

At approximately 1.5 metres depth, sands and sandy silts were identified in the E.C. Row Expressway/Ojibway Parkway area. Elsewhere within the ACA, the subsurface conditions consist of clayey silt to silty clay.

At approximately three metres depth, the subsurface conditions generally consist of clayey silt and/or silty clay in the ACA. Figure 5 illustrates the subsurface soil conditions at approximately three metres below existing ground surface in the ACA.

At approximately six metres depth, the subsurface conditions generally consist of clayey silt and/or silty clay throughout the ACA.

Groundwater levels are expected to be located about 2 to 3 metres below ground surface in the clayey silt and silty clay materials and will generally be defined by the location of the transition of the soil colour from brown to grey. It should be noted that one of the boreholes drilled for the foundations engineering component of the project encountered artesian groundwater pressures in the clayey silt. This borehole was drilled near the intersection of Ojibway Parkway and E.C. Row Expressway in the northwestern portion of the project.

2.5 Soil Characteristics Influencing Pavement Design

The subsurface conditions as described in this report have an important influence on the design of the pavement structures for the proposed transportation corridor. Two main factors affecting roadway pavement design are:

- frost susceptibility of the subgrade soil, which influences the design of the pavement structure component thicknesses; and
- soil erodibility, which influences the design of embankment surfacing and drainage ditches that may be proposed in the design of a proposed corridor.

2.6 Frost Susceptibility

The generalized subsurface conditions have been categorized as low, moderate or high frost susceptibility. At depths of about 1.2 to 1.5 metres, the subsurface conditions in the E.C. Row Expressway/Ojibway Parkway area indicate the presence of localized area of sands and silty sands, which are considered to have low to moderate frost susceptibility. This area also has areas of silty clay and clayey silt which are considered to have a low susceptibility to frost action. These are also the soils that occur at depth.

2.7 Soil Erodibility

It is anticipated that drainage ditches and embankments will be incorporated in the design of the proposed corridor. The subsurface conditions in the Area of Continued Analysis consist largely of clayey silt and silty clay with localized surficial areas of sand and gravel, sands and silty sand. The silty clay, clayey silt, sand and gravel and sands are considered to be slightly erodible and the silty sands are considered to be moderately erodible.

3.0 REVIEW OF AVAILABLE BACKGROUND INFORMATION

Following the review of the available geological mapping and information from our files to delineate, in a preliminary fashion, the general subsurface conditions in the area of the site, a detailed review of the files in our Windsor office was carried out to attempt to determine the characteristics of the existing pavements in the ACA. In addition, requests were made to the City of Windsor by URS and to the MTO by Golder Associates for any available background information regarding the existing pavement conditions in the study area. To date, no information has been provided by the City of Windsor.

3.1 Golder Associates Report 04-1111-060

Four deep boreholes, numbered 1, 7, 14 and 23, were advanced in conjunction with the foundation investigation portion of this project, and their locations are shown on the Location Plan, Figure 1. The following paragraphs summarize the subsurface conditions encountered in the upper portion of these boreholes as they relate to pavement design. The Records of Boreholes are provided in Appendix C.

3.1.1 Borehole Information

<u>Borehole 1 – Highway 3 and Howard Avenue Area</u>

About 0.3 metres of clayey topsoil was encountered at ground surface. The surficial topsoil had a natural moisture content of about 20 per cent.

Beneath the topsoil, a 3.6 metre thick layer of firm to very stiff silty clay was encountered. A single standard penetration test completed in the silty clay indicated an N value of 28 blows per 0.3 metres. The moisture content of the silty clay was about 15 to 18 per cent.

An extensive deposit of stiff clayey silt was encountered beneath the silty clay. The upper portion of the clayey silt had N values of 9 to 15 blows per 0.3 metres with moisture contents of about 16 to 18 per cent. In situ vane shear strength testing carried out in the upper portion of the clayey silt indicated undrained shear strengths of about 75 to 80 kilopascals (kPa) with vane sensitivities of 1.0 to 1.5. Below about 10 metres depth, the undrained shear strength was about 55 kPa with a vane sensitivity of 1.7. The clayey silt had corresponding average plastic and liquid limits of 13 and 25 per cent, respectively, based on two Atterberg limits determinations. The Atterberg limits data are shown on the Plasticity Chart, Figure 4.

Borehole 7 – Howard Avenue and Geraedts Drive Area

About 0.3 metres of clayey topsoil was encountered at ground surface. The surficial topsoil had an N value of 10 blows per 0.3 metres based on a standard penetration test partially completed in the topsoil with a natural moisture content of about 20 per cent.

Beneath the topsoil, a 3.6 metre thick layer of very stiff to hard clayey silt was encountered. The clayey silt had N values of 23 to 59 blows per 0.3 metres with moisture contents of about 13 per cent.

An extensive deposit of very stiff to firm clayey silt was encountered beneath the upper very stiff to hard clayey silt. The upper portion of the clayey silt had N values of 11 to 32 blows per 0.3 metres with moisture contents of about 14 to 19 per cent. In situ vane shear strength testing carried out in the upper portion of the clayey silt indicated undrained shear strengths of greater than 100 kPa above about 7 metres depth with a vane sensitivity of 1.3. Below about 7 metres depth, the undrained shear strength was about 55 to 70 kPa with vane sensitivities of 1.7 to 2.0. The clayey silt had corresponding average plastic and liquid limits of 12 and 25 per cent, respectively, based on three Atterberg limits determinations. The Atterberg limits data are shown on the Plasticity Chart, Figure 4.

Borehole 14 – Huron Church Road and Balmoral Drive Area

About 1.1 metres of silty clay fill was encountered at ground surface in borehole 14. The fill had an N value of 13 blows per 0.3 metres with an in situ moisture content of about 16 per cent. Beneath the silty clay fill, a 0.3 metre thick layer of silty sand and gravel fill was encountered.

A soft to very stiff layer of clayey silt about 4.1 metres thick was encountered beneath the fill. Silty clay layers were noted within the clayey silt. The clayey silt had N values of 4 to 14 blows per 0.3 metres with moisture contents of about 22 to 26 per cent. In situ vane testing in the clayey silt indicated undrained shear strengths of 115 to 120 kPa with vane sensitivities of 1.4 to 2.7. The clayey silt had corresponding plastic and liquid limits of 21 and 41 per cent, respectively, based on a single Atterberg limits determination. The Atterberg limits data are provided on Figure 4.

Beneath the upper soft to very stiff clayey silt, an extensive deposit of firm to stiff clayey silt was encountered at 5.5 metres depth or at about elevation 176.6 metres. The upper portion of the clayey silt had an N value of 7 blows per 0.3 metres with moisture contents of about 20 to 23 per cent. In situ vane shear strength testing carried out in the upper portion of the clayey silt indicated undrained shear strengths of 58 to 77 kPa with vane sensitivities of 1.7 to 3.2. The clayey silt had corresponding average plastic and liquid limits of 15 and 31 per cent, respectively, based on two Atterberg limits determinations. The Atterberg limits data are shown on the Plasticity Chart, Figure 4.

Borehole 23 – E.C. Row Expressway and Ojibway Parkway Area

About 0.3 metres of silty sand fill was encountered at ground surface in borehole 23. Beneath the fill, about 0.3 metres of sandy topsoil and 1.1 metres of sandy silt was encountered.

A stiff to very stiff layer of clayey silt about 2.7 metres thick was encountered beneath the sandy silt. The clayey silt had N values of 6 to 15 blows per 0.3 metres with moisture contents of about 21 to 24 per cent. In situ vane testing in the clayey silt indicated undrained shear strengths of 105 to 120 kPa with vane sensitivities of 2.8 to 2.9. The clayey silt had corresponding plastic and liquid limits of 17 and 28 per cent, respectively, based on a single Atterberg limits determination. The Atterberg limits data are provided on Figure 4.

Beneath the upper stiff to very stiff clayey silt, an extensive deposit of soft to very stiff clayey silt was encountered at about 4.4 metres depth or about elevation 174.5 metres. This layer extended to about 20.7 metres depth or about elevation 158.2 metres. The upper portion of the clayey silt had N values of 1 to 5 blows per 0.3 metres with moisture contents of about 23 to 36 per cent. In situ vane shear strength testing carried out in the upper portion of the clayey silt indicated undrained shear strengths of 25 to 43 kPa with vane sensitivities of 1.8 to 3.5. The clayey silt had corresponding average plastic and liquid limits of 15 and 27 per cent, respectively, based on two Atterberg limits determinations. The Atterberg limits data are shown on the Plasticity Chart, Figure 4.

3.1.2 Field Vane and Piezocone Penetration Testing (CPT) Information

In addition to the above, rigorous in situ vane testing was carried out adjacent to each borehole and piezocone penetration testing (CPT) was carried out at regular intervals along the alignment. The locations of the CPTs and field vane testing are shown on the Plan, Figure 1. Summaries of the undrained shear strength measurements carried out during the investigation using field vane and CPT methods are provided on Figures 5, 6 and 7.

3.2 Ministry of Transportation Background Information

The MTO provided the available background information for sections of roadway under their jurisdiction in the form of Region Geotechnical Pavement Condition Reports. The relevant information from these are summarized in the following sections.

Highway 401 Eastbound Lanes - Walker Road to the terminus of Highway 401 (surveyed May 2005 and June 2007)

- Original grading carried out under Contract 55-138.
- Granular base and paving carried out under Contract 55-23 and consisted of 225 millimetres of plain jointed concrete pavement (JPCP) over 100 millimetres of Granular A and 125 millimetres of Granular C.
- Contract 73-172 consisted of an asphalt overlay consisting of 50 millimetres HL 4 modified, 40 millimetres HL 4 binder course and 40 millimetres of HL 1 surface course.
- Under Contract 90-41, four sections of pavement (total length of 700 metres) were resurfaced by milling 40 millimetres and paving 40 millimetres of HL 1 (reclaimed) in the driving lane. Prior to paving, all depressed transverse cracks were sawcut and reinstated with HL 4.
- Under Contract 2002-3002, the pavements were resurfaced between Station 9+995 and 14+000 by milling 50 millimetres and paving 50 millimetres of SuperPave 12.5 FC2.
- In 2004, microsurfacing was carried out.
- 2005 PCR = 95, 2007 PCR = 90

Highway 401 Westbound Lanes - Walker Road to the terminus of Highway 401 (surveyed May 2005 and June 2007)

- Original grading carried out under Contract 55-138.
- Granular base and paving carried out under Contract 55-23 and consisted of 225 millimetres of plain jointed concrete pavement (JPCP) over 100 millimetres of Granular A and 125 millimetres of Granular C.
- Contract 73-172 consisted of an asphalt overlay consisting of 50 millimetres HL 4 modified, 40 millimetres HL 4 binder course and 40 millimetres of HL 1 surface course.
- Under Contract 90-41, a 200 metre long section was resurfaced by milling 40 millimetres and paving 40 millimetres of HL 1 (reclaimed) in the driving lane. Prior to paving, all depressed transverse cracks were sawcut, the asphalt removed and the areas reinstated with HL 4.
- Under Contract 2002-3002, 5 kilometres of the pavements were resurfaced by milling 50 millimetres and paving 50 millimetres of SuperPave 12.5 FC2.

- In 2004, the western 0.6 kilometres was resurfaced with SMA and the remainder was microsurfaced.

- 2005 PCR = 93, 2007 PCR = 88

Highway 3 – West junction of Essex Road 34 to Highway 401 (surveyed September 2006 and May 2007)

- Existing pavement consisted of asphalt and/or concrete placed directly on subgrade. No details of the original construction were provided.

- The pavements were widened and resurfaced on the south side under Contract 76-115. The widening consisted of 150 millimetres of Granular A, 237 millimetres of HL 4 binder course and 40 millimetres of HL 1 surface course. The resurfacing consisted of HL 4 padding, HL 4 binder course and HL 1 surface course.

- The westerly 0.5 kilometres was resurfaced with 50 millimetres of DFC under Contract 98-19.

- Milling of 80 millimetres and paving 40 millimetres of HDBC and 40 millimetres of HL 1 was carried out at the Walker Road intersection in 1998 to address rutting.

- Dynapatching was carried out in 2002.

- Selective full depth repairs were carried out in the westbound lanes in 2004.

- Under Contract 2004-3009, the pavements were resurfaced by milling 50 millimetres and paving 60 millimetres of SuperPave 19.0 and 40 millimetres of SuperPave 12.5 FC2.

- Under Contract 2004-3039, intersection improvements were carried out at Outer Drive and Walker Road and the main line pavements were resurfaced by milling 50 millimetres and paving 60 millimetres of SuperPave 19.0 and 40 millimetres of SMA.

- 2006 PCR = 93, 2007 PCR = 89

Highway 3 (Huron Church Road) Eastbound Lanes – Highway 401 to Todd Lane (surveyed September 2006 and July 2007)

- No details of the original construction were provided.

- Resurfacing was carried out consisting of HL 5 padding to correct crossfall, 20 millimetres HL 2 padding and 40 millimetres of surface course.

- Widening consisted of 312 millimetres of Granular A in the shoulders, 350 millimetres of HL 5 and 40 millimetres of surface course.

- Under Contract 90-14, the westerly 0.7 kilometres was widened and resurfaced with 40 millimetres of HDBC and 40 millimetres of DFC.
- Under Contract 98-19, all but the westerly 0.7 kilometres was resurfaced with 50 millimetres of HDBC and 40 millimetres of DFC.
- Whitetopping carried out at Cousineau Road and Todd Lane under District Contracts 2002-3383 (driving lane) and 2002-3399 (passing lane).
- Under Contract 2003-3022, the pavements were resurfaced by milling 50 millimetres and paving 50 millimetres of SMA.
- 2006 PCR = 92, 2007 PCR = 80

Highway 3 (Huron Church Road) Westbound Lanes – Highway 401 to Todd Lane (surveyed September 2006 and July 2007)

- No details of the original construction were provided.
- Resurfacing was carried out consisting of HL 5 padding to correct crossfall, 20 millimetres HL 2 padding and 40 millimetres of surface course.
- Widening consisted of 312 millimetres of Granular A in the shoulders, 350 millimetres of HL 5 and 40 millimetres of surface course.
- Under Contract 90-14, the westerly 0.7 kilometres was widened and resurfaced with 40 millimetres of HDBC and 40 millimetres of DFC. Widening plugs consisted of 200 millimetres of hot mix asphalt over 700 millimetres of Granular A.
- Under Contract 98-19, all but the westerly 0.7 kilometres was resurfaced with 50 millimetres of HDBC and 40 millimetres of DFC.
- Whitetopping carried out at Howard Avenue intersection District Contracts 32-99-05 to address rutting.
- Whitetopping carried out at Cousineau Road and Todd Lane under District Contracts 2002-3383 (driving lane) and 2002-3399 (passing lane).
- Under Contract 2003-3022, the pavements were resurfaced by milling 50 millimetres and paving 50 millimetres of SMA.
- Whitetopping repaired at Howard Avenue under District Contract 2003-3355.
- 2006 PCR = 93, 2007 PCR = 82

E.C. Row Expressway - Eastbound Lanes – Highway 3 (Huron Church Road) to Ojibway Parkway (surveyed September 1992)

- Pavement constructed under Contract 89-41 and consisted of 25 millimetres of OFC and 35 millimetres of HDBC over 225 millimetres of unreinforced concrete placed on 110 millimetres of OGDL. This structure includes the partially paved shoulders.
- 0.7 kilometre long structure approach at Highway 3 constructed under Contract 87-23 and consisted of 65 millimetres of hot mix asphalt over 230 millimetres of plain concrete and asphalt stabilized OGDL.
- 1992 PCR = 59

E.C. Row Expressway - Westbound Lanes – Highway 3 (Huron Church Road) to Ojibway Parkway (surveyed September 1992)

- Original pavement consisted of 40 millimetres of DFC over 200 millimetres of unreinforced concrete placed on 150 millimetres of cement treated Granular A.
- Structure approach at Highway 3 constructed under Contract 87-23 and consisted of 65 millimetres of hot mix asphalt over 230 millimetres of plain concrete and asphalt stabilized OGDL.
- Rout and seal carried out between Matchette Road and Huron Church Line.
- Structure approaches patched full width at Malden Road and Matchette Road.
- Several slabs replaced under Contract 87-41.
- French drains installed in outer shoulder.
- 1992 PCR = 57

3.3 Review of Background Information From Golder Associates' Files

To supplement the background information for the pavements at the site, a review of the information in Golder Associates' files for the area of the site was carried out. The relevant information from that review is summarized in the following sections. The review included a summary of the recommended pavement design information for the various sections of roadway; however, these should not necessarily be construed to be the actual pavements constructed. Further, post report and construction modifications may have also been made.

No pavement information was provided by the City of Windsor.

Huron Church Road at Todd Lane and Todd Lane

Reference: Golder Associates Report No. 754139/13 entitled "Geotechnical Investigation, Contract No. 10, Proposed Provincial Sewage Works Program, Township of Sandwich West, County of Essex, Ontario" dated September 21, 1982.

The boreholes drilled for this investigation generally encountered silty clay to clayey silt till materials at subgrade level.

The recommendations provided in the report indicated that the pavements impacted by sewer construction could be restored using a pavement structure consisting of 40 millimetres of surface course, 50 millimetres of binder course and 400 millimetres of Granular A base.

Cousineau Road, East of Highway 3

Reference: Golder Associates Report No. 791-4096 entitled "Geotechnical Investigation, Proposed Heritage Estates Residential Development, Township of Sandwich West, County of Essex, Ontario" dated August 1979.

This report indicated that the Cousineau Road realignment could be constructed using a flexible pavement structure or a rigid pavement. The rigid pavement could consist of 200 millimetres of concrete and 230 millimetres of Granular A base. The flexible pavement could consist of 40 millimetres of surface course, 100 millimetres of binder course and either 600 millimetres of Granular A base or 150 millimetres of Granular A and 600 millimetres of Granular B subbase.

Labelle Street, East of Huron Church Road

Reference: Golder Associates Report No. 801-4009 entitled "Geotechnical Investigation, Proposed Phase II Bellewood Land Assembly, Windsor, Ontario" dated February 1980.

Two pavement design alternatives were provided for Labelle Street as summarized below:

COMPONENT	THICKNESS (mm) Alternative 1	Alternative 2
Asphalt	100	100
Granular A Base	600	150
Granular B Subbase	-	660

It is not known which alternative was ultimately constructed.

Huron Church Road, Cabana Road to Grand Marais Drain and Pulford Street

Reference: Golder Associates Report No. 901-4256 entitled "Geotechnical Investigation, Proposed Phase 4 Reconstruction, Huron Church Road, Windsor, Ontario" dated January 1991.

Recommendations were provided in the above-noted report to reconstruct the subject section of Huron Church Road using a rigid pavement structure consisting of 275 millimetres of Portland cement concrete, 100 millimetres of drainage layer (19 millimetre clear stone or asphalt stabilized OGDL) and 275 millimetres of Granular A base.

The report also noted that the existing Pulford Street intersection at Huron Church Road would be widened and realigned to the north. The pavement structure recommended for the new section of Pulford Street consisted of 230 millimetres of Portland cement concrete and 300 millimetres of Granular A base.

Howard Avenue, North Talbot Road to Highway 3

Reference: Golder Associates Report No. 921-4204 entitled "Geotechnical Investigation, Proposed Howard Avenue Sanitary Sewer, North Talbot to Highway No. 3, Windsor, Ontario" dated November 1992.

The above-noted report suggested that the new Howard Avenue pavement structure for the project consist of 150 millimetres of asphalt and 610 millimetres of Granular A base. In addition, it was suggested that continuous subdrains be provided at subgrade level to provide effective drainage of the pavement structure.

E.C. Row Expressway, Ojibway Parkway to Huron Church Road

Reference: John Emery Geotechnical Engineering Limited (JEGEL) Report No. 198258 entitled "Pavement Evaluation, E.C. Row Expressway, Ojibway Parkway to Huron Church Road and Huron Church Road to Midpoint of Dominion Boulevard and Dougall Avenue" dated April 5, 1999.

The background information provided in the above-noted report indicates that the original construction of this section of the E.C. Row Expressway was carried out between 1979 and 1981 and consisted of 38 millimetres of DFC, 200 millimetres of plain jointed concrete pavement and 150 millimetres of cement treated Granular A. The construction was carried out to accommodate two lanes of traffic.

In 1987, a grade separation was constructed at the Huron Church Road intersection from 900 metres west to 700 metres east of Huron Church Road. The pavements for the grade separation consisted of 25 millimetres of OFC, 30 millimetres of HL 4 binder course, 225 millimetres of plain jointed concrete and 110 millimetres of asphalt stabilized OGDL.

In 1989, two additional lanes, creating the existing eastbound lanes were constructed as well as interchanges at Matchette Road and Malden Road. The mainline pavements consisted of 25 millimetres of OFC, 30 millimetres of HL 4 binder course, 225 millimetres of plain jointed concrete and 110 millimetres of asphalt stabilized OGDL. The speed change lanes consisted of 40 millimetres of DFC, 225 millimetres of plain jointed concrete and 150 millimetres of OGDL. The ramps consisted of 35 millimetres of DFC, 35 millimetres of HL 4 binder course, 225 millimetres of plain jointed concrete and 110 millimetres of asphalt stabilized OGDL.

In 1997, a 50 millimetre HL 1 surface course overlay was provided between Ojibway Parkway and Matchette Road.

JEGEL provided several alternative pavement designs for the various sections of pavements to be reconstructed including two alternative flexible structures and a rigid structure as summarized in Table 6 of their Report No. 198258, as presented below:

TABLE 6
MINIMUM PAVEMENT STRUCTURE REQUIREMENTS
(All thickness in millimetres)

SECTION	PAVEMENT STRUCTURE ALTERNATIVES		
	RIGID	FLEXIBLE (THIN BASE)	FLEXIBLE (THICK BASE)
MAINLINES Ojibway Parkway to East Ramps of Huron Church Road, Section I	250 PCC* 100 OGDL 200 100% Crushed Granular A	40 SMA** 120 HDBC (2 lifts) 40 HL 8 100 OGDL 100 100% Crushed Granular A 300 100% Crushed Granular B	40 SMA 110 HDBC (2 lifts) 100 OGDL 100 100% Crushed Granular A 450 100% Crushed Granular B
East Ramps of Huron Church Road to East Ramps of Dominion Boulevard, Section II West	270 PCC 100 OGDL 200 100% Crushed Granular A	40 SMA 120 HDBC (2 lifts) 60 HL 8 100 OGDL 100 100% Crushed Granular A 300 100% Crushed Granular B	40 SMA 90 HDBC (2 lifts) 40 HL 8 100 OGDL 100 100% Crushed Granular A 450 100% Crushed Granular B

SECTION	PAVEMENT STRUCTURE ALTERNATIVES		
	RIGID	FLEXIBLE (THIN BASE)	FLEXIBLE (THICK BASE)
East Ramps of Dominion Boulevard to Midpoint of Dominion Boulevard and Dougall Road, Section II East	285 PCC 100 OGDL 200 100% Crushed Granular A	40 SMA 120 HDBC (2 lifts) 80 HL 8 100 OGDL 100 100% Crushed Granular A 300 100% Crushed Granular B	40 SMA 110 HDBC (2 lifts) 40 HL 8 100 OGDL 100 100% Crushed Granular A 450 100% Crushed Granular B
RAMPS Matchette Road Interchange	225 PCC 300 100% Crushed Granular A	40 SMA 90 HDBC 60 HL 8 100 100% Crushed Granular A 300 100% Crushed Granular B	40 SMA 90 HDBC 40 HL 8 100 100% Crushed Granular A 450 100% Crushed Granular B
Huron Church Road Interchange	270 PCC 300 100% Crushed Granular A	40 SMA 120 HDBC 80 HL 8 100 100% Crushed Granular A 300 100% Crushed Granular B	40 SMA 120 HDBC 40 HL 8 100 100% Crushed Granular A 450 100% Crushed Granular B
Dominion Boulevard Interchange	260 PCC 300 100% Crushed Granular A	40 SMA 120 HDBC 80 HL 8 100 100% Crushed Granular A 300 100% Crushed Granular B	40 SMA 120 HDBC 40 HL 8 100 100% Crushed Granular A 450 100% Crushed Granular B

* Portland Cement Concrete with a compressive strength of 35 MPa at 28 days.

** Stone Mastic Asphalt with Performance Graded Asphalt Cement.

Reproduced from JEGEL Report No. 198258

4.0 PAVEMENT CONDITION SURVEY

A pavement condition survey of the major pavements within the project was carried out by a senior pavement design engineer from our staff. At that time, the existing pavements were visually examined and digital photographs of characteristic and major distresses were obtained. Select site photographs are provided in Appendix D.

A summary of the items noted during the pavement condition survey are provided in the following table:

LOCATION	REMARKS
Highway 401 - North Talbot Road to Huron Church Line	- asphalt surfaced pavements - good condition - very slight to slight single and multiple transverse cracks throughout (see Photograph 1 in Appendix D) - multiple very slight centerline joint cracks throughout - short section of outer wheel path/pavement edge failure in curve beneath Talbot Road East in westbound lanes with severe rutting (see Photograph 2 in Appendix D)
Huron Church Line (Highway 3) - Highway 401 to Huron Church Road	- asphalt surfaced pavements - good condition - intermittent slight transverse cracks in left turn lanes - intermittent slight longitudinal cracks in left turn lanes - slight to moderate wheel path rutting at intersections - the white topping placed at the Howard Avenue, Cousineau Road and Todd Lane intersections has been replaced with asphalt.
Huron Church Road - Huron Church Line to E.C. Row Expressway	- asphalt surfaced from Highway 3 to just west of Todd Lane - good condition - no distresses noted in asphalt section - concrete pavements west of Todd Lane - good condition - few to intermittent, apparently full depth repairs in concrete - few moderate corner cracks, intermittent slight corner cracks
Howard Avenue - south of Huron Church Line	- asphalt surfaced - recently resurfaced - excellent condition - see Photographs 3 and 4 in Appendix D
- north of Huron Church Line	- asphalt surfaced - severe midlane cracking in eastbound lanes throughout - moderate to severe transverse cracks throughout - moderate pavement edge/inner wheel path cracks in westbound lanes throughout - see Photographs 5 and 6 in Appendix D
Cousineau Road	- asphalt surfaced - good condition - slight transverse cracks - see Photograph 7 in Appendix D

LOCATION	REMARKS
Sandwich Parkway	- asphalt surfaced - fair to good condition - slight longitudinal cracks throughout - extensive slight transverse cracks - few moderate alligatored transverse cracks - see Photographs 8 and 9 in Appendix D
Cabana Road	- asphalt surfaced - excellent condition - recently resurfaced to about 25 metres from intersection - no distresses noted - see Photographs 10 and 11 in Appendix D
Todd Lane	- asphalt surfaced - fair condition - recently resurfaced at Huron Church Road to end of radius - slight alligatored pavement edge cracking throughout - few very slight transverse cracks - see Photographs 12 and 13 in Appendix D
Pulford Street	- concrete pavement - generally in good condition - see Photographs 14 and 15 in Appendix D - moderate to severe edge and corner cracks and joint distresses about 50 metres and 20 metres south of Northway Avenue (see Photographs 16 and 17 in Appendix D)
Grand Marais Road West	- concrete radius at Huron Church Road and asphalt surfaced beyond - good condition - intermittent slight transverse cracks - see Photographs 18 and 19 in Appendix D
Lambton Street	- concrete radius at Huron Church Road and asphalt surfaced beyond - fair condition - extensive moderate to severe alligatored transverse cracks - frequent moderate pavement edge cracks - few distresses patched with cold mix asphalt - map/random cracks at maintenance holes - see Photographs 20 and 21 in Appendix D
Spring Garden Road/Bethlehem Avenue	- concrete pavement to curve and asphalt surfaced beyond - concrete pavement in good condition - see Photographs 22 and 23 in Appendix D - few spalled concrete joints (see Photograph 24 in Appendix D)
Labelle Street	- concrete radius at Huron Church Road and asphalt surfaced beyond - pavement in excellent condition - see Photograph 25 in Appendix D

LOCATION	REMARKS
Malden Road	
- south of E.C. Row Expressway	- asphalt surfaced - good to excellent condition - frequent slight transverse cracks - see Photograph 26 in Appendix D
- north of E.C. Row Expressway	- asphalt surfaced - pavements in poor condition - see Photographs 27 and 28 in Appendix D - severe to very severe single and alligatored transverse cracks throughout (see Photograph 29 in Appendix D) - very severe longitudinal/meander cracks throughout (some patched with cold mix –see Photograph 30 in Appendix D) - moderate pavement edge cracks (some patched with cold mix)
Matchette Road	
- north of E.C. Row Expressway	- asphalt surfaced - fair condition - see Photographs 31 and 32 in Appendix D - extensive slight transverse cracks - intermittent alligatored wheel path cracks and slight rutting in northbound lanes (see Photograph 33 in Appendix D)
- south of E.C. Row Expressway	- asphalt surfaced - fair condition - see Photographs 34 and 35 in Appendix D - intermittent slight transverse cracks - intermittent slight wheel path ruts - intermittent slight wheel path cracks - frequent moderate longitudinal cracks (see Photograph 36 in Appendix D)
E.C. Row Expressway	
- Huron Church Road to Ojibway Parkway	- asphalt surfaced pavements - excellent condition - intermittent slight transverse cracks
Ojibway Parkway North	
- E.C. Row Expressway to Prospect Avenue	- asphalt surfaced to just north of rail crossing - asphalt in poor condition - moderate transverse cracks throughout - moderate longitudinal cracks throughout, some alligatored - frequent moderate map cracks - concrete pavements north of rail crossing - concrete pavements in poor condition - approximately 30 per cent of transverse joints failed (blow ups) with some concrete patches and poorly performing asphalt patches (see Photographs 37 and 38 in Appendix D) - few moderate longitudinal/crescent cracks
Ojibway Parkway South	
- E.C. Row Expressway to Weaver Road	- asphalt surfaced pavements - poor condition in southbound lanes from E.C. Row Expressway to Broadway Street - severe depressed transverse cracks throughout - extensive moderate longitudinal cracks - northbound lanes and southbound lanes south of Broadway Street in fair condition - slight single and multiple transverse cracks throughout, blow ups - intermittent slight meander cracks - moderate centerline joint cracks throughout

5.0 TRAFFIC VOLUMES

The traffic data provided by URS Canada Inc. for the entire project are attached in Tables I-A to I-F following the text of this report. A summary of the projected 2015 traffic data for the proposed Highway 401 mainline extension/access route to the bridge for the various alternatives is provided below:

HIGHWAY 401 EXTENSION/ ACCESS ROUTE TO BRIDGE		ALT 1a		ALT 1b		ALT 2a		ALT 2b		ALT 3		PKWAY ALT	
FROM	TO	AADT	% COMM.	AADT	% COMM.	AADT	% COMM.	AADT	% COMM.	AADT	% COMM.	AADT	% COMM.
WESTBOUND LANES													
North Talbot Road	Howard Avenue	19,972	27.6	19,954	27.2	19,958	27.4	19,958	27.4	19,936	27.0	19,954	27.2
Howard Avenue	St. Clair College	19,026	27.4	19,664	27.6					19,359	26.8	14,993	27.6
St. Clair College	Pulford Street			16,522	25.2							9,858	29.5
Pulford Street	E.C. Row Expressway			22,550	19.8								
Howard Avenue	Todd Lane					17,735	24.4	17,735	24.4				
Todd Lane	E.C. Row Expressway					22,373	18.0	22,373	18.0				
St. Clair College	Highway 3/Huron Church Road	16,155	24.8									20,784	25.2
St. Clair College	E.C. Row Expressway									16,845	23.0		
Highway 3/Huron Church Road	Malden Road	7,502	55.7										
E.C. Row Expressway	Malden Road			7,414	53.3	7,274	53.8	7,274	53.8	7,336	55.3		
Malden Road	Ojibway Parkway	10,678	43.5	10,591	41.8	10,449	41.7	10,449	41.7	10,498	42.9		
Ojibway Parkway	EC Row Expressway	7,521	59.5	7,296	58.0	7,243	57.8	7,243	57.8	7,381	58.7	7,577	58.0
EC Row Expressway	Canadian Plaza	10,032	58.7	9,987	57.9	9,981	57.8	9,981	57.8	10,009	58.1	9,987	57.9
EASTBOUND LANES													
Canadian Plaza	Ojibway Parkway	18,007	52.4	17,980	52.0	18,028	52.8	18,028	52.8	18,010	52.4	17,980	52.0
Ojibway Parkway	EC Row Expressway	31,533	27.6	31,533	27.6	31,610	28.2	31,610	28.2	31,565	28.1	27,348	27.6
EC Row Expressway	Malden Road	18,914	51.3	18,914	51.3	18,476	52.2	18,476	52.2	18,546	53.3	14,333	51.3
Malden Road	Highway 3/Huron Church Road or E.C. Row Expressway	14,382	58.0	14,231	55.2	13,766	56.4	13,766	56.4	13,841	57.7	14,333	51.3
Highway 3/Huron Church Road	St Clair College	24,917	32.5							25,086	33.7	30,697	27.3
E.C. Row Expressway	Pulford Street			30,422	27.3								
Pulford Street	St Clair College			24,232	34.5							22,166	27.3
E.C. Row Expressway	Todd Lane					29,083	27.3	29,083	27.3				
Todd Lane	Howard Avenue					23,313	30.1	23,313	30.1				
Howard Avenue	Highway 3					27,051	25.3	27,051	25.3				
St Clair College	Howard Avenue	21,477	35.0	21,700	34.9					22,105	34.7	22,874	34.9
Howard Avenue	North Talbot Road	21,529	36.2	21,530	36.3	29,133	27.1	29,133	27.1	21,550	36.3	27,843	36.3

6.0 GRANULAR MATERIALS

The general area of the project lacks crushable gravel. Sandy material may be available from pits in the vicinity of Leamington. The high quality hot mix asphalt aggregates would have to be imported from great distances, either by truck or by water/truck transportation. The availability of aggregates from the following licensed sources needs to be investigated by bidders at the time of tendering. Aggregates transported by water from quarries in the USA, or from Canadian sources, need to be stockpiled and sampled at dock sites.

6.1 Granular Base and Subbase

Aggregate materials for Granular B Type I may be obtained from pits in the sandy delta deposit at Leamington, such as:

- Sterling Acres Farms Limited, Lot 24, Concession 5, Gosfield South Township, 4 kilometres northwest of Leamington.
- Erie Sand and Gravel Limited, Lots 23 and 24, Concessions 3 and 4, Gosfield South Township, 4 kilometres northwest of Leamington.
- Erie Sand and Gravel Limited, Lots 1, 2 and 3, Concession 2, Mersea Township, 2.4 kilometres west of Leamington.

This type of aggregate might also be obtained from pits under wayside permits from the same deposit provided the requirements of the Aggregate Resources of Ontario Provincial Standards under the Aggregate Resources Act are met by the Contractor. Careful selection would be required, as some of the sands are too fine for Granular B Type I.

Granular B Type II aggregates may be available from the following quarries:

- Amherst Quarries (1969) Anderdon quarry, Lots 9 and 10, Concession 7, Anderdon Township, 4 kilometres northwest of McGregor. It should be noted that this quarry has not reportedly been active recently for aggregate production.
- Amherst Quarries (1969) Limited quarry, Lots 21 and 22, Concession 2, Malden Township, 1.5 kilometres east of Amherstberg.
- The 671173 Ontario Limited quarry, Lot 27, the Ben Koop quarry, Lot 13 and the 670028 Ontario Limited quarry, Lots 1, 2, 12 and 13 in Registered Plan 35, Pelee Township, on Pelee Island, approximately 1 kilometre east of the Scudder dock. Transportation for these quarries is through the Kingsville dock. In the past, the main products from these quarries were armor stone, subbase and base aggregates for Pelee Island.
- Lafarge Canada Inc. Manitoulin Dolomite quarry, Lots 41 to 45, Concession 8, Dawson Township, 9.4 kilometres west of Meldrum Bay on Manitoulin Island, or quarries from the USA, all via the docks at Kingsville or the docks in Windsor.

Possible Granular A sources for the project are:

- Amherst Quarries (1969) Anderdon quarry; however excess material passing the 75 micrometre sieve may be problematic.
- Huron Gravel Limited pit in a large kame deposit, Lots 16, 17 and 18, Concession 13 LES, 11.5 kilometres east of Chatham. A dragline is currently in operation. The stone quality of pit run material is borderline for Granular A due to the presence of Kettle Point shale boulders. To improve the product, these boulders should be removed before crushing. The addition of screenings or suitable sand is required due to a lack of fines in order to meet Ministry specifications and to facilitate compaction.
- Lafarge Canada Inc. Manitoulin Dolomite quarry or quarries in the USA.
- Quarries on Pelee Island through the Kingsville dock; however, excess fines passing the 75 micrometre sieve may be problematic.

In addition to the use of virgin materials, since the majority of the pavements at the site are designated for removal and full reconstruction, recycling of the existing pavement materials into new granular base and subbase should be fully explored.

6.2 Asphaltic Concrete

SuperPave mixtures are to be used throughout and SuperPave aggregates would likely be producible from quarries or pits that can currently produce HDBC coarse and fine aggregates, subject to the materials meeting the additional testing requirements. For the top 100 millimetres of SuperPave asphalt, the fine aggregates could be obtained from HDBC fine aggregate sources, if properly processed.

Heavy duty binder course (HDBC) aggregates may be obtained from the following sources:

- Amherst Quarries (1969) Anderdon quarry; only the top bench consisting of Anderdon limestone is suitable.
- Lafarge Canada Inc. Manitoulin Dolomite quarry.
- Quarries in the USA.
- Beachvilime Limited, two quarries in Lots 13, 14 and 15, Broken Front, and Lots 14, 15, 17 and 18, Concessions 2 and 3, Oxford on Thames Geographic Township, 2.5 and 3.5 kilometres, respectively, south of Beachville. Aggregate may break down during handling.
- Global Stone Ingersoll Limited quarry, Lots 13, 14 and 15, Concessions 2, 3 and 4, North Oxford Geographic Township, 4.5 kilometres southwest of Beachville. Aggregate may break down during handling.

HDBC fine aggregates may be available from some of the quarries that can produce HDBC coarse aggregate, if properly processed. The Dufferin Aggregates Milton quarry and the Lafarge Canada Inc. Dundas quarry produce HDBC fine aggregates on a routine basis. The Beachvilime Limited and Global Stone Limited quarries have produced

HDBC fine aggregate, but specific approval for quality and gradation is required as the aggregate may break down during processing.

Asphalt pavement mixes may be produced by portable plants operated by contractors close to the project or by stationary plants in Chatham and/or Windsor. The location of portable asphalt plants in pits or other locations need to be cleared with local municipal authorities.

6.3 Concrete

Concrete aggregates may be available from the following sources:

- Lafarge Canada Inc. Manitoulin Dolomite Quarry;
- Lafarge Canada Inc., Lots 3 and 4, Concession 6, London Township;
- Huron Gravel Ltd., Harwich Township (fine aggregate);
- Osbourne Materials Company, Drummond Island quarry via Kingsville or Windsor;
- Presque Isle Corporation, Michigan, via Kingsville or Windsor;
- Michigan Limestone Operations, via Kingsville or Windsor;
- Smelter Bay Aggregates Inc., Sowerby pit, via Kingsville or Windsor;
- Blue Circle Aggregates, Lot 3, Concession 5, London Township;
- Erie Sand and Gravel Limited, Tyhurst Pit (fine aggregate);
- Lobo Sand and Gravel, Lots 11 and 12, Concession 9, Township of Lobo (fine aggregate); and
- Fowler Construction Company Ltd., 11 kilometres north of junction of Highway 12 and Simcoe County Road 44 (coarse aggregate).

7.0 PAVEMENT DESIGN

7.1 General

The proposed pavement sections have been analyzed using the American Association of State Highway and Transportation Officials (AASHTO) design methods, the Canadian Portland Cement Association (PCA) design method and the Asphalt Institute (1991) design method together with our knowledge of previous MTO experiences and standards and employing good engineering judgement. A discussion of the various pavement design methods used for this project is provided in Section 7.2.

It should be noted that only relatively limited cost information is available for SuperPave mixes at this time. Therefore, the life cycle costing analyses reported throughout this report are based on the costs utilized on recent adjacent projects.

The following are relevant SuperPave mixes together with the lift thicknesses currently specified by MTO:

SUPERPAVE MIX	LIFT THICKNESS (mm)
SuperPave 12.5 FC 2	38 to 50
SuperPave 12.5 FC 1	38 to 50
SuperPave 12.5	38 to 50
SuperPave 19.0	50 to 75
SuperPave 25.0	75 to 100
SuperPave 9.5	nil to 30

7.2 Discussion of Pavement Design Methods

7.2.1 AASHTO (1993) Design Method

The AASHTO design method is a statistically based method calibrated using the results from the AASHTO Road Test carried out in the late 1950's and early 1960's. Thus, there are some limitations to the application of this design method. The limitations are discussed in Section 1.4.2 of the Guide and are summarized below:

a) limited pavement types (asphaltic concrete, granular base and subbase only for flexible pavements, rigid pavements with and without reinforcement but always with dowels);
b) limited subgrade types;

c) traffic loadings (road test terminated at 1,114,000 axle applications, thus use of design equivalent single axle loads (ESALs) in excess of eight million requires extrapolation beyond the equations developed);
d) age (aging effects are ignored as the road test was terminated after two years); and
e) environment (road test carried out in Ottawa, Illinois, U.S.A.).

The design method has been updated several times since inception, and recently the MTO undertook a study to adapt the AASHTO method to Ontario conditions and the results were provided in ERES Consultants Final Report entitled "Adaptation and Verification of AASHTO Pavement Design Guide for Ontario Conditions" dated February 22, 2001.

The benefits of employing the AASHTO method, particularly when properly calibrated to Ontario conditions, are that advanced conditions such as reliability, drainage, frost susceptible subgrades and swelling may be incorporated directly.

Since the AASHTO design method has not, until very recently, been scrutinized under Ontario conditions, the computed pavement structure must be verified using experience, judgement and comparison with other accepted pavement design methods.

<u>Flexible Pavements</u>

The results of the AASHTO design method for flexible pavements are sensitive to the input parameters, particularly subgrade resilient modulus and the initial and terminal serviceability factors. In addition, the scaling of layer coefficients is not consistent with the GBE concept. Designing for a specific GBE or structural number (SN) will cause discrepancies with other GBE based methods.

<u>Rigid Pavements</u>

Based on the comparison by Darter, Hall and Kuo (1995) as summarized in the Adaptation of AASHTO for Ontario guide, the largest factors to be questioned in the rigid pavement model are the composite modulus of subgrade reaction, and the J factor. The above referenced review notes that the nomograph for composite modulus of subgrade reaction produces unrealistically high values and overestimates the support actually experienced in the field. In addition, the J factor, which is a stress load factor across cracks and/or joints, is not properly applied in the AASHTO method and is intended to account for corner cracking. Joint faulting is not considered in the AASHTO analyses.

The above and other factors were addressed in the 1998 supplement to the guide, and the 1998 method has been examined and calibrated for Ontario conditions.

7.2.2 Asphalt Institute (AI) Design Method

The AI design method is based on a theoretical multilayered elastic system. However, the results of analyses using the AI method tend to provide asphaltic thicknesses well in excess of those typically employed in current practice. The main reason is the perceived notion that base and/or subbase courses greater than 300 millimetres in thickness do not provide additional structural capacity to the pavement structure as stated in the following excerpt from the AI design guide:

"Some agencies employ greater thicknesses of untreated aggregate base to try to minimize the potential for frost damage in the pavement. Although thicknesses greater than 300 millimetres are used for this purpose, pavement analysis studies have shown that this additional thickness adds little benefit if any to the structural behavior of the pavement system….Reducing the asphalt concrete thickness because of very large thicknesses of untreated aggregate is discouraged by the Asphalt Institute and most pavement designers because the potential for other pavement problems will increase."

The results of the AI design method will be scaled using typical GBE factors to develop a more typical pavement section based on past MTO experience and current design philosophies.

7.2.3 Canadian Portland Cement Association (PCA) Design Method

As indicated in the PCA "Thickness Design for Concrete Highway and Street Pavements" manual, the pavement design methods are based on pavement theory, performance, and research experience from:

- theoretical pavement slab studies by Westergaard and Pichett & Ray, and the results of finite element analyses,
- model and full scale testing,
- experimental pavements, and
- performance of existing pavements.

It is indicated that an emphasis has been placed on calibration of the design model to the performance of existing pavements.

The design method allows independent consideration of subgrade and base courses, subgrade resilient modulus, traffic and includes consideration of fatigue (to control fatigue cracking) and erosion (to control subgrade and shoulder erosion, pumping and faulting). The analysis can also consider plain jointed, doweled and continuously reinforced pavements.

The results of the PCA design method will be compared to the results of the AASHTO analyses and MTO experience to determine an appropriate design slab thickness.

7.2.4 Comparison of Pavement Design Methods

Comparisons of the results of the various pavement design methods were carried out as part of the pavement design process. The results of the AASHTO and Asphalt Institute flexible pavement design methods and the results of the AASHTO and Canadian Portland Cement Association rigid pavement design methods are compared on Figure 8 for the project specific conditions. Subgrade condition 1, as described in Sections 7.5.2 and 7.5.4 below, were used for the comparison.

Based on the results of the comparisons and our experience in the Windsor area, the AASHTO method yields reasonable results and has been used as the primary design tool for assessing the various pavement design alternatives.

7.3 Discussion of Life Cycle Cost Methods

The life cycle costing has been carried out in accordance with ERES Consultants Inc. Report entitled “Review of Life Cycle Costing Analysis Procedures” dated December 1998. Consistent with MTO direction, the discount rate utilized in the analyses is 5.0 per cent and, for flexible pavements, rehabilitation strategies have consisted of milling 50 millimetres and paving 50 millimetres of SuperPave 19.0 and 40 millimetres of surface course appropriate for the traffic conditions. For concrete pavements, a 50 millimetre asphalt overlay is provided in year 38.

The unit rates used in the life cycle costing are:

MATERIAL/ACTIVITY	UNIT RATE
SuperPave 12.5 FC2	$140/tonne
SuperPave 12.5 FC1	$120/tonne
SuperPave 12.5	$85/tonne
SuperPave 19.0	$90/tonne
SuperPave 25.0	$90/tonne
OGDL	$13/tonne
Granular A Base	$20/tonne
Granular B Type III Subbase	$18/tonne
Concrete – 175 to 200 mm	$\$64/m^2$
Concrete – 200 to 225 mm	$\$66/m^2$
Concrete – 225 to 260 mm	$\$68/m^2$
Concrete – 260 to 290 mm	$\$70/m^2$
Concrete – 290 to 330 mm	$\$73/m^2$
rout and seal	$1.50/m

MATERIAL/ACTIVITY	UNIT RATE
milling (25-50mm depth)	$1.75/m^2$
milling (75-100mm depth)	$2.25/m^2$
asphalt patching	$50/m^2$
concrete joint reseal	$5/m
surface texturing	$5/m^2$
subdrains	$25/m

7.4 Concept Pavement Design

Based on the information provided in the Request for Proposal for this project, the MTO has advised that typical pavement designs for freeways in the area of this project consist of:

RIGID PAVEMENT		FLEXIBLE PAVEMENT	
COMPONENT	THICKNESS (mm)	COMPONENT	THICKNESS (mm)
Plain Jointed Concrete	260	Stone Mastic Asphalt	40
Open Graded Drainage Layer	100	SuperPave 19.0	70
Granular A Base	300	SuperPave 25.0	190 (2@95)
		Open Graded Drainage Layer	100
		Granular A Base	500

The above noted pavement structures include continuous subdrains hydraulically connected to the open graded drainage layer (OGDL) that discharges to a positive gravity outlet.

It should be noted that the rigid pavement design noted above is considered to be applicable for the better drained and typically stiffer upper weathered crust in the area and may not necessarily be appropriate for the typical weaker and not as well drained soils in the depressed profile areas.

7.5 Pavement Design Model

7.5.1 Traffic Loading

The average annual daily traffic (AADT) loadings and per cent commercial vehicles for the various pavements under consideration in the Area of Continued Analysis are detailed in Tables I-A to I-F, attached. Calculations of the traffic loadings in terms of equivalent single axle loads (ESALs) were completed using the traffic data provided by URS and appropriate truck factors and lane distribution factors determined based on the anticipated volume and nature of the loadings and geometry of the proposed pavements. The truck and lane distribution factors utilized are summarized below:

ROAD CLASSIFICATION	NUMBER OF LANES (each direction)	APPROXIMATE ESALs (millions)		TRUCK FACTOR	LANE DISTRIBUTION FACTOR
		Flexible Pavt's	Rigid Pavt's		
Local	1	less than 0.2	less than 10	1.5	1.0
Minor Collector	1	0.2 to 1	10 to 20	1.5	1.0
Major Collector	1 to 2	1 to 6	20 to 50	1.5	1.0
Minor Arterial	2	6 to 20	50 to 100	2.0	0.8 to 0.9
Major Arterial	2	20 to 50	100 to 200	2.0	0.8 to 0.9
Freeway	3	50 to 125	greater than 200	2.5	0.6 to 0.8

The truck factors in the table were based on the anticipated heavy traffic loading conditions for the various types of pavements. The lane distribution factors were determined based on the proposed pavement lane configurations, traffic volumes and Table 8-3 of the Ontario AASHTO design guidelines.

The cumulative ESAL loading were used to describe the roadway classification for the purposes of this report. While it may be more convenient for the reader to classify the pavements based on AADT or the like, varying percentage of commercial traffic, lane configuration and the like would not be taken into account, therefore, classification by ESALs was utilized.

The cumulative 19 and 21 year ESALs for the various flexible pavements are summarized in Tables II-A to II-F, attached. The freeway pavements have been based on an initial design life of 21 years and the remainder of the pavements based on an initial design life of 19 years, consistent with MTO standards.

The cumulative 25 year ESALs for the various rigid pavements are summarized in Tables III-A to III-F, attached.

7.5.2 AASHTO Analyses – Flexible Pavements

To carry out the AASHTO analyses, estimates of initial and terminal serviceability indices (ISI & TSI, respectively) and reliability (R) are required. The criteria for selecting the appropriate values of these parameters is dependent on the anticipated volume, the nature of the loadings and geometry of the proposed pavements. The initial and terminal serviceability indices and reliability used for the various pavements are summarized below:

ROAD CLASSIFICATION	INITIAL SERVICEABILITY INDEX	TERMINAL SERVICEABILITY INDEX	RELIABILITY (%)
Local	4.5	2.0	50
Minor Collector	4.5	2.0	75
Major Collector	4.5	2.0	75
Minor Arterial	4.5	2.2	85
Major Arterial	4.5	2.5	90
Freeway	4.5	2.5	95

The initial and terminal serviceability indices were selected in general accordance with the revised Table 8-4 of the Ontario AASHTO design guidelines. The design reliability was selected based on experience gained with other similar projects and the AASHTO design guidelines.

Subgrade Resilient Modulus, M_R

Based on the nature of the subgrade soils and our related experience in the Windsor area, a subgrade resilient modulus of 25 megapascals (MPa) is considered appropriate for the clayey crust soils that typically have an undrained shear strength in excess of about 100 kilopascals and is consistent with the recommendations for low to medium plasticity clays as indicated in Table 8.6 of the “Adaptation and Verification of AASHTO Pavement Design Guide for Ontario Conditions” document and is also consistent with the typical pavement thicknesses constructed by MTO in this area.

As indicated in Section 3.1.2 and on Figures 5, 6 and 7, the undrained shear strength beneath the upper weathered crust decreases significantly. While undrained shear strength cannot be directly correlated to resilient modulus, the shear strength data clearly indicates a reduction in support characteristics for the pavements. Therefore, for the various alternatives, the resilient moduli used in the analyses are:

SUBGRADE CONDITION	SUBGRADE UNDRAINED SHEAR STRENGTH (kPa)	SUBGRADE RESILIENT MODULUS (MPa)
1	greater than 100	25
2	75 to 100	20
3	less than 75	15

Based on the results of the investigation carried out for the foundations component of the project, the following table summarizes the subgrade conditions expected at various locations throughout the project for subgrade levels at grade, 3 metres below grade and 6 metres below grade:

LOCATION	SUBGRADE CONDITION		
	At Grade	3 m Below Grade	6 m Below Grade
Proposed Highway 401			
Highway 401/Highway 3 to Geraedts Drive	1	1	2
Geraedts Drive to 700m west of Huron Church Road	1	1	3
700m west of Huron Church Road to Cabana Road	1	1	2
Cabana Road to 100 m north of Pulford Street	1	1	3
100m north of Pulford Street to 200m west of Malden Road	1	1	2
200 to 600 m west of Malden Road	1	2	2
600 m west of Malden Road to Ojibway Parkway	1	2	3
Ojibway Parkway (E.C. Row Expressway to Sandwich Street)	1	2	3

Structural Number

The above-noted classifications and the required structural numbers suggested for each roadway class are summarized on Figures 9, 10 and 11, attached, for the three subgrade conditions considered.

Utilizing the above information, the following representative flexible pavement structural numbers were calculated for the major pavements to be constructed. The following structural numbers provide a general sense of the pavement structure required. Detailed information for the individual pavement sections analyzed is provided in Tables II-A to II-F:

LOCATION	STRUCTURAL NUMBER (mm)		
	Condition 1	Condition 2	Condition 3
Highway 401			
- westbound	208	222	240
- eastbound	222	236	255
Huron Church Road			
- northbound	144	154	167
- southbound	177	189	205
E.C. Row Expressway			
- westbound	148	158	172
- eastbound	174	185	201

LOCATION	STRUCTURAL NUMBER (mm)		
	Condition 1	Condition 2	Condition 3
Ojibway Parkway			
- northbound	112	120	130
- southbound	135	145	158

The structural analyses for the proposed new pavement sections were carried out using the design nineteen year traffic loadings and the following equivalency factors and AASHTO layer coefficients:

MATERIAL	EQUIVALENCY FACTOR	AASHTO LAYER COEFFICIENT	AASHTO DRAINAGE COEFFICIENT
Asphalt	2.0	0.42	-
Granular A Base	1.0	0.14	1.0
Granular B Type III Subbase	0.67	0.09	1.0
Granular B Type II Subbase	1.0	0.14	1.0

7.5.3 Preliminary Flexible Pavement Design

As noted above, while it may be more convenient for the reader to classify the pavements based on AADT or the like, varying percentage of commercial traffic, lane configuration and the like would not be taken into account, therefore, classification by ESALs was utilized. To aid in the assessment of appropriate pavement structures for the various roadways under consideration, Tables II-A to II-F summarize the cumulative ESALs and roadway classification to be used for design.

Based on the results of the analyses, appropriate pavement structures for the various pavements within the project consist of:

- Subgrade Condition 1

ROAD CLASSIFICATION	RANGE OF ESALs (millions)	STRUCTURAL NUMBER (mm)	PAVEMENT COMPONENT THICKNESS (mm)			
			Asphalt		OGDL	Granular A Base
			Surface	Binder		
Local	less than 0.2	<75	40	50	-	300
Minor Collector	0.2 to 1	75-95	40	90	-	300
Major Collector	1 to 6	95-120	40	110	-	400
Minor Arterial	6 to 20	120-150	40	120	-	550
Major Arterial	20 to 50	150-180	40	190	-	600
Freeway	50 to 125	>180	40	260	100	500

- Subgrade Condition 2

ROAD CLASSIFICATION	RANGE OF ESALs (millions)	STRUCTURAL NUMBER (mm)	PAVEMENT COMPONENT THICKNESS (mm)			
			Asphalt		OGDL	Granular A Base
			Surface	Binder		
Local	less than 0.2	<75	40	50	-	300
Minor Collector	0.2 to 1	75-95	40	90	-	350
Major Collector	1 to 6	95-130	40	120	-	450
Minor Arterial	6 to 20	130-160	40	150	-	600
Major Arterial	20 to 50	160-190	40	220	-	600
Freeway	50 to 125	>190	40	260	100	600

- Subgrade Condition 3

ROAD CLASSIFICATION	RANGE OF ESALs (millions)	STRUCTURAL NUMBER (mm)	PAVEMENT COMPONENT THICKNESS (mm)			
			Asphalt		OGDL	Granular A Base
			Surface	Binder		
Local	less than 0.2	<75	40	50	-	350
Minor Collector	0.2 to 1	75-100	40	90	-	350
Major Collector	1 to 6	100-135	40	130	-	500
Minor Arterial	6 to 20	135-180	40	190	-	600
Major Arterial	20 to 50	180-220	40	260	-	600
Freeway	50 to 125	>220	40	300	100	650

Alternative 3 involves the construction of cut and cover tunnels to convey the traffic and it is understood that the Highway 401 main line pavements will be constructed over the tunnel base slab. Therefore, the Alternative 3 main line pavements should consist of:

COMPONENT	THICKNESS (mm)
Surface Asphalt	40
Binder Asphalt	160
OGDL	100

Tables II-A to II-F provide the detailed results of the ESAL calculations and the resultant pavement classification based on the above for each of the pavement sections examined.

In addition, for comparison, alternative pavement designs were considered for Subgrade Condition 1 that incorporate a granular subbase component. These are summarized as follows:

ROAD CLASSIFICATION	RANGE OF ESALs (millions)	PAVEMENT COMPONENT THICKNESS (mm) Asphalt Surface	Asphalt Binder	Granular A Base	Granular B Type III Subbase
Local	less than 0.2	40	50	100	300
Minor Collector	0.2 to 1	40	90	100	300
Major Collector	1 to 6	40	110	150	400
Minor Arterial	6 to 20	40	120	150	650
Major Arterial	20 to 50	40	190	150	650
Freeway	50 to 125	40	260	100 OGDL 100 Gran A	650

7.5.4 AASHTO Analyses – Rigid Pavements

For the rigid pavement analyses, the initial and terminal serviceability indices and reliabilities used for the flexible pavement analyses were utilized.

Modulus of Subgrade Reaction

Based on the nature of the subgrade soils and our related experience, a modulus of subgrade reaction of 30 megapascals per metre (MPa/m) is considered appropriate for the clayey crust soils that typically have an undrained shear strength in excess of about 100 kilopascals and is consistent with the recommendations for low to medium plasticity clays as indicated in Table 8.9 of the “Adaptation and Verification of AASHTO Pavement Design Guide for Ontario Conditions” document.

As indicated in Section 3.1.2 and on Figures 5, 6 and 7, the undrained shear strength beneath the upper weathered crust decreases significantly. While undrained shear strength cannot be directly correlated to modulus of subgrade reaction, the shear strength data clearly indicates a reduction in support characteristics for the pavements. Therefore, for the various alternatives, the moduli of subgrade reaction used in the analyses are:

SUBGRADE CONDITION	SUBGRADE UNDRAINED SHEAR STRENGTH (kPa)	MODULUS OF SUBGRADE REACTION (MPa/m)
1	greater than 100	30
2	75 to 100	20
3	less than 75	10

The table previously provided in Section 7.5.2 summarizes the subgrade conditions expected at various locations throughout the project for subgrade levels of at grade, 3 metres below grade and 6 metres below grade.

The structural analyses for the proposed new pavement sections were carried out using the design twenty five year traffic loadings, in terms of ESALs, and the effective moduli of subgrade reaction for various Granular A and OGDL thicknesses beneath the slabs for the following effective moduli of subgrade reaction, k.

COMBINED THICKNESS OF GRANULAR A AND OGDL (mm)	EFFECTIVE MODULUS OF SUBGRADE REACTION (MPa/m)		
	k=30MPa/m	k=20MPa/m	k=10MPa/m
300	52	38	24
400	62	46	30

The values for effective modulus of subgrade reaction are based on Table 1 in the CPCA "Thickness Design for Concrete Highway and Street Pavements."

In addition to the above, the following input parameters were used in the AASHTO rigid pavement analyses:

PARAMETER	VALUE
Modulus of Rupture, S_c'	5 MPa
Elastic Modulus, E_c	30,000 MPa
Load Transfer Coefficient, J	
- 0.5m monolithic shoulder	2.5
- no tied shoulder	3.2

The appropriate pavement classifications and the required slab thicknesses suggested for each roadway class and subgrade condition, based on the above input information, are summarized on Figures 9, 10 and 11.

7.5.5 Preliminary Rigid Pavement Design

As noted above, while it may be more convenient for the reader to classify the pavements based on AADT or the like, varying percentage of commercial traffic, lane configuration and the like would not be taken into account, therefore, classification by ESALs was utilized. To aid in the assessment of appropriate pavement structures for the various roadways under consideration, Tables III-A to III-F summarize the cumulative ESALs and roadway classification to be used for design.

Based on the results of the analyses, appropriate pavement structures for the various pavements within the project consist of:

- Subgrade Condition 1

ROAD CLASSIFICATION	RANGE OF ESALs (millions)	PAVEMENT COMPONENT THICKNESS (mm) Portland Cement Concrete	OGDL	Granular A Base
Local	less than 10	concrete pavement not warranted		
Minor Collector	10 to 20	175	-	300
Major Collector	20 to 50	210	-	300
Minor Arterial	50 to 100	260	-	300
Major Arterial	100 to 200	290	100	300
Freeway	greater than 200	330	100	300

- Subgrade Condition 2

ROAD CLASSIFICATION	RANGE OF ESALs (millions)	PAVEMENT COMPONENT THICKNESS (mm) Portland Cement Concrete	OGDL	Granular A Base
Local	less than 10	concrete pavement not warranted		
Minor Collector	10 to 20	175	-	300
Major Collector	20 to 50	220	-	300
Minor Arterial	50 to 100	260	-	300
Major Arterial	100 to 200	300	100	300
Freeway	greater than 200	330	100	300

- Subgrade Condition 3

ROAD CLASSIFICATION	RANGE OF ESALs (millions)	PAVEMENT COMPONENT THICKNESS (mm) Portland Cement Concrete	OGDL	Granular A Base
Local	less than 10	concrete pavement not warranted		
Minor Collector	10 to 20	190	-	300
Major Collector	20 to 50	225	-	300
Minor Arterial	50 to 100	260	-	400
Major Arterial	100 to 200	300	100	400
Freeway	greater than 200	330	100	400

Alternative 3 involves the construction of cut and cover tunnels to convey the traffic and it is understood that the Highway 401 main line pavements will be constructed over the tunnel base slab. Therefore, the Alternative 3 main line pavements should consist of:

COMPONENT	THICKNESS (mm)
Portland Cement Concrete	260
OGDL	100

Tables III-A to III-F provide the detailed results of the ESAL calculations and the resultant pavement classification based on the above for each of the pavement sections examined.

7.6 Life Cycle Cost Analyses

Life cycle cost analyses were carried out for the alternative pavement designs above consistent with the procedures outlined in Section 7.3. In accordance with MTO procedures, the following maintenance and rehabilitation strategies were utilized in assessing the life cycle costs:

YEAR	LIGHT AND MEDIUM DUTY PAVEMENTS	HEAVY DUTY PAVEMENTS (FREEWAY)	CONCRETE PAVEMENTS
3	Rout & Seal (59m)	Rout & Seal (59m)	
9	Mill 40mm and Patch (293m^2) Rout & Seal (156m)	Mill 40mm and Patch (293m^2) Rout & Seal (156m)	
12			Joint Reseal (50% of transverse joints, 25% of longitudinal joints)
15	Mill 40mm and Patch (880 m^2) Rout & Seal (352m)	Mill 40mm and Patch (880m^2) Rout & Seal (352m)	
18			Diamond Grinding, Resealing, Patching
19	Mill 50mm and 90mm Overlay	Mill 40mm and Patch (440m^2) Rout & Seal (244m)	
21		Mill 50mm and 90mm Overlay	
22	Rout & Seal (59m)		
24		Rout & Seal (59m)	
27	Mill 40mm and Patch (440m^2) Rout & Seal (244m)		
28		Mill 40mm and Patch (440m^2) Rout & Seal (352m)	Extensive Patching, Diamond Grinding, Joint Resealing
31	Mill 50mm and 90mm Overlay	Rout & Seal (244m)	
34	Rout & Seal (59m)	Mill 50mm and 90mm Overlay	
37		Rout & Seal (59m)	
38	Mill 40mm and Patch (440m^2) Rout & Seal (244m)		50mm asphalt overlay
41			Rout & Seal (70% of transverse cracks)
42	Mill 50mm and 90mm Overlay	Mill 40mm and Patch (440m^2) Rout & Seal (352m)	
44		Rout & Seal (244m)	Rout & Seal (30% of transverse cracks, 50% of longitudinal cracks)
45	Rout & Seal (59m)		
46		Mill 50mm and 90mm Overlay	
48	Mill 40mm and Patch (440m^2) Rout & Seal (244m)		
49		Rout & Seal (59m)	

These strategies are illustrated on Figure 12.

Using the above-noted rehabilitation strategies, the following life cycle costs were determined:

- Subgrade Condition 1

	LIFE CYCLE COST ($ PER LANE KM)					
	Flexible Pavement				Rigid Pavement	
	Granular Base Alternative		Granular Subbase Alternative			
ROAD CLASSIFICATION	Capital Cost	Total Life Cycle Cost	Capital Cost	Total Life Cycle Cost	Capital Cost	Total Life Cycle Cost
Local	109,400	**192,964**	122,020	205,529		
Minor Collector	137,890	**221,330**	150,704	234,088	272,990	334,651
Major Collector	180,694	**271,672**	201,952	292,837	280,959	344,616
Minor Arterial	201,689	**292,576**	233,057	323,807	275,471	339,151
Major Arterial	264,991	360,016	288,502	383,424	284,752	**349,552**
Freeway	382,246	479,759	413,684	511,060	346,807	**411,337**
Tunnel Section	208,601	306,871	208,601	306,871	270,326	**335,189**

- **bold** represents preferred alternative

Based on the life cycle costing, flexible pavements are preferred for the local roadways, minor and major collector and minor arterial pavements. Rigid pavements are preferred for the major arterial and freeway pavements.

- Subgrade Condition 2

	LIFE CYCLE COST ($ PER LANE KM)			
	Flexible Pavement		Rigid Pavement	
ROAD CLASSIFICATION	Capital Cost	Total Life Cycle Cost	Capital Cost	Total Life Cycle Cost
Local	109,400	**192,964**	-	-
Minor Collector	146,808	**230,209**	272,990	334,651
Major Collector	197,284	**288,190**	281,488	345,142
Minor Arterial	230,935	**321,694***	275,471	**339,151***
Major Arterial	286,125	381,058	294,303	**359,061**
Freeway	404,541	501,957	346,807	**411,337**

*these alternatives are considered equivalent since the life cycle costs are within 5 per cent.

Based on the life cycle costing, flexible pavements are preferred for the local roadways and minor and major collector pavements. Rigid pavements are preferred for the major arterial and freeway pavements and the flexible and rigid pavement alternatives are considered to be equivalent for the minor arterial pavements.

- Subgrade Condition 3

	LIFE CYCLE COST ($ PER LANE KM)			
	Flexible Pavement		Rigid Pavement	
ROAD CLASSIFICATION	Capital Cost	Total Life Cycle Cost	Capital Cost	Total Life Cycle Cost
Local	118,180	**201,706**	-	-
Minor Collector	146,808	**230,209**	273,750	335,408
Major Collector	214,123	**304,955**	281,755	345,408
Minor Arterial	259,066	**349,702***	291,406	**355,017***
Major Arterial	314,353	409,163	310,376	**375,064**
Freeway	446,678	543,910	367,927	**432,364**

*these alternatives are considered equivalent since the life cycle costs are within 5 per cent.

Based on the life cycle costing, flexible pavements are preferred for the local roadways and minor and major collector pavements. Rigid pavements are preferred for the major arterial and freeway pavements and the flexible and rigid pavement alternatives are considered to be equivalent for the minor arterial pavements.

The above-noted total life cycle costs are referred to year 2011 dollars. The alternatives with the lowest total life cycle costs are indicated in **bold** for each road classification and each pavement type. However, based on both the MTO's and our experience in the Windsor area, rigid pavements are preferred at major intersections and any areas where frequent starting/stopping of heavy vehicles is expected.

8.0 PRELIMINARY RECOMMENDATIONS

8.1 Pavement Components

Based on the results of our analyses and the results of the life cycle costing, flexible pavements should be utilized for the local roadways, minor and major collectors and minor arterials, as follows:

	THICKNESS (mm)			
COMPONENT	Local	Minor Collector	Major Collector	Minor Arterial
Subgrade Condition 1				
Surface Asphalt	40	40	40	40
Binder Asphalt	50	90 (2 @ 45)	110 (2 @ 55)	120 (2 @ 60)
Granular A Base	300	300	400	550
Subgrade Condition 2				
Surface Asphalt	40	40	40	40
Binder Asphalt	50	90 (2 @ 45)	120 (2 @ 60)	150 (2 @ 75)
Granular A Base	300	350	450	600
Subgrade Condition 3				
Surface Asphalt	40	40	40	40
Binder Asphalt	50	90 (2 @ 45)	130 (2 @ 65)	190 (2 @ 60, 1 @ 70)
Granular A Base	350	350	500	600

However, based on both the MTO's and our experience in the Windsor area, rigid pavements are preferred at major intersections and any areas where frequent starting/stopping of heavy vehicles is expected.

The major arterial and freeway pavements should consist of rigid pavements, as follows:

	THICKNESS (mm)		
COMPONENT	Major Arterial	Freeway	Tunnel
Subgrade Condition 1			
Concrete	290	330	260
OGDL	100	100	100
Granular A	300	300	-

COMPONENT	THICKNESS (mm) Major Arterial	Freeway	Tunnel
Subgrade Condition 2			
Concrete	300	330	260
OGDL	100	100	100
Granular A	300	300	-
Subgrade Condition 3			
Concrete	300	330	260
OGDL	100	100	100
Granular	400	400	-

All of the above-noted structures incorporate a 0.5 metre wide tied monolithic shoulder.

8.2 Mixture Types

Based on the anticipated traffic volumes and roadway usage, the following mixtures are recommended for the flexible pavements:

- Subgrade Condition 1

ROAD CLASSIFICATION	SURFACE COURSE Mixture	Thickness (mm)	Traffic Category	BINDER COURSES Mixture	Thickness (mm)	Traffic Category
Local	SuperPave 12.5	40	A	SuperPave 19.0	50	A
Minor Collector	SuperPave 12.5	40	B	SuperPave 19.0	90 (2@45)	B
Major Collector	SuperPave 12.5 FC1	40	C	SuperPave 19.0	110 (2@55)	C
Minor Arterial	SuperPave 12.5 FC1	40	D	SuperPave 19.0	120 (2@60)	D

- Subgrade Condition 2

ROAD CLASSIFICATION	SURFACE COURSE Mixture	Thickness (mm)	Traffic Category	BINDER COURSES Mixture	Thickness (mm)	Traffic Category
Local	SuperPave 12.5	40	A	SuperPave 19.0	50	A
Minor Collector	SuperPave 12.5	40	B	SuperPave 19.0	90 (2@45)	B
Major Collector	SuperPave 12.5 FC1	40	C	SuperPave 19.0	120 (2@60)	C
Minor Arterial	SuperPave 12.5 FC1	40	D	SuperPave 19.0	150 (2@75)	D

- Subgrade Condition 3

ROAD CLASSIFICATION	SURFACE COURSE Mixture	Thickness (mm)	Traffic Category	BINDER COURSES Mixture	Thickness (mm)	Traffic Category
Local	SuperPave 12.5	40	A	SuperPave 19.0	50	A
Minor Collector	SuperPave 12.5	40	B	SuperPave 19.0	90 (2@45)	B
Major Collector	SuperPave 12.5 FC1	40	C	SuperPave 19.0	130 (2@65)	C
Minor Arterial	SuperPave 12.5 FC1	40	D	SuperPave 19.0	190 (2@60, 1@70)	D

8.3 Construction Considerations

The granular materials should extend laterally full width and daylight to ditches having inverts at least 0.5 metres below subgrade level. In urban sections or in areas where ditches are not practical or feasible, perforated, continuous subdrains should be installed with outlets at appropriate intervals.

For the flexible pavements, if the top lift of binder asphalt is exposed through a winter, thorough cleaning and visual inspection will be required prior to placement of tack coat and surface course asphalt.

8.4 Paved Shoulders

Paved shoulders throughout the project should consist of two lifts of asphalt. Lift thicknesses should be equivalent to the adjacent surface course and upper binder course. The surface and binder courses for the non-driveable paved shoulders should be SuperPave 12.5. In any areas where tracking onto paved shoulders is considered likely, such as the inner loops of interchange ramps, the full design lane asphalt thickness and mix type should be provided.

8.5 Asphalt Cement Grades

Performance grade asphalt cement is to be used on this project. The asphalt cement grades to be used on this project are:

LOCATION	COMPONENT	PGAC
Major Collector and Minor Arterial	Surface Course	64-28
	Upper Binder Course	64-28
	Lower Binder Courses	58-28

LOCATION	COMPONENT	PGAC
Local Roads and Minor Collector	All components	58-28

8.6 Tack Coat

Tack coat should be applied between all asphaltic lifts and on any milled surfaces consistent with MTO Southwestern Region directives.

9.0 CUT MATERIALS AND DESIGN

9.1 Transition Point Treatment

Transition treatment from earth cuts to earth fills and at the limits of subexcavation areas are to be provided in accordance with Ontario Provincial Standard Drawing (OPSD) 205.01. The transition treatment depth, t, should be taken as 1.0 metres less the thickness of asphalt or concrete. For preliminary purposes, the thickness of organic, leached and accumulation layers, D_a, should be taken as 0.0 metres.

For this project, the frost penetration depth should be taken as 1.0 metres.

Reference should be made to the approach foundation engineering report for additional information regarding the requirement for cut stability and construction issues.

10.0 EMBANKMENT MATERIALS AND DESIGN

10.1 Embankment Construction

The embankments should be constructed using good quality, approved earth borrow. Based on the project location, it is anticipated that clayey borrow materials will be utilized. Following stripping of the surficial topsoil and any softened or unsuitable materials, the embankment fill material should be placed in maximum 300 millimetre thick loose lifts and compacted. Upon completion of filling to proposed subgrade level, the embankment side slopes should be trimmed to a final inclination of 2.5 horizontal to one vertical or flatter.

Reference should be made to the appropriate foundation engineering reports for additional information regarding requirement for embankment, settlements and construction issues.

11.0 DRAINAGE

11.1 Ditches

The ditches throughout the project should be constructed in accordance with the OPSD 200 series for earth grading with inverts at least 0.5 metres below subgrade level. Subdrains should be provided where this minimum ditch depth is not practical.

Pipe subdrains should be perforated, 100 millimetres in diameter, and placed in a geotextile lined trench 300 millimetres wide in accordance with OPSD 207.041. The trench should be backfilled with 19 millimetre clear stone or OGDL aggregates. At least 300 millimetres of overlap should be provided between the joints in the geotextile.

Any ditch areas which may be wet from conditions such as poor grading or from adjacent surface flows or the like, should be provided with an approved geotextile and appropriately sized rip rap consisting of angular stone or recycled concrete conforming to OPSS 1004.

Geotextile used for pipe subdrains should be Class I, non-woven with a FOS of 75 to 150 microns. Geotextile used under rip rap should be Class II, non-woven with a FOS of 75 to 150 microns.

12.0 OTHER DESIGN FEATURES

12.1 Recycling of Existing Pavement Materials

Consideration may be given to recycling the existing asphalt, concrete and/or granular materials into the new pavements. A maximum of 20 per cent recycled asphalt pavement (RAP) may be utilized in the binder courses throughout below a depth of 150 millimetres. A maximum of 30 per cent RAP may be utilized in the granular base in any unpaved shoulders. The contractor must demonstrate that he can produce a suitable product that meets all of the appropriate material specifications on a consistent basis.

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TABLE I-A

SUMMARY OF TRAFFIC DATA - ALTERNATIVE 1A

Detroit River International Crossing
Windsor, Ontario

LOCATION			2015				2025				2035			
Pavement Section	From	To	AADT		Comm Vehicles		AADT		Comm Vehicles		AADT		Comm Vehicles	
			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
Huron Church Road	Riverside Drive	University Avenue	6,903	5,381	2.6%	1.6%	6,921	5,488	2.7%	2.4%	6,884	5,682	2.9%	3.1%
	University Avenue	Wyandotte Street	3,208	3,874	4.3%	3.2%	3,185	3,974	4.6%	4.1%	3,071	4,106	5.0%	5.0%
	Wyandotte Street	AMB Off Ramp	2,263	3,076	1.0%	1.0%	2,244	3,139	1.0%	1.0%	2,110	3,240	1.0%	1.0%
	AMB Off Ramp	College	17,476	6,223	15.0%	1.5%	18,520	6,297	16.5%	1.6%	19,645	6,460	20.5%	1.7%
	College Street	Girardot Street	25,318	24,056	2.9%	12.5%	26,148	24,855	3.2%	13.4%	26,159	25,893	3.4%	16.5%
	Girardot Street	Tecumseh Road	24,203	23,788	3.3%	12.2%	25,103	24,972	3.7%	13.0%	25,638	26,470	3.9%	15.6%
	Tecumseh Road	Dorchester Street	27,458	27,231	3.5%	10.6%	28,263	28,077	3.8%	11.2%	28,751	29,264	4.0%	13.3%
	Dorchester Street	Prince Road/Totten Street	27,503	28,501	3.0%	9.2%	28,314	29,360	3.3%	9.8%	28,834	30,327	3.5%	11.7%
	Prince Road/Totten Street	Malden Road	30,089	31,859	3.1%	8.4%	30,960	33,126	3.4%	8.6%	31,699	34,496	3.6%	10.2%
	Malden Road	Industrial Road	24,695	26,711	2.4%	9.2%	24,658	28,107	2.5%	9.4%	25,290	29,911	2.6%	11.5%
	Industrial Rd	EC Row North Ramp Terminal	27,133	28,866	2.4%	8.9%	27,916	30,104	2.5%	9.0%	28,563	32,827	2.6%	10.6%
	EC Row North Ramp Terminal	EC Row South Ramp Terminal	20,198	34,938	2.2%	7.1%	20,480	37,897	2.3%	7.0%	21,332	41,573	2.3%	8.1%
	South of EC Row South Ramp Terminal		24,716	26,836	2.3%	7.5%	27,674	28,928	2.4%	7.1%	29,933	32,061	2.4%	8.0%
South Service Road	North of Lambton Street		N/A	10,483	N/A	1.5%	N/A	12,380	N/A	1.4%	N/A	14,423	N/A	1.4%
	Lambton Street	Todd Lane/Cabana Road	N/A	9,429	N/A	1.3%	N/A	11,489	N/A	1.2%	N/A	13,362	N/A	1.2%
	Todd Lane/Cabana Road	St Clair College	N/A	16,021	N/A	0.4%	N/A	17,084	N/A	0.5%	N/A	18,371	N/A	0.5%
	St Clair College	Cousineau Drive	N/A	9,288	N/A	1.9%	N/A	9,834	N/A	2.1%	N/A	10,653	N/A	2.2%
	Cousineau Drive	Howard Avenue	N/A	6,287	N/A	3.1%	N/A	6,313	N/A	3.1%	N/A	6,582	N/A	3.2%
	East of Howard Avenue		N/A	12,060	N/A	2.0%	N/A	13,024	N/A	1.9%	N/A	14,106	N/A	2.0%
North Service Road	North of Labelle Street		25,245	N/A	1.9%	N/A	28,297	N/A	1.9%	N/A	30,429	N/A	2.0%	N/A
	Labelle Street	Grand Marais Road Ramp	24,277	N/A	1.3%	N/A	27,609	N/A	1.2%	N/A	29,689	N/A	1.4%	N/A
	Grand Marais Road Ramp	Pulford Street	12,425	N/A	1.2%	N/A	13,788	N/A	1.2%	N/A	14,568	N/A	1.4%	N/A
	Pulford Street	Todd Lane/Cabana Road	12,314	N/A	1.3%	N/A	14,331	N/A	1.3%	N/A	15,197	N/A	1.5%	N/A
	Todd Lane/Cabana Road	St Clair College	6,976	N/A	1.0%	N/A	7,167	N/A	1.0%	N/A	7,428	N/A	1.0%	N/A
	St Clair College	Cousineau Drive	14,452	N/A	0.5%	N/A	14,675	N/A	0.5%	N/A	15,278	N/A	0.6%	N/A
	Cousineau Drive	Howard Avenue	7,417	N/A	2.4%	N/A	7,599	N/A	2.6%	N/A	8,010	N/A	3.1%	N/A
	East of Howard Avenue		13,630	N/A	2.1%	N/A	14,732	N/A	2.1%	N/A	15,472	N/A	2.2%	N/A
Ojibway Parkway	EC Row Expressway	GN Booth Drive	10,180	10,555	2.2%	5.3%	10,894	11,126	2.3%	6.0%	11,696	11,775	2.4%	6.6%
	GN Booth Drive	Sandwich Street	10,116	10,431	2.2%	5.4%	10,830	10,927	2.3%	6.1%	11,632	11,576	2.4%	6.7%
	Sandwich Street	Prospect Avenue	9,479	9,729	0.8%	0.8%	10,088	10,069	0.7%	0.7%	10,789	10,589	0.7%	0.7%
	North of Prospect Avenue		9,416	9,510	0.8%	0.8%	10,025	9,858	0.7%	0.7%	10,726	10,388	0.7%	0.7%
CROSS ROADS														
Wyandotte Street	West of Huron Church Road		5,210	4,912	1.0%	1.0%	5,139	4,894	1.0%	1.0%	4,985	4,912	1.0%	1.0%
	East of Huron Church Road		3,635	5,183	1.8%	2.7%	3,633	5,254	1.9%	2.8%	3,622	5,422	2.1%	2.8%
University Avenue	West of Huron Church Road		1,266	1,188	1.0%	1.0%	1,376	1,275	1.0%	1.0%	1,547	1,310	1.0%	1.0%
	East of Huron Church Road		2,136	2,122	5.7%	6.5%	2,287	2,207	7.2%	6.6%	2,500	2,261	8.2%	6.8%
Riverside Drive	West of Huron Church Road		3,428	3,580	1.0%	1.0%	3,579	3,715	1.0%	1.0%	3,718	4,039	1.0%	1.0%
	E of HuronChurch		6,712	5,703	1.0%	1.0%	6,925	5,802	1.0%	1.0%	7,178	5,977	1.0%	1.0%
AMB Off Ramp	E of HuronChurch		N/A	10,153	N/A	24.1%	N/A	11,250	N/A	25.6%	N/A	12,464	N/A	30.7%
AMB On Ramp	E of HuronChurch		6,407	N/A	2.9%	N/A	6,739	N/A	3.4%	N/A	7,143	N/A	3.9%	N/A
Patricia Street	AMB	Wyandotte Street	4,105	5,097	4.7%	6.3%	4,135	4,980	5.5%	7.2%	4,288	4,829	5.7%	9.0%
College Street	East of Huron Church Road		6,514	6,360	2.4%	4.2%	6,603	6,529	2.5%	5.2%	6,758	6,585	2.5%	6.5%
	West of Huron Church Road		1,861	809	1.0%	1.0%	2,066	963	1.0%	1.0%	2,275	1,078	1.0%	1.0%
Girardot Street	East of Huron Church Road		1,127	1,169	1.0%	1.0%	1,147	1,159	1.0%	1.0%	1,155	1,167	1.0%	1.0%
	West of Huron Church Road		2,346	2,275	1.6%	1.0%	2,297	2,203	1.6%	1.0%	2,291	2,171	1.6%	1.0%
Tecumseh Road	East of Huron Church Road		5,829	6,836	2.3%	4.4%	5,789	6,844	2.2%	5.0%	6,209	7,294	2.2%	6.7%
	West of Huron Church Road		6,613	6,995	1.0%	1.0%	6,495	7,114	1.0%	1.0%	6,677	7,354	1.0%	1.0%
Dorchester Street	East of Huron Church Road		1,684	1,556	1.0%	1.0%	1,717	1,582	1.0%	1.0%	1,740	1,600	1.0%	1.0%
	West of Huron Church Road		1,419	807	1.6%	1.1%	1,419	808	1.6%	1.1%	1,419	808	1.6%	1.1%
Prince Road/Totten Street	East of Huron Church Road		2,075	2,907	1.0%	1.0%	2,214	2,353	1.0%	1.0%	2,312	2,888	1.0%	1.0%
	West of Huron Church Road		4,784	5,176	1.0%	1.0%	5,516	5,545	1.0%	1.0%	5,054	5,711	1.0%	1.0%
Malden Road	East of Huron Church Road		1,376	1,126	1.0%	1.0%	1,632	1,359	1.0%	1.0%	1,859	1,512	1.0%	1.0%
	West of Huron Church Road		7,884	8,413	6.6%	10.8%	8,212	8,859	7.1%	12.4%	8,621	9,302	7.3%	13.8%
Industrial Road	East of Huron Church Road		3,616	3,425	1.7%	2.2%	3,925	3,673	1.5%	2.1%	4,361	3,862	1.2%	2.2%
	West of Huron Church Road		4,072	3,169	3.9%	12.3%	4,262	3,467	4.0%	13.0%	4,490	3,603	4.1%	14.4%
E.C. Row Expressway North Ramp Terminal	East of Huron Church Road (W-N/S Off Ramp & N-W On Ramp)		14,179	2,041	2.2%	0.0%	15,964	2,066	2.2%	0.0%	16,497	2,213	2.3%	0.1%
	West of Huron Church Road (S-W On Ramp)		609	N/A	24.0%	N/A	584	N/A	27.8%	N/A	626	N/A	30.9%	0.0%
E.C. Row Expressway South Ramp Terminal	East of Huron Church Road (N-E On Ramp)		N/A	7,407	N/A	1.5%	N/A	10,547	N/A	1.5%	N/A	12,051	N/A	1.9%
	West of Huron Church Road (S-E On Ramp & E-N/S Off Ramp)		8,624	2,901	6.2%	2.9%	9,448	3,084	7.1%	2.7%	10,022	3,317	8.9%	2.6%
Labelle Street	East of North Service Road		2,073	715	1.0%	1.0%	2,018	758	1.0%	1.0%	2,112	803	1.0%	1.0%
Grand Marais Road Ramp	East of North Service Road		4,896	1,877	1.0%	1.0%	5,402	2,065	1.0%	1.0%	5,912	2,254	1.0%	1.0%
Fazio Drive	West of South Service Road		3,550	2,411	1.6%	1.2%	3,907	2,924	1.6%	1.2%	4,702	3,481	1.6%	1.1%
Pulford Street	East of North Service Road		493	1,011	1.0%	1.0%	476	1,099	1.0%	1.0%	476	1,205	1.0%	1.0%
Todd Lane/Cabana Road	East of North Service Road		8,970	7,585	1.0%	1.0%	9,635	7,247	1.0%	1.0%	10,835	8,271	1.0%	1.0%
	between North and South Service Road		9,971	13,458	1.0%	0.8%	10,668	14,999	1.0%	0.8%	11,958	16,763	1.0%	0.9%
	between South Service Road and Huron Church Line		13,705	14,201	0.6%	0.7%	16,030	15,949	0.6%	0.7%	18,324	17,933	0.6%	0.8%
	West of Huron Church Line		8,686	8,729	1.0%	1.0%	8,758	9,145	1.0%	1.0%	9,347	9,638	1.0%	1.0%
St. Clair College	East of North Service Rd		2,969	8,656	1.0%	1.0%	3,199	8,917	1.0%	1.0%	3,387	9,171	1.0%	1.0%
	between North and South Service Road		2,255	2,572	1.0%	1.0%	2,480	2,770	1.0%	1.0%	2,706	2,961	1.0%	1.0%
Cousineau Drive	East of North Service Road		5,380	4,408	1.0%	1.0%	5,242	4,265	1.0%	1.0%	5,507	4,380	1.0%	1.0%
	between North and South Service Road		7,569	6,705	0.1%	1.6%	7,879	7,085	0.1%	1.8%	9,161	7,923	0.1%	2.0%
	West of South Service Road		9,746	6,412	0.2%	1.8%	10,617	7,091	0.2%	1.8%	12,108	8,103	0.2%	1.9%
Howard Avenue	East of North Service Rd		7,718	8,482	1.7%	1.9%	8,580	9,789	1.6%	1.9%	9,246	10,454	1.6%	1.9%
	between North and South Service Road		11,604	7,215	1.7%	2.0%	12,668	7,994	1.7%	2.1%	13,631	8,725	1.7%	2.1%
	West of South Service Road		11,359	13,477	2.1%	2.1%	12,503	15,356	2.1%	2.1%	13,518	17,014	2.1%	2.1%
E.C. Row Expressway	East of Ojibway Parkway		13,304	8,173	2.8%	3.0%	17,700	9,006	3.1%	3.4%	21,805	9,794	2.9%	2.7%
	West of Ojibway Parkway		20,534	11,155	1.6%	2.2%	25,738	12,305	1.5%	2.2%	30,777	13,314	1.5%	2.1%
	East of Huron Church Road		34,989	43,027	3.0%	4.7%	43,140	50,618	3.2%	5.2%	48,161	57,032	3.3%	5.6%
	At Malden Rd		23,221	29,489	3.9%	4.6%	29,631	33,065	4.1%	5.1%	34,317	37,671	4.3%	5.1%
	West of Matchette Road		15,619	8,173	4.8%	3.0%	20,348	9,006	5.1%	3.4%	24,784	9,794	5.4%	2.7%
GN Booth Drive	West of Ojibway Parkway		357	461	1.7%	1.4%	357	461	1.6%	1.4%	357	461	1.6%	1.4%
Sandwich Street	West of Ojibway Parkway		1,533	1,388	9.6%	6.6%	1,629	1,518	9.3%	6.4%	1,775	1,630	8.8%	6.2%
Prospect Avenue	West of Ojibway Parkway		342	437	1.7%	0.9%	342	437	1.6%	0.9%	342	437	1.6%	0.9%
* - For consistency, Huron Church Rd/Talbot Rd runs North-South and all crossing roads run East-West														
HIGHWAY 401 Ramps														
Highway 3 merge/split														
Highway 401 northbound Off Ramp			9,970	N/A	6.1%	N/A	11,166	N/A	7.1%	N/A	11,862	N/A	8.4%	N/A
Highway 401 northbound On Ramp			9,124	N/A	1.9%	N/A	9,328	N/A	1.8%	N/A	9,728	N/A	1.9%	N/A
Highway 401 southbound Off Ramp			N/A	9,491	N/A	2.0%	N/A	9,841	N/A	2.0%	N/A	10,383	N/A	2.1%
Highway 401 southbound On Ramp			N/A	9,574	N/A	6.2%	N/A	10,600	N/A	7.2%	N/A	11,830	N/A	8.0%
At St. Clair College														
Highway 401 northbound Off Ramp			6,964	N/A	1.0%	N/A	7,216	N/A	1.0%	N/A	7,753	N/A	1.0%	N/A
Highway 401 northbound On Ramp			4,318	N/A	0.5%	N/A	4,457	N/A	0.5%	N/A	4,850	N/A	0.5%	N/A
Highway 401 southbound Off Ramp			N/A	8,288	N/A	2.2%	N/A	8,772	N/A	2.4%	N/A	8,911	N/A	2.7%
Highway 401 southbound On Ramp			N/A	5,019	N/A	0.4%	N/A	5,449	N/A	0.4%	N/A	5,824	N/A	0.5%
At Huron Church Road														
Highway 401 northbound Off Ramp			8,892	N/A	2.7%	N/A	10,331	N/A	2.8%	N/A	11,496	N/A	3.0%	N/A
Highway 401 southbound On Ramp			N/A	11,044	N/A	11.8%	N/A	10,960	N/A	12.1%	N/A	11,499	N/A	14.1%
At Malden Road														
Highway 401 northbound On Ramp			3,176	N/A	14.7%	N/A	3,769	N/A	14.2%	N/A	4,147	N/A	15.6%	N/A
Highway 401 southbound Off Ramp			N/A	4,140	N/A	13.8%	N/A	4,949	N/A	10.9%	N/A	5,453	N/A	9.8%
Highway 401 to E.C. Row Expressway														
401 SB Off Ramp			N/A	13,343	N/A	7.7%	N/A	14,976	N/A	8.5%	N/A	18,144	N/A	8.9%
Ojibway Parkway Interchange														
Highway 401 northbound Off Ramp			4,660	N/A	9.9%	N/A	5,160	N/A	8.6%	N/A	5,459	N/A	9.2%	0.0%
Highway 401 northbound On Ramp			1,503	N/A	19.5%	N/A	1,688	N/A	21.2%	N/A	1,807	N/A	22.7%	0.0%
Highway 401 southbound Off Ramp			N/A	1,091	N/A	0.7%	N/A	1,142	N/A	1.6%	N/A	1,297	N/A	2.2%
Highway 401 southbound On Ramp			N/A	14,959	N/A	2.8%	N/A	18,909	N/A	2.8%	N/A	22,906	N/A	2.9%
E.C. Row Expressway to Highway 401														
Highway 401 northbound On Ramp			2,083	N/A	37.2%	N/A	2,521	N/A	38.4%	N/A	3,029	N/A	38.4%	N/A
Highway 401 Mainline	South of Highway 3 merge/split	Highway 3/Highway 401 northbound Off Ramp	19,972	N/A	27.6%	N/A	24,704	N/A	28.5%	N/A	27,686	N/A	30.3%	N/A
	Highway 3/Highway 401 northbound Off Ramp	Highway 3/Highway 401 northbound On Ramp	9,889	N/A	43.4%	N/A	13,346	N/A	46.7%	N/A	16,034	N/A	48.0%	N/A
	Highway 3/Highway 401 northbound On Ramp	St. Clair College/Highway 401 northbound Off Ramp	19,026	N/A	27.4%	N/A	22,602	N/A	31.1%	N/A	25,681	N/A	33.2%	N/A
	St. Clair College/Highway 401 northbound Off Ramp	St. Clair College/Highway 401 northbound On Ramp	11,651	N/A	28.7%	N/A	14,904	N/A	33.3%	N/A	17,359	N/A	35.6%	N/A
	St. Clair College/Highway 401 northbound On Ramp	Huron Church Road/Highway 401 northbound Off Ramp	16,155	N/A	24.8%	N/A	19,526	N/A	28.7%	N/A	22,404	N/A	31.1%	N/A
	Huron Church Road/Highway 401 northbound Off Ramp	Malden Road/Highway 401 northbound On Ramp	7,502	N/A	55.7%	N/A	9,431	N/A	60.2%	N/A	11,228	N/A	63.0%	N/A
	Malden Road/Highway 401 northbound On Ramp	Ojibway Parkway/Highway 401 northbound Off Ramp	10,678	N/A	43.5%	N/A	13,200	N/A	47.1%	N/A	15,375	N/A	50.2%	N/A
	Ojibway Parkway/Highway 401 northbound Off Ramp	Ojibway Parkway/Highway 401 northbound OnRamp	6,018	N/A	69.5%	N/A	8,040	N/A	71.7%	N/A	9,916	N/A	72.8%	N/A
	Ojibway Parkway/Highway 401 northbound OnRamp	EC Row Expressway to Highway 401 northbound On Ramp	7,521	N/A	59.5%	N/A	9,728	N/A	63.0%	N/A	11,723	N/A	65.1%	N/A
	EC Row Expressway to Highway 401 northbound On Ramp	Canadian Plaza	10,032	N/A	58.7%	N/A	12,701	N/A	60.2%	N/A	14,830	N/A	61.4%	N/A
	Canadian Plaza	Ojibway Parkway/Highway 401 southbound Off Ramp	N/A	18,007	N/A	52.4%	N/A	21,543	N/A	57.1%	N/A	24,168	N/A	58.8%
	Ojibway Parkway/Highway 401 southbound Off Ramp	Ojibway Parkway/Highway 401 southbound On Ramp	N/A	16,722	N/A	52.6%	N/A	20,153	N/A	57.4%	N/A	22,602	N/A	59.1%
	Ojibway Parkway/Highway 401 southbound On Ramp	Highway 401 to EC Row Expressway southbound Off Ramp	N/A	31,533	N/A	27.6%	N/A	39,289	N/A	32.5%	N/A	46,534	N/A	36.5%
	Highway 401 to EC Row Expressway southbound Off Ramp	Malden Road/Highway 401 southbound Off Ramp	N/A	18,914	N/A	51.3%	N/A	24,273	N/A	55.4%	N/A	29,106	N/A	59.2%
	Malden Road/Highway 401 southbound Off Ramp	Huron Church Road/Highway 401 southbound On Ramp	N/A	14,382	N/A	58.0%	N/A	20,022	N/A	63.7%	N/A	23,149	N/A	66.6%
	Huron Church Road/Highway 401 southbound On Ramp	St Clair College/Highway 401 southbound Off Ramp	N/A	24,917	N/A	32.5%	N/A	29,871	N/A	37.3%	N/A	33,356	N/A	41.1%
	St Clair College/Highway 401 southbound Off Ramp	St Clair College/Highway 401 southbound On Ramp	N/A	16,134	N/A	39.9%	N/A	20,521	N/A	45.0%	N/A	23,809	N/A	48.8%
	St Clair College/Highway 401 southbound On Ramp	Highway 3/Highway 401 southbound Off Ramp	N/A	21,477	N/A	35.0%	N/A	26,333	N/A	39.7%	N/A	30,052	N/A	43.4%
	Highway 3/Highway 401 southbound Off Ramp	Highway 3/Highway 401 southbound On Ramp	N/A	14,245	N/A	50.5%	N/A	18,741	N/A	51.4%	N/A	22,060	N/A	53.8%
	Highway 3/Highway 401 southbound On Ramp	South of Highway 3 merge/split	N/A	21,529	N/A	36.2%	N/A	26,965	N/A	38.6%	N/A	30,966	N/A	41.5%
Grand Marais Road	East of connecting ramp		4,769	4,265	1.0%	1.0%	5,257	4,687	1.0%	1.0%	5,749	5,118	1.0%	1.0%
	West of connecting ramp		3,659	6,458	0.1%	0.6%	4,021	7,096	0.1%	0.6%	4,391	7,750	0.1%	0.6%
Broadway Street	West of Ojibway Parkway		330	352	1.0%	1.0%	330	352	1.0%	1.0%	330	352	1.0%	1.0%
Huron Church Line	South of Todd Lane		9,097	8,914	4.7%	5.0%	10,984	11,821	5.1%	5.8%	12,558	13,701	5.6%	6.8%
Millen Street	Felix Avenue	Huron Church Road	107	257	1.7%	1.4%	107	257	1.6%	1.4%	107	257	1.6%	1.4%
Malden Road	Chappus Street	Highway 401 South Ramp	9,796	11,386	2.6%	2.3%	10,514	12,368	2.6%	2.3%	9,268	13,116	2.5%	2.4%
	Highway 401 South Ramp	Highway 401 North Ramp	10,788	7,776	2.6%	2.3%	11,628	7,976	2.5%	2.3%	10,504	8,288	2.5%	2.4%
	North of Highway 401 North Ramp		8,014	8,481	2.6%	2.3%	8,383	8,854	2.5%	2.3%	6,946	9,254	2.4%	2.4%
Matchette Road	Chappus Street	EC Row Expressway South Ramp	8,514	7,907	1.0%	1.0%	9,852	9,480	1.0%	1.0%	10,463	9,981	1.0%	1.0%
	EC Row Expressway South Ramp	EC Row Expressway North Ramp	2,621	8,885	1.0%	1.0%	2,796	10,345	1.0%	1.0%	3,015	10,774	1.0%	1.0%
	EC Row Expressway North Ramp	Carmichael	4,793	3,284	1.0%	1.0%	5,098	3,121	1.0%	1.0%	5,379	3,291	1.0%	1.0%
Montgomery Drive	Surrey Drive	Talbot Street	92	179	1.1%	3.2%	101	197	1.1%	3.1%	110	206	1.1%	3.3%
Surrey Drive	Montgomery Drive	Talbot Street	74	44	1.2%	2.9%	74	44	1.2%	2.9%	74	44	1.1%	3.0%
Grosvenor Road	Montgomery Drive	Talbot Street	121	78	1.3%	2.2%	121	78	1.2%	2.1%	121	78	1.2%	2.2%

Prepared By: MEB
Reviewed By: PRB

TABLE I-B

SUMMARY OF TRAFFIC DATA - ALTERNATIVE 1B

Detroit River International Crossing
Windsor, Ontario

LOCATION			2015				2025				2035			
Pavement Section	From	To	AADT		Comm Vehicles		AADT		Comm Vehicles		AADT		Comm Vehicles	
			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
Huron Church Road	Riverside Drive	University Avenue	6,911	5,457	2.5%	1.6%	6,986	5,610	2.6%	2.3%	6,924	5,840	2.9%	3.0%
	University Avenue	Wyandotte Street	3,258	3,990	3.4%	3.0%	3,233	4,092	3.5%	4.0%	3,108	4,254	5.0%	4.8%
	Wyandotte Street	AMB Off Ramp	2,322	3,177	1.0%	1.0%	2,280	3,224	1.0%	1.0%	2,131	3,370	1.0%	1.0%
	AMB Off Ramp	College	17,448	6,323	15.0%	1.5%	18,348	6,447	17.3%	1.6%	19,543	6,656	20.5%	1.6%
	College Street	Girardot Street	25,364	24,092	2.9%	12.4%	26,218	24,966	3.2%	13.9%	26,227	25,933	3.3%	16.5%
	Girardot Street	Tecumseh Road	24,197	23,801	3.4%	12.3%	25,129	25,158	3.7%	13.5%	25,638	26,525	3.9%	15.7%
	Tecumseh Road	Dorchester Street	27,469	27,266	3.5%	10.6%	28,309	28,199	3.8%	11.6%	28,797	29,299	4.0%	13.3%
	Dorchester Street	Prince Road/Totten Street	27,511	28,532	3.1%	9.3%	28,358	29,470	3.4%	10.3%	28,875	30,357	3.5%	11.7%
	Prince Road/Totten Street	Malden Road	30,088	31,791	3.2%	8.5%	30,998	33,157	3.4%	8.9%	31,736	34,429	3.6%	10.1%
	Malden Road	Industrial Road	24,739	26,772	2.4%	9.0%	24,761	28,255	2.5%	9.7%	25,383	29,967	2.6%	11.3%
	Industrial Road	EC Row North Ramp Terminal	27,169	28,916	2.4%	8.6%	28,022	30,240	2.5%	9.1%	28,657	32,868	2.6%	10.3%
	EC Row North Ramp Terminal	EC Row South Ramp Terminal	20,228	35,043	2.1%	6.2%	20,486	38,090	2.1%	6.5%	21,298	41,670	2.2%	7.2%
	South of EC Row South Ramp Terminal		24,803	26,946	2.1%	6.2%	27,808	29,115	2.2%	6.4%	30,005	32,155	2.3%	6.8%
South Service Road	north of Bethlehem Avenue		N/A	23,492	N/A	6.8%	N/A	25,122	N/A	7.0%	N/A	27,675	N/A	7.4%
	Bethlehem Avenue	Lambton Street	N/A	5,220	N/A	2.4%	N/A	5,610	N/A	2.5%	N/A	6,174	N/A	2.6%
	Lambton Street	Pulford Street	N/A	5,063	N/A	0.6%	N/A	5,642	N/A	0.3%	N/A	6,440	N/A	0.4%
	Pulford Street	Todd Lane/Cabana Road	N/A	11,853	N/A	0.8%	N/A	13,546	N/A	0.5%	N/A	15,723	N/A	0.5%
	Todd Lane/Cabana Road	Huron Church Line	N/A	12,504	N/A	0.9%	N/A	13,994	N/A	0.9%	N/A	15,799	N/A	0.9%
	Huron Church Line	St. Clair College	N/A	16,536	N/A	0.6%	N/A	17,693	N/A	0.6%	N/A	18,794	N/A	0.7%
	St. Clair College	Cousineau Drive	N/A	9,334	N/A	2.8%	N/A	9,902	N/A	3.3%	N/A	10,735	N/A	3.7%
	Cousineau Drive	Howard Avenue	N/A	6,282	N/A	4.6%	N/A	6,321	N/A	5.2%	N/A	6,597	N/A	5.9%
	east of Howard Avenue		N/A	12,060	N/A	2.0%	N/A	13,024	N/A	1.9%	N/A	14,106	N/A	2.0%
North Service Road	north of Labelle Street		25,501	N/A	1.7%	N/A	28,317	N/A	1.8%	N/A	30,540	N/A	1.9%	N/A
	Labelle Street	Grand Marais Road Ramp	23,298	N/A	1.0%	N/A	26,127	N/A	1.1%	N/A	28,297	N/A	1.2%	N/A
	Grand Marais Road Ramp	Pulford Street	5,423	N/A	0.1%	N/A	5,754	N/A	0.1%	N/A	6,100	N/A	0.1%	N/A
	Pulford Street	Todd Lane/Cabana Road	5,496	N/A	0.2%	N/A	6,105	N/A	0.2%	N/A	6,780	N/A	0.2%	N/A
	Todd Lane/Cabana Road	Huron Church Line	11,313	N/A	1.1%	N/A	12,049	N/A	1.2%	N/A	12,703	N/A	1.2%	N/A
	Huron Church Line	St. Clair College	7,229	N/A	0.4%	N/A	7,778	N/A	0.7%	N/A	8,204	N/A	1.2%	N/A
	St. Clair College	Cousineau Drive	14,718	N/A	0.8%	N/A	15,051	N/A	0.9%	N/A	15,671	N/A	0.8%	N/A
	Cousineau Drive	Howard Avenue	7,461	N/A	1.5%	N/A	7,603	N/A	1.5%	N/A	7,984	N/A	1.3%	N/A
	east of Howard Avenue		13,630	N/A	2.1%	N/A	14,732	N/A	2.0%	N/A	15,472	N/A	2.0%	N/A
Ojibway Parkway	E.C. Row Expressway	GN Booth Drive	10,180	10,556	2.2%	5.3%	10,894	11,127	2.3%	6.0%	11,697	11,777	2.5%	6.7%
	GN Booth Drive	Sandwich Street	10,116	10,433	2.2%	5.5%	10,830	10,928	2.3%	6.1%	11,632	11,578	2.5%	6.8%
	Sandwich Street	Prospect Avenue	9,478	9,729	0.8%	0.8%	10,088	10,069	0.7%	0.7%	10,788	10,588	0.7%	0.7%
	north of Prospect Avenue		9,415	9,510	0.8%	0.8%	10,025	9,858	0.7%	0.7%	10,725	10,387	0.7%	0.7%
CROSS ROADS														
Wyandotte Street	west of Huron Church Line		5,168	4,869	1.0%	1.0%	5,099	4,858	1.0%	1.0%	5,008	4,886	1.0%	1.0%
	east of Huron Church Line		3,574	5,121	1.1%	2.6%	3,562	5,201	1.1%	2.7%	3,648	5,398	2.0%	2.9%
University	west of Huron Church Line		1,254	1,192	1.0%	1.0%	1,365	1,272	1.0%	1.0%	1,511	1,306	1.0%	1.0%
	east of Huron Church Line		2,138	2,118	5.7%	5.2%	2,311	2,214	7.0%	5.1%	2,481	2,273	8.3%	6.8%
Riverside Drive	west of Huron Church Line		3,390	3,487	1.0%	1.0%	3,552	3,655	1.0%	1.0%	3,642	3,993	1.0%	1.0%
	east of Huron Church Line		6,770	5,671	1.0%	1.0%	6,981	5,782	1.0%	1.0%	7,225	5,957	1.0%	1.0%
AMB Off Ramp	east of Huron Church Line		N/A	12,464	N/A	30.7%	N/A	12,464	N/A	30.7%	N/A	12,464	N/A	30.7%
AMB On Ramp	east of Huron Church Line		6,286	N/A	3.0%	N/A	6,558	N/A	3.5%	N/A	6,917	N/A	4.0%	N/A
Patricia	AMB	Wyandotte Street	4,111	5,195	4.7%	6.2%	4,149	5,049	5.5%	7.1%	4,205	4,873	5.8%	9.0%
College Street	east of Huron Church Road		6,514	6,361	2.6%	4.2%	6,603	6,526	2.5%	4.9%	6,758	6,581	2.5%	6.1%
	west of Huron Church Road		1,867	806	1.0%	1.0%	2,068	956	1.0%	1.0%	2,272	1,076	1.0%	1.0%
Girardot Street	east of Huron Church Road		1,133	1,160	1.0%	1.0%	1,154	1,148	1.0%	1.0%	1,162	1,155	1.0%	1.0%
	west of Huron Church Road		2,346	2,275	1.7%	1.1%	2,296	2,202	1.8%	1.1%	2,290	2,168	1.8%	1.2%
Tecumseh Road	east of Huron Church Road		5,829	6,836	2.4%	4.4%	5,786	6,844	2.4%	5.2%	6,210	7,294	2.2%	7.0%
	west of Huron Church Road		6,604	6,994	1.0%	1.0%	6,488	7,115	1.0%	1.0%	6,679	7,355	1.0%	1.0%
Dorchester Street	east of Huron Church Road		1,693	1,533	1.0%	1.0%	1,726	1,557	1.0%	1.0%	1,748	1,574	1.0%	1.0%
	west of Huron Church Road		1,419	807	1.8%	1.2%	1,419	808	1.9%	1.3%	1,419	807	1.9%	1.3%
Prince Road/Totten Street	east of Huron Church Road		2,075	2,907	1.0%	1.0%	2,213	2,353	1.0%	1.0%	2,311	2,888	1.0%	1.0%
	west of Huron Church Road		4,782	5,176	1.0%	1.0%	5,515	5,545	1.0%	1.0%	5,053	5,710	1.0%	1.0%
Malden Road	east of Huron Church Road		1,377	1,126	1.0%	1.0%	1,631	1,358	1.0%	1.0%	1,858	1,508	1.0%	1.0%
	west of Huron Church Road		7,891	8,417	6.8%	11.6%	8,223	8,875	7.3%	13.1%	8,633	9,314	7.6%	14.4%
Industrial Road	east of Huron Church Road		3,619	3,426	1.5%	2.1%	3,926	3,674	1.4%	2.1%	4,362	3,864	1.2%	2.2%
	west of Huron Church Road		4,072	3,166	3.9%	11.8%	4,262	3,458	4.0%	12.0%	4,490	3,594	4.0%	13.3%
E.C. Row Expressway North Ramp Terminal	east of Huron Church Road (E-N/S Off Ramp & S-W On Ramp)		14,334	2,042	1.9%	10.0%	16,245	2,068	1.9%	10.0%	16,852	2,214	1.9%	0.3%
	west of Huron Church Road (N-W On Ramp)		607	N/A	22.4%	N/A	583	N/A	27.0%	N/A	624	N/A	30.0%	N/A
E.C. Row Expressway South Ramp Terminal	east of Huron Church Road (S-E On Ramp)		N/A	7,407	N/A	0.9%	N/A	10,547	N/A	1.0%	N/A	12,051	N/A	1.0%
	west of Huron Church Road (N-E On Ramp & W-N/S Off Ramp)		8,637	2,904	6.3%	2.8%	9,466	3,083	7.2%	2.7%	10,047	3,314	9.3%	2.8%
Labelle Street/Bethlehem Avenue	east of North Service Road		2,903	2,116	1.0%	1.0%	3,112	2,338	1.0%	1.0%	3,336	2,617	1.0%	1.0%
	between North and South Service Road		1,403	3,202	1.0%	1.0%	1,232	3,565	1.0%	1.0%	1,573	3,934	1.0%	1.0%
	west of South Service Road		1,804	3,255	1.0%	1.0%	1,678	4,360	1.0%	1.0%	2,055	3,283	1.0%	1.0%
Grand Marais Road/Lambton Road	east of North Service Road		4,183	3,270	1.0%	1.0%	4,593	3,595	1.0%	1.0%	5,010	3,929	1.0%	1.0%
	between North and South Service Road		2,429	2,940	0.1%	0.8%	2,664	3,229	0.1%	0.9%	2,907	3,527	0.1%	1.0%
	west of South Service Road		1,714	1,960	1.7%	0.9%	1,876	2,193	1.8%	0.9%	2,056	2,428	1.8%	1.0%
Pulford Street	east of North Service Road		1,465	1,949	1.0%	1.0%	1,600	2,135	1.0%	1.0%	1,748	2,330	1.0%	1.0%
	between North and South Service Road		1,393	1,234	1.0%	1.0%	1,528	1,356	1.0%	1.0%	1,672	1,483	1.0%	1.0%
	west of South Service Road		1,177	876	2.0%	0.8%	1,295	956	2.0%	0.9%	1,413	1,051	2.0%	1.0%
Todd Lane/Cabana Road	east of North Service Road		8,721	7,177	1.0%	1.0%	9,390	7,481	1.0%	1.0%	10,586	8,495	1.0%	1.0%
	between North and South Service Road		9,351	8,073	1.0%	1.0%	9,884	9,828	1.0%	1.0%	10,926	11,224	1.0%	1.0%
	west of South Service Road		9,933	9,958	1.0%	1.0%	11,875	11,293	1.0%	1.0%	13,701	12,917	1.0%	1.0%
Huron Church Line	between North and South Service Road		1,219	5,242	3.4%	1.5%	1,392	5,744	2.8%	1.5%	1,480	6,252	3.6%	1.5%
	west of South Service Road		7,451	6,841	1.2%	1.4%	8,272	7,451	1.2%	1.5%	9,041	7,983	1.3%	1.5%
St. Clair College	east of North Service Road		2,968	8,655	1.0%	1.0%	3,199	8,915	1.0%	1.0%	3,387	9,168	1.0%	1.0%
	between North and South Service Road		2,255	2,587	1.0%	1.0%	2,480	2,790	1.0%	1.0%	2,706	2,988	1.0%	1.0%
Cousineau Drive	east of North Service Road		5,396	4,415	1.0%	1.0%	5,254	4,268	1.0%	1.0%	5,516	4,382	1.0%	1.0%
	between North and South Service Road		7,608	6,705	1.0%	1.0%	7,924	7,085	1.0%	1.0%	9,207	7,923	1.0%	1.0%
	west of South Service Road		9,797	6,318	1.0%	1.0%	10,685	7,021	1.0%	0.2%	12,218	8,024	1.0%	1.0%
Howard Avenue	east of North Service Road		7,718	8,482	1.7%	1.8%	8,580	9,789	1.7%	1.9%	9,246	10,454	1.7%	1.9%
	between North and South Service Road		11,637	7,215	1.8%	2.2%	12,711	7,994	1.7%	2.2%	13,678	8,725	1.7%	2.2%
	west of South Service Road		11,382	13,477	2.2%	2.3%	12,530	15,356	2.1%	2.2%	13,546	17,014	2.1%	2.2%
E.C. Row Expressway	east of Ojibway Parkway		13,304	8,173	2.8%	4.7%	17,698	9,003	3.2%	5.2%	21,804	9,791	3.0%	4.4%
	west of Ojibway Parkway		20,538	11,155	1.5%	2.2%	25,741	12,305	1.5%	2.2%	30,784	13,314	1.6%	2.2%
	east of Huron Church Road		35,042	43,067	3.1%	4.5%	43,102	51,004	3.2%	5.0%	49,462	56,583	3.4%	5.4%
	at Malden Road		23,161	29,462	4.3%	5.4%	29,297	33,650	4.6%	6.0%	35,168	37,219	4.8%	6.0%
	west of Matchette		15,894	8,173	2.7%	4.7%	20,831	9,003	3.1%	5.2%	25,630	9,791	2.9%	4.4%
GN Booth Drive	west of Ojibway Parkway		357	461	1.9%	1.7%	357	461	1.9%	1.7%	357	461	1.9%	1.7%
Sandwich Street	west of Ojibway Parkway		1,533	1,388	9.6%	6.6%	1,629	1,518	9.3%	6.4%	1,775	1,630	8.8%	6.3%
Prospect Avenue	west of Ojibway Parkway		342	437	2.0%	1.0%	342	437	1.9%	1.0%	342	437	1.9%	1.1%
HIGHWAY 401 Ramps														
Highway 3 merge/split														
Highway 401 Northbound Off Ramp			9,967	N/A	6.0%	N/A	11,304	N/A	7.1%	N/A	11,862	N/A	8.3%	N/A
Highway 401 Northbound On Ramp			9,124	N/A	1.9%	N/A	9,462	N/A	1.9%	N/A	9,728	N/A	1.9%	N/A
Highway 401 Southbound Off Ramp			N/A	9,491	N/A	1.9%	N/A	10,063	N/A	1.9%	N/A	10,383	N/A	1.9%
Highway 401 Southbound On Ramp			N/A	9,566	N/A	6.2%	N/A	10,832	N/A	7.2%	N/A	11,814	N/A	8.0%
At St. Clair College														
Highway 401 Northbound Off Ramp			6,964	N/A	0.4%	N/A	7,309	N/A	0.6%	N/A	7,753	N/A	0.9%	N/A
Highway 401 Northbound On Ramp			4,069	N/A	0.8%	N/A	3,979	N/A	0.8%	N/A	4,124	N/A	0.8%	N/A
Highway 401 Southbound Off Ramp			N/A	7,812	N/A	3.1%	N/A	7,993	N/A	3.7%	N/A	7,944	N/A	4.5%
Highway 401 Southbound On Ramp			N/A	5,498	N/A	0.5%	N/A	5,906	N/A	0.6%	N/A	6,223	N/A	0.6%
At Pulford Street														
Highway 401 Northbound On Ramp			5,919	N/A	1.2%	N/A	7,507	N/A	1.3%	N/A	7,737	N/A	1.4%	N/A
Highway 401 Southbound Off Ramp			N/A	6,238	N/A	1.1%	N/A	7,227	N/A	1.1%	N/A	8,464	N/A	1.0%
At Huron Church Road														
Highway 401 Northbound Off Ramp			15,039	N/A	1.9%	N/A	17,194	N/A	2.0%	N/A	18,741	N/A	2.0%	N/A
Highway 401 Southbound On Ramp			N/A	16,563	N/A	9.3%	N/A	18,468	N/A	9.4%	N/A	18,845	N/A	10.1%
At Malden Road														
Highway 401 Northbound On Ramp			3,176	N/A	14.7%	N/A	3,769	N/A	14.2%	N/A	4,147	N/A	15.6%	N/A
Highway 401 Southbound Off Ramp			N/A	4,140	N/A	13.8%	N/A	4,949	N/A	10.9%	N/A	5,453	N/A	9.8%
Highway 401 to E.C. Row Expressway														
401 Southbound Off Ramp			N/A	13,364	N/A	7.8%	N/A	15,782	N/A	8.7%	N/A	18,179	N/A	9.1%
Ojibway Parkway Interchange														
Highway 401 Northbound Off Ramp			4,791	N/A	9.6%	N/A	5,356	N/A	8.3%	N/A	5,721	N/A	8.8%	N/A
Highway 401 Northbound On Ramp			1,496	N/A	18.3%	N/A	1,689	N/A	20.4%	N/A	1,805	N/A	21.7%	N/A
Highway 401 Southbound Off Ramp			N/A	1,092	N/A	0.9%	N/A	1,133	N/A	1.2%	N/A	1,294	N/A	1.7%
Highway 401 Southbound On Ramp			N/A	14,959	N/A	2.8%	N/A	18,909	N/A	2.9%	N/A	22,906	N/A	2.9%
E.C. Row Expressway to Highway 401														
Highway 401 Northbound On Ramp			2,083	N/A	37.2%	N/A	2,521	N/A	38.4%	N/A	3,029	N/A	38.4%	N/A
Highway 401 Mainline	South of Highway 3 merge/split	Highway 3/Highway 401 Northbound Off Ramp	19,954	N/A	27.2%	N/A	24,657	N/A	27.8%	N/A	27,629	N/A	29.6%	N/A
	Highway 3/Highway 401 Northbound Off Ramp	Highway 3/Highway 401 Northbound On Ramp	10,589	N/A	44.1%	N/A	13,212	N/A	45.5%	N/A	16,399	N/A	46.8%	N/A
	Highway 3/Highway 401 Northbound On Ramp	St. Clair College/Highway 401 Northbound Off Ramp	19,664	N/A	27.6%	N/A	22,641	N/A	30.6%	N/A	26,044	N/A	32.7%	N/A
	St. Clair College/Highway 401 Northbound Off Ramp	St. Clair College/Highway 401 Northbound On Ramp	12,307	N/A	29.5%	N/A	14,884	N/A	33.5%	N/A	17,780	N/A	35.9%	N/A
	St. Clair College/Highway 401 Northbound On Ramp	Pulford Street/Highway 401 Northbound On Ramp	16,522	N/A	25.2%	N/A	18,957	N/A	28.4%	N/A	21,972	N/A	30.5%	N/A
	Pulford Street/Highway 401 Northbound On Ramp	Huron Church Road/Highway 401 Northbound Off Ramp	22,550	N/A	19.8%	N/A	26,644	N/A	22.2%	N/A	29,920	N/A	24.1%	N/A
	Huron Church Road/Highway 401 Northbound Off Ramp	Malden Road/Highway 401 Northbound On Ramp	7,414	N/A	53.3%	N/A	9,413	N/A	57.9%	N/A	11,204	N/A	61.5%	N/A
	Malden Road/Highway 401 Northbound On Ramp	Ojibway Parkway/Highway 401 Northbound Off Ramp	10,591	N/A	41.8%	N/A	13,182	N/A	45.4%	N/A	15,351	N/A	49.1%	N/A
	Ojibway Parkway/Highway 401 Northbound Off Ramp	Ojibway Parkway/Highway 401 Northbound OnRamp	5,800	N/A	68.3%	N/A	7,825	N/A	70.9%	N/A	9,630	N/A	73.0%	N/A
	Ojibway Parkway/Highway 401 Northbound OnRamp	EC Row Expressway to Highway 401 Northbound On Ramp	7,296	N/A	58.0%	N/A	9,515	N/A	61.9%	N/A	11,436	N/A	64.9%	N/A
	EC Row Expressway to Highway 401 Northbound On Ramp	Canadian Plaza	9,987	N/A	57.9%	N/A	12,617	N/A	59.5%	N/A	14,744	N/A	60.8%	N/A
	Canadian Plaza	Ojibway Parkway/Highway 401 Southbound Off Ramp	N/A	17,980	N/A	52.0%	N/A	21,442	N/A	56.1%	N/A	24,132	N/A	58.4%
	Ojibway Parkway/Highway 401 Southbound Off Ramp	Ojibway Parkway/Highway 401 Southbound On Ramp	N/A	16,696	N/A	52.2%	N/A	20,060	N/A	56.4%	N/A	22,568	N/A	58.7%
	Ojibway Parkway/Highway 401 Southbound On Ramp	Highway 401 to EC Row Expressway Southbound Off Ramp	N/A	31,533	N/A	27.6%	N/A	39,289	N/A	32.5%	N/A	46,534	N/A	36.5%
	Highway 401 to EC Row Expressway Southbound Off Ramp	Malden Road/Highway 401 Southbound Off Ramp	N/A	18,914	N/A	51.3%	N/A	24,273	N/A	55.4%	N/A	29,106	N/A	59.2%
	Malden Road/Highway 401 Southbound Off Ramp	Huron Church Road/Highway 401 Southbound On Ramp	N/A	14,231	N/A	55.2%	N/A	18,666	N/A	59.8%	N/A	22,878	N/A	63.8%
	Huron Church Road/Highway 401 Southbound On Ramp	Pulford Street/Highway 401 Southbound Off Ramp	N/A	30,422	N/A	27.3%	N/A	36,538	N/A	31.0%	N/A	40,606	N/A	33.8%
	Pulford Street/Highway 401 Southbound Off Ramp	St Clair College/Highway 401 Southbound Off Ramp	N/A	24,232	N/A	34.5%	N/A	29,414	N/A	39.6%	N/A	32,261	N/A	43.6%
	St Clair College/Highway 401 Southbound Off Ramp	St Clair College/Highway 401 Southbound On Ramp	N/A	15,850	N/A	39.5%	N/A	20,763	N/A	44.4%	N/A	23,591	N/A	48.4%
	St Clair College/Highway 401 Southbound On Ramp	Highway 3/Highway 401 Southbound Off Ramp	N/A	21,700	N/A	34.9%	N/A	27,071	N/A	39.7%	N/A	30,301	N/A	43.5%
	Highway 3/Highway 401 Southbound Off Ramp	Highway 3/Highway 401 Southbound On Ramp	N/A	14,451	N/A	50.0%	N/A	19,128	N/A	50.9%	N/A	22,418	N/A	54.0%
	Highway 3/Highway 401 Southbound On Ramp	South of Highway 3 merge/split	N/A	21,530	N/A	36.3%	N/A	26,996	N/A	38.9%	N/A	31,034	N/A	42.1%
Malden Road	Chappus Street	Highway 401 South Ramp	8,966	11,480	3.9%	4.3%	9,084	11,528	3.7%	3.9%	9,447	12,207	3.9%	3.7%
	Highway 401 South Ramp	Highway 401 North Ramp	9,957	7,916	3.8%	4.3%	10,193	7,192	3.7%	3.9%	10,678	7,440	3.8%	3.7%
	North of Highway 401 North Ramp		7,195	8,613	3.8%	4.3%	6,982	8,058	3.7%	3.9%	7,149	8,393	3.8%	3.7%
Matchette Road	Chappus Street	EC Row Expressway South Ramp	8,512	7,933	1.0%	1.0%	9,261	9,268	1.0%	1.0%	9,542	10,489	1.0%	1.0%
	EC Row Expressway South Ramp	EC Row Expressway North Ramp	2,620	8,916	1.0%	1.0%	2,620	10,207	1.0%	1.0%	2,675	11,452	1.0%	1.0%
	EC Row Expressway North Ramp	Carmichael	4,861	3,303	1.0%	1.0%	5,152	3,168	1.0%	1.0%	5,719	3,318	1.0%	1.0%

Prepared By: MEB
Reviewed By: PRB

TABLE I-C

SUMMARY OF TRAFFIC DATA - ALTERNATIVE 2A

Detroit River International Crossing
Windsor, Ontario

LOCATION			2015				2025				2035			
Pavement Section	From	To	AADT		Comm Vehicles		AADT		Comm Vehicles		AADT		Comm Vehicles	
			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
Huron Church Road	Riverside Drive	University Avenue	6,939	5,479	2.5%	1.6%	7062	5644	2.6%	2.4%	7,038	5,893	2.8%	3.0%
	University Avenue	Wyandotte Street	3,286	3,971	3.3%	3.1%	3349	4081	4.3%	4.0%	3,312	4,280	4.5%	4.8%
	Wyandotte Street	AMB Off Ramp	2,256	3,176	1.0%	1.0%	2234	3201	1.0%	1.0%	2,292	3,415	1.0%	1.0%
	AMB Off Ramp	College Street	17,371	6,347	13.8%	1.5%	18219	6483	16.6%	1.6%	19,697	6,722	19.2%	1.6%
	College Street	Girardot Street	24,380	23,704	2.9%	11.4%	25180	25325	3.2%	13.6%	25,791	26,069	3.3%	15.9%
	Girardot Street	Tecumseh Road	23,677	23,943	3.4%	11.2%	24378	25437	3.6%	13.1%	25,158	27,097	3.8%	15.2%
	Tecumseh Road	Dorchester Street	27,103	27,831	3.5%	9.7%	27806	28711	3.8%	11.0%	28,406	31,078	4.0%	12.5%
	Dorchester Street	Prince Road/Totten Street	27,021	29,147	3.1%	8.4%	27999	30476	3.3%	9.6%	28,518	32,810	3.5%	11.1%
	Prince Road/Totten Street	Malden Road	29,320	32,345	3.2%	7.5%	30399	34133	3.4%	8.3%	31,078	36,661	3.6%	9.5%
	Malden Road	Industrial Road	24,228	27,223	2.4%	8.0%	25181	28820	2.5%	9.0%	25,673	31,289	2.6%	10.4%
	Industrial Road	EC Row Expressway North Ramp Terminal	25,922	29,090	2.4%	7.6%	27797	30892	2.6%	8.6%	27,661	33,495	2.6%	9.7%
	EC Row Expressway North Ramp Terminal	EC Row Expressway South Ramp Terminal	19,860	35,172	2.1%	5.5%	21217	39953	2.3%	6.1%	21,241	42,144	2.3%	6.8%
	EC Row Expressway South Ramp Terminal	Highway 401 Off Ramp	25,710	26,218	1.7%	5.4%	28699	30391	1.8%	5.8%	30,263	32,833	1.9%	6.4%
	Highway 401 Off Ramp	Spring Garden Road/Labelle Street	11,401	7,335	0.7%	1.3%	12069	8877	0.7%	1.5%	12,489	9,489	0.8%	1.6%
	Spring Garden Road/Labelle Street	Lambton Street/Grand Marais Road Ramp	9,600	7,377	1.2%	1.8%	10251	8762	1.3%	2.2%	10,516	9,720	1.3%	2.2%
	Lambton Street/Grand Marais Road Ramp	Pulford Street	8,208	6,730	1.7%	0.6%	8577	8072	1.8%	0.6%	8,947	8,380	1.5%	0.7%
	Pulford Street	Todd Lane/Cabana Road	8,186	7,395	1.9%	0.7%	8811	8686	1.9%	0.7%	9,368	9,494	1.9%	0.7%
	Todd Lane/Cabana Road	Huron Church Line	11,076	13,226	1.1%	1.6%	12791	14745	1.2%	1.5%	14,484	17,025	1.3%	1.6%
Talbot Road	Huron Church Line	St Clair College	6,414	7,682	0.1%	1.0%	6864	7897	0.2%	1.0%	7,245	8,548	0.2%	1.0%
	St Clair College	Cousineau Drive	9,895	6,404	0.1%	1.0%	10440	7016	0.1%	1.0%	10,857	6,843	0.1%	1.0%
	Cousineau Drive	Howard Avenue	9,831	5,472	0.2%	1.0%	10484	6166	0.4%	0.1%	10,911	6,141	0.6%	0.1%
	Howard Avenue	EC Row Expressway	15,176	13,247	1.9%	2.1%	16424	14899	2.0%	2.1%	17,869	16,234	2.0%	2.1%
Ojibway Parkway	EC Row Expressway	GN Booth Drive	10,181	11,207	2.2%	5.1%	10894	11526	2.3%	5.8%	11,697	12,459	2.5%	6.3%
	GN Booth Drive	Sandwich Street	10,116	10,994	2.2%	5.2%	10830	11322	2.3%	5.9%	11,633	12,247	2.5%	6.4%
	Sandwich Street	Prospect Avenue	9,487	9,723	0.8%	0.8%	10088	10109	0.7%	0.7%	10,780	10,639	0.7%	0.7%
	North of Prospect Avenue		9,424	9,512	0.8%	0.8%	10025	9899	0.7%	0.7%	10,717	10,429	0.7%	0.7%
CROSSING ROADS														
Wyandotte Street	West of Huron Church Road		5,192	4,872	1.0%	1.0%	5112	4861	1.0%	1.0%	4,937	4,882	1.0%	1.0%
	East of Huron Church Road		3,616	5,077	1.1%	2.7%	3628	5148	1.9%	2.7%	3,627	5,297	2.0%	2.9%
University Avenue	West of Huron Church Road		1,267	1,128	1.0%	1.0%	1358	1254	1.0%	1.0%	1,504	1,357	1.0%	1.0%
	East of Huron Church Road		2,139	2,145	5.7%	5.1%	2312	2356	7.1%	6.1%	2,457	2,367	8.4%	6.3%
Riverside Drive	West of Huron Church Road		3,368	3,642	1.0%	1.0%	3548	3770	1.0%	1.0%	3,634	3,914	1.0%	1.0%
	East of Huron Church Road		6,739	5,763	1.0%	1.0%	6951	5853	1.0%	1.0%	7,254	6,036	1.0%	1.0%
AMB Off Ramp	East of Huron Church Road		N/A	10,035	N/A	22.1%	N/A	10798	N/A	26.4%	N/A	12,337	N/A	29.1%
AMB On Ramp	East of Huron Church Road		6,302	N/A	3.0%	N/A	6604	N/A	3.5%	N/A	6,927	N/A	4.0%	N/A
Patricia Street	AMB	Wyandotte Street	4,102	5,173	4.7%	5.6%	4153	5101	5.0%	7.0%	4,194	4,966	6.5%	8.8%
College Street	East of Huron Church Road		6,642	6,443	2.6%	4.4%	6747	6609	2.6%	4.9%	6,798	6,780	2.7%	5.8%
	West of Huron Church Road		1,777	805	1.0%	1.0%	2013	899	1.0%	1.0%	2,239	990	1.0%	1.0%
Girardot Street	East of Huron Church Road		1,127	1,161	1.0%	1.0%	1132	1167	1.0%	1.0%	1,153	1,174	1.0%	1.0%
	West of Huron Church Road		2,338	2,273	1.9%	1.4%	2282	2206	1.9%	1.4%	2,292	2,172	2.1%	1.4%
Tecumseh Road	East of Huron Church Road		5,983	6,760	2.2%	4.3%	5758	6765	2.2%	5.8%	6,350	7,261	2.2%	7.5%
	West of Huron Church Road		6,444	6,926	1.0%	1.0%	6335	6833	1.0%	1.0%	6,629	7,220	1.0%	1.0%
Dorchester Street	East of Huron Church Road		1,706	1,536	1.0%	1.0%	1738	1562	1.0%	1.0%	1,746	1,586	1.0%	1.0%
	West of Huron Church Road		1,417	807	2.2%	1.4%	1418	807	2.3%	1.5%	1,422	806	2.4%	1.5%
Prince Road/Totten Street	East of Huron Church Road		2,112	2,713	1.0%	1.0%	2259	2683	1.0%	1.0%	2,359	2,668	1.0%	1.0%
	West of Huron Church Road		4,860	5,238	1.0%	1.0%	5023	5427	1.0%	1.0%	5,173	5,546	1.0%	1.0%
Malden Road	East of Huron Church Road		1,376	1,114	1.0%	1.0%	1681	1348	1.0%	1.0%	1,859	1,541	1.0%	1.0%
	West of Huron Church Road		7,502	7,026	7.1%	10.9%	7798	7050	7.4%	12.4%	8,088	7,317	7.7%	14.0%
Industrial Road	East of Huron Church Road		3,634	3,450	1.4%	2.0%	3903	3861	1.4%	2.0%	4,318	4,030	1.4%	2.1%
	West of Huron Church Road		3,911	3,157	3.8%	11.7%	4306	3451	4.0%	13.0%	4,481	3,597	4.0%	13.9%
EC Row Expressway North Ramp Terminal	E-N/S Ramp		13,740	N/A	1.9%	N/A	16099	N/A	1.9%	N/A	16,787	N/A	2.0%	N/A
	N-W Ramp		N/A	768	N/A	1.0%	N/A	889	N/A	1.0%	N/A	988	N/A	0.8%
	S-W Ramp		1,562	N/A	35.6%	N/A	1642	N/A	40.7%	N/A	1,691	N/A	44.1%	N/A
EC Row Expressway South Ramp Terminal	W-N/S Ramp		N/A	2,804	N/A	1.7%	N/A	2910	N/A	2.2%	N/A	2,860	N/A	2.5%
	S/N-E Ramp		N/A	16,908	N/A	3.1%	N/A	19396	N/A	3.6%	N/A	21,212	N/A	4.2%
Spring Garden Road	West of Huron Church Road		2,322	3,118	1.0%	1.0%	2322	3118	1.0%	1.0%	2,368	3,118	1.0%	1.0%
Labelle Street	East of Huron Church Road		3,606	1,866	1.0%	1.0%	3883	2060	1.0%	1.0%	4,091	2,140	1.0%	1.0%
Lambton Street/Grand Marais Road Ramp	East of Huron Church Road		5,266	4,439	1.0%	1.0%	5269	4900	1.0%	1.0%	5,271	5,542	1.0%	1.0%
Pulford Street	East of Huron Church Road		3,301	1,925	1.0%	1.0%	2975	1517	1.0%	1.0%	3,004	1,495	1.0%	1.0%
Cabana Road	East of Huron Church Road		8,027	6,614	1.0%	1.0%	8534	7653	1.0%	1.0%	9,275	8,802	1.0%	1.0%
	between Huron Church Road and Highway 401 northbound Ramps		19,842	19,082	0.2%	1.0%	21977	20565	0.3%	1.1%	23,942	23,009	0.3%	1.2%
Todd Lane	between Highway 401 northbound and southbound Ramps		12,043	16,536	0.2%	1.0%	12917	18098	0.3%	1.0%	13,743	19,749	0.3%	1.1%
	West of Highway 401 southbound Ramps		11,370	9,895	1.0%	1.0%	12182	10099	1.0%	1.0%	12,291	10,338	1.0%	1.0%
Huron Church Line	West of Huron Church Road		7,444	6,031	1.6%	1.3%	8588	7611	1.5%	1.3%	10,341	9,022	1.6%	1.4%
St Clair College	East of Talbot Road		3,144	9,599	1.0%	1.0%	3254	9546	1.0%	1.0%	3,214	9,802	1.0%	1.0%
Cousineau Drive	East of Talbot Road		5,464	5,233	1.0%	1.0%	5707	5513	1.0%	1.0%	6,502	5,727	1.0%	1.0%
	West of Talbot Road		7,233	6,365	1.0%	1.0%	8167	7000	0.0%	0.4%	8,832	7,650	0.0%	0.6%
Howard Avenue	East of Talbot Road		8,134	10,557	1.6%	1.8%	8765	11517	1.7%	1.9%	9,113	12,384	1.8%	1.9%
	between Talbot Road and Highway 401 southbound On Ramp		14,444	7,334	1.4%	2.0%	15646	8026	1.5%	2.1%	17,352	8,434	1.6%	2.1%
	West of Highway 401 southbound On Ramp		12,559	14,692	2.0%	2.0%	13654	16628	1.9%	2.0%	15,378	18,277	1.9%	2.0%
E.C. Row Expressway	East of Huron Church Road		34,790	44,695	3.1%	4.6%	43065	50397	3.2%	5.1%	48,073	56,669	3.4%	5.4%
	At Malden Road		23,297	29,858	4.3%	5.4%	29382	32888	4.6%	5.8%	33,768	37,407	4.7%	5.9%
	West of Matchette Drive		16,051	8,173	2.7%	4.9%	20854	9029	2.7%	4.5%	25,601	9,811	2.8%	3.8%
* - For consistency, Huron Church Rd/Talbot Rd runs North-South and all crossing roads run East-West														
HIGHWAY 401 Ramps														
Highway 3 merge/split														
Highway 401 northbound Off Ramp			11,467	N/A	6.1%	N/A	12564	N/A	7.2%	N/A	14,074	N/A	8.6%	N/A
Highway 401 northbound On Ramp			9,736	N/A	2.0%	N/A	9748	N/A	2.0%	N/A	10,103	N/A	2.0%	N/A
Highway 401 southbound Off Ramp			N/A	9,952	N/A	1.8%	N/A	10144	N/A	1.9%	N/A	10,701	N/A	1.9%
Highway 401 southbound On Ramp			N/A	10,350	N/A	6.1%	N/A	11816	N/A	7.7%	N/A	13,164	N/A	7.7%
Howard Avenue														
401 NB Off Ramp			N/A	3,146	N/A	1.1%	N/A	3457	N/A	1.4%	N/A	3,755	N/A	1.3%
At Todd Lane/Cabana Road														
Highway 401 northbound Off Ramp			6,875	N/A	1.1%	N/A	7973	N/A	1.1%	N/A	7,877	N/A	1.3%	N/A
Highway 401 northbound On Ramp			11,458	N/A	1.0%	N/A	12703	N/A	1.1%	N/A	13,317	N/A	1.2%	N/A
Highway 401 southbound Off Ramp			N/A	13,410	N/A	1.5%	N/A	14847	N/A	1.7%	N/A	16,154	N/A	1.7%
Highway 401 southbound On Ramp			N/A	7,896	N/A	0.3%	N/A	8077	N/A	0.4%	N/A	8,737	N/A	0.4%
At Huron Church Road														
Highway 401 northbound Off Ramp			15,244	N/A	2.1%	N/A	17534	N/A	2.2%	N/A	18,589	N/A	2.2%	N/A
Highway 401 southbound On Ramp			N/A	15,712	N/A	8.1%	N/A	17621	N/A	9.7%	N/A	18,987	N/A	9.7%
At Malden Road														
Highway 401 northbound On Ramp			3,175	N/A	14.2%	N/A	3749	N/A	13.4%	N/A	4,144	N/A	12.3%	N/A
Highway 401 southbound Off Ramp			N/A	4,144	N/A	13.6%	N/A	4953	N/A	8.6%	N/A	5,460	N/A	8.6%
EC Row Expressway to Highway 401														
Highway 401 southbound On Ramp			N/A	13,781	N/A	7.8%	N/A	15448	N/A	9.2%	N/A	18,181	N/A	9.2%
Ojibway Parkway Interchange														
Highway 401 northbound Off Ramp			4,701	N/A	9.6%	N/A	5280	N/A	9.1%	N/A	5,767	N/A	7.6%	N/A
Highway 401 northbound On Ramp			1,495	N/A	18.3%	N/A	1689	N/A	20.3%	N/A	1,807	N/A	21.8%	N/A
Highway 401 southbound Off Ramp			N/A	1,092	N/A	1.4%	N/A	1431	N/A	2.6%	N/A	1,291	N/A	1.8%
Highway 401 southbound On Ramp			N/A	14,959	N/A	2.9%	N/A	17791	N/A	1.9%	N/A	22,906	N/A	3.0%
EC Row Expressway Interchange														
Highway 401 northbound On Ramp			2,178	N/A	36.3%	N/A	2537	N/A	41.0%	N/A	3,026	N/A	41.8%	N/A
Highway 401 Mainline	South of Highway 3 merge/split	Highway 3/Highway 401 northbound Off Ramp	19,958	N/A	27.4%	N/A	24670	N/A	28.1%	N/A	27,671	N/A	30.1%	N/A
	Highway 3/Highway 401 northbound Off Ramp	Highway 3/Highway 401 northbound On Ramp	7,731	N/A	35.9%	N/A	12076	N/A	39.6%	N/A	13,738	N/A	42.2%	N/A
	Highway 3/Highway 401 northbound On Ramp	Todd Lane/Highway 401 northbound Off Ramp	17,735	N/A	24.4%	N/A	21980	N/A	27.6%	N/A	24,030	N/A	30.3%	N/A
	Todd Lane/Highway 401 northbound Off Ramp	Todd Lane/Highway 401 northbound On Ramp	10,510	N/A	25.6%	N/A	13570	N/A	30.6%	N/A	15,706	N/A	34.4%	N/A
	Todd Lane/Highway 401 northbound On Ramp	Huron Church Road/Highway 401 northbound On Ramp	22,373	N/A	18.0%	N/A	26683	N/A	20.6%	N/A	29,403	N/A	22.6%	N/A
	Huron Church Road/Highway 401 northbound On Ramp	Malden Road/Highway 401 northbound On Ramp	7,274	N/A	53.8%	N/A	9431	N/A	58.7%	N/A	11,213	N/A	61.9%	N/A
	Malden Road/Highway 401 northbound On Ramp	Ojibway Parkway/Highway 401 northbound Off Ramp	10,449	N/A	41.7%	N/A	13180	N/A	45.8%	N/A	15,357	N/A	48.5%	N/A
	Ojibway Parkway/Highway 401 northbound Off Ramp	Ojibway Parkway/Highway 401 northbound OnRamp	5,748	N/A	68.0%	N/A	7900	N/A	70.3%	N/A	9,590	N/A	73.2%	N/A
	Ojibway Parkway/Highway 401 northbound OnRamp	EC Row Expressway to Highway 401 northbound On Ramp	7,243	N/A	57.8%	N/A	9589	N/A	61.5%	N/A	11,397	N/A	65.1%	N/A
	EC Row Expressway to Highway 401 northbound On Ramp	Canadian Plaza	9,981	N/A	57.8%	N/A	12615	N/A	59.5%	N/A	14,742	N/A	60.8%	N/A
	Canadian Plaza	Ojibway Parkway/Highway 401 southbound Off Ramp	N/A	18,028	N/A	52.8%	N/A	21461	N/A	56.3%	N/A	24,191	N/A	59.0%
	Ojibway Parkway/Highway 401 southbound Off Ramp	Ojibway Parkway/Highway 401 southbound On Ramp	N/A	16,743	N/A	53.0%	N/A	20077	N/A	56.5%	N/A	22,624	N/A	59.3%
	Ojibway Parkway/Highway 401 southbound On Ramp	Highway 401 to EC Row Expressway southbound Off Ramp	N/A	31,610	N/A	28.2%	N/A	39274	N/A	32.7%	N/A	46,563	N/A	36.7%
	Highway 401 to EC Row Expressway southbound Off Ramp	Malden Road/Highway 401 southbound Off Ramp	N/A	18,476	N/A	52.2%	N/A	24839	N/A	56.1%	N/A	29,133	N/A	59.3%
	Malden Road/Highway 401 southbound Off Ramp	Huron Church Road/Highway 401 southbound On Ramp	N/A	13,766	N/A	56.4%	N/A	19308	N/A	61.4%	N/A	23,011	N/A	65.0%
	Huron Church Road/Highway 401 southbound On Ramp	Todd Lane/Highway 401 southbound Off Ramp	N/A	29,083	N/A	27.3%	N/A	36031	N/A	31.2%	N/A	40,739	N/A	34.0%
	Todd Lane/Highway 401 southbound Off Ramp	Todd Lane/Highway 401 southbound On Ramp	N/A	14,880	N/A	35.8%	N/A	20218	N/A	41.0%	N/A	23,531	N/A	44.9%
	Todd Lane/Highway 401 southbound On Ramp	Howard Avenue/Highway 401 southbound Off Ramp	N/A	23,313	N/A	30.1%	N/A	28889	N/A	34.7%	N/A	32,962	N/A	38.2%
	Howard Avenue/Highway 401 southbound Off Ramp	Highway 3/Highway 401 southbound Off Ramp	N/A	27,051	N/A	25.3%	N/A	25374	N/A	38.6%	N/A	29,133	N/A	42.3%
	Highway 3/Highway 401 southbound Off Ramp	Highway 3/Highway 401 southbound On Ramp	N/A	15,799	N/A	46.0%	N/A	18209	N/A	53.5%	N/A	21,770	N/A	55.6%
	Highway 3/Highway 401 southbound On Ramp	South of Highway 3 merge/split	N/A	29,133	N/A	27.1%	N/A	27043	N/A	39.5%	N/A	31,056	N/A	42.3%
Grand Marais Road	East of connecting ramp		3,799	6,872	1.0%	1.0%	4299	3821	1.0%	1.0%	4,299	4,417	1.0%	1.0%
	West of connecting ramp		2,354	4,624	1.5%	0.4%	2581	2363	1.7%	0.9%	2,627	1,655	1.8%	0.6%
Malden Road	Chappus Street	Highway 401 South Ramp	8,790	18,846	3.8%	2.3%	8678	11100	3.7%	3.9%	9,101	11,667	3.7%	3.6%
	Highway 401 South Ramp	Highway 401 North Ramp	9,781	6,822	3.8%	4.3%	9788	6764	3.7%	3.9%	10,331	6,899	3.7%	3.6%
	North of Highway 401 North Ramp		7,017	7,519	3.8%	4.3%	6584	7630	3.7%	3.9%	6,817	7,853	3.7%	3.6%
Matchette Street	Chappus Street	EC Row Expressway South Ramp	7,691	7,482	1.0%	1.0%	8264	9347	1.0%	1.0%	9,199	10,065	1.0%	1.0%
	EC Row Expressway South Ramp	EC Row Expressway North Ramp	2,330	8,609	1.0%	1.0%	2290	10334	1.0%	1.0%	2,646	10,982	1.0%	1.0%
	EC Row Expressway North Ramp	Carmichael	4,642	2,938	1.0%	1.0%	4752	3019	1.0%	1.0%	5,048	3,271	1.0%	1.0%

Prepared By: MEB
Reviewed By: PRB

TABLE I-D

SUMMARY OF TRAFFIC DATA - ALTERNATIVE 2B

Detroit River International Crossing
Windsor, Ontario

LOCATION			2015				2025				2035			
Pavement Section	From	To	AADT		Comm Vehicles		AADT		Comm Vehicles		AADT		Comm Vehicles	
			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
Huron Church Road	Riverside Drive	University Avenue	6,939	5,479	2.5%	1.6%	7,062	5,644	2.6%	2.4%	7,038	5,893	2.8%	3.0%
	University Avenue	Wyandotte Street	3,286	3,971	3.3%	3.1%	3,349	4,081	4.3%	4.0%	3,312	4,280	4.5%	4.8%
	Wyandotte Street	AMB Off Ramp	2,256	3,176	1.0%	1.0%	2,234	3,201	1.0%	1.0%	2,292	3,415	1.0%	1.0%
	AMB Off Ramp	College Street	17,371	6,347	13.8%	1.5%	18,219	6,483	16.6%	1.6%	19,697	6,722	19.2%	1.6%
	College Street	Girardot Street	24,380	23,704	2.9%	11.4%	25,180	25,325	3.2%	13.6%	25,791	26,069	3.3%	15.9%
	Girardot Street	Tecumseh Road	23,677	23,943	3.4%	11.2%	24,378	25,437	3.6%	13.1%	25,158	27,097	3.8%	15.2%
	Tecumseh Road	Dorchester Street	27,103	27,831	3.5%	9.7%	27,806	28,711	3.8%	11.0%	28,406	31,078	4.0%	12.5%
	Dorchester Street	Prince Road/Totten Street	27,021	29,147	3.1%	8.4%	27,999	30,476	3.3%	9.6%	28,518	32,810	3.5%	11.1%
	Prince Road/Totten Street	Malden Road	29,320	32,345	3.2%	7.5%	30,399	34,133	3.4%	8.3%	31,078	36,661	3.6%	9.5%
	Malden Road	Industrial Road	24,228	27,223	2.4%	8.0%	25,181	28,820	2.5%	9.0%	25,673	31,289	2.6%	10.4%
	Industrial Road	EC Row Expressway North Ramp Terminal	25,922	29,090	2.4%	7.6%	27,797	30,892	2.6%	8.6%	27,661	33,495	2.6%	9.7%
	EC Row Expressway North Ramp Terminal	EC Row Expressway South Ramp Terminal	19,860	35,172	2.1%	5.5%	21,217	39,953	2.3%	6.1%	21,241	42,144	2.3%	6.8%
	EC Row Expressway South Ramp Terminal	Highway 401 Off Ramp	25,710	26,218	1.7%	5.4%	28,699	30,391	1.8%	5.8%	30,263	32,461	1.9%	6.4%
	Highway 401 Off Ramp	Spring Garden Road/Labelle Street	11,401	7,335	0.7%	1.3%	12,069	8,877	0.7%	1.5%	12,489	9,489	0.8%	1.6%
	Spring Garden Road/Labelle Street	Lambton Street/Grand Marais Road Ramp	9,600	7,377	1.2%	1.8%	10,251	8,762	1.3%	2.2%	10,516	9,720	1.3%	2.2%
	Lambton Street/Grand Marais Road Ramp	Pulford Street	8,208	6,730	1.7%	0.6%	8,577	8,072	1.8%	0.6%	8,947	8,380	1.5%	0.7%
	Pulford Street	Todd Lane/Cabana Road	8,186	7,395	1.9%	0.7%	8,811	8,686	1.9%	0.7%	9,368	9,494	1.9%	0.7%
	Todd Lane/Cabana Road	Huron Church Line	11,076	13,226	1.1%	1.6%	12,791	14,745	1.2%	1.5%	14,484	17,025	1.3%	1.6%
Talbot Road	Huron Church Line	St Clair College	6,414	7,682	0.1%	1.0%	6,864	7,897	0.2%	1.0%	7,245	8,548	0.2%	1.0%
	St Clair College	Cousineau Drive	9,895	6,404	0.1%	1.0%	10,440	7,016	0.1%	1.0%	10,857	6,843	0.1%	1.0%
	Cousineau Drive	Howard Avenue	9,831	5,472	0.2%	1.0%	10,484	6,166	0.4%	0.1%	10,911	6,141	0.6%	0.1%
	Howard Avenue	Highway 3 split	15,176	13,247	1.9%	2.1%	16,424	14,899	2.0%	2.1%	17,869	16,234	2.0%	2.1%
Ojibway Parkway	EC Row Expressway	GN Booth Drive	10,181	11,207	2.2%	5.1%	10,894	11,526	2.3%	5.8%	11,697	12,459	2.5%	6.3%
	GN Booth Drive	Sandwich Street	10,116	10,994	2.2%	5.2%	10,830	11,322	2.3%	5.9%	11,633	12,247	2.5%	6.4%
	Sandwich Street	Prospect Avenue	9,487	9,723	0.8%	0.8%	10,088	10,109	0.7%	0.7%	10,780	10,639	0.7%	0.7%
	North of Prospect Avenue		9,424	9,512	0.8%	0.8%	10,025	9,899	0.7%	0.7%	10,717	10,429	0.7%	0.7%
CROSSING ROADS														
Wyandotte Street	West of Huron Church Road		5,192	4,872	1.0%	1.0%	5,112	4,861	1.0%	1.0%	4,937	4,882	1.0%	1.0%
	East of Huron Church Road		3,616	5,077	1.1%	2.7%	3,628	5,148	1.9%	2.7%	3,627	5,297	2.0%	2.9%
University Avenue	West of Huron Church Road		1,267	1,128	1.0%	1.0%	1,358	1,254	1.0%	1.0%	1,504	1,357	1.0%	1.0%
	East of Huron Church Road		2,139	2,145	5.7%	5.1%	2,312	2,356	7.1%	6.1%	2,457	2,367	8.4%	6.3%
Riverside Drive	West of Huron Church Road		3,368	3,642	1.0%	1.0%	3,548	3,770	1.0%	1.0%	3,634	3,914	1.0%	1.0%
	East of Huron Church Road		6,739	5,763	1.0%	1.0%	6,951	5,853	1.0%	1.0%	7,254	6,036	1.0%	1.0%
AMB Off Ramp	East of Huron Church Road		N/A	10,035	N/A	22.1%	N/A	10,798	N/A	26.4%	N/A	12,337	N/A	29.1%
AMB On Ramp	East of Huron Church Road		6,302	N/A	3.0%	N/A	6,604	N/A	3.5%	N/A	6,927	N/A	4.0%	N/A
Patricia Street	AMB	Wyandotte Street	4,102	5,173	4.7%	5.6%	4,153	5,101	5.0%	7.0%	4,194	4,966	6.5%	8.8%
College Street	East of Huron Church Road		6,642	6,443	2.6%	4.4%	6,747	6,609	2.6%	4.9%	6,798	6,780	2.7%	5.8%
	West of Huron Church Road		1,777	805	1.0%	1.0%	2,013	899	1.0%	1.0%	2,239	990	1.0%	1.0%
Girardot Street	East of Huron Church Road		1,127	1,161	1.0%	1.0%	1,132	1,167	1.0%	1.0%	1,153	1,174	1.0%	1.0%
	West of Huron Church Road		2,338	2,273	1.9%	1.4%	2,282	2,206	1.9%	1.4%	2,292	2,172	2.1%	1.4%
Tecumseh Road	East of Huron Church Road		5,983	6,760	2.2%	4.3%	5,758	6,765	2.2%	5.8%	6,350	7,261	2.2%	7.5%
	West of Huron Church Road		6,444	6,926	1.0%	1.0%	6,335	6,833	1.0%	1.0%	6,629	7,220	1.0%	1.0%
Dorchester Street	East of Huron Church Road		1,706	1,536	1.0%	1.0%	1,738	1,562	1.0%	1.0%	1,746	1,586	1.0%	1.0%
	West of Huron Church Road		1,417	807	2.2%	1.4%	1,418	807	2.3%	1.5%	1,422	806	2.4%	1.5%
Prince Road/Totten Street	East of Huron Church Road		2,112	2,713	1.0%	1.0%	2,259	2,683	1.0%	1.0%	2,359	2,668	1.0%	1.0%
	West of Huron Church Road		4,860	5,238	1.0%	1.0%	5,023	5,427	1.0%	1.0%	5,173	5,546	1.0%	1.0%
Malden Road	East of Huron Church Road		1,376	1,114	1.0%	1.0%	1,681	1,348	1.0%	1.0%	1,859	1,541	1.0%	1.0%
	West of Huron Church Road		7,502	7,026	7.1%	10.9%	7,798	7,050	7.4%	12.4%	8,088	7,317	7.7%	14.0%
Industrial Road	East of Huron Church Road		3,634	3,450	1.4%	2.0%	3,903	3,861	1.4%	2.0%	4,318	4,030	1.4%	2.1%
	West of Huron Church Road		3,911	3,157	3.8%	11.7%	4,306	3,451	4.0%	13.0%	4,481	3,597	4.0%	13.9%
EC Row Expressway North Ramp Termi	E-N/S Ramp		13,740	N/A	1.9%	N/A	16,099	N/A	1.9%	N/A	16,787	N/A	2.0%	N/A
	N-W Ramp		N/A	768	N/A	1.0%	N/A	889	N/A	1.0%	N/A	988	N/A	0.8%
	S-W Ramp		1,562	N/A	35.6%	N/A	1,642	N/A	40.7%	N/A	1,691	N/A	44.1%	N/A
EC Row Expressway South Ramp Termi	W-N/S Ramp		N/A	2,804	N/A	1.7%	N/A	2,910	N/A	2.2%	N/A	2,860	N/A	2.5%
	S/N-E Ramp		N/A	16,908	N/A	3.1%	N/A	19,396	N/A	3.6%	N/A	21,212	N/A	4.2%
Spring Garden Road	West of Huron Church Road		2,322	3,118	1.0%	1.0%	2,322	3,118	1.0%	1.0%	2,368	3,118	1.0%	1.0%
Labelle Street	East of Huron Church Road		3,606	1,866	1.0%	1.0%	3,883	2,060	1.0%	1.0%	4,091	2,140	1.0%	1.0%
Lambton Street/Grand Marais Road	East of Huron Church Road		4,296	3,589	1.0%	1.0%	4,299	3,821	1.0%	1.0%	4,299	4,417	1.0%	1.0%
	West of Huron Church Road		2,354	2,360	1.5%	0.9%	2,581	2,363	1.7%	0.9%	2,627	2,362	1.8%	1.0%
Pulford Street	East of Huron Church Road		3,301	1,925	1.0%	1.0%	2,975	1,517	1.0%	1.0%	3,004	1,495	1.0%	1.0%
Cabana Road	East of Huron Church Road		8,027	6,614	1.0%	1.0%	8,534	7,653	1.0%	1.0%	9,275	8,802	1.0%	1.0%
	between Huron Church Road and Highway 401 northbound Ramps		19,842	19,082	0.2%	1.0%	21,977	20,565	0.3%	1.1%	23,942	23,009	0.3%	1.2%
Todd Lane	between Highway 401 northbound and southbound Ramps		12,043	16,536	0.2%	1.0%	12,917	18,098	0.3%	1.0%	13,743	19,749	0.3%	1.1%
	West of Highway 401 southbound Ramps		11,370	9,895	1.0%	1.0%	12,182	10,099	1.0%	1.0%	12,291	10,338	1.0%	1.0%
Huron Church Line	West of Huron Church Road		7,444	6,031	1.6%	1.3%	8,588	7,611	1.5%	1.3%	10,341	9,022	1.6%	1.4%
St Clair College	East of Talbot Road		3,144	9,599	1.0%	1.0%	3,254	9,546	1.0%	1.0%	3,214	9,802	1.0%	1.0%
Cousineau Drive	East of Talbot Road		5,464	5,233	1.0%	1.0%	5,707	5,513	1.0%	1.0%	6,502	5,727	1.0%	1.0%
	West of Talbot Road		7,233	6,365	1.0%	1.0%	8,167	7,000	0.0%	0.4%	8,832	7,650	0.0%	0.6%
Howard Avenue	East of Talbot Road		8,134	10,557	1.6%	1.8%	8,765	11,517	1.7%	1.9%	9,113	12,384	1.8%	1.9%
	between Talbot Road and Highway 401 southbound On Ramp		14,444	7,334	1.4%	2.0%	15,646	8,026	1.5%	2.1%	17,352	8,434	1.6%	2.1%
	West of Highway 401 southbound On-Ramp		12,559	14,692	2.0%	2.0%	13,654	16,628	1.9%	2.0%	15,378	18,277	1.9%	2.0%
E.C. Row Expressway	East of Huron Church Road		34,790	44,897	3.1%	4.6%	43,065	50,397	3.2%	5.1%	49,464	57,015	3.4%	5.4%
	At Malden Road		23,297	30,060	4.3%	5.4%	29,382	32,888	4.6%	5.8%	35,165	37,750	4.8%	5.8%
	West of Matchette Street		16,051	8,173	2.7%	4.9%	20,854	9,029	2.7%	4.5%	25,601	9,811	2.8%	3.8%

* - For consistency, Huron Church Rd/Talbot Rd runs North-South and all crossing roads run East-West

HIGHWAY 401 Ramps														
Highway 3 merge/split														
Highway 401 northbound Off Ramp			11,467	N/A	6.1%	N/A	12,564	N/A	7.2%	N/A	14,074	N/A	8.6%	N/A
Highway 401 northbound On Ramp			9,736	N/A	2.0%	N/A	9,748	N/A	2.0%	N/A	10,103	N/A	2.0%	N/A
Highway 401 southbound Off Ramp			N/A	9,952	N/A	1.8%	N/A	10,144	N/A	1.9%	N/A	10,701	N/A	1.9%
Highway 401 southbound On Ramp			N/A	10,350	N/A	6.1%	N/A	11,816	N/A	7.7%	N/A	13,164	N/A	7.7%
Howard Avenue														
Highway 401 southbound Off Ramp			N/A	3,146	N/A	1.1%	N/A	3,457	N/A	1.4%	N/A	3,755	N/A	1.3%
At Todd Lane/Cabana Road														
Highway 401 northbound Off Ramp			6,875	N/A	1.1%	N/A	7,973	N/A	1.1%	N/A	7,877	N/A	1.3%	N/A
Highway 401 northbound On Ramp			11,458	N/A	1.0%	N/A	12,703	N/A	1.1%	N/A	13,317	N/A	1.2%	N/A
Highway 401 southbound Off Ramp			N/A	13,410	N/A	1.5%	N/A	14,847	N/A	1.7%	N/A	16,154	N/A	1.7%
Highway 401 southbound On Ramp			N/A	7,896	N/A	0.3%	N/A	8,077	N/A	0.4%	N/A	8,737	N/A	0.4%
At Huron Church Road														
Highway 401 northbound Off Ramp			15,244	N/A	2.1%	N/A	17,534	N/A	2.2%	N/A	18,589	N/A	2.2%	N/A
Highway 401 southbound On Ramp			N/A	15,712	N/A	8.1%	N/A	17,621	N/A	9.7%	N/A	18,653	N/A	9.7%
At Malden Road														
Highway 401 northbound On Ramp			3,175	N/A	14.2%	N/A	3,749	N/A	13.4%	N/A	4,144	N/A	12.3%	N/A
Highway 401 southbound Off Ramp			N/A	4,144	N/A	13.6%	N/A	4,953	N/A	8.6%	N/A	5,460	N/A	8.6%
EC Row Expressway to Highway 401														
Highway 401 southbound Off Ramp			N/A	13,781	N/A	7.8%	N/A	15,448	N/A	9.2%	N/A	18,181	N/A	9.2%
Ojibway Parkway Interchange														
Highway 401 northbound Off Ramp			4,701	N/A	9.6%	N/A	5,280	N/A	9.1%	N/A	5,767	N/A	7.6%	N/A
Highway 401 northbound On Ramp			1,495	N/A	18.3%	N/A	1,689	N/A	20.3%	N/A	1,807	N/A	21.8%	N/A
Highway 401 southbound Off Ramp			N/A	1,092	N/A	1.4%	N/A	1,431	N/A	2.6%	N/A	1,291	N/A	1.8%
Highway 401 southbound On Ramp			N/A	14,959	N/A	2.9%	N/A	17,791	N/A	1.9%	N/A	22,906	N/A	3.0%
EC Row Expressway Interchange														
Highway 401 northbound On Ramp			2,178	N/A	36.3%	N/A	2,537	N/A	41.0%	N/A	3,026	N/A	41.8%	N/A
Highway 401 Mainline	Souht of Highway 3 merge/split	Highway 3/Highway 401 northbound Off Ramp	19,958	N/A	27.4%	N/A	24,670	N/A	28.1%	N/A	27,671	N/A	30.1%	N/A
	Highway 3/Highway 401 northbound Off Ramp	Highway 3/Highway 401 northbound On Ramp	7,731	N/A	35.9%	N/A	12,076	N/A	39.6%	N/A	13,738	N/A	42.2%	N/A
	Highway 3/Highway 401 northbound On Ramp	Todd Lane/Highway 401 northbound Off Ramp	17,735	N/A	24.4%	N/A	21,980	N/A	27.6%	N/A	24,030	N/A	30.3%	N/A
	Todd Lane/Highway 401 northbound Off Ramp	Todd Lane/Highway 401 northbound On Ramp	10,510	N/A	25.6%	N/A	13,570	N/A	30.6%	N/A	15,706	N/A	34.4%	N/A
	Todd Lane/Highway 401 northbound On Ramp	Huron Church Road/Highway 401 northbound On Ramp	22,373	N/A	18.0%	N/A	26,683	N/A	20.6%	N/A	29,403	N/A	22.6%	N/A
	Huron Church Road/Highway 401 northbound On Ramp	Malden Road/Highway 401 northbound On Ramp	7,274	N/A	53.8%	N/A	9,431	N/A	58.7%	N/A	11,213	N/A	61.9%	N/A
	Malden Road/Highway 401 northbound On Ramp	Ojibway Parkway/Highway 401 northbound Off Ramp	10,449	N/A	41.7%	N/A	13,180	N/A	45.8%	N/A	15,357	N/A	48.5%	N/A
	Ojibway Parkway/Highway 401 northbound Off Ramp	Ojibway Parkway/Highway 401 northbound OnRamp	5,748	N/A	68.0%	N/A	7,900	N/A	70.3%	N/A	9,590	N/A	73.2%	N/A
	Ojibway Parkway/Highway 401 northbound OnRamp	EC Row Expressway to Highway 401 northbound On Ramp	7,243	N/A	57.8%	N/A	9,589	N/A	61.5%	N/A	11,397	N/A	65.1%	N/A
	EC Row Expressway to Highway 401 northbound On Ramp	Canadian Plaza	9,981	N/A	57.8%	N/A	12,615	N/A	59.5%	N/A	14,742	N/A	60.8%	N/A
	Canadian Plaza	Ojibway Parkway/Highway 401 southbound Off Ramp	N/A	18,028	N/A	52.8%	N/A	21,461	N/A	56.3%	N/A	24,191	N/A	59.0%
	Ojibway Parkway/Highway 401 southbound Off Ramp	Ojibway Parkway/Highway 401 southbound On Ramp	N/A	16,743	N/A	53.0%	N/A	20,077	N/A	56.5%	N/A	22,624	N/A	59.3%
	Ojibway Parkway/Highway 401 southbound On Ramp	Highway 401 to EC Row Expressway southbound Off Ramp	N/A	31,610	N/A	28.2%	N/A	39,274	N/A	32.7%	N/A	46,563	N/A	36.7%
	Highway 401 to EC Row Expressway southbound Off Ramp	Malden Road/Highway 401 southbound Off Ramp	N/A	18,476	N/A	52.2%	N/A	24,839	N/A	56.1%	N/A	29,133	N/A	59.3%
	Malden Road/Highway 401 southbound Off Ramp	Huron Church Road/Highway 401 southbound On Ramp	N/A	13,766	N/A	56.4%	N/A	19,308	N/A	61.4%	N/A	23,011	N/A	65.0%
	Huron Church Road/Highway 401 southbound On Ramp	Todd Lane/Highway 401 southbound Off Ramp	N/A	29,083	N/A	27.3%	N/A	36,031	N/A	31.2%	N/A	40,387	N/A	34.0%
	Todd Lane/Highway 401 southbound Off Ramp	Todd Lane/Highway 401 southbound On Ramp	N/A	14,880	N/A	35.8%	N/A	20,218	N/A	41.0%	N/A	23,170	N/A	44.9%
	Todd Lane/Highway 401 southbound On Ramp	Howard Avenue/Highway 401 southbound Off Ramp	N/A	23,313	N/A	30.1%	N/A	28,889	N/A	34.7%	N/A	32,604	N/A	38.2%
	Howard Avenue/Highway 401 southbound Off Ramp	Highway 3/Highway 401 southbound Off Ramp	N/A	27,051	N/A	25.3%	N/A	25,374	N/A	38.6%	N/A	28,770	N/A	42.2%
	Highway 3/Highway 401 southbound Off Ramp	Highway 3/Highway 401 southbound On Ramp	N/A	15,799	N/A	46.0%	N/A	18,209	N/A	53.5%	N/A	21,570	N/A	56.1%
	Highway 3/Highway 401 southbound On Ramp	South of Highway 3 merge/split	N/A	29,133	N/A	27.1%	N/A	27,043	N/A	39.5%	N/A	31,056	N/A	42.3%
Malden Road	Chappus Street	Highway 401 South Ramp	8,439	10,340	3.8%	4.3%	8,678	11,091	3.7%	3.9%	9,101	11,717	3.7%	3.6%
	Highway 401 South Ramp	Highway 401 North Ramp	9,430	6,776	3.8%	4.3%	9,788	6,764	3.7%	3.9%	10,331	6,950	3.7%	3.5%
	North of Highway 401 North Ramp		6,667	7,473	3.8%	4.3%	6,584	7,630	3.7%	3.9%	6,810	7,903	3.7%	3.5%
Matchette Street	Chappus Street	EC Row Expressway South Ramp	7,871	7,570	1.0%	1.0%	8,264	9,347	1.0%	1.0%	9,495	11,002	1.0%	1.0%
	EC Row Expressway South Ramp	EC Row Expressway North Ramp	2,330	8,626	1.0%	1.0%	2,290	10,334	1.0%	1.0%	2,646	12,006	1.0%	1.0%
	EC Row Expressway North Ramp	Carmichael	4,625	2,938	1.0%	1.0%	4,752	3,019	1.0%	1.0%	5,363	3,271	1.0%	1.0%

Prepared By: MEB
Reviewed By: PRB

TABLE I-E

SUMMARY OF TRAFFIC DATA - ALTERNATIVE 3

Detroit River International Crossing
Windsor, Ontario

LOCATION			2015				2025				2035			
Pavement Section	From	To	AADT		Comm Vehicles		AADT		Comm Vehicles		AADT		Comm Vehicles	
	FROM	TO	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
Huron Church Road	Riverside Drive	University Avenue	6,918	5,396	2.6%	1.6%	6,961	5,530	2.6%	2.4%	6,880	5,780	2.9%	3.0%
	University Avenue	Wyandotte Street	3,192	3,920	3.5%	3.1%	3,214	4,019	4.5%	4.0%	3,053	4,205	5.0%	4.9%
	Wyandotte Street	AMB Off Ramp	2,259	3,128	1.0%	1.0%	2,224	3,176	1.0%	1.0%	2,107	3,328	1.0%	1.0%
	AMB Off Ramp	College Street	17,523	6,248	15.0%	1.5%	18,564	6,353	16.4%	1.6%	19,717	6,581	20.7%	1.6%
	College Street	Girardot Street	24,195	23,449	2.9%	12.4%	24,955	24,843	3.2%	13.4%	25,463	26,103	3.3%	16.8%
	Girardot Street	Tecumseh Road	23,064	23,964	3.4%	12.3%	24,408	25,958	3.7%	13.1%	25,119	27,680	3.9%	16.0%
	Tecumseh Road	Dorchester Street	26,282	27,186	3.5%	10.6%	27,651	29,331	3.8%	11.3%	28,380	30,495	4.0%	13.6%
	Dorchester Street	Prince Road/Totten Street	26,623	28,555	3.1%	9.3%	28,081	30,873	3.3%	9.9%	28,794	31,651	3.5%	12.0%
	Prince Road/Totten Street	Malden Road	28,955	32,055	3.2%	8.5%	30,049	33,749	3.4%	8.6%	31,206	34,207	3.7%	10.5%
	Malden Road	Industrial Road	23,645	26,388	2.4%	9.0%	24,646	27,981	2.5%	9.4%	25,464	28,851	2.6%	11.7%
	Industrial Road	EC Row Expressway North Ramp Terminal	25,478	28,982	2.4%	8.7%	26,596	30,037	2.6%	8.8%	27,054	31,283	2.6%	10.7%
	EC Row Expressway North Ramp Terminal	EC Row Expressway South Ramp Terminal	19,503	36,395	2.2%	6.3%	20,149	38,952	2.3%	6.4%	20,884	41,304	2.3%	7.7%
	EC Row Expressway South Ramp Terminal	Spring Gdn Rd/Labelle St	24,639	28,455	1.7%	6.3%	28,259	30,210	1.8%	6.2%	29,662	32,024	1.8%	7.3%
	Spring Gdn Rd/Labelle St	Lambton Street/Grand Marais Road	22,690	11,287	1.3%	1.5%	26,134	13,261	1.4%	1.5%	27,720	13,928	1.4%	1.5%
	Lambton Street/Grand Marais Road	Pulford Street	10,760	11,989	1.4%	1.3%	12,557	14,320	1.5%	1.2%	13,439	15,346	1.5%	1.2%
	Pulford Street	Todd Lane/Cabana Road	10,912	12,726	1.5%	1.4%	12,763	15,081	1.6%	1.2%	13,680	16,161	1.6%	1.2%
	Todd Lane/Cabana Road	Huron Church Line	10,614	11,744	1.0%	0.8%	12,281	14,453	1.0%	0.7%	12,890	15,643	1.0%	0.7%
Talbot Road	Huron Church Line	St Clair College	6,839	13,604	0.8%	0.6%	6,530	14,107	1.2%	0.6%	7,121	14,895	1.3%	0.7%
	St Clair College	Cousineau Drive	14,243	7,669	0.9%	3.0%	14,778	7,704	0.9%	3.5%	15,512	8,120	0.8%	3.9%
	Cousineau Drive	Howard Avenue	6,432	5,582	1.5%	4.8%	7,085	5,242	1.4%	5.3%	7,625	5,360	1.3%	5.7%
	South of Howard Avenue		13,491	12,505	2.1%	2.0%	14,875	13,903	2.0%	2.0%	15,866	14,939	2.0%	2.0%
Ojibway Parkway	EC Row Expressway	GN Booth Drive	9,914	10,556	1.4%	5.3%	10,857	11,127	1.3%	6.0%	11,827	11,522	1.3%	6.8%
	GN Booth Drive	Sandwich Street	9,850	10,366	1.4%	5.4%	10,758	10,889	1.3%	6.1%	11,744	11,274	1.3%	6.9%
	Sandwich Street	Prospect Avenue	9,183	9,681	0.8%	0.8%	10,039	10,079	0.7%	0.7%	10,920	10,280	0.7%	0.7%
	North of Prospect Avenue		9,120	9,480	0.8%	0.8%	9,975	9,897	0.7%	0.7%	10,857	10,051	0.7%	0.7%
CROSSING ROADS														
Wyandotte Street	West of Huron Church Road		5,176	4,869	1.0%	1.0%	5,113	4,883	1.0%	1.0%	4,977	4,900	1.0%	1.0%
	East of Huron Church Road		3,579	5,179	1.1%	2.7%	3,606	5,258	1.9%	2.7%	3,621	5,433	2.1%	2.8%
University Avenue	West of Huron Church Road		1,264	1,185	1.0%	1.0%	1,375	1,229	1.0%	1.0%	1,513	1,313	1.0%	1.0%
	East of Huron Church Road		2,129	2,108	5.7%	5.3%	2,295	2,207	7.1%	6.6%	2,476	2,249	8.3%	6.9%
Riverside Drive	West of Huron Church Road		3,427	3,539	1.0%	1.0%	3,595	3,728	1.0%	1.0%	3,708	4,018	1.0%	1.0%
	East of Huron Church Road		6,762	5,658	1.0%	1.0%	6,979	5,800	1.0%	1.0%	7,256	5,956	1.0%	1.0%
AMB Off Ramp	East of Huron Church Road		N/A	10,176	N/A	24.1%	N/A	11,242	N/A	25.5%	N/A	12,540	N/A	31.1%
AMB On Ramp	East of Huron Church Road		6,319	N/A	2.9%	N/A	6,616	N/A	3.5%	N/A	7,019	N/A	4.0%	N/A
Patricia Street	AMB	Wyandotte Street	4,109	5,115	4.7%	6.3%	4,135	5,001	5.5%	7.1%	4,206	4,833	5.8%	9.0%
College Street	East of Huron Church Road		6,585	6,227	2.4%	4.3%	6,690	6,390	2.5%	5.1%	6,834	6,532	2.5%	6.4%
	West of Huron Church Road		1,839	751	1.0%	1.0%	2,051	935	1.0%	1.0%	2,260	1,021	1.0%	1.0%
Girardot Street	East of Huron Church Road		1,120	1,156	1.0%	1.0%	1,150	1,153	1.0%	1.0%	1,159	1,160	1.0%	1.0%
	West of Huron Church Road		2,346	2,282	1.7%	1.1%	2,288	2,217	1.8%	1.2%	2,290	2,184	1.8%	1.2%
Tecumseh Road	East of Huron Church Road		5,692	6,768	2.4%	4.4%	5,683	6,763	2.4%	5.2%	6,150	7,222	2.3%	6.8%
	West of Huron Church Road		6,453	6,857	1.0%	1.0%	6,537	6,961	1.0%	1.0%	6,800	7,321	1.0%	1.0%
Dorchester Street	East of Huron Church Road		1,297	844	1.0%	1.0%	1,296	843	1.0%	1.0%	1,296	842	1.0%	1.0%
	West of Huron Church Road		1,796	1,457	1.8%	1.2%	1,830	1,473	1.8%	1.3%	1,849	1,490	1.8%	1.3%
Prince Road/Totten Street	East of Huron Church Road		2,067	2,624	1.0%	1.0%	2,206	2,597	1.0%	1.0%	2,304	2,597	1.0%	1.0%
	West of Huron Church Road		4,684	4,687	1.0%	1.0%	4,726	4,924	1.0%	1.0%	4,856	4,953	1.0%	1.0%
Malden Road	East of Huron Church Road		1,377	1,093	1.0%	1.0%	1,632	1,318	1.0%	1.0%	1,868	1,462	1.0%	1.0%
	West of Huron Church Road		7,305	6,667	7.0%	11.3%	7,621	6,939	7.4%	12.7%	8,033	7,260	7.6%	14.1%
Industrial Road	East of Huron Church Road		3,700	3,485	1.6%	2.2%	4,029	3,803	1.4%	2.2%	4,394	3,993	1.2%	2.2%
	West of Huron Church Road		3,702	3,167	3.6%	12.1%	4,158	3,449	3.9%	12.0%	4,432	3,594	3.9%	13.3%
EC Row Expressway North Ramp Terminal	East of Huron Church Road (E-N/S Off Ramp & S-W On Ramp)		14,514	1,487	1.9%	1.0%	16,498	1,503	1.9%	0.1%	17,403	1,647	2.0%	0.2%
	West of Huron Church Road (N-W On Ramp)		846	N/A	31.2%	N/A	948	N/A	32.8%	N/A	1,072	N/A	39.0%	N/A
EC Row Expressway South Ramp Terminal	East of Huron Church Road (S-E On Ramp)		N/A	7,757	N/A	0.8%	N/A	10,999	N/A	0.9%	N/A	11,842	N/A	1.0%
	West of Huron Church Road (N-E On Ramp & W-N/S Off Ramp)		8,597	2,928	6.2%	2.5%	9,010	3,132	6.8%	2.5%	9,507	3,316	8.7%	2.3%
Spring Garden Road/Labelle Street	East of Huron Church Road		3,643	2,941	1.0%	1.0%	3,734	3,026	1.0%	1.0%	3,434	3,160	1.0%	1.0%
	West of Huron Church Road		3,659	4,143	1.0%	1.0%	3,994	4,329	1.0%	1.0%	4,255	4,248	1.0%	1.0%
Lambton Street/Grand Marais Road	East of Huron Church Road		4,381	3,824	1.0%	1.0%	4,948	3,919	1.0%	1.0%	5,418	4,073	1.0%	1.0%
	West of Huron Church Road		2,028	4,081	1.8%	1.3%	2,077	3,924	1.8%	1.3%	2,126	3,871	1.8%	1.4%
Pulford Street	East of Huron Church Road		2,192	1,948	1.0%	1.0%	2,210	1,992	1.0%	1.0%	2,227	2,037	1.0%	1.0%
Todd Lane/Cabana Road	East of Huron Church Road		10,171	8,767	1.0%	1.0%	10,073	8,513	1.0%	1.0%	10,941	9,229	1.0%	1.0%
	West of Huron Church Road		13,136	10,317	1.0%	1.0%	12,847	10,327	1.0%	1.0%	13,261	10,845	1.0%	1.0%
Huron Church Line	West of Huron Church Road		8,084	6,446	1.2%	1.3%	9,768	8,150	1.2%	1.3%	11,081	9,590	1.2%	1.3%
St Clair College	East of Talbot Road		3,078	9,510	1.0%	1.0%	3,201	9,406	1.0%	1.0%	3,255	9,306	1.0%	1.0%
Cousineau Drive	East of Talbot Road		7,837	5,831	1.0%	1.0%	8,160	5,416	1.0%	1.0%	8,875	5,604	1.0%	1.0%
	West of Talbot Road		10,718	8,338	1.0%	0.5%	11,856	8,767	1.0%	1.3%	13,082	9,483	1.0%	1.3%
Howard Avenue	East of Talbot Road		7,649	9,487	1.7%	1.8%	8,186	10,256	1.6%	1.9%	8,905	11,116	1.7%	1.9%
	between Talbot Road and Highway 401 southbound On Ramp		10,770	6,885	1.8%	2.2%	11,524	7,289	1.7%	2.2%	12,423	7,884	1.7%	2.3%
	West of Highway 401 southbound On Ramp		9,648	12,566	2.1%	2.3%	10,488	14,834	2.0%	2.2%	11,262	16,265	2.1%	2.2%
E.C. Row Expressway	East of Huron Church Road		35,580	35,332	3.0%	4.6%	43,452	42,975	3.2%	5.1%	50,269	48,093	3.4%	5.5%
	At Malden Road		23,319	29,881	4.2%	5.2%	29,307	34,264	4.5%	5.8%	35,432	38,618	4.8%	5.8%
	West of Matchette Street		16,032	8,173	2.3%	4.7%	20,751	9,029	2.3%	4.6%	25,742	9,811	2.3%	4.2%

* - For consistency, Huron Church Rd/Talbot Rd runs North-South and all crossing roads run East-West

HIGHWAY 401 Ramps														
Highway 3 merge/split														
Highway 401 northbound Off Ramp			9,808	N/A	6.0%	N/A	11,216	N/A	7.1%	N/A	12,186	N/A	8.4%	N/A
Highway 401 northbound On Ramp			9,225	N/A	1.9%	N/A	9,408	N/A	1.9%	N/A	9,811	N/A	1.9%	N/A
Highway 401 southbound Off Ramp			N/A	9,835	N/A	2.0%	N/A	9,929	N/A	1.8%	N/A	10,598	N/A	1.9%
Highway 401 southbound On Ramp			N/A	9,516	N/A	6.1%	N/A	10,588	N/A	7.1%	N/A	11,840	N/A	7.9%
At St. Clair College														
Highway 401 northbound Off Ramp			6,260	N/A	0.7%	N/A	6,414	N/A	0.9%	N/A	6,745	N/A	1.0%	N/A
Highway 401 northbound On Ramp			4,021	N/A	0.8%	N/A	4,728	N/A	0.8%	N/A	5,077	N/A	0.8%	N/A
Highway 401 southbound Off Ramp			N/A	6,455	N/A	3.0%	N/A	6,331	N/A	3.6%	N/A	6,552	N/A	4.1%
Highway 401 southbound On Ramp			N/A	3,835	N/A	0.5%	N/A	4,424	N/A	0.6%	N/A	4,893	N/A	0.7%
At Huron Church Road														
Highway 401 northbound Off Ramp			9,757	N/A	2.6%	N/A	11,320	N/A	2.7%	N/A	12,988	N/A	2.7%	N/A
Highway 401 southbound On Ramp			N/A	11,483	N/A	12.8%	N/A	10,853	N/A	12.2%	N/A	11,289	N/A	14.6%
Malden Road Interchange														
Highway 401 On Ramp			3,162	N/A	14.2%	N/A	3,762	N/A	15.6%	N/A	4,124	N/A	16.1%	N/A
Highway 401 Off Ramp			N/A	4,138	N/A	13.5%	N/A	4,954	N/A	10.4%	N/A	5,467	N/A	9.3%
EC Row Expressway Interchange														
Highway 401 southbound Off Ramp			N/A	13,755	N/A	7.8%	N/A	16,124	N/A	8.9%	N/A	19,059	N/A	8.9%
Ojibway Parkway Interchange														
Highway 401 northbound Off Ramp			4,607	N/A	9.9%	N/A	5,150	N/A	9.5%	N/A	5,454	N/A	9.5%	N/A
Highway 401 northbound On Ramp			1,491	N/A	18.9%	N/A	1,685	N/A	21.1%	N/A	1,802	N/A	22.5%	N/A
Highway 401 southbound Off Ramp			N/A	1,112	N/A	6.4%	N/A	1,160	N/A	7.6%	N/A	1,324	N/A	8.0%
Highway 401 southbound On Ramp			N/A	14,959	N/A	2.9%	N/A	18,909	N/A	2.9%	N/A	22,906	N/A	3.0%
EC Row Expressway Interchange														
Highway 401 northbound On Ramp			2,181	N/A	35.8%	N/A	2,523	N/A	37.8%	N/A	3,019	N/A	39.3%	N/A
Highway 401 Mainline	South of Highway 3 merge/split	Highway 3/Highway 401 northbound Off Ramp	19,936	N/A	27.0%	N/A	24,636	N/A	27.5%	N/A	27,604	N/A	29.3%	N/A
	Highway 3/Highway 401 northbound Off Ramp	Highway 3/Highway 401 northbound On Ramp	10,106	N/A	42.0%	N/A	12,984	N/A	43.2%	N/A	16,139	N/A	45.9%	N/A
	Highway 3/Highway 401 northbound On Ramp	St. Clair College/Highway 401 northbound Off Ramp	19,359	N/A	26.8%	N/A	22,414	N/A	29.6%	N/A	25,909	N/A	32.3%	N/A
	St. Clair College/Highway 401 northbound Off Ramp	St. Clair College/Highway 401 northbound On Ramp	12,756	N/A	28.2%	N/A	15,629	N/A	32.1%	N/A	18,741	N/A	35.3%	N/A
	St. Clair College/Highway 401 northbound On Ramp	Huron Church Road/Highway 401 northbound Off Ramp	16,845	N/A	23.0%	N/A	20,488	N/A	26.6%	N/A	23,866	N/A	28.8%	N/A
	Huron Church Road/Highway 401 northbound Off Ramp	Malden Road/Highway 401 northbound On Ramp	7,336	N/A	55.3%	N/A	9,512	N/A	60.1%	N/A	11,315	N/A	63.5%	N/A
	Malden Road/Highway 401 northbound On Ramp	Ojibway Parkway/Highway 401 northbound Off Ramp	10,498	N/A	42.9%	N/A	13,275	N/A	47.5%	N/A	15,439	N/A	50.9%	N/A
	Ojibway Parkway/Highway 401 northbound Off Ramp	Ojibway Parkway/Highway 401 northbound OnRamp	5,890	N/A	68.7%	N/A	8,125	N/A	71.6%	N/A	9,985	N/A	73.5%	N/A
	Ojibway Parkway/Highway 401 northbound OnRamp	EC Row Expressway to Highway 401 northbound On Ramp	7,381	N/A	58.7%	N/A	9,809	N/A	62.9%	N/A	11,787	N/A	65.7%	N/A
	EC Row Expressway to Highway 401 northbound On Ramp	Canadian Plaza	10,009	N/A	58.1%	N/A	12,650	N/A	59.7%	N/A	14,784	N/A	61.1%	N/A
	Canadian Plaza	Ojibway Parkway/Highway 401 southbound Off Ramp	N/A	18,010	N/A	52.4%	N/A	21,552	N/A	57.3%	N/A	24,160	N/A	58.7%
	Ojibway Parkway/Highway 401 southbound Off Ramp	Ojibway Parkway/Highway 401 southbound On Ramp	N/A	16,724	N/A	52.7%	N/A	20,161	N/A	57.5%	N/A	22,596	N/A	59.0%
	Ojibway Parkway/Highway 401 southbound On Ramp	Highway 401 to EC Row Expressway southbound Off Ramp	N/A	31,565	N/A	28.1%	N/A	39,386	N/A	33.4%	N/A	46,455	N/A	36.5%
	Highway 401 to EC Row Expressway southbound Off Ramp	Malden Road/Highway 401 southbound Off Ramp	N/A	18,546	N/A	53.3%	N/A	24,169	N/A	58.3%	N/A	28,226	N/A	61.1%
	Malden Road/Highway 401 southbound Off Ramp	Huron Church Road/Highway 401 southbound On Ramp	N/A	13,841	N/A	57.7%	N/A	18,562	N/A	63.7%	N/A	22,034	N/A	66.9%
	Huron Church Road/Highway 401 southbound On Ramp	St Clair College/Highway 401 southbound Off Ramp	N/A	25,086	N/A	33.7%	N/A	28,687	N/A	38.6%	N/A	32,298	N/A	42.4%
	St Clair College/Highway 401 southbound Off Ramp	St Clair College/Highway 401 southbound On Ramp	N/A	18,267	N/A	39.4%	N/A	21,968	N/A	44.6%	N/A	25,302	N/A	48.2%
	St Clair College/Highway 401 southbound On Ramp	Highway 3/Highway 401 southbound Off Ramp	N/A	22,105	N/A	34.7%	N/A	26,452	N/A	39.4%	N/A	30,276	N/A	42.7%
	Highway 3/Highway 401 southbound Off Ramp	Highway 3/Highway 401 southbound On Ramp	N/A	14,521	N/A	50.0%	N/A	18,842	N/A	51.4%	N/A	22,219	N/A	53.5%
	Highway 3/Highway 401 southbound On Ramp	South of Highway 3 merge/split	N/A	21,550	N/A	36.3%	N/A	26,971	N/A	38.7%	N/A	30,963	N/A	41.5%
Malden Road	Chappus Street	Highway 401 South Ramp	8,168	9,933	4.0%	4.1%	8,621	10,764	3.9%	3.9%	8,986	11,723	3.9%	3.8%
	Highway 401 South Ramp	Highway 401 North Ramp	9,159	6,366	3.9%	4.1%	9,729	6,427	3.9%	3.9%	10,214	6,953	3.9%	3.8%
	North of Highway 401 North Ramp		6,398	7,063	3.9%	4.1%	6,523	7,294	3.9%	3.9%	6,704	7,907	3.9%	3.8%
Matchette Street	Chappus Street	EC Row Expressway South Ramp	7,545	6,236	1.0%	1.0%	8,915	7,997	1.0%	1.0%	9,695	9,770	1.0%	1.0%
	EC Row Expressway South Ramp	EC Row Expressway North Ramp	2,539	8,038	1.0%	1.0%	2,706	9,624	1.0%	1.0%	3,096	11,386	1.0%	1.0%
	EC Row Expressway North Ramp	Carmichael	5,887	3,394	1.0%	1.0%	6,299	3,565	1.0%	1.0%	6,874	3,918	1.0%	1.0%
Montgomery Drive	Surrey Drive	Talbot Road	91	179	1.2%	2.5%	100	197	1.1%	2.6%	109	206	1.1%	2.9%
Surrey Drive	Montgomery Drive	Talbot Road	73	222	1.2%	1.8%	73	230	1.2%	1.9%	73	238	1.1%	1.9%
Grosvenor Road	Montgomery Drive	Talbot Road	127	224	1.2%	1.9%	127	223	1.2%	2.0%	127	223	1.2%	2.0%

Prepared By: MEB
Reviewed By: PRB

TABLE I-F

SUMMARY OF TRAFFIC DATA - PARKWAY ALTERNATIVE

Detroit River International Crossing
Windsor, Ontario

LOCATION			2015				2025				2035			
Pavement Section	From	To	AADT		Comm Vehicles		AADT		Comm Vehicles		AADT		Comm Vehicles	
	FROM	TO	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
Huron Church Road	Riverside Drive	University Avenue	6,911	5,457	2.5%	1.6%	6,986	5,610	2.6%	2.3%	6,924	5,840	2.9%	3.0%
	University Avenue	Wyandotte Street	3,258	3,990	3.4%	3.0%	3,233	4,092	3.5%	4.0%	3,108	4,254	5.0%	4.8%
	Wyandotte Street	AMB Off Ramp	2,322	3,177	1.0%	1.0%	2,280	3,224	1.0%	1.0%	2,131	3,370	1.0%	1.0%
	AMB Off Ramp	College Street	17,448	6,323	15.0%	1.5%	18,348	6,447	17.3%	1.6%	19,543	6,656	20.5%	1.6%
	College Street	Girardot Street	25,364	24,092	2.9%	12.4%	26,218	24,966	3.2%	13.9%	26,227	25,933	3.3%	16.5%
	Girardot Street	Tecumseh Road	24,197	23,801	3.4%	12.3%	25,129	25,158	3.7%	13.5%	25,638	26,525	3.9%	15.7%
	Tecumseh Road	Dorchester Street	27,469	27,266	3.5%	10.6%	28,309	28,199	3.8%	11.6%	28,797	29,299	4.0%	13.3%
	Dorchester Street	Prince Road/Totten Street	27,511	28,532	3.1%	9.3%	28,358	29,470	3.4%	10.3%	28,875	30,357	3.5%	11.7%
	Prince Road/Totten Street	Malden Road	30,088	31,791	3.2%	8.5%	30,998	33,157	3.4%	8.9%	31,736	34,429	3.6%	10.1%
	Malden Road	Industrial Road	24,739	26,772	2.4%	9.0%	24,761	28,255	2.5%	9.7%	25,383	29,967	2.6%	11.3%
	Industrial Road	E.C. Row Expressway North Ramp Terminal	27,169	28,916	2.4%	8.6%	28,022	30,240	2.5%	9.1%	28,657	32,868	2.6%	10.3%
	E.C. Row Expressway North Ramp Terminal	E.C. Row Expressway South Ramp Terminal	20,228	35,043	2.1%	6.2%	20,486	38,090	2.1%	6.5%	21,298	41,670	2.2%	7.2%
	South of E.C. Row Expressway South Ramp Terminal		24,741	26,578	2.1%	6.2%	27,739	28,701	2.2%	6.4%	30,005	32,155	2.3%	6.8%
South Service Road	North of Bethlehem Avenue		N/A	23,492	N/A	6.8%	N/A	25,122	N/A	7.0%	N/A	27,675	N/A	7.4%
	Bethlehem Avenue	Grand Marais Road	N/A	5,220	N/A	2.4%	N/A	5,610	N/A	2.5%	N/A	6,174	N/A	2.6%
North Service Road	North of Labelle Street		25,501	N/A	1.7%	N/A	28,317	N/A	1.8%	N/A	30,540	N/A	1.9%	N/A
	Labelle Street	Grand Marais Road Ramp	23,298	N/A	1.0%	N/A	26,127	N/A	1.1%	N/A	28,297	N/A	1.2%	N/A
Huron Church Road	Grand Marais Road	Pulford Street	6,176	4,265	0.1%	0.6%	6,629	4,743	0.1%	0.3%	7,103	5,374	0.1%	0.4%
	Pulford Street	Todd Lane/Cabana Road	5,813	4,243	0.2%	0.8%	6,418	4,880	0.2%	0.5%	7,074	5,644	0.2%	0.5%
	Todd Lane/Cabana Road	Huron Church Line	15,881	9,555	1.1%	0.9%	16,915	10,707	1.2%	0.9%	17,838	12,117	1.2%	0.9%
Talbot Road	Huron Church Line	St Clair College	11,107	9,691	0.4%	0.6%	11,982	10,375	0.7%	0.6%	12,692	11,023	1.2%	0.7%
	St Clair College	Cousineau Drive	9,229	8,012	0.8%	2.8%	9,448	8,541	0.9%	3.3%	9,792	9,249	0.8%	3.7%
	Cousineau Drive	Howard Avenue	8,722	2,696	1.5%	4.6%	8,810	2,709	1.5%	5.2%	9,366	2,847	1.3%	5.9%
	Howard Avenue	Laurier Extension	11,607	11,385	2.1%	2.0%	12,429	12,257	2.0%	1.9%	13,137	13,283	2.0%	2.0%
	South of Laurier Extension		12,021	11,914	2.1%	2.0%	12,974	12,826	2.0%	1.9%	13,639	13,900	2.0%	2.0%
Ojibway Parkway	E.C. Row Expressway	GN Booth Drive	10,180	10,556	2.2%	5.3%	10,894	11,127	2.3%	6.0%	11,697	11,777	2.5%	6.7%
	GN Booth Drive	Sandwich Street	10,116	10,433	2.2%	5.5%	10,830	10,928	2.3%	6.1%	11,632	11,578	2.5%	6.8%
	Sandwich Street	Prospect Avenue	9,478	9,729	0.8%	0.8%	10,088	10,069	0.7%	0.7%	10,788	10,588	0.7%	0.7%
	North of Prospect Avenue		9,415	9,510	0.8%	0.8%	10,025	9,858	0.7%	0.7%	10,725	10,387	0.7%	0.7%
Wyandotte Street	West of Huron Church Road		5,168	4,869	1.0%	1.0%	5,099	4,858	1.0%	1.0%	5,008	4,886	1.0%	1.0%
	East of Huron Church Road		3,574	5,121	1.1%	2.6%	3,562	5,201	1.1%	2.7%	3,648	5,398	2.0%	2.9%
University Avenue	West of Huron Church Road		1,254	1,192	1.0%	1.0%	1,365	1,272	1.0%	1.0%	1,511	1,306	1.0%	1.0%
	East of Huron Church Road		2,138	2,118	5.7%	5.2%	2,311	2,214	7.0%	5.1%	2,481	2,273	8.3%	6.8%
Riverside Drive	West of Huron Church Road		3,390	3,487	1.0%	1.0%	3,552	3,655	1.0%	1.0%	3,642	3,993	1.0%	1.0%
	East of Huron Church Road		6,770	5,671	1.0%	1.0%	6,981	5,782	1.0%	1.0%	7,225	5,957	1.0%	1.0%
AMB Off Ramp	East of Huron Church Road		N/A	12,464	N/A	30.7%	N/A	12,464	N/A	30.7%	N/A	12,464	N/A	30.7%
AMB On Ramp	East of Huron Church Road		6,286	N/A	3.0%	N/A	6,558	N/A	3.5%	N/A	6,917	N/A	4.0%	0.0%
Patricia Street	AMB	Wyandotte Street	4,111	5,195	4.7%	6.2%	4,149	5,049	5.5%	7.1%	4,205	4,873	5.8%	9.0%
College Street	East of Huron Church Road		6,514	6,361	2.6%	4.2%	6,603	6,526	2.5%	4.9%	6,758	6,581	2.5%	6.1%
	West of Huron Church Road		1,867	806	1.0%	1.0%	2,068	956	1.0%	1.0%	2,272	1,076	1.0%	1.0%
Girardot Street	East of Huron Church Road		1,133	1,160	1.0%	1.0%	1,154	1,148	1.0%	1.0%	1,162	1,155	1.0%	1.0%
	West of Huron Church Road		2,346	2,275	1.7%	1.1%	2,296	2,202	1.8%	1.1%	2,290	2,168	1.8%	1.2%
Tecumseh Road	East of Huron Church Road		5,829	6,836	2.4%	4.4%	5,786	6,844	2.4%	5.2%	6,210	7,294	2.2%	7.0%
	West of Huron Church Road		6,604	6,994	1.0%	1.0%	6,488	7,115	1.0%	1.0%	6,679	7,355	1.0%	1.0%
Dorchester Street	East of Huron Church Road		1,693	1,533	1.0%	1.0%	1,726	1,557	1.0%	1.0%	1,748	1,574	1.0%	1.0%
	West of Huron Church Road		1,419	807	1.8%	1.2%	1,419	808	1.9%	1.3%	1,419	807	1.9%	1.3%
Prince Road/Totten Street	East of Huron Church Road		2,075	2,907	1.0%	1.0%	2,213	2,353	1.0%	1.0%	2,311	2,888	1.0%	1.0%
	West of Huron Church Road		4,782	5,176	1.0%	1.0%	5,515	5,545	1.0%	1.0%	5,053	5,710	1.0%	1.0%
Malden Road	East of Huron Church Road		1,377	1,126	1.0%	1.0%	1,631	1,358	1.0%	1.0%	1,858	1,508	1.0%	1.0%
	West of Huron Church Road		7,891	8,417	6.8%	11.6%	8,223	8,875	7.3%	13.1%	8,633	9,314	7.6%	14.4%
Industrial Road	East of Huron Church Road		3,619	3,426	1.5%	2.1%	3,926	3,674	1.4%	2.1%	4,362	3,864	1.2%	2.2%
	West of Huron Church Road		4,072	3,166	3.9%	11.8%	4,262	3,458	4.0%	12.0%	4,490	3,594	4.0%	13.3%
E.C. Row Expressway North Ramp Terminal	East of Huron Church Road		14,334	2,042	1.9%	1.0%	16,245	2,068	1.9%	1.0%	16,852	2,214	1.9%	0.3%
	West of Huron Church Road		607	N/A	22.4%	N/A	583	N/A	27.0%	N/A	624	N/A	30.0%	N/A
E.C. Row Expressway South Ramp Terminal	East of Huron Church Road		N/A	7,407	N/A	0.9%	N/A	10,547	N/A	1.0%	N/A	12,051	N/A	1.0%
	West of Huron Church Road		8,637	2,904	6.3%	2.8%	9,466	3,083	7.2%	2.7%	10,047	3,314	9.3%	2.8%
Labelle Street/Bethlehem Avenue	East of North Service Road		2,903	2,203	1.0%	1.0%	3,112	2,438	1.0%	1.0%	3,336	2,617	1.0%	1.0%
	Between North and South Service Road		1,403	3,202	1.0%	1.0%	1,232	3,565	1.0%	1.0%	1,573	3,934	1.0%	1.0%
	West of South Service Road		1,804	3,255	1.0%	1.0%	1,678	4,360	1.0%	1.0%	2,055	3,283	1.0%	1.0%
Grand Marais Road/Lambton Street	East of Huron Church Road		3,982	3,270	1.0%	1.0%	4,372	3,595	1.0%	1.0%	5,010	3,929	1.0%	1.0%
	West of Huron Church Road		1,714	1,960	1.7%	0.9%	1,876	2,193	1.8%	0.9%	2,056	2,428	1.8%	1.0%
Pulford Street	East of Huron Church Road		2,407	1,762	1.0%	1.0%	2,635	1,928	1.0%	1.0%	2,876	2,107	1.0%	1.0%
Todd Lane/Cabana Road	East of Huron Church Road		8,767	7,221	1.0%	1.0%	9,440	7,526	1.0%	1.0%	10,586	8,495	1.0%	1.0%
	Between Huron Church Road and Highway 401 Off Ramp		9,350	12,549	1.0%	1.0%	9,855	15,424	1.0%	1.0%	10,886	17,405	1.0%	1.0%
	West of Highway 401 Off Ramp		9,953	10,417	1.0%	1.0%	11,908	11,817	1.0%	1.0%	13,727	13,505	1.0%	1.0%
Huron Church Line	West of Huron Church Road		7,456	6,841	1.2%	1.4%	8,273	7,451	1.2%	1.5%	9,041	7,983	1.3%	1.5%
St Clair College	East of Talbot Road		3,009	9,320	1.0%	1.0%	3,240	9,608	1.0%	1.0%	3,428	9,882	1.0%	1.0%
Cousineau Drive	East of Talbot Road		6,321	5,777	1.0%	1.0%	6,134	5,580	1.0%	1.0%	6,470	5,725	1.0%	1.0%
	West of Talbot Road		7,099	5,807	1.0%	1.0%	7,697	6,496	1.0%	0.2%	8,816	7,424	1.0%	0.1%
Howard Avenue	East of Talbot Road		7,718	8,092	1.7%	1.8%	8,580	9,316	1.7%	1.9%	9,246	9,953	1.7%	1.9%
	West of Talbot Road		6,911	8,038	2.2%	2.3%	7,584	9,172	2.1%	2.2%	8,179	10,157	2.1%	2.2%
Laurier Extension	West of Talbot Road/Highway 3		6,658	6,543	2.2%	2.3%	7,307	7,473	2.1%	2.2%	7,881	8,274	2.1%	2.2%
E.C. Row Expressway	West of Ojibway Parkway		17,859	15,300	2.8%	4.7%	23,590	16,818	3.2%	5.2%	30,784	17,189	1.6%	2.2%
	West of Broadway Street		19,828	27,454	1.5%	2.2%	24,768	30,219	1.5%	2.2%	29,551	32,605	1.6%	2.2%
	East of Huron Church Road		35,042	43,067	3.1%	4.5%	43,102	51,004	3.2%	5.0%	49,462	56,583	3.4%	5.4%
	At Malden Road		23,638	29,462	4.3%	5.4%	29,896	33,650	4.6%	6.0%	35,168	37,219	4.8%	6.0%
	West of Matchette Road		16,363	8,173	2.7%	4.7%	21,440	9,003	3.1%	5.2%	25,630	9,791	2.9%	4.4%
GN Booth Drive	West of Ojibway Parkway		357	461	1.9%	1.7%	357	461	1.9%	1.7%	357	461	1.9%	1.7%
Sandwich Street	West of Ojibway Parkway		1,533	1,388	9.6%	6.6%	1,629	1,518	9.3%	6.4%	1,775	1,630	8.8%	6.3%
Prospect Avenue	West of Ojibway Parkway		342	437	2.0%	1.0%	342	437	1.9%	1.0%	342	437	1.9%	1.1%
HIGHWAY 401 Ramps														
Highway 3 merge/split														
Highway 401 Northbound Off Ramp			14,237	N/A	6.0%	N/A	15,464	N/A	7.1%	N/A	16,787	N/A	8.3%	N/A
Highway 401 Northbound On Ramp			8,722	N/A	1.9%	N/A	9,051	N/A	1.9%	N/A	9,298	N/A	1.9%	N/A
Highway 401 Southbound Off Ramp			N/A	8,660	N/A	1.9%	N/A	9,136	N/A	1.9%	N/A	9,309	N/A	1.9%
Highway 401 Southbound On Ramp			N/A	5,656	N/A	6.2%	N/A	6,167	N/A	7.2%	N/A	6,996	N/A	8.0%
At Howard Avenue														
Highway 401 Northbound On Ramp			745	N/A	1.9%	N/A	776	N/A	1.9%	N/A	795	N/A	1.9%	N/A
Highway 401 Southbound On Ramp			N/A	4,521	N/A	6.2%	N/A	4,758	N/A	7.2%	N/A	5,488	N/A	8.0%
At St. Clair College														
Highway 401 Northbound Off Ramp			4,553	N/A	0.4%	N/A	5,033	N/A	0.6%	N/A	5,297	N/A	0.9%	N/A
Highway 401 Southbound Off Ramp			N/A	5,307	N/A	1.1%	N/A	6,270	N/A	1.1%	N/A	7,431	N/A	1.0%
Highway 401 Southbound On Ramp			N/A	2,154	N/A	0.5%	N/A	2,278	N/A	0.6%	N/A	2,411	N/A	0.6%
At Todd Lane/Cabana Road														
Highway 401 Northbound On Ramp			8,950	N/A	1.2%	N/A	12,026	N/A	1.3%	N/A	11,929	N/A	1.4%	N/A
Highway 401 Southbound Off Ramp			N/A	7,857	N/A	1.1%	N/A	9,406	N/A	1.1%	N/A	9,590	N/A	1.0%
Highway 401 Southbound On Ramp			N/A	3,344	N/A	1.1%	N/A	3,627	N/A	1.1%	N/A	3,812	N/A	1.0%
At Huron Church Road														
Highway 401 Northbound Off Ramp			12,114	N/A	1.9%	N/A	16,511	N/A	2.0%	N/A	18,040	N/A	2.0%	N/A
Highway 401 Southbound On Ramp			N/A	16,563	N/A	9.3%	N/A	18,195	N/A	9.4%	N/A	18,845	N/A	10.1%
At Malden Road														
Highway 401 Northbound On Ramp														
Highway 401 Southbound Off Ramp														
Highway 401 to E.C. Row Expressway														
Highway 401 Southbound Off Ramp			N/A	13,364	N/A	7.8%	N/A	15,782	N/A	8.7%	N/A	18,179	N/A	9.1%
Ojibway Parkway Interchange														
Highway 401 Northbound Off Ramp			1,780	N/A	9.6%	N/A	1,991	N/A	8.3%	N/A	5,721	N/A	8.8%	N/A
Highway 401 Northbound On Ramp			1,919	N/A	18.3%	N/A	2,141	N/A	20.4%	N/A	5,952	N/A	17.4%	N/A
Highway 401 Southbound Off Ramp			N/A	2,047	N/A	0.9%	N/A	2,106	N/A	1.2%	N/A	6,747	N/A	8.3%
Highway 401 Southbound On Ramp			N/A	12,043	N/A	2.8%	N/A	15,267	N/A	2.9%	N/A	22,906	N/A	2.9%
E.C. Row Expressway to Highway 401														
Highway 401 Northbound On Ramp			2,174	N/A	37.2%	N/A	2,630	N/A	38.4%	N/A	3,029	N/A	38.4%	N/A
Highway 401 Mainline	South of Highway 3 merge/split	Highway 3/Highway 401 Northbound Off Ramp	19,954	N/A	27.2%	N/A	24,657	N/A	27.8%	N/A	28,867	N/A	29.6%	N/A
	Highway 3/Highway 401 Northbound Off Ramp	Highway 3/Highway 401 Northbound On Ramp	5,337	N/A	44.1%	N/A	8,978	N/A	45.5%	N/A	12,071	N/A	46.8%	N/A
	Highway 3/Highway 401 Northbound On Ramp	Howard Avenue Northbound On Ramp	14,215	N/A	27.6%	N/A	18,139	N/A	30.6%	N/A	21,434	N/A	32.7%	N/A
	Howard Avenue Northbound On Ramp	St. Clair College/Highway 401 Northbound Off Ramp	14,993	N/A	27.6%	N/A	18,954	N/A	30.6%	N/A	22,229	N/A	31.6%	N/A
	St. Clair College/Highway 401 Northbound Off Ramp	Pulford Street/Highway 401 Northbound On Ramp	9,858	N/A	29.5%	N/A	13,267	N/A	33.5%	N/A	15,990	N/A	30.5%	N/A
	Pulford Street/Highway 401 Northbound On Ramp	Huron Church Road/Highway 401 Northbound Off Ramp	20,784	N/A	25.2%	N/A	26,147	N/A	22.2%	N/A	29,176	N/A	24.1%	N/A
	Huron Church Road/Highway 401 Northbound Off Ramp	Ojibway Parkway/Highway 401 Northbound Off Ramp	6,834	N/A	19.8%	N/A	9,661	N/A	57.9%	N/A	11,204	N/A	61.5%	N/A
	Ojibway Parkway/Highway 401 Northbound Off Ramp	Ojibway Parkway/Highway 401 Northbound On Ramp	5,515	N/A	68.3%	N/A	7,277	N/A	70.9%	N/A	8,780	N/A	73.0%	N/A
	Ojibway Parkway/Highway 401 Northbound On Ramp	E.C. Row Expressway to Highway 401 Northbound On Ramp	7,577	N/A	58.0%	N/A	9,581	N/A	61.9%	N/A	11,268	N/A	64.9%	N/A
	E.C. Row Expressway to Highway 401 Northbound On Ramp	Canadian Plaza	9,987	N/A	57.9%	N/A	12,617	N/A	59.5%	N/A	14,744	N/A	60.8%	N/A
	Canadian Plaza	Ojibway Parkway/Highway 401 Southbound Off Ramp	N/A	17,980	N/A	52.0%	N/A	21,442	N/A	56.1%	N/A	24,132	N/A	58.4%
	Ojibway Parkway/Highway 401 Southbound Off Ramp	Ojibway Parkway/Highway 401 Southbound On Ramp	N/A	15,525	N/A	52.2%	N/A	18,806	N/A	56.4%	N/A	21,181	N/A	58.7%
	Ojibway Parkway/Highway 401 Southbound On Ramp	Highway 401 to E.C. Row Expressway Southbound Off Ramp	N/A	27,348	N/A	27.6%	N/A	34,180	N/A	32.5%	N/A	40,411	N/A	36.5%
	Highway 401 to E.C. Row Expressway Southbound Off Ramp	Huron Church Road/Highway 401 Southbound On Ramp	N/A	14,333	N/A	51.3%	N/A	18,677	N/A	55.4%	N/A	22,370	N/A	59.2%
	Huron Church Road/Highway 401 Southbound On Ramp	Pulford Street/Highway 401 Southbound Off Ramp	N/A	30,697	N/A	27.3%	N/A	36,588	N/A	31.0%	N/A	40,606	N/A	33.8%
	Pulford Street/Highway 401 Southbound Off Ramp	Todd Lane/Highway 401 Southbound Off Ramp	N/A	22,166	N/A	27.3%	N/A	26,254	N/A	31.0%	N/A	29,962	N/A	33.8%
	Todd Lane/Highway 401 Southbound Off Ramp	St. Clair College/Highway 401 Southbound Off Ramp	N/A	25,017	N/A	24.0%	N/A	29,442	N/A	28.0%	N/A	33,581	N/A	30.0%
	St. Clair College/Highway 401 Southbound Off Ramp	St. Clair College/Highway 401 Southbound On Ramp	N/A	19,250	N/A	30.0%	N/A	22,404	N/A	35.0%	N/A	24,397	N/A	40.0%
	St. Clair College/Highway 401 Southbound On Ramp	Howard Avenue Southbound On Ramp	N/A	22,874	N/A	34.9%	N/A	26,502	N/A	39.7%	N/A	29,449	N/A	43.5%
	Howard Avenue Southbound On Ramp	Highway 3/Highway 401 Southbound Off Ramp	N/A	27,843	N/A	36.3%	N/A	31,625	N/A	38.9%	N/A	33,686	N/A	39.3%
	Highway 3/Highway 401 Southbound Off Ramp	Highway 3/Highway 401 Southbound On Ramp	N/A	18,004	N/A	35.5%	N/A	21,212	N/A	40.4%	N/A	23,741	N/A	45.9%
	Highway 3/Highway 401 Southbound On Ramp	South of Highway 3 merge/split	N/A	21,530	N/A	36.3%	N/A	27,440	N/A	38.9%	N/A	32,317	N/A	42.1%
Malden Road	Chappus Street	Highway 401 South Ramp	8,966	11,480	3.9%	4.3%	9,084	11,528	3.7%	3.9%	9,447	12,207	3.9%	3.7%
	Highway 401 South Ramp	Highway 401 North Ramp	9,957	7,916	3.8%	4.3%	10,193	7,192	3.7%	3.9%	10,678	7,440	3.8%	3.7%
	North of Highway 401 North Ramp		7,195	8,613	3.8%	4.3%	6,982	8,058	3.7%	3.9%	7,149	8,393	3.8%	3.7%
Matchette Road	Chappus Street	E.C. Row Expressway South Ramp	8,512	7,933	1.0%	1.0%	9,261	9,268	1.0%	1.0%	9,542	10,489	1.0%	1.0%
	E.C. Row Expressway South Ramp	E.C. Row Expressway North Ramp	2,620	8,916	1.0%	1.0%	2,620	10,207	1.0%	1.0%	2,675	11,452	1.0%	1.0%
	E.C. Row Expressway North Ramp	Carmichael Street	4,861	3,303	1.0%	1.0%	5,152	3,168	1.0%	1.0%	5,719	3,318	1.0%	1.0%
Highway 3 merge/split														
Highway 401 Northbound Off Ramp (to Highway 3)			8,751	N/A	6.0%	N/A	9,490	N/A	7.1%	N/A	10,247	N/A	8.3%	N/A
Highway 401 Northbound Off Ramp (to Laurier split)			5,486	N/A	6.0%	N/A	5,973	N/A	7.1%	N/A	6,539	N/A	8.3%	N/A

NOTE: Values highlighted in yellow indicate per cent commercial vehicles of nil - 1 per cent assumed for analysis

Prepared By: MEB
Reviewed By: PRB

TABLE II-A

SUMMARY OF ESAL CALCULATIONS - FLEXIBLE PAVEMENTS - ALTERNATIVE 1A

Detroit River International Crossing
Windsor, Ontario

LOCATION			Northbound/Westbound					Southbound/Eastbound				
Pavement Section	From	To	LDF	TF	Design Period (years)	ESALs	Class	LDF	TF	Design Period (years)	ESALs	Class
Huron Church Road	Riverside Drive	University Avenue	0.9	2	19	2,355,841	Major Collector	0.9	2	19	1,632,290	Major Collector
	University Avenue	Wyandotte Street	0.9	2	19	1,822,880	Major Collector	0.9	2	19	2,033,116	Major Collector
	Wyandotte Street	AMB Off Ramp	0.9	2	19	277,133	Minor Collector	0.9	2	19	392,502	Minor Collector
	AMB Off Ramp	College	0.8	2	19	35,164,062	Major Arterial	0.9	2	19	1,267,536	Major Collector
	College Street	Girardot Street	0.8	2	19	9,169,220	Minor Arterial	0.8	2	19	38,378,611	Major Arterial
	Girardot Street	Tecumseh Road	0.8	2	19	10,093,451	Minor Arterial	0.8	2	19	37,366,261	Major Arterial
	Tecumseh Road	Dorchester Street	0.8	2	19	11,751,221	Minor Arterial	0.8	2	19	36,073,735	Major Arterial
	Dorchester Street	Prince Road/Totten Street	0.8	2	19	10,283,260	Minor Arterial	0.8	2	19	32,960,098	Major Arterial
	Prince Road/Totten Street	Malden Road	0.8	2	19	11,554,694	Minor Arterial	0.8	2	19	32,824,966	Major Arterial
	Malden Road	Industrial Road	0.8	2	19	6,862,058	Minor Arterial	0.8	2	19	30,927,075	Major Arterial
	Industrial Rd	EC Row North Ramp Terminal	0.8	2	19	7,800,046	Minor Arterial	0.8	2	19	31,594,901	Major Arterial
	EC Row North Ramp Terminal	EC Row South Ramp Terminal	0.8	2	19	5,146,190	Major Collector	0.8	2	19	30,683,990	Major Arterial
	South of EC Row South Ramp Terminal		0.8	2	19	7,123,330	Minor Arterial	0.8	2	19	23,990,334	Major Arterial
South Service Road	North of Lambton Street					no data		1	2	19	2,445,688	Major Collector
	Lambton Street	Todd Lane/Cabana Road				no data		1	2	19	1,869,677	Major Collector
	Todd Lane/Cabana Road	St Clair College				no data		1	2	19	1,172,194	Major Collector
	St Clair College	Cousineau Drive				no data		1	2	19	2,834,974	Major Collector
	Cousineau Drive	Howard Avenue				no data		1	2	19	2,776,739	Major Collector
	East of Howard Avenue					no data		1	2	19	3,518,137	Major Collector
North Service Road	North of Labelle Street		1	2	19	7,514,528	Minor Arterial				no data	
	Labelle Street	Grand Marais Road Ramp	1	2	19	4,847,309	Major Collector				no data	
	Grand Marais Road Ramp	Pulford Street	1	2	19	2,367,614	Major Collector				no data	
	Pulford Street	Todd Lane/Cabana Road	1	2	19	2,605,552	Major Collector				no data	
	Todd Lane/Cabana Road	St Clair College	1	2	19	994,834	Minor Collector				no data	
	St Clair College	Cousineau Drive	1	2	19	1,102,788	Major Collector				no data	
	Cousineau Drive	Howard Avenue	1	2	19	2,834,656	Major Collector				no data	
	East of Howard Avenue		1	2	19	4,353,530	Major Collector				no data	
Ojibway Parkway	EC Row Expressway	GN Booth Drive	0.8	2	19	2,784,093	Major Collector	0.8	2	19	7,338,520	Minor Arterial
	GN Booth Drive	Sandwich Street	0.8	2	19	2,789,884	Major Collector	0.8	2	19	7,376,860	Minor Arterial
	Sandwich Street	Prospect Avenue	0.8	2	19	814,358	Minor Collector	0.8	2	19	821,465	Minor Collector
	North of Prospect Avenue		0.8	2	19	809,496	Minor Collector	0.8	2	19	804,291	Minor Collector
CROSS ROADS												
Wyandotte Street	West of Huron Church Road		1	1.5	19	533,102	Minor Collector	1	1.5	19	509,976	Minor Collector
	East of Huron Church Road		1	1.5	19	724,004	Minor Collector	1	1.5	19	1,531,451	Major Collector
University Avenue	West of Huron Church Road		1	1.5	19	143,940	Local	1	1.5	19	131,043	Local
	East of Huron Church Road		1	1.5	19	1,691,694	Major Collector	1	1.5	19	1,516,825	Major Collector
Riverside Drive	West of Huron Church Road		1	1.5	19	371,254	Minor Collector	1	1.5	19	389,942	Minor Collector
	E of HuronChurch		1	1.5	19	720,155	Minor Collector	1	1.5	19	604,732	Minor Collector
AMB Off Ramp	E of HuronChurch					no data		1	1.5	19	31,000,318	Major Arterial
AMB On Ramp	E of HuronChurch		1	1.5	19	2,387,572	Major Collector				no data	
Patricia Street	AMB	Wyandotte Street	1	1.5	19	2,316,801	Major Collector	1	1.5	19	3,813,587	Major Collector
College Street	East of Huron Church Road		1	1.5	19	1,708,003	Major Collector	1	1.5	19	3,553,628	Major Collector
	West of Huron Church Road		1	1.5	19	213,918	Minor Collector	1	1.5	19	98,502	Local
Girardot Street	East of Huron Church Road		1	1.5	19	118,935	Local	1	1.5	19	121,049	Local
	West of Huron Church Road		1	1.5	19	381,998	Minor Collector	1	1.5	19	223,541	Minor Collector
Tecumseh Road	East of Huron Church Road		1	1.5	19	1,348,886	Major Collector	1	1.5	19	3,776,582	Major Collector
	West of Huron Church Road		1	1.5	19	682,926	Minor Collector	1	1.5	19	742,094	Minor Collector
Dorchester Street	East of Huron Church Road		1	1.5	19	178,211	Local	1	1.5	19	164,294	Local
	West of Huron Church Road		1	1.5	19	235,973	Minor Collector	1	1.5	19	89,597	Local
Prince Road/Totten Street	East of Huron Church Road		1	1.5	19	228,660	Minor Collector	1	1.5	19	271,824	Minor Collector
	West of Huron Church Road		1	1.5	19	543,540	Minor Collector	1	1.5	19	570,391	Minor Collector
Malden Road	East of Huron Church Road		1	1.5	19	167,789	Local	1	1.5	19	138,372	Local
	West of Huron Church Road		1	1.5	19	5,996,945	Major Collector	1	1.5	19	11,347,383	Minor Arterial
Industrial Road	East of Huron Church Road		1	1.5	19	610,571	Minor Collector	1	1.5	19	817,538	Minor Collector
	West of Huron Church Road		1	1.5	19	1,781,647	Major Collector	1	1.5	19	4,677,110	Major Collector
E.C. Row Expressway North Ramp Terminal	East of Huron Church Road (W-N/S Off Ramp & N-W On Ramp)		1	1.5	19	3,646,597	Major Collector	1	1.5	19	4,699	Local
	West of Huron Church Road (S-W On Ramp)		1	1.5	19	1,717,399	Major Collector				no data	
E.C. Row Expressway South Ramp Terminal	East of Huron Church Road (N-E On Ramp)					no data		1	1.5	19	1,700,453	Major Collector
	West of Huron Church Road (S-E On Ramp & E-N/S Off Ramp)		1	1.5	19	7,160,163	Minor Arterial	1	1.5	19	879,060	Minor Collector
Labelle Street	East of North Service Road		1	1.5	19	213,501	Minor Collector	1	1.5	19	78,655	Local
Grand Marais Road Ramp	East of North Service Road		1	1.5	19	559,400	Minor Collector	1	1.5	19	213,865	Minor Collector
Fazio Drive	West of South Service Road		1	1.5	19	658,859	Minor Collector	1	1.5	19	352,201	Minor Collector
Pulford Street	East of North Service Road		1	1.5	19	50,023	Local	1	1.5	19	114,248	Local
Todd Lane/Cabana Road	East of North Service Road		1	1.5	19	1,010,692	Major Collector	1	1.5	19	785,844	Minor Collector
	between North and South Service Road		1	1.5	19	1,119,285	Major Collector	1	1.5	19	1,265,943	Major Collector
	between South Service Road and Huron Church Line		1	1.5	19	956,746	Minor Collector	1	1.5	19	1,206,016	Major Collector
	West of Huron Church Line		1	1.5	19	922,144	Minor Collector	1	1.5	19	950,828	Minor Collector
St. Clair College	East of North Service Rd		1	1.5	19	330,663	Minor Collector	1	1.5	19	926,084	Minor Collector
	between North and South Service Road		1	1.5	19	256,814	Minor Collector	1	1.5	19	286,988	Minor Collector
Cousineau Drive	East of North Service Road		1	1.5	19	554,966	Minor Collector	1	1.5	19	450,109	Minor Collector
	between North and South Service Road		1	1.5	19	49,734	Local	1	1.5	19	1,339,311	Major Collector
	West of South Service Road		1	1.5	19	203,916	Minor Collector	1	1.5	19	1,333,221	Major Collector
Howard Avenue	East of North Service Rd		1	1.5	19	1,444,079	Major Collector	1	1.5	19	1,921,514	Major Collector
	between North and South Service Road		1	1.5	19	2,205,001	Major Collector	1	1.5	19	1,705,104	Major Collector
	West of South Service Road		1	1.5	19	2,702,072	Major Collector	1	1.5	19	3,278,335	Major Collector
E.C. Row Expressway	East of Ojibway Parkway		0.8	2	19	5,757,431	Major Collector	1	2	19	3,909,440	Major Collector
	West of Ojibway Parkway		0.8	2	19	4,230,045	Major Collector	1	2	19	3,678,095	Major Collector
	East of Huron Church Road		0.8	2	19	14,798,368	Minor Arterial	1	2	19	36,065,807	Major Arterial
	At Malden Rd		0.8	2	19	13,222,919	Minor Arterial	1	2	19	23,049,269	Major Arterial
	West of Matchette Road		0.8	2	19	11,413,597	Minor Arterial	1	2	19	3,909,440	Major Collector
GN Booth Drive	West of Ojibway Parkway		1	1.5	19	59,678	Local	1	1.5	19	66,610	Local
Sandwich Street	West of Ojibway Parkway		1	1.5	19	1,575,586	Major Collector	1	1.5	19	1,001,131	Major Collector
Prospect Avenue	West of Ojibway Parkway		1	1.5	19	57,268	Local	1	1.5	19	40,772	Local
* - For consistency, Huron Church Rd/Talbot Rd runs North-South and all crossing roads run East-West												
HIGHWAY 401 Ramps												
Highway 3 merge/split												
Highway 401 northbound Off Ramp			1	2	19	10,917,727	Minor Arterial				no data	
Highway 401 northbound On Ramp			1	2	19	2,428,699	Major Collector				no data	
Highway 401 southbound Off Ramp						no data		1	2	19	2,769,473	Major Collector
Highway 401 southbound On Ramp						no data		1	2	19	10,549,830	Minor Arterial
At St. Clair College												
Highway 401 northbound Off Ramp			1	1.5	19	755,609	Minor Collector				no data	
Highway 401 northbound On Ramp			1	1.5	19	229,431	Minor Collector				no data	
Highway 401 southbound Off Ramp						no data		1	1.5	19	2,176,331	Major Collector
Highway 401 southbound On Ramp						no data		1	1.5	19	234,069	Minor Collector
At Huron Church Road												
Highway 401 northbound Off Ramp			1	2	19	3,997,976	Major Collector				no data	
Highway 401 southbound On Ramp								1	2	19	19,271,082	Minor Arterial
At Malden Road												
Highway 401 northbound On Ramp			1	1.5	19	5,640,656	Major Collector				no data	
Highway 401 southbound Off Ramp						no data		1	1.5	19	5,686,088	Major Collector
Highway 401 to E.C. Row Expressway												
401 SB Off Ramp						no data		1	2	19	17,729,368	Minor Arterial
Ojibway Parkway Interchange												
Highway 401 northbound Off Ramp			1	2	19	6,425,673	Minor Arterial				no data	
Highway 401 northbound On Ramp			1	2	19	4,883,853	Major Collector				no data	
Highway 401 southbound Off Ramp						no data		1	2	19	246,287	Minor Collector
Highway 401 southbound On Ramp						no data		1	2	19	7,364,764	Minor Arterial
E.C. Row Expressway to Highway 401												
Highway 401 northbound On Ramp			1	2	19	13,290,981	Minor Arterial				no data	
Highway 401 Mainline	South of Highway 3 merge/split	Highway 3/Highway 401 northbound Off Ramp	0.6	2.5	21	81,055,789	Freeway				no data	
	Highway 3/Highway 401 northbound Off Ramp	Highway 3/Highway 401 northbound On Ramp	0.7	2.5	21	83,032,379	Freeway				no data	
	Highway 3/Highway 401 northbound On Ramp	St. Clair College/Highway 401 northbound Off Ramp	0.6	2.5	21	80,708,006	Freeway				no data	
	St. Clair College/Highway 401 northbound Off Ramp	St. Clair College/Highway 401 northbound On Ramp	0.7	2.5	21	66,025,895	Freeway				no data	
	St. Clair College/Highway 401 northbound On Ramp	Huron Church Road/Highway 401 northbound Off Ramp	0.7	2.5	21	75,196,212	Freeway				no data	
	Huron Church Road/Highway 401 northbound Off Ramp	Malden Road/Highway 401 northbound On Ramp	0.8	2.5	21	87,637,056	Freeway				no data	
	Malden Road/Highway 401 northbound On Ramp	Ojibway Parkway/Highway 401 northbound Off Ramp	0.7	2.5	21	84,016,315	Freeway				no data	
	Ojibway Parkway/Highway 401 northbound Off Ramp	Ojibway Parkway/Highway 401 northbound OnRamp	0.8	2.5	21	89,010,502	Freeway				no data	
	Ojibway Parkway/Highway 401 northbound OnRamp	EC Row Expressway to Highway 401 northbound On Ramp	0.8	2.5	21	94,432,027	Freeway				no data	
	EC Row Expressway to Highway 401 northbound On Ramp	Canadian Plaza	0.7	2.5	21	102,518,161	Freeway				no data	
	Canadian Plaza	Ojibway Parkway/Highway 401 southbound Off Ramp				no data		0.6	2.5	21	139,823,881	Freeway
	Ojibway Parkway/Highway 401 southbound Off Ramp	Ojibway Parkway/Highway 401 southbound On Ramp				no data		0.7	2.5	21	153,128,914	Freeway
	Ojibway Parkway/Highway 401 southbound On Ramp	Highway 401 to EC Row Expressway southbound Off Ramp				no data		0.6	2.5	21	149,145,203	Freeway
	Highway 401 to EC Row Expressway southbound Off Ramp	Malden Road/Highway 401 southbound Off Ramp				no data		0.6	2.5	21	156,491,942	Freeway
	Malden Road/Highway 401 southbound Off Ramp	Huron Church Road/Highway 401 southbound On Ramp				no data		0.7	2.5	21	167,118,659	Freeway
	Huron Church Road/Highway 401 southbound On Ramp	St Clair College/Highway 401 southbound Off Ramp				no data		0.6	2.5	21	127,816,748	Freeway
	St Clair College/Highway 401 southbound Off Ramp	St Clair College/Highway 401 southbound On Ramp				no data		0.6	2.5	21	106,132,652	Freeway
	St Clair College/Highway 401 southbound On Ramp	Highway 3/Highway 401 southbound Off Ramp				no data		0.6	2.5	21	120,365,626	Freeway
	Highway 3/Highway 401 southbound Off Ramp	Highway 3/Highway 401 southbound On Ramp				no data		0.7	2.5	21	129,947,433	Freeway
	Highway 3/Highway 401 southbound On Ramp	South of Highway 3 merge/split				no data		0.6	2.5	21	120,362,887	Freeway
Grand Marais Road	East of connecting ramp		1	1.5	19	544,422	Minor Collector	1	1.5	19	485,540	Minor Collector
	West of connecting ramp		1	1.5	19	27,716	Local	1	1.5	19	420,374	Minor Collector
Broadway Street	West of Ojibway Parkway		1	1.5	19	34,310	Local	1	1.5	19	36,666	Local
Huron Church Line	South of Todd Lane		1	1.5	19	5,787,782	Major Collector	1	1.5	19	7,039,676	Minor Arterial
Millen Street	Felix Avenue	Huron Church Road	1	1.5	19	17,886	Local	1	1.5	19	37,630	Local
Malden Road	Chappus Street	Highway 401 South Ramp	1	1.5	19	2,672,733	Major Collector	1	1.5	19	2,961,102	Major Collector
	Highway 401 South Ramp	Highway 401 North Ramp	1	1.5	19	2,945,196	Major Collector	1	1.5	19	1,940,145	Major Collector
	North of Highway 401 North Ramp		1	1.5	19	2,088,158	Major Collector	1	1.5	19	2,143,604	Major Collector
Matchette Road	Chappus Street	EC Row Expressway South Ramp	1	1.5	19	1,001,785	Major Collector	1	1.5	19	954,170	Minor Collector
	EC Row Expressway South Ramp	EC Row Expressway North Ramp	1	1.5	19	290,915	Minor Collector	1	1.5	19	1,045,682	Major Collector
	EC Row Expressway North Ramp	Carmichael	1	1.5	19	528,215	Minor Collector	1	1.5	19	332,863	Minor Collector
Montgomery Drive	Surrey Drive	Talbot Street	1	1.5	19	11,353	Local	1	1.5	19	64,102	Local
Surrey Drive	Montgomery Drive	Talbot Street	1	1.5	19	8,924	Local	1	1.5	19	13,509	Local
Grosvenor Road	Montgomery Drive	Talbot Street	1	1.5	19	15,357	Local	1	1.5	19	17,570	Local

Prepared By: MEB
Reviewed By: PRB

TABLE II-B

SUMMARY OF ESAL CALCULATIONS - FLEXIBLE PAVEMENTS - ALTERNATIVE 1B

Detroit River International Crossing
Windsor, Ontario

LOCATION			Northbound/Westbound					Southbound/Eastbound				
Pavement Section	From	To	LDF	TF	Design Period (years)	ESALs	Class	LDF	TF	Design Period (years)	ESALs	Class
Huron Church Road	Riverside Drive	University Avenue	0.9	2	19	2,318,723	Major Collector	0.9	2	19	1,613,018	Major Collector
	University Avenue	Wyandotte Street	0.9	2	19	1,534,091	Major Collector	0.9	2	19	2,014,241	Major Collector
	Wyandotte Street	AMB Off Ramp	0.9	2	19	282,018	Minor Collector	0.9	2	19	404,775	Minor Collector
	AMB Off Ramp	College	0.8	2	19	35,745,592	Major Arterial	0.9	2	19	1,246,000	Major Collector
	College Street	Girardot Street	0.8	2	19	9,121,152	Minor Arterial	0.8	2	19	39,268,951	Major Arterial
	Girardot Street	Tecumseh Road	0.8	2	19	10,108,420	Minor Arterial	0.8	2	19	38,247,717	Major Arterial
	Tecumseh Road	Dorchester Street	0.8	2	19	11,804,328	Minor Arterial	0.8	2	19	36,838,170	Major Arterial
	Dorchester Street	Prince Road/Totten Street	0.8	2	19	10,422,643	Minor Arterial	0.8	2	19	33,845,734	Major Arterial
	Prince Road/Totten Street	Malden Road	0.8	2	19	11,709,441	Minor Arterial	0.8	2	19	33,464,371	Major Arterial
	Malden Road	Industrial Road	0.8	2	19	6,843,950	Minor Arterial	0.8	2	19	31,147,517	Major Arterial
	Industrial Road	EC Row North Ramp Terminal	0.8	2	19	7,762,430	Minor Arterial	0.8	2	19	31,385,533	Major Arterial
	EC Row North Ramp Terminal	EC Row South Ramp Terminal	0.8	2	19	4,848,338	Major Collector	0.8	2	19	27,775,883	Major Arterial
	South of EC Row South Ramp Terminal		0.8	2	19	6,739,829	Minor Arterial	0.8	2	19	20,972,160	Major Arterial
South Service Road	north of Bethlehem Avenue					no data		1	2	19	24,643,746	Major Arterial
	Bethlehem Avenue	Lambton Street				no data		1	2	19	1,931,404	Major Collector
	Lambton Street	Pulford Street				no data		1	2	19	306,828	Minor Collector
	Pulford Street	Todd Lane/Cabana Road				no data		1	2	19	1,031,576	Major Collector
	Todd Lane/Cabana Road	Huron Church Line				no data		1	2	19	1,685,810	Major Collector
	Huron Church Line	St. Clair College				no data		1	2	19	1,564,142	Major Collector
	St. Clair College	Cousineau Drive				no data		1	2	19	4,524,555	Major Collector
	Cousineau Drive	Howard Avenue				no data		1	2	19	4,620,893	Major Collector
	east of Howard Avenue					no data		1	2	19	3,527,171	Major Collector
North Service Road	north of Labelle Street		1	2	19	7,040,640	Minor Arterial				no data	
	Labelle Street	Grand Marais Road Ramp	1	2	19	3,876,909	Major Collector				no data	
	Grand Marais Road Ramp	Pulford Street	1	2	19	108,248	Local				no data	
	Pulford Street	Todd Lane/Cabana Road	1	2	19	170,430	Local				no data	
	Todd Lane/Cabana Road	Huron Church Line	1	2	19	1,907,803	Major Collector				no data	
	Huron Church Line	St. Clair College	1	2	19	829,845	Minor Collector				no data	
	St. Clair College	Cousineau Drive	1	2	19	1,822,141	Major Collector				no data	
	Cousineau Drive	Howard Avenue	1	2	19	1,516,256	Major Collector				no data	
	east of Howard Avenue		1	2	19	4,148,596	Major Collector				no data	
Ojibway Parkway	E.C. Row Expressway	GN Booth Drive	0.8	2	19	2,822,038	Major Collector	0.8	2	19	7,408,690	Minor Arterial
	GN Booth Drive	Sandwich Street	0.8	2	19	2,827,820	Major Collector	0.8	2	19	7,446,829	Minor Arterial
	Sandwich Street	Prospect Avenue	0.8	2	19	827,232	Minor Collector	0.8	2	19	831,603	Minor Collector
	north of Prospect Avenue		0.8	2	19	822,281	Minor Collector	0.8	2	19	814,230	Minor Collector
CROSS ROADS												
Wyandotte Street	west of Huron Church Line		1	1.5	19	530,306	Minor Collector	1	1.5	19	506,299	Minor Collector
	east of Huron Church Line		1	1.5	19	498,288	Minor Collector	1	1.5	19	1,497,725	Major Collector
University	west of Huron Church Line		1	1.5	19	142,238	Local	1	1.5	19	130,873	Local
	east of Huron Church Line		1	1.5	19	1,677,084	Major Collector	1	1.5	19	1,276,242	Major Collector
Riverside Drive	west of Huron Church Line		1	1.5	19	367,095	Minor Collector	1	1.5	19	383,074	Minor Collector
	east of Huron Church Line		1	1.5	19	725,809	Minor Collector	1	1.5	19	602,328	Minor Collector
AMB Off Ramp	east of Huron Church Line					no data		1	1.5	19	39,778,029	Major Arterial
AMB On Ramp	east of Huron Church Line		1	1.5	19	2,384,754	Major Collector				no data	
Patricia	AMB	Wyandotte Street	1	1.5	19	2,320,936	Major Collector	1	1.5	19	3,829,080	Major Collector
College Street	east of Huron Church Road		1	1.5	19	1,731,091	Major Collector	1	1.5	19	3,381,361	Major Collector
	west of Huron Church Road		1	1.5	19	214,141	Minor Collector	1	1.5	19	97,988	Local
Girardot Street	east of Huron Church Road		1	1.5	19	119,621	Local	1	1.5	19	119,915	Local
	west of Huron Church Road		1	1.5	19	430,888	Minor Collector	1	1.5	19	264,100	Minor Collector
Tecumseh Road	east of Huron Church Road		1	1.5	19	1,431,479	Major Collector	1	1.5	19	3,940,554	Major Collector
	west of Huron Church Road		1	1.5	19	682,338	Minor Collector	1	1.5	19	742,123	Minor Collector
Dorchester Street	east of Huron Church Road		1	1.5	19	179,099	Local	1	1.5	19	161,663	Local
	west of Huron Church Road		1	1.5	19	273,395	Minor Collector	1	1.5	19	106,303	Local
Prince Road/Totten Street	east of Huron Church Road		1	1.5	19	228,617	Minor Collector	1	1.5	19	271,778	Minor Collector
	west of Huron Church Road		1	1.5	19	543,413	Minor Collector	1	1.5	19	570,409	Minor Collector
Malden Road	east of Huron Church Road		1	1.5	19	167,733	Local	1	1.5	19	138,262	Local
	west of Huron Church Road		1	1.5	19	6,228,212	Minor Arterial	1	1.5	19	11,980,340	Minor Arterial
Industrial Road	east of Huron Church Road		1	1.5	19	569,110	Minor Collector	1	1.5	19	808,713	Minor Collector
	west of Huron Church Road		1	1.5	19	1,747,369	Major Collector	1	1.5	19	4,358,199	Major Collector
E.C. Row Expressway North Ramp Terminal	east of Huron Church Road (E-N/S Off Ramp & S-W On Ramp)		1	1.5	19	3,157,192	Major Collector	1	2	19	2,197,579	Major Collector
	west of Huron Church Road (N-W On Ramp)		1	1.5	19	1,650,554	Major Collector				no data	
E.C. Row Expressway South Ramp Terminal	east of Huron Church Road (S-E On Ramp)					no data		1	2	19	1,359,110	Major Collector
	west of Huron Church Road (N-E On Ramp & W-N/S Off Ramp)		1	1.5	19	7,304,349	Minor Arterial	1	2	19	1,180,968	Major Collector
Labelle Street/Bethlehem Avenue	east of North Service Road		1	1.5	19	323,003	Minor Collector	1	1.5	19	243,335	Minor Collector
	between North and South Service Road		1	1.5	19	140,366	Local	1	1.5	19	369,113	Minor Collector
	west of South Service Road		1	1.5	19	186,351	Local	1	1.5	19	399,459	Minor Collector
Grand Marais Road/Lambton Road	east of North Service Road		1	1.5	19	475,792	Minor Collector	1	1.5	19	372,495	Minor Collector
	between North and South Service Road		1	1.5	19	24,743	Local	1	1.5	19	297,734	Minor Collector
	west of South Service Road		1	1.5	19	344,115	Minor Collector	1	1.5	19	210,036	Minor Collector
Pulford Street	east of North Service Road		1	1.5	19	166,004	Local	1	1.5	19	221,312	Minor Collector
	between North and South Service Road		1	1.5	19	158,444	Local	1	1.5	19	140,517	Local
	west of South Service Road		1	1.5	19	265,107	Minor Collector	1	1.5	19	87,247	Local
Todd Lane/Cabana Road	east of North Service Road		1	1.5	19	985,003	Minor Collector	1	1.5	19	792,372	Minor Collector
	between North and South Service Road		1	1.5	19	1,036,720	Major Collector	1	1.5	19	1,005,264	Major Collector
	west of South Service Road		1	1.5	19	1,222,612	Major Collector	1	1.5	19	1,174,203	Major Collector
Huron Church Line	between North and South Service Road		1	1.5	19	448,122	Minor Collector	1	1.5	19	905,846	Minor Collector
	west of South Service Road		1	1.5	19	1,080,769	Major Collector	1	1.5	19	1,161,572	Major Collector
St. Clair College	east of North Service Road		1	1.5	19	330,617	Minor Collector	1	1.5	19	925,874	Minor Collector
	between North and South Service Road		1	1.5	19	256,814	Minor Collector	1	1.5	19	289,076	Minor Collector
Cousineau Drive	east of North Service Road		1	1.5	19	556,250	Minor Collector	1	1.5	19	450,545	Minor Collector
	between North and South Service Road		1	1.5	19	844,095	Minor Collector	1	1.5	19	745,196	Minor Collector
	west of South Service Road		1	1.5	19	1,121,187	Major Collector	1	1.5	19	427,178	Minor Collector
Howard Avenue	east of North Service Road		1	1.5	19	1,492,660	Major Collector	1	1.5	19	1,873,822	Major Collector
	between North and South Service Road		1	1.5	19	2,306,946	Major Collector	1	1.5	19	1,828,872	Major Collector
	west of South Service Road		1	1.5	19	2,741,117	Major Collector	1	1.5	19	3,536,412	Major Collector
E.C. Row Expressway	east of Ojibway Parkway		0.8	2	19	5,866,348	Major Collector	0.8	2	19	4,840,302	Major Collector
	west of Ojibway Parkway		0.8	2	19	4,342,634	Major Collector	0.8	2	19	2,977,058	Major Collector
	east of Huron Church Road		0.8	2	19	15,217,182	Minor Arterial	0.8	2	19	27,901,249	Major Arterial
	at Malden Road		0.8	2	19	14,685,915	Minor Arterial	0.8	2	19	21,605,735	Major Arterial
	west of Matchette		0.8	2	19	6,740,518	Minor Arterial	0.8	2	19	4,840,302	Major Collector
GN Booth Drive	west of Ojibway Parkway		1	1.5	19	71,351	Local	1	1.5	19	79,754	Local
Sandwich Street	west of Ojibway Parkway		1	1.5	19	1,570,291	Major Collector	1	1.5	19	1,002,890	Major Collector
Prospect Avenue	west of Ojibway Parkway		1	1.5	19	69,348	Local	1	1.5	19	48,013	Local
HIGHWAY 401 Ramps												
Highway 3 merge/split												
Highway 401 Northbound Off Ramp			1	2	19	10,954,220	Minor Arterial	1	2	10	no data	
Highway 401 Northbound On Ramp			1	2	19	2,459,797	Major Collector	1	2	10	no data	
Highway 401 Southbound Off Ramp						no data		1	2	19	2,628,824	Major Collector
Highway 401 Southbound On Ramp						no data		1	2	19	10,636,980	Minor Arterial
At St. Clair College												
Highway 401 Northbound Off Ramp			1	1.5	19	470,168	Minor Collector				no data	
Highway 401 Northbound On Ramp			1	1.5	19	334,642	Minor Collector				no data	
Highway 401 Southbound Off Ramp						no data		1	1.5	19	3,101,103	Major Collector
Highway 401 Southbound On Ramp						no data		1	1.5	19	336,576	Minor Collector
At Pulford Street												
Highway 401 Northbound On Ramp			1	1.5	19	952,472	Minor Collector				no data	
Highway 401 Southbound Off Ramp						no data		1	1.5	19	801,564	Minor Collector
At Huron Church Road												
Highway 401 Northbound Off Ramp			1	2	19	4,713,176	Major Collector				no data	
Highway 401 Southbound On Ramp						no data		1	2	19	23,953,811	Major Arterial
At Malden Road												
Highway 401 Northbound On Ramp			1	1.5	19	5,640,656	Major Collector				no data	
Highway 401 Southbound Off Ramp						no data		1	1.5	19	5,686,088	Major Collector
Highway 401 to E.C. Row Expressway												
401 Southbound Off Ramp			1	2	10	no data		1	2	19	18,696,765	Minor Arterial
Ojibway Parkway Interchange												
Highway 401 Northbound Off Ramp			1	2	19	6,413,696	Minor Arterial				no data	
Highway 401 Northbound On Ramp			1	2	19	4,669,477	Major Collector				no data	
Highway 401 Southbound Off Ramp						no data		1	2	19	205,164	Minor Collector
Highway 401 Southbound On Ramp						no data		1	2	19	7,444,238	Minor Arterial
E.C. Row Expressway to Highway 401												
Highway 401 Northbound On Ramp			1	2	19	13,290,981	Minor Arterial				no data	
Highway 401 Mainline	South of Highway 3 merge/split	Highway 3/Highway 401 Northbound Off Ramp	0.6	2.5	21	79,144,876	Freeway				no data	
	Highway 3/Highway 401 Northbound Off Ramp	Highway 3/Highway 401 Northbound On Ramp	0.7	2.5	21	82,697,651	Freeway				no data	
	Highway 3/Highway 401 Northbound On Ramp	St. Clair College/Highway 401 Northbound Off Ramp	0.6	2.5	21	80,594,029	Freeway				no data	
	St. Clair College/Highway 401 Northbound Off Ramp	St. Clair College/Highway 401 Northbound On Ramp	0.7	2.5	21	67,847,046	Freeway				no data	
	St. Clair College/Highway 401 Northbound On Ramp	Pulford Street/Highway 401 Northbound On Ramp	0.7	2.5	21	73,267,419	Freeway				no data	
	Pulford Street/Highway 401 Northbound On Ramp	Huron Church Road/Highway 401 Northbound Off Ramp	0.6	2.5	21	68,163,484	Freeway				no data	
	Huron Church Road/Highway 401 Northbound Off Ramp	Malden Road/Highway 401 Northbound On Ramp	0.8	2.5	21	84,313,935	Freeway				no data	
	Malden Road/Highway 401 Northbound On Ramp	Ojibway Parkway/Highway 401 Northbound Off Ramp	0.7	2.5	21	81,110,153	Freeway				no data	
	Ojibway Parkway/Highway 401 Northbound Off Ramp	Ojibway Parkway/Highway 401 Northbound OnRamp	0.8	2.5	21	85,690,630	Freeway				no data	
	Ojibway Parkway/Highway 401 Northbound OnRamp	EC Row Expressway to Highway 401 Northbound On Ramp	0.8	2.5	21	90,873,833	Freeway				no data	
	EC Row Expressway to Highway 401 Northbound On Ramp	Canadian Plaza	0.8	2.5	21	115,112,527	Freeway				no data	
	Canadian Plaza	Ojibway Parkway/Highway 401 Southbound Off Ramp				no data		0.6	2.5	21	137,650,885	Freeway
	Ojibway Parkway/Highway 401 Southbound Off Ramp	Ojibway Parkway/Highway 401 Southbound On Ramp				no data		0.7	2.5	21	150,778,243	Freeway
	Ojibway Parkway/Highway 401 Southbound On Ramp	Highway 401 to EC Row Expressway Southbound Off Ramp				no data		0.6	2.5	21	149,145,203	Freeway
	Highway 401 to EC Row Expressway Southbound Off Ramp	Malden Road/Highway 401 Southbound Off Ramp				no data		0.6	2.5	21	156,491,942	Freeway
	Malden Road/Highway 401 Southbound Off Ramp	Huron Church Road/Highway 401 Southbound On Ramp				no data		0.7	2.5	21	152,225,381	Freeway
	Huron Church Road/Highway 401 Southbound On Ramp	Pulford Street/Highway 401 Southbound Off Ramp				no data		0.6	2.5	21	129,558,262	Freeway
	Pulford Street/Highway 401 Southbound Off Ramp	St Clair College/Highway 401 Southbound Off Ramp				no data		0.6	2.5	21	132,554,055	Freeway
	St Clair College/Highway 401 Southbound Off Ramp	St Clair College/Highway 401 Southbound On Ramp				no data		0.6	2.5	21	104,888,549	Freeway
	St Clair College/Highway 401 Southbound On Ramp	Highway 3/Highway 401 Southbound Off Ramp				no data		0.6	2.5	21	122,605,180	Freeway
	Highway 3/Highway 401 Southbound Off Ramp	Highway 3/Highway 401 Southbound On Ramp				no data		0.7	2.5	21	131,625,015	Freeway
	Highway 3/Highway 401 Southbound On Ramp	South of Highway 3 merge/split				no data		0.6	2.5	21	121,648,998	Freeway
Malden Road	Chappus Street	Highway 401 South Ramp	1	1.5	19	3,611,502	Major Collector	1	1.5	19	4,796,333	Major Collector
	Highway 401 South Ramp	Highway 401 North Ramp	1	1.5	19	4,035,122	Major Collector	1	1.5	19	3,059,261	Major Collector
	North of Highway 401 North Ramp		1	1.5	19	2,783,241	Major Collector	1	1.5	19	3,405,068	Major Collector
Matchette Road	Chappus Street	EC Row Expressway South Ramp	1	1.5	19	949,140	Minor Collector	1	1.5	19	954,621	Minor Collector
	EC Row Expressway South Ramp	EC Row Expressway North Ramp	1	1.5	19	273,758	Minor Collector	1	1.5	19	1,054,060	Major Collector
	EC Row Expressway North Ramp	Carmichael	1	1.5	19	540,579	Minor Collector	1	1.5	19	336,609	Minor Collector

Prepared By: MEB
Reviewed By: PRB

TABLE II-C

SUMMARY OF ESAL CALCULATIONS - FLEXIBLE PAVEMENTS - ALTERNATIVE 2A

Detroit River International Crossing
Windsor, Ontario

LOCATION			Northbound/Westbound					Southbound/Eastbound				
Pavement Section	From	To	LDF	TF	Design Period (years)	ESALs	Class	LDF	TF	Design Period (years)	ESALs	Class
Huron Church Road	Riverside Drive	University Avenue	0.9	2	19	2,267,830	Major Collector	0.9	2	19	1,639,892	Major Collector
	University Avenue	Wyandotte Street	0.9	2	19	1,700,172	Major Collector	0.9	2	19	2,040,505	Major Collector
	Wyandotte Street	AMB Off Ramp	0.9	2	19	281,104	Minor Collector	0.9	2	19	404,480	Minor Collector
	AMB Off Ramp	College Street	0.8	2	19	33,653,502	Major Arterial	0.9	2	19	1,278,419	Major Collector
	College Street	Girardot Street	0.8	2	19	8,754,323	Minor Arterial	0.8	2	19	37,817,378	Major Arterial
	Girardot Street	Tecumseh Road	0.8	2	19	9,776,177	Minor Arterial	0.8	2	19	37,174,638	Major Arterial
	Tecumseh Road	Dorchester Street	0.8	2	19	11,532,926	Minor Arterial	0.8	2	19	35,655,663	Major Arterial
	Dorchester Street	Prince Road/Totten Street	0.8	2	19	10,255,125	Minor Arterial	0.8	2	19	32,954,683	Major Arterial
	Prince Road/Totten Street	Malden Road	0.8	2	19	11,510,526	Minor Arterial	0.8	2	19	31,784,965	Major Arterial
	Malden Road	Industrial Road	0.8	2	19	6,981,447	Minor Arterial	0.8	2	19	29,233,379	Major Arterial
	Industrial Road	EC Row Expressway North Ramp Terminal	0.8	2	19	7,681,945	Minor Arterial	0.8	2	19	29,711,655	Major Arterial
	EC Row Expressway North Ramp Terminal	EC Row Expressway South Ramp Terminal	0.8	2	19	5,165,251	Major Collector	0.8	2	19	26,667,735	Major Arterial
	EC Row Expressway South Ramp Terminal	Highway 401 Off Ramp	0.8	2	19	5,714,013	Major Collector	0.8	2	19	19,444,054	Minor Arterial
	Highway 401 Off Ramp	Spring Garden Road/Labelle Street	0.8	2	19	972,220	Minor Collector	0.8	2	19	1,431,625	Major Collector
	Spring Garden Road/Labelle Street	Lambton Street/Grand Marais Road Ramp	0.8	2	19	1,437,746	Major Collector	0.8	2	19	1,988,355	Major Collector
	Lambton Street/Grand Marais Road Ramp	Pulford Street	0.8	2	19	1,589,255	Major Collector	0.8	2	19	529,408	Minor Collector
	Pulford Street	Todd Lane/Cabana Road	0.8	2	19	1,825,214	Major Collector	0.8	2	19	670,657	Minor Collector
	Todd Lane/Cabana Road	Huron Church Line	0.8	2	19	1,706,435	Major Collector	0.8	2	19	2,568,379	Major Collector
Talbot Road	Huron Church Line	St Clair College	0.9	2	19	147,840	Local	0.8	2	19	885,350	Minor Collector
	St Clair College	Cousineau Drive	0.8	2	19	129,349	Local	0.9	2	19	851,084	Minor Collector
	Cousineau Drive	Howard Avenue	0.8	2	19	496,098	Minor Collector	0.9	2	19	212,355	Minor Collector
	Howard Avenue	EC Row Expressway	0.8	2	19	3,559,509	Major Collector	0.8	2	19	3,466,485	Major Collector
Ojibway Parkway	EC Row Expressway	GN Booth Drive	0.8	2	19	2,819,502	Major Collector	0.8	2	19	7,399,089	Minor Arterial
	GN Booth Drive	Sandwich Street	0.8	2	19	2,825,328	Major Collector	0.8	2	19	7,397,115	Minor Arterial
	Sandwich Street	Prospect Avenue	0.8	2	19	825,929	Minor Collector	0.8	2	19	825,509	Minor Collector
	North of Prospect Avenue		0.8	2	19	820,995	Minor Collector	0.8	2	19	808,350	Minor Collector
CROSSING ROADS												
Wyandotte Street	West of Huron Church Road		1	1.5	19	530,103	Minor Collector	1	1.5	19	506,426	Minor Collector
	East of Huron Church Road		1	1.5	19	652,585	Minor Collector	1	1.5	19	1,482,823	Major Collector
University Avenue	West of Huron Church Road		1	1.5	19	141,998	Local	1	1.5	19	129,314	Local
	East of Huron Church Road		1	1.5	19	1,699,799	Major Collector	1	1.5	19	1,416,255	Major Collector
Riverside Drive	West of Huron Church Road		1	1.5	19	366,045	Minor Collector	1	1.5	19	391,846	Minor Collector
	East of Huron Church Road		1	1.5	19	723,983	Minor Collector	1	1.5	19	610,459	Minor Collector
AMB Off Ramp	East of Huron Church Road					no data		1	1.5	19	29,663,810	Major Arterial
AMB On Ramp	East of Huron Church Road		1	1.5	19	2,388,073	Major Collector				no data	
Patricia Street	AMB	Wyandotte Street	1	1.5	19	2,278,257	Major Collector	1	1.5	19	3,722,913	Major Collector
College Street	East of Huron Church Road		1	1.5	19	1,848,818	Major Collector	1	1.5	19	3,432,860	Major Collector
	West of Huron Church Road		1	1.5	19	207,927	Minor Collector	1	1.5	19	92,990	Local
Girardot Street	East of Huron Church Road		1	1.5	19	118,076	Local	1	1.5	19	121,403	Local
	West of Huron Church Road		1	1.5	19	469,270	Minor Collector	1	1.5	19	325,412	Minor Collector
Tecumseh Road	East of Huron Church Road		1	1.5	19	1,368,509	Major Collector	1	1.5	19	4,158,194	Major Collector
	West of Huron Church Road		1	1.5	19	668,482	Minor Collector	1	1.5	19	721,961	Minor Collector
Dorchester Street	East of Huron Church Road		1	1.5	19	180,124	Local	1	1.5	19	162,330	Local
	West of Huron Church Road		1	1.5	19	339,175	Minor Collector	1	1.5	19	122,081	Local
Prince Road/Totten Street	East of Huron Church Road		1	1.5	19	233,196	Minor Collector	1	1.5	19	279,563	Minor Collector
	West of Huron Church Road		1	1.5	19	521,405	Minor Collector	1	1.5	19	562,003	Minor Collector
Malden Road	East of Huron Church Road		1	1.5	19	170,478	Local	1	1.5	19	138,108	Local
	West of Huron Church Road		1	1.5	19	5,984,098	Major Collector	1	1.5	19	9,177,512	Minor Arterial
Industrial Road	East of Huron Church Road		1	1.5	19	573,716	Minor Collector	1	1.5	19	802,133	Minor Collector
	West of Huron Church Road		1	1.5	19	1,733,054	Major Collector	1	1.5	19	4,573,116	Major Collector
EC Row Expressway North Ramp Terminal	E-N/S Ramp		1	2	19	4,248,046	Major Collector				no data	
	N-W Ramp					no data		1	2	19	116,689	Local
	S-W Ramp		1	2	19	9,113,907	Minor Arterial				no data	
EC Row Expressway South Ramp Terminal	W-N/S Ramp					no data		1	2	19	846,675	Minor Collector
	S/N-E Ramp					no data		1	2	19	9,683,406	Minor Arterial
Spring Garden Road	West of Huron Church Road		1	1.5	19	242,551	Minor Collector	1	1.5	19	324,349	Minor Collector
Labelle Street	East of Huron Church Road		1	1.5	19	400,962	Minor Collector	1	1.5	19	210,733	Minor Collector
Lambton Street/Grand Marais Road Ramp	East of Huron Church Road		1	1.5	19	548,092	Minor Collector	1	1.5	19	511,362	Minor Collector
Pulford Street	East of Huron Church Road		1	1.5	19	319,028	Minor Collector	1	1.5	19	168,468	Local
Cabana Road	East of Huron Church Road		1	1.5	19	890,289	Minor Collector	1	1.5	19	793,161	Minor Collector
	between Huron Church Road and Highway 401 northbound Ramps		1	1.5	19	567,842	Minor Collector	1	1.5	19	2,319,084	Major Collector
Todd Lane	between Highway 401 northbound and southbound Ramps		1	1.5	19	334,535	Minor Collector	1	1.5	19	1,954,325	Major Collector
	West of Highway 401 southbound Ramps		1	1.5	19	1,247,442	Major Collector	1	1.5	19	1,050,231	Major Collector
Huron Church Line	West of Huron Church Road		1	1.5	19	1,405,818	Major Collector	1	1.5	19	1,047,256	Major Collector
St Clair College	East of Talbot Road		1	1.5	19	334,584	Minor Collector	1	1.5	19	1,000,169	Major Collector
Cousineau Drive	East of Talbot Road		1	1.5	19	604,649	Minor Collector	1	1.5	19	570,581	Minor Collector
	West of Talbot Road		1	1.5	19	226,713	Minor Collector	1	1.5	19	451,135	Minor Collector
Howard Avenue	East of Talbot Road		1	1.5	19	1,514,091	Major Collector	1	1.5	19	2,241,544	Major Collector
	between Talbot Road and Highway 401 southbound On Ramp		1	1.5	19	2,474,266	Major Collector	1	1.5	19	1,721,976	Major Collector
	West of Highway 401 southbound On Ramp		1	1.5	19	2,764,107	Major Collector	1	1.5	19	3,407,026	Major Collector
E.C. Row Expressway	East of Huron Church Road		0.8	2	19	15,078,657	Minor Arterial	0.8	2	19	28,108,637	Major Arterial
	At Malden Road		0.8	2	19	14,619,885	Minor Arterial	0.8	2	19	20,918,124	Major Arterial
	West of Matchette Drive		0.8	2	19	6,283,330	Minor Arterial	0.8	2	19	4,392,185	Major Collector

* - For consistency, Huron Church Rd/Talbot Rd runs North-South and all crossing roads run East-West

Pavement Section	From	To	LDF	TF	Design Period (years)	ESALs	Class	LDF	TF	Design Period (years)	ESALs	Class
HIGHWAY 401 Ramps												
Highway 3 merge/split												
Highway 401 northbound Off Ramp			1	2	19	12,770,680	Minor Arterial				no data	
Highway 401 northbound On Ramp			1	2	19	2,727,622	Major Collector				no data	
Highway 401 southbound Off Ramp						no data		1	2	19	2,670,979	Major Collector
Highway 401 southbound On Ramp						no data		1	2	19	11,911,133	Minor Arterial
Howard Avenue												
401 NB Off Ramp						no data		1	2	19	610,847	Minor Collector
At Todd Lane/Cabana Road												
Highway 401 northbound Off Ramp			1	1.5	19	931,020	Minor Collector				no data	
Highway 401 northbound On Ramp			1	1.5	19	1,395,145	Major Collector				no data	
Highway 401 southbound Off Ramp						no data		1	1.5	19	2,577,794	Major Collector
Highway 401 southbound On Ramp						no data		1	1.5	19	348,733	Minor Collector
At Huron Church Road												
Highway 401 northbound Off Ramp			1	2	19	5,139,048	Major Collector					
Highway 401 southbound On Ramp								1	2	19	22,490,491	Major Arterial
At Malden Road												
Highway 401 northbound On Ramp			1	1.5	19	5,101,197	Major Collector				no data	
Highway 401 southbound Off Ramp						no data		1	1.5	19	4,905,375	Major Collector
EC Row Expressway to Highway 401												
Highway 401 southbound On Ramp						no data		1	2	19	19,232,457	Minor Arterial
Ojibway Parkway Interchange												
Highway 401 northbound Off Ramp			1	2	19	6,400,766	Minor Arterial				no data	
Highway 401 northbound On Ramp			1	2	19	4,666,462	Major Collector				no data	
Highway 401 southbound Off Ramp						no data		1	2	19	389,928	Minor Collector
Highway 401 southbound On Ramp						no data		1	2	19	6,144,891	Minor Arterial
EC Row Expressway Interchange												
Highway 401 northbound On Ramp			1	2	19	14,184,840	Minor Arterial				no data	
Highway 401 Mainline	South of Highway 3 merge/split	Highway 3/Highway 401 northbound Off Ramp	0.6	2.5	21	80,126,151	Freeway				no data	
	Highway 3/Highway 401 northbound Off Ramp	Highway 3/Highway 401 northbound On Ramp	0.8	2.5	21	70,304,443	Freeway				no data	
	Highway 3/Highway 401 northbound On Ramp	Todd Lane/Highway 401 northbound Off Ramp	0.6	2.5	21	68,820,150	Freeway				no data	
	Todd Lane/Highway 401 northbound Off Ramp	Todd Lane/Highway 401 northbound On Ramp	0.7	2.5	21	55,643,124	Freeway				no data	
	Todd Lane/Highway 401 northbound On Ramp	Huron Church Road/Highway 401 northbound On Ramp	0.6	2.5	21	62,806,125	Freeway				no data	
	Huron Church Road/Highway 401 northbound On Ramp	Malden Road/Highway 401 northbound On Ramp	0.8	2.5	21	85,002,759	Freeway				no data	
	Malden Road/Highway 401 northbound On Ramp	Ojibway Parkway/Highway 401 northbound Off Ramp	0.7	2.5	21	80,974,510	Freeway				no data	
	Ojibway Parkway/Highway 401 northbound Off Ramp	Ojibway Parkway/Highway 401 northbound OnRamp	0.8	2.5	21	85,533,717	Freeway				no data	
	Ojibway Parkway/Highway 401 northbound OnRamp	EC Row Expressway to Highway 401 northbound On Ramp	0.8	2.5	21	90,719,615	Freeway				no data	
	EC Row Expressway to Highway 401 northbound On Ramp	Canadian Plaza	0.8	2.5	21	115,087,677	Freeway				no data	
	Canadian Plaza	Ojibway Parkway/Highway 401 southbound Off Ramp				no data		0.6	2.5	21	138,907,322	Freeway
	Ojibway Parkway/Highway 401 southbound Off Ramp	Ojibway Parkway/Highway 401 southbound On Ramp				no data		0.7	2.5	21	152,148,062	Freeway
	Ojibway Parkway/Highway 401 southbound On Ramp	Highway 401 to EC Row Expressway southbound Off Ramp				no data		0.6	2.5	21	150,620,962	Freeway
	Highway 401 to EC Row Expressway southbound Off Ramp	Malden Road/Highway 401 southbound Off Ramp				no data		0.6	2.5	21	159,292,075	Freeway
	Malden Road/Highway 401 southbound Off Ramp	Huron Church Road/Highway 401 southbound On Ramp				no data		0.7	2.5	21	157,660,444	Freeway
	Huron Church Road/Highway 401 southbound On Ramp	Todd Lane/Highway 401 southbound Off Ramp				no data		0.6	2.5	21	128,496,630	Freeway
	Todd Lane/Highway 401 southbound Off Ramp	Todd Lane/Highway 401 southbound On Ramp				no data		0.7	2.5	21	110,195,513	Freeway
	Todd Lane/Highway 401 southbound On Ramp	Howard Avenue/Highway 401 southbound Off Ramp				no data		0.6	2.5	21	115,187,677	Freeway
	Howard Avenue/Highway 401 southbound Off Ramp	Highway 3/Highway 401 southbound Off Ramp				no data		0.6	2.5	21	112,617,760	Freeway
	Highway 3/Highway 401 southbound Off Ramp	Highway 3/Highway 401 southbound On Ramp				no data		0.7	2.5	21	131,804,701	Freeway
	Highway 3/Highway 401 southbound On Ramp	South of Highway 3 merge/split				no data		0.6	2.5	21	123,085,952	Freeway
Grand Marais Road	East of connecting ramp		1	1.5	19	433,492	Minor Collector	1	1.5	19	494,177	Minor Collector
	West of connecting ramp		1	1.5	19	441,195	Minor Collector	1	1.5	19	193,921	Local
Malden Road	Chappus Street	Highway 401 South Ramp	1	1.5	19	3,448,807	Major Collector	1	1.5	19	4,493,638	Major Collector
	Highway 401 South Ramp	Highway 401 North Ramp	1	1.5	19	3,868,909	Major Collector	1	1.5	19	2,787,882	Major Collector
	North of Highway 401 North Ramp		1	1.5	19	2,628,774	Major Collector	1	1.5	19	3,127,563	Major Collector
Matchette Street	Chappus Street	EC Row Expressway South Ramp	1	1.5	19	864,717	Minor Collector	1	1.5	19	937,223	Minor Collector
	EC Row Expressway South Ramp	EC Row Expressway North Ramp	1	1.5	19	247,166	Minor Collector	1	1.5	19	1,042,158	Major Collector
	EC Row Expressway North Ramp	Carmichael	1	1.5	19	497,893	Minor Collector	1	1.5	19	317,389	Minor Collector

Prepared By: MEB
Reviewed By: PRB

TABLE II-D

SUMMARY OF ESAL CALCULATIONS - FLEXIBLE PAVEMENTS - ALTERNATIVE 2B

Detroit River International Crossing
Windsor, Ontario

LOCATION			Northbound/Westbound					Southbound/Eastbound				
Pavement Section	From	To	LDF	TF	Design Period (years)	ESALs	Class	LDF	TF	Design Period (years)	ESALs	Class
Huron Church Road	Riverside Drive	University Avenue	0.9	2	19	2,267,830	Major Collector	0.9	2	19	1,639,892	Major Collector
	University Avenue	Wyandotte Street	0.9	2	19	1,700,172	Major Collector	0.9	2	19	2,040,505	Major Collector
	Wyandotte Street	AMB Off Ramp	0.9	2	19	281,104	Minor Collector	0.9	2	19	404,480	Minor Collector
	AMB Off Ramp	College Street	0.8	2	19	33,653,502	Major Arterial	0.9	2	19	1,278,419	Major Collector
	College Street	Girardot Street	0.8	2	19	8,754,323	Minor Arterial	0.8	2	19	37,817,378	Major Arterial
	Girardot Street	Tecumseh Road	0.8	2	19	9,776,177	Minor Arterial	0.8	2	19	37,174,638	Major Arterial
	Tecumseh Road	Dorchester Street	0.8	2	19	11,532,926	Minor Arterial	0.8	2	19	35,655,663	Major Arterial
	Dorchester Street	Prince Road/Totten Street	0.8	2	19	10,255,125	Minor Arterial	0.8	2	19	32,954,683	Major Arterial
	Prince Road/Totten Street	Malden Road	0.8	2	19	11,510,526	Minor Arterial	0.8	2	19	31,784,965	Major Arterial
	Malden Road	Industrial Road	0.8	2	19	6,981,447	Minor Arterial	0.8	2	19	29,233,379	Major Arterial
	Industrial Road	EC Row Expressway North Ramp Terminal	0.8	2	19	7,681,945	Minor Arterial	0.8	2	19	29,711,655	Major Arterial
	EC Row Expressway North Ramp Terminal	EC Row Expressway South Ramp Terminal	0.8	2	19	5,165,251	Major Collector	0.8	2	19	26,667,735	Major Arterial
	EC Row Expressway South Ramp Terminal	Highway 401 Off Ramp	0.8	2	19	5,714,013	Major Collector	0.8	2	19	19,368,387	Minor Arterial
	Highway 401 Off Ramp	Spring Garden Road/Labelle Street	0.8	2	19	972,220	Minor Collector	0.8	2	19	1,431,625	Major Collector
	Spring Garden Road/Labelle Street	Lambton Street/Grand Marais Road Ramp	0.8	2	19	1,437,746	Major Collector	0.8	2	19	1,988,355	Major Collector
	Lambton Street/Grand Marais Road Ramp	Pulford Street	0.8	2	19	1,589,255	Major Collector	0.8	2	19	529,408	Minor Collector
	Pulford Street	Todd Lane/Cabana Road	0.8	2	19	1,825,214	Major Collector	0.8	2	19	670,657	Minor Collector
	Todd Lane/Cabana Road	Huron Church Line	0.8	2	19	1,706,435	Major Collector	0.8	2	19	2,568,379	Major Collector
Talbot Road	Huron Church Line	St Clair College	0.9	2	19	147,840	Local	0.8	2	19	885,350	Minor Collector
	St Clair College	Cousineau Drive	0.8	2	19	129,349	Local	0.9	2	19	851,084	Minor Collector
	Cousineau Drive	Howard Avenue	0.8	2	19	496,098	Minor Collector	0.9	2	19	212,355	Minor Collector
	Howard Avenue	Highway 3 split	0.8	2	19	3,559,509	Major Collector	0.8	2	19	3,466,485	Major Collector
Ojibway Parkway	EC Row Expressway	GN Booth Drive	0.8	2	19	2,819,502	Major Collector	0.8	2	19	7,399,089	Minor Arterial
	GN Booth Drive	Sandwich Street	0.8	2	19	2,825,328	Major Collector	0.8	2	19	7,397,115	Minor Arterial
	Sandwich Street	Prospect Avenue	0.8	2	19	825,929	Minor Collector	0.8	2	19	825,509	Minor Collector
	North of Prospect Avenue		0.8	2	19	820,995	Minor Collector	0.8	2	19	808,350	Minor Collector
CROSSING ROADS												
Wyandotte Street	West of Huron Church Road		1	1.5	19	530,103	Minor Collector	1	2	19	675,234	Minor Collector
	East of Huron Church Road		1	1.5	19	652,585	Minor Collector	1	2	19	1,977,097	Major Collector
University Avenue	West of Huron Church Road		1	1.5	19	141,998	Local	1	2	19	172,419	Local
	East of Huron Church Road		1	1.5	19	1,699,799	Major Collector	1	2	19	1,888,340	Major Collector
Riverside Drive	West of Huron Church Road		1	1.5	19	366,045	Minor Collector	1	2	19	522,462	Minor Collector
	East of Huron Church Road		1	1.5	19	723,983	Minor Collector	1	2	19	813,946	Minor Collector
AMB Off Ramp	East of Huron Church Road					no data		1	2	19	39,551,747	Major Arterial
AMB On Ramp	East of Huron Church Road		1	2	19	3,184,098	Major Collector				no data	
Patricia Street	AMB	Wyandotte Street	1	1.5	19	2,278,257	Major Collector	1	2	19	4,963,884	Major Collector
College Street	East of Huron Church Road		1	1.5	19	1,848,818	Major Collector	1	2	19	4,577,147	Major Collector
	West of Huron Church Road		1	1.5	19	207,927	Minor Collector	1	2	19	123,987	Local
Girardot Street	East of Huron Church Road		1	1.5	19	118,076	Local	1	2	19	161,870	Local
	West of Huron Church Road		1	1.5	19	469,270	Minor Collector	1	2	19	433,883	Minor Collector
Tecumseh Road	East of Huron Church Road		1	1.5	19	1,368,509	Major Collector	1	2	19	5,544,259	Major Collector
	West of Huron Church Road		1	1.5	19	668,482	Minor Collector	1	2	19	962,615	Minor Collector
Dorchester Street	East of Huron Church Road		1	1.5	19	180,124	Local	1	2	19	216,440	Minor Collector
	West of Huron Church Road		1	1.5	19	339,175	Minor Collector	1	2	19	162,774	Local
Prince Road/Totten Street	East of Huron Church Road		1	1.5	19	233,196	Minor Collector	1	2	19	372,751	Minor Collector
	West of Huron Church Road		1	1.5	19	521,405	Minor Collector	1	2	19	749,337	Minor Collector
Malden Road	East of Huron Church Road		1	1.5	19	170,478	Local	1	2	19	184,144	Local
	West of Huron Church Road		1	1.5	19	5,984,098	Major Collector	1	2	19	12,236,683	Minor Arterial
Industrial Road	East of Huron Church Road		1	1.5	19	573,716	Minor Collector	1	2	19	1,069,511	Major Collector
	West of Huron Church Road		1	1.5	19	1,733,054	Major Collector	1	2	19	6,097,488	Minor Arterial
EC Row Expressway North Ramp Termi	E-N/S Ramp		1	2	19	4,248,046	Major Collector				no data	
	N-W Ramp					no data		1	2	19	116,689	Local
	S-W Ramp		1	2	19	9,113,907	Minor Arterial				no data	
EC Row Expressway South Ramp Termi	W-N/S Ramp					no data		1	2	19	846,675	Minor Collector
	S/N-E Ramp					no data		1	2	19	9,683,406	Minor Arterial
Spring Garden Road	West of Huron Church Road		1	1.5	19	242,551	Minor Collector	1	2	19	432,466	Minor Collector
Labelle Street	East of Huron Church Road		1	1.5	19	400,962	Minor Collector	1	2	19	280,977	Minor Collector
Lambton Street/Grand Marais Road	East of Huron Church Road		1	1.5	19	447,113	Minor Collector	1	2	19	539,088	Minor Collector
	West of Huron Church Road		1	1.5	19	441,195	Minor Collector	1	2	19	300,685	Minor Collector
Pulford Street	East of Huron Church Road		1	1.5	19	319,028	Minor Collector	1	2	19	224,624	Minor Collector
Cabana Road	East of Huron Church Road		1	1.5	19	890,289	Minor Collector	1	2	19	1,057,548	Major Collector
	between Huron Church Road and Highway 401 northbound Ramps		1	1.5	19	567,842	Minor Collector	1	2	19	3,092,112	Major Collector
Todd Lane	between Highway 401 northbound and southbound Ramps		1	1.5	19	334,535	Minor Collector	1	2	19	2,605,766	Major Collector
	West of Highway 401 southbound Ramps		1	1.5	19	1,247,442	Major Collector	1	2	19	1,400,308	Major Collector
Huron Church Line	West of Huron Church Road		1	1.5	19	1,405,818	Major Collector	1	2	19	1,396,342	Major Collector
St Clair College	East of Talbot Road		1	1.5	19	334,584	Minor Collector	1	2	19	1,333,559	Major Collector
Cousineau Drive	East of Talbot Road		1	1.5	19	604,649	Minor Collector	1	2	19	760,775	Minor Collector
	West of Talbot Road		1	1.5	19	226,713	Minor Collector	1	2	19	601,513	Minor Collector
Howard Avenue	East of Talbot Road		1	1.5	19	1,514,091	Major Collector	1	2	19	2,988,725	Major Collector
	between Talbot Road and Highway 401 southbound On Ramp		1	1.5	19	2,474,266	Major Collector	1	2	19	2,295,969	Major Collector
	West of Highway 401 southbound On-Ramp		1	1.5	19	2,764,107	Major Collector	1	2	19	4,542,701	Major Collector
E.C. Row Expressway	East of Huron Church Road		0.8	2	19	15,221,498	Minor Arterial	0.8	2	19	28,171,736	Major Arterial
	At Malden Road		0.8	2	19	14,829,069	Minor Arterial	0.8	2	19	20,989,330	Major Arterial
	West of Matchette Street		0.8	2	19	6,283,330	Minor Arterial	0.8	2	19	4,392,185	Major Collector

* - For consistency, Huron Church Rd/Talbot Rd runs North-South and all crossing roads run East-West

Pavement Section	From	To	LDF	TF	Design Period (years)	ESALs	Class	LDF	TF	Design Period (years)	ESALs	Class
HIGHWAY 401 Ramps												
Highway 3 merge/split												
Highway 401 northbound Off Ramp			1	2	19	12,770,680	Minor Arterial				no data	
Highway 401 northbound On Ramp			1	2	19	2,727,622	Major Collector				no data	
Highway 401 southbound Off Ramp						no data		1	2	19	2,670,979	Major Collector
Highway 401 southbound On Ramp						no data		1	2	19	11,911,133	Minor Arterial
Howard Avenue												
Highway 401 southbound Off Ramp			1	2	10	no data		1	2	19	610,847	Minor Collector
At Todd Lane/Cabana Road												
Highway 401 northbound Off Ramp			1	1.5	19	931,020	Minor Collector				no data	
Highway 401 northbound On Ramp			1	1.5	19	1,395,145	Major Collector				no data	
Highway 401 southbound Off Ramp						no data		1	2	19	3,437,058	Major Collector
Highway 401 southbound On Ramp						no data		1	2	19	464,977	Minor Collector
At Huron Church Road												
Highway 401 northbound Off Ramp			1	2	19	5,139,048	Major Collector				no data	
Highway 401 southbound On Ramp						no data		1	2	19	22,372,608	Major Arterial
At Malden Road												
Highway 401 northbound On Ramp			1	1.5	19	5,101,197	Major Collector				no data	
Highway 401 southbound Off Ramp						no data		1	2	19	6,540,500	Minor Arterial
EC Row Expressway to Highway 401												
Highway 401 southbound Off Ramp						no data		1	2	19	19,232,457	Minor Arterial
Ojibway Parkway Interchange												
Highway 401 northbound Off Ramp			1	2	19	6,400,766	Minor Arterial				no data	
Highway 401 northbound On Ramp			1	2	19	4,666,462	Major Collector				no data	
Highway 401 southbound Off Ramp						no data		1	2	19	389,928	Minor Collector
Highway 401 southbound On Ramp						no data		1	2	19	6,144,891	Minor Arterial
EC Row Expressway Interchange												
Highway 401 northbound On Ramp			1	2	19	14,184,840	Minor Arterial				no data	
Highway 401 Mainline	Souht of Highway 3 merge/split	Highway 3/Highway 401 northbound Off Ramp	0.6	2.5	21	80,126,151	Freeway				no data	
	Highway 3/Highway 401 northbound Off Ramp	Highway 3/Highway 401 northbound On Ramp	0.8	2.5	21	70,304,443	Freeway				no data	
	Highway 3/Highway 401 northbound On Ramp	Todd Lane/Highway 401 northbound Off Ramp	0.6	2.5	21	68,820,150	Freeway				no data	
	Todd Lane/Highway 401 northbound Off Ramp	Todd Lane/Highway 401 northbound On Ramp	0.7	2.5	21	55,643,124	Freeway				no data	
	Todd Lane/Highway 401 northbound On Ramp	Huron Church Road/Highway 401 northbound On Ramp	0.6	2.5	21	62,806,125	Freeway				no data	
	Huron Church Road/Highway 401 northbound On Ramp	Malden Road/Highway 401 northbound On Ramp	0.8	2.5	21	85,002,759	Freeway				no data	
	Malden Road/Highway 401 northbound On Ramp	Ojibway Parkway/Highway 401 northbound Off Ramp	0.7	2.5	21	80,974,510	Freeway				no data	
	Ojibway Parkway/Highway 401 northbound Off Ramp	Ojibway Parkway/Highway 401 northbound OnRamp	0.8	2.5	21	85,533,717	Freeway				no data	
	Ojibway Parkway/Highway 401 northbound OnRamp	EC Row Expressway to Highway 401 northbound On Ramp	0.8	2.5	21	90,719,615	Freeway				no data	
	EC Row Expressway to Highway 401 northbound On Ramp	Canadian Plaza	0.8	2.5	21	115,087,677	Freeway				no data	
	Canadian Plaza	Ojibway Parkway/Highway 401 southbound Off Ramp				no data		0.6	2	21	111,125,858	Freeway
	Ojibway Parkway/Highway 401 southbound Off Ramp	Ojibway Parkway/Highway 401 southbound On Ramp				no data		0.7	2	21	121,718,450	Freeway
	Ojibway Parkway/Highway 401 southbound On Ramp	Highway 401 to EC Row Expressway southbound Off Ramp				no data		0.6	2	21	120,496,770	Freeway
	Highway 401 to EC Row Expressway southbound Off Ramp	Malden Road/Highway 401 southbound Off Ramp				no data		0.6	2	21	127,433,660	Freeway
	Malden Road/Highway 401 southbound Off Ramp	Huron Church Road/Highway 401 southbound On Ramp				no data		0.7	2	21	126,128,355	Freeway
	Huron Church Road/Highway 401 southbound On Ramp	Todd Lane/Highway 401 southbound Off Ramp				no data		0.6	2	21	102,468,073	Freeway
	Todd Lane/Highway 401 southbound Off Ramp	Todd Lane/Highway 401 southbound On Ramp				no data		0.7	2	21	87,645,310	Freeway
	Todd Lane/Highway 401 southbound On Ramp	Howard Avenue/Highway 401 southbound Off Ramp				no data		0.6	2	21	91,767,179	Freeway
	Howard Avenue/Highway 401 southbound Off Ramp	Highway 3/Highway 401 southbound Off Ramp				no data		0.6	2	21	89,658,099	Freeway
	Highway 3/Highway 401 southbound Off Ramp	Highway 3/Highway 401 southbound On Ramp				no data		0.7	2	21	105,408,694	Freeway
	Highway 3/Highway 401 southbound On Ramp	South of Highway 3 merge/split				no data		0.6	2	21	98,468,761	Freeway
Malden Road	Chappus Street	Highway 401 South Ramp	1	1.5	19	3,414,229	Major Collector	1	2	19	5,984,036	Major Collector
	Highway 401 South Ramp	Highway 401 North Ramp	1	1.5	19	3,834,331	Major Collector	1	2	19	3,712,641	Major Collector
	North of Highway 401 North Ramp		1	1.5	19	2,593,504	Major Collector	1	2	19	4,165,552	Major Collector
Matchette Street	Chappus Street	EC Row Expressway South Ramp	1	1.5	19	876,197	Minor Collector	1	2	19	1,280,529	Major Collector
	EC Row Expressway South Ramp	EC Row Expressway North Ramp	1	1.5	19	247,166	Minor Collector	1	2	19	1,420,411	Major Collector
	EC Row Expressway North Ramp	Carmichael	1	1.5	19	504,389	Minor Collector	1	2	19	423,185	Minor Collector

Prepared By: MEB
Reviewed By: PRB

TABLE II-E

SUMMARY OF ESAL CALCULATIONS - FLEXIBLE PAVEMENTS - ALTERNATIVE 3

Detroit River International Crossing
Windsor, Ontario

LOCATION			Northbound/Westbound					Southbound/Eastbound				
Pavement Section	From	To	LDF	TF	Design Period (years)	ESALs	Class	LDF	TF	Design Period (years)	ESALs	Class
Huron Church Road	Riverside Drive	University Avenue	0.9	2	19	2,328,597	Major Collector	0.9	2	19	1,618,731	Major Collector
	University Avenue	Wyandotte Street	0.9	2	19	1,729,616	Major Collector	0.9	2	19	2,017,711	Major Collector
	Wyandotte Street	AMB Off Ramp	0.9	2	19	275,654	Minor Collector	0.9	2	19	398,955	Minor Collector
	AMB Off Ramp	College Street	0.8	2	19	35,279,857	Major Arterial	0.9	2	19	1,251,798	Major Collector
	College Street	Girardot Street	0.8	2	19	8,704,745	Minor Arterial	0.8	2	19	38,391,872	Major Arterial
	Girardot Street	Tecumseh Road	0.8	2	19	9,764,254	Minor Arterial	0.8	2	19	39,018,493	Major Arterial
	Tecumseh Road	Dorchester Street	0.8	2	19	11,448,950	Minor Arterial	0.8	2	19	37,665,820	Major Arterial
	Dorchester Street	Prince Road/Totten Street	0.8	2	19	10,305,392	Minor Arterial	0.8	2	19	34,775,501	Major Arterial
	Prince Road/Totten Street	Malden Road	0.8	2	19	11,452,792	Minor Arterial	0.8	2	19	33,566,216	Major Arterial
	Malden Road	Industrial Road	0.8	2	19	6,886,568	Minor Arterial	0.8	2	19	30,400,608	Major Arterial
	Industrial Road	EC Row Expressway North Ramp Terminal	0.8	2	19	7,443,207	Minor Arterial	0.8	2	19	30,790,999	Major Arterial
	EC Row Expressway North Ramp Terminal	EC Row Expressway South Ramp Terminal	0.8	2	19	5,105,886	Major Collector	0.8	2	19	28,727,049	Major Arterial
	EC Row Expressway South Ramp Terminal	Spring Gdn Rd/Labelle St	0.8	2	19	5,486,062	Major Collector	0.8	2	19	21,792,751	Major Arterial
	Spring Gdn Rd/Labelle St	Lambton Street/Grand Marais Road	0.8	2	19	3,903,420	Major Collector	0.8	2	19	2,127,447	Major Collector
	Lambton Street/Grand Marais Road	Pulford Street	0.8	2	19	1,986,740	Major Collector	0.8	2	19	1,838,451	Major Collector
	Pulford Street	Todd Lane/Cabana Road	0.8	2	19	2,211,713	Major Collector	0.8	2	19	2,041,324	Major Collector
	Todd Lane/Cabana Road	Huron Church Line	0.8	2	19	1,333,686	Major Collector	0.8	2	19	1,145,767	Major Collector
Talbot Road	Huron Church Line	St Clair College	0.9	2	19	914,123	Minor Collector	0.8	2	19	1,004,054	Major Collector
	St Clair College	Cousineau Drive	0.8	2	19	1,401,753	Major Collector	0.8	2	19	2,987,434	Major Collector
	Cousineau Drive	Howard Avenue	0.9	2	19	1,234,811	Major Collector	0.9	2	19	3,516,522	Major Collector
	South of Howard Avenue		0.8	2	19	3,294,380	Major Collector	0.8	2	19	3,057,641	Major Collector
Ojibway Parkway	EC Row Expressway	GN Booth Drive	0.8	2	19	1,556,798	Major Collector	0.8	2	19	7,368,173	Minor Arterial
	GN Booth Drive	Sandwich Street	0.8	2	19	1,547,381	Major Collector	0.8	2	19	7,334,745	Minor Arterial
	Sandwich Street	Prospect Avenue	0.8	2	19	812,617	Minor Collector	0.8	2	19	819,486	Minor Collector
	North of Prospect Avenue		0.8	2	19	807,717	Minor Collector	0.8	2	19	803,394	Minor Collector
CROSSING ROADS												
Wyandotte Street	West of Huron Church Road		1	1.5	19	530,606	Minor Collector	1	1.5	19	507,929	Minor Collector
	East of Huron Church Road		1	1.5	19	654,254	Minor Collector	1	1.5	19	1,510,134	Major Collector
University Avenue	West of Huron Church Road		1	1.5	19	143,041	Local	1	1.5	19	128,492	Local
	East of Huron Church Road		1	1.5	19	1,680,030	Major Collector	1	1.5	19	1,438,770	Major Collector
Riverside Drive	West of Huron Church Road		1	1.5	19	371,873	Minor Collector	1	1.5	19	389,075	Minor Collector
	East of Huron Church Road		1	1.5	19	726,183	Minor Collector	1	1.5	19	602,898	Minor Collector
AMB Off Ramp	East of Huron Church Road					no data		1	2	19	41,509,362	Major Arterial
AMB On Ramp	East of Huron Church Road		1	1.5	19	2,383,756	Major Collector				no data	
Patricia Street	AMB	Wyandotte Street	1	1.5	19	2,314,747	Major Collector	1	1.5	19	3,813,143	Major Collector
College Street	East of Huron Church Road		1	1.5	19	1,730,252	Major Collector	1	1.5	19	3,444,909	Major Collector
	West of Huron Church Road		1	1.5	19	212,177	Minor Collector	1	1.5	19	94,131	Local
Girardot Street	East of Huron Church Road		1	1.5	19	119,024	Local	1	1.5	19	120,186	Local
	West of Huron Church Road		1	1.5	19	430,638	Minor Collector	1	1.5	19	268,101	Minor Collector
Tecumseh Road	East of Huron Church Road		1	1.5	19	1,434,953	Major Collector	1	1.5	19	3,836,233	Major Collector
	West of Huron Church Road		1	1.5	19	683,536	Minor Collector	1	1.5	19	729,238	Minor Collector
Dorchester Street	East of Huron Church Road		1	1.5	19	134,876	Local	1	1.5	19	87,706	Local
	West of Huron Church Road		1	1.5	19	345,078	Minor Collector	1	1.5	19	194,350	Local
Prince Road/Totten Street	East of Huron Church Road		1	1.5	19	227,839	Minor Collector	1	1.5	19	270,881	Minor Collector
	West of Huron Church Road		1	1.5	19	493,332	Minor Collector	1	1.5	19	506,370	Minor Collector
Malden Road	East of Huron Church Road		1	1.5	19	167,983	Local	1	1.5	19	134,147	Local
	West of Huron Church Road		1	1.5	19	5,826,132	Major Collector	1	2	19	12,200,427	Minor Arterial
Industrial Road	East of Huron Church Road		1	1.5	19	591,230	Minor Collector	1	1.5	19	848,410	Minor Collector
	West of Huron Church Road		1	1.5	19	1,637,563	Major Collector	1	2	19	5,816,136	Major Collector
EC Row Expressway North Ramp Terminal	East of Huron Church Road (E-N/S Off Ramp & S-W On Ramp)		1	1.5	19	3,228,505	Major Collector	1	1.5	19	52,467	Local
	West of Huron Church Road (N-W On Ramp)		1	1.5	19	3,357,780	Major Collector				no data	
EC Row Expressway South Ramp Terminal	East of Huron Church Road (S-E On Ramp)					no data		1	1.5	19	1,006,600	Major Collector
	West of Huron Church Road (N-E On Ramp & W-N/S Off Ramp)		1	1.5	19	6,688,163	Minor Arterial	1	1.5	19	790,823	Minor Collector
Spring Garden Road/Labelle Street	East of Huron Church Road		1	1.5	19	379,314	Minor Collector	1	1.5	19	315,403	Minor Collector
	West of Huron Church Road		1	1.5	19	412,103	Minor Collector	1	1.5	19	443,445	Minor Collector
Lambton Street/Grand Marais Road	East of Huron Church Road		1	1.5	19	509,620	Minor Collector	1	1.5	19	408,482	Minor Collector
	West of Huron Church Road		1	1.5	19	393,240	Minor Collector	1	1.5	19	544,797	Minor Collector
Pulford Street	East of Huron Church Road		1	1.5	19	229,782	Minor Collector	1	1.5	19	207,050	Minor Collector
Todd Lane/Cabana Road	East of Huron Church Road		1	1.5	19	1,069,749	Major Collector	1	1.5	19	908,393	Minor Collector
	West of Huron Church Road		1	1.5	19	1,353,508	Major Collector	1	1.5	19	1,085,497	Major Collector
Huron Church Line	West of Huron Church Road		1	1.5	19	1,183,798	Major Collector	1	1.5	19	1,067,231	Major Collector
St Clair College	East of Talbot Road		1	1.5	19	330,807	Minor Collector	1	1.5	19	979,085	Minor Collector
Cousineau Drive	East of Talbot Road		1	1.5	19	855,836	Minor Collector	1	1.5	19	578,911	Minor Collector
	West of Talbot Road		1	1.5	19	1,229,340	Major Collector	1	1.5	19	985,934	Minor Collector
Howard Avenue	East of Talbot Road		1	1.5	19	1,413,123	Major Collector	1	1.5	19	2,022,545	Major Collector
	between Talbot Road and Highway 401 southbound On Ramp		1	1.5	19	2,075,442	Major Collector	1	1.5	19	1,696,281	Major Collector
	West of Highway 401 southbound On Ramp		1	1.5	19	2,247,653	Major Collector	1	1.5	19	3,372,469	Major Collector
E.C. Row Expressway	East of Huron Church Road		0.8	1.5	19	11,464,746	Minor Arterial	0.8	2	19	23,959,134	Major Arterial
	At Malden Road		0.8	1.5	19	10,907,982	Minor Arterial	0.8	2	19	21,440,297	Major Arterial
	West of Matchette Street		0.8	1.5	19	3,923,355	Major Collector	0.8	2	19	4,495,833	Major Collector

* - For consistency, Huron Church Rd/Talbot Rd runs North-South and all crossing roads run East-West

HIGHWAY 401 Ramps												
Highway 3 merge/split												
Highway 401 northbound Off Ramp			1	2	19	11,009,422	Minor Arterial				no data	
Highway 401 northbound On Ramp			1	2	19	2,489,010	Major Collector				no data	
Highway 401 southbound Off Ramp						no data		1	2	19	2,626,208	Major Collector
Highway 401 southbound On Ramp						no data		1	2	19	10,435,344	Minor Arterial
At St. Clair College												
Highway 401 northbound Off Ramp			1	1.5	19	583,831	Minor Collector				no data	
Highway 401 northbound On Ramp			1	1.5	19	383,897	Minor Collector				no data	
Highway 401 southbound Off Ramp						no data		1	1.5	19	2,375,643	Major Collector
Highway 401 southbound On Ramp						no data		1	1.5	19	264,876	Minor Collector
At Huron Church Road												
Highway 401 northbound Off Ramp			1	2	19	4,181,452	Major Collector				no data	
Highway 401 southbound On Ramp						no data		1	2	19	19,946,487	Minor Arterial
Malden Road Interchange												
Highway 401 On Ramp			1	1.5	19	5,897,729	Major Collector				no data	
Highway 401 Off Ramp						no data		1	1.5	19	5,462,529	Major Collector
EC Row Expressway Interchange												
Highway 401 southbound Off Ramp						no data		1	1.5	19	14,486,209	Minor Arterial
Ojibway Parkway Interchange												
Highway 401 northbound Off Ramp			1	2	19	6,742,411	Minor Arterial				no data	
Highway 401 northbound On Ramp			1	2	19	4,812,914	Major Collector				no data	
Highway 401 southbound Off Ramp						no data		1	2	19	1,216,567	Major Collector
Highway 401 southbound On Ramp						no data		1	2	19	7,514,146	Minor Arterial
EC Row Expressway Interchange												
Highway 401 northbound On Ramp			1	2	19	13,299,703	Minor Arterial				no data	
Highway 401 Mainline	South of Highway 3 merge/split	Highway 3/Highway 401 northbound Off Ramp	0.6	2.5	21	78,361,050	Freeway				no data	
	Highway 3/Highway 401 northbound Off Ramp	Highway 3/Highway 401 northbound On Ramp	0.7	2.5	21	77,699,758	Freeway				no data	
	Highway 3/Highway 401 northbound On Ramp	St. Clair College/Highway 401 northbound Off Ramp	0.6	2.5	21	77,786,735	Freeway				no data	
	St. Clair College/Highway 401 northbound Off Ramp	St. Clair College/Highway 401 northbound On Ramp	0.7	2.5	21	68,751,045	Freeway				no data	
	St. Clair College/Highway 401 northbound On Ramp	Huron Church Road/Highway 401 northbound Off Ramp	0.6	2.5	21	62,901,295	Freeway				no data	
	Huron Church Road/Highway 401 northbound Off Ramp	Malden Road/Highway 401 northbound On Ramp	0.8	2.5	21	87,954,907	Freeway				no data	
	Malden Road/Highway 401 northbound On Ramp	Ojibway Parkway/Highway 401 northbound Off Ramp	0.7	2.5	21	84,638,183	Freeway				no data	
	Ojibway Parkway/Highway 401 northbound Off Ramp	Ojibway Parkway/Highway 401 northbound OnRamp	0.8	2.5	21	89,356,520	Freeway				no data	
	Ojibway Parkway/Highway 401 northbound OnRamp	EC Row Expressway to Highway 401 northbound On Ramp	0.8	2.5	21	94,702,193	Freeway				no data	
	EC Row Expressway to Highway 401 northbound On Ramp	Canadian Plaza	0.8	2.5	21	115,940,523	Freeway				no data	
	Canadian Plaza	Ojibway Parkway/Highway 401 southbound Off Ramp				no data		0.6	2.5	21	139,974,819	Freeway
	Ojibway Parkway/Highway 401 southbound Off Ramp	Ojibway Parkway/Highway 401 southbound On Ramp				no data		0.7	2.5	21	153,302,218	Freeway
	Ojibway Parkway/Highway 401 southbound On Ramp	Highway 401 to EC Row Expressway southbound Off Ramp				no data		0.6	2.5	21	151,681,933	Freeway
	Highway 401 to EC Row Expressway southbound Off Ramp	Malden Road/Highway 401 southbound Off Ramp				no data		0.6	2.5	21	160,763,007	Freeway
	Malden Road/Highway 401 southbound Off Ramp	Huron Church Road/Highway 401 southbound On Ramp				no data		0.7	2.5	21	157,417,133	Freeway
	Huron Church Road/Highway 401 southbound On Ramp	St Clair College/Highway 401 southbound Off Ramp				no data		0.6	2.5	21	128,453,501	Freeway
	St Clair College/Highway 401 southbound Off Ramp	St Clair College/Highway 401 southbound On Ramp				no data		0.6	2.5	21	113,177,636	Freeway
	St Clair College/Highway 401 southbound On Ramp	Highway 3/Highway 401 southbound Off Ramp				no data		0.6	2.5	21	120,298,347	Freeway
	Highway 3/Highway 401 southbound Off Ramp	Highway 3/Highway 401 southbound On Ramp				no data		0.7	2.5	21	130,486,398	Freeway
	Highway 3/Highway 401 southbound On Ramp	South of Highway 3 merge/split				no data		0.6	2.5	21	120,558,255	Freeway
Malden Road	Chappus Street	Highway 401 South Ramp	1	1.5	19	3,522,848	Major Collector	1	1.5	19	4,356,022	Major Collector
	Highway 401 South Ramp	Highway 401 North Ramp	1	1.5	19	3,958,732	Major Collector	1	1.5	19	2,643,558	Major Collector
	North of Highway 401 North Ramp		1	1.5	19	2,660,394	Major Collector	1	1.5	19	2,984,519	Major Collector
Matchette Street	Chappus Street	EC Row Expressway South Ramp	1	1.5	19	907,174	Minor Collector	1	1.5	19	822,976	Minor Collector
	EC Row Expressway South Ramp	EC Row Expressway North Ramp	1	1.5	19	285,526	Minor Collector	1	1.5	19	996,800	Minor Collector
	EC Row Expressway North Ramp	Carmichael	1	1.5	19	656,721	Minor Collector	1	1.5	19	374,039	Minor Collector
Montgomery Drive	Surrey Drive	Talbot Road	1	1.5	19	11,748	Local	1	1.5	19	53,927	Local
Surrey Drive	Montgomery Drive	Talbot Road	1	1.5	19	8,891	Local	1	1.5	19	44,214	Local
Grosvenor Road	Montgomery Drive	Talbot Road	1	1.5	19	15,831	Local	1	1.5	19	46,304	Local

Prepared By: MEB
Reviewed By: PRB

TABLE II-F

SUMMARY OF ESAL CALCULATIONS - FLEXIBLE PAVEMENTS - PARKWAY ALTERNATIVE

Detroit River International Crossing
Windsor, Ontario

LOCATION			Northbound/Westbound					Southbound/Eastbound				
Pavement Section	From	To	LDF	TF	Design Period (years)	ESALs	Class	LDF	TF	Design Period (years)	ESALs	Class
Huron Church Road	Riverside Drive	University Avenue	0.9	2	19	2,318,723	Major Collector	0.9	2	19	713,289	Minor Collector
	University Avenue	Wyandotte Street	0.9	2	19	1,534,091	Major Collector	0.9	2	19	930,889	Minor Collector
	Wyandotte Street	AMB Off Ramp	0.9	2	19	282,018	Minor Collector	0.9	2	19	210,268	Minor Collector
	AMB Off Ramp	College Street	0.8	2	19	35,745,592	Major Arterial	0.9	2	19	638,637	Minor Collector
	College Street	Girardot Street	0.8	2	19	9,121,152	Minor Arterial	0.8	2	19	18,906,740	Minor Arterial
	Girardot Street	Tecumseh Road	0.8	2	19	10,108,420	Minor Arterial	0.8	2	19	18,446,946	Minor Arterial
	Tecumseh Road	Dorchester Street	0.8	2	19	11,804,328	Minor Arterial	0.8	2	19	18,047,941	Minor Arterial
	Dorchester Street	Prince Road/Totten Street	0.8	2	19	10,422,643	Minor Arterial	0.8	2	19	16,597,770	Minor Arterial
	Prince Road/Totten Street	Malden Road	0.8	2	19	11,709,441	Minor Arterial	0.8	2	19	16,529,379	Minor Arterial
	Malden Road	Industrial Road	0.8	2	19	6,843,950	Minor Arterial	0.8	2	19	15,088,668	Minor Arterial
	Industrial Road	E.C. Row Expressway North Ramp Terminal	0.8	2	19	7,762,430	Minor Arterial	0.8	2	19	15,328,346	Minor Arterial
	E.C. Row Expressway North Ramp Terminal	E.C. Row Expressway South Ramp Terminal	0.8	2	19	4,848,338	Major Collector	0.8	2	19	13,493,316	Minor Arterial
	South of E.C. Row Expressway South Ramp Terminal		0.8	2	19	6,727,035	Minor Arterial	0.8	2	19	10,202,232	Minor Arterial
South Service Road	North of Bethlehem Avenue							0.8	2	19	9,769,327	Minor Arterial
	Bethlehem Avenue	Grand Marais Road						0.9	2	19	860,069	Minor Collector
North Service Road	North of Labelle Street		0.8	2	19	5,632,512	Major Collector					
	Labelle Street	Grand Marais Road Ramp	0.8	2	19	3,101,527	Major Collector					
Huron Church Road	Grand Marais Road	Pulford Street	0.9	2	19	112,172	Local	0.9	2	19	131,420	Local
	Pulford Street	Todd Lane/Cabana Road	0.9	2	19	161,232	Local	0.9	2	19	186,391	Local
	Todd Lane/Cabana Road	Huron Church Line	0.8	2	19	2,142,739	Major Collector	0.8	2	19	520,943	Minor Collector
Talbot Road	Huron Church Line	St Clair College	0.8	2	19	1,023,942	Major Collector	0.8	2	19	362,141	Minor Collector
	St Clair College	Cousineau Drive	0.8	2	19	913,912	Minor Collector	0.8	2	19	1,473,280	Major Collector
	Cousineau Drive	Howard Avenue	0.8	2	19	1,412,327	Major Collector	0.9	2	19	872,827	Minor Collector
	Howard Avenue	Laurier Extension	0.8	2	19	2,810,705	Major Collector	0.8	2	19	1,345,622	Major Collector
	South of Laurier Extension		0.8	2	19	2,924,554	Major Collector	0.8	2	19	1,408,144	Major Collector
Ojibway Parkway	E.C. Row Expressway	GN Booth Drive	0.8	2	19	2,822,038	Major Collector	0.8	2	19	3,598,386	Major Collector
	GN Booth Drive	Sandwich Street	0.8	2	19	2,827,820	Major Collector	0.8	2	19	3,629,630	Major Collector
	Sandwich Street	Prospect Avenue	0.8	2	19	827,232	Minor Collector	0.8	2	19	446,284	Minor Collector
	North of Prospect Avenue		0.8	2	19	822,281	Minor Collector	0.8	2	19	436,634	Minor Collector
Wyandotte Street	West of Huron Church Road		0.9	1.5	19	477,276	Minor Collector	0.9	1.5	19	239,671	Minor Collector
	East of Huron Church Road		0.9	1.5	19	448,459	Minor Collector	0.9	1.5	19	684,670	Minor Collector
University Avenue	West of Huron Church Road		0.9	1.5	19	128,014	Local	0.9	1.5	19	60,705	Local
	East of Huron Church Road		0.9	1.5	19	1,509,376	Major Collector	0.9	1.5	19	553,937	Minor Collector
Riverside Drive	West of Huron Church Road		0.9	1.5	19	330,386	Minor Collector	0.9	1.5	19	175,939	Local
	East of Huron Church Road		0.9	1.5	19	653,228	Minor Collector	0.9	1.5	19	282,171	Minor Collector
AMB Off Ramp	East of Huron Church Road							0.8	1.5	19	16,748,644	Minor Arterial
AMB On Ramp	East of Huron Church Road		0.9	1.5	19	2,146,279	Major Collector					
Patricia Street	AMB	Wyandotte Street	0.9	1.5	19	2,088,843	Major Collector	0.9	1.5	19	1,680,859	Major Collector
College Street	East of Huron Church Road		0.9	1.5	19	1,557,982	Major Collector	0.9	1.5	19	1,444,258	Major Collector
	West of Huron Church Road		0.9	1.5	19	192,727	Local	0.9	1.5	19	43,408	Local
Girardot Street	East of Huron Church Road		0.9	1.5	19	107,659	Local	0.9	1.5	19	56,860	Local
	West of Huron Church Road		0.9	1.5	19	387,800	Minor Collector	0.9	1.5	19	123,807	Local
Tecumseh Road	East of Huron Church Road		0.9	1.5	19	1,288,331	Major Collector	0.9	1.5	19	1,626,895	Major Collector
	West of Huron Church Road		0.9	1.5	19	614,104	Minor Collector	0.9	1.5	19	347,594	Minor Collector
Dorchester Street	East of Huron Church Road		0.9	1.5	19	161,189	Local	0.9	1.5	19	76,121	Local
	West of Huron Church Road		0.9	1.5	19	246,056	Minor Collector	0.9	1.5	19	49,582	Local
Prince Road/Totten Street	East of Huron Church Road		0.9	1.5	19	205,755	Minor Collector	0.9	1.5	19	129,573	Local
	West of Huron Church Road		0.9	1.5	19	489,072	Minor Collector	0.9	1.5	19	264,150	Minor Collector
Malden Road	East of Huron Church Road		0.9	1.5	19	150,960	Local	0.9	1.5	19	61,202	Local
	West of Huron Church Road		0.8	1.5	19	4,982,570	Major Collector	0.8	1.5	19	4,670,576	Major Collector
Industrial Road	East of Huron Church Road		0.9	1.5	19	512,199	Minor Collector	0.9	1.5	19	372,001	Minor Collector
	West of Huron Church Road		0.9	1.5	19	1,572,632	Major Collector	0.9	1.5	19	1,944,892	Major Collector
E.C. Row Expressway North Ramp Terminal	East of Huron Church Road		0.8	1.5	19	2,525,753	Major Collector	0.9	1.5	19	101,270	Local
	West of Huron Church Road		0.9	1.5	19	1,485,499	Major Collector					
E.C. Row Expressway South Ramp Terminal	East of Huron Church Road							0.8	1.5	19	371,375	Minor Collector
	West of Huron Church Road		0.8	1.5	19	5,843,480	Major Collector	0.9	1.5	19	408,850	Minor Collector
Labelle Street/Bethlehem Avenue	East of North Service Road		0.9	1.5	19	290,703	Minor Collector	0.9	1.5	19	114,353	Local
	Between North and South Service Road		0.9	1.5	19	126,329	Local	0.9	1.5	19	166,724	Local
	West of South Service Road		0.9	1.5	19	167,716	Local	0.9	1.5	19	187,636	Local
Grand Marais Road/Lambton Street	East of Huron Church Road		0.9	1.5	19	412,436	Minor Collector	0.9	1.5	19	169,153	Local
	West of Huron Church Road		0.9	1.5	19	309,703	Minor Collector	0.9	1.5	19	91,161	Local
Pulford Street	East of Huron Church Road		0.9	1.5	19	245,871	Minor Collector	0.9	1.5	19	90,889	Local
Todd Lane/Cabana Road	East of Huron Church Road		0.8	1.5	19	791,191	Minor Collector	0.8	1.5	19	322,956	Minor Collector
	Between Huron Church Road and Highway 401 Off Ramp		0.8	1.5	19	827,363	Minor Collector	0.8	1.5	19	612,609	Minor Collector
	West of Highway 401 Off Ramp		0.8	1.5	19	980,455	Minor Collector	0.8	1.5	19	486,926	Minor Collector
Huron Church Line	West of Huron Church Road		0.8	1.5	19	864,788	Minor Collector	0.9	1.5	19	523,823	Minor Collector
St Clair College	East of Talbot Road		0.9	1.5	19	301,410	Minor Collector	0.8	1.5	19	414,509	Minor Collector
Cousineau Drive	East of Talbot Road		0.9	1.5	19	585,613	Minor Collector	0.9	1.5	19	279,803	Minor Collector
	West of Talbot Road		0.8	1.5	19	647,287	Minor Collector	0.9	1.5	19	168,521	Local
Howard Avenue	East of Talbot Road		0.8	1.5	19	1,194,128	Major Collector	0.8	1.5	19	712,129	Minor Collector
	West of Talbot Road		0.8	1.5	19	1,327,646	Major Collector	0.8	1.5	19	849,010	Minor Collector
Laurier Extension	West of Talbot Road/Highway 3		0.9	1.5	19	1,439,008	Major Collector	0.9	1.5	19	777,904	Minor Collector
E.C. Row Expressway	West of Ojibway Parkway		0.8	1.5	19	5,114,156	Major Collector	0.8	1.5	19	3,490,790	Major Collector
	West of Broadway Street		0.8	1.5	19	3,134,123	Major Collector	0.8	1.5	19	2,787,933	Major Collector
	East of Huron Church Road		0.8	1.5	19	11,412,886	Minor Arterial	0.8	1.5	19	9,899,760	Minor Arterial
	At Malden Road		0.8	1.5	19	11,178,474	Minor Arterial	0.8	1.5	19	7,877,891	Minor Arterial
	West of Matchette Road		0.8	1.5	19	5,164,467	Major Collector	0.8	1.5	19	1,866,920	Major Collector
GN Booth Drive	West of Ojibway Parkway		0.9	1.5	19	64,216	Local	0.9	1.5	19	37,756	Local
Sandwich Street	West of Ojibway Parkway		0.9	1.5	19	1,413,262	Major Collector	0.9	1.5	19	463,196	Minor Collector
Prospect Avenue	West of Ojibway Parkway		0.9	1.5	19	62,413	Local	0.9	1.5	19	22,117	Local
HIGHWAY 401 Ramps												
Highway 3 merge/split												
Highway 401 Northbound Off Ramp			0.8	2	19	12,204,976	Minor Arterial					
Highway 401 Northbound On Ramp			0.8	2	19	1,881,657	Major Collector					
Highway 401 Southbound Off Ramp								0.8	2	19	990,657	Minor Collector
Highway 401 Southbound On Ramp								0.9	2	19	2,608,048	Major Collector
At Howard Avenue												
Highway 401 Northbound On Ramp			0.9	2	19	181,206	Local					
Highway 401 Southbound On Ramp								0.9	2	19	2,044,012	Major Collector
At St. Clair College												
Highway 401 Northbound Off Ramp			0.9	2	19	384,385	Minor Collector					
Highway 401 Southbound Off Ramp								0.9	2	19	414,651	Minor Collector
Highway 401 Southbound On Ramp								0.9	2	19	76,476	Local
At Todd Lane/Cabana Road												
Highway 401 Northbound On Ramp			0.8	2	19	1,593,660	Major Collector					
Highway 401 Southbound Off Ramp								0.8	2	19	549,491	Minor Collector
Highway 401 Southbound On Ramp								0.8	2	19	223,909	Minor Collector
At Huron Church Road												
Highway 401 Northbound Off Ramp			0.8	2	19	3,490,740	Major Collector					
Highway 401 Southbound On Ramp								0.8	2	19	9,522,161	Minor Arterial
At Malden Road												
Highway 401 Northbound On Ramp												
Highway 401 Southbound Off Ramp												
Highway 401 to E.C. Row Expressway												
Highway 401 Southbound Off Ramp								0.8	2	19	7,069,865	Minor Arterial
Ojibway Parkway Interchange												
Highway 401 Northbound Off Ramp			0.9	2	19	2,986,757	Major Collector					
Highway 401 Northbound On Ramp			0.9	2	19	6,741,119	Minor Arterial					
Highway 401 Southbound Off Ramp								0.9	2	19	148,606	Local
Highway 401 Southbound On Ramp								0.8	2	19	2,270,214	Major Collector
E.C. Row Expressway to Highway 401												
Highway 401 Northbound On Ramp			0.9	2	19	12,345,929	Minor Arterial					
Highway 401 Mainline	South of Highway 3 merge/split	Highway 3/Highway 401 Northbound Off Ramp	0.8	2.5	21	107,139,391	Freeway					
	Highway 3/Highway 401 Northbound Off Ramp	Highway 3/Highway 401 Northbound On Ramp	0.8	2.5	21	63,145,928	Freeway					
	Highway 3/Highway 401 Northbound On Ramp	Howard Avenue Northbound On Ramp	0.8	2.5	21	85,361,160	Freeway					
	Howard Avenue Northbound On Ramp	St. Clair College/Highway 401 Northbound Off Ramp	0.8	2.5	21	88,105,923	Freeway					
	St. Clair College/Highway 401 Northbound Off Ramp	Pulford Street/Highway 401 Northbound On Ramp	0.8	2.5	21	64,629,545	Freeway					
	Pulford Street/Highway 401 Northbound On Ramp	Huron Church Road/Highway 401 Northbound Off Ramp	0.8	2.5	21	92,084,546	Freeway					
	Huron Church Road/Highway 401 Northbound Off Ramp	Ojibway Parkway/Highway 401 Northbound Off Ramp	0.8	2.5	21	75,867,359	Freeway					
	Ojibway Parkway/Highway 401 Northbound Off Ramp	Ojibway Parkway/Highway 401 Northbound On Ramp	0.9	2.5	21	89,351,413	Freeway					
	Ojibway Parkway/Highway 401 Northbound On Ramp	E.C. Row Expressway to Highway 401 Northbound On Ramp	0.8	2.5	21	91,287,233	Freeway					
	E.C. Row Expressway to Highway 401 Northbound On Ramp	Canadian Plaza	0.8	2.5	21	115,112,527	Freeway					
	Canadian Plaza	Ojibway Parkway/Highway 401 Southbound Off Ramp						0.8	2.5	21	78,030,128	Freeway
	Ojibway Parkway/Highway 401 Southbound Off Ramp	Ojibway Parkway/Highway 401 Southbound On Ramp						0.8	2.5	21	68,305,680	Freeway
	Ojibway Parkway/Highway 401 Southbound On Ramp	Highway 401 to E.C. Row Expressway Southbound Off Ramp						0.8	2.5	21	68,137,178	Freeway
	Highway 401 to E.C. Row Expressway Southbound Off Ramp	Huron Church Road/Highway 401 Southbound On Ramp						0.8	2.5	21	64,580,755	Freeway
	Huron Church Road/Highway 401 Southbound On Ramp	Pulford Street/Highway 401 Southbound Off Ramp						0.8	2.5	21	71,982,468	Freeway
	Pulford Street/Highway 401 Southbound Off Ramp	Todd Lane/Highway 401 Souhtbound Off Ramp						0.8	2.5	21	51,791,439	Freeway
	Todd Lane/Highway 401 Souhtbound Off Ramp	St. Clair College/Highway 401 Southbound Off Ramp						0.8	2.5	21	52,004,616	Freeway
	St. Clair College/Highway 401 Southbound Off Ramp	St. Clair College/Highway 401 Southbound On Ramp						0.8	2.5	21	37,274,895	Freeway
	St. Clair College/Highway 401 Southbound On Ramp	Howard Avenue Southbound On Ramp						0.8	2.5	21	67,516,141	Freeway
	Howard Avenue Southbound On Ramp	Highway 3/Highway 401 Southbound Off Ramp						0.8	2.5	21	81,805,366	Freeway
	Highway 3/Highway 401 Southbound Off Ramp	Highway 3/Highway 401 Southbound On Ramp						0.8	2.5	21	54,621,274	Freeway
	Highway 3/Highway 401 Southbound On Ramp	South of Highway 3 merge/split						0.8	2.5	21	67,500,893	Freeway
Malden Road	Chappus Street	Highway 401 South Ramp	0.8	1.5	19	2,889,202	Major Collector	0.8	1.5	19	2,057,862	Major Collector
	Highway 401 South Ramp	Highway 401 North Ramp	0.8	1.5	19	3,228,097	Major Collector	0.8	1.5	19	1,357,099	Major Collector
	North of Highway 401 North Ramp		0.9	1.5	19	2,504,917	Major Collector	0.8	1.5	19	1,495,715	Major Collector
Matchette Road	Chappus Street	E.C. Row Expressway South Ramp	0.8	1.5	19	759,312	Minor Collector	0.8	1.5	19	376,689	Minor Collector
	E.C. Row Expressway South Ramp	E.C. Row Expressway North Ramp	0.9	1.5	19	246,382	Minor Collector	0.8	1.5	19	418,801	Minor Collector
	E.C. Row Expressway North Ramp	Carmichael Street	0.9	1.5	19	486,522	Minor Collector	0.9	1.5	19	159,441	Local
Highway 3 merge/split												
Highway 401 Northbound Off Ramp (to Highway 3)			0.8	1.5	19	5,611,520	Major Collector					
Highway 401 Northbound Off Ramp (to Laurier split)			0.9	1.5	19	3,984,988	Major Collector					

Prepared By: MEB
Reviewed By: PRB

TABLE III-A

SUMMARY OF ESAL CALCULATIONS - RIGID PAVEMENTS - ALTERNATIVE 1A

Detroit River International Crossing
Windsor, Ontario

LOCATION			Northbound/Westbound					Southbound/Eastbound				
Pavement Section	From	To	LDF	TF	Design Period (years)	ESALs	Class	LDF	TF	Design Period (years)	ESALs	Class
Huron Church Road	Riverside Drive	University Avenue	0.9	2	25	3,117,453	Local	0.9	2	25	2,254,132	Local
	University Avenue	Wyandotte Street	0.9	2	25	2,399,654	Local	0.9	2	25	2,779,561	Local
	Wyandotte Street	AMB Off Ramp	0.9	2	25	359,239	Local	0.9	2	25	521,038	Local
	AMB Off Ramp	College	0.8	2	25	48,079,092	Major Collector	0.9	2	25	1,687,231	Local
	College Street	Girardot Street	0.8	2	25	12,194,775	Minor Collector	0.8	2	25	52,067,728	Minor Arterial
	Girardot Street	Tecumseh Road	0.8	2	25	13,506,429	Minor Collector	0.8	2	25	50,846,605	Minor Arterial
	Tecumseh Road	Dorchester Street	0.8	2	25	15,697,773	Minor Collector	0.8	2	25	48,774,322	Major Collector
	Dorchester Street	Prince Road/Totten Street	0.8	2	25	13,739,260	Minor Collector	0.8	2	25	44,471,810	Major Collector
	Prince Road/Totten Street	Malden Road	0.8	2	25	15,457,424	Minor Collector	0.8	2	25	44,288,711	Major Collector
	Malden Road	Industrial Road	0.8	2	25	9,140,266	Local	0.8	2	25	42,081,106	Major Collector
	Industrial Rd	EC Row North Ramp Terminal	0.8	2	25	10,382,904	Minor Collector	0.8	2	25	43,096,526	Major Collector
	EC Row North Ramp Terminal	EC Row South Ramp Terminal	0.8	2	25	6,864,154	Local	0.8	2	25	41,905,372	Major Collector
	South of EC Row South Ramp Terminal		0.8	2	25	9,661,319	Local	0.8	2	25	32,686,882	Major Collector
South Service Road	North of Lambton Street					no data		1	2	25	3,361,831	Local
	Lambton Street	Todd Lane/Cabana Road				no data		1	2	25	2,565,983	Local
	Todd Lane/Cabana Road	St Clair College				no data		1	2	25	1,594,062	Local
	St Clair College	Cousineau Drive				no data		1	2	25	3,848,588	Local
	Cousineau Drive	Howard Avenue				no data		1	2	25	3,702,725	Local
	East of Howard Avenue					no data		1	2	25	4,742,195	Local
North Service Road	North of Labelle Street		1	2	25	10,189,391	Minor Collector				no data	
	Labelle Street	Grand Marais Road Ramp	1	2	25	6,581,372	Local				no data	
	Grand Marais Road Ramp	Pulford Street	1	2	25	3,202,876	Local				no data	
	Pulford Street	Todd Lane/Cabana Road	1	2	25	3,535,629	Local				no data	
	Todd Lane/Cabana Road	St Clair College	1	2	25	1,322,461	Local				no data	
	St Clair College	Cousineau Drive	1	2	25	1,476,198	Local				no data	
	Cousineau Drive	Howard Avenue	1	2	25	3,844,431	Local				no data	
	East of Howard Avenue		1	2	25	5,846,113	Local				no data	
Ojibway Parkway	EC Row Expressway	GN Booth Drive	0.8	2	25	3,764,555	Local	0.8	2	25	9,962,805	Local
	GN Booth Drive	Sandwich Street	0.8	2	25	3,772,856	Local	0.8	2	25	10,007,985	Minor Collector
	Sandwich Street	Prospect Avenue	0.8	2	25	1,084,016	Local	0.8	2	25	1,084,947	Local
	North of Prospect Avenue		0.8	2	25	1,077,681	Local	0.8	2	25	1,062,852	Local
CROSS ROADS												
Wyandotte Street	West of Huron Church Road		1	1.5	25	695,827	Local	1	1.5	25	671,438	Local
	East of Huron Church Road		1	1.5	25	961,158	Local	1	1.5	25	2,036,625	Local
University Avenue	West of Huron Church Road		1	1.5	25	195,894	Local	1	1.5	25	174,293	Local
	East of Huron Church Road		1	1.5	25	2,337,709	Local	1	1.5	25	2,018,393	Local
Riverside Drive	West of Huron Church Road		1	1.5	25	494,289	Local	1	1.5	25	524,764	Local
	E of HuronChurch		1	1.5	25	957,599	Local	1	1.5	25	802,240	Local
AMB Off Ramp	E of HuronChurch					no data		1	1.5	25	42,792,199	Major Collector
AMB On Ramp	E of HuronChurch		1	1.5	25	3,257,588	Local				no data	
Patricia Street	AMB	Wyandotte Street	1	1.5	25	3,114,950	Local	1	1.5	25	5,087,475	Local
College Street	East of Huron Church Road		1	1.5	25	2,267,380	Local	1	1.5	25	4,822,021	Local
	West of Huron Church Road		1	1.5	25	290,017	Local	1	1.5	25	134,678	Local
Girardot Street	East of Huron Church Road		1	1.5	25	156,929	Local	1	1.5	25	159,439	Local
	West of Huron Church Road		1	1.5	25	500,793	Local	1	1.5	25	293,116	Local
Tecumseh Road	East of Huron Church Road		1	1.5	25	1,799,183	Local	1	1.5	25	5,197,008	Local
	West of Huron Church Road		1	1.5	25	903,470	Local	1	1.5	25	985,238	Local
Dorchester Street	East of Huron Church Road		1	1.5	25	235,516	Local	1	1.5	25	216,974	Local
	West of Huron Church Road		1	1.5	25	309,657	Local	1	1.5	25	117,990	Local
Prince Road/Totten Street	East of Huron Church Road		1	1.5	25	305,239	Local	1	1.5	25	370,210	Local
	West of Huron Church Road		1	1.5	25	706,546	Local	1	1.5	25	759,101	Local
Malden Road	East of Huron Church Road		1	1.5	25	230,346	Local	1	1.5	25	189,044	Local
	West of Huron Church Road		1	1.5	25	8,057,424	Local	1	1.5	25	15,390,563	Minor Collector
Industrial Road	East of Huron Church Road		1	1.5	25	809,523	Local	1	1.5	25	1,094,178	Local
	West of Huron Church Road		1	1.5	25	2,386,253	Local	1	1.5	25	6,308,735	Local
E.C. Row Expressway North Ramp Terminal	East of Huron Church Road (W-N/S Off Ramp & N-W On Ramp)		1	1.5	25	4,880,352	Local	1	1.5	25	7,795	Local
	West of Huron Church Road (S-W On Ramp)		1	1.5	25	2,329,183	Local				no data	
E.C. Row Expressway South Ramp Terminal	East of Huron Church Road (N-E On Ramp)					no data		1	1.5	25	2,400,438	Local
	West of Huron Church Road (S-E On Ramp & E-N/S Off Ramp)		1	1.5	25	9,843,128	Local	1	1.5	25	1,174,014	Local
Labelle Street	East of North Service Road		1	1.5	25	283,512	Local	1	1.5	25	105,327	Local
Grand Marais Road Ramp	East of North Service Road		1	1.5	25	756,940	Local	1	1.5	25	289,151	Local
Fazio Drive	West of South Service Road		1	1.5	25	910,867	Local	1	1.5	25	488,493	Local
Pulford Street	East of North Service Road		1	1.5	25	65,667	Local	1	1.5	25	154,516	Local
Todd Lane/Cabana Road	East of North Service Road		1	1.5	25	1,374,490	Local	1	1.5	25	1,064,284	Local
	between North and South Service Road		1	1.5	25	1,520,587	Local	1	1.5	25	1,735,320	Local
	between South Service Road and Huron Church Line		1	1.5	25	1,305,726	Local	1	1.5	25	1,657,523	Local
	West of Huron Church Line		1	1.5	25	1,233,066	Local	1	1.5	25	1,270,672	Local
St. Clair College	East of North Service Rd		1	1.5	25	443,171	Local	1	1.5	25	1,229,006	Local
	between North and South Service Road		1	1.5	25	347,171	Local	1	1.5	25	385,521	Local
Cousineau Drive	East of North Service Road		1	1.5	25	737,621	Local	1	1.5	25	594,742	Local
	between North and South Service Road		1	1.5	25	69,310	Local	1	1.5	25	1,847,195	Local
	West of South Service Road		1	1.5	25	282,541	Local	1	1.5	25	1,832,195	Local
Howard Avenue	East of North Service Rd		1	1.5	25	1,946,169	Local	1	1.5	25	2,595,807	Local
	between North and South Service Road		1	1.5	25	2,962,691	Local	1	1.5	25	2,310,443	Local
	West of South Service Road		1	1.5	25	3,638,448	Local	1	1.5	25	4,461,412	Local
E.C. Row Expressway	East of Ojibway Parkway		0.8	2	25	8,136,868	Local	0.8	2	25	4,196,993	Local
	West of Ojibway Parkway		0.8	2	25	5,885,764	Local	0.8	2	25	3,960,448	Local
	East of Huron Church Road		0.8	2	25	20,385,475	Major Collector	0.8	2	25	39,930,631	Major Collector
	At Malden Rd		0.8	2	25	18,439,279	Minor Collector	0.8	2	25	25,386,109	Major Collector
	West of Matchette Road		0.8	2	25	16,151,443	Minor Collector	0.8	2	25	4,196,993	Local
GN Booth Drive	West of Ojibway Parkway		1	1.5	25	78,218	Local	1	1.5	25	87,447	Local
Sandwich Street	West of Ojibway Parkway		1	1.5	25	2,112,306	Local	1	1.5	25	1,343,419	Local
Prospect Avenue	West of Ojibway Parkway		1	1.5	25	75,023	Local	1	1.5	25	53,829	Local
* - For consistency, Huron Church Rd/Talbot Rd runs North-South and all crossing roads run East-West												
HIGHWAY 401 Ramps												
Highway 3 merge/split												
Highway 401 northbound Off Ramp			1	2	25	14,980,568	Minor Collector				no data	
Highway 401 northbound On Ramp			1	2	25	3,231,714	Local				no data	
Highway 401 southbound Off Ramp						no data		1	2	25	3,712,763	Local
Highway 401 southbound On Ramp						no data		1	2	25	14,587,791	Minor Collector
At St. Clair College												
Highway 401 northbound Off Ramp			1	1.5	25	1,013,820	Local				no data	
Highway 401 northbound On Ramp			1	1.5	25	310,943	Local				no data	
Highway 401 southbound Off Ramp						no data		1	1.5	25	2,915,927	Local
Highway 401 southbound On Ramp						no data		1	1.5	25	319,467	Local
At Huron Church Road												
Highway 401 northbound Off Ramp			1	2	25	5,482,344	Local				no data	
Highway 401 southbound On Ramp								1	2	25	25,939,860	Major Collector
At Malden Road												
Highway 401 northbound On Ramp			1	1.5	25	7,709,238	Local				no data	
Highway 401 southbound Off Ramp						no data		1	1.5	25	7,574,667	Local
Highway 401 to E.C. Row Expressway												
401 SB Off Ramp						no data		1	2	25	24,883,693	Major Collector
Ojibway Parkway Interchange												
Highway 401 northbound Off Ramp			1	2	25	8,585,263	Local				no data	
Highway 401 northbound On Ramp			1	2	25	6,644,726	Local				no data	
Highway 401 southbound Off Ramp						no data		1	2	25	356,351	Local
Highway 401 southbound On Ramp						no data		1	2	25	10,331,127	Minor Collector
E.C. Row Expressway to Highway 401												
Highway 401 northbound On Ramp			1	2	25	18,555,239	Minor Collector				no data	
Highway 401 Mainline	South of Highway 3 merge/split	Highway 3/Highway 401 northbound Off Ramp	0.6	2.5	25	99,490,307	Minor Arterial				no data	
	Highway 3/Highway 401 northbound Off Ramp	Highway 3/Highway 401 northbound On Ramp	0.7	2.5	25	103,437,879	Major Arterial				no data	
	Highway 3/Highway 401 northbound On Ramp	St. Clair College/Highway 401 northbound Off Ramp	0.6	2.5	25	99,496,823	Minor Arterial				no data	
	St. Clair College/Highway 401 northbound Off Ramp	St. Clair College/Highway 401 northbound On Ramp	0.7	2.5	25	82,013,278	Minor Arterial				no data	
	St. Clair College/Highway 401 northbound On Ramp	Huron Church Road/Highway 401 northbound Off Ramp	0.7	2.5	25	93,024,545	Minor Arterial				no data	
	Huron Church Road/Highway 401 northbound Off Ramp	Malden Road/Highway 401 northbound On Ramp	0.8	2.5	25	108,849,158	Major Arterial				no data	
	Malden Road/Highway 401 northbound On Ramp	Ojibway Parkway/Highway 401 northbound Off Ramp	0.7	2.5	25	103,985,370	Major Arterial				no data	
	Ojibway Parkway/Highway 401 northbound Off Ramp	Ojibway Parkway/Highway 401 northbound OnRamp	0.8	2.5	25	111,138,783	Major Arterial				no data	
	Ojibway Parkway/Highway 401 northbound OnRamp	EC Row Expressway to Highway 401 northbound On Ramp	0.8	2.5	25	117,499,457	Major Arterial				no data	
	EC Row Expressway to Highway 401 northbound On Ramp	Canadian Plaza	0.7	2.5	25	126,568,533	Major Arterial				no data	
	Canadian Plaza	Ojibway Parkway/Highway 401 southbound Off Ramp				no data		0.6	2.5	25	171,523,028	Major Arterial
	Ojibway Parkway/Highway 401 southbound Off Ramp	Ojibway Parkway/Highway 401 southbound On Ramp				no data		0.7	2.5	25	187,887,095	Major Arterial
	Ojibway Parkway/Highway 401 southbound On Ramp	Highway 401 to EC Row Expressway southbound Off Ramp				no data		0.6	2.5	25	186,117,157	Major Arterial
	Highway 401 to EC Row Expressway southbound Off Ramp	Malden Road/Highway 401 southbound Off Ramp				no data		0.6	2.5	25	194,920,971	Major Arterial
	Malden Road/Highway 401 southbound Off Ramp	Huron Church Road/Highway 401 southbound On Ramp				no data		0.7	2.5	25	207,293,102	Freeway
	Huron Church Road/Highway 401 southbound On Ramp	St Clair College/Highway 401 southbound Off Ramp				no data		0.6	2.5	25	157,404,536	Major Arterial
	St Clair College/Highway 401 southbound Off Ramp	St Clair College/Highway 401 southbound On Ramp				no data		0.6	2.5	25	131,662,311	Major Arterial
	St Clair College/Highway 401 southbound On Ramp	Highway 3/Highway 401 southbound Off Ramp				no data		0.6	2.5	25	148,797,356	Major Arterial
	Highway 3/Highway 401 southbound Off Ramp	Highway 3/Highway 401 southbound On Ramp				no data		0.7	2.5	25	160,996,656	Major Arterial
	Highway 3/Highway 401 southbound On Ramp	South of Highway 3 merge/split				no data		0.6	2.5	25	148,647,817	Major Arterial
Grand Marais Road	East of connecting ramp		1	1.5	25	736,515	Local	1	1.5	25	656,481	Local
	West of connecting ramp		1	1.5	25	37,086	Local	1	1.5	25	571,506	Local
Broadway Street	West of Ojibway Parkway		1	1.5	25	45,138	Local	1	1.5	25	48,245	Local
Huron Church Line	South of Todd Lane		1	1.5	25	8,061,503	Local	1	1.5	25	9,964,750	Local
Millen Street	Felix Avenue	Huron Church Road	1	1.5	25	23,444	Local	1	1.5	25	49,394	Local
Malden Road	Chappus Street	Highway 401 South Ramp	1	1.5	25	3,422,880	Local	1	1.5	25	3,983,558	Local
	Highway 401 South Ramp	Highway 401 North Ramp	1	1.5	25	3,793,940	Local	1	1.5	25	2,586,496	Local
	North of Highway 401 North Ramp		1	1.5	25	2,630,488	Local	1	1.5	25	2,865,444	Local
Matchette Road	Chappus Street	EC Row Expressway South Ramp	1	1.5	25	1,349,524	Local	1	1.5	25	1,285,328	Local
	EC Row Expressway South Ramp	EC Row Expressway North Ramp	1	1.5	25	391,397	Local	1	1.5	25	1,402,426	Local
	EC Row Expressway North Ramp	Carmichael	1	1.5	25	706,748	Local	1	1.5	25	442,072	Local
Montgomery Drive	Surrey Drive	Talbot Street	1	1.5	25	15,259	Local	1	1.5	25	86,008	Local
Surrey Drive	Montgomery Drive	Talbot Street	1	1.5	25	11,709	Local	1	1.5	25	17,812	Local
Grosvenor Road	Montgomery Drive	Talbot Street	1	1.5	25	20,158	Local	1	1.5	25	23,093	Local

Prepared By: MEB
Reviewed By: PRB

TABLE III-B

SUMMARY OF ESAL CALCULATIONS - RIGID PAVEMENTS - ALTERNATIVE 1B

Detroit River International Crossing
Windsor, Ontario

LOCATION			Northbound/Westbound					Southbound/Eastbound				
Pavement Section	From	To	LDF	TF	Design Period (years)	ESALs	Class	LDF	TF	Design Period (years)	ESALs	Class
Huron Church Road	Riverside Drive	University Avenue	0.9	2	25	3,077,400	Local	0.9	2	25	2,230,914	Local
	University Avenue	Wyandotte Street	0.9	2	25	2,048,765	Local	0.9	2	25	2,757,478	Local
	Wyandotte Street	AMB Off Ramp	0.9	2	25	364,841	Local	0.9	2	25	538,754	Local
	AMB Off Ramp	College	0.8	2	25	48,879,305	Major Collector	0.9	2	25	1,660,578	Local
	College Street	Girardot Street	0.8	2	25	12,121,728	Minor Collector	0.8	2	25	53,231,477	Minor Arterial
	Girardot Street	Tecumseh Road	0.8	2	25	13,512,891	Minor Collector	0.8	2	25	51,973,153	Minor Arterial
	Tecumseh Road	Dorchester Street	0.8	2	25	15,758,333	Minor Collector	0.8	2	25	49,725,238	Major Collector
	Dorchester Street	Prince Road/Totten Street	0.8	2	25	13,910,123	Minor Collector	0.8	2	25	45,600,590	Major Collector
	Prince Road/Totten Street	Malden Road	0.8	2	25	15,647,014	Minor Collector	0.8	2	25	45,073,767	Major Collector
	Malden Road	Industrial Road	0.8	2	25	9,110,936	Local	0.8	2	25	42,326,986	Major Collector
	Industrial Road	EC Row North Ramp Terminal	0.8	2	25	10,321,304	Minor Collector	0.8	2	25	42,761,724	Major Collector
	EC Row North Ramp Terminal	EC Row South Ramp Terminal	0.8	2	25	6,463,195	Local	0.8	2	25	37,941,684	Major Collector
	South of EC Row South Ramp Terminal		0.8	2	25	9,136,857	Local	0.8	2	25	28,585,674	Major Collector
South Service Road	north of Bethlehem Avenue					no data		1	2	25	33,535,751	Major Collector
	Bethlehem Avenue	Lambton Street				no data		1	2	25	2,628,900	Local
	Lambton Street	Pulford Street				no data		1	2	25	404,576	Local
	Pulford Street	Todd Lane/Cabana Road				no data		1	2	25	1,368,682	Local
	Todd Lane/Cabana Road	Huron Church Line				no data		1	2	25	2,292,795	Local
	Huron Church Line	St. Clair College				no data		1	2	25	2,116,089	Local
	St. Clair College	Cousineau Drive				no data		1	2	25	6,211,048	Local
	Cousineau Drive	Howard Avenue				no data		1	2	25	6,244,242	Local
	east of Howard Avenue					no data		1	2	25	4,758,694	Local
North Service Road	north of Labelle Street		1	2	25	9,538,715	Local				no data	
	Labelle Street	Grand Marais Road Ramp	1	2	25	5,283,431	Local				no data	
	Grand Marais Road Ramp	Pulford Street	1	2	25	144,326	Local				no data	
	Pulford Street	Todd Lane/Cabana Road	1	2	25	229,861	Local				no data	
	Todd Lane/Cabana Road	Huron Church Line	1	2	25	2,566,311	Local				no data	
	Huron Church Line	St. Clair College	1	2	25	1,182,947	Local				no data	
	St. Clair College	Cousineau Drive	1	2	25	2,423,331	Local				no data	
	Cousineau Drive	Howard Avenue	1	2	25	2,001,317	Local				no data	
	east of Howard Avenue		1	2	25	5,543,938	Local				no data	
Ojibway Parkway	E.C. Row Expressway	GN Booth Drive	0.8	2	25	3,818,692	Local	0.8	2	25	10,057,279	Minor Collector
	GN Booth Drive	Sandwich Street	0.8	2	25	3,827,016	Local	0.8	2	25	10,102,168	Minor Collector
	Sandwich Street	Prospect Avenue	0.8	2	25	1,101,865	Local	0.8	2	25	1,098,205	Local
	north of Prospect Avenue		0.8	2	25	1,095,414	Local	0.8	2	25	1,075,855	Local
CROSS ROADS												
Wyandotte Street	west of Huron Church Line		1	1.5	25	694,232	Local	1	1.5	25	666,967	Local
	east of Huron Church Line		1	1.5	25	689,819	Local	1	1.5	25	2,002,780	Local
University	west of Huron Church Line		1	1.5	25	192,850	Local	1	1.5	25	174,005	Local
	east of Huron Church Line		1	1.5	25	2,309,980	Local	1	1.5	25	1,725,370	Local
Riverside Drive	west of Huron Church Line		1	1.5	25	487,330	Local	1	1.5	25	516,473	Local
	east of Huron Church Line		1	1.5	25	964,742	Local	1	1.5	25	799,175	Local
AMB Off Ramp	east of Huron Church Line					no data		1	1.5	25	52,339,512	Minor Arterial
AMB On Ramp	east of Huron Church Line		1	1.5	25	3,250,192	Local				no data	
Patricia	AMB	Wyandotte Street	1	1.5	25	3,107,462	Local	1	1.5	25	5,102,108	Local
College Street	east of Huron Church Road		1	1.5	25	2,289,981	Local	1	1.5	25	4,573,190	Local
	west of Huron Church Road		1	1.5	25	290,101	Local	1	1.5	25	134,115	Local
Girardot Street	east of Huron Church Road		1	1.5	25	157,849	Local	1	1.5	25	157,910	Local
	west of Huron Church Road		1	1.5	25	567,343	Local	1	1.5	25	347,457	Local
Tecumseh Road	east of Huron Church Road		1	1.5	25	1,907,420	Local	1	1.5	25	5,430,573	Local
	west of Huron Church Road		1	1.5	25	902,982	Local	1	1.5	25	985,320	Local
Dorchester Street	east of Huron Church Road		1	1.5	25	236,654	Local	1	1.5	25	213,476	Local
	west of Huron Church Road		1	1.5	25	360,048	Local	1	1.5	25	140,416	Local
Prince Road/Totten Street	east of Huron Church Road		1	1.5	25	305,193	Local	1	1.5	25	370,182	Local
	west of Huron Church Road		1	1.5	25	706,374	Local	1	1.5	25	759,081	Local
Malden Road	east of Huron Church Road		1	1.5	25	230,260	Local	1	1.5	25	188,801	Local
	west of Huron Church Road		1	1.5	25	8,368,583	Local	1	1.5	25	16,223,749	Minor Collector
Industrial Road	east of Huron Church Road		1	1.5	25	759,283	Local	1	1.5	25	1,082,288	Local
	west of Huron Church Road		1	1.5	25	2,339,227	Local	1	1.5	25	5,865,251	Local
E.C. Row Expressway North Ramp Terminal	east of Huron Church Road (E-N/S Off Ramp & S-W On Ramp)		1	1.5	25	4,231,065	Local	1	2	25	2,686,293	Local
	west of Huron Church Road (N-W On Ramp)		1	1.5	25	2,243,827	Local				no data	
E.C. Row Expressway South Ramp Terminal	east of Huron Church Road (S-E On Ramp)					no data		1	2	25	1,902,158	Local
	west of Huron Church Road (N-E On Ramp & W-N/S Off Ramp)		1	1.5	25	10,061,304	Minor Collector	1	2	25	1,585,368	Local
Labelle Street/Bethlehem Avenue	east of North Service Road		1	1.5	25	434,060	Local	1	1.5	25	331,135	Local
	between North and South Service Road		1	1.5	25	194,281	Local	1	1.5	25	500,781	Local
	west of South Service Road		1	1.5	25	256,338	Local	1	1.5	25	500,236	Local
Grand Marais Road/Lambton Road	east of North Service Road		1	1.5	25	643,114	Local	1	1.5	25	503,736	Local
	between North and South Service Road		1	1.5	25	32,625	Local	1	1.5	25	407,601	Local
	west of South Service Road		1	1.5	25	467,037	Local	1	1.5	25	288,094	Local
Pulford Street	east of North Service Road		1	1.5	25	224,412	Local	1	1.5	25	299,120	Local
	between North and South Service Road		1	1.5	25	214,309	Local	1	1.5	25	190,063	Local
	west of South Service Road		1	1.5	25	357,634	Local	1	1.5	25	119,543	Local
Todd Lane/Cabana Road	east of North Service Road		1	1.5	25	1,340,613	Local	1	1.5	25	1,078,092	Local
	between North and South Service Road		1	1.5	25	1,402,500	Local	1	1.5	25	1,383,140	Local
	west of South Service Road		1	1.5	25	1,684,692	Local	1	1.5	25	1,609,216	Local
Huron Church Line	between North and South Service Road		1	1.5	25	606,870	Local	1	1.5	25	1,227,699	Local
	west of South Service Road		1	1.5	25	1,468,443	Local	1	1.5	25	1,568,008	Local
St. Clair College	east of North Service Road		1	1.5	25	443,110	Local	1	1.5	25	1,228,701	Local
	between North and South Service Road		1	1.5	25	347,171	Local	1	1.5	25	388,546	Local
Cousineau Drive	east of North Service Road		1	1.5	25	739,163	Local	1	1.5	25	595,221	Local
	between North and South Service Road		1	1.5	25	1,154,957	Local	1	1.5	25	1,010,971	Local
	west of South Service Road		1	1.5	25	1,532,626	Local	1	1.5	25	591,297	Local
Howard Avenue	east of North Service Road		1	1.5	25	2,011,428	Local	1	1.5	25	2,531,151	Local
	between North and South Service Road		1	1.5	25	3,098,594	Local	1	1.5	25	2,472,906	Local
	west of South Service Road		1	1.5	25	3,687,059	Local	1	1.5	25	4,799,149	Local
E.C. Row Expressway	east of Ojibway Parkway		0.8	2	25	8,300,384	Local	0.8	2	25	6,506,690	Local
	west of Ojibway Parkway		0.8	2	25	6,069,160	Local	0.8	2	25	4,011,686	Local
	east of Huron Church Road		0.8	2	25	21,109,329	Major Collector	0.8	2	25	38,468,583	Major Collector
	at Malden Road		0.8	2	25	20,667,760	Major Collector	0.8	2	25	29,568,892	Major Collector
	west of Matchette		0.8	2	25	9,528,949	Local	0.8	2	25	6,506,690	Local
GN Booth Drive	west of Ojibway Parkway		1	1.5	25	93,809	Local	1	1.5	25	104,949	Local
Sandwich Street	west of Ojibway Parkway		1	1.5	25	2,104,888	Local	1	1.5	25	1,345,831	Local
Prospect Avenue	west of Ojibway Parkway		1	1.5	25	91,116	Local	1	1.5	25	63,622	Local
HIGHWAY 401 Ramps												
Highway 3 merge/split												
Highway 401 Northbound Off Ramp			1	2	25	14,990,226	Minor Collector	1	2	25	no data	
Highway 401 Northbound On Ramp			1	2	25	3,268,470	Local	1	2	25	no data	
Highway 401 Southbound Off Ramp						no data		1	2	25	3,494,101	Local
Highway 401 Southbound On Ramp						no data		1	2	25	14,635,604	Minor Collector
At St. Clair College												
Highway 401 Northbound Off Ramp			1	1.5	25	665,998	Local				no data	
Highway 401 Northbound On Ramp			1	1.5	25	444,106	Local				no data	
Highway 401 Southbound Off Ramp						no data		1	1.5	25	4,174,822	Local
Highway 401 Southbound On Ramp						no data		1	1.5	25	456,116	Local
At Pulford Street												
Highway 401 Northbound On Ramp			1	1.5	25	1,290,271	Local				no data	
Highway 401 Southbound Off Ramp						no data		1	1.5	25	1,099,706	Local
At Huron Church Road												
Highway 401 Northbound Off Ramp			1	2	25	6,406,190	Local				no data	
Highway 401 Southbound On Ramp						no data		1	2	25	32,045,783	Major Collector
At Malden Road												
Highway 401 Northbound On Ramp			1	1.5	25	7,709,238	Local				no data	
Highway 401 Southbound Off Ramp						no data		1	1.5	25	7,574,667	Local
Highway 401 to E.C. Row Expressway												
401 Southbound Off Ramp			1	2	25	no data		1	2	25	25,970,343	Major Collector
Ojibway Parkway Interchange												
Highway 401 Northbound Off Ramp			1	2	25	8,585,316	Local				no data	
Highway 401 Northbound On Ramp			1	2	25	6,357,549	Local				no data	
Highway 401 Southbound Off Ramp						no data		1	2	25	290,753	Local
Highway 401 Southbound On Ramp						no data		1	2	25	10,439,918	Minor Collector
E.C. Row Expressway to Highway 401												
Highway 401 Northbound On Ramp			1	2	25	18,555,239	Minor Collector				no data	
Highway 401 Mainline	South of Highway 3 merge/split	Highway 3/Highway 401 Northbound Off Ramp	0.6	2.5	25	97,095,712	Minor Arterial				no data	
	Highway 3/Highway 401 Northbound Off Ramp	Highway 3/Highway 401 Northbound On Ramp	0.7	2.5	25	103,187,744	Major Arterial				no data	
	Highway 3/Highway 401 Northbound On Ramp	St. Clair College/Highway 401 Northbound Off Ramp	0.6	2.5	25	99,383,182	Minor Arterial				no data	
	St. Clair College/Highway 401 Northbound Off Ramp	St. Clair College/Highway 401 Northbound On Ramp	0.7	2.5	25	84,440,194	Minor Arterial				no data	
	St. Clair College/Highway 401 Northbound On Ramp	Pulford Street/Highway 401 Northbound On Ramp	0.7	2.5	25	90,527,267	Minor Arterial				no data	
	Pulford Street/Highway 401 Northbound On Ramp	Huron Church Road/Highway 401 Northbound Off Ramp	0.6	2.5	25	83,868,146	Minor Arterial				no data	
	Huron Church Road/Highway 401 Northbound Off Ramp	Malden Road/Highway 401 Northbound On Ramp	0.8	2.5	25	104,833,669	Major Arterial				no data	
	Malden Road/Highway 401 Northbound On Ramp	Ojibway Parkway/Highway 401 Northbound Off Ramp	0.7	2.5	25	100,482,518	Major Arterial				no data	
	Ojibway Parkway/Highway 401 Northbound Off Ramp	Ojibway Parkway/Highway 401 Northbound OnRamp	0.8	2.5	25	107,082,154	Major Arterial				no data	
	Ojibway Parkway/Highway 401 Northbound OnRamp	EC Row Expressway to Highway 401 Northbound On Ramp	0.8	2.5	25	113,154,501	Major Arterial				no data	
	EC Row Expressway to Highway 401 Northbound On Ramp	Canadian Plaza	0.8	2.5	25	142,143,615	Major Arterial				no data	
	Canadian Plaza	Ojibway Parkway/Highway 401 Southbound Off Ramp				no data		0.6	2.5	25	168,957,100	Major Arterial
	Ojibway Parkway/Highway 401 Southbound Off Ramp	Ojibway Parkway/Highway 401 Southbound On Ramp				no data		0.7	2.5	25	185,111,151	Major Arterial
	Ojibway Parkway/Highway 401 Southbound On Ramp	Highway 401 to EC Row Expressway Southbound Off Ramp				no data		0.6	2.5	25	186,117,157	Major Arterial
	Highway 401 to EC Row Expressway Southbound Off Ramp	Malden Road/Highway 401 Southbound Off Ramp				no data		0.6	2.5	25	194,920,971	Major Arterial
	Malden Road/Highway 401 Southbound Off Ramp	Huron Church Road/Highway 401 Southbound On Ramp				no data		0.7	2.5	25	190,484,445	Major Arterial
	Huron Church Road/Highway 401 Southbound On Ramp	Pulford Street/Highway 401 Southbound Off Ramp				no data		0.6	2.5	25	159,298,422	Major Arterial
	Pulford Street/Highway 401 Southbound Off Ramp	St Clair College/Highway 401 Southbound Off Ramp				no data		0.6	2.5	25	162,789,962	Major Arterial
	St Clair College/Highway 401 Southbound Off Ramp	St Clair College/Highway 401 Southbound On Ramp				no data		0.6	2.5	25	129,793,424	Major Arterial
	St Clair College/Highway 401 Southbound On Ramp	Highway 3/Highway 401 Southbound Off Ramp				no data		0.6	2.5	25	151,171,244	Major Arterial
	Highway 3/Highway 401 Southbound Off Ramp	Highway 3/Highway 401 Southbound On Ramp				no data		0.7	2.5	25	163,089,572	Major Arterial
	Highway 3/Highway 401 Southbound On Ramp	South of Highway 3 merge/split				no data		0.6	2.5	25	150,343,223	Major Arterial
Malden Road	Chappus Street	Highway 401 South Ramp	1	1.5	25	4,801,801	Local	1	1.5	25	6,342,823	Local
	Highway 401 South Ramp	Highway 401 North Ramp	1	1.5	25	5,377,206	Local	1	1.5	25	3,991,013	Local
	North of Highway 401 North Ramp		1	1.5	25	3,675,716	Local	1	1.5	25	4,460,046	Local
Matchette Road	Chappus Street	EC Row Expressway South Ramp	1	1.5	25	1,264,455	Local	1	1.5	25	1,307,221	Local
	EC Row Expressway South Ramp	EC Row Expressway North Ramp	1	1.5	25	361,981	Local	1	1.5	25	1,438,422	Local
	EC Row Expressway North Ramp	Carmichael	1	1.5	25	732,178	Local	1	1.5	25	446,606	Local

Prepared By: MEB
Reviewed By: PRB

TABLE III-C

SUMMARY OF ESAL CALCULATIONS - RIGID PAVEMENTS - ALTERNATIVE 2A

Detroit River International Crossing
Windsor, Ontario

LOCATION			Northbound/Westbound					Southbound/Eastbound				
Pavement Section	From	To	LDF	TF	Design Period (years)	ESALs	Class	LDF	TF	Design Period (years)	ESALs	Class
Huron Church Road	Riverside Drive	University Avenue	0.9	2	25	3,003,414	Local	0.9	2	25	2,267,626	Local
	University Avenue	Wyandotte Street	0.9	2	25	2,273,977	Local	0.9	2	25	2,797,191	Local
	Wyandotte Street	AMB Off Ramp	0.9	2	25	371,922	Local	0.9	2	25	540,775	Local
	AMB Off Ramp	College Street	0.8	2	25	46,237,229	Major Collector	0.9	2	25	1,705,458	Local
	College Street	Girardot Street	0.8	2	25	11,706,946	Minor Collector	0.8	2	25	51,381,316	Minor Arterial
	Girardot Street	Tecumseh Road	0.8	2	25	13,088,483	Minor Collector	0.8	2	25	50,850,389	Minor Arterial
	Tecumseh Road	Dorchester Street	0.8	2	25	15,393,542	Minor Collector	0.8	2	25	48,718,427	Major Collector
	Dorchester Street	Prince Road/Totten Street	0.8	2	25	13,682,470	Minor Collector	0.8	2	25	45,070,741	Major Collector
	Prince Road/Totten Street	Malden Road	0.8	2	25	15,375,948	Minor Collector	0.8	2	25	43,366,525	Major Collector
	Malden Road	Industrial Road	0.8	2	25	9,300,337	Local	0.8	2	25	40,087,258	Major Collector
	Industrial Road	EC Row Expressway North Ramp Terminal	0.8	2	25	10,173,324	Minor Collector	0.8	2	25	40,658,732	Major Collector
	EC Row Expressway North Ramp Terminal	EC Row Expressway South Ramp Terminal	0.8	2	25	6,849,753	Local	0.8	2	25	36,316,054	Major Collector
	EC Row Expressway South Ramp Terminal	Highway 401 Off Ramp	0.8	2	25	7,699,909	Local	0.8	2	25	26,592,454	Major Collector
	Highway 401 Off Ramp	Spring Garden Road/Labelle Street	0.8	2	25	1,303,925	Local	0.8	2	25	1,954,826	Local
	Spring Garden Road/Labelle Street	Lambton Street/Grand Marais Road Ramp	0.8	2	25	1,928,836	Local	0.8	2	25	2,738,677	Local
	Lambton Street/Grand Marais Road Ramp	Pulford Street	0.8	2	25	2,103,320	Local	0.8	2	25	717,384	Local
	Pulford Street	Todd Lane/Cabana Road	0.8	2	25	2,451,298	Local	0.8	2	25	914,155	Local
	Todd Lane/Cabana Road	Huron Church Line	0.8	2	25	2,350,950	Local	0.8	2	25	3,538,796	Local
Talbot Road	Huron Church Line	St Clair College	0.9	2	25	202,126	Local	0.8	2	25	1,189,454	Local
	St Clair College	Cousineau Drive	0.8	2	25	174,323	Local	0.9	2	25	1,119,464	Local
	Cousineau Drive	Howard Avenue	0.8	2	25	702,188	Local	0.9	2	25	226,825	Local
	Howard Avenue	EC Row Expressway	0.8	2	25	4,817,363	Local	0.8	2	25	4,698,514	Local
Ojibway Parkway	EC Row Expressway	GN Booth Drive	0.8	2	25	3,816,612	Local	0.8	2	25	10,078,277	Minor Collector
	GN Booth Drive	Sandwich Street	0.8	2	25	3,825,020	Local	0.8	2	25	10,077,909	Minor Collector
	Sandwich Street	Prospect Avenue	0.8	2	25	1,099,952	Local	0.8	2	25	1,090,292	Local
	North of Prospect Avenue		0.8	2	25	1,093,523	Local	0.8	2	25	1,067,942	Local
CROSSING ROADS												
Wyandotte Street	West of Huron Church Road		1	1.5	25	691,154	Local	1	1.5	25	666,955	Local
	East of Huron Church Road		1	1.5	25	889,042	Local	1	1.5	25	1,974,611	Local
University Avenue	West of Huron Church Road		1	1.5	25	192,347	Local	1	1.5	25	174,581	Local
	East of Huron Church Road		1	1.5	25	2,336,177	Local	1	1.5	25	1,899,605	Local
Riverside Drive	West of Huron Church Road		1	1.5	25	486,003	Local	1	1.5	25	521,381	Local
	East of Huron Church Road		1	1.5	25	964,270	Local	1	1.5	25	809,963	Local
AMB Off Ramp	East of Huron Church Road					no data		1	1.5	25	41,238,608	Major Collector
AMB On Ramp	East of Huron Church Road		1	1.5	25	3,250,546	Local				no data	
Patricia Street	AMB	Wyandotte Street	1	1.5	25	3,073,521	Local	1	1.5	25	5,000,645	Local
College Street	East of Huron Church Road		1	1.5	25	2,441,619	Local	1	1.5	25	4,634,076	Local
	West of Huron Church Road		1	1.5	25	282,978	Local	1	1.5	25	126,110	Local
Girardot Street	East of Huron Church Road		1	1.5	25	156,077	Local	1	1.5	25	160,033	Local
	West of Huron Church Road		1	1.5	25	619,854	Local	1	1.5	25	425,668	Local
Tecumseh Road	East of Huron Church Road		1	1.5	25	1,835,031	Local	1	1.5	25	5,771,568	Local
	West of Huron Church Road		1	1.5	25	888,172	Local	1	1.5	25	961,699	Local
Dorchester Street	East of Huron Church Road		1	1.5	25	237,510	Local	1	1.5	25	214,598	Local
	West of Huron Church Road		1	1.5	25	448,850	Local	1	1.5	25	160,658	Local
Prince Road/Totten Street	East of Huron Church Road		1	1.5	25	311,330	Local	1	1.5	25	367,127	Local
	West of Huron Church Road		1	1.5	25	692,330	Local	1	1.5	25	744,979	Local
Malden Road	East of Huron Church Road		1	1.5	25	232,719	Local	1	1.5	25	190,007	Local
	West of Huron Church Road		1	1.5	25	8,002,565	Local	1	1.5	25	12,382,485	Minor Collector
Industrial Road	East of Huron Church Road		1	1.5	25	776,309	Local	1	1.5	25	1,077,069	Local
	West of Huron Church Road		1	1.5	25	2,324,857	Local	1	1.5	25	6,177,174	Local
EC Row Expressway North Ramp Terminal	E-N/S Ramp		1	2	25	5,716,274	Local				no data	
	N-W Ramp					no data		1	2	25	157,118	Local
	S-W Ramp		1	2	25	12,276,704	Minor Collector				no data	
EC Row Expressway South Ramp Terminal	W-N/S Ramp					no data		1	2	25	1,139,060	Local
	S/N-E Ramp					no data		1	2	25	13,390,680	Minor Collector
Spring Garden Road	West of Huron Church Road		1	1.5	25	320,631	Local	1	1.5	25	426,779	Local
Labelle Street	East of Huron Church Road		1	1.5	25	536,707	Local	1	1.5	25	281,556	Local
Lambton Street/Grand Marais Road Ramp	East of Huron Church Road		1	1.5	25	721,249	Local	1	1.5	25	697,644	Local
Pulford Street	East of Huron Church Road		1	1.5	25	417,886	Local	1	1.5	25	217,417	Local
Cabana Road	East of Huron Church Road		1	1.5	25	1,199,851	Local	1	1.5	25	1,089,842	Local
	between Huron Church Road and Highway 401 northbound Ramps		1	1.5	25	786,233	Local	1	1.5	25	3,181,065	Local
Todd Lane	between Highway 401 northbound and southbound Ramps		1	1.5	25	459,538	Local	1	1.5	25	2,667,887	Local
	West of Highway 401 southbound Ramps		1	1.5	25	1,651,936	Local	1	1.5	25	1,391,395	Local
Huron Church Line	West of Huron Church Road		1	1.5	25	1,956,835	Local	1	1.5	25	1,459,340	Local
St Clair College	East of Talbot Road		1	1.5	25	439,914	Local	1	1.5	25	1,323,857	Local
Cousineau Drive	East of Talbot Road		1	1.5	25	823,446	Local	1	1.5	25	760,123	Local
	West of Talbot Road		1	1.5	25	239,550	Local	1	1.5	25	587,207	Local
Howard Avenue	East of Talbot Road		1	1.5	25	2,034,139	Local	1	1.5	25	3,021,866	Local
	between Talbot Road and Highway 401 southbound On Ramp		1	1.5	25	3,373,932	Local	1	1.5	25	2,310,325	Local
	West of Highway 401 southbound On Ramp		1	1.5	25	3,761,568	Local	1	1.5	25	4,624,392	Local
E.C. Row Expressway	East of Huron Church Road		0.8	2	25	20,767,916	Major Collector	0.8	2	25	38,740,646	Major Collector
	At Malden Road		0.8	2	25	20,314,284	Major Collector	0.8	2	25	28,736,837	Major Collector
	West of Matchette Drive		0.8	2	25	8,877,795	Local	0.8	2	25	5,838,068	Local

* - For consistency, Huron Church Rd/Talbot Rd runs North-South and all crossing roads run East-West

LOCATION			Northbound/Westbound					Southbound/Eastbound				
Pavement Section	From	To	LDF	TF	Design Period (years)	ESALs	Class	LDF	TF	Design Period (years)	ESALs	Class
HIGHWAY 401 Ramps												
Highway 3 merge/split												
Highway 401 northbound Off Ramp			1	2	25	17,763,332	Minor Collector				no data	
Highway 401 northbound On Ramp			1	2	25	3,627,312	Local				no data	
Highway 401 southbound Off Ramp						no data		1	2	25	3,573,480	Local
Highway 401 southbound On Ramp						no data		1	2	25	16,446,401	Minor Collector
Howard Avenue												
401 NB Off Ramp						no data		1	2	25	834,906	Local
At Todd Lane/Cabana Road												
Highway 401 northbound Off Ramp			1	1.5	25	1,248,804	Local				no data	
Highway 401 northbound On Ramp			1	1.5	25	1,885,405	Local				no data	
Highway 401 southbound Off Ramp						no data		1	1.5	25	3,507,977	Local
Highway 401 southbound On Ramp						no data		1	1.5	25	477,804	Local
At Huron Church Road												
Highway 401 northbound Off Ramp			1	2	25	6,930,905	Local					
Highway 401 southbound On Ramp								1	2	25	30,663,730	Major Collector
At Malden Road												
Highway 401 northbound On Ramp			1	1.5	25	6,884,017	Local				no data	
Highway 401 southbound Off Ramp						no data		1	1.5	25	6,476,966	Local
EC Row Expressway to Highway 401												
Highway 401 southbound On Ramp						no data		1	2	25	26,795,424	Major Collector
Ojibway Parkway Interchange												
Highway 401 northbound Off Ramp			1	2	25	8,532,329	Local				no data	
Highway 401 northbound On Ramp			1	2	25	6,358,614	Local				no data	
Highway 401 southbound Off Ramp						no data		1	2	25	512,325	Local
Highway 401 southbound On Ramp						no data		1	2	25	8,775,237	Local
EC Row Expressway Interchange												
Highway 401 northbound On Ramp			1	2	25	19,854,252	Minor Collector				no data	
Highway 401 Mainline	South of Highway 3 merge/split	Highway 3/Highway 401 northbound Off Ramp	0.6	2.5	25	98,354,919	Minor Arterial				no data	
	Highway 3/Highway 401 northbound Off Ramp	Highway 3/Highway 401 northbound On Ramp	0.8	2.5	25	87,330,456	Minor Arterial				no data	
	Highway 3/Highway 401 northbound On Ramp	Todd Lane/Highway 401 northbound Off Ramp	0.6	2.5	25	84,475,424	Minor Arterial				no data	
	Todd Lane/Highway 401 northbound Off Ramp	Todd Lane/Highway 401 northbound On Ramp	0.7	2.5	25	69,263,131	Minor Arterial				no data	
	Todd Lane/Highway 401 northbound On Ramp	Huron Church Road/Highway 401 northbound On Ramp	0.6	2.5	25	77,127,923	Minor Arterial				no data	
	Huron Church Road/Highway 401 northbound On Ramp	Malden Road/Highway 401 northbound On Ramp	0.8	2.5	25	105,736,754	Major Arterial				no data	
	Malden Road/Highway 401 northbound On Ramp	Ojibway Parkway/Highway 401 northbound Off Ramp	0.7	2.5	25	100,314,701	Major Arterial				no data	
	Ojibway Parkway/Highway 401 northbound Off Ramp	Ojibway Parkway/Highway 401 northbound OnRamp	0.8	2.5	25	106,732,924	Major Arterial				no data	
	Ojibway Parkway/Highway 401 northbound OnRamp	EC Row Expressway to Highway 401 northbound On Ramp	0.8	2.5	25	112,836,998	Major Arterial				no data	
	EC Row Expressway to Highway 401 northbound On Ramp	Canadian Plaza	0.8	2.5	25	142,122,712	Major Arterial				no data	
	Canadian Plaza	Ojibway Parkway/Highway 401 southbound Off Ramp				no data		0.6	2.5	25	170,518,752	Major Arterial
	Ojibway Parkway/Highway 401 southbound Off Ramp	Ojibway Parkway/Highway 401 southbound On Ramp				no data		0.7	2.5	25	186,813,315	Major Arterial
	Ojibway Parkway/Highway 401 southbound On Ramp	Highway 401 to EC Row Expressway southbound Off Ramp				no data		0.6	2.5	25	187,882,061	Major Arterial
	Highway 401 to EC Row Expressway southbound Off Ramp	Malden Road/Highway 401 southbound Off Ramp				no data		0.6	2.5	25	197,822,411	Major Arterial
	Malden Road/Highway 401 southbound Off Ramp	Huron Church Road/Highway 401 southbound On Ramp				no data		0.7	2.5	25	196,703,745	Major Arterial
	Huron Church Road/Highway 401 southbound On Ramp	Todd Lane/Highway 401 southbound Off Ramp				no data		0.6	2.5	25	158,668,372	Major Arterial
	Todd Lane/Highway 401 southbound Off Ramp	Todd Lane/Highway 401 southbound On Ramp				no data		0.7	2.5	25	137,197,143	Major Arterial
	Todd Lane/Highway 401 southbound On Ramp	Howard Avenue/Highway 401 southbound Off Ramp				no data		0.6	2.5	25	142,567,589	Major Arterial
	Howard Avenue/Highway 401 southbound Off Ramp	Highway 3/Highway 401 southbound Off Ramp				no data		0.6	2.5	25	139,508,081	Major Arterial
	Highway 3/Highway 401 southbound Off Ramp	Highway 3/Highway 401 southbound On Ramp				no data		0.7	2.5	25	163,699,560	Major Arterial
	Highway 3/Highway 401 southbound On Ramp	South of Highway 3 merge/split				no data		0.6	2.5	25	152,048,713	Major Arterial
Grand Marais Road	East of connecting ramp		1	1.5	25	574,737	Local	1	1.5	25	643,174	Local
	West of connecting ramp		1	1.5	25	592,967	Local	1	1.5	25	232,471	Local
Malden Road	Chappus Street	Highway 401 South Ramp	1	1.5	25	4,579,686	Local	1	1.5	25	5,940,681	Local
	Highway 401 South Ramp	Highway 401 North Ramp	1	1.5	25	5,148,177	Local	1	1.5	25	3,639,500	Local
	North of Highway 401 North Ramp		1	1.5	25	3,466,710	Local	1	1.5	25	4,098,620	Local
Matchette Street	Chappus Street	EC Row Expressway South Ramp	1	1.5	25	1,173,068	Local	1	1.5	25	1,272,576	Local
	EC Row Expressway South Ramp	EC Row Expressway North Ramp	1	1.5	25	336,411	Local	1	1.5	25	1,407,186	Local
	EC Row Expressway North Ramp	Carmichael	1	1.5	25	665,684	Local	1	1.5	25	426,482	Local

Prepared By: MEB
Reviewed By: PRB

TABLE III-D

SUMMARY OF ESAL CALCULATIONS - RIGID PAVEMENTS - ALTERNATIVE 2B

Detroit River International Crossing
Windsor, Ontario

LOCATION			Northbound/Westbound					Southbound/Eastbound				
Pavement Section	From	To	LDF	TF	Design Period (years)	ESALs	Class	LDF	TF	Design Period (years)	ESALs	Class
Huron Church Road	Riverside Drive	University Avenue	0.9	2	25	3,003,414	Local	0.9	2	25	2,267,626	Local
	University Avenue	Wyandotte Street	0.9	2	25	2,273,977	Local	0.9	2	25	2,797,191	Local
	Wyandotte Street	AMB Off Ramp	0.9	2	25	371,922	Local	0.9	2	25	540,775	Local
	AMB Off Ramp	College Street	0.8	2	25	46,237,229	Major Collector	0.9	2	25	1,705,458	Local
	College Street	Girardot Street	0.8	2	25	11,706,946	Minor Collector	0.8	2	25	51,381,316	Minor Arterial
	Girardot Street	Tecumseh Road	0.8	2	25	13,088,483	Minor Collector	0.8	2	25	50,850,389	Minor Arterial
	Tecumseh Road	Dorchester Street	0.8	2	25	15,393,542	Minor Collector	0.8	2	25	48,718,427	Major Collector
	Dorchester Street	Prince Road/Totten Street	0.8	2	25	13,682,470	Minor Collector	0.8	2	25	45,070,741	Major Collector
	Prince Road/Totten Street	Malden Road	0.8	2	25	15,375,948	Minor Collector	0.8	2	25	43,366,525	Major Collector
	Malden Road	Industrial Road	0.8	2	25	9,300,337	Local	0.8	2	25	40,087,258	Major Collector
	Industrial Road	EC Row Expressway North Ramp Terminal	0.8	2	25	10,173,324	Minor Collector	0.8	2	25	40,658,732	Major Collector
	EC Row Expressway North Ramp Terminal	EC Row Expressway South Ramp Terminal	0.8	2	25	6,849,753	Local	0.8	2	25	36,316,054	Major Collector
	EC Row Expressway South Ramp Terminal	Highway 401 Off Ramp	0.8	2	25	7,699,909	Local	0.8	2	25	26,405,895	Major Collector
	Highway 401 Off Ramp	Spring Garden Road/Labelle Street	0.8	2	25	1,303,925	Local	0.8	2	25	1,954,826	Local
	Spring Garden Road/Labelle Street	Lambton Street/Grand Marais Road Ramp	0.8	2	25	1,928,836	Local	0.8	2	25	2,738,677	Local
	Lambton Street/Grand Marais Road Ramp	Pulford Street	0.8	2	25	2,103,320	Local	0.8	2	25	717,384	Local
	Pulford Street	Todd Lane/Cabana Road	0.8	2	25	2,451,298	Local	0.8	2	25	914,155	Local
	Todd Lane/Cabana Road	Huron Church Line	0.8	2	25	2,350,950	Local	0.8	2	25	3,538,796	Local
Talbot Road	Huron Church Line	St Clair College	0.9	2	25	202,126	Local	0.8	2	25	1,189,454	Local
	St Clair College	Cousineau Drive	0.8	2	25	174,323	Local	0.9	2	25	1,119,464	Local
	Cousineau Drive	Howard Avenue	0.8	2	25	702,188	Local	0.9	2	25	226,825	Local
	Howard Avenue	Highway 3 split	0.8	2	25	4,817,363	Local	0.8	2	25	4,698,514	Local
Ojibway Parkway	EC Row Expressway	GN Booth Drive	0.8	2	25	3,816,612	Local	0.8	2	25	10,078,277	Minor Collector
	GN Booth Drive	Sandwich Street	0.8	2	25	3,825,020	Local	0.8	2	25	10,077,909	Minor Collector
	Sandwich Street	Prospect Avenue	0.8	2	25	1,099,952	Local	0.8	2	25	1,090,292	Local
	North of Prospect Avenue		0.8	2	25	1,093,523	Local	0.8	2	25	1,067,942	Local
CROSSING ROADS												
Wyandotte Street	West of Huron Church Road		1	1.5	25	691,154	Local	1	2	25	889,273	Local
	East of Huron Church Road		1	1.5	25	889,042	Local	1	2	25	2,632,815	Local
University Avenue	West of Huron Church Road		1	1.5	25	192,347	Local	1	2	25	232,775	Local
	East of Huron Church Road		1	1.5	25	2,336,177	Local	1	2	25	2,532,807	Local
Riverside Drive	West of Huron Church Road		1	1.5	25	486,003	Local	1	2	25	695,175	Local
	East of Huron Church Road		1	1.5	25	964,270	Local	1	2	25	1,079,951	Local
AMB Off Ramp	East of Huron Church Road					no data		1	2	25	54,984,811	Minor Arterial
AMB On Ramp	East of Huron Church Road		1	2	25	4,334,061	Local				no data	
Patricia Street	AMB	Wyandotte Street	1	1.5	25	3,073,521	Local	1	2	25	6,667,526	Local
College Street	East of Huron Church Road		1	1.5	25	2,441,619	Local	1	2	25	6,178,769	Local
	West of Huron Church Road		1	1.5	25	282,978	Local	1	2	25	168,147	Local
Girardot Street	East of Huron Church Road		1	1.5	25	156,077	Local	1	2	25	213,377	Local
	West of Huron Church Road		1	1.5	25	619,854	Local	1	2	25	567,558	Local
Tecumseh Road	East of Huron Church Road		1	1.5	25	1,835,031	Local	1	2	25	7,695,424	Local
	West of Huron Church Road		1	1.5	25	888,172	Local	1	2	25	1,282,265	Local
Dorchester Street	East of Huron Church Road		1	1.5	25	237,510	Local	1	2	25	286,131	Local
	West of Huron Church Road		1	1.5	25	448,850	Local	1	2	25	214,211	Local
Prince Road/Totten Street	East of Huron Church Road		1	1.5	25	311,330	Local	1	2	25	489,502	Local
	West of Huron Church Road		1	1.5	25	692,330	Local	1	2	25	993,305	Local
Malden Road	East of Huron Church Road		1	1.5	25	232,719	Local	1	2	25	253,343	Local
	West of Huron Church Road		1	1.5	25	8,002,565	Local	1	2	25	16,509,980	Minor Collector
Industrial Road	East of Huron Church Road		1	1.5	25	776,309	Local	1	2	25	1,436,092	Local
	West of Huron Church Road		1	1.5	25	2,324,857	Local	1	2	25	8,236,231	Local
EC Row Expressway North Ramp Termi	E-N/S Ramp		1	2	25	5,716,274	Local				no data	
	N-W Ramp					no data		1	2	25	157,118	Local
	S-W Ramp		1	2	25	12,276,704	Minor Collector				no data	
EC Row Expressway South Ramp Termi	W-N/S Ramp					no data		1	2	25	1,139,060	Local
	S/N-E Ramp					no data		1	2	25	13,390,680	Minor Collector
Spring Garden Road	West of Huron Church Road		1	1.5	25	320,631	Local	1	2	25	569,038	Local
Labelle Street	East of Huron Church Road		1	1.5	25	536,707	Local	1	2	25	375,408	Local
Lambton Street/Grand Marais Road	East of Huron Church Road		1	1.5	25	588,358	Local	1	2	25	737,751	Local
	West of Huron Church Road		1	1.5	25	592,967	Local	1	2	25	398,163	Local
Pulford Street	East of Huron Church Road		1	1.5	25	417,886	Local	1	2	25	289,889	Local
Cabana Road	East of Huron Church Road		1	1.5	25	1,199,851	Local	1	2	25	1,453,123	Local
	between Huron Church Road and Highway 401 northbound Ramps		1	1.5	25	786,233	Local	1	2	25	4,241,419	Local
Todd Lane	between Highway 401 northbound and southbound Ramps		1	1.5	25	459,538	Local	1	2	25	3,557,183	Local
	West of Highway 401 southbound Ramps		1	1.5	25	1,651,936	Local	1	2	25	1,855,193	Local
Huron Church Line	West of Huron Church Road		1	1.5	25	1,956,835	Local	1	2	25	1,945,787	Local
St Clair College	East of Talbot Road		1	1.5	25	439,914	Local	1	2	25	1,765,143	Local
Cousineau Drive	East of Talbot Road		1	1.5	25	823,446	Local	1	2	25	1,013,498	Local
	West of Talbot Road		1	1.5	25	239,550	Local	1	2	25	782,943	Local
Howard Avenue	East of Talbot Road		1	1.5	25	2,034,139	Local	1	2	25	4,029,154	Local
	between Talbot Road and Highway 401 southbound On Ramp		1	1.5	25	3,373,932	Local	1	2	25	3,080,434	Local
	West of Highway 401 southbound On-Ramp		1	1.5	25	3,761,568	Local	1	2	25	6,165,856	Local
E.C. Row Expressway	East of Huron Church Road		0.8	2	25	21,129,303	Major Collector	0.8	2	25	38,872,371	Major Collector
	At Malden Road		0.8	2	25	20,840,008	Major Collector	0.8	2	25	28,885,180	Major Collector
	West of Matchette Street		0.8	2	25	8,877,795	Local	0.8	2	25	5,838,068	Local

* - For consistency, Huron Church Rd/Talbot Rd runs North-South and all crossing roads run East-West

HIGHWAY 401 Ramps												
Highway 3 merge/split												
Highway 401 northbound Off Ramp			1	2	25	17,763,332	Minor Collector				no data	
Highway 401 northbound On Ramp			1	2	25	3,627,312	Local				no data	
Highway 401 southbound Off Ramp						no data		1	2	25	3,573,480	Local
Highway 401 southbound On Ramp						no data		1	2	25	16,446,401	Minor Collector
Howard Avenue												
Highway 401 southbound Off Ramp			1	2	25	no data		1	2	25	834,906	Local
At Todd Lane/Cabana Road												
Highway 401 northbound Off Ramp			1	1.5	25	1,248,804	Local				no data	
Highway 401 northbound On Ramp			1	1.5	25	1,885,405	Local				no data	
Highway 401 southbound Off Ramp						no data		1	2	25	4,677,303	Local
Highway 401 southbound On Ramp						no data		1	2	25	637,072	Local
At Huron Church Road												
Highway 401 northbound Off Ramp			1	2	25	6,930,905	Local				no data	
Highway 401 southbound On Ramp						no data		1	2	25	30,360,347	Major Collector
At Malden Road												
Highway 401 northbound On Ramp			1	1.5	25	6,884,017	Local				no data	
Highway 401 southbound Off Ramp						no data		1	2	25	8,635,955	Local
EC Row Expressway to Highway 401												
Highway 401 southbound Off Ramp						no data		1	2	25	26,795,424	Major Collector
Ojibway Parkway Interchange												
Highway 401 northbound Off Ramp			1	2	25	8,532,329	Local				no data	
Highway 401 northbound On Ramp			1	2	25	6,358,614	Local				no data	
Highway 401 southbound Off Ramp						no data		1	2	25	512,325	Local
Highway 401 southbound On Ramp						no data		1	2	25	8,775,237	Local
EC Row Expressway Interchange												
Highway 401 northbound On Ramp			1	2	25	19,854,252	Minor Collector				no data	
Highway 401 Mainline	Souht of Highway 3 merge/split	Highway 3/Highway 401 northbound Off Ramp	0.6	2.5	25	98,354,919	Minor Arterial				no data	
	Highway 3/Highway 401 northbound Off Ramp	Highway 3/Highway 401 northbound On Ramp	0.8	2.5	25	87,330,456	Minor Arterial				no data	
	Highway 3/Highway 401 northbound On Ramp	Todd Lane/Highway 401 northbound Off Ramp	0.6	2.5	25	84,475,424	Minor Arterial				no data	
	Todd Lane/Highway 401 northbound Off Ramp	Todd Lane/Highway 401 northbound On Ramp	0.7	2.5	25	69,263,131	Minor Arterial				no data	
	Todd Lane/Highway 401 northbound On Ramp	Huron Church Road/Highway 401 northbound On Ramp	0.6	2.5	25	77,127,923	Minor Arterial				no data	
	Huron Church Road/Highway 401 northbound On Ramp	Malden Road/Highway 401 northbound On Ramp	0.8	2.5	25	105,736,754	Major Arterial				no data	
	Malden Road/Highway 401 northbound On Ramp	Ojibway Parkway/Highway 401 northbound Off Ramp	0.7	2.5	25	100,314,701	Major Arterial				no data	
	Ojibway Parkway/Highway 401 northbound Off Ramp	Ojibway Parkway/Highway 401 northbound OnRamp	0.8	2.5	25	106,732,924	Major Arterial				no data	
	Ojibway Parkway/Highway 401 northbound OnRamp	EC Row Expressway to Highway 401 northbound On Ramp	0.8	2.5	25	112,836,998	Major Arterial				no data	
	EC Row Expressway to Highway 401 northbound On Ramp	Canadian Plaza	0.8	2.5	25	142,122,712	Major Arterial				no data	
	Canadian Plaza	Ojibway Parkway/Highway 401 southbound Off Ramp				no data		0.6	2	25	136,415,002	Major Arterial
	Ojibway Parkway/Highway 401 southbound Off Ramp	Ojibway Parkway/Highway 401 southbound On Ramp				no data		0.7	2	25	149,450,652	Major Arterial
	Ojibway Parkway/Highway 401 southbound On Ramp	Highway 401 to EC Row Expressway southbound Off Ramp				no data		0.6	2	25	150,305,649	Major Arterial
	Highway 401 to EC Row Expressway southbound Off Ramp	Malden Road/Highway 401 southbound Off Ramp				no data		0.6	2	25	158,257,929	Major Arterial
	Malden Road/Highway 401 southbound Off Ramp	Huron Church Road/Highway 401 southbound On Ramp				no data		0.7	2	25	157,362,996	Major Arterial
	Huron Church Road/Highway 401 southbound On Ramp	Todd Lane/Highway 401 southbound Off Ramp				no data		0.6	2	25	126,333,818	Major Arterial
	Todd Lane/Highway 401 southbound Off Ramp	Todd Lane/Highway 401 southbound On Ramp				no data		0.7	2	25	108,821,101	Major Arterial
	Todd Lane/Highway 401 southbound On Ramp	Howard Avenue/Highway 401 southbound Off Ramp				no data		0.6	2	25	113,358,649	Major Arterial
	Howard Avenue/Highway 401 southbound Off Ramp	Highway 3/Highway 401 southbound Off Ramp				no data		0.6	2	25	110,816,590	Major Arterial
	Highway 3/Highway 401 southbound Off Ramp	Highway 3/Highway 401 southbound On Ramp				no data		0.7	2	25	130,758,491	Major Arterial
	Highway 3/Highway 401 southbound On Ramp	South of Highway 3 merge/split				no data		0.6	2	25	121,638,970	Major Arterial
Malden Road	Chappus Street	Highway 401 South Ramp	1	1.5	25	4,545,108	Local	1	2	25	7,920,293	Local
	Highway 401 South Ramp	Highway 401 North Ramp	1	1.5	25	5,113,599	Local	1	2	25	4,855,028	Local
	North of Highway 401 North Ramp		1	1.5	25	3,430,329	Local	1	2	25	5,467,173	Local
Matchette Street	Chappus Street	EC Row Expressway South Ramp	1	1.5	25	1,196,214	Local	1	2	25	1,776,894	Local
	EC Row Expressway South Ramp	EC Row Expressway North Ramp	1	1.5	25	336,411	Local	1	2	25	1,960,901	Local
	EC Row Expressway North Ramp	Carmichael	1	1.5	25	684,578	Local	1	2	25	568,643	Local

Prepared By: MEB
Reviewed By: PRB

TABLE III-E

SUMMARY OF ESAL CALCULATIONS - RIGID PAVEMENTS - ALTERNATIVE 3

Detroit River International Crossing
Windsor, Ontario

LOCATION			Northbound/Westbound					Southbound/Eastbound				
Pavement Section	From	To	LDF	TF	Design Period (years)	ESALs	Class	LDF	TF	Design Period (years)	ESALs	Class
Huron Church Road	Riverside Drive	University Avenue	0.9	2	25	3,077,854	Local	0.9	2	25	2,240,674	Local
	University Avenue	Wyandotte Street	0.9	2	25	2,298,797	Local	0.9	2	25	2,765,978	Local
	Wyandotte Street	AMB Off Ramp	0.9	2	25	357,802	Local	0.9	2	25	531,350	Local
	AMB Off Ramp	College Street	0.8	2	25	48,314,738	Major Collector	0.9	2	25	1,669,621	Local
	College Street	Girardot Street	0.8	2	25	11,624,061	Minor Collector	0.8	2	25	52,357,898	Minor Arterial
	Girardot Street	Tecumseh Road	0.8	2	25	13,086,035	Minor Collector	0.8	2	25	53,338,799	Minor Arterial
	Tecumseh Road	Dorchester Street	0.8	2	25	15,321,817	Minor Collector	0.8	2	25	51,089,731	Minor Arterial
	Dorchester Street	Prince Road/Totten Street	0.8	2	25	13,794,967	Minor Collector	0.8	2	25	47,029,220	Major Collector
	Prince Road/Totten Street	Malden Road	0.8	2	25	15,366,113	Minor Collector	0.8	2	25	45,086,556	Major Collector
	Malden Road	Industrial Road	0.8	2	25	9,211,776	Local	0.8	2	25	41,165,442	Major Collector
	Industrial Road	EC Row Expressway North Ramp Terminal	0.8	2	25	9,897,068	Local	0.8	2	25	41,597,660	Major Collector
	EC Row Expressway North Ramp Terminal	EC Row Expressway South Ramp Terminal	0.8	2	25	6,816,457	Local	0.8	2	25	39,048,204	Major Collector
	EC Row Expressway South Ramp Terminal	Spring Gdn Rd/Labelle St	0.8	2	25	7,397,321	Local	0.8	2	25	29,483,508	Major Collector
	Spring Gdn Rd/Labelle St	Lambton Street/Grand Marais Road	0.8	2	25	5,279,275	Local	0.8	2	25	2,852,004	Local
	Lambton Street/Grand Marais Road	Pulford Street	0.8	2	25	2,696,780	Local	0.8	2	25	2,470,273	Local
	Pulford Street	Todd Lane/Cabana Road	0.8	2	25	2,999,285	Local	0.8	2	25	2,735,616	Local
	Todd Lane/Cabana Road	Huron Church Line	0.8	2	25	1,800,509	Local	0.8	2	25	1,543,435	Local
Talbot Road	Huron Church Line	St Clair College	0.9	2	25	1,260,298	Local	0.8	2	25	1,365,942	Local
	St Clair College	Cousineau Drive	0.8	2	25	1,861,070	Local	0.8	2	25	4,046,296	Local
	Cousineau Drive	Howard Avenue	0.9	2	25	1,651,370	Local	0.9	2	25	4,685,701	Local
	South of Howard Avenue		0.8	2	25	4,426,756	Local	0.8	2	25	4,124,981	Local
Ojibway Parkway	EC Row Expressway	GN Booth Drive	0.8	2	25	2,093,984	Local	0.8	2	25	9,960,405	Local
	GN Booth Drive	Sandwich Street	0.8	2	25	2,081,887	Local	0.8	2	25	9,909,079	Local
	Sandwich Street	Prospect Avenue	0.8	2	25	1,088,643	Local	0.8	2	25	1,074,749	Local
	North of Prospect Avenue		0.8	2	25	1,082,258	Local	0.8	2	25	1,052,767	Local
CROSSING ROADS												
Wyandotte Street	West of Huron Church Road		1	1.5	25	693,224	Local	1	1.5	25	669,025	Local
	East of Huron Church Road		1	1.5	25	892,583	Local	1	1.5	25	2,008,801	Local
University Avenue	West of Huron Church Road		1	1.5	25	193,642	Local	1	1.5	25	172,170	Local
	East of Huron Church Road		1	1.5	25	2,316,614	Local	1	1.5	25	1,937,132	Local
Riverside Drive	West of Huron Church Road		1	1.5	25	494,443	Local	1	1.5	25	522,956	Local
	East of Huron Church Road		1	1.5	25	966,358	Local	1	1.5	25	799,583	Local
AMB Off Ramp	East of Huron Church Road					no data		1	2	25	57,455,194	Minor Arterial
AMB On Ramp	East of Huron Church Road		1	1.5	25	3,252,300	Local				no data	
Patricia Street	AMB	Wyandotte Street	1	1.5	25	3,100,023	Local	1	1.5	25	5,083,323	Local
College Street	East of Huron Church Road		1	1.5	25	2,296,152	Local	1	1.5	25	4,684,466	Local
	West of Huron Church Road		1	1.5	25	287,771	Local	1	1.5	25	128,247	Local
Girardot Street	East of Huron Church Road		1	1.5	25	157,153	Local	1	1.5	25	158,354	Local
	West of Huron Church Road		1	1.5	25	567,325	Local	1	1.5	25	352,916	Local
Tecumseh Road	East of Huron Church Road		1	1.5	25	1,915,853	Local	1	1.5	25	5,278,764	Local
	West of Huron Church Road		1	1.5	25	908,650	Local	1	1.5	25	972,099	Local
Dorchester Street	East of Huron Church Road		1	1.5	25	177,465	Local	1	1.5	25	115,374	Local
	West of Huron Church Road		1	1.5	25	456,470	Local	1	1.5	25	257,750	Local
Prince Road/Totten Street	East of Huron Church Road		1	1.5	25	304,157	Local	1	1.5	25	356,179	Local
	West of Huron Church Road		1	1.5	25	653,717	Local	1	1.5	25	669,254	Local
Malden Road	East of Huron Church Road		1	1.5	25	230,890	Local	1	1.5	25	183,101	Local
	West of Huron Church Road		1	1.5	25	7,825,593	Local	1	2	25	16,500,848	Minor Collector
Industrial Road	East of Huron Church Road		1	1.5	25	783,674	Local	1	1.5	25	1,136,520	Local
	West of Huron Church Road		1	1.5	25	2,217,029	Local	1	2	25	7,819,422	Local
EC Row Expressway North Ramp Terminal	East of Huron Church Road (E-N/S Off Ramp & S-W On Ramp)		1	1.5	25	4,346,581	Local	1	1.5	25	58,859	Local
	West of Huron Church Road (N-W On Ramp)		1	1.5	25	4,657,548	Local				no data	
EC Row Expressway South Ramp Terminal	East of Huron Church Road (S-E On Ramp)					no data		1	1.5	25	1,389,261	Local
	West of Huron Church Road (N-E On Ramp & W-N/S Off Ramp)		1	1.5	25	9,150,700	Local	1	1.5	25	1,053,091	Local
Spring Garden Road/Labelle Street	East of Huron Church Road		1	1.5	25	490,166	Local	1	1.5	25	420,080	Local
	West of Huron Church Road		1	1.5	25	553,594	Local	1	1.5	25	582,444	Local
Lambton Street/Grand Marais Road	East of Huron Church Road		1	1.5	25	690,709	Local	1	1.5	25	543,272	Local
	West of Huron Church Road		1	1.5	25	522,332	Local	1	1.5	25	715,926	Local
Pulford Street	East of Huron Church Road		1	1.5	25	303,060	Local	1	1.5	25	274,270	Local
Todd Lane/Cabana Road	East of Huron Church Road		1	1.5	25	1,434,862	Local	1	1.5	25	1,216,248	Local
	West of Huron Church Road		1	1.5	25	1,791,868	Local	1	1.5	25	1,445,151	Local
Huron Church Line	West of Huron Church Road		1	1.5	25	1,624,212	Local	1	1.5	25	1,485,323	Local
St Clair College	East of Talbot Road		1	1.5	25	438,079	Local	1	1.5	25	1,284,110	Local
Cousineau Drive	East of Talbot Road		1	1.5	25	1,152,081	Local	1	1.5	25	764,228	Local
	West of Talbot Road		1	1.5	25	1,667,119	Local	1	1.5	25	1,388,966	Local
Howard Avenue	East of Talbot Road		1	1.5	25	1,906,879	Local	1	1.5	25	2,735,766	Local
	between Talbot Road and Highway 401 southbound On Ramp		1	1.5	25	2,790,801	Local	1	1.5	25	2,283,670	Local
	West of Highway 401 southbound On Ramp		1	1.5	25	3,020,136	Local	1	1.5	25	4,581,230	Local
E.C. Row Expressway	East of Huron Church Road		0.8	1.5	25	15,937,192	Minor Collector	0.8	2	25	33,144,634	Major Collector
	At Malden Road		0.8	1.5	25	15,376,513	Minor Collector	0.8	2	25	29,477,730	Major Collector
	West of Matchette Street		0.8	1.5	25	5,539,329	Local	0.8	2	25	6,025,739	Local
* - For consistency, Huron Church Rd/Talbot Rd runs North-South and all crossing roads run East-West												
HIGHWAY 401 Ramps												
Highway 3 merge/split												
Highway 401 northbound Off Ramp			1	2	25	15,223,164	Minor Collector				no data	
Highway 401 northbound On Ramp			1	2	25	3,316,671	Local				no data	
Highway 401 southbound Off Ramp						no data		1	2	25	3,507,406	Local
Highway 401 southbound On Ramp						no data		1	2	25	14,444,993	Minor Collector
At St. Clair College												
Highway 401 northbound Off Ramp			1	1.5	25	801,352	Local				no data	
Highway 401 northbound On Ramp			1	1.5	25	517,399	Local				no data	
Highway 401 southbound Off Ramp						no data		1	1.5	25	3,213,902	Local
Highway 401 southbound On Ramp						no data		1	1.5	25	366,203	Local
At Huron Church Road												
Highway 401 northbound Off Ramp			1	2	25	5,765,139	Local				no data	
Highway 401 southbound On Ramp						no data		1	2	25	26,643,826	Major Collector
Malden Road Interchange												
Highway 401 On Ramp			1	1.5	25	8,081,700	Local				no data	
Highway 401 Off Ramp						no data		1	1.5	25	7,267,134	Local
EC Row Expressway Interchange												
Highway 401 southbound Off Ramp						no data		1	1.5	25	20,210,842	Major Collector
Ojibway Parkway Interchange												
Highway 401 northbound Off Ramp			1	2	25	9,035,576	Local				no data	
Highway 401 northbound On Ramp			1	2	25	6,557,314	Local				no data	
Highway 401 southbound Off Ramp						no data		1	2	25	1,680,972	Local
Highway 401 southbound On Ramp						no data		1	2	25	10,548,859	Minor Collector
EC Row Expressway Interchange												
Highway 401 northbound On Ramp			1	2	25	18,573,804	Minor Collector				no data	
Highway 401 Mainline	South of Highway 3 merge/split	Highway 3/Highway 401 northbound Off Ramp	0.6	2.5	25	96,136,699	Minor Arterial				no data	
	Highway 3/Highway 401 northbound Off Ramp	Highway 3/Highway 401 northbound On Ramp	0.7	2.5	25	97,214,232	Minor Arterial				no data	
	Highway 3/Highway 401 northbound On Ramp	St. Clair College/Highway 401 northbound Off Ramp	0.6	2.5	25	96,098,132	Minor Arterial				no data	
	St. Clair College/Highway 401 northbound Off Ramp	St. Clair College/Highway 401 northbound On Ramp	0.7	2.5	25	85,760,495	Minor Arterial				no data	
	St. Clair College/Highway 401 northbound On Ramp	Huron Church Road/Highway 401 northbound Off Ramp	0.6	2.5	25	78,044,023	Minor Arterial				no data	
	Huron Church Road/Highway 401 northbound Off Ramp	Malden Road/Highway 401 northbound On Ramp	0.8	2.5	25	109,412,212	Major Arterial				no data	
	Malden Road/Highway 401 northbound On Ramp	Ojibway Parkway/Highway 401 northbound Off Ramp	0.7	2.5	25	104,907,134	Major Arterial				no data	
	Ojibway Parkway/Highway 401 northbound Off Ramp	Ojibway Parkway/Highway 401 northbound OnRamp	0.8	2.5	25	111,714,229	Major Arterial				no data	
	Ojibway Parkway/Highway 401 northbound OnRamp	EC Row Expressway to Highway 401 northbound On Ramp	0.8	2.5	25	117,990,244	Major Arterial				no data	
	EC Row Expressway to Highway 401 northbound On Ramp	Canadian Plaza	0.8	2.5	25	143,175,515	Major Arterial				no data	
	Canadian Plaza	Ojibway Parkway/Highway 401 southbound Off Ramp				no data		0.6	2.5	25	171,676,321	Major Arterial
	Ojibway Parkway/Highway 401 southbound Off Ramp	Ojibway Parkway/Highway 401 southbound On Ramp				no data		0.7	2.5	25	188,065,906	Major Arterial
	Ojibway Parkway/Highway 401 southbound On Ramp	Highway 401 to EC Row Expressway southbound Off Ramp				no data		0.6	2.5	25	188,987,639	Major Arterial
	Highway 401 to EC Row Expressway southbound Off Ramp	Malden Road/Highway 401 southbound Off Ramp				no data		0.6	2.5	25	199,337,006	Major Arterial
	Malden Road/Highway 401 southbound Off Ramp	Huron Church Road/Highway 401 southbound On Ramp				no data		0.7	2.5	25	195,998,031	Major Arterial
	Huron Church Road/Highway 401 southbound On Ramp	St Clair College/Highway 401 southbound Off Ramp				no data		0.6	2.5	25	158,135,477	Major Arterial
	St Clair College/Highway 401 southbound Off Ramp	St Clair College/Highway 401 southbound On Ramp				no data		0.6	2.5	25	139,974,536	Major Arterial
	St Clair College/Highway 401 southbound On Ramp	Highway 3/Highway 401 southbound Off Ramp				no data		0.6	2.5	25	148,627,621	Major Arterial
	Highway 3/Highway 401 southbound Off Ramp	Highway 3/Highway 401 southbound On Ramp				no data		0.7	2.5	25	161,672,664	Major Arterial
	Highway 3/Highway 401 southbound On Ramp	South of Highway 3 merge/split				no data		0.6	2.5	25	148,857,660	Major Arterial
Malden Road	Chappus Street	Highway 401 South Ramp	1	1.5	25	4,695,316	Local	1	1.5	25	5,848,671	Local
	Highway 401 South Ramp	Highway 401 North Ramp	1	1.5	25	5,287,141	Local	1	1.5	25	3,524,808	Local
	North of Highway 401 North Ramp		1	1.5	25	3,525,754	Local	1	1.5	25	3,988,349	Local
Matchette Street	Chappus Street	EC Row Expressway South Ramp	1	1.5	25	1,230,775	Local	1	1.5	25	1,155,560	Local
	EC Row Expressway South Ramp	EC Row Expressway North Ramp	1	1.5	25	389,776	Local	1	1.5	25	1,382,397	Local
	EC Row Expressway North Ramp	Carmichael	1	1.5	25	886,298	Local	1	1.5	25	505,078	Local
Montgomery Drive	Surrey Drive	Talbot Road	1	1.5	25	15,770	Local	1	1.5	25	72,784	Local
Surrey Drive	Montgomery Drive	Talbot Road	1	1.5	25	11,646	Local	1	1.5	25	58,847	Local
Grosvenor Road	Montgomery Drive	Talbot Road	1	1.5	25	20,745	Local	1	1.5	25	61,111	Local

Prepared By: MEB
Reviewed By: PRB

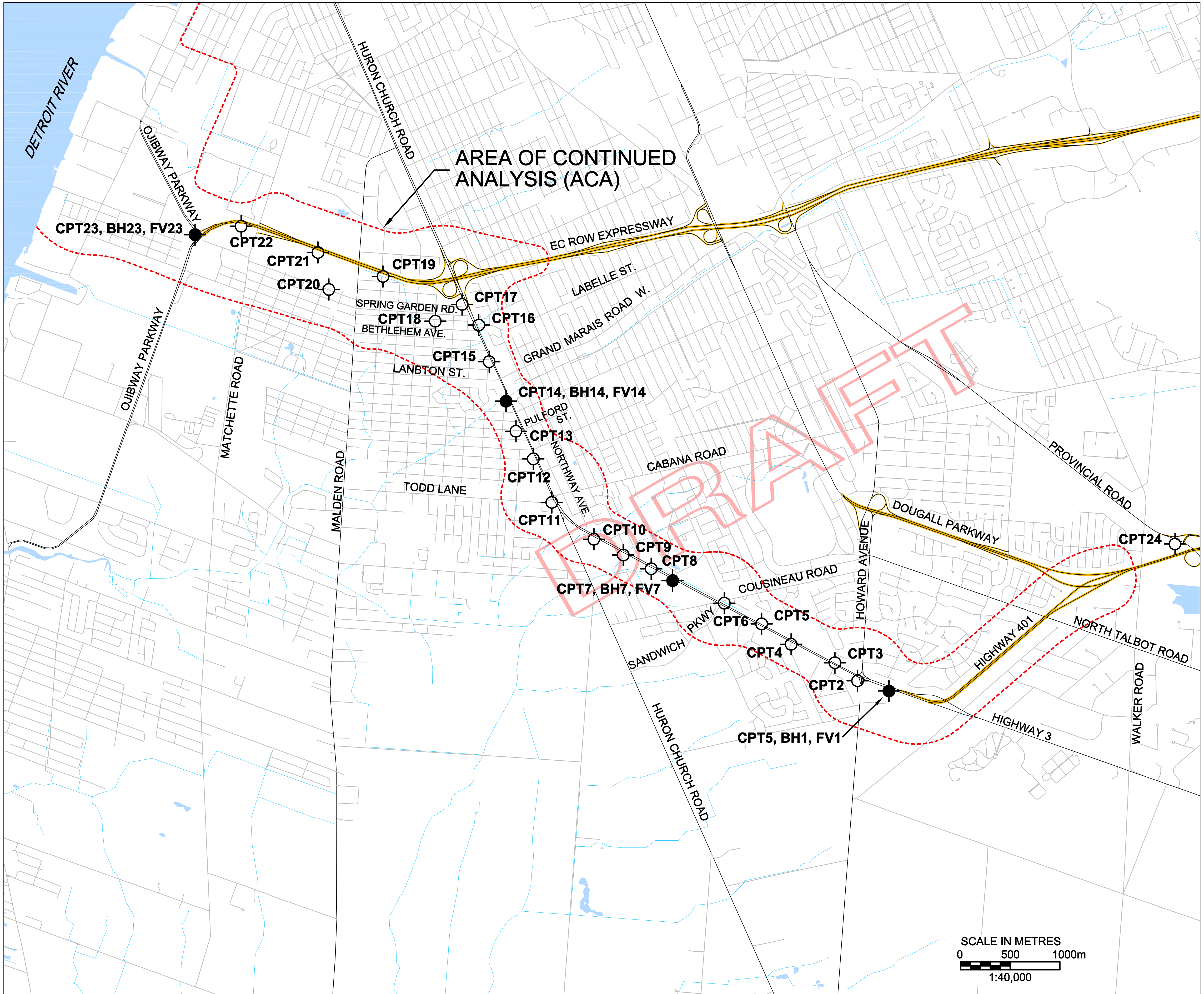
TABLE III-F

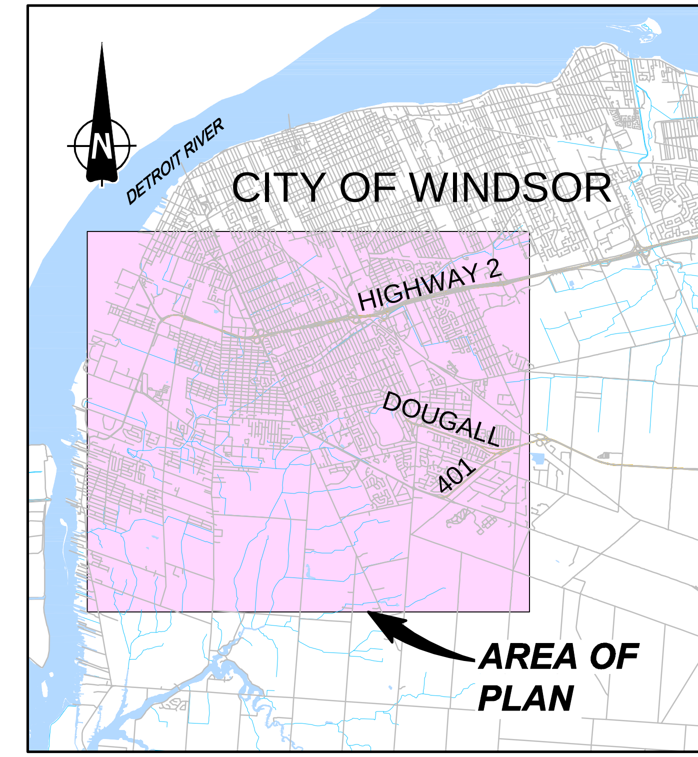
SUMMARY OF ESAL CALCULATIONS - RIGID PAVEMENTS - PARKWAY ALTERNATIVE

Detroit River International Crossing
Windsor, Ontario

LOCATION			Northbound/Westbound					Southbound/Eastbound				
Pavement Section	From	To	LDF	TF	Design Period (years)	ESALs	Class	LDF	TF	Design Period (years)	ESALs	Class
Huron Church Road	Riverside Drive	University Avenue	0.9	2	25	3,077,400	Local	0.9	2	25	2,230,914	Local
	University Avenue	Wyandotte Street	0.9	2	25	2,048,765	Local	0.9	2	25	2,757,478	Local
	Wyandotte Street	AMB Off Ramp	0.9	2	25	364,841	Local	0.9	2	25	538,754	Local
	AMB Off Ramp	College Street	0.8	2	25	48,879,305	Major Collector	0.9	2	25	1,660,578	Local
	College Street	Girardot Street	0.8	2	25	12,121,728	Minor Collector	0.8	2	25	53,231,477	Minor Arterial
	Girardot Street	Tecumseh Road	0.8	2	25	13,512,891	Minor Collector	0.8	2	25	51,973,153	Minor Arterial
	Tecumseh Road	Dorchester Street	0.8	2	25	15,758,333	Minor Collector	0.8	2	25	49,725,238	Major Collector
	Dorchester Street	Prince Road/Totten Street	0.8	2	25	13,910,123	Minor Collector	0.8	2	25	45,600,590	Major Collector
	Prince Road/Totten Street	Malden Road	0.8	2	25	15,647,014	Minor Collector	0.8	2	25	45,073,767	Major Collector
	Malden Road	Industrial Road	0.8	2	25	9,110,936	Local	0.8	2	25	42,326,986	Major Collector
	Industrial Road	E.C. Row Expressway North Ramp Terminal	0.8	2	25	10,321,304	Minor Collector	0.8	2	25	42,761,724	Major Collector
	E.C. Row Expressway North Ramp Terminal	E.C. Row Expressway South Ramp Terminal	0.8	2	25	6,463,195	Local	0.8	2	25	37,941,684	Major Collector
	South of E.C. Row Expressway South Ramp Terminal		0.8	2	25	9,125,202	Local	0.8	2	25	28,384,887	Major Collector
South Service Road	North of Bethlehem Avenue							0.8	2	25	26,828,601	Major Collector
	Bethlehem Avenue	Grand Marais Road						0.9	2	25	2,366,010	Local
North Service Road	North of Labelle Street		0.8	2	25	7,630,972	Local					
	Labelle Street	Grand Marais Road Ramp	0.8	2	25	4,226,745	Local					
Huron Church Road	Grand Marais Road	Pulford Street	0.9	2	25	150,056	Local	0.9	2	25	305,232	Local
	Pulford Street	Todd Lane/Cabana Road	0.9	2	25	216,967	Local	0.9	2	25	442,345	Local
	Todd Lane/Cabana Road	Huron Church Line	0.8	2	25	2,882,568	Local	0.8	2	25	1,404,675	Local
Talbot Road	Huron Church Line	St Clair College	0.8	2	25	1,461,523	Local	0.8	2	25	992,698	Local
	St Clair College	Cousineau Drive	0.8	2	25	1,214,215	Local	0.8	2	25	4,280,010	Local
	Cousineau Drive	Howard Avenue	0.8	2	25	1,868,413	Local	0.9	2	25	2,417,566	Local
	Howard Avenue	Laurier Extension	0.8	2	25	3,759,688	Local	0.8	2	25	3,585,852	Local
	South of Laurier Extension		0.8	2	25	3,908,804	Local	0.8	2	25	3,752,400	Local
Ojibway Parkway	E.C. Row Expressway	GN Booth Drive	0.8	2	25	3,818,692	Local	0.8	2	25	10,057,279	Minor Collector
	GN Booth Drive	Sandwich Street	0.8	2	25	3,827,016	Local	0.8	2	25	10,102,168	Minor Collector
	Sandwich Street	Prospect Avenue	0.8	2	25	1,101,865	Local	0.8	2	25	1,098,205	Local
	North of Prospect Avenue		0.8	2	25	1,095,414	Local	0.8	2	25	1,075,855	Local
Wyandotte Street	West of Huron Church Road		0.9	1.5	25	624,808	Local	0.9	1.5	25	600,270	Local
	East of Huron Church Road		0.9	1.5	25	620,837	Local	0.9	1.5	25	1,802,502	Local
University Avenue	West of Huron Church Road		0.9	1.5	25	173,565	Local	0.9	1.5	25	156,605	Local
	East of Huron Church Road		0.9	1.5	25	2,078,982	Local	0.9	1.5	25	1,552,833	Local
Riverside Drive	West of Huron Church Road		0.9	1.5	25	438,597	Local	0.9	1.5	25	464,825	Local
	East of Huron Church Road		0.9	1.5	25	868,268	Local	0.9	1.5	25	719,257	Local
AMB Off Ramp	East of Huron Church Road							0.8	1.5	25	41,871,610	Major Collector
AMB On Ramp	East of Huron Church Road		0.9	1.5	25	2,925,173	Local					
Patricia Street	AMB	Wyandotte Street	0.9	1.5	25	2,796,716	Local	0.9	1.5	25	4,591,897	Local
College Street	East of Huron Church Road		0.9	1.5	25	2,060,983	Local	0.9	1.5	25	4,115,871	Local
	West of Huron Church Road		0.9	1.5	25	261,091	Local	0.9	1.5	25	120,704	Local
Girardot Street	East of Huron Church Road		0.9	1.5	25	142,064	Local	0.9	1.5	25	142,119	Local
	West of Huron Church Road		0.9	1.5	25	510,609	Local	0.9	1.5	25	312,712	Local
Tecumseh Road	East of Huron Church Road		0.9	1.5	25	1,716,678	Local	0.9	1.5	25	4,887,516	Local
	West of Huron Church Road		0.9	1.5	25	812,683	Local	0.9	1.5	25	886,788	Local
Dorchester Street	East of Huron Church Road		0.9	1.5	25	212,989	Local	0.9	1.5	25	192,128	Local
	West of Huron Church Road		0.9	1.5	25	324,043	Local	0.9	1.5	25	126,375	Local
Prince Road/Totten Street	East of Huron Church Road		0.9	1.5	25	274,674	Local	0.9	1.5	25	333,164	Local
	West of Huron Church Road		0.9	1.5	25	635,737	Local	0.9	1.5	25	683,173	Local
Malden Road	East of Huron Church Road		0.9	1.5	25	207,234	Local	0.9	1.5	25	169,921	Local
	West of Huron Church Road		0.8	1.5	25	6,694,866	Local	0.8	1.5	25	12,978,999	Minor Collector
Industrial Road	East of Huron Church Road		0.9	1.5	25	683,355	Local	0.9	1.5	25	974,059	Local
	West of Huron Church Road		0.9	1.5	25	2,105,304	Local	0.9	1.5	25	5,278,726	Local
E.C. Row Expressway North Ramp Terminal	East of Huron Church Road		0.8	1.5	25	3,384,852	Local	0.9	1.5	25	202,285	Local
	West of Huron Church Road		0.9	1.5	25	2,019,444	Local					
E.C. Row Expressway South Ramp Terminal	East of Huron Church Road							0.8	1.5	25	1,141,295	Local
	West of Huron Church Road		0.8	1.5	25	8,049,043	Local	0.9	1.5	25	1,070,123	Local
Labelle Street/Bethlehem Avenue	East of North Service Road		0.9	1.5	25	390,654	Local	0.9	1.5	25	304,484	Local
	Between North and South Service Road		0.9	1.5	25	174,853	Local	0.9	1.5	25	450,703	Local
	West of South Service Road		0.9	1.5	25	230,704	Local	0.9	1.5	25	450,212	Local
Grand Marais Road/Lambton Street	East of Huron Church Road		0.9	1.5	25	564,330	Local	0.9	1.5	25	453,362	Local
	West of Huron Church Road		0.9	1.5	25	420,333	Local	0.9	1.5	25	259,284	Local
Pulford Street	East of Huron Church Road		0.9	1.5	25	332,327	Local	0.9	1.5	25	243,325	Local
Todd Lane/Cabana Road	East of Huron Church Road		0.8	1.5	25	1,075,417	Local	0.8	1.5	25	865,161	Local
	Between Huron Church Road and Highway 401 Off Ramp		0.8	1.5	25	1,118,866	Local	0.8	1.5	25	1,723,579	Local
	West of Highway 401 Off Ramp		0.8	1.5	25	1,350,769	Local	0.8	1.5	25	1,346,465	Local
Huron Church Line	West of Huron Church Road		0.8	1.5	25	1,174,921	Local	0.9	1.5	25	1,411,207	Local
St Clair College	East of Talbot Road		0.9	1.5	25	403,887	Local	0.8	1.5	25	1,059,258	Local
Cousineau Drive	East of Talbot Road		0.9	1.5	25	778,882	Local	0.9	1.5	25	700,261	Local
	West of Talbot Road		0.8	1.5	25	884,855	Local	0.9	1.5	25	237,841	Local
Howard Avenue	East of Talbot Road		0.8	1.5	25	1,609,143	Local	0.8	1.5	25	1,928,198	Local
	West of Talbot Road		0.8	1.5	25	1,784,364	Local	0.8	1.5	25	2,292,015	Local
Laurier Extension	West of Talbot Road/Highway 3		0.9	1.5	25	1,934,059	Local	0.9	1.5	25	2,100,322	Local
E.C. Row Expressway	West of Ojibway Parkway		0.8	1.5	25	7,032,005	Local	0.8	1.5	25	7,622,219	Local
	West of Broadway Street		0.8	1.5	25	4,376,646	Local	0.8	1.5	25	7,382,092	Local
	East of Huron Church Road		0.8	1.5	25	15,831,997	Minor Collector	0.8	1.5	25	28,851,437	Major Collector
	At Malden Road		0.8	1.5	25	15,648,904	Minor Collector	0.8	1.5	25	22,176,669	Major Collector
	West of Matchette Road		0.8	1.5	25	7,246,916	Local	0.8	1.5	25	4,880,017	Local
GN Booth Drive	West of Ojibway Parkway		0.9	1.5	25	84,428	Local	0.9	1.5	25	94,454	Local
Sandwich Street	West of Ojibway Parkway		0.9	1.5	25	1,894,399	Local	0.9	1.5	25	1,211,248	Local
Prospect Avenue	West of Ojibway Parkway		0.9	1.5	25	82,004	Local	0.9	1.5	25	57,260	Local
HIGHWAY 401 Ramps												
Highway 3 merge/split												
Highway 401 Northbound Off Ramp			0.8	2	25	16,809,375	Minor Collector					
Highway 401 Northbound On Ramp			0.8	2	25	2,499,973	Local					
Highway 401 Southbound Off Ramp								0.8	2	25	2,525,443	Local
Highway 401 Southbound On Ramp								0.9	2	25	7,698,500	Local
At Howard Avenue												
Highway 401 Northbound On Ramp			0.9	2	25	240,624	Local					
Highway 401 Southbound On Ramp								0.9	2	25	6,023,709	Local
At St. Clair College												
Highway 401 Northbound Off Ramp			0.9	2	25	544,551	Local					
Highway 401 Southbound Off Ramp								0.9	2	25	1,147,771	Local
Highway 401 Southbound On Ramp								0.9	2	25	212,116	Local
At Todd Lane/Cabana Road												
Highway 401 Northbound On Ramp			0.8	2	25	2,144,618	Local					
Highway 401 Southbound Off Ramp								0.8	2	25	1,421,787	Local
Highway 401 Southbound On Ramp								0.9	2	25	641,106	Local
At Huron Church Road												
Highway 401 Northbound Off Ramp			0.8	2	25	4,795,039	Local					
Highway 401 Southbound On Ramp								0.8	2	25	25,506,592	Major Collector
At Malden Road												
Highway 401 Northbound On Ramp												
Highway 401 Southbound Off Ramp												
Highway 401 to E.C. Row Expressway												
Highway 401 Southbound Off Ramp								0.8	2	25	20,776,275	Major Collector
Ojibway Parkway Interchange												
Highway 401 Northbound Off Ramp			0.9	2	25	5,195,387	Local					
Highway 401 Northbound On Ramp			0.9	2	25	11,560,147	Minor Collector					
Highway 401 Southbound Off Ramp								0.9	2	25	3,779,532	Local
Highway 401 Southbound On Ramp								0.8	2	25	7,579,779	Local
E.C. Row Expressway to Highway 401												
Highway 401 Northbound On Ramp			0.9	2	25	17,050,696	Minor Collector					
Highway 401 Mainline	South of Highway 3 merge/split	Highway 3/Highway 401 Northbound Off Ramp	0.8	2.5	25	132,440,945	Major Arterial					
	Highway 3/Highway 401 Northbound Off Ramp	Highway 3/Highway 401 Northbound On Ramp	0.8	2.5	25	80,696,299	Minor Arterial					
	Highway 3/Highway 401 Northbound On Ramp	Howard Avenue Northbound On Ramp	0.8	2.5	25	106,125,521	Major Arterial					
	Howard Avenue Northbound On Ramp	St. Clair College/Highway 401 Northbound Off Ramp	0.8	2.5	25	109,195,695	Major Arterial					
	St. Clair College/Highway 401 Northbound Off Ramp	Pulford Street/Highway 401 Northbound On Ramp	0.8	2.5	25	80,268,051	Minor Arterial					
	Pulford Street/Highway 401 Northbound On Ramp	Huron Church Road/Highway 401 Northbound Off Ramp	0.8	2.5	25	112,467,203	Major Arterial					
	Huron Church Road/Highway 401 Northbound Off Ramp	Ojibway Parkway/Highway 401 Northbound Off Ramp	0.8	2.5	25	96,249,254	Minor Arterial					
	Ojibway Parkway/Highway 401 Northbound Off Ramp	Ojibway Parkway/Highway 401 Northbound On Ramp	0.9	2.5	25	111,187,902	Major Arterial					
	Ojibway Parkway/Highway 401 Northbound On Ramp	E.C. Row Expressway to Highway 401 Northbound On Ramp	0.8	2.5	25	113,121,901	Major Arterial					
	E.C. Row Expressway to Highway 401 Northbound On Ramp	Canadian Plaza	0.8	2.5	25	142,143,615	Major Arterial					
	Canadian Plaza	Ojibway Parkway/Highway 401 Southbound Off Ramp						0.8	2.5	25	225,276,134	Freeway
	Ojibway Parkway/Highway 401 Southbound Off Ramp	Ojibway Parkway/Highway 401 Southbound On Ramp						0.8	2.5	25	198,199,485	Major Arterial
	Ojibway Parkway/Highway 401 Southbound On Ramp	Highway 401 to E.C. Row Expressway Southbound Off Ramp						0.8	2.5	25	215,589,233	Freeway
	Highway 401 to E.C. Row Expressway Southbound Off Ramp	Huron Church Road/Highway 401 Southbound On Ramp						0.8	2.5	25	199,445,995	Major Arterial
	Huron Church Road/Highway 401 Southbound On Ramp	Pulford Street/Highway 401 Southbound Off Ramp						0.8	2.5	25	212,768,119	Freeway
	Pulford Street/Highway 401 Southbound Off Ramp	Todd Lane/Highway 401 Southbound Off Ramp						0.8	2.5	25	155,074,837	Major Arterial
	Todd Lane/Highway 401 Southbound Off Ramp	St. Clair College/Highway 401 Southbound Off Ramp						0.8	2.5	25	155,589,284	Major Arterial
	St. Clair College/Highway 401 Southbound Off Ramp	St. Clair College/Highway 401 Southbound On Ramp						0.8	2.5	25	148,112,702	Major Arterial
	St. Clair College/Highway 401 Southbound On Ramp	Howard Avenue Southbound On Ramp						0.8	2.5	25	198,640,605	Major Arterial
	Howard Avenue Southbound On Ramp	Highway 3/Highway 401 Southbound Off Ramp						0.8	2.5	25	223,904,817	Freeway
	Highway 3/Highway 401 Southbound Off Ramp	Highway 3/Highway 401 Southbound On Ramp						0.8	2.5	25	164,167,857	Major Arterial
	Highway 3/Highway 401 Southbound On Ramp	South of Highway 3 merge/split						0.8	2.5	25	205,927,275	Freeway
Malden Road	Chappus Street	Highway 401 South Ramp	0.8	1.5	25	3,841,441	Local	0.8	1.5	25	5,074,259	Local
	Highway 401 South Ramp	Highway 401 North Ramp	0.8	1.5	25	4,301,764	Local	0.8	1.5	25	3,192,811	Local
	North of Highway 401 North Ramp		0.9	1.5	25	3,308,144	Local	0.8	1.5	25	3,568,037	Local
Matchette Road	Chappus Street	E.C. Row Expressway South Ramp	0.8	1.5	25	1,011,564	Local	0.8	1.5	25	1,045,777	Local
	E.C. Row Expressway South Ramp	E.C. Row Expressway North Ramp	0.9	1.5	25	325,783	Local	0.8	1.5	25	1,150,737	Local
	E.C. Row Expressway North Ramp	Carmichael Street	0.9	1.5	25	658,960	Local	0.9	1.5	25	401,945	Local
Highway 3 merge/split												
Highway 401 Northbound Off Ramp (to Highway 3)			0.8	1.5	25	7,717,110	Local					
Highway 401 Northbound Off Ramp (to Laurier split)			0.9	1.5	25	5,501,166	Local					

Prepared By: MEB
Reviewed By: PRB





KEY PLAN

LEGEND

- PIEZO CONE PENETRATION TEST
- BOREHOLE, CONE PENETRATION TEST, FIELD VANE

REFERENCE

DRAWING BASED ON CANMAP STREET FILES V2005.4

NOTES

THIS DRAWING IS SCHEMATIC ONLY AND IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.

ALL LOCATIONS ARE APPROXIMATE.

PROJECT

DETROIT RIVER INTERNATIONAL CROSSING
WINDSOR, ONTARIO

TITLE

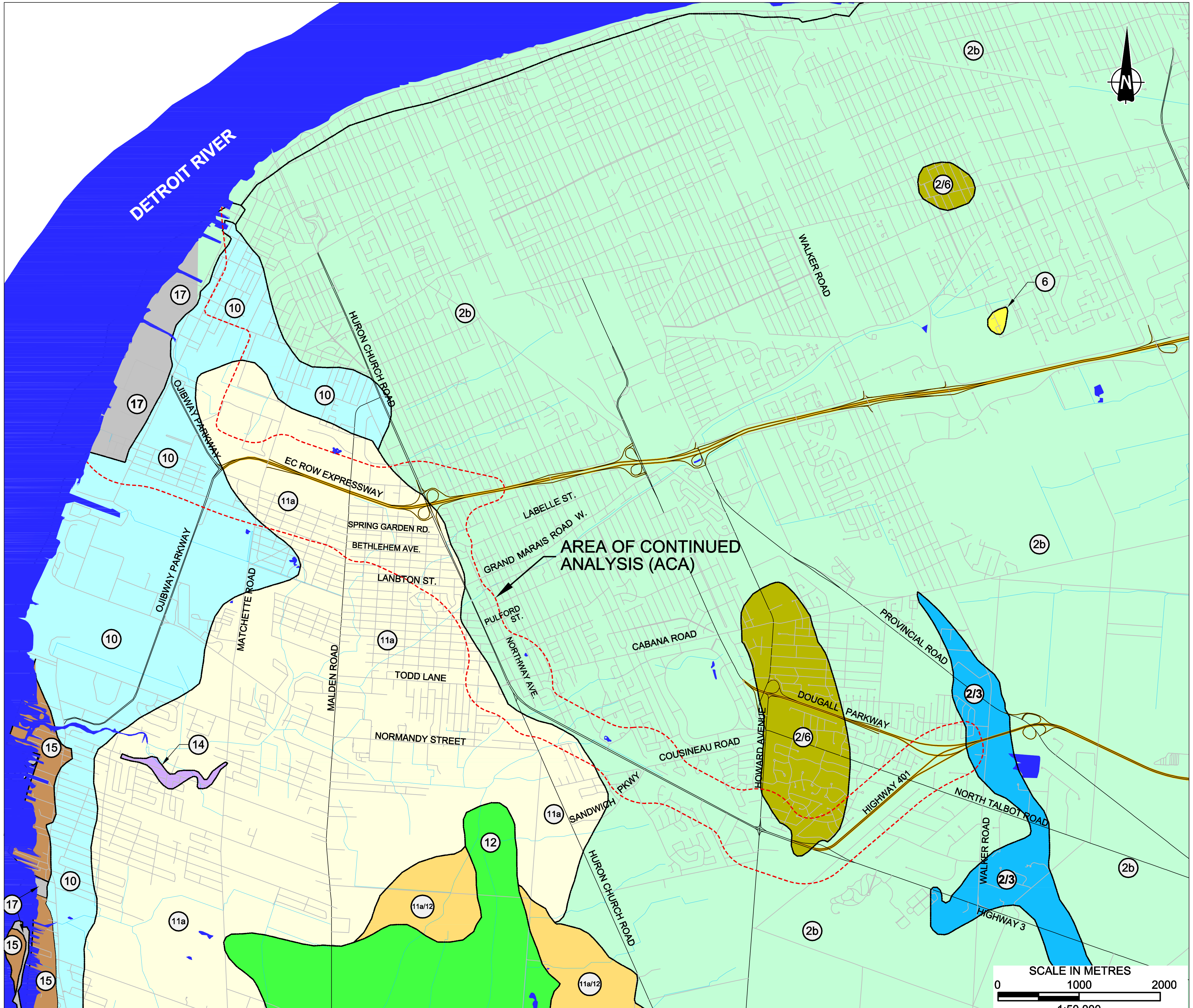
LOCATION PLAN

Golder Associates
LONDON, ONTARIO

PROJECT No.	05-1140-003	FILE No.	051140003-R01001
		SCALE	AS SHOWN
CADD	LMK	Nov. 15/07	REV.
CHECK			

FIGURE 1

Drawing file: 051140003-R01001.dwg Dec 19, 2007 - 2:55pm



LEGEND

QUATERNARY GEOLOGY:

Symbol	Description
2b	Clayey silt till.
2/3	Area of till (2) and glaciofluvial gravel or gravelly sand (3).
6	Glaciolacustrine: medium sand.
2/6	Area of till (2) with a thin and dicontinuous cover of glaciolacustrine medium sand (6).
10	Lacustrine (Lake Rouge): gravel, gravelly sand.
11a	Lacustrine sand. a) Lake Rouge: medium sand.
11a/12	Lacustrine (Lake Rouge): area of medium sand on the knolls and silt in the depressions.
12	Lacustrine (Lake Rouge): silt, clay. May include some glaciolacustrine silt-clay (8).
14	Unsubdivided modern alluvium: silty loam, some organic matter.
15	Bogs, marshes and swamps: peat, muck, marl, loam.
17	Fill, concrete, other cultural features.

REFERENCE

DRAWING BASED ON CANMAP STREET FILES V2005.4
QUATERNARY GEOLOGY: Ontario Division of Mines (1972) "Quaternary Geology of the Windsor-Essex Area, Western Part", Map 749, Geol. Ser., Scale 1:50,000.

NOTES

THIS DRAWING IS SCHEMATIC ONLY AND IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.

ALL LOCATIONS ARE APPROXIMATE.

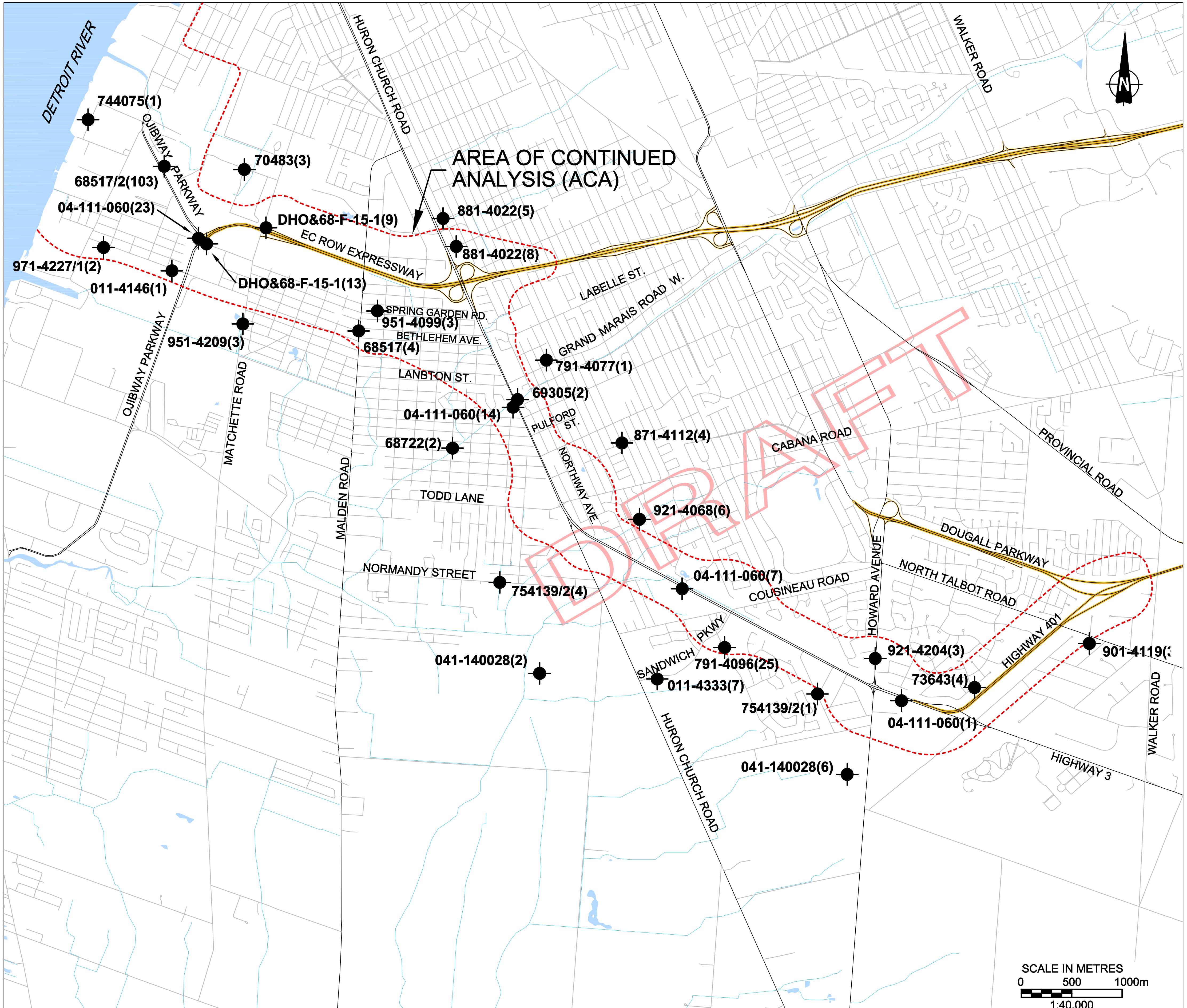
PROJECT
DETROIT RIVER INTERNATIONAL CROSSING
WINDSOR, ONTARIO

TITLE
QUATERNARY GEOLOGY

Golder Associates
LONDON, ONTARIO

PROJECT No.	05-1140-003	FILE No.	051140003-R01002	
		SCALE	AS SHOWN	REV.
CADD	LMK	Nov. 15/07		
CHECK			FIGURE 2	

Drawing file: 051140003-R01002.dwg Dec 19, 2007 - 3:00pm



LEGEND

BOREHOLE

REFERENCE

DRAWING BASED ON CANMAP STREET FILES V2005.4

NOTES

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ALL LOCATIONS ARE APPROXIMATE.

PROJECT

DETROIT RIVER INTERNATIONAL CROSSING
WINDSOR, ONTARIO

TITLE

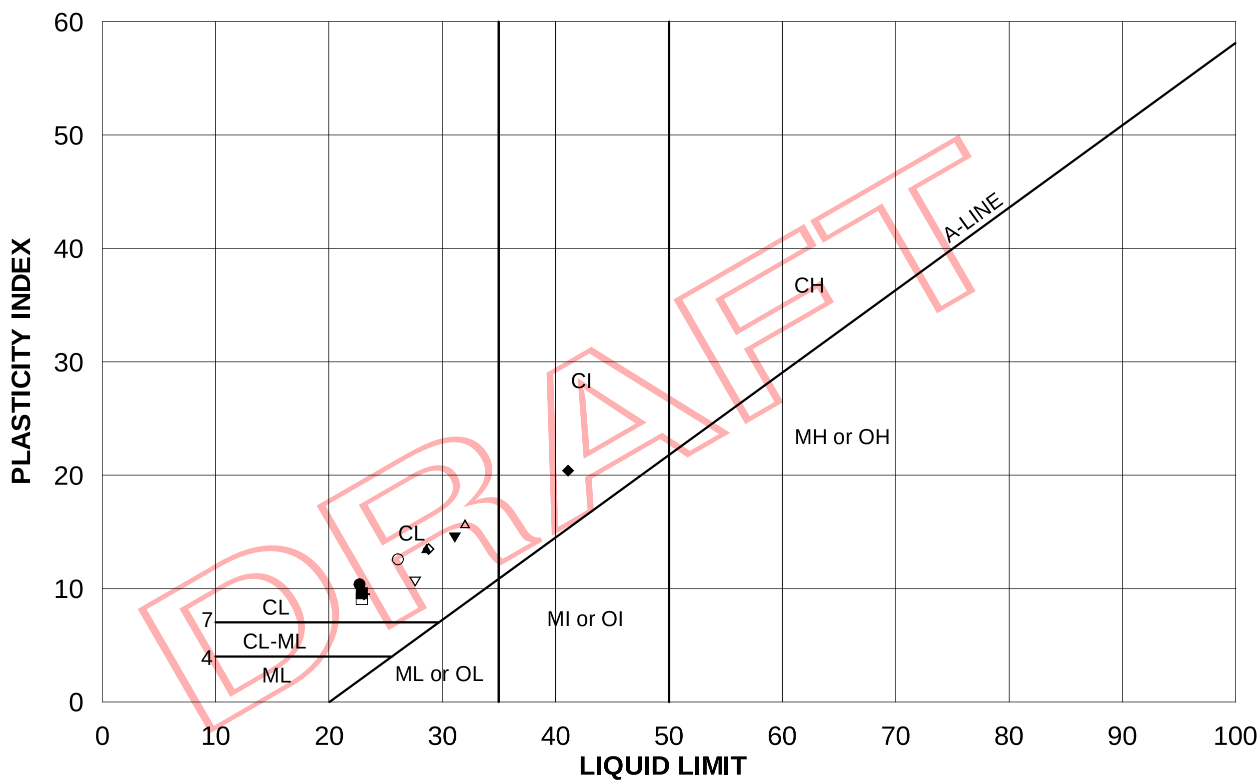
SUBSURFACE DATABASE

Golder Associates
LONDON, ONTARIO

PROJECT No.	05-1140-003	FILE No.	051140003-R01003
		SCALE	AS SHOWN
CADD	LMK	Nov. 15/07	REV.
CHECK			

FIGURE 3

Drawing file: 051140003-R01003.dwg Dec 19, 2007 - 2:58pm



LEGEND (04-1111-060)

○	Borehole 1, Sample 5
●	Borehole 1, Sample 7
□	Borehole 7, Sample 5
■	Borehole 7, Sample 7
◇	Borehole 7, Sample 9
◆	Borehole 14, Sample 4
△	Borehole 14, Sample 6
▲	Borehole 14, Sample 9
▽	Borehole 23, Sample 4
▼	Borehole 23, Sample 7
+	Borehole 23, Sample 9

PROJECT

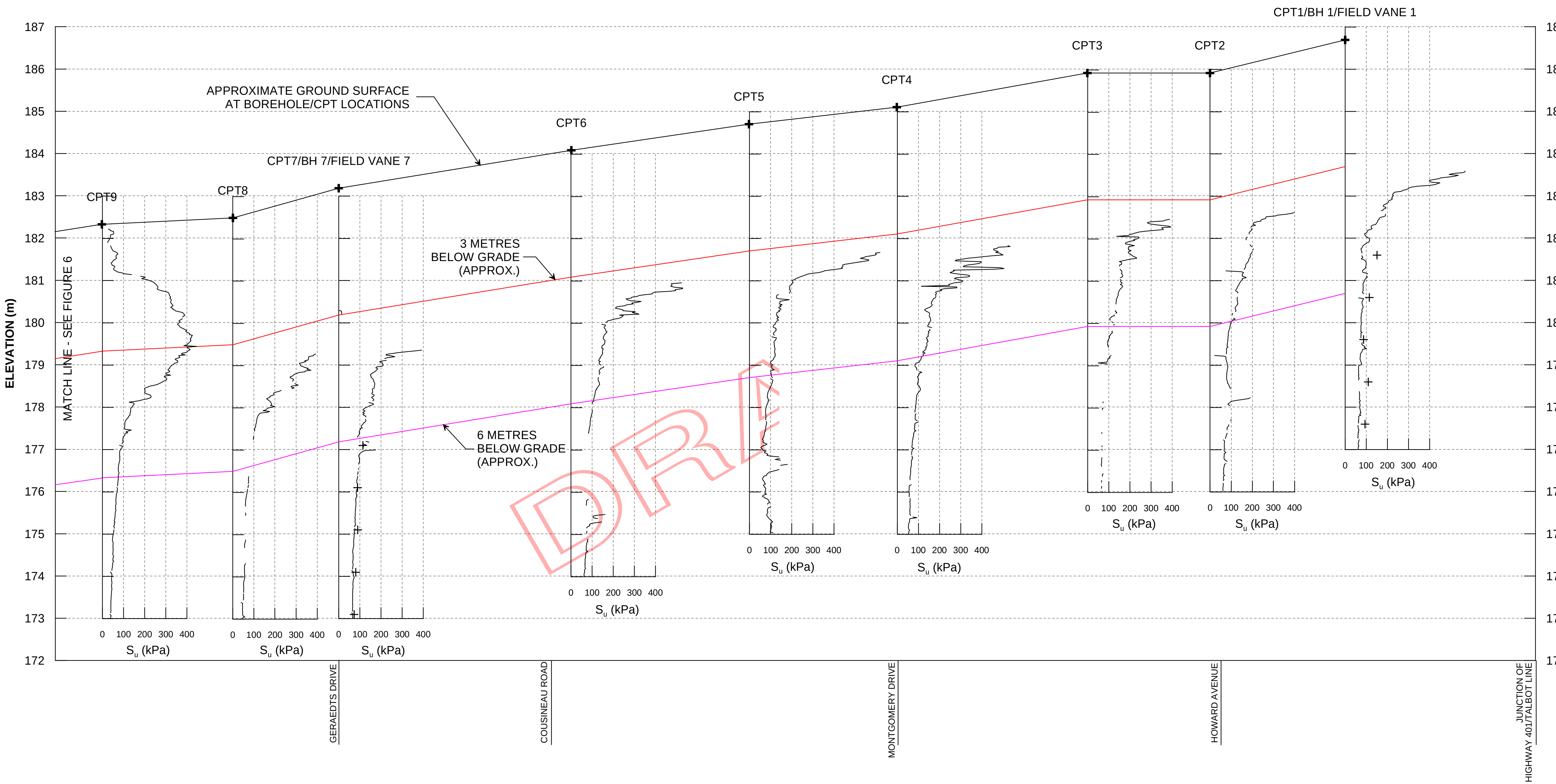
DETROIT RIVER INTERNATIONAL CROSSING
WINDSOR, ONTARIO

TITLE

PLASTICITY CHART

Golder Associates

PROJECT No.	05-1140-003-1	FILE No.	051140003-1-R01004	
		SCALE	AS SHOWN	REV. 0
CADD	MEB	Nov. 15/07		
CHECK			**FIGURE 4**	



LEGEND (04-1111-060)

——— CPT DATA
+ FIELD VANE DATA

SCALE

VERTICAL SCALE - 1:100
HORIZONTAL SCALE - 1:10,000

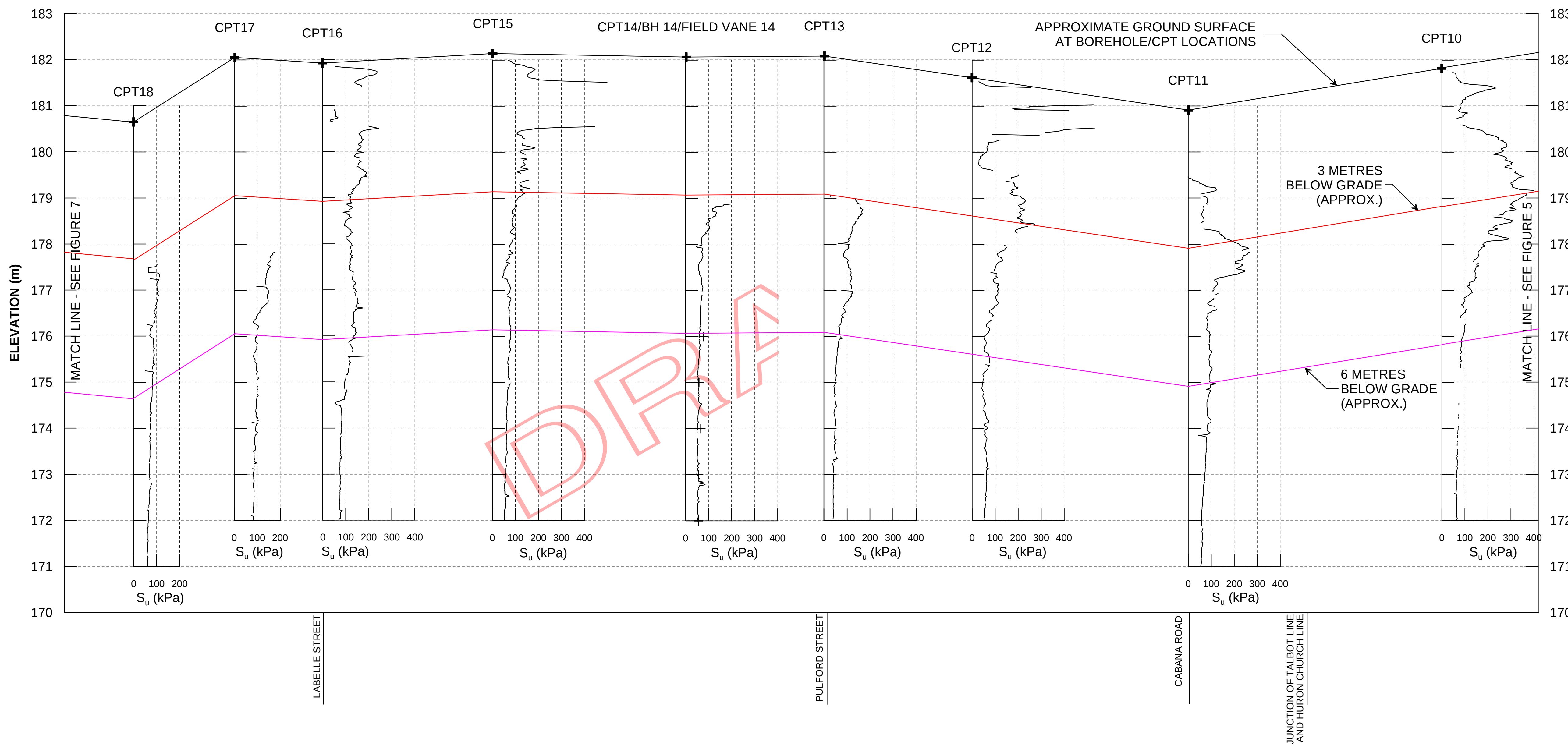
PROJECT
DETROIT RIVER INTERNATIONAL CROSSING
WINDSOR, ONTARIO

TITLE
UNDRAINED SHEAR STRENTH PROFILE

PROJECT No.	05-1140-003-1		FILE No.	051140003-1-R01005	
			SCALE	AS SHOWN	REV. 0
CADD	MEB	Nov. 15/07			
CHECK					

Golder Associates

FIGURE 5



LEGEND (04-1111-060)

——— CPT DATA

\+ FIELD VANE DATA

SCALE

VERTICAL SCALE - 1:100
HORIZONTAL SCALE - 1:10,000

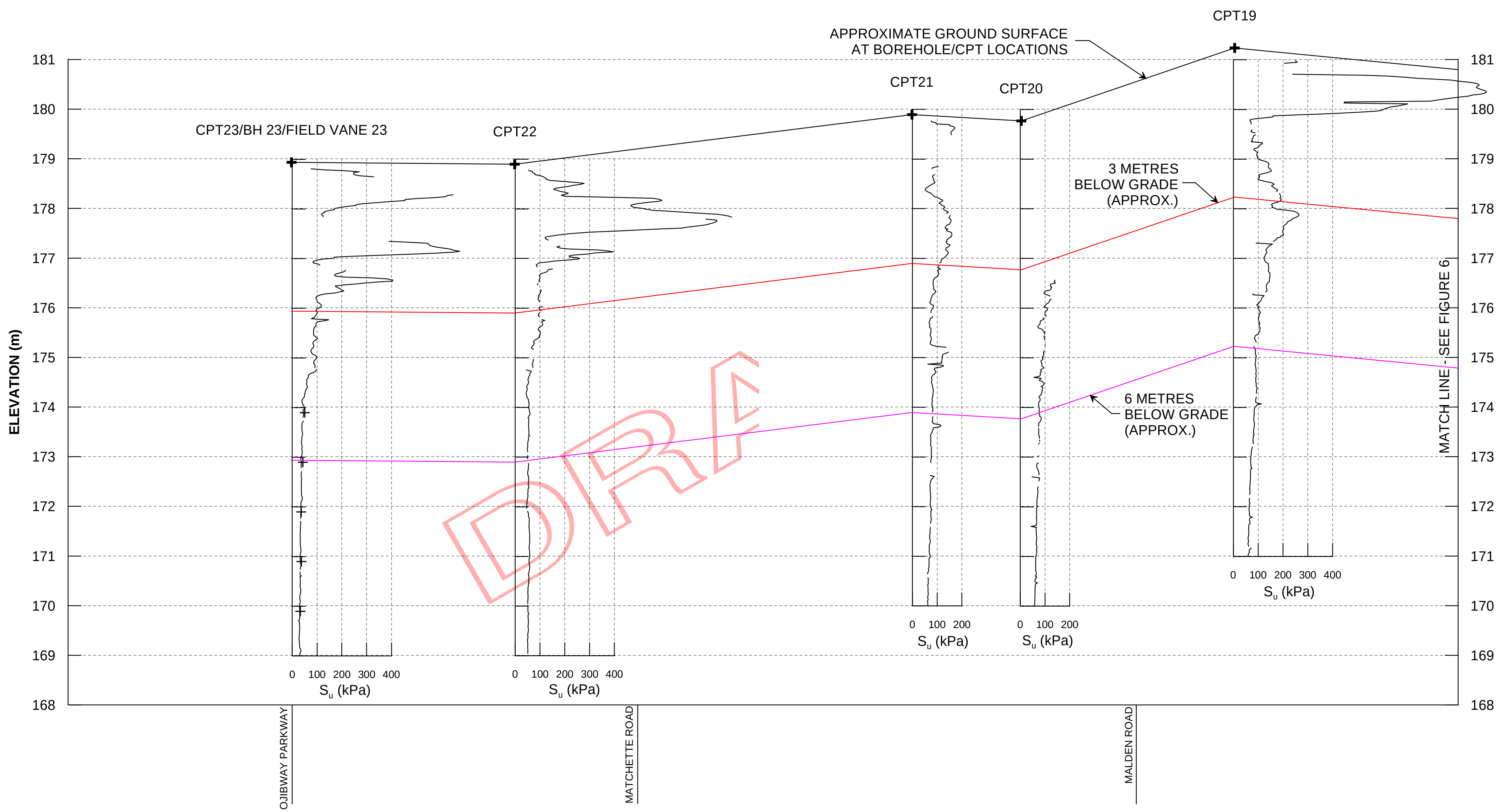
PROJECT
DETROIT RIVER INTERNATIONAL CROSSING
WINDSOR, ONTARIO

TITLE
UNDRAINED SHEAR STRENGTH PROFILE

PROJECT No. 05-1140-003-1		FILE No. 051140003-1-R01006	
		SCALE AS SHOWN	REV. 0
CADD	MEB	Nov. 15/07	
CHECK			

Golder Associates

FIGURE 6



LEGEND (04-1111-060)

——— CPT DATA

\+ FIELD VANE DATA

SCALE

VERTICAL SCALE - 1:100
HORIZONTAL SCALE - 1:10,000

PROJECT

DETROIT RIVER INTERNATIONAL CROSSING
WINDSOR, ONTARIO

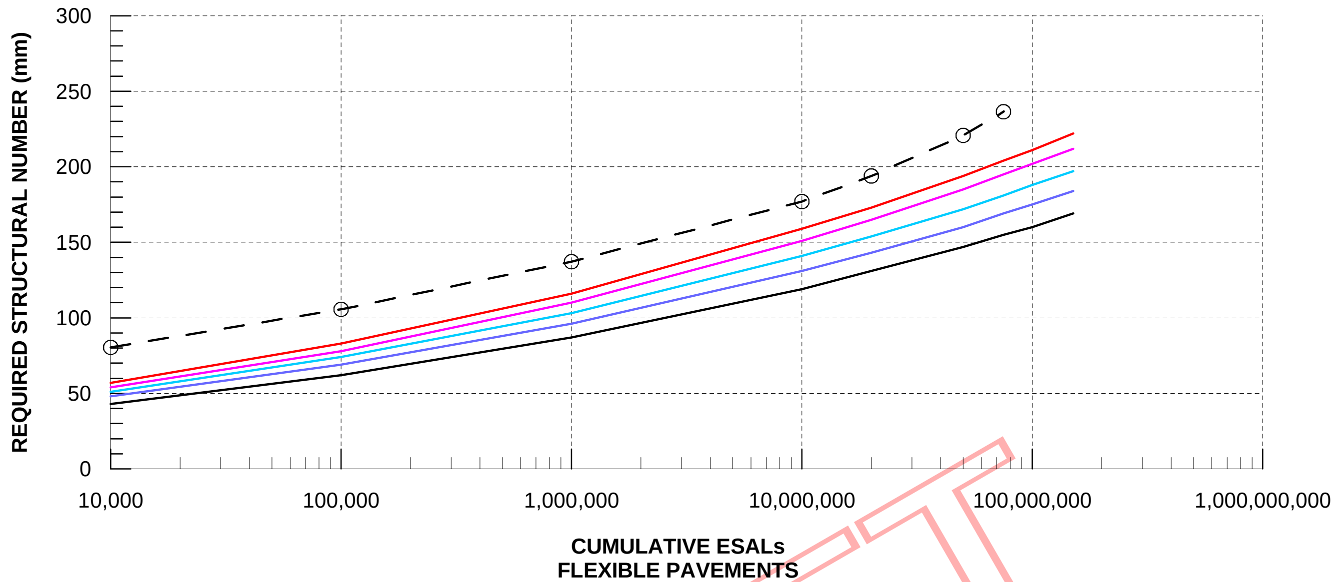
TITLE

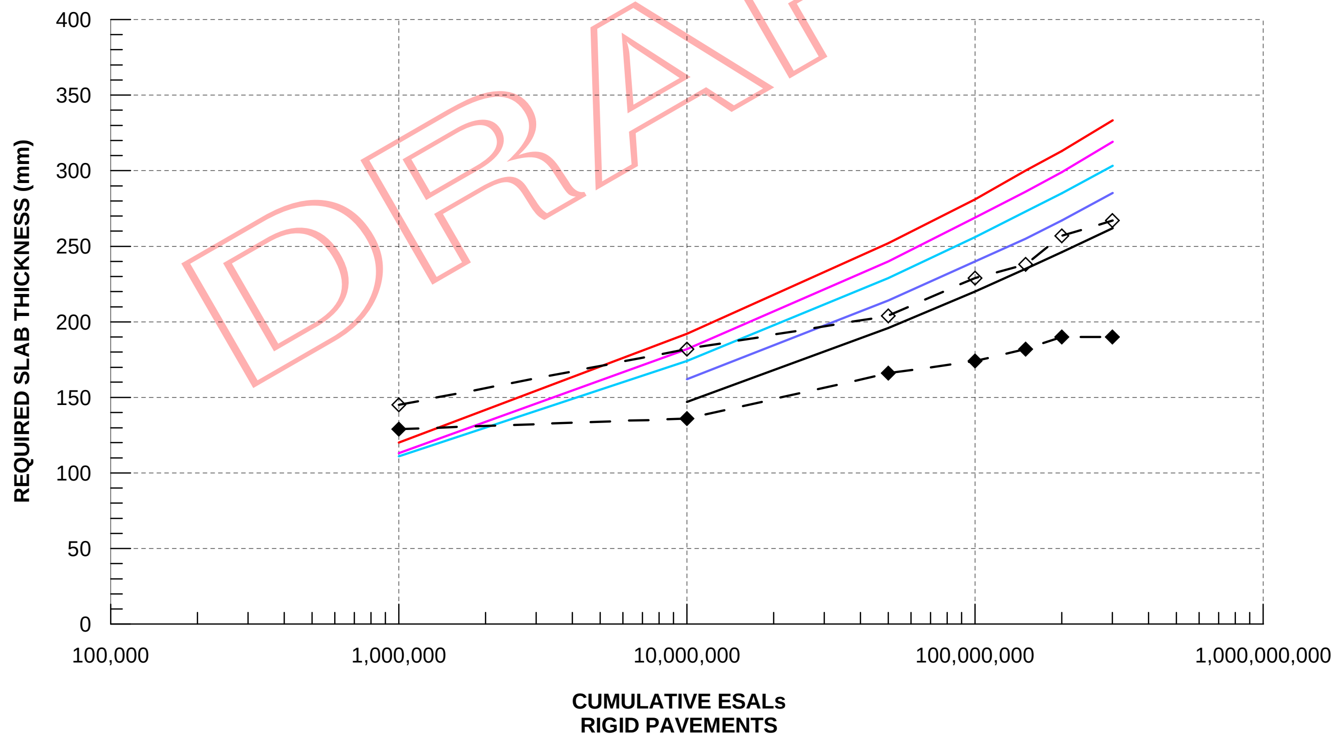
UNDRAINED SHEAR STRENGTH PROFILE

PROJECT No.	05-1140-003-1	FILE No.	051140003-1-R01007
		SCALE	AS SHOWN REV. 0
CADD	MEB	Nov. 15/07	
CHECK			

Golder Associates

FIGURE 7





AASHTO METHOD
- R=50%, TSI=2.0 (Local & Minor Collector)
- R=75%, TSI=2.0 (Major Collector)
- R=85%, TSI=2.2 (Minor Arterial)
- R=90%, TSI=2.5 (Major Arterial)
- R=95%, TSI=2.5 (Freeway)

- ASPHALT INSTITUTE METHOD
- PCA METHOD - NO TIED SHOULDER
- PCA METHOD - WITH TIED SHOULDER

PROJECT

DETROIT RIVER INTERNATIONAL CROSSING
WINDSOR, ONTARIO

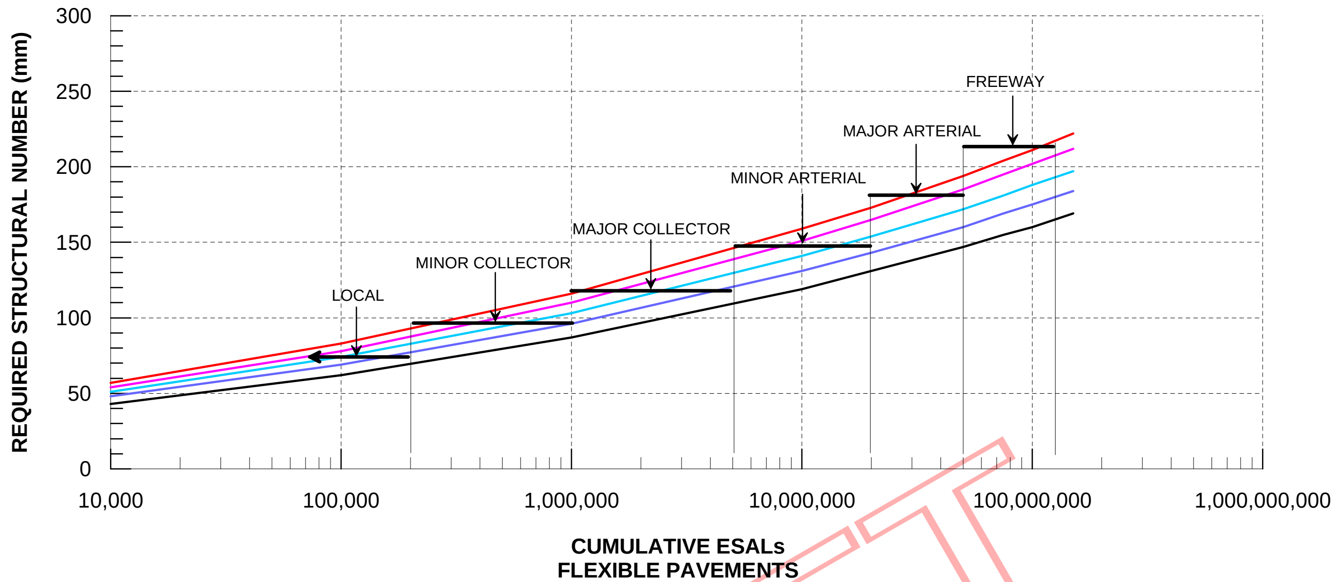
TITLE

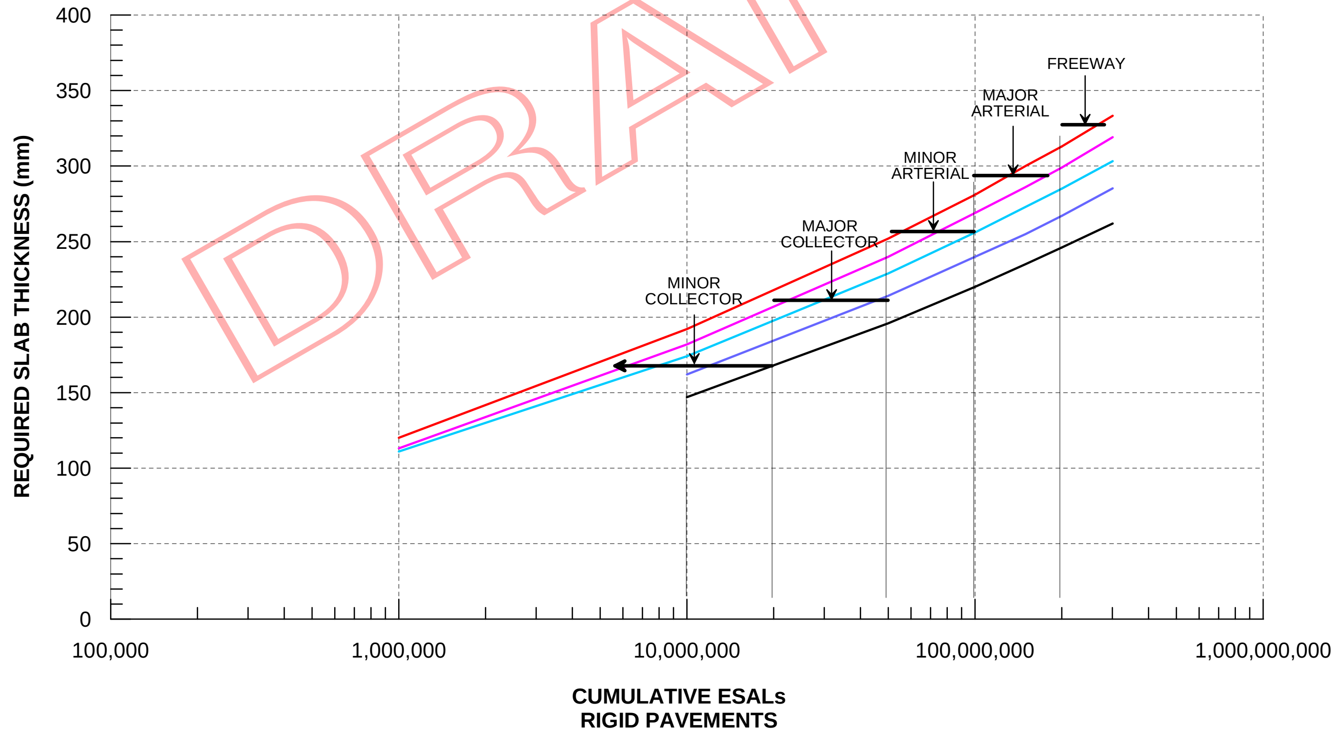
COMPARISON OF PAVEMENT DESIGN METHODS
(using Subgrade Condition 1)

Golder Associates

PROJECT No.	05-1140-003-1		FILE No.	051140003-1-R01008
			SCALE	JUN 29-07 REV. 0
CADD	MEB	Nov. 15/07		
CHECK				

FIGURE 8





R=50%, TSI=2.0 (Local & Minor Collector)
R=75%, TSI=2.0 (Major Collector)
R=85%, TSI=2.2 (Minor Arterial)
R=90%, TSI=2.5 (Major Arterial)
R=95%, TSI=2.5 (Freeway)

PROJECT

DETROIT RIVER INTERNATIONAL CROSSING
WINDSOR, ONTARIO

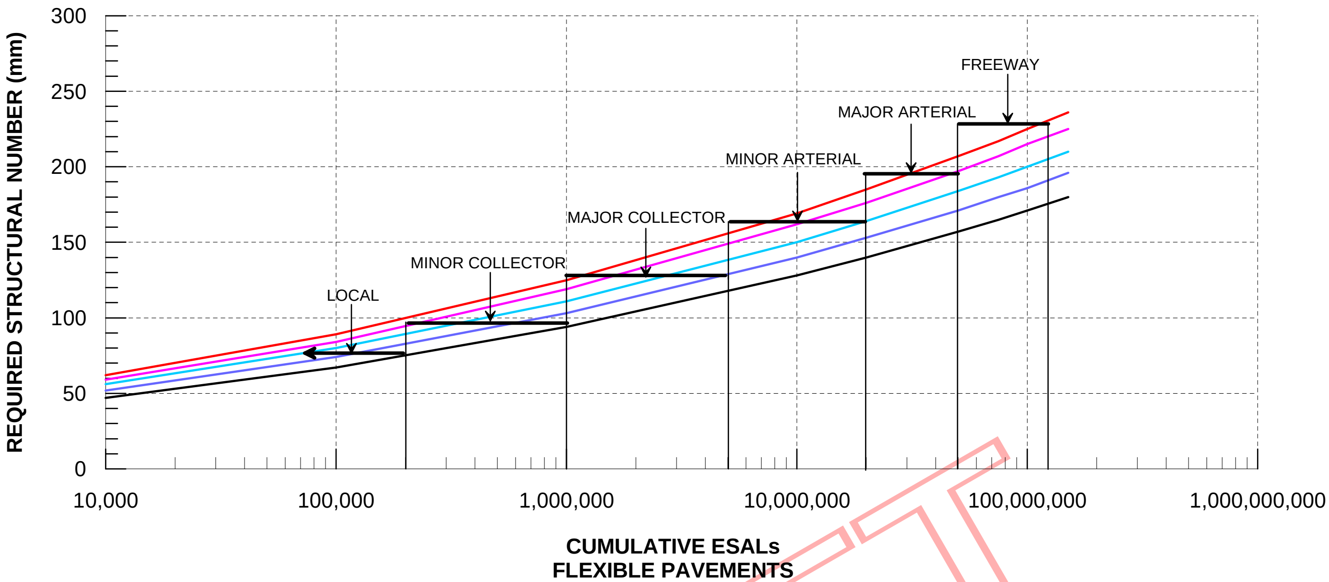
TITLE

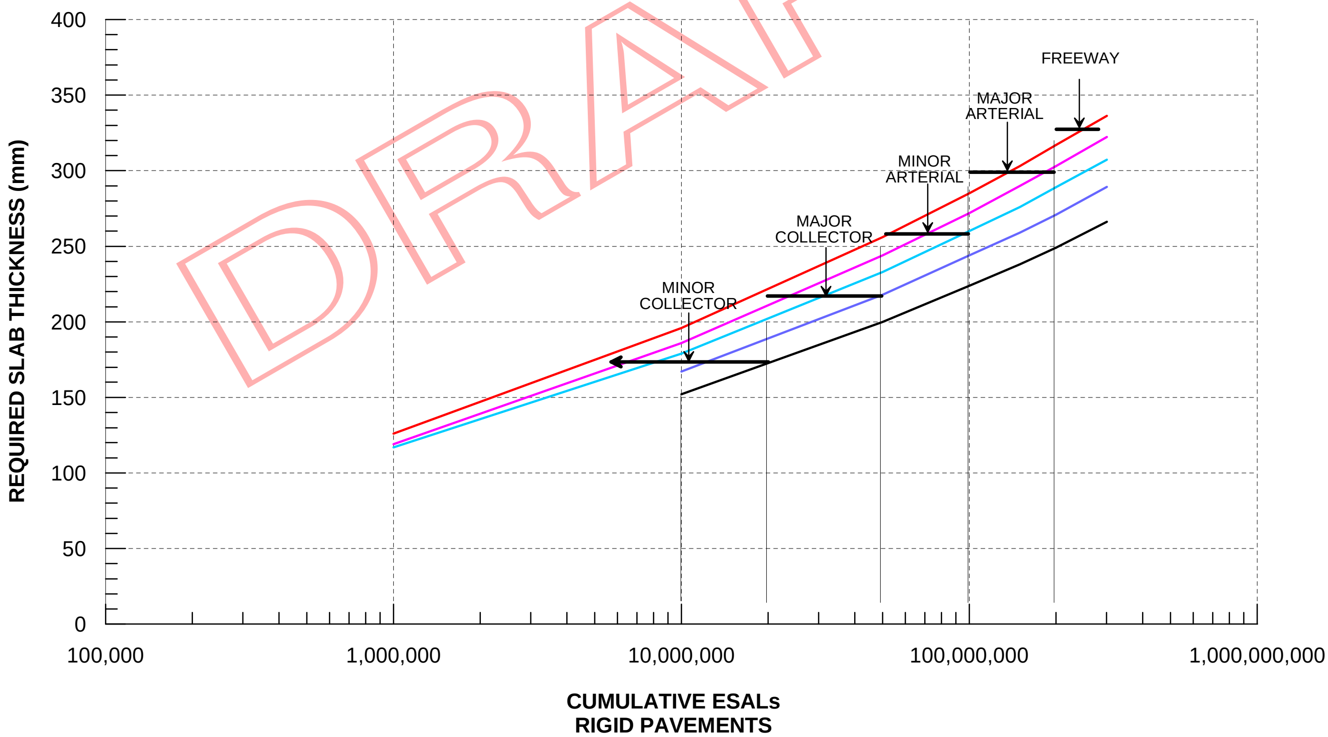
PAVEMENT STRUCTURAL REQUIREMENTS VERSUS CUMULATIVE ESALs SUBGRADE CONDITION 1

Golder Associates

PROJECT No. 05-1140-003-1		FILE No. 051140003-1-R01009	
		SCALE JUN 29-07	REV. 0
CADD	MEB	Nov. 15/07	
CHECK			

FIGURE 9





- R=50%, TSI=2.0 (Local & Minor Collector)
- R=75%, TSI=2.0 (Major Collector)
- R=85%, TSI=2.2 (Minor Arterial)
- R=90%, TSI=2.5 (Major Arterial)
- R=95%, TSI=2.5 (Freeway)

PROJECT

DETROIT RIVER INTERNATIONAL CROSSING
WINDSOR, ONTARIO

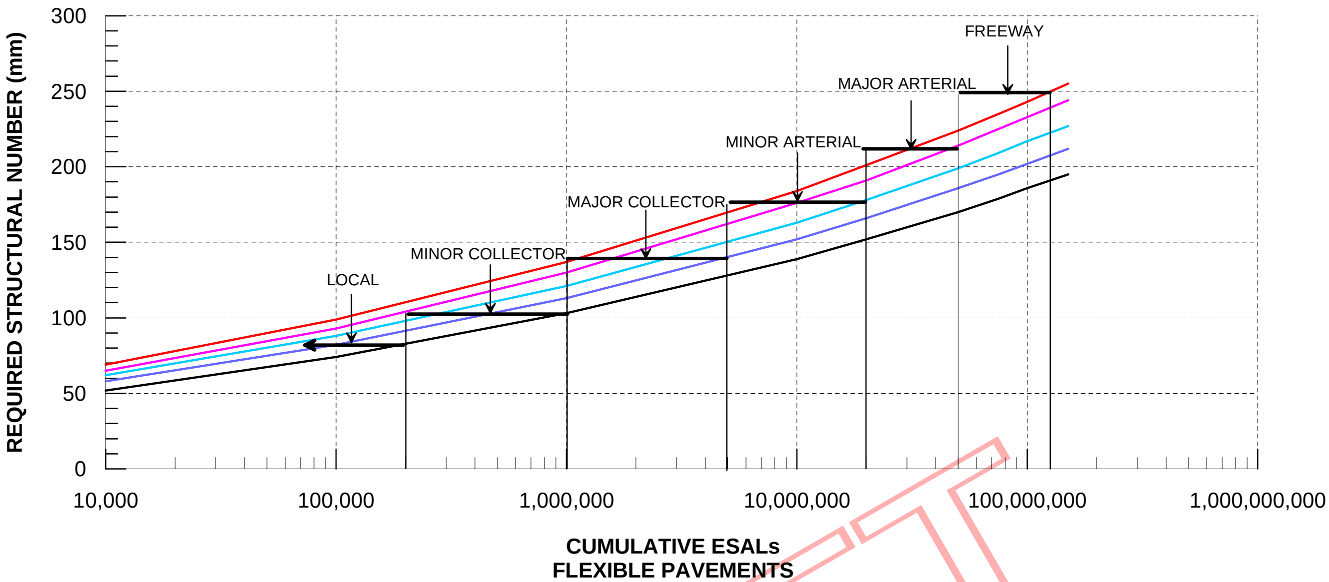
TITLE

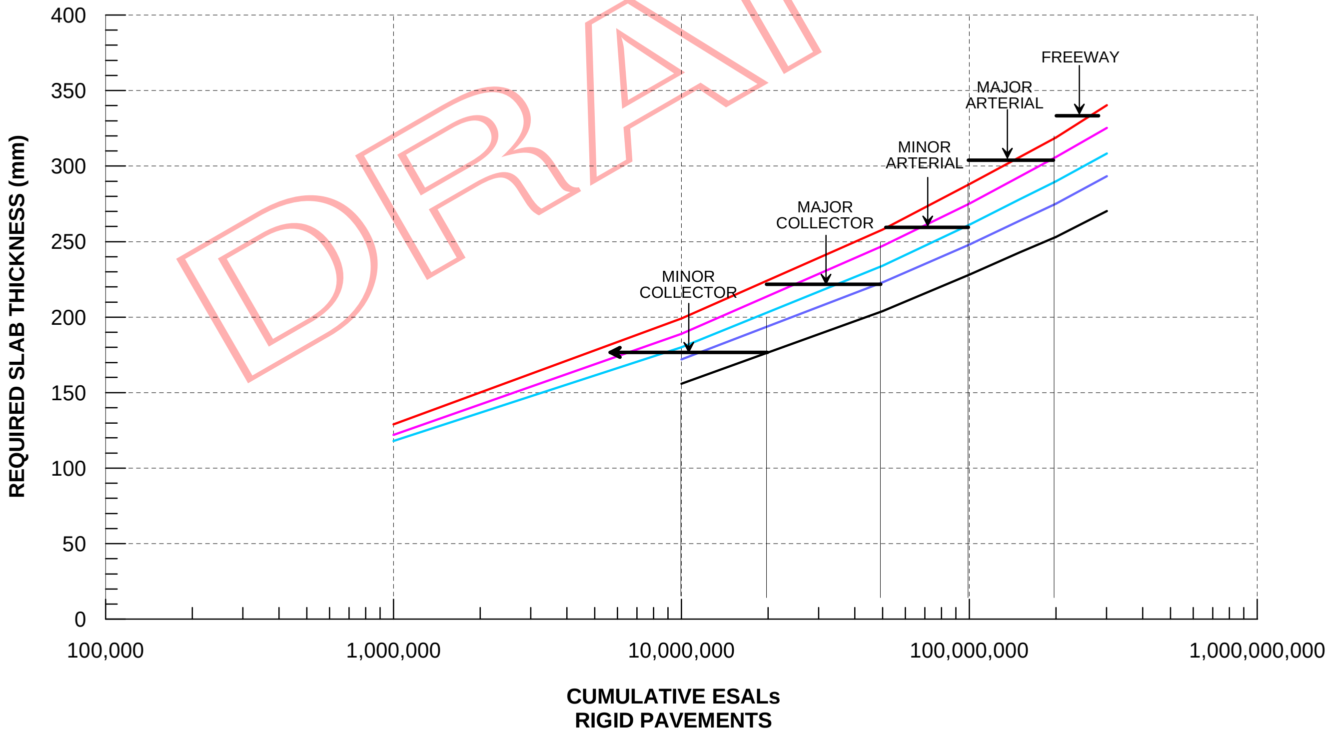
PAVEMENT STRUCTURAL REQUIREMENTS VERSUS CUMULATIVE ESALs SUBGRADE CONDITION 2

Golder Associates

PROJECT No. 05-1140-003-1		FILE No. 051140003-1-R01010	
		SCALE JUN 29-07	REV. 0
CADD	MEB	Nov. 15/07	
CHECK			

FIGURE 10





- R=50%, TSI=2.0 (Local & Minor Collector)
- R=75%, TSI=2.0 (Major Collector)
- R=85%, TSI=2.2 (Minor Arterial)
- R=90%, TSI=2.5 (Major Arterial)
- R=95%, TSI=2.5 (Freeway)

PROJECT

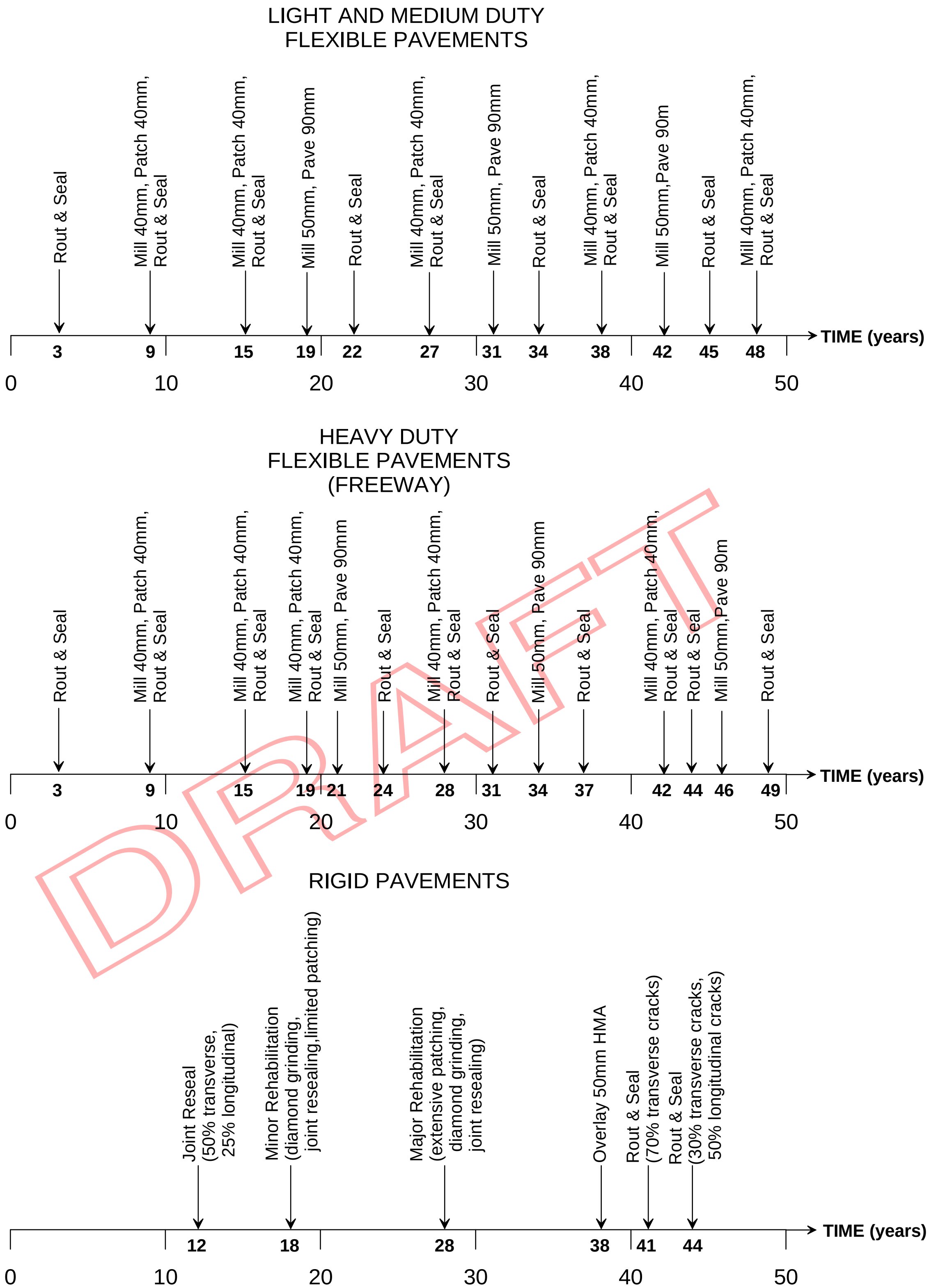
DETROIT RIVER INTERNATIONAL CROSSING
WINDSOR, ONTARIO

TITLE

PAVEMENT STRUCTURAL REQUIREMENTS VERSUS CUMULATIVE ESALs SUBGRADE CONDITION 3

Golder Associates

PROJECT No. 05-1140-003-1			FILE No. 051140003-1-R01011	
			SCALE JUN 29-07	REV. 0
CADD	MEB	Nov. 15/07	**FIGURE 11**	
CHECK				



PROJECT
DETROIT RIVER INTERNATIONAL CROSSING
WINDSOR, ONTARIO

TITLE
SUMMARY OF LIFE CYCLE COST STRATEGIES

Golder Associates

PROJECT No.	05-1140-003-1		FILE No.	051140003-1-R01012
			SCALE AS SHOWN	REV. 0
CADD	MEB	Nov. 15/07		
CHECK				

FIGURE 12

APPENDIX A

DRAFT INTERIM REPORT - PAVEMENT ENGINEERING

DETROIT RIVER INTERNATIONAL CROSSING

APPENDIX A

DRAFT INTERIM REPORT ON

PAVEMENTS ENGINEERING
DETROIT RIVER INTERNATIONAL CROSSING
WINDSOR, ONTARIO

Submitted to:

URS Canada Inc.
Consulting Engineers
75 Commerce Valley Drive East
Markham, Ontario
L3T 7N9

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August 2005 05-1140-003

INTRODUCTION

This report summarizes the background information on the subsurface conditions pertaining to pavement engineering in the Windsor area in support of the Environmental Assessment being undertaken for the proposed Detroit River International Crossing transportation corridors. A group of consulting firms, lead by URS Corporation, is completing the study under contract to the Ministry of Transportation, Ontario. The Ministry of Transportation, Ontario is one of the four principal members of an international partnership organized to study potential transportation corridors to permit more efficient transit of travelers and goods between the highway systems in the Windsor and Detroit metropolitan areas. Other members of the partnership include Transport Canada (TC), the United States Federal Highway Administration (US EHWA), and the State of Michigan Department of Transportation (MDOT).

Proposed Project

It is understood that current and projected cross-border traffic conditions in the greater Detroit and Windsor areas are such that a new river crossing is needed. The project will generally consist of either upgrading of existing transportation routes or building of new roadways to connect Provincial Highway 401 in Ontario with the interstate highway system surrounding Detroit. This connection will require either a bridge or tunnel crossing of the Detroit River and has the potential to include multiple overpass or underpass bridge structures associated with interchanges or grade separations along the connecting routes. Consideration may also be given to roadway sections lowered between retaining structures to achieve grade separations and which may minimize the effects of the corridor on surrounding areas. At this time, the details of the crossing facilities, locations, and corridors to and from the regional highways have not been established.

The general study area is illustrated on Figure 1.

Scope of Report

The scope of this report is to compile, review and provide a summary of the background information related to the subsurface conditions in the context of feasibility evaluation, route selection, and environmental assessment for the pavement engineering component of the proposed project. No subsurface investigations were conducted for this report and all subsurface data has been gathered from existing internal and published sources.

SUBSURFACE DATA REVIEW

Existing subsurface data was compiled and used to develop the soil classification maps described in this report. Information was gathered from Ministry of Transportation Ontario files (through the GEOCRES system), Golder Associates project files, Ontario Ministry of Natural Resources (MNR), and published papers and books. These data were used to assist in building an electronic database of subsurface information, and map the soil classification throughout the Windsor area at the following approximate intervals of depth: 0.3, 1.5, 3.0, and 6.0 metres below existing ground surface at the borehole locations.

Subsurface data existing in Golder Associates and the Ministry of Transportion Ontario (MTO) GEOCRES library files for projects completed in Windsor and surrounding areas over the last 40 years were reviewed for this project using the following criteria:

- Available boreholes and test pits drilled or excavated from ground surface to a minimum depth of 3 metres, and

- One representative borehole or test pit per minimum area of 0.25 square kilometres, where available, within the City of Windsor and Towns of LaSalle and Tecumseh.

The resultant data base is provided in Appendix A-I.

GEOLOGY OF THE WINDSOR AREA

The subsurface conditions in the Windsor area are characterized by regionally extensive, flat-lying soil including:

- Surface layers of miscellaneous fill materials at localized areas, associated with industrial and urban growth,

- Native deposits of sand and silt present at or near the surface in some locations, particularly in the west end of the City of Windsor and Town of LaSalle,

- Beneath the sand, where present, extensive deposits of clayey silt to silty clay,

- Bedrock throughout the study area is generally encountered at depths of 20 to 35 metres.

Figure 2 illustrates the general surficial sedimentary geology of the study area based on geologic interpretation of widely-spaced sample locations and an understanding of geomorphologic processes. When reviewing this figure, it should be noted that only the natural sediments encountered closest to the surface are identified, and that other sediments will exist beneath these.

Sedimentary Geology

The study area is located in the physiographic region of Southwestern Ontario known as the St. Clair Clay Plains[1]. Within this region, Essex County and the southwestern part of Kent County are normally discussed as a subregion known as the Essex Clay Plain. The clay plain was deposited during the retreat of the ice sheets (late Pleisocene Era) when a series of glacial lakes inundated the area. In general, the ice sheets deposited till in the area of Windsor and Detroit. Depending on the locations of the glacial ice sheets and depths of water in the ice-contact glacial lakes, the till may have been directly deposited at the contact between the ice sheet and the bedrock or, as the lake levels rose and the ice sheets retreated and floated, the soil and rock debris within and at the base of the ice may have been deposited through the lake water (lacustrine). Glacial till, in its common usage, often indicates a very dense or hard composition resulting from consolidation and densification under the weight of the ice sheet. The mineral soil particles typically have a distribution of grain sizes ranging from cobbles to clay. However, in many areas of Windsor and Detroit, the soils described as "glacial till" were deposited through water and have a softer consistency as a result. A large end moraine of glacial till is mapped in the area of Windsor-Detroit, generally trending northwest to southeast near the outlet of Lake St. Clair as illustrated throughout Essex County near the terminus of Provincial Highway 401. In other areas, the lacustrine deposits overlie the hard glacial till. The major clay stratum, typically ranging in thickness from about 20 metres to 30 metres, exhibits a till-like structure exemplified by a random distribution of coarser particles within the primarily fine-grained silt and clay deposit (this type of deposit is also called "diamict").

Surficial layers or pockets of more typical layered lacustrine (lake deposited) silty clay, silt, or sand may be encountered overlying the extensive stratum of "till-like" silty clay. Silt and sand deposits, on the order of 2 to 4 metres thick, are often found near the ground surface in areas near the western side of Windsor and the southwestern limits of the study area.

General Subsurface Conditions

The following section describes the general subsurface conditions in the Windsor and surrounding areas, at intervals of depths of approximately 0.3, 1.5, 3.0 and 6.0 metres below existing ground surface. The information was gathered from previous geotechnical investigations by Golder Associates and others, using the criteria defined in Section 2.0. The following descriptions of the subsurface conditions are generalized and should not be interpreted to be

[1] Chapman, L. J., The Physiography of Southern Ontario, 1984.

exact, nor used in the design of the pavement structure of a proposed corridor. Further detailed site specific geotechnical investigation is required once a corridor has been selected.

Beneath the topsoil and/or surficial fill materials in west Windsor and LaSalle, at a depth of approximately 0.3 metres below existing ground surface, the subsurface conditions consists of fine grained granular material, such as sand, silty sand and sandy silt. In central and east Windsor, and Tecumseh, the subsurface conditions at a depth of approximately 0.3 metres below existing ground surface generally consist of a silty clay to clayey silt, with localized areas of surficial granular soil. Figure 3 illustrates the subsurface soil conditions at an approximate depth of 0.3 metres below existing ground surface.

In general, in west Windsor and LaSalle, at a depth of approximately 1.2 to 1.5 metres below the existing ground surface, the subsurface conditions consists of a clayey silt to silty clay, with areas of granular deposits, consisting of sand, silty sand and sandy silt. In central and east Windsor and Tecumseh, the subsurface conditions at a depth of approximately 1.5 metres below existing ground surface generally consist of a clayey silt to a silty clay. Figure 4 illustrates the subsurface soil conditions at a depth of approximately 1.5 metres below existing ground surface.

At an approximate depth of 3.0 metres below exisitng ground surface, the subsurface conditions in the Windsor and surrounding areas generally consist of clayey silt to silty clay. However, localized areas of granular soil exist at a depth of approximately 3.0 metres below existing ground surface. Figure 5 illustrates the subsurface soil conditions at a depth of approximately 3.0 metres below existing ground surface.

At an approximate depth of 6.0 metres below existing ground surface, the subsurface conditions in the Windsor and surrounding areas generally consist of clayey silt to silty clay. Fine-grained granular material was encountered in previous investigations at a depth of about 6.0 metres below existing ground surface in the northeast corner of the study area. Figure 6 illustrates the subsurface soil conditions at a depth of approximately 6.0 metres below existing ground surface.

SOIL CHARACTERISTICS INFLUENCING PAVEMENT DESIGN

The subsurface conditions as described in this report have an important influence on the design of the pavement structure for the proposed transportation corridor. Two main factors affecting roadway pavement design are:

i) frost susceptibility of the subgrade soil which influences the design of the pavement structure component thicknesses, and

ii) soil erodibility which influences the design of embankment surfacing and drainage ditches that may be proposed in the design of a proposed corridor.

The following comments are general and should not be used for actual design of the roadway cross-section along a proposed corridor.

Frost Susceptibility

The generalized subsurface conditions at a depth of approximately 1.2 to 1.5 metres below existing ground surface, typical subgrade depths, have been categorized into categories of frost susceptibility, low, medium and high. At a depth of about 1.2 to 1.5 metres below existing ground surface, the subsurface conditions generally consist of clayey silt in the west end of Windsor, which is considered to have medium frost susceptibility. The west end of Windsor has areas of silty clay, which are considered to have low susceptibility to frost. Figure 7 illustrates the frost susceptibility of the soils at a depth of approximately 1.2 to 1.5 metres below existing ground surface in the Windsor and surrounding area.

Soil Erodibility

It is anticipated that drainage ditches and embankments may be incorporated in the design of the proposed corridor. As previously indicated, the subsurface conditions in Windsor and surrounding area mainly consist of a silty clay at an approximate depth of 1.2 to 1.5 metres below existing ground surface. The areas of silty clay and localized areas of sand and silty sand are considered to be slightly erodible. However, some localized areas of clayey silt and sandy silt exist, and these are considered to be moderately erodible. Figure 8 illustrates the soil erodibility of the Windsor and surrounding area at a depth of approximately 1.2 to 1.5 metres below existing ground surface.

ADDITIONAL GEOTECHNICAL WORK

This interim report has been prepared on the basis of existing background information available through a limited number of resources. The work completed for this report is not sufficient to permit preliminary or final design and must be considered within the context of feasibility study and environmental assessment. Preliminary and final design, once a preferred route or routes have been selected, will require site-specific subsurface explorations, testing, analysis, and reporting.

GOLDER ASSOCIATES LTD.

André Bom, M.A.Sc., EIT

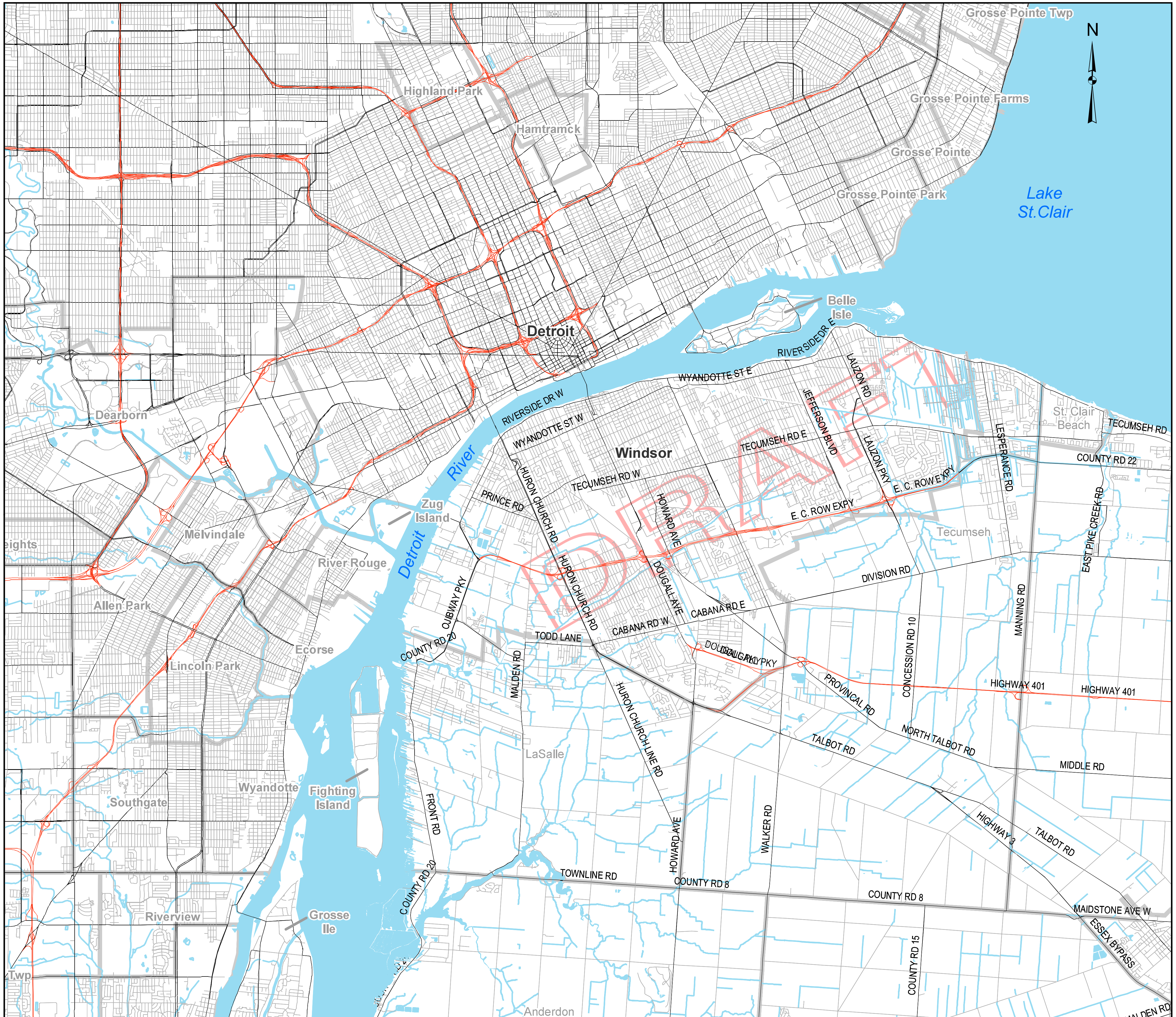
Philip R. Bedell, P.Eng.
Principal

Attachments

Figures A-1 to A-8

Appendix A-1

N:\ACTIVE\PROJECTS - OTHER OFFICES\WINDSOR\2005\05-1140-003 URS - PAVEMENTS\REPORTS\05-1140-003-1\UPDATED DRAFT - DEC 17 07\APPENDIX A - INTERIM RPT\RPT-DRAFT-050711-INTERIM PAVEMENT REPORT-AB.DOC



LEGEND

- Expressway
- Major Road
- Local Road
- Water
- Municipal Boundary

NOTE: Figure to be read in conjunction with accompanying report.

DRAFT

REFERENCE

Base Data - MNR NRVIS, obtained 2004, CANMAP v7.3 2003
Produced by Golder Associates Ltd under licence from Ontario Ministry of Natural Resources, © Queens Printer 2005
Datum: NAD 83 Projection: UTM Zone 17N

0 1.25 2.5 5 7.5 10
Kilometers

PROJECT	ROUTE PLANNING DETROIT RIVER INTERNATIONAL CROSSING CANADIAN SIDE
TITLE	**SITE LOCATION PLAN**

Golder Associates
Mississauga, Ontario

PROJECT No. 05-1140-003		SCALE 1:125,000	REV. 0
DESIGN	AW	16 Feb. 2005	**FIGURE: 1**
GIS	CC	13 Jul. 2005	
CHECK	AB	14 Jul. 2005	
REVIEW			

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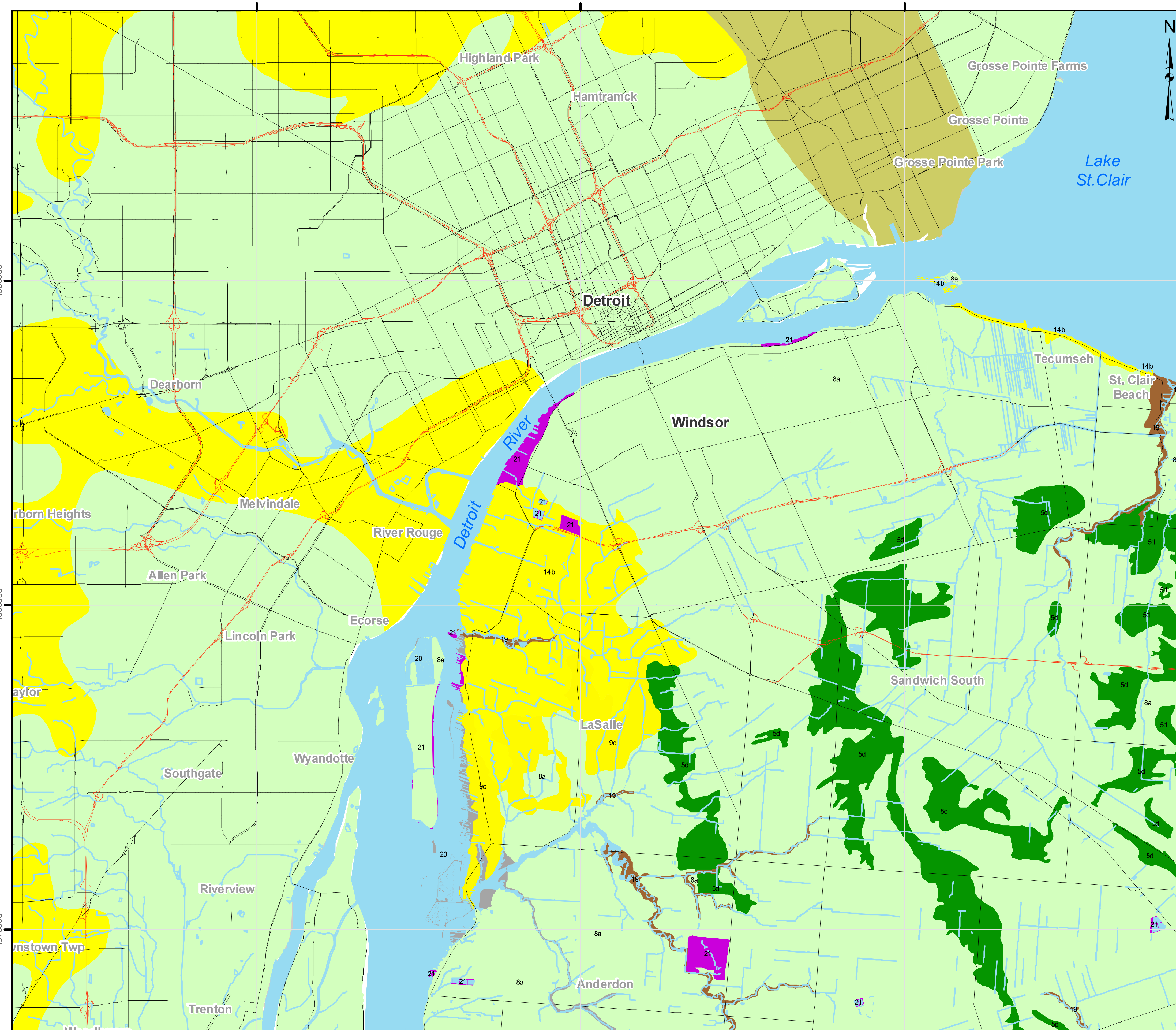

LEGEND

Quaternary Geology - Ontario

- 5d: Glaciolacustrine-derived silty to clayey till
- 8a: Massive to well laminated clayey silt to silty clay diamict
- 9c: Foreshore-basinal deposits of silty sand to sandy silt
- 14b: Littoral-foreshore deposits of silty sand to sandy silt
- 19: Modern alluvial deposits
- 20: Organic deposits
- 21: Man-made deposits

Quaternary Geology - Michigan

- End moraines of fine-textured till
- Lacustrine clay and silt
- Lacustrine sand and gravel

NOTE: Figure to be read in conjunction with accompanying report.

DRAFT

REFERENCE

Base Data - MNR NRVIS, obtained 2004 and CANMAP v7.3 obtained 2003,
Ontario Geology - OGS digital 1:50 000, obtained 2003,
Michigan Geology - downloaded from MI Geographic Data Library - 1:500000, obtained Feb. 2004.
Produced by Golder Associates Ltd under licence from Ontario Ministry of Natural Resources, © Queens Printer 2005
Datum: NAD 83 Projection: UTM Zone 17N

0 1.25 2.5 5 7.5 10
Kilometers

PROJECT
ROUTE PLANNING
DETROIT RIVER INTERNATIONAL CROSSING
CANADIAN SIDE

TITLE
QUATERNARY GEOLOGY

Golder Associates
Mississauga, Ontario

PROJECT No. 05-1140-003			SCALE 1:125,000	REV. 0
DESIGN	AW	16 Feb. 2005	**FIGURE: 2**	
GIS	CC	13 Jul. 2005		
CHECK	AB	14 Jul. 2005		
REVIEW				

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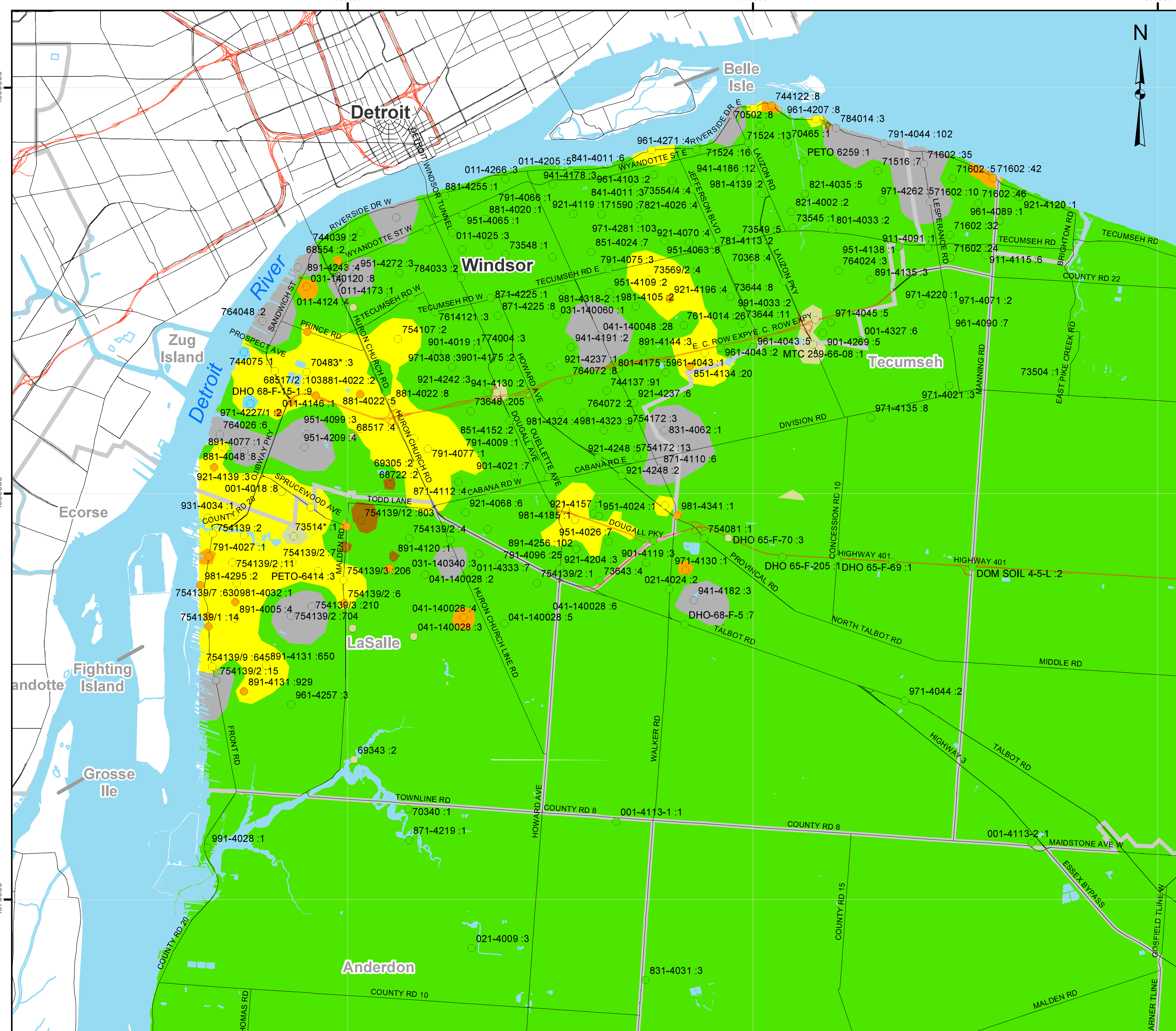

LEGEND

- Expressway
- Major Road
- Fill
- Silt/Sandy Silt
- Silty Clay
- Clayey Silt
- Silty Sand
- Sand
- Sand and Gravel
- Water
- Municipal Boundary

Borehole Labels: Job Number:Borehole Number

NOTE: Figure to be read in conjunction with accompanying report.

DRAFT

REFERENCE

Base Data - MNR NRVIS, obtained 2004, CANMAP v7.3 2003
Produced by Golder Associates Ltd under licence from Ontario Ministry of Natural Resources, © Queens Printer 2005
Datum: NAD 83 Projection: UTM Zone 17N

0 0.5 1 2 3 4
Kilometres

PROJECT
ROUTE PLANNING
DETROIT RIVER INTERNATIONAL CROSSING
CANADIAN SIDE

TITLE
SOIL CLASSIFICATION
0.3 M DEPTH

Golder Associates
Mississauga, Ontario

PROJECT No. 05-1140-003			SCALE 1:100,000	REV. 0
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GIS	CC	17 Aug. 2005		
CHECK				
REVIEW				

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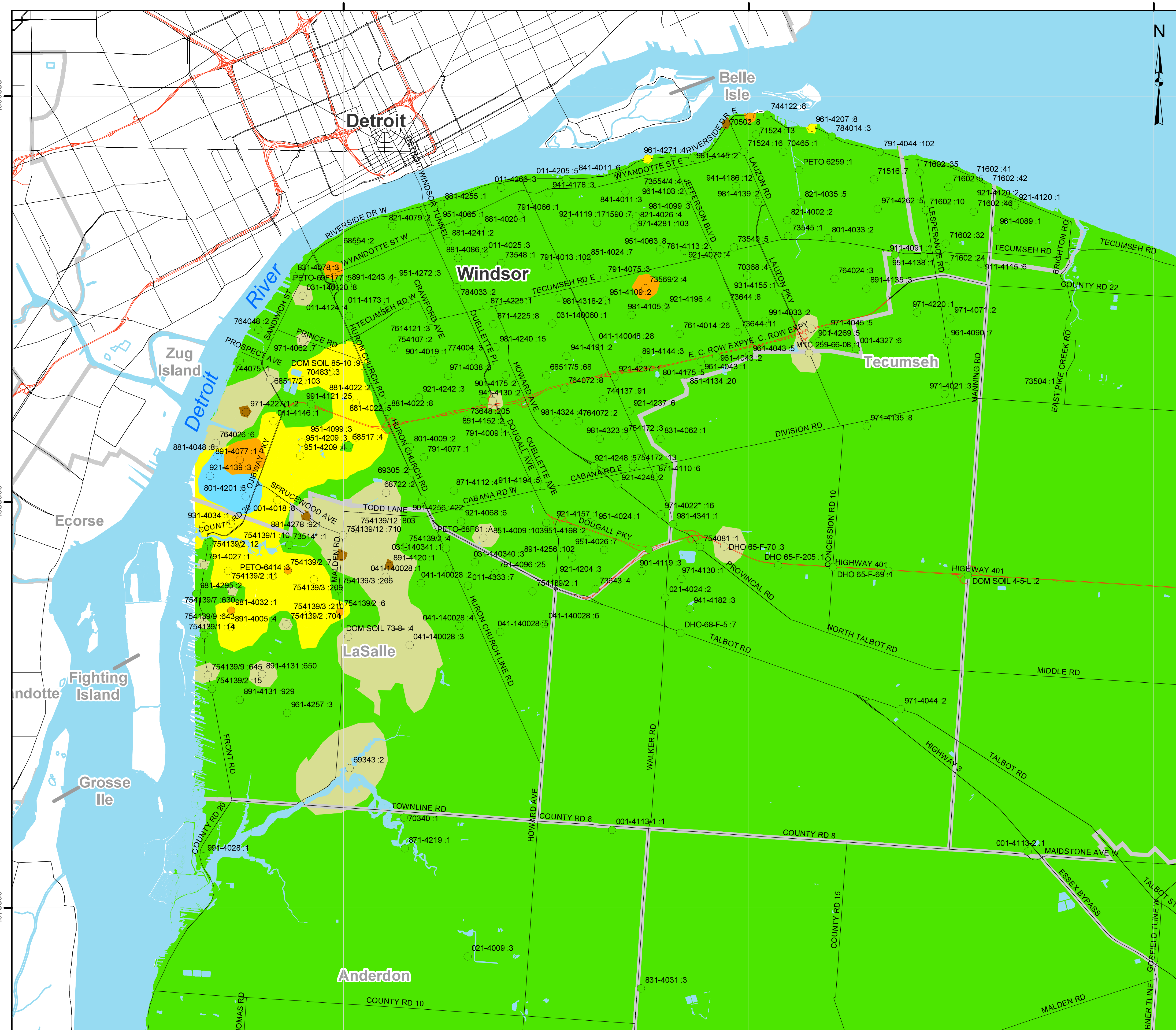

LEGEND

- Expressway
- Major Road
- Clayey Silt
- Silty Clay
- Silt/Sandy Silt
- Silty Sand
- Sand
- Sand and Gravel
- Water
- Municipal Boundary

Borehole Labels: Job Number:Borehole Number

NOTE: Figure to be read in conjunction with accompanying report.

DRAFT

REFERENCE

Base Data - MNR NRVIS, obtained 2004, CANMAP v7.3 2003
Produced by Golder Associates Ltd under licence from Ontario Ministry of Natural Resources, © Queens Printer 2005
Datum: NAD 83 Projection: UTM Zone 17N

0 0.5 1 2 3 4
Kilometres

PROJECT
ROUTE PLANNING
DETROIT RIVER INTERNATIONAL CROSSING
CANADIAN SIDE

TITLE
SOIL CLASSIFICATION
1.2 TO 1.5 M DEPTH

Golder Associates
Mississauga, Ontario

PROJECT No. 05-1140-003			SCALE 1:100,000	REV. 0
DESIGN	CC	06 Jun. 2005	**FIGURE: 4**	
GIS	CC	17 Aug. 2005		
CHECK				
REVIEW				

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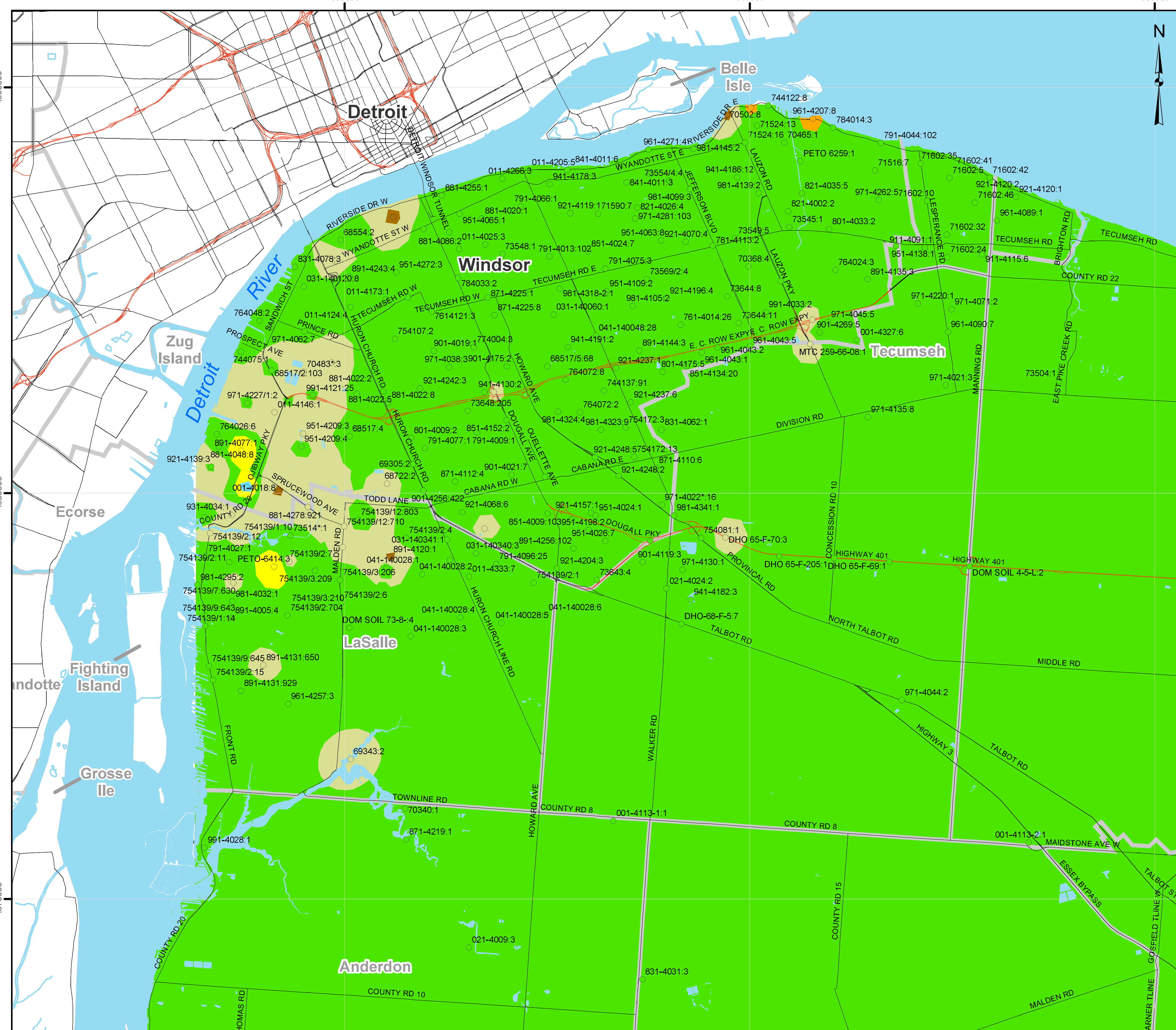

LEGEND

- Expressway
- Major Road
- Clayey Silt
- Silty Clay
- Silt/Sandy Silt
- Silty Sand
- Sand
- Sand & Gravel

Borehole Labels: Job Number:Borehole Number

NOTE: Figure to be read in conjunction with accompanying report.

DRAFT

REFERENCE

Base Data - MNR NRVIS, obtained 2004, CANMAP v7.3 2003
Produced by Golder Associates Ltd under licence from Ontario Ministry of Natural Resources, © Queens Printer 2005
Datum: NAD 83 Projection: UTM Zone 17N

0 0.5 1 2 3 4
Kilometres

PROJECT

ROUTE PLANNING
DETROIT RIVER INTERNATIONAL CROSSING
CANADIAN SIDE

TITLE

SOIL CLASSIFICATION 3 M DEPTH

Golder Associates
Mississauga, Ontario

PROJECT No. 05-1140-003			SCALE 1:100,000	REV. 0
DESIGN	CC	06 Jun. 2005		
GIS	CC	17 Aug. 2005		
CHECK				
REVIEW				

FIGURE: 5

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LEGEND

- Expressway
- Major Road
- Clayey Silt
- Silt/Sandy Silt
- Silty Clay
- Water
- Municipal Boundary

Borehole Labels: Job Number:Borehole Number

NOTE: Figure to be read in conjunction with accompanying report.

DRAFT

REFERENCE

Base Data - MNR NRVIS, obtained 2004, CANMAP v7.3 2003
Produced by Golder Associates Ltd under licence from Ontario Ministry of Natural Resources, © Queens Printer 2005
Datum: NAD 83 Projection: UTM Zone 17N

0 0.5 1 2 3 4
Kilometres

PROJECT
ROUTE PLANNING
DETROIT RIVER INTERNATIONAL CROSSING
CANADIAN SIDE

TITLE
SOIL CLASSIFICATION 6 M DEPTH

Golder Associates
Mississauga, Ontario

PROJECT No. 05-1140-003			SCALE 1:100,000	REV. 0
DESIGN	CC	06 Jun. 2005	**FIGURE: 6**	
GIS	CC	17 Aug. 2005		
CHECK				
REVIEW				

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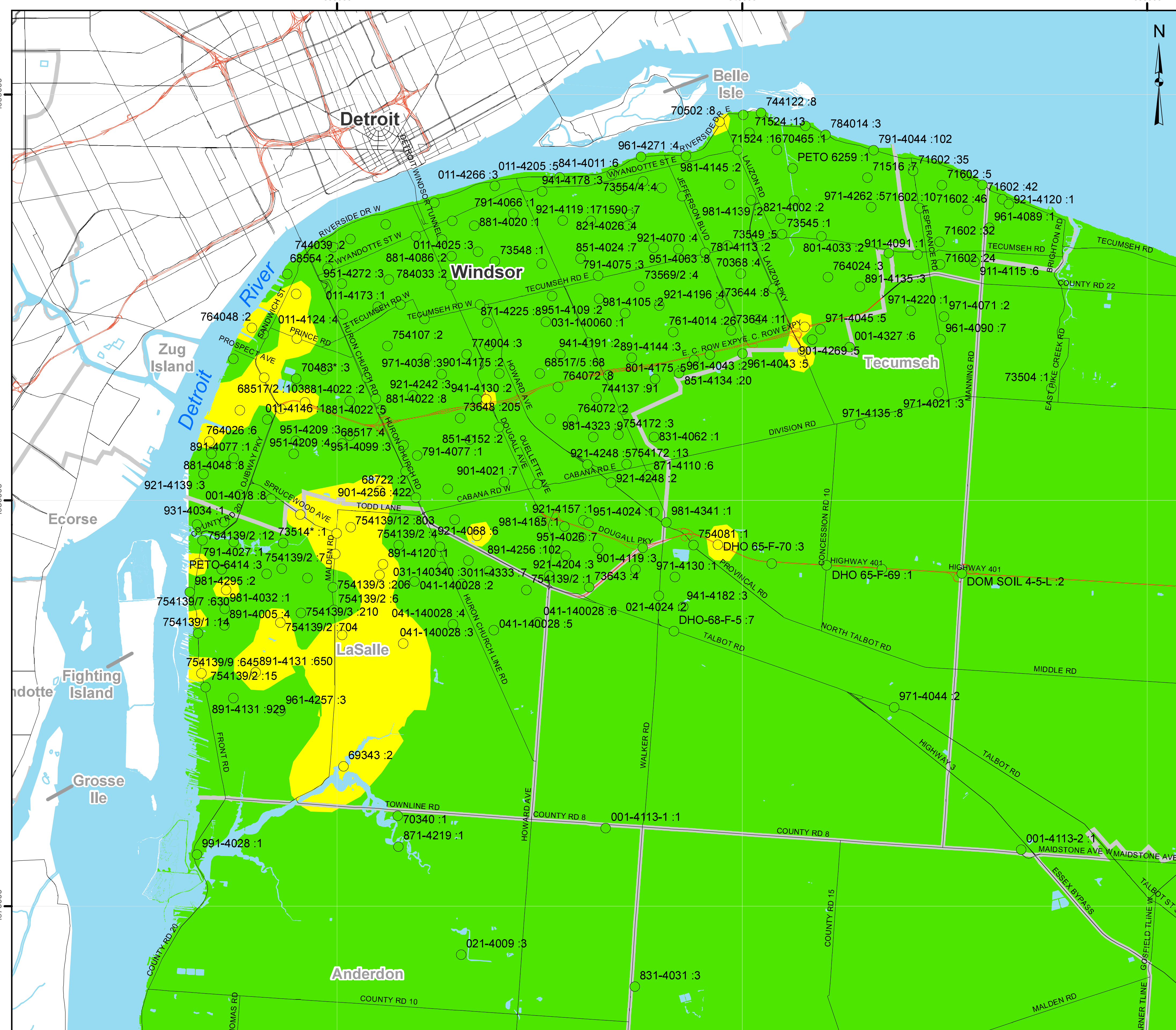

LEGEND

- Expressway
- Major Road

Susceptibility

- Medium
- Low
- Water
- Municipal Boundary

Borehole Labels: Job Number:Borehole Number

NOTE: Figure to be read in conjunction with accompanying report.

DRAFT

REFERENCE

Base Data - MNR NRVIS, obtained 2004, CANMAP v7.3 2003
Produced by Golder Associates Ltd under licence from Ontario Ministry of Natural Resources, © Queens Printer 2005
Datum: NAD 83 Projection: UTM Zone 17N

0 0.5 1 2 3 4
Kilometres

PROJECT

ROUTE PLANNING
DETROIT RIVER INTERNATIONAL CROSSING
CANADIAN SIDE

TITLE

FROST SUSCEPTIBILITY
1.2 TO 1.5 M DEPTH

Golder Associates
Mississauga, Ontario

PROJECT No. 05-1140-003			SCALE 1:100,000	REV. 0
DESIGN	CC	06 Jun. 2005		
GIS	CC	17 Aug. 2005	**FIGURE: 7**	
CHECK				
REVIEW				

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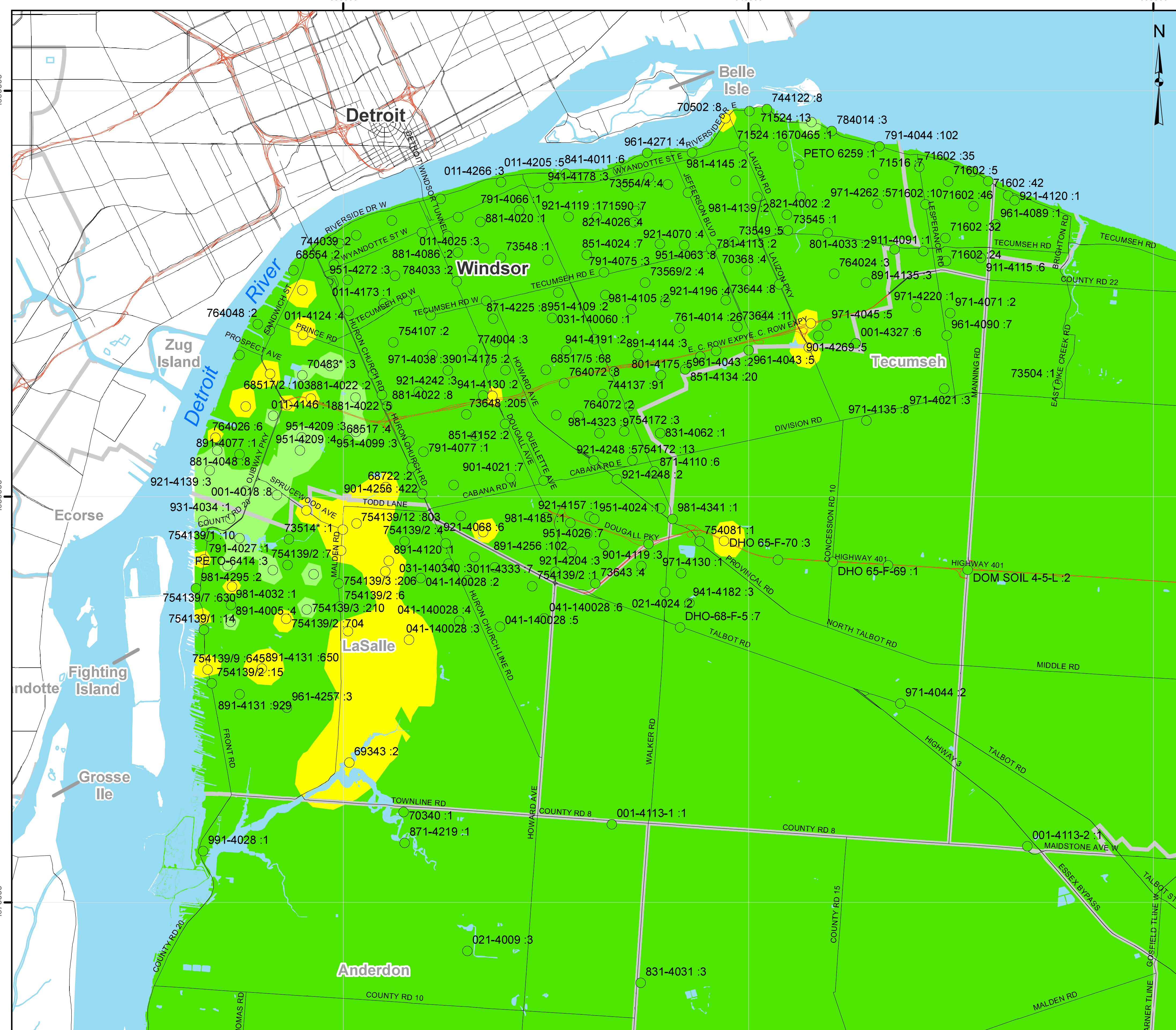

LEGEND

Expressway
Major Road

Erodibility

- Moderate
- Slight
- Very Slight
- Water
- Municipal Boundary

Borehole Labels: Job Number:Borehole Number

NOTE: Figure to be read in conjunction with accompanying report.

DRAFT

REFERENCE

Base Data - MNR NRVIS, obtained 2004, CANMAP v7.3 2003
Produced by Golder Associates Ltd under licence from Ontario Ministry of Natural Resources, © Queens Printer 2005
Datum: NAD 83 Projection: UTM Zone 17N

0 0.5 1 2 3 4
Kilometres

PROJECT
ROUTE PLANNING
DETROIT RIVER INTERNATIONAL CROSSING
CANADIAN SIDE

TITLE
SOIL ERODIBILITY
1.2 TO 1.5 M DEPTH

Golder Associates
Mississauga, Ontario

PROJECT No. 05-1140-003			SCALE 1:100,000	REV. 1
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GIS	CC	17 Aug. 2005		
CHECK				
REVIEW				

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APPENDIX A-I

SUBSURFACE DATABASE

Note: bold soil classification indicates GSD carried out on a sample at about this depth

Job #	BH # / TP #	Northing	Easting	Soil Classification 0.3 m (1') depth	Soil Classification 1.5 m (5') depth	Soil Classification 3 m (10') depth	Soil Classification 6 m (20') depth	Frost Susceptibility at 1.5 m depth	Erodibility at 1.5 m depth
981-4032	1	4677335	327219	SiSa	SiSa	SiCl	SiCl	L	S
981-4295	2	4677750	326357	SiSa	SiCl	SiCl	SiCl	L	S
791-4027	1	4678463	326556	SiSa	**ClSi**	SiCl	SiCl	M	M
754139/1	14	4676731	326555	SiSa	**SiCl**	**SiCl**	SiCl	L	S
754139/9	643	4676989	326542	SiSa	ClSi	SiCl	--	M	M
754139/9	645	4675742	326647	Sa	ClSi	SiCl	--	M	M
754139/2	15	4675406	326746	Fill	SiCl	SiCl	SiCl	L	S
891-4131	929	4675134	327434	SiSa	SiCl	SiCl	SiCl	L	S
764026	6	4681463	326840	Fill	**ClSi**	**SiCl**	SiCl	M	M
921-4139	3	4680654	326696	SiSa	**Sa&Gr**	SiCl to ClSi	SiCl to ClSi	L	VS
881-4048	8	4681152	326887	Sa	**Sa&Gr**	SiCl	SiCl	L	VS
931-4034	1	4679475	327205	Sa	Sa	ClSi	ClSi	L	VS
OM SOIL 84-1-W	3	4679417	326536	Sa	Sa	SiCl	SiCl	L	VS
754139/2	12	4679032	326671	Sa	SiCl	**ClSi**	**SiCl**	L	S
754139/1	10	4678988	327437	Sa	Sa	**ClSi**	**SiCl**	L	VS
754139/2	11	4678313	327142	Sa	Sa	SiCl	SiCl	L	VS
754139/7	630	4677798	327249	Sa	**ClSi**	**ClSi**	**ClSi**	M	M
891-4005	4	4676925	327211	**Sa**	**Sa**	SiCl	--	L	VS
754139/2	704	4676996	328588	Fill	ClSi	SiCl	--	M	M
891-4131	650	4675768	327983	Sa	ClSi	ClSi	--	M	M
961-4257	3	4674809	328599	SiCl	SiCl	SiCl	SiCl	L	S
--	--	--	--	--	--	--	--		
744075	1	4683499	327434	**Sa & Gr**	SiCl	SiCl	SiCl	L	S
971-4227/1	2	4682232	327588	Sa & Gr	SaSi	SiCl to ClSi	SiCl	M	M
891-4077	1	4681051	327438	Fill	SiSa	Sa	ClSi	L	S
011-4146	1	4682001	328266	SiSa	Sa	ClSi	--	L	VS
PETO-6414	3	4678200	328252	Sa	Sa	Sa	SiCl	L	VS
801-4201	6	4680147	327581	Sa	Sa&Gr	Sa&Gr	SiCl	L	VS
001-4018	8	4680049	328361	Sa	Sa	Si	ClSi	L	VS
73514	1	4678963	328656	ClSi	SiCl	SiCl	SiCl	L	S
881-4278	921	4679662	329082	Sa	SaSi	ClSi	ClSi	M	M
754139/2	7	4678329	328623	**Sa**	SiSa	**ClSi**	SiCl	L	S
754139/3	209	4678101	329262	Sa	Sa	SiCl	SiCl	L	VS
754139/3	210	4677230	329098	Fill	Sa	SiCl	--	L	VS
754139/2	6	4677306	329912	SiSa	SiSa	SiCl	SiCl	L	S
OM SOIL 73-8-W	4	4676694	330112	ClSi	ClSi	SiCl	SiCl	M	M

Frost Susceptibility:
- H - High
- M - Medium
- L - Low

Erodibility:
- VS - Very Slightly
- S - Slightly
- M - Moderately
- H - Highly

Job #	BH # / TP #	Northing	Easting	Soil Classification 0.3 m (1') depth	Soil Classification 1.5 m (5') depth	Soil Classification 3 m (10') depth	Soil Classification 6 m (20') depth	Frost Susceptibility at 1.5 m depth	Erodibility at 1.5 m depth		
031-140089	3	4676323	330286	ClSi	ClSi	SiCl	SiCl	M	M		
--	--	--	--	--	--	--	--				
69343	2	4673459	330146	ClSi	ClSi	ClSi	SiCl	M	M		
764048	2	4684264	327887	Fill	Alluvium (SiCl)	SiCl	SiCl	M	S		
981-4046	9	4684109	328176	Fill	SiCl	SiCl	SiCl	L	S		
70483	3	4683005	328984	Sa	Sa	ClSi to SiCl	ClSi to SiCl	L	VS		
68517/2	103	4683037	328189	Sa	ClSi	SiCl	SiCl	M	M		
DHO 68-F-15-1	13	4682267	328609	SiSa	SiCl to ClSi	SiCl to ClSi	SiCl to ClSi	M	M		
DHO 68-F-15-1	9	4682427	329199	SiSa	SiCl to ClSi	SiCl to ClSi	SiCl to ClSi	M	M		
951-4209	3	4681474	328969	Fill	Sa	ClSi	SiCl	L	VS		
951-4209	4	4681151	328923	Fill	Sa	SiCl	SiCl	L	VS		
68517	4	4681405	330118	ClSi	SiCl	SiCl	SiCl	L	S		
754139/12	710	4679198	329980	SiSa	ClSi	ClSi	ClSi	H	H		
754139/12	709	4678686	329944	SaSi	SaSi	ClSi	SiCl	M	M		
754139/12	803	4679354	330326	Si	ClSi	SiCl	SiCl	M	M		
891-4120	1	4678433	331130	SaSi	SaSi	SaSi	--	M	M		
041-140028	1	4678170	331043	SiSa	ClSi	SiCl	SiCl	M	M		
754139/3	206	4677872	329883	Sa	SiCl	SiCl	--	L	S		
041-140028	3	4676484	331630	ClSi	ClSi	SiCl	SiCl	M	M		
PETO-69F177	5	4685730	329761	SiSa	SiSa	ClSi to SiCl	SiCl	L	S		
831-4078	3	4685585	328762	Fill	SiCl	SiCl	SiCl	L	S		
031-140120	8	4685104	328981	SiSa	ClSi	SiCl	--	M	M		
DM SOIL 85-10-V	9	4683231	329670	Sa	Sa	ClSi	SiCl	L	VS		
011-4124	4	4684598	330131	ClSi	SiCl	SiCl	--	L	S		
971-4062	7	4684003	329001	SiSa	ClSi to SiCl	SiCl	SiCl	M	M		
881-4022	2	4683032	330734	SiCl	SiCl	SiCl	SiCl	L	S		
881-4022	5	4682520	330954	SiCl	SiCl	SiCl	SiCl	L	S		
991-4121	25	4682456	330299	SiSa	Sa	SiCl	SiCl	L	VS		
881-4022	8	4682242	331085	Sa	SiCl	SiCl	SiCl	L	S		
951-4099	3	4681603	330303	Sa	Sa	SiCl	SiCl	L	VS		
801-4009	2	4681369	331638	Sa	SiCl	SiCl	SiCl	L	S		
69305	2	4680724	331693	Sa	SiCl	SiCl	SiCl	L	S		
68722	2	4680242	331049	SaSi to SiSa	ClSi	ClSi	ClSi	M	M		
901-4256	422	4680070	331948	Sa	SiCl	SiCl	SiCl	L	S		
031-140130	3	4678366	332597	Fill	SiCl	SiCl	SiCl	L	S		
031-140341	1	4678864	332535	SiCl	SiCl	SiCl	SiCl	L	S		
754139/2	4	4678911	331517	SiCl	SiCl	SiCl	SiCl	L	S		
011-4333	7	4677953	333077	SiCl	SiCl	SiCl	--	L	S		

Job #	BH # / TP #	Northing	Easting	Soil Classification 0.3 m (1') depth	Soil Classification 1.5 m (5') depth	Soil Classification 3 m (10') depth	Soil Classification 6 m (20') depth	Frost Susceptibility at 1.5 m depth	Erodibility at 1.5 m depth		
041-140028	2	4678009	331912	SiCl	SiCl	SiCl	SiCl	L	S		
041-140028	4	4676950	332860	SiSa	SiCl	SiCl	SiCl	L	S		
041-140028	5	4676808	333869	SiCl	SiCl	SiCl	SiCl	L	S		
744039	2	4686446	330317	SiCl	SiCl	SiCl	SiCl	L	S		
68554	2	4686244	329895	SiCl	SiCl	SiCl	SiCl	L	S		
891-4243	4	4685347	330105	Fill	SiCl	SiCl	SiCl	L	S		
951-4272	3	4685446	331275	SiCl	SiCl	SiCl	SiCl	L	S		
011-4173	1	4684784	331005	SiCl	SiCl	SiCl	SiCl	L	S		
851-4126	2	4684842	331563	SiCl	SiCl	SiCl	SiCl	L	S		
754107	2	4683817	331240	Sa	SiCl	SiCl	SiCl	L	S		
901-4019	1	4683515	332203	SiCl	SiCl	SiCl	SiCl	L	S		
971-4038	3	4683123	332583	SiCl	SiCl	SiCl	SiCl	L	S		
921-4242	3	4682597	331864	SiCl to ClSi	SiCl	SiCl	SiCl	L	S		
73648	205	4682039	333040	SiCl	SiCl	SiCl	SiCl	L	S		
791-4077	1	4681115	331978	Sa	SiCl	SiCl	SiCl	L	S		
791-4009	1	4681500	333270	SiCl	SiCl	SiCl	SiCl	L	S		
871-4112	4	4680294	332728	SiCl	SiCl	SiCl	SiCl	L	S		
PETO-68F81	A	4679141	333452	SiCl	ClSi	ClSi	ClSi	M	M		
031-140340	3	4678526	333241	SiCl	SiCl	SiCl	--	L	S		
921-4068	6	4679537	332901	SiCl	SiCl	SiCl	--	L	S		
754139/2	1	4677805	334667	SiCl	SiCl	SiCl	SiCl	L	S		
791-4096	25	4678266	333746	SiCl	SiCl	SiCl	SiCl	L	S		
041-140028	6	4677007	334961	SiCl	SiCl	SiCl	SiCl	L	S		
821-4079	2	4686814	331199	Fill	SiCl	SaSi	SiCl	L	S		
881-4241	2	4686435	332584	SiCl	SiCl	SiCl	SiCl	L	S		
011-4079	2	4686515	331944	SiCl	SiCl	SiCl	SiCl	L	S		
7614121	3	4684486	332157	SiCl	SiCl	SiCl	SiCl	L	S		
881-4086	2	4686026	332828	SiCl	SiCl	SiCl	SiCl	L	S		
784033	2	4685316	332802	SiCl	SiCl	SiCl	SiCl	L	S		
774004	3	4683612	333194	SiCl	SiCl	SiCl	SiCl	L	S		
871-4225	1	4684839	333530	SiCl	SiCl	SiCl	SiCl	L	S		
981-4240	15	4683826	333755	SiCl	SiCl	SiCl	SiCl	L	S		
901-4175	2	4683134	334004	SiCl	SiCl	SiCl	SiCl	L	S		
941-4130	2	4682501	333455	SiCl	SiCl	SiCl	SiCl	L	S		
DHO-68-F-15-2	4	4682497	333680	ClSi	ClSi	ClSi	ClSi	M	M		
851-4152	2	4681803	333997	SiCl	SiCl	SiCl	SiCl	L	S		
901-4021	7	4680461	334123	SiCl	SiCl	SiCl	SiCl	L	S		
911-4194	5	4680406	334943	SiCl	SiCl	SiCl	SiCl	L	S		

Job #	BH # / TP #	Northing	Easting	Soil Classification 0.3 m (1') depth	Soil Classification 1.5 m (5') depth	Soil Classification 3 m (10') depth	Soil Classification 6 m (20') depth	Frost Susceptibility at 1.5 m depth	Erodibility at 1.5 m depth		
851-4009	103	4679506	335005	SiCl	SiCl	SiCl	SiCl	L	S		
981-4185	1	4679368	335609	Sa	SiCl	SiCl	SiCl	L	S		
951-4198	2	4679102	336022	Sa	SiCl	SiCl	SiCl	L	S		
891-4256	102	4678649	335644	SiCl	SiCl	SiCl	SiCl	L	S		
921-4204	3	4678157	335239	SiCl	SiCl	SiCl	SiCl	L	S		
73643	4	4677869	336224	SiCl	SiCl	SiCl	SiCl	L	S		
881-4255	1	4687346	332404	SiCl	SiCl	SiCl	SiCl	L	S		
951-4065	1	4686899	332838	SiCl	SiCl	SiCl	SiCl	L	S		
881-4020	1	4686779	333388	SiCl	SiCl	SiCl	SiCl	L	S		
73548	1	4685896	333892	SiCl	SiCl	SiCl	SiCl	L	S		
011-4025	3	4686131	333475	SiCl	SiCl	SiCl	SiCl	L	S		
871-4225	8	4684401	333703	SiCl	SiCl	SiCl	--	L	S		
031-140060	1	4684414	335154	SiCl	SiCl	SiCl	SiCl	L	S		
941-4191	2	4683614	335508	SiCl	SiCl	SiCl	--	L	S		
68517/5	68	4683135	335004	SiCl	SiCl	SiCl	SiCl	L	S		
764072	8	4682805	335453	SiCl	SiCl	SiCl	SiCl	L	S		
981-4324	4	4682019	335262	SiCl	SiCl	SiCl	SiCl	L	S		
981-4323	9	4681568	336322	SiCl	SiCl	SiCl	--	L	S		
764072	2	4682002	335811	SiCl	SiCl	SiCl	--	L	S		
921-4248	5	4680892	336178	SiCl	SiCl	SiCl	SiCl	L	S		
921-4248	2	4680439	336762	SiCl	SiCl	SiCl	SiCl	L	S		
921-4157	1	4679521	336078	SiCl	SiCl	SiCl	SiCl	L	S		
951-4024	1	4679460	336200	SiCl	SiCl	SiCl	SiCl	L	S		
PETO-01TF072A	71-4	4678846	337540	SiCl	SiCl	SiCl	SiCl	L	S		
951-4026	7	4678835	336437	SiCl	SiCl	SiCl	SiCl	L	S		
901-4119	3	4678306	337362	SiCl	SiCl	SiCl	SiCl	L	S		
021-4024	2	4677655	337942	SiCl	SiCl	SiCl	--	L	S		
DHO-68-F-5	7	4676785	338312	SiCl	SiCl	SiCl	SiCl	L	S		
011-4266	3	4687762	333893	SiCl	SiCl	SiCl	SiCl	L	S		
941-4178	3	4687623	335062	SiCl	SiCl	SiCl	--	L	S		
791-4066	1	4687071	334348	SiCl	**SiCl**	SiCl	SiCl	L	S		
921-4119	1	4686907	335567	SiCl	SiCl	SiCl	SiCl	L	S		
791-4013	102	4685836	335052	SiCl	SiCl	SiCl	SiCl	L	S		
981-4318-2	1	4685046	335309	SiCl	SiCl	SiCl	SiCl	L	S		
951-4109	2	4684982	336466	SiCl	SiCl	SiCl	--	L	S		
851-4024	7	4685965	336013	SiCl	SiCl	SiCl	SiCl	L	S		
041-140048	28	4683896	336202	Fill	SiCl	SiCl	SiCl	L	S		
921-4237	1	4683093	336694	SiCl	SiCl	SiCl	SiCl	L	S		

Job #	BH # / TP #	Northing	Easting	Soil Classification 0.3 m (1') depth	Soil Classification 1.5 m (5') depth	Soil Classification 3 m (10') depth	Soil Classification 6 m (20') depth	Frost Susceptibility at 1.5 m depth	Erodibility at 1.5 m depth		
891-4144	3	4683522	337275	SiCl	SiCl	SiCl	SiCl	L	S		
921-4237	6	4682243	337062	SiCl	SiCl	SiCl	SiCl	L	S		
754172	3	4681625	336937	SiCl	SiCl	SiCl	SiCl	L	S		
744137	91	4682539	336402	SiCl	SiCl	SiCl	SiCl	L	S		
831-4062	1	4681571	337825	Fill	SiCl	SiCl	SiCl	L	S		
754172	13	4680904	337143	SiCl	SiCl	SiCl	SiCl	L	S		
871-4110	6	4680629	337683	Fill	SiCl	SiCl	SiCl	L	S		
754081	1	4678913	338795	**SiCl**	SiCl	SiCl	SiCl	L	S		
981-4341	1	4679465	338126	SiSa	SiCl	SiCl	SiCl	L	S		
971-4022	16	4679713	337831	Sa	SiCl	SiCl	--	L	S		
971-4130	1	4678122	338341	SiSa	SiCl	SiCl	--	L	S		
941-4182	3	4677387	338543	Fill	SiCl	SiCl	--	L	S		
011-4205	5	4687972	335492	SiCl	SiCl	SiCl	SiCl	L	S		
841-4011	6	4688049	336780	SiCl	SiCl	SiCl	SiCl	L	S		
841-4011	3	4687664	336960	SiCl	SiCl	SiCl	SiCl	L	S		
71590	7	4686899	336259	SiCl	SiCl	SiCl	SiCl	L	S		
821-4026	4	4687049	337221	SiCl	SiCl	SiCl	SiCl	L	S		
791-4075	3	4685539	336437	SiCl	SiCl	SiCl	SiCl	L	S		
971-4281	103	4686775	337172	SiCl	SiCl	SiCl	SiCl	L	S		
73569/2	4	4685283	337456	**Sa**	**SiSa**	SiCl	SiCl	L	S		
981-4105	2	4684629	337113	SiCl	SiCl	SiCl	SiCl	L	S		
921-4196	4	4684809	337952	SiSa	SiCl	SiCl	SiCl	L	S		
761-4014	26	4684160	338295	**SiCl**	**SiCl**	**SiCl**	**SiCl**	L	S		
801-4175	5	4683003	337846	SiCl	SiCl	SiCl	SiCl	L	S		
851-4134	20	4683146	338443	SiSa	SiCl	SiCl	SiCl	L	S		
961-4043	1	4683472	338814	Sa	SiCl	SiCl	SiCl	L	S		
DHO 65-F-70	3	4678919	339400	ClSi	ClSi	ClSi	ClSi	M	M		
DHO 65-F-205	1	4678453	340730	SiCl	SiCl	SiCl	SiCl	L	S		
961-4271	4	4688482	337500	Sa	Sa	SiCl	SiCl	L	S		
961-4103	2	4687870	337548	SiCl	SiCl	SiCl	SiCl	L	S		
73554/4	4	4687706	338008	SiCl	SiCl	SiCl	SiCl	L	S		
981-4099	3	4687503	338515	SiCl	SiCl	SiCl	SiCl	L	S		
951-4063	8	4686237	337817	SiCl	SiCl	SiCl	--	L	S		
921-4070	4	4686204	338420	SiCl	SiCl	SiCl	SiCl	L	S		
781-4113	2	4686111	339086	SiCl	SiCl	SiCl	--	L	S		
73644	8	4684860	339444	SiCl	SiCl	SiCl	--	L	S		
73644	11	4684200	339731	SiCl	SiCl	SiCl	--	L	S		
961-4043	2	4683603	339202	SiCl	SiCl	SiCl	SiCl	L	S		

Job #	BH # / TP #	Northing	Easting	Soil Classification 0.3 m (1') depth	Soil Classification 1.5 m (5') depth	Soil Classification 3 m (10') depth	Soil Classification 6 m (20') depth	Frost Susceptibility at 1.5 m depth	Erodibility at 1.5 m depth		
961-4043	5	4683624	340006	SiCl	SiCl	SiCl	SiCl	L	S		
DHO 65-F-69	1	4678407	342084	SiCl	SiCl	SiCl	SiCl	L	S		
971-4044	2	4674907	343750	SiCl	SiCl	SiCl	SiCl	L	S		
70502	8	4689341	339438	Fill	SaSi	SaSi	SiCl	M	M		
981-4145	2	4688493	338611	SiCl	SiCl	SiCl	--	L	S		
71524	16	4688648	339885	SiCl	SiCl	SiCl	SiCl	L	S		
941-4186	12	4687794	339685	SiCl	SiCl	SiCl	--	L	S		
981-4139	2	4687402	340218	SiCl	SiCl	SiCl	--	L	S		
73549	5	4686285	339635	SiCl	SiCl	**SiCl**	SiCl	L	S		
73545	1	4686565	340976	SiCl	SiCl	SiCl	SiCl	L	S		
70368	4	4685589	339963	SiCl	SiCl	SiCl	SiCl	L	S		
931-4155	1	4685238	340766	SiCl	SiCl	SiCl	SiCl	L	S		
MTC 259-66-08	1	4683685	341491	ClSi	ClSi	ClSi	ClSi	M	M		
MTC 259-66-04	106	4684284	341543	ClSi	ClSi	ClSi	ClSi	M	M		
991-4033	2	4684478	340395	SiCl	SiCl	SiCl	SiCl	L	S		
901-4269	5	4683973	341728	SiCl	SiCl	SiCl	SiCl	L	S		
971-4135	8	4681882	342915	SiCl	SiCl	SiCl	SiCl	L	S		
DOM SOIL 5-3-7	1	4678321	343445	SiCl	SiCl	SiCl	SiCl	L	S		
744122	1	4689513	340025	Sa	**SiSa**	**SiSa**	SiCl	L	S		
744122	8	4689567	340460	**SiSa**	SiCl	SiCl	SiCl	L	S		
70465	1	4688648	340854	**SiCl**	SiCl	SiCl	**SiCl**	L	S		
71524	13	4689072	340179	SiCl	SiCl	SiCl	SiCl	L	S		
PETO 6259	1	4688192	341242	SiCl	SiCl	SiCl	SiCl	L	S		
821-4035	5	4687394	341285	SiCl	SiCl	SiCl	SiCl	L	S		
821-4002	2	4686956	340948	SiCl	SiCl	SiCl	SiCl	L	S		
801-4033	2	4686511	341957	**SiCl**	SiCl	SiCl	SiCl	L	S		
764024	3	4685505	342115	SiCl	SiCl	SiCl	SiCl	L	S		
891-4135	3	4685282	342904	SiCl	SiCl	SiCl	--	L	S		
971-4045	5	4684227	341930	SiCl	SiCl	SiCl	SiCl	L	S		
001-4327	6	4683788	342651	SiCl	SiCl	SiCl	SiCl	L	S		
DOM SOIL 4-5-L7	2	4678207	345416	SiCl	SiCl	SiCl	SiCl	L	S		
961-4207	8	4689240	341560	Sa	Sa	SiSa	SiCl	L	VS		
784014	3	4689020	342058	Fill	SiCl	**SiCl**	SiCl	L	S		
791-4044	102	4688642	343237	Fill	SiCl	**SiCl**	SiCl	L	S		
71516	7	4687965	343090	SiCl	SiCl	SiCl	SiCl	L	S		
971-4262	5	4687231	343186	SiCl	SiCl	SiCl	--	L	S		
951-4138	1	4686102	343610	SiCl	SiCl	SiCl	SiCl	L	S		
911-4091	1	4686062	344321	SiCl	SiCl	SiCl	SiCl	L	S		

Job #	BH # / TP #	Northing	Easting	Soil Classification 0.3 m (1') depth	Soil Classification 1.5 m (5') depth	Soil Classification 3 m (10') depth	Soil Classification 6 m (20') depth	Frost Susceptibility at 1.5 m depth	Erodibility at 1.5 m depth		
971-4220	1	4684682	344153	SiCl	SiCl	SiCl	--	L	S		
971-4071	2	4684539	344979	SiCl	SiCl	SiCl	SiCl	L	S		
961-4090	7	4683983	344892	SiCl	SiCl	SiCl	--	L	S		
971-4021	3	4682670	344838	SiCl	SiCl	SiCl	--	L	S		
71602	35	4688132	344219	Fill	SiCl	SiCl	SaSi	L	S		
71602	10	4687212	344375	Fill	SiCl	SiCl	SaSi	L	S		
71602	5	4687777	344929	SiCl	SiCl	SiCl	ClSi	L	S		
71602	46	4687167	345558	SiCl	SiCl	SiCl	--	L	S		
71602	32	4686380	344863	SiCl	SiCl	SiCl	--	L	S		
71602	24	4685818	344881	SiCl	SiCl	SiCl	--	L	S		
911-4115	6	4685888	345735	SiCl	SiCl	SiCl	SiCl	L	S		
71602	41	4688017	345528	SiSa	SiCl	SiCl	--	L	S		
71602	42	4687784	345923	SiSa	SiCl	SiCl	--	L	S		
921-4120	2	4687430	346415	SiCl	SiCl	SiCl	--	L	S		
961-4089	1	4686724	346097	SiCl	SiCl	SiCl	SiCl	L	S		
ounty Road 8 and East of Manning Road											
70340	1	46722391	331493	SiCl	SiCl	SiCl	SiCl	L	S		
991-4028	1	4671276	326536	SiCl	SiCl	SiCl	SiCl	L	S		
871-4219	1	4671475	331513	SiCl	SiCl	SiCl	SiCl	L	S		
831-4031	3	4668031	337346	SiCl	SiCl	SiCl	SiCl	L	S		
001-4113-1	1	4671933	336630	SiCl	SiCl	SiCl	SiCl	L	S		
001-4113-2	1	4671395	346882	SiCl	SiCl	SiCl	SiCl	L	S		
021-4009	3	4668807	333066	SiCl	SiCl	SiCl	SiCl	L	S		
921-4120	1	4687315	346575	SiCl	SiCl	SiCl	SiCl	L	S		
73504	1	4682776	347631	SiCl	SiCl	SiCl	SiCl	L	S		

APPENDIX B

SUBSURFACE DATABASE

DETROIT RIVER INTERNATIONAL CROSSING

SUBSURFACE DATABASE

REFERENCE	BOREHOLE OR TEST PIT	NORTHING (m)	EASTING (m)	SOIL CLASSIFICATION 0.3 m Depth	1.5 m Depth	3 m Depth	6 m Depth	FROST SUSCEPTIBILITY 1.5 m depth	ERODIBILITY 1.5 m depth
744075	1	4,683,499	327,434	**Sa & Gr**	Si Cl	Si Cl	Si Cl	L	S
971-4227/1	2	4,682,232	327,588	Sa & Gr	SaSi	Si Cl to Cl Si	Si Cl	M	M
011-4146	1	4,682,001	328,266	Si Sa	Sa	Cl Si	--	L	VS
70483	3	4,683,005	328,984	Sa	Sa	Cl Si to Si Cl	Cl Si to Si Cl	L	VS
68517/2	103	4,683,037	328,189	Sa	Cl Si	Si Cl	Si Cl	M	M
DHO 68-F-15-1	13	4,682,267	328,609	Si Sa	Si Cl to Cl Si	Si Cl to Cl Si	Si Cl to Cl Si	M	M
DHO 68-F-15-1	9	4,682,427	329,199	Si Sa	Si Cl to Cl Si	Si Cl to Cl Si	Si Cl to Cl Si	M	M
951-4209	3	4,681,474	328,969	Fill	Sa	ClSi	Si Cl	L	VS
68517	4	4,681,405	330,118	Cl Si	Si Cl	Si Cl	Si Cl	L	S
881-4022	5	4,682,520	330,954	Si Cl	Si Cl	Si Cl	Si Cl	L	S
881-4022	8	4,682,242	331,085	Sa	Si Cl	Si Cl	Si Cl	L	S
951-4099	3	4,681,603	330,303	Sa	Sa	Si Cl	Si Cl	L	VS
69305	2	4,680,724	331,693	Sa	Si Cl	Si Cl	Si Cl	L	S
68722	2	4,680,242	331,049	Sa Si to Si Sa	Cl Si	Cl Si	Cl Si	M	M
754139/2	4	4,678,911	331,517	Si Cl	Si Cl	Si Cl	Si Cl	L	S
011-4333	7	4,677,953	333,077	Si Cl	Si Cl	Si Cl	--	L	S
041-140028	2	4,678,009	331,912	Si Cl	Si Cl	Si Cl	Si Cl	L	S
791-4077	1	4,681,115	331,978	Sa	Si Cl	Si Cl	Si Cl	L	S
871-4112	4	4,680,294	332,728	Si Cl	Si Cl	Si Cl	Si Cl	L	S
921-4068	6	4,679,537	332,901	Si Cl	Si Cl	Si Cl	--	L	S
754139/2	1	4,677,805	334,667	Si Cl	Si Cl	Si Cl	Si Cl	L	S
791-4096	25	4,678,266	333,746	Si Cl	Si Cl	Si Cl	Si Cl	L	S
041-140028	6	4,677,007	334,961	Si Cl	Si Cl	Si Cl	Si Cl	L	S
921-4204	3	4,678,157	335,239	Si Cl	Si Cl	Si Cl	Si Cl	L	S
73643	4	4,677,869	336,224	Si Cl	Si Cl	Si Cl	Si Cl	L	S
901-4119	3	4,678,306	337,362	Si Cl	Si Cl	Si Cl	Si Cl	L	S
04-111-060	1	4,677,738	335,500	Si Cl	Si Cl	Si Cl	Cl Si	L	S
04-111-060	7	4,678,848	333,325	Cl Si	Cl Si	Cl Si	Cl Si	L	S
04-111-060	14	4,680,648	331,648	Fill	Cl Si	Cl Si	Cl Si	L	S
04-111-060	23	4,682,323	328,529	Fill and Topsoil	Sa Si	Cl Si	Cl Si	M	M

Frost Susceptibility:
- M - Moderate
- L - Low

Erodibility:
- VS - Very Slight
- S - Slight
- M - Moderate

NOTES:
1. **Bold** soil classification indicates grain size analysis carried out on a sample at about this depth.
2. Table to be read in conjunction with accompanying report.

Prepared By: MEB
Reviewed By: PRB

APPENDIX C

RECORDS OF BOREHOLES
(GOLDER ASSOCIATES LTD. PROJECT NO. 04-1111-060)

DETROIT RIVER INTERNATIONAL CROSSING

Golder Associates
London, Ontario

RECORD OF BOREHOLE No 1

METRIC

PROJECT	04-1111-060		
G.W.P.		LOCATION	335500E, 4677738N
DIST	SW Region HWY 401 / 3	BOREHOLE TYPE	POWER AUGER,HOLLOW STEM
DATUM	Geodetic	DATE	November 2, 2006 - November 5, 2006

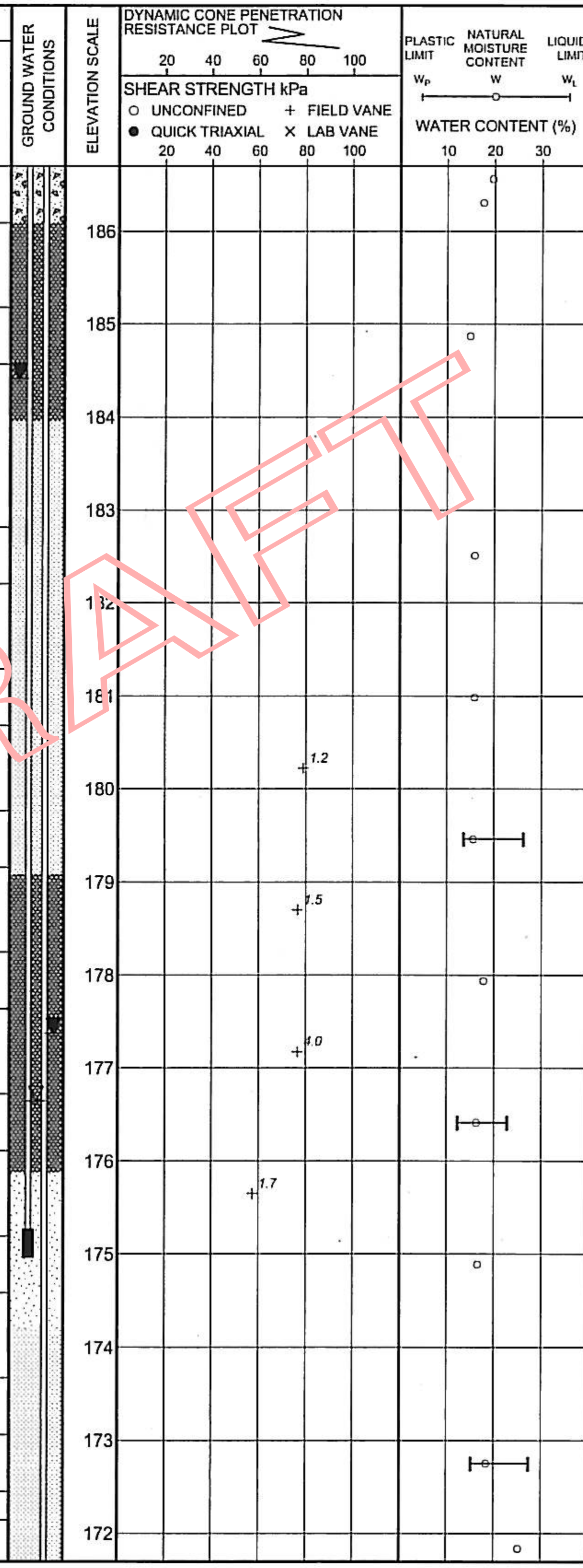
ORIGINATED BY C.C.
COMPILED BY T.M.
CHECKED BY SJB

SOIL PROFILE

ELEV / DEPTH	DESCRIPTION
186.70	GROUND SURFACE
0.00	TOPSOIL, clayey, Firm, Black
0.27	SILTY CLAY, some sand, trace gravel, fissured, oxidized along fissures, Firm, Brown
185.18 / 1.52	SILTY CLAY, some sand, trace gravel, fissured and oxidized along fissures, Very stiff, Brown
182.80 / 3.90	CLAYEY SILT, some sand, trace gravel, Stiff, Grey

SAMPLES

NUMBER	TYPE	"N" VALUES	UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
1	SS	5		
2	SS	28		
3	SS	15		
4	SS	14		
5	TO	PH	21.1	9 30 36 25, CICU, Oedometer
6	SS	9		
7	TO	PH		
8	SS	11		
9	TO	PH		
10	TO	PH	20.5	2 28 41 29, CICU, Oedometer
11	SS	10		



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+3, ×3: Numbers refer to Sensitivity ○3% STRAIN AT FAILURE

LDN_MTO_2006 04-1111-060.GPJ GLDR_LON.GDT 6/14/07

DRAFT

Golder Associates
London, Ontario

RECORD OF BOREHOLE No 7

METRIC

PROJECT 04-1111-060			
G.W.P.	LOCATION 333325E, 4678848N		ORIGINATED BY C.C.
DIST SW Region HWY 401 / 3	BOREHOLE TYPE POWER AUGER,HOLLOW STEM		COMPILED BY T.M.
DATUM Geodetic	DATE November 10, 2006 - November 16, 2006		CHECKED BY SJB

ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	"N" VALUES	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
183.17	GROUND SURFACE				
0.00	TOPSOIL, clayey Firm Black	1	SS	10	
0.25	CLAYEY SILT , some sand, trace gravel Stiff Mottled brown and grey				
181.65 / 1.52	CLAYEY SILT , some sand, trace gravel, oxidized fissures Very stiff to hard Brown	2	SS	23	
		3	SS	59	
179.28 / 3.89	CLAYEY SILT , some sand, trace gravel, silt and sandy silt pockets and laminated zones Firm to very stiff Grey	4	SS	32	
		5	TO	PH	
		6	SS	11	
		7	TO	PH	Unit weight 21.4 kN/m³; 1 30 39 30; CICU, Oedometer
		8	SS	12	
		9	TO	PH	
		10	SS	8	
		11	TO	PH	Unit weight 20.7 kN/m³; 3 19 42 36

Field vane sensitivity values plotted: 1.3 (approx. El. 176.8), 2.0 (approx. El. 175.2), 1.7 (approx. El. 173.7), 1.9 (approx. El. 172.1), 1.8 (approx. El. 170.6), 2.8 (approx. El. 169.1).

Continued Next Page

+³, ×³: Numbers refer to Sensitivity   ○³% STRAIN AT FAILURE

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LDN_MTO_2006 04-1111-060.GPJ GLDR_LON.GDT 6/14/07

Golder Associates
London, Ontario

RECORD OF BOREHOLE No 14

METRIC

PROJECT 04-1111-060

G.W.P.

LOCATION 331648E, 4680648N

ORIGINATED BY C.C.

DIST SW Region HWY 401 / 3

BOREHOLE TYPE POWER AUGER,HOLLOW STEM

COMPILED BY T.M.

DATUM Geodetic

DATE November 18, 2006 - November 23, 2006

CHECKED BY S.J.B.

ELEV DEPTH	SOIL PROFILE – DESCRIPTION	SAMPLE NUMBER	TYPE	"N" VALUES	UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
182.06	GROUND SURFACE					
0.00	FILL, silty clay, pockets of crushed gravel, topsoil, sand partings, glass fragments. Stiff. Brown to grey	1	SS	13		
180.99 / 1.07	FILL, silty sand and gravel. Brown					
180.69 / 1.37	CLAYEY SILT, laminated, some sand. Soft to stiff. Brown and grey,	2	SS	4		
		3	SS	14		
	SILTY CLAY, some sand, trace gravel. Soft to Stiff. Brown and Grey	4	TO	PH		
176.57 / 5.49	CLAYEY SILT, some sand, trace gravel. Firm to stiff. Grey	5	TO	PH		
		6	TO	PH		
		7	SS	7		
		8	TO	PH		
		9	TO	PH	21.0	3 26 41 30 CICU, Oedometer
		10	SS	WR		
		11	TO	PH	20.2	2 23 39 36 CICU, Oedometer

Elevation scale: 181, 180, 179, 178, 177, 176, 175, 174, 173, 172, 171, 170, 169, 168

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100

SHEAR STRENGTH kPa: ○ UNCONFINED, + FIELD VANE, ● QUICK TRIAXIAL, × LAB VANE: 20 40 60 80 100

Field vane sensitivity values plotted: 4, 2.7, 3.2, 2.2, 1.7, 1.4, 2.2

PLASTIC LIMIT W_P — NATURAL MOISTURE CONTENT W — LIQUID LIMIT W_L

WATER CONTENT (%): 10 20 30 (value 41 noted at 178)

Continued Next Page

+³, ×³: Numbers refer to Sensitivity ○³% STRAIN AT FAILURE

DRAFT

LDN_MTO_2006 04-1111-060.GPJ GLDR_LON.GDT 6/14/07

Golder Associates
London, Ontario

RECORD OF BOREHOLE No 23

METRIC

PROJECT 04-1111-060			ORIGINATED BY C.C.
G.W.P.	LOCATION 328529E, 4682323N		COMPILED BY T.M.
DIST SW Region HWY 401 / 3	BOREHOLE TYPE POWER AUGER,HOLLOW STEM		CHECKED BY SJB
DATUM Geodetic	DATE November 24, 2006 - November 26, 2006		

SOIL PROFILE

ELEV DEPTH	DESCRIPTION
178.92	GROUND SURFACE
178.62 0.00	FILL, silty sand, with gravel and silt pockets Brown
178.31 0.30	TOPSOIL, silty sand Black
0.61	SANDY SILT, Compact Brown to grey,
177.24 1.68	CLAYEY SILT, laminated, some sand, numerous silt and sandy silt partings Stiff to very stiff Grey
174.50 4.42	CLAYEY SILT, some sand, trace gravel, silty sand pockets Soft to very stiff Grey

SAMPLES

NUMBER	TYPE	"N" VALUES
1	AS	-
2	SS	15
3	SS	6
4	TO	PH
5	SS	4
6	SS	5
7	TO	PH
8	SS	1
9	TO	PH
10	SS	3
11	TO	PH

ELEVATION SCALE: 178, 177, 176, 175, 174, 173, 172, 171, 170, 169, 168, 167, 166, 165, 164

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100

SHEAR STRENGTH kPa: ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE: 20 40 60 80 100

Field vane sensitivity values plotted: 2.9, 2.8, 3.0, 1.8, 3.5, 3.0, 2.3, 1.4

PLASTIC LIMIT W_P — NATURAL MOISTURE CONTENT W — LIQUID LIMIT W_L

WATER CONTENT (%): 10 20 30

UNIT WEIGHT γ kN/m³

REMARKS & GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL	Remarks
1	23	37	39	CICU, Oedometer

Continued Next Page

+ [3], × [3]: Numbers refer to Sensitivity ○ [3%] STRAIN AT FAILURE

APPENDIX D

SITE PHOTOGRAPHS

DETROIT RIVER INTERNATIONAL CROSSING

SITE PHOTOGRAPHS

Detroit River International Crossing
Windsor, Ontario

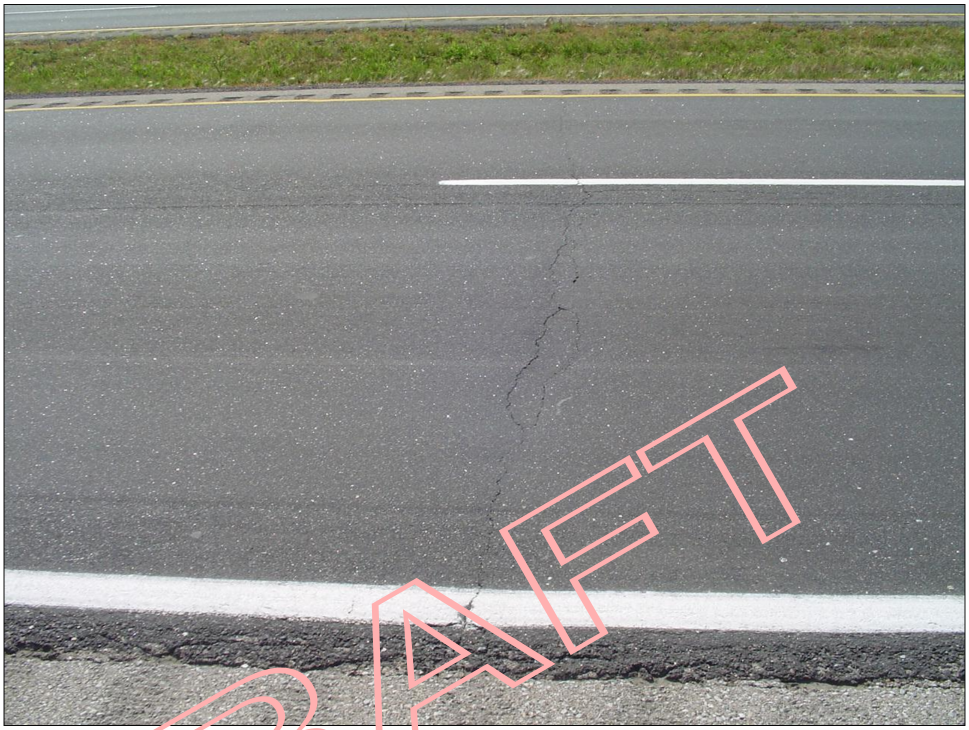

Photo 1 – Highway 401 westbound lanes between North Talbot Road and Huron Church Line. Typical transverse crack.

Photo 2 – Highway 401 westbound lanes just west of Talbot Road east. Note rutting and cracking at inner edge of pavement.

SITE PHOTOGRAPHS

Detroit River International Crossing
Windsor, Ontario

Photo 3 – Howard Avenue - south of Talbot Line - looking south.

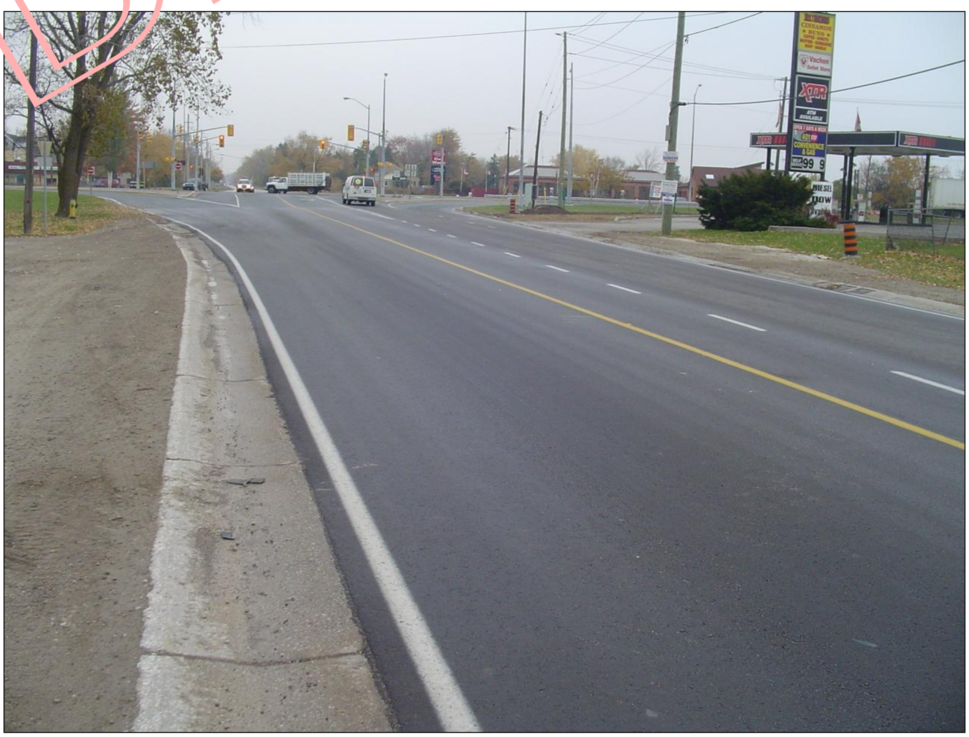

Photo 4 – Howard Avenue - south of Talbot Line - looking north.

SITE PHOTOGRAPHS

Detroit River International Crossing
Windsor, Ontario

Photo 5 – Howard Avenue - north of Talbot Line - looking north.

Photo 6 – Howard Avenue - north of Talbot Line - looking south.

SITE PHOTOGRAPHS

Detroit River International Crossing
Windsor, Ontario

Photo 7 – Cousineau Road - looking south.

Photo 8 – Sandwich Parkway - looking north.

SITE PHOTOGRAPHS

Detroit River International Crossing
Windsor, Ontario

Photo 9 – Sandwich Parkway - looking south

Photo 10 – Cabana Road - looking north.

SITE PHOTOGRAPHS

Detroit River International Crossing
Windsor, Ontario

Photo 11 – Cabana Road - looking south

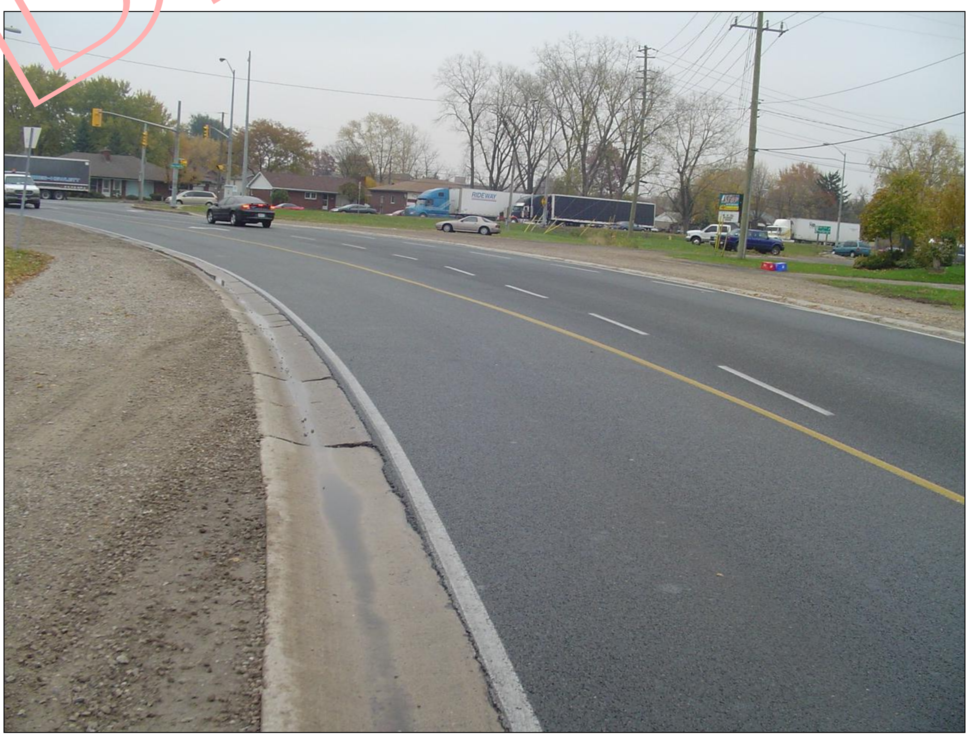

Photo 12 – Todd Lane - looking north

SITE PHOTOGRAPHS

Detroit River International Crossing
Windsor, Ontario

Photo 13 – Todd Lane - looking south

Photo 14 – Pulford Street - looking west.

SITE PHOTOGRAPHS

Detroit River International Crossing
Windsor, Ontario

Photo 15 – Pulford Street - looking east.

Photo 16 – Pulford Street – concrete distress about 50 m south of Northway Ave.

SITE PHOTOGRAPHS

Detroit River International Crossing
Windsor, Ontario

Photo 17 – Pulford Street - concrete distress about 20 m south of Northway Ave.

Photo 18 – Grand Marais Road West - looking east.

SITE PHOTOGRAPHS

Detroit River International Crossing
Windsor, Ontario

Photo 19 – Grand Marais Road West - looking west.

Photo 20 – Lambton Street - looking east.

SITE PHOTOGRAPHS

Detroit River International Crossing
Windsor, Ontario

Photo 21 – Lambton Street - looking west

Photo 22 – Spring Garden Road - looking east

SITE PHOTOGRAPHS

Detroit River International Crossing
Windsor, Ontario

Photo 23 – Spring Garden Road - looking west

Photo 24 – Spring Garden Road – slight joint spalling

SITE PHOTOGRAPHS

Detroit River International Crossing
Windsor, Ontario

Photo 25 – Labelle Street - looking west

Photo 26 – Malden Road - south of E.C. Row Expressway - looking south

SITE PHOTOGRAPHS

Detroit River International Crossing
Windsor, Ontario

Photo 27 – Malden Road - north of E.C. Row Expressway - looking north

Photo 28– Malden Road - north of E.C. Row Expressway - looking south

SITE PHOTOGRAPHS

Detroit River International Crossing
Windsor, Ontario

Photo 29 – Malden Road – very severe transverse crack

Photo 30 – Malden Road – very severe longitudinal/meander crack

SITE PHOTOGRAPHS

Detroit River International Crossing
Windsor, Ontario

Photo 31 – Matchette Road - north of E.C. Row Expressway - looking south

Photo 32 – Matchette Road – north of E.C. Row Expressway – looking north

SITE PHOTOGRAPHS

Detroit River International Crossing
Windsor, Ontario

Photo 33 – Matchette Road - north of E.C. Row Expressway – alligator wheel path cracks

Photo 34 – Matchette Road – south of E.C. Row Expressway – looking north

SITE PHOTOGRAPHS

Detroit River International Crossing
Windsor, Ontario

Photo 35 – Matchette Road - south of E.C. Row Expressway – looking south

Photo 36 – Matchette Road – moderate longitudinal cracks

SITE PHOTOGRAPHS

Detroit River International Crossing
Windsor, Ontario

Photo 37 – Ojibway Parkway - north of E.C. Row Expressway

Photo 38 – Ojibway Parkway - north of E.C. Row Expressway