Ontario

Ministry of Transportation
Southwestern Region
Planning & Design Section

HIGHWAY 3

CLASS ENVIRONMENTAL ASSESSMENT (GROUP 'B') PLANNING AND PRELIMINARY DESIGN STUDY, FROM OUTER DRIVE EASTERLY 33.5 KM TO EAST JUNCTION OF ESSEX COUNTY ROAD 34 (LEAMINGTON BY-PASS) G.W.P. 315-98-00

FINAL

TRANSPORTATION ENVIRONMENTAL STUDY REPORT AND PRELIMINARY DESIGN REPORT

COUNTY OF ESSEX

January 2006

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HIGHWAY 3

PLANNING AND PRELIMINARY DESIGN STUDY

FROM OUTER DRIVE EASTERLY
TO THE EAST JUNCTION OF ESSEX COUNTY ROAD 34
A TOTAL LENGTH OF 33.5 KM

G.W.P. 315-98-00

TRANSPORTATION ENVIRONMENTAL STUDY REPORT
AND
PRELIMINARY DESIGN REPORT

January 2006

Submitted By

Earth Tech Canada Inc.
105 Commerce Valley Drive West, 7th Floor
Markham, Ontario L3T 7W3

TRANSPORTATION ENVIRONMENTAL STUDY REPORT AND
AND
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TO THE EAST JUNCTION OF ESSEX COUNTY ROAD 34
A TOTAL LENGTH OF 33.5 KM

January 2006

Prepared By:

Jiri Filipovic, P.Eng
Senior Project Manager
Earth Tech Canada Inc.

Approved By:

W. Douglas Willoughby, P.Eng.
Director, Transportation
Earth Tech Canada Inc.

The Public Record:

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Ministry of the Environment
London Regional Office
733 Exeter Road, 2nd Floor
London, Ontario
N6E 1L3

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Windsor Area Office
4510 Rhodes Drive, Unit 620
Windsor, Ontario
N8W 5K5

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London, Ontario
N6E 1L3

County of Essex
Clerk's Department
360 Fairview Avenue West
Essex, Ontario
N8M 1Y6

City of Windsor
Clerk's Department
350 City Hall Square West
Windsor, Ontario
N9A 6S1

Municipality of Leamington
Clerk's Department
38 Erie Street North
Leamington, Ontario
N8H 2Z3

Town of Kingsville
Clerk's Department
2021 Division Road North
Kingsville, Ontario
N9Y 2Y9

Town of Tecumseh
Clerk's Department
917 Lesperance Road
Tecumseh, Ontario
N8N 1W9

Town of Lakeshore
Clerk's Department
419 Notre Dame Street
Belle River, Ontario
N0R 1A0

Town of Essex
Clerk's Department
33 Talbot Street South
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N8M 1A8

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A copy of this report is also available on the Project Web Site: www.earthtech.ca/highway3

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EXECUTIVE SUMMARY

Project Definition

Highway 3 between Windsor and Leamington is an arterial King's Highway that services a number of communities between these two centres. The Highway is used mainly by commuters and the agricultural operators along the Highway 3 corridor.

Earth Tech Canada Inc., on behalf of the Ministry of Transportation, initiated a Class Environmental Assessment (EA) and Preliminary Design Study to identify necessary improvements to Highway 3 from the Todd Lane/Cabana Road intersection in the City of Windsor easterly 38.7 km to the east junction of the Leamington By-pass (Essex County Road 34). The Study Area, shown in **Figure A,** was divided into four distinct sections due to the unique characteristics of the existing highway.

While this study was underway, the Ministry initiated other studies related to the Windsor-Detroit border crossing. It was recognized that future border crossing improvements in the Windsor area could affect travel patterns on Highway 3 between Todd Lane/Cabana Road and Outer Drive. As a result, in the spring of 2004, it was proposed that environmental clearance for Sections 1 and 1A be deferred. The environmental clearance for Sections 2 and 3 is being pursued at this time.

This report is a combined Transportation Environmental Study Report (TESR) and Preliminary Design Report (PDR). The planning for this project (G.W.P. 315-98-00) began in the fall of 1999, prior to the implementation of revisions to the *Class Environmental Assessment for Provincial Transportation Facilities (2000)* document. The Study was undertaken as a Group 'B' activity in accordance with the Class EA process.

The Ministry of Transportation initiated this study to review existing traffic, geometry, safety, pavement condition, drainage, structural, and electrical features, and to examine the need for improvements to address current and projected traffic needs within the Study Area. A 2017 planning horizon was used for Sections 2 and 3.

Proposed Improvements

An extensive review of the existing and proposed roadway conditions, the development and assessment of alternatives, and a comprehensive public consultation program resulted in the following recommended improvements for the Highway 3 Study Area (Sections 2 and 3):

- Section 2 – Outer Drive to Essex Road 34 West Limit (Talbot Road)
  - Four lanes with a centre two-way left turn lane
  - Improved at-grade intersections
  - Realignment of Oldcastle Road (jog elimination)

- Section 3 – Essex Road 34 West Limit (Talbot Road) to Essex Road 34 (Leamington By-Pass)
  - Four lanes with a 15 m wide grass median
  - Improved at-grade intersections with turning lanes at all intersections
  - Extension of Essex Road 29 (Division Road) north of Highway 3 to connect to a realigned South Talbot Road (Service Road)
  - Closure of the existing intersections at Inman Sideroad.

Environmental Assessment

As part of the Class EA and Preliminary Design process, external agencies and the public were notified of the project through letters and newspaper advertisements. In addition, they were invited to provide input and to identify their comments/concerns at six key points throughout the study including a Value Planning Study, a Study Design Report, and four Public Information Centres (PICs). The key issues expressed have been summarized and grouped into the following areas of concern:

- Traffic Operations / Mobility:
  - Comments both for and against widening Highway 3 to four lanes.
  - Intersection operations need to be improved, including the addition of signals where not currently present (e.g., Division Road, Oldcastle Road, Sexton Road, County Road 18, etc.), right-hand and left-hand turn lanes at sideroads, and new interchanges (e.g., Essex Road 19, Walker Road).
  - Comments both for and against proposed sideroad closures / re-alignments (including effects on traffic redistributed to other roadways).
  - Concern for access to/from driveways on Highway 3.

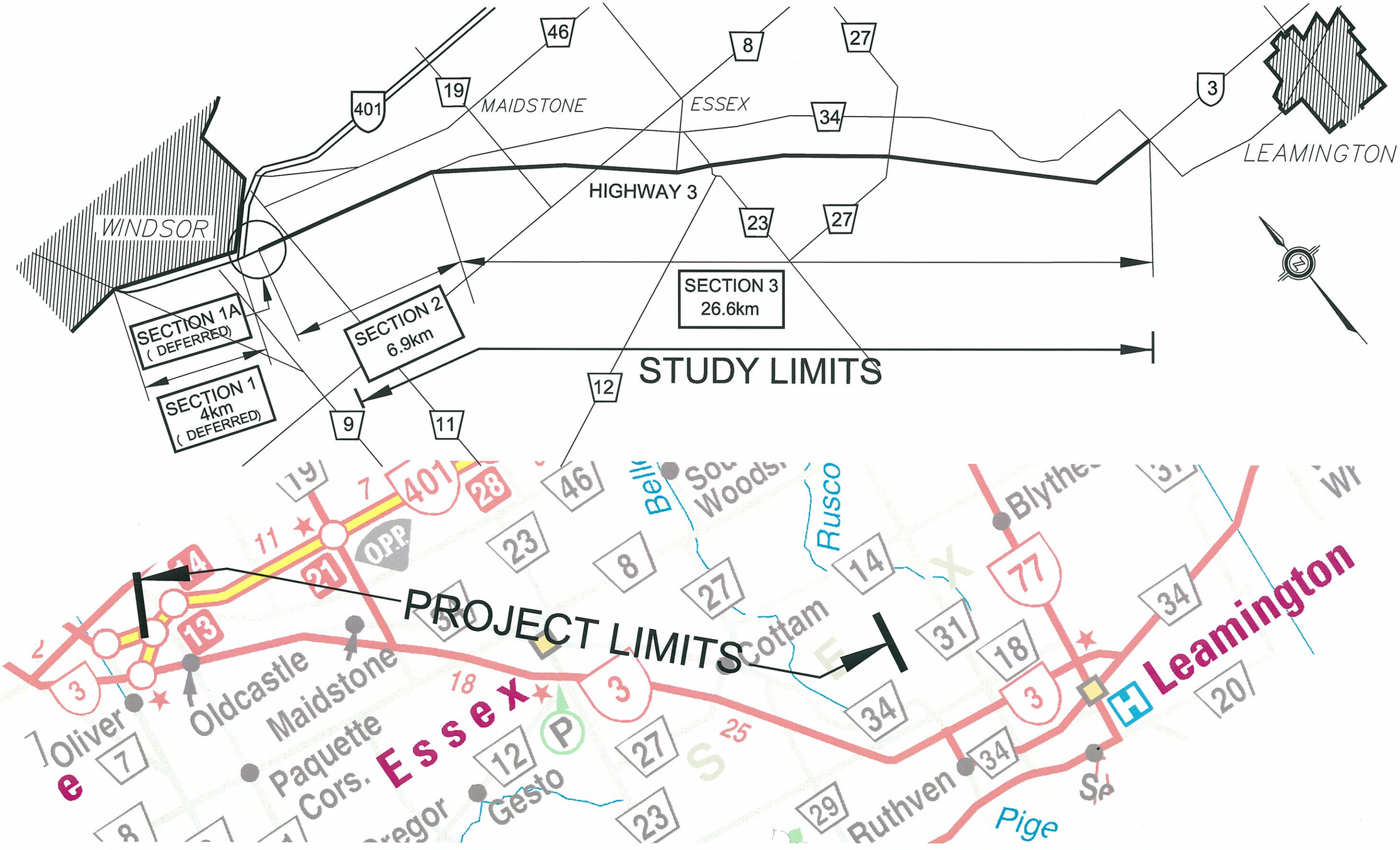
- Safety:
  - Need for better traffic enforcement and lower speed limits.
  - Concern for personal safety (e.g., provide a solid barrier at Tulley Meadows to protect against vehicles coming through the existing fence).
  - Concern for pedestrian safety (e.g., those walking to Jenner Park and Heavenly Rest Cemetery; provide pedestrian crossing for trail access from parking area).

- Environmental Effects:
  - Concern for surface water quality & drainage impacts.
  - Concern for effects on groundwater.
  - Concern for effects on air quality
  - Concern for potential loss of hedgerows and trees acting as visual and sound barriers.

- Community Effects:
  - Private property requirements.
  - Decrease in property values.
  - Effects on existing businesses.
  - Traffic congestion – air quality and health implications.
  - Traffic noise – suggests a noise barrier be constructed to protect adjacent homes (e.g., Tulley Meadows, Southwood Lakes, Division Road area).
  - Impact on existing and proposed future land uses along corridor (development).

The majority of the external agency comments that were received were related to the potential adverse effects on the natural or social/cultural environment. Potential effects on the natural environment included possible fish habitat disturbance (Ministry of Natural Resources) and impact to the provincially rare to uncommon pin oak trees located in the Division Road / South Talbot Road area. The Ministry of Culture (formerly the Ministry of Tourism, Culture and Recreation) noted the potential for impacting cultural heritage resources within the project limits.

Overall, the key issues and potential adverse effects identified in the assessment can be addressed through the recommended mitigation measures, resulting in no significant adverse net environmental impact.



EarthTech A tyco International Ltd. Company	Ministry of Transportation Ontario	SCALE DATE JANUARY /06	W.P. 315-98-00 HIGHWAY No. 3 - WINDSOR TO LEAMINGTON ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN	KEY MAP	EXHIBIT A

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January 20, 2006

1 INTRODUCTION

Highway 3 is a major King's Highway extending from just east of the City of Windsor easterly to Leamington. This section of the Highway is located in the County of Essex. The Highway extends through several communities including the Towns of LaSalle, Tecumseh, Essex, Lakeshore, and Kingsville, for a total length of 33.5 km.

The importance of Highway 3 continues to grow as a result of an expansion in the agricultural industry and population growth in the area.

Earth Tech Canada Inc., on behalf of the Ministry of Transportation (MTO), initiated a Preliminary Design and Environmental Assessment (EA) Study for Highway 3 improvements between Outer Drive just east of the City of Windsor and the east junction of Essex Road 34 (Leamington By-pass).

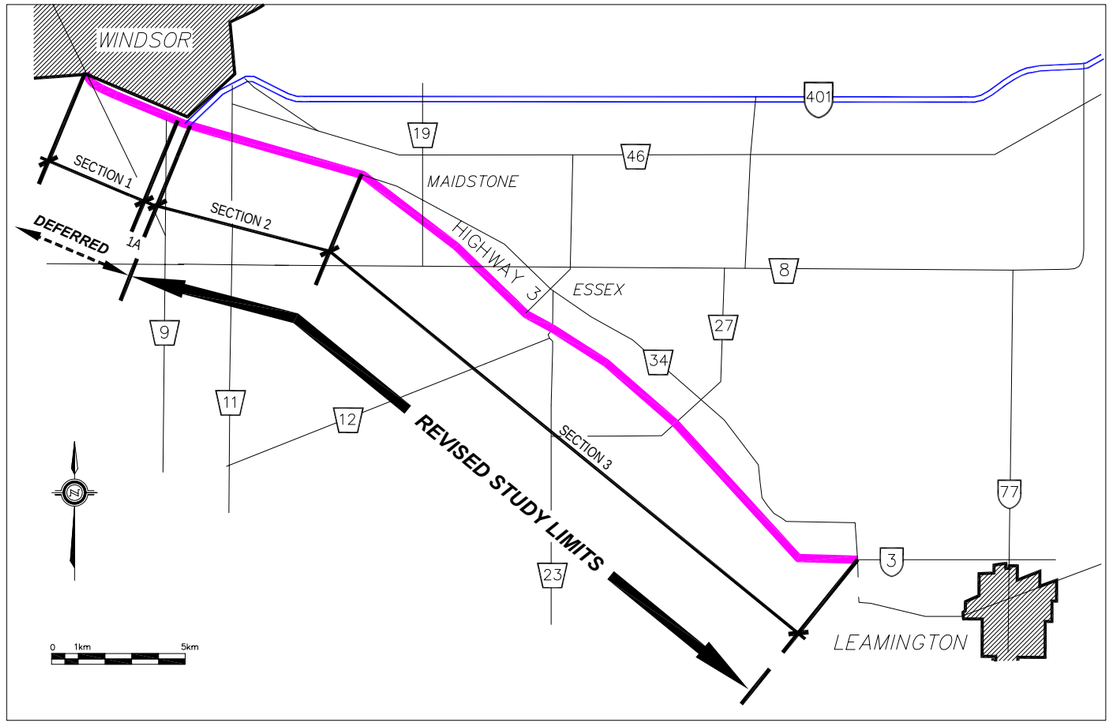
The Study Area was initially divided into four distinct sections to reflect the different characteristics of the existing roadway configuration and access. While this study was underway, the Ministry initiated other studies related to the Windsor-Detroit border crossing. It was recognized that future border crossing improvements in the Windsor area could affect travel patterns on Highway 3 between Todd Lane/Cabana Road and Outer Drive. As a result, in the spring of 2004, it was proposed that environmental clearance for Sections 1 and 1A be deferred. The environmental clearance for Sections 2 and 3 is being pursued at this time.

Under a separate environmental assessment study known as the Detroit River International Crossing Study (DRIC), MTO is seeking approvals for a new international crossing and associated road connections. In November 2005, MTO identified the Highway 3-Talbot Road-Huron Church Road corridor, from Highway 401 to E.C. Row Expressway as part of the Area of Continued Analysis for the DRIC study. As of January 2006, the DRIC study and its associated consultation activities are continuing. For further information about the DRIC study, please see the study website, www.partnershipborderstudy.com.

1.1 Project Location and Highway Classification

The project is located on Highway 3 between the communities of Windsor and Leamington as shown in **Figure 1.1**.

Figure 1.1: Project Limits



Section 2 of Highway 3 from Outer Drive to Talbot Road (Essex County Road 34-Maidstone) is a two-lane undivided highway with numerous private access points. This section is classified as Class III Special Controlled Access Highway with significant restrictions on private access. Section 3, to the east limit of the project, is classified as a Class I Expressway in the Provincial Highways Access Controls system with no private access allowed. Highway 3 within the project limits has a functional classification of Rural Arterial Undivided (RAU) with a Design Speed of 100 km/h (RAU 100).

The section of Highway 3 between Windsor and Leamington is in a semi-urban/rural setting with a relatively flat terrain. There are several sideroads that intersect Highway 3 within the project limits, including Essex County Roads 8, 9, 11, 18, 19, 23, 27, 29 and 34, as well as several local roadways.

1.2 Project Purpose

The purpose of this Study was to review existing traffic, geometry, safety, pavement condition, drainage, structural, and electrical features, and to examine the need for improvements to address current and projected traffic needs within the Study Area. During the Study, consideration was given to land use planning, engineering, operational, economic, natural and social environmental factors.

A 2017 planning horizon was used for Sections 2 and 3.

A key element of this Study was the determination of the role and function of Highway 3 within the Study Area. The function/classification of the subject section of Highway 3 as an arterial roadway was confirmed.

1.3 Need and Justification

Highway 3, has a number of existing and future deficiencies, between Windsor and Leamington that require improvement. A description of these improvements and their justification is provided below.

1.3.1 Pavement Condition

The Ministry has prepared Pavement Conditions Reports dated August and September 1998. Since then the Ministry has undertaken existing pavement rehabilitation on Highway 3 from Outer Drive to west of County Road 34 and minor intersection improvements at County Road 8, Sexton Road, Walker Road and Outer Drive.

The pavement in remaining areas should be rehabilitated to preserve the Ministry's infrastructure investment and to provide a stable and safe riding surface for motorists. The Ministry has an ongoing pavement monitoring program to facilitate this requirement. A pavement rehabilitation strategy will be determined in detail design.

1.3.2 Traffic Operations

Section 2 is currently operating at Level of Service (LOS) 'D' from Walker Road to Talbot Road. Based on the historic traffic and projected growth in the corridor, the LOS of Section 2 is projected to decrease to an LOS 'E' by 2007, assuming that the existing configuration is maintained. Please refer to **Section 4.4** for more details about Level of Service.

Section 3 is currently operating at LOS 'E' from Talbot Road to Essex Road 23. The traffic forecasts indicate that the section from Talbot Road to Division Road will be operating at LOS 'E' by 2007. The final segment, from Division Road to Essex Road 34 (east junction) is expected to operate at LOS 'D' at the year 2017 planning horizon, unless improvements are implemented.

No other signalized intersections are expected to have operational concerns before 2017.

The need for signalization within the planning horizon was met at the following unsignalized intersections:

- Outer Drive and Highway 3 – signals installed in 2005
- Essex Road 8 and Highway 3 – signals installed in 2004
- Essex Road 29 (Division Road) and Highway 3 – signals installed in 2003

1.3.3 Road Safety

In general, the Highway 3 Study Area experiences collision rates below the rates for similar King's Highways. However, there is a collision severity issue in Section 3: the total number of collisions is less than expected, but the number of injury-related collisions is higher than expected. This suggests that vehicle speeds play an important role in the collision severity.

A night road safety review indicated that visibility is a concern during night time conditions. Improved signage reflectivity levels and lane line markings along with improved illumination at the sideroads is recommended.

Specific safety needs were identified at Outer Drive and Talbot Road in Section 2, and Essex Road 8 and Division Road in Section 3.

During the course of the study, the MTO responded by signalizing the intersections at Division Road in 2003, Essex Road 8 in 2004 and Outer Drive in 2005.

1.4 Summary of the Preferred Design Options

Several design options were developed for each Section, which were presented to the public during the Study. A preferred option was presented to the public in April 2005. The recommended design for this undertaking is shown in **Appendix A**.

The recommended improvements are summarized below:

SECTION 2 Outer Drive to Essex Road 34 West Limit (Talbot Road)

- Four through lanes with a centre two-way left turn lane
- Improved at-grade intersections
- Realignment of Oldcastle Road (jog elimination)

SECTION 3 Essex Road 34 West Limit (Talbot Road) to Essex Road 34 (Leamington By-Pass)

- Four through lanes with a 15 m wide grass median
- Improved at-grade intersections with turning lanes at all intersections
- Extension of Essex Road 29 (Division Road) north of Highway 3 to connect to a realigned South Talbot Road
- Close existing intersection at Inman Sideroad.

The recommended improvements include rehabilitation of existing Highway 3 features such as pavement rehabilitation, and drainage, illumination and signage improvements

2 BACKGROUND INFORMATION

2.1 Construction History

Highway 3 is one of the oldest highways in Ontario. It was constructed in the 1930's to link Windsor and Fort Erie. Due to traffic congestion through the Town of Essex, a controlled access by-pass of the Town was constructed in the early 1970's (Section 3).

2.2 Maintenance History

Highway 3 has been upgraded and maintained several times since its initial construction. The most recent maintenance work within the Study Area is as follows:

- Contract 94-35 Section 3 Talbot Road to Essex Road 23: Resurfacing with HL-4 binder and HL-1 surface course.
- Contract 97-05 Section 3 Minor patching and signalization/illumination improvements.
- Contract 2004-3039 Section 2 Highway 3/Outer Drive and Highway 3/Walker Road intersections – signalization/illumination installed, with overall intersection improvements, pavement rehabilitated using Superpave and Stone Mastic Asphalt.
- W.P. 394-94-00 Section 2 Highway 3 from east of Outer Drive to west of Essex Road 34 excluding Highway 3/Walker Road intersection) – rehabilitation of existing pavement with Superpave binder and surface courses and associated intersection improvements including illumination at Sexton Road intersection.

2.3 Related Projects

A number of studies have been completed for this section of Highway 3 and the broader Study Area. The studies are listed below along with a brief synopsis of their content.

- **Highway 3 Appraisal Study, MTO, 1995**. This study addressed the existing and future operations of Highway 3 from Windsor to Fort Erie. The report identified existing and projected traffic volumes for the various sections of Highway 3 within the Study Area.
- **County of Essex Official Plan (Discussion paper #2), 1999**. The Official Plan related to land use, land requirements, sewage and water, transportation, agricultural, natural resources, and heritage issues. The report addressed historic and existing traffic demands for Highway 3.
- **Windsor Area Long-Range Transportation Study (WALTS), 1999**. This report primarily focused on the Windsor urban area, which is located north and west of Highway 401. The report identified that the majority of the growth in the Windsor area will actually occur outside the City of Windsor. Approximately 31 percent of the expected population growth will occur within the City, with the remainder occurring in the surrounding villages. Most of the employment growth (65 percent) will occur within the City limits. In total, the population of the area will grow by approximately 50,000 and employment by about 33,200 by 2016. The study indicated that cross-border traffic will increase at approximately 5 percent per annum and forecasts poor Levels of Service along Huron Church Road within the City limits by year 2016.
- **Southwestern Ontario Transportation Perspective, 1997**. This report indicated that the annual vehicle traffic at the Ambassador Bridge and Detroit-Windsor Tunnel would grow by 81 percent between 1994 and 2026, or 2.5 percent per year. This includes a 92 percent growth in truck traffic over the same time period. The study concluded that additional crossing capacity is required and recognized that the roadway corridors that service the border crossings must also be improved.
- **Southwest Ontario Frontier International Gateway Study, 1998**. This study, using economic indicators and an associated growth in commercial traffic of 5 percent per annum, concluded that the Ambassador Bridge would reach its capacity by year 2014. Furthermore, the study indicated that Huron Church Road would become capacity deficient by year 2011.
- **Essex – Windsor Regional Transportation Master Plan, 2005**. This study, led by a joint Steering Committee with representatives from the City of Windsor, Essex County and MTO, builds and expands upon the City's 1999 WALTS by providing recommended policies and an implementation strategy to serve the transportation needs of the Essex-Windsor area to 2021.

3 PROJECT APPROACH

3.1 Project Management

The project management of this study was carried out under the "Total Project Management" (TPM) approach. Under this approach Earth Tech initiated and maintained contacts with offices within the MTO, other provincial ministries, agencies, municipalities, interest groups, and the public at various stages of the Class Environmental Assessment Planning and Preliminary Design Study in order to obtain information, identify concerns, and solicit comments. A team of MTO and Consultant staff conducted the Study.

The Project Team members included:

Mr. Michael Swim	MTO Planning and Design
Mr. Joel Foster	MTO Environmental
Mr. Bob Koziol	Earth Tech Canada
Mr. Jiri Filipovic	Earth Tech Canada

Key milestone recommendations were presented to Senior Management of Southwestern Region MTO for endorsement. Endorsement of the preferred options was obtained from MTO Senior Management at the Regional Presentation held in November 2004.

3.2 The Class Environmental Assessment Process

This Study was carried out in accordance with the Ministry's *Class Environmental Assessment for Provincial Transportation Facilities, 2000* (Class EA), which was transitioned from the 1993 to the 2000 version part way through the project. The Class EA is an approved planning document under the *Environmental Assessment Act* (EA Act) that defines the EA process to be followed by groups of similar projects and activities. Provided that the appropriate EA process is followed, projects and activities included under the Class EA do not require review and approval separately under the EA Act. Under the Class EA, the project and activity groups are generally categorized as follows:

Group A:	New facilities
Group B:	Major improvements to existing facilities
Group C:	Minor improvements to existing facilities
Group D:	Activities which involve operation, maintenance, administration, and miscellaneous work for provincial transportation facilities

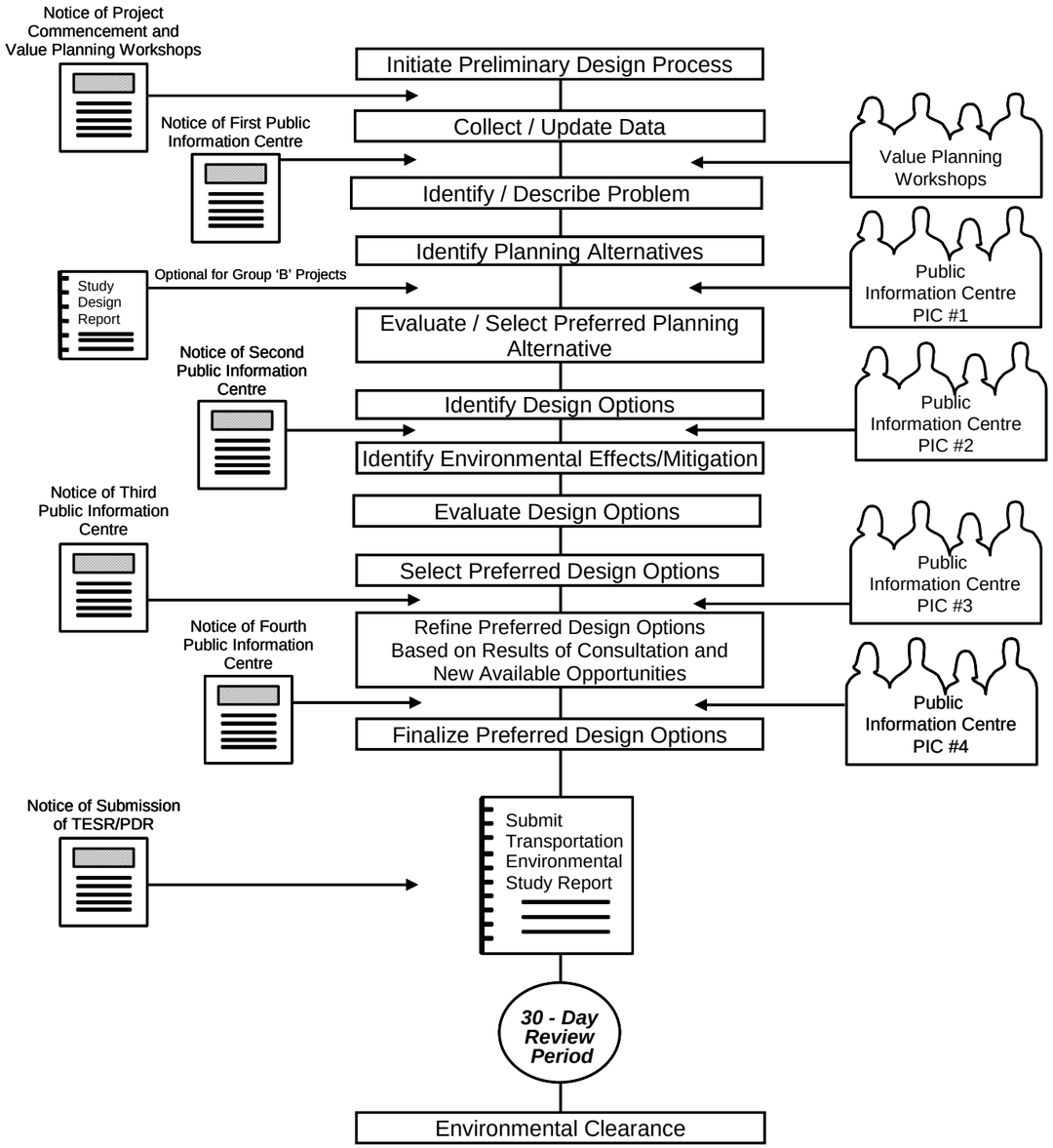
The Class EA process is principle-based rather than prescriptive in nature. The following principles underlie the Class EA process to be undertaken for all Group A, B, and C projects:

- Transportation engineering;
- Environmental protection;
- External consultation;
- Evaluation;
- Documentation;
- "Bump-up" (reclassification); and,
- Environmental clearance.

The Study is classified within the Group 'B' category because the proposed Highway 3 improvements will result in the Highway 3 corridor undergoing significant modifications.[1] An overview of the Group 'B' Class EA process as it relates specifically to this study is illustrated in **Figure 3.1.**

[1] Ministry of Transportation, *Class Environmental Assessment for Provincial Transportation Facilities*, 2000, p. 2-3

Figure 3.1: Overview of the Group 'B' Class Environmental Assessment Process



3.3 Consultation

As part of this study, an enhanced consultation program was undertaken to proactively inform external agencies, stakeholders, and the public of the study, obtain their input, and address issues/concerns as much as possible as they arose. This was accomplished throughout the study, beginning with the notification of project commencement, and continuing through a Value Planning Study, a Study Design Report, a series of four Public Information Centres (PICs), and a number of individual meetings.

3.3.1 Notification of Project Commencement and Invitation for Comments

Relevant external agencies, stakeholders, and the general public were notified of project initiation by way of letter in October 1999. On October 19, 1999, nine Provincial Ministry and Agency representatives were mailed a notice of project commencement, including the Ministry of the Environment, Ministry of Natural Resources, Ministry of Citizenship, Culture and Recreation, Ministry of Municipal Affairs, Ministry of Agriculture, Food and Rural Affairs, and the Ontario Provincial Police. The letter described the project, identified the Study Area, described the Class EA process being followed, requested comment, and included an invitation to the Value Planning Workshops. On October 29, 1999 the same letter was sent to 32 additional stakeholders including local municipalities, the Essex Region Conservation Authority, local school boards and emergency services, potentially affected utilities, and environmental organizations.

In addition to letter notification, the general public was informed of project commencement, and invited to the Value Planning Workshops through Ontario Government Notice (OGN) advertisements in the Windsor Star on Thursday, October 28, 1999, and in Le Rempart (French-language newspaper) on Wednesday, December 1, 1999.

As a follow up to the notice of project commencement letter sent to agencies, a telephone call was made to each agency who failed to respond to the letter as a means of proactively engaging their interest in the study.

3.3.2 Value Planning Study

Following project commencement, a Value Planning Study was undertaken at a strategic level to interactively involve Government Agencies and the interested public in the development of study objectives. A Value Planning Study was included as one of the initial consultation activities in order to:

- Enhance the opportunities for public consultation;
- Identify project sensitivities and expectations;
- Develop a common understanding of the needed and desired project functions; and,
- Seek public input to the project early in the process.

The Value Planning Study was based on inputs obtained through three Value Planning Workshops. The first workshop was conducted with a total of 11 MTO staff on October 18, 1999. The second workshop, attended by 19 agency representatives and members of the general public, was held on December 8, 1999, while the third workshop, held on December 9, 1999, was attended by eight municipal politicians / staff.

Each workshop followed the same format: participants completed activities using techniques such as quality modelling, function analysis, and idea generation (a modified Value Management work plan consisting of the Information, Function Analysis, and Creativity phases of the SAVE International (1997) value methodology standard). The key outcome of these activities was the identification of five main study objectives:

- Moving traffic safely without undue delay, including a safe roadway environment;
- Accommodating future growth, including supporting municipal planning initiatives and maintaining flexibility with minimal property impacts;
- Linking communities and supporting the local economy;
- Sustaining/enhancing the environment; and,
- Accommodating people and providing improved access.

The "Value Planning Workshops Final Report" (Earth Tech Canada, January 2000) documents the Value Planning Study process and results in further detail and is available from the MTO by request.

3.3.3 Study Design Report

Although optional for Group 'B' projects, a Study Design Report (Earth Tech Canada, September 2000, available by request) was prepared and filed for agency/stakeholder/public review as part of the Ministry's enhanced consultation program. The purpose of the Study Design process was to gain an understanding of the current challenges and future needs in the Highway 3 corridor, and to communicate the Project Team's intended planning approach to address these challenges and needs. Further, it provided an opportunity to solicit comments on our approach from key stakeholders and the public.

The Study Design Report outlined the project need and justification, discussed the planning alternatives, and defined the project Study Area and EA process commitments. These incorporated discussion of the Value Planning Study and PIC No. 1 results (see **Section 3.3.4**), and findings of the preliminary technical site investigations (i.e., traffic and safety review, engineering review, and environmental review).

On October 5, 2000, over 100 notices of Study Design Report filing were mailed to Provincial Ministry and Agency representatives, local municipalities, and other stakeholders including the Essex Region Conservation Authority, local school boards and emergency services, potentially affected utilities, and environmental organizations. Of these notices, 52 were sent to members of the interested public who had either attended PIC No. 1 or requested to be added to the contact database.

In addition to letter notification, the general public was informed of Study Design Report filing and invited to comment, through Ontario Government Notice (OGN) advertisements in the Windsor Star on Wednesday, October 11, 2000 and in Le Rempart (French-language newspaper).

During the 30-calendar day public review period from October 11 to November 9, 2000, comments were received from a total of 11 agencies and stakeholders including the Ministry of Municipal Affairs & Housing, Ministry of Citizenship, Culture & Recreation, Ministry of Agriculture, Food and Rural Affairs, County of Essex, Town of LaSalle, Windsor Police Service, Bell Canada, and 4 members of the public.

Appendix C contains a copy of key correspondence received from ministries, agencies, and municipalities, including that related to the Study Design Report.

3.3.4 Public Information Centres

Public Information Centre No. 1

The first PIC was held on June 21, 2000 to present the results of the Value Planning Study, obtain additional input regarding the problem statement, and solicit comments on the generated planning alternatives prior to evaluating them. The PIC was held from 1:00 p.m. to 4:00 p.m. and from 6:00 p.m. to 9:00 p.m. at the Ciociaro Club in Oldcastle, Ontario. Municipalities were also invited to attend a review of the information between 10:00 a.m. and 12:00 p.m. prior to the PIC being open to the public.

The PIC followed an informal "drop-in" format with large display boards presenting the relevant project information. This provided an opportunity for Ministries, the local municipalities, special interest groups, and the public to review the information, present their comments and discuss them with Earth Tech and MTO staff.

Notification of the Public Information Centre (PIC) was through the following means:

- Letter information package mailed to area municipalities on June 13, 2000.
- Letter faxed/mailed to forty external agencies and interested public members on June 14, 2000.
- Ontario Governmental Notice (OGN) advertised in both the Windsor Star (English) and Le Rempart (French) on June 14, 2000.
- PIC No. 1 brochure hand-delivered to study area residents/businesses on June 14 and 15, 2000.

The PIC was well attended with 78 people signing in for the two formal PIC sessions. In addition to members of the general public, those in attendance included representatives from the:

- County of Essex (including representatives at the special viewing before the 1 p.m. session);
- City of Windsor;
- Town of LaSalle; and the
- Essex Region Conservation Authority.

Comments Received

Written and verbal comments were received from a total of 23 individuals, three of which were developers with specific issues related to their own lands. The remaining comments from the first PIC generally related to:

- Operations and Mobility
  - improvement of intersections
  - limit number of signals

  - reduce traffic
- Safety
  - enforce/reduce speed limit
  - widen spacing between signalized intersections and improve illumination
  - school bus safety
  - add highway shoulders
- Community Effects
  - noise
  - pollution
  - divert traffic from residential area

All written comments received were responded to via individual letters. A summary of the comments received and a copy of the response are provided in **Appendix B1**.

A "Public Information Centre Summary Document" (Earth Tech Canada, June 2001) was prepared to detail the process and results, and is available from the MTO by request. The summary document contains a copy of the following: notice letter and contact list of those to whom it was mailed; newspaper advertisements; PIC brochure, sign-in sheets (private information removed), display boards, and written comments received.

Public Information Centre No. 2

PIC No. 2 was held on October 30, 2001 to present the preferred planning alternatives and various design options being considered for comment prior to evaluating them. The second PIC was held from 2:00 p.m. to 8:00 p.m. at the Ciociaro Club in Oldcastle, Ontario. Municipalities were also invited to attend a review of the information between 1:00 p.m. and 2:00 p.m. prior to the PIC being open to the public.

Similar to the first PIC, PIC No. 2 followed an informal "drop-in" format with large display boards presenting the relevant project information. This provided an opportunity for Ministries, the local municipalities, special interest groups, and the public to review the information, present their comments and discuss them with Earth Tech and MTO staff.

Notification of the Public Information Centre (PIC) was through the following means:

- Letter mailed to 30 local municipal representatives on October 15, 2001.
- Letter mailed to 92 Ministries, special interest groups, and interested public members on October 15, 2001.
- OGN advertised in both the Windsor Star (English) on October 20, 2001 and the Le Rempart (French) on October 17, 2001.
- Over 1500 PIC No. 2 brochures hand-delivered to study area residents/businesses on October 19 and 20, 2001.

The second PIC was well attended with 105 people signing in over the course of the afternoon / evening session. In addition to the general public, those in attendance included representatives from the:

- County of Essex;
- Town of Essex;
- Municipality of Leamington;
- City of Windsor;
- Town of LaSalle;
- Town of Tecumseh;
- Town of Kingsville;
- Ontario Provincial Police (Essex); and the
- Essex Region Conservation Authority.

Comments Received

Sixty-nine written comments were received at or during PIC No. 2. Based on the design options presented, the majority of comments received dealt with one or more of the following primary issues:

- Widening Highway 3 to four lanes;
- Enhancing intersection operations;
- Improving median treatments;
- Constructing a protective/noise barrier in the vicinity of the Tulley Meadows subdivision in Essex; and,
- Providing a greater police presence along Highway 3.

A number of the respondents also submitted their preferences for the design options presented:

- In Section 2, the options with no median barrier (2 A and 2 B) each had 5 comments against and 2 B had one comment in support. Option 2 C with a median barrier, generated the most comments with 3 in support and 8 against.
- In Section 3 each of the alternatives had 8 comments against. Option 3 A (flush median) received no comments in support. Option 3 B (concrete median barrier) received 3 comments in support while Option 3 C (15 m grass median) received 4 supportive comments.

All written comments received were responded to via individual letters. A summary of the comments received and a copy of the responses are provided in **Appendix B2**.

A "Public Information Centre No. 2 Summary Document" (Earth Tech Canada, January 2002) was prepared to detail the process and results, and is available from the MTO by request. The summary document contains a copy of the following: notice letter and contact list of those to whom it was mailed; newspaper advertisements; PIC brochure, sign-in sheets (private information removed), display boards, and written comments received.

Public Information Centre No. 3

PIC No.3 was held on September 26, 2002 to provide an opportunity for interested parties to review the preferred design options being considered. PIC No. 3 was held from 2:00 p.m. to 8:00 p.m. at the Ciociaro Club in Oldcastle, Ontario. Municipalities, ministries, and agencies were also invited to attend a preview of the information between 1:00 p.m. and 2:00 p.m. prior to the PIC being open to the public.

Similar to the first and second PICs, PIC No. 3 followed an informal "drop-in" format with large display boards presenting the relevant project information. This provided an opportunity for Ministries, the local municipalities, special interest groups, and the public to review the information and discuss their concerns with Earth Tech and MTO staff.

Notification of PIC No. 3 was through the following means:

- Letters mailed to 54 municipalities, ministries, and agencies and 123 stakeholders/interested public members on September 16, 2002.
- Letters sent on September 16, 2002 by Registered Mail to 40 property owners whose property may be affected by the preferred design options.
- Letters sent on September 16, 2002 by Registered Mail to 217 property owners whose existing access(es) to Highway 3 may be affected by the preferred design options.
- OGN advertised in both the Windsor Star (English) on September 21, 2002 and the Le Rempart (French) on September 18, 2002.
- Over 1500 PIC No. 3 brochures hand-delivered to study area residents/businesses on September 17, 18, and 19, 2002.

PIC No. 3 was well attended with more than 200 people signing in over the course of the afternoon / evening session. In addition to the general public, those in attendance included representatives from the:

- County of Essex;
- Town of Essex;
- City of Windsor;
- Town of LaSalle;
- Town of Tecumseh; and the
- Ontario Provincial Police (Essex).

Comments Received

A total of 82 written comment sheets were received based on the following questions:

- What is the category that best describes your interest in this Study?
- What are your specific concerns regarding the rationale for the selection of the preferred design option specific to each of the four study sections?
- What are your recommended refinements to the preferred design options to either improve the design or minimize potential impacts?

The majority of attendees who provided written comments were area residents and adjacent landowners. The remaining respondents were commuters, local business owners/operators, area farmers, council representatives, and members of other various stakeholder groups (environmental groups, etc.).

The preferred design option for Section 1 received the most concerns from attendees (note: the MTO subsequently deferred seeking environmental clearance for Sections 1 and 1A, see **Section 1** of this report). This was followed by the preferred design options for Section 3 and Sections 1A and 2, in that order (see **Table 3.1**). About a quarter of the concerns raised were applicable to all sections including property access, increased traffic impacts, and future development implications.

Table 3.1 - Section Specific Preferred Design Option Concerns

Concern	Section			
	1	1A	2	3
Pedestrian Safety	✓			
Closure of turnarounds and turning lanes;	✓			
Property Access	✓	✓	✓	✓
Increased traffic impacts such as noise, vibration, dust, pollution and safety	✓	✓	✓	✓
Future property development implications, property devaluation and the potential for property owners to receive financial compensation	✓	✓	✓	✓
Commercial vehicles travelling through residential neighbourhoods	✓			
Increased Traffic flows and vehicular speeds	✓		✓	✓
Potential for the construction of protective barriers to separate roadways from private properties	✓	✓		✓
Impacts of study findings being conducted concurrently, including Truck Traffic and Border Crossing Studies	✓			
Transportation of farm machinery				✓
Impacts to existing farmland and division of property				✓
Intersection improvements to increase safety and reduce potential for traffic accidents				✓

A number of respondents recommended refinements to the preferred design options presented. The recommended refinements included:

- Install traffic signals at specific intersections;

- Install protective barriers separating the roadway from private property;
- Accommodate a connection to the Lauzon Parkway;
- Institute speed reductions along certain portions of the roadway and provide greater police presence along Highway 3;
- Provide cross-overs/permit U-turns for emergency services vehicles;
- Construct turning lanes rather than median barriers at Highway 3 and Walker Road;
- Repair and upgrade existing roadway infrastructure including culverts, increased illumination, replacement of hydro wires, etc.;
- Construct a grade separation at Howard Avenue and Highway 401; and,
- Convert some streets into cul-de-sacs and close others to prevent the use of back streets as shortcuts to by pass traffic congestion.

All written comments received were responded to via individual letters. A summary of the comments received and a copy of the responses are provided in **Appendix B3**.

A "Public Information Centre No. 3 Summary Document" (Earth Tech Canada, January 2003) was prepared to detail the process and results, and is available from the MTO by request. The summary document contains a copy of the following: notice letter and contact list of those to whom it was mailed; newspaper advertisements; PIC brochure, sign-in sheets (private information removed), display boards, and written comments received.

Public Information Centre No. 4

PIC No. 4 was held on April 7, 2005 to announce the decision to defer seeking EA clearance for Sections 1 and 1A (see **Section 1** of this report), and to present the *refined* preferred design options associated with Sections 2 and 3. Since the focus of PIC No. 4 was on Sections 2 and 3 primarily, the location for holding the PIC was changed to a location closer to Sections 2 and 3. The PIC was held at the Essex United Church in Essex, Ontario from 3:00 p.m. to 8:00 p.m.

Notification of PIC No. 4 was provided through the following means:

- Letters mailed to 54 municipalities, ministries, and agencies and 127 stakeholders/interested public members on March 28, 2005.
- OGN advertised in the Windsor Star (English) on March 29, 2005 and the Le Rempart (French) on April 5, 2005.
- Approximately 1000 PIC No. 4 brochures hand-delivered to study area residents/businesses during the week of March 28, 2005.

All landowners that were directly affected by proposed changes developed subsequently to PIC No. 3 in Sections 2 and 3 were individually contacted by letter and/or telephone in advance of PIC No. 4. Similar to previous PICs, the format followed an informal "drop-in" style with large display boards illustrating key information. This provided an opportunity for Ministries, local municipalities, special interest groups, and the public to review the information, present their comments and discuss their concerns with Earth Tech and MTO staff.

Over 60 people signed-in at PIC No.4, the majority of which were area residents and adjacent landowners. The remaining attendees included local municipal and city staff, business owners/operators, farmers, commuters, and members of other various stakeholder groups (environmental groups, etc.). In addition to the general public, those in attendance included representatives from the:

- County of Essex;
- Town of Essex;
- City of Windsor;
- Town of Kingsville;
- Town of Tecumseh; and the
- Essex Region Conservation Authority.

Comments Received

Eighteen written comments were received at or following the PIC, based around the following themes:

- Concern for property access and potential impacts to business;
- The need for a pedestrian cross-over to provide access to ERCA trails;
- Proposed intersection improvements;
- Support for the technically preferred design;
- Town of Essex road network connections to Highway 3;
- Proposed sideroad closures; and
- Poor drainage along Highway 3.

In addition to written comments received, a number of discussions took place at PIC No. 4 between project team members and those in attendance. The topics of discussion included historical background, project timing, and project specific needs and impacts.

All written comments received were responded to via individual letters. A summary of the comments received and a copy of the responses are provided in **Appendix B4**.

A "Public Information Centre No. 4 Summary Document" (Earth Tech Canada, October 2005) was prepared to detail the process and results, and is available from the MTO by request. The summary document contains a copy of the following: notice letter and contact list of those to whom it was mailed; newspaper advertisements; PIC brochure, sign-in sheets (private information removed), display boards, and written comments received.

3.3.5 External Consultation

The intent of the consultation program outlined above was to ensure that external agencies, stakeholders, and the interested public had an opportunity to discuss their concerns about the project and influence the outcome of the recommended plan, while at the same time, address the consultation principles identified in the Class EA document.

Table 3.2 highlights the main comments/issues provided by the agencies, stakeholders and members of the public throughout the course of this study (Sections 2 and 3), and how they have been addressed.

Table 3.2 – External Consultation Summary

Comment / Issue	Response
Consideration of Alternatives Other Than Widening Existing Highway 3	
• Consider the "Do Nothing" alternative • Opposed to widening; feels it will not solve problem • Divert traffic to other routes, away from residential areas	• The "Do Nothing" alternative, along with "Operational Improvements" (i.e., no widening) and "Increase Occupancy" were considered. Based on traffic forecasts and capacity analysis, Highway 3 needs to be widened to four lanes. • Other routes are not able to provide substantial mobility and safety improvements.
• New route south of Highway 3 should be the preferred alternative	• A new alignment was considered to bypass Section 2; however, a new alignment would have significant social environmental affects and cost premiums without providing a significant safety or mobility benefit.
• Eliminate traffic signals • Add interchanges	• A number of alternatives were considered during the study, including upgrading Highway 3 to a freeway by replacing the existing intersections with interchanges and overpasses. Based on the future role and function of Highway 3, as well as the forecasted traffic volumes, it has been determined that a four-lane highway with some signalized intersections will address the traffic and safety needs. • Newer approaches to signals design and activation can be used in conjunction with other improvements to address safety and mobility concerns.
• Concerned that not enough thought given to reducing traffic on Highway 3	• Traffic has historically increased by about 2% per year, and this level of growth is expected to continue over the next 20 years. • The implementation of transportation demand management techniques such as staggered work hours or carpooling were considered as possible alternatives. However, these techniques are not completely effective in reducing traffic volumes to the point where the proposed improvements are not warranted. • As part of its commitment to safety, the Ministry continues to monitor traffic operations and collision frequency at intersections along Highway 3.
Safety and Enforcement	
• Better speed limit enforcement • Concerned with safety as a result of increased speeds with 4 lanes	• High operating speeds, and more importantly significant speed differentials, in the highway corridor present safety and operations concerns. • The focus of the study is on geometric improvements and the separation of traffic. • Comments were forwarded to the Ontario Provincial Police
• Reduce speed limit on Division Road	• Comments were forwarded to the County of Essex.
Intersections	
• Add traffic signals: - County Road 8 - Division Road	• Intersections were reviewed, in terms of safety and operations. Signals have been added at County Road 8 and Division Road.
• Add traffic signals: - Oldcastle Road - Sexton Road - Essex Road 18	• Intersections were reviewed, in terms of safety and operations. Signals were found not to be currently warranted, and forecast not to be warranted in the planning horizon (2017).
• Improvement at Outer Drive requested	• Intersections were reviewed, in terms of safety and operations. Geometric improvements have been made at Outer Drive and traffic signals have been added.
• Suggests intersection closures	• Intersection closures were considered to reduce conflict points along Highway 3 and improve safety. The review of intersections included consideration of traffic volume at the intersection, potential out-of-the-way travel, and farming/business linkages across Highway 3 at a given intersection. • Based on the project team's assessment and consultation with the public, Inman Road is the only intersection proposed to be closed.
• Ellis Sideroad closure may cause heavy loads and tractors / combines to pass through the Town of Essex creating safety, dust and noise issues • Request for traffic signals at Ellis Sideroad	• In light of new information obtained and concerns expressed at PIC #3, the evaluation of Ellis Sideroad was reviewed. As a result of this review, Ellis Road will remain open at Highway 3. If future traffic operations become a problem or significant traffic is generated creating a warrant for traffic signals, the Ministry may recommend that the intersection be closed or that a grade separation be constructed over Highway 3.
• Concern with closure of Upcott Sideroad and impact on family business	• In light of new information obtained and concerns expressed following PIC#4, the evaluation of Upcott Sideroad was reviewed. As a result of this review, Upcott Sideroad will remain open at Highway 3. If future traffic operations become a problem or significant traffic is generated creating a warrant for traffic signals, the Ministry may recommend that the intersection be closed or that a grade separation be constructed over Highway 3.
• Opposes removal of the exit at the intersection of South Talbot Road and Inman Road at Highway 3. Removal of the exit will hinder quick access to the property.	• While most intersections on Highway 3 are more than 1 km apart, the distance between Division Road and Inman Sideroad is only 590 m. Closing Inman Sideroad will eliminate this less than desirable intersection spacing, and thereby reduce collision potential and improve traffic flow on Highway 3. While we recognize that this closure will result in some out-of-the-way travel requirements, good road connections to the signalized intersection at Highway 3 and Division Road mean that significant out-of-the-way travel is avoided.
• Opposes Sexton Road realignment	• The MTO acquired the right-of-way to realign Sexton Road a number of years ago. The realignment of Sexton Road was proposed to improve the safety of the intersection by removing some of the skew. The present intersection is located at an angle of approximately 70 degrees with Highway 3. This skew angle reduces the amount of visibility for vehicles turning onto Highway 3 from Sexton Road. The realignment would reconfigure the

Comment / Issue	Response
	intersection to a 90 degree intersection. However, since there are no identified concerns relating to the operation of and safety at the intersection, realignment cannot be justified at this time. However, the Ministry will retain the property in order to maintain the viability of the realignment option for implementation at some future date.
• Realignment of Oldcastle Road will have negative impact on business • Realignment of Oldcastle Road will negatively affect resale value	• Alternatives were assessed to avoid the relocation of Oldcastle Road north of Highway 3. However, relocating Oldcastle Road north of Highway 3 provides the best safety and traffic operations and has fewer impacts and is less costly than realigning Oldcastle Road south of Highway 3. • There are currently no entrances to the property from Highway 3. Given the Ministry's policy to maintain Highway 3 as a Controlled Access Highway, a direct access to Highway 3 can not be provided. • The property will continue to have access to Oldcastle Road and will not be land locked based on the technically preferred alternative. • The proposed improvements do not alter the visibility of your property from Highway 3.
• Concern with signal timing at Essex Road 8	• We have reviewed the traffic signal timing and operations at the Maidstone Avenue – Highway 3 intersection. Our review has determined that the intersection is operating at an excellent level of service during all periods of the day, and the prevailing traffic volumes are being accommodated at the existing intersection with minimal delay.
• Requests proposed signals will have advance warning signs	• Advanced warning signs or signals are normally used when traffic signals are not expected or at the transition between a freeway and an arterial road. It is not anticipated that advanced signs or signals will be warranted along Highway 3, but this will be reviewed further during the detail design stage of the project.
• Concerned about safety of Manning Road intersection	• We have reviewed the collision statistics for the Manning Road intersection. Our records indicate that this intersection's collision frequency is about average for similar intersections in Ontario. The majority of the collisions at this intersection are rear end collisions, which can be attributed to the high speeds, high volumes and the fact that many drivers follow too closely. While rear end collisions can occur at signalized intersections, the widening of Highway 3, should improve passing opportunities significantly, and should reduce tailgating, one of the major contributing factors in these types of collisions. The Ministry is satisfied that the Highway 3 / Manning Road intersection will continue to operate safely in the future.
• Requests stop area in median (80 feet) at Marsh Road intersection	• From a safety perspective, it is not desirable to permit traffic to stop within the median area. However, the proposed median will be 15 m (50 feet) wide, which could be used as a vehicle refuge, if necessary.
• Requests improvements at Victoria Avenue • Suggests right-in/left out at Fairview Avenue • Suggests right-in for commercial development at Essex Road 8	• As part of the Ministry's update since PIC #3, the traffic operations at the key Highway 3 intersections (County Road 8, Victoria Avenue, and County Road 23) in the vicinity of the Town of Essex were reviewed. The Ministry has concluded that these three key intersections will operate at a satisfactory level of service to the year 2017 with a widened Highway 3, assuming a background traffic growth rate of 2% per year and that there is no connection between South Talbot Road and the new commercial development on County Road 8. • However, the short distance on Victoria Avenue between the intersections with Highway 3 and South Talbot Road is of concern given the Town's desire to support additional development north of Highway 3. • Opportunities for further improvements should be considered under a more comprehensive road network study given the interdependency of the municipal and provincial network, and the possible community, property and cost implications. MTO has suggested to the Town of Essex that they partner in a transportation study to address the forecasted operational and safety concerns at both Victoria Avenue and Essex Road 8 where there is close spacing between the Highway 3 intersection and the adjacent municipal intersection.
• Concerned Victoria Avenue intersection will only get worse if South Talbot road connected to Essex Road 8	• An extension of South Talbot Road across the former railway corridor to connect to the new development on the west side of the railway corridor cannot be permitted since this will compromise traffic operations at the South Talbot Road – Victoria Avenue intersection.
• Suggests realigning Highway 3 at Victoria to the south away from South Talbot Road	• Shifting Highway 3 to the south to increase the spacing between Highway 3 and South Talbot Road at Victoria Avenue could cost between $2 and $3 million, and cannot be justified based on the Ministry's operational review.
• Pinkerton Road intersection on Essex Road 8 too close to Highway 3	• As part of our preliminary design study, MTO and its consultant reviewed the traffic operations at the Essex County Road 8 and Pinkerton Sideroad intersections. The review concluded that although the spacing between Highway 3 and Pinkerton Sideroad is less than desirable, traffic operations will remain satisfactory provided that no significant new development takes place south of Highway 3. • However, the short distance on Essex Road 8 between the intersections with Highway 3 and Pinkerton Sideroad is of concern if additional development south of Highway 3 is desired. • Opportunities for further improvements should be considered under a more comprehensive road network study given the interdependency of the municipal and provincial network, and the possible community, property and cost implications. MTO has suggested to the Town of Essex that they partner in a transportation study to address the forecasted operational and safety concerns at both Victoria Avenue and Essex Road 8 where there is close spacing between the Highway 3 intersection and the adjacent municipal intersection.
• Prime agricultural land would be destroyed by dividing farm into 3 unfarmable triangles • Undesirable skew angle at intersection of Inman Road a Essex Road 34	• The technically preferred alternative to realign Division Road to connect to the Inman Road intersection at Highway 3 was reviewed subsequent to PIC#3 based on comments received and on new opportunities that arose. A new alternative has been recommended that avoids dividing the farm and directing traffic to Inman Road.
Community and Property Impacts	
• Air quality	• Air quality can partly be addressed by considering improvements that target intersection delays and congestion.
• Concerned about estimated noise increase of 2.5 decibels • What measures will be taken to reduce noise? • Requests noise barriers	• An increase of less than 3 decibels is considered to be imperceptible. • A Noise Impact assessment was completed in February 2002 as part of this study. Under a noise protocol with the Ministry of the Environment, the Ministry of Transportation is required to consider noise mitigation where there is a 5-decibel or more increase in noise as a result of proposed improvements. A noise barrier is not warranted within the study limits, as the 5-decibel increase in noise will not occur within the 20 year planning horizon.
• Request full cut-off luminaires (FCOs) throughout the project.	• Illumination has been recommended at a number of intersections where traffic signals are presently installed and are to be upgraded to current standards, or traffic signals have been recommended because a need has been identified. No other illumination has been recommended within this corridor for the current study period. In terms of preventing light from shining upward, street lights are currently available that minimize upward light. The type

Comment / Issue	Response
	of street light installed will be determined as part of detailed design.
• Noise impacts at Tulley Meadows subdivision	• Construction of noise barriers is not warranted in the area of the Tulley Meadows subdivision. A noise impact assessment was undertaken as part of our planning study. The results of the analysis indicate that there would be an increase of less than 3 decibels over 20 years in the vicinity of the Tulley Meadows subdivision. An increase of less than 3 decibels is considered to be imperceptible. Under provincial policy, noise mitigation must be considered only where an increase of 5 decibels or more is forecast. The low projected noise level increases at Tulley Meadows are at least in part due to the fact that the Ministry is recommending the widening of Highway 3 occur to the south of the existing highway, opposite the Tulley Meadows area. • Approvals for and construction of the Tulley Meadows subdivision also post-dates the implementation of the Ministry's noise barrier retrofit policy in 1977. Once this policy was put into place, developers of new subdivisions became responsible (through the municipal approval process) for addressing noise requirements adjacent to highways.
• Need for barrier to prevent vehicles from entering yards at Tulley Meadows subdivision	• In response to concerns that errant vehicles may leave Highway 3 and travel into residential backyards at Tulley Meadows, MTO conducted safety reviews in November 2002 and November 2003. These safety reviews considered the need for guiderail along Highway 3. In considering whether to install a guiderail, the risk of collision with the guiderail itself needs to be balanced with the risk and potential severity of a collision if protection is not provided. The recommendation in both reviews for the specific situation at Tulley Meadows was that a barrier not be installed.
• Delays to proposed development • Include proposed developments in the traffic analysis	• MTO has worked with specific developers to minimize delays and considered advance purchases where delays could not be minimized. • The traffic projections were moderately aggressive to accommodate overall land use changes, anticipating some displacement of current agricultural uses by more intensive land uses
• How close will widening come to houses?	• The selection of the technically preferred alternative considered property acquisition requirements. The technically preferred alternative was designed to generally be centred within the existing right-of-way to avoid property acquisition where possible. The recommended plan avoids property acquisition along the corridor with the exception of requirements at specific intersections.
• Drainage concerns	• Drainage was reviewed during design. No localized flooding was found to be a result of the highway drainage system.
• Consider impact of water when road is built	• A drainage study was completed as part of this assignment. Positive drainage will be provided along Highway 3.
• Will new lanes be built at the same grade as existing lanes?	• The profile of the proposed widening in Section 3 will be finalized during detailed design of this project. It is anticipated that the profile of Highway 3 will remain as it currently is, with only minor changes for drainage or safety reasons.
• Request replacement of mature landscaping	• Typically, replacement of affected features such as trees and shrubs are negotiated at the time of the property acquisition.
• Add landscaping as buffer to highway	• Landscaping within the Highway 3 corridor will be considered during detailed design.
• How will MTO compensate decrease in property value due to	• Compensation to land owners is limited to those instances where property is acquired to construct the highway.

Comment / Issue	Response
increase in traffic?	
Property Access Concerns	
• Increased traffic will make accessing property more difficult • Property access overlooked	• In the Maidstone area, traffic has historically increased by about 2% per year, and this level of growth is expected to continue over the next 20 years. • Property access was a major criterion in the evaluation of all design alternatives.
• Close existing private drives and prevent new driveways	• Highway 3 needs to continue to provide access to properties in Section 2 that have no alternative access. During detail design MTO will review opportunities to reduce the number of access points where more than one access serves a property. MTO has strong corridor control policies that apply to Highway 3 that will limit the potential for new access.
• Residential Access (Section 2) -Concern with access if barrier selected • Oppose median barrier – emergency response • Barrier aesthetics – prefer grassed/landscaped	• Access to driveways was considered in the assessment of the alternatives for Section 2. The technically preferred alternative allows for full traffic moves at driveways and enhances access by providing a two-way left turn lane for refuge of turning vehicles.
Essex Region Conservation Authority Trail Crossing	
• Provide safe pedestrian trail crossing across Highway 3	• Designated pedestrian cross-overs are prohibited under the Highway Traffic Act from all roadways with posted speeds in excess of 60 km/h, to ensure that pedestrians are not placed at risk due to high speed traffic. Highway 3 is also designated as a Special Controlled Access highway to ensure maximum safety, the free flow of traffic, and to reduce the likelihood that entrances might interfere with traffic operations on the highway. In light of these two considerations, an at grade pedestrian crossing cannot be considered across Highway 3 and pedestrian crossing signs are also not appropriate at this intersection. For high speed highways, pedestrian crossing movements should be directed to intersections that are controlled by traffic signals, such as Walker Road. • The technically preferred plan includes the relocation of the access into the ERCA pavilion and parking lot from Highway 3 to Oldcastle Road to improve safety at this entrance. • MTO policy outlines a number of criteria that must be met to consider a grade separated pedestrian crossing. Given that the criteria are not met at this location, the Ministry is not in a position to fund a grade separated crossing. However, the ministry would be pleased to discuss any suggestions that ERCA may have to provide safer access to the Chrysler Greenway trail. MTO is prepared to seriously consider suggestions that do not affect safety and traffic operations on Highway 3, on the understanding that these improvements would be funded by sources other than MTO.
• Provide a naturalized trail/bikeway as part of the Highway 3 corridor.	• The role of Highway 3 is to function as a major arterial. As such, the highway carries higher volumes of traffic at higher operating speeds than local roads. The Ministry encourages developing cycling facilities on local roads wherever possible as a safer option to considering the use of provincial highways. The existing right-of-way is not wide enough to adequately provide a separate bikeway for the entire length of the study corridor. Cyclists are therefore encouraged to use lower speed roadways parallel to Highway 3 for their east-west travels which will be safer for both motorists and cyclists.

3.4 Individual Meetings

As part of the consultation activities undertaken, the project team made themselves available to meet with municipal, agency, landowner or public stakeholders that requested a meeting. This resulted in a number of individual meetings held throughout the course of the study. In addition, when design changes were made subsequent to a Public Information Centre being held that directly affected any landowners, they were mailed a plan illustrating the changes and were contacted directly by the project team to discuss the changes and offered a meeting at their home to further discuss any concerns.

3.5 Value Engineering Review

An independent Value Engineering review was undertaken on behalf of the MTO during the week of June 24-28, 2002.

The Value Engineering Team followed the basic Value Engineering procedure for conducting this type of analysis, including the following phases:

- Investigation
- Speculation
- Evaluation
- Development
- Presentation
- Report Preparation

Evaluation criteria used as a basis for the comparison of alternatives included the following:

- Traffic operations
- Safety
- Neighbourhood impacts
- Property impacts
- Construction staging
- Drainage
- Access
- Construction cost
- Maintenance
- Natural environment
- Socio-economic environment

The following areas of focus were analyzed by the Value Engineering team, and from these areas, the following Value Engineering recommendations were made for Sections 2 and 3:

Recommendation Number 1 – Section 2 – Cross-Section: Reduce Lane Widths from 3.75 m to 3.5 m

The Value Engineering Team recommended that the two through lanes in each direction be reduced from 3.75 m wide to 3.5 m. Although it is recognized that the 3.5 m width does not meet current MTO design standards for lane widths for this type of facility, the literature researched strongly suggests that the benefits of lane width increases maximize somewhere between 3.35 m and 3.65 m. Nonetheless, given that this recommendation does not meet MTO policy, further study should be undertaken by MTO to clarify the benefits of lane width reduction.

If this recommendation can be implemented, the original cost estimate of approximately $13,650,000 (2002 dollars) can be reduced to approximately $13,330,000, for a possible savings of $320,000.

Recommendation Number 2 - Section 3 - Cross-Section: Reduce lane widths from 3.75 m to 3.5 m and shoulder widths from 3.0 m to 2.5 m, modify side roadside slopes from 3:1 to 6:1, and enhance clear zone.

The Value Engineering Team recommended that these geometric improvements be considered for implementation. A lane width and shoulder width reduction of the types proposed would likely have no measurable effect on safety, capacity, or other vehicle operations, but would reduce pavement and granular costs. Nonetheless, lane width reduction to 3.5 m does not meet current MTO design standards for this type of facility. Given this, further study may be required to clarify the benefits of lane width reduction. Flattening the roadside slopes has been shown to have significant benefits by reducing the societal cost of collisions. The primary cost element affected by such flattening is earth borrow.

If this recommendation can be implemented, the original cost estimate of approximately $30,940,000 (2002 dollars) would be increased to approximately $32,174,000, for a value added cost of approximately $1,234,000.

Summary

Recommendation 1, reducing the widths to 3.5 m, is contrary to current MTO design standards, and has therefore not been carried forward in the preliminary design. However, the MTO may wish to revisit this issue during detail design.

Recommendation 2, reducing lane and shoulder widths and flattening side slopes, was also considered. While the Project Team agreed that using 6:1 side slopes in Section 3 is desirable, it was agreed that the lane and shoulder widths should be to current MTO design standards. The Section 3 typical cross-section should be reviewed in detail design.

4 EXISTING CONDITIONS

The Highway 3 Study Area extends from Outer Drive to the Essex County Road 34 east junction at the Leamington By-pass, a total length of 33.5 km. As stated previously, the configuration, highway function, and access control of Highway 3 varies within the highway corridor, as shown in **Figure 4.1**. As such, a sub-study area or section approach was utilized to account for corridor variations. As noted previously, Sections 1 and 1A were not carried forward due to the uncertainty of timing and impacts due to border crossing improvements.

The sub-study areas considered in this Report were defined to be:

Section 2: Outer Drive to Essex Road 34 West Limit (Talbot Road), 6.9 km

Section 3: Essex Road 34 West Limit (Talbot Road) to Essex Road 34 (Leamington By-pass), 26.6 km

Along the Highway 3 corridor, the natural, social, and cultural environments were inventoried and documented to describe the existing conditions associated with Sections 2 and 3 based on a number of factor specific studies:

- Natural Environment Study Report (Earth Tech Canada, December 2001)
- Groundwater Report (Earth Tech Canada, December 2001)
- Land Use Planning Implications of Proposed Improvements to Highway 3 in the County of Essex (Hemson Consulting Ltd., August 2001)
- Agricultural Impact Assessment (Stovel and Associates, Inc., October 2001)
- Cultural Heritage Assessment including Stage 1 Archaeological Assessment and Built Heritage/Cultural Landscape Assessment (Archaeological Services Inc., August 2001)
- Noise Impact Assessment (RWDI, February 2002)

The following sub-sections summarize the findings from these preceding studies.

4.1 Natural Environment

The following descriptions summarize the natural environment features within the Highway 3 Study Area. The existing natural environmental features are shown in **Figure 4.2.**

4.1.1 Physiography

The Study Area is situated within the St. Clair Clay Plain Physiographic Region (Chapman and Putnam, 1984) of Physiographic Site District 7-1. This Region is an extensive clay plain that provides little relief and low gradient drainage northward toward Lake St. Clair, westward toward the Detroit River, and southward to Lake Erie.

Most of Lambton and Essex Counties are essentially till plains smoothed by shallow deposits of lacustrine clay which settled in the depressions while the knolls were being lowered by wave action. Because the St. Clair Clay Plain is so large, it is useful to further subdivide the area into four sub-regions: the Essex Clay Plain, the Lambton Clay Plain, the St. Clair Deltas, and the Chatham Flats. The following description focuses on the Essex Clay Plain, which is the sub-region where the Highway 3 project limits are located.

Essex County and the southwestern part of Kent County have a fairly uniform environment and terrain setting. Standing between the basins of Lake Erie and Lake St. Clair, the surface is essentially a till plain overlying the Cincinatti Arch which, in this area, is a low swell in the bedrock. The surface drainage of the plain is nearly all northward to Lake St. Clair, but the gradient is extremely low and the drainage divide near Lake Erie is rather vague. Although it is almost level, the Clay Plain has a faint relief so that it is better drained than the very flat, low-lying area bordering Lake St. Clair. The prevailing soil type is Brookston clay loam, a dark-surfaced gleysolic soil developed under a swamp forest of elm, black and white ash, silver maple, and other moisture-loving trees. There are also numerous undrained areas where peat and muck have accumulated. Most of the Essex Clay Plain has such imperfect drainage that dredged ditches and tile underdrains have had to be installed in order to provide satisfactory conditions for crop growth and tillage.

The continuity of the Essex Clay Plain is broken near Leamington by a small morainic hill, standing about 30 m above the general level. Being composed of a good deal of sand and gravel in the first place, it was smoothed by the action of the lakes developed during the retreat of the Wisconsin glacier. Being one of the warmest parts of the Province, these well-drained soils warm up early in the spring, and it is here that the earliest crops such as asparagus, tomatoes, strawberries, sweet corn, and cucumbers are grown. Tender fruit crops may also be grown here.

A second area where the continuity of the Essex Clay Plain is broken up occurs in the area of Cottam, Essex, and Maidstone. In this area, a low amplitude gravel ridge interrupts the continuity of the plain. The ridge is oriented in a southeast to northwest direction (Chapman and Putnam. 1984. pp. 147-149).

The soils in the general vicinity are mapped as Brookston clay loam, Burford loam and Burford loam (shallow phase), Parkhill loam (red sand spot phase), and Harrow loam. The parent material and internal drainage characteristics of these soil series are described as follows:

- Brookston clay loam: Parent material is derived from heavy ground moraine (till) which has been altered by wave action and lacustrine deposition. Internal drainage of this soil series is considered to be poor. However, with artificial drainage, the Brookston series provides excellent forage crops, small grains, beans, and corn crops.
- Burford loam and Burford loam (shallow phase): The Burford series is developed on well sorted gravelly materials derived from dolomitic limestone containing smaller proportions of shaley and siliceous materials. The shallow phase of this series in Essex County occurs in shallow ridges that cut through the area in a southeast to northwest direction. Heavier textured clay till materials occur at depths of 1-2 m. Internal drainage of the Burford series is considered to be good. The Burford series is intensively cultivated, providing good crops of vegetables, fruit trees and small fruit crops.

Figure 4.1 – Study Area

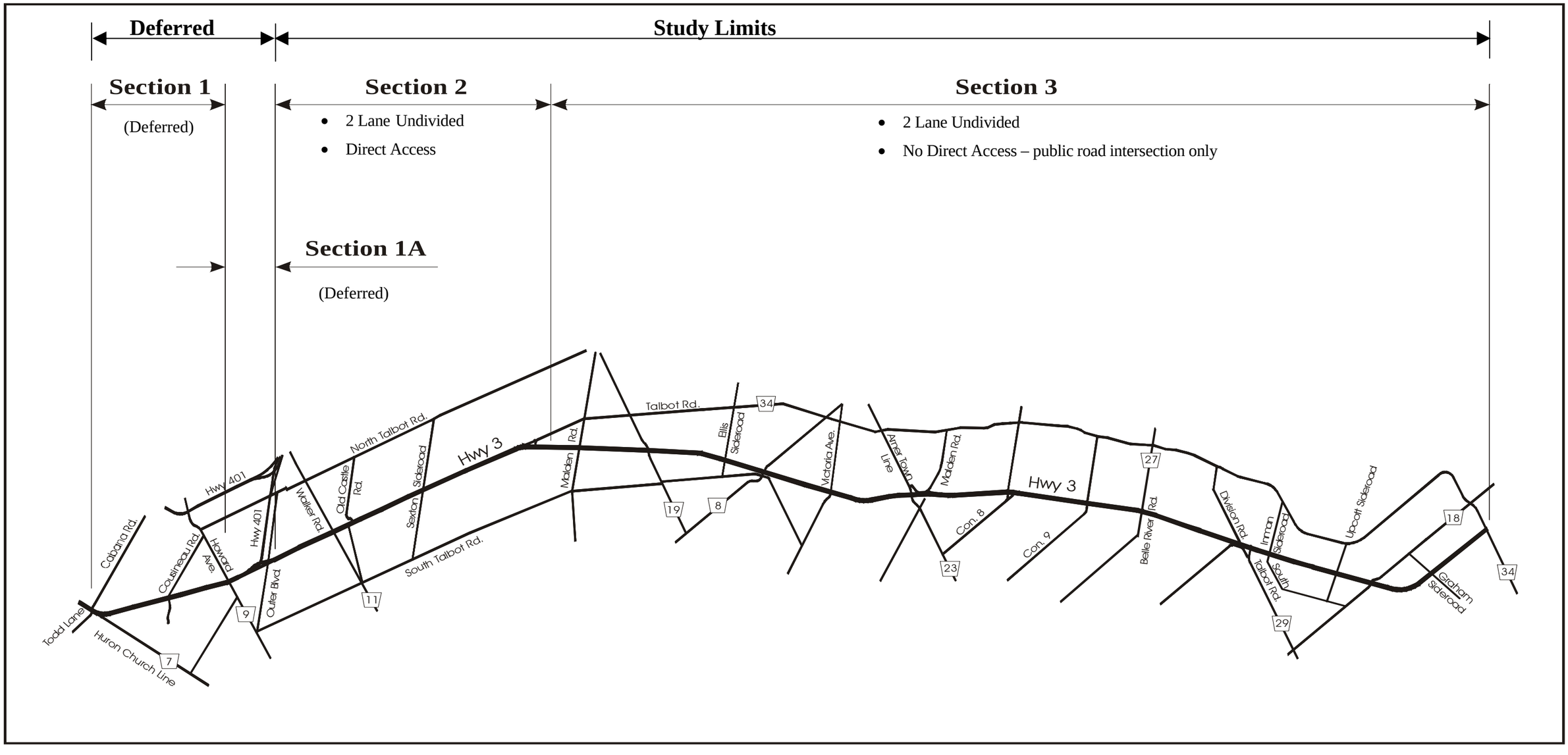


Figure 4.2 – Existing Features in the Vicinity of Highway 3 (Windsor to Leamington)

DOWNLOAD SEPARATELY (6 MB)

- Parkhill loam (red sand spot phase): The Parkhill loam series is developed on limestone till. The topography of the Parkhill series is level to slightly undulating. The area mapped as red sand spot phase is characterized by shallow sandy knolls scattered over the area. These knolls are slightly acidic and the reddish colour, especially in the summer, is quite noticeable. Internal drainage of this series is poor. However, with artificial drainage, the Parkhill soils can produce specialty crops, such as vegetables and canning crops including cabbages, lettuce, celery and tomatoes.
- Harrow loam: The Harrow series is formed on poorly sorted outwash materials, probably resulting from the action of waves on a sandy moraine. The Harrow series is often characterized by sandy materials containing scattered stones and local bouldery ridges. Internal drainage of this soil series is considered to be imperfect (since it is usually underlain by a clay loam till). This soil is intensively farmed, providing important crops such as early vegetables, strawberries, raspberries, peaches, pears, and cherry orchards.

To determine the relative quality of the soils in the local area, Canada Land Inventory manuscript mapping (1:50,000 scale) of Soil Capability for Agriculture was consulted. This background mapping illustrates the local area as being entirely comprised of prime agricultural land (that is Class 1-3 soils). The individual ratings for each soil series described in the preceding paragraphs are set out below:

- Brookston clay loam - Class 2 w (the descriptor ‘w’ indicates a limitation due to excessive water or wetness);
- Burford loam - Class 2 fm (‘f’ refers to a limitation associated with low inherent fertility and ‘m’ refers to low moisture or water-holding capacity of the soils);
- Burford loam (shallow phase) - Class 3 fm;
- Parkhill loam (red sand spot phase) - Class 3 fm; and,
- Harrow loam - Class 2 fm.

The importance of the local area from an agricultural perspective is well recognized. The Leamington area of Essex County is regarded as one of Ontario’s five main “specialty crop” areas, due to a unique combination of soil and climatic conditions which permit the production of specialty crops, such as fruits and vegetables. This recognized specialty crop area generally follows the distribution of Parkhill loam (red sand spot phase), Burford loam, and Harrow loam**.**

4.1.2 Fisheries and Aquatic Habitat

As a result of imperfect drainage in the Study Area, numerous dredged ditches and tile drains were installed by local landowners in order to provide satisfactory conditions for crop cultivation. As a result, this has reduced the abundance of natural channel systems providing fish habitat, but favourable climatic conditions have resulted in the highest fish species diversity in Ontario.

While the Study Area traverses six subwatersheds including Cahill Drain, Little River, Pike Creek, Canard River, Belle River, and Wigle Creek, only seven actual watercourse crossings with the potential to provide fish habitat exist within the Study Area (refer to **Figure 4.2**). The majority of the transverse culverts only convey highly intermittent highway or agricultural storm runoff. With the exception of the Cahill Drain, all crossings exhibit intermittent flow characteristics.

The key watercourses within each section are as follows:

4.1.2.1 Section 2

A small tributary of Little River originates immediately upstream of Culvert 2 (Station 13+530). No potential for fish habitat exists here because the narrow (< 0.4 m wide) intermittent channel is densely dominated by cattails and herbaceous plants.

Pike Creek and Sullivan Creek (a tributary of Pike Creek) are located in the central portion of Section 2, near Maidstone. The Pike Creek subwatershed flows northward toward Lake St. Clair, near the Village of St. Clair Beach. Three small tributaries of this subwatershed (including Sullivan Creek) cross under Highway 3 near Maidstone. Pike Creek is not identified in the MNR District Fisheries Management Plan (DFMP).

Fish collection records for Pike Creek indicate that the system provides warmwater habitat for a variety of species including pumpkinseed, green sunfish, and common carp which were recovered in the main channel north of Maidstone. Based on field investigations conducted in October 2001, the small tributary at Crossing 7 (Station 17+820) is the only Pike Creek tributary in the Study Area that may provide warmwater baitfish habitat. No alterations or new crossings are anticipated for this tributary.

4.1.2.2 Section 3

Section 3 traverses three subwatersheds including the Canard River, Belle River and Wigle Creek. However, there are no definable tributaries associated with any of these subwatersheds that are traversed by Highway 3. There are five intermittent surface watercourses in Section 3 associated with agricultural drains that have potential for fisheries habitat, but due to flow alterations, they present difficulty in subwatershed identification.

Water quality values for all five watercourses are within the acceptable range for a warmwater fish environment. However, it is unlikely that established fish habitat exists at any of these crossings due to their flow regime, lack of canopy cover, and deep silt beds. The five crossings are further described below.

Culvert 17

The watercourse at Culvert 17 (Station 15+950) on the north side of Highway 3 is in a flat bottom roadside ditch. Within 200 m upstream of the culvert crossing, the channel flow becomes intermittent as grasses and cattails dominate the channel bed. The standing water observed during the investigation on both sides of the culvert was a result of recent heavy rainfall and the presence of a permanent concrete weir, located approximately 70 m downstream.

Beyond the weir, a 0.5 m wide low flow channel flowed through a dense cattail community that occupied the remainder of the 4m wide flat bottom channel. Channel morphology was absent as the channel resembled a continuous shallow flat area (average depth less than 200 mm). Situated in the most upstream section of the catchment area, this entire reach likely experiences highly intermittent flows due to its relatively small upstream drainage area. Fish habitat potential is considered low to absent at this crossing.

Culvert 18

Culvert 18 (Station 10+000) conveys a roadside ditch that flows perpendicular to Highway 3 and passes under the intersection with Essex Road 23. The upstream trapezoidal channel has a 5 m wide flat bottom that is denuded of vegetation. Recent ditch maintenance appeared to have occurred here. Downstream, the channel flows west through a small scrub vegetation stand before narrowing to into an open roadside channel without canopy cover. The channel collects run-off from various ditches, commercial/residential properties, and agricultural lands along its route. This channel likely experiences intermittent flow in the summer months.

Culvert 26

The watercourse at Culvert 26 (Station 16+890) originates on the north side of Highway 3 as two narrow (0.5 m wide) intermittent cattail dominated ditches. Upstream run-off is collected from agricultural and residential properties. Immediately upstream of the Highway 3 culvert crossing, the channel widens into a stagnant cattail-dominated pool with silty substrate. This pooled area also collects run-off from two cattail ditches running along the north side of Highway 3.

The downstream channel is approximately 3 m wide with a flat bottom containing deep (> 200 mm) silt deposits and sporadic floating vegetation (duckweed). Canopy cover is sparse along the entire channel as it flows downstream through agricultural fields with a low gradient. Situated in the most upstream section of the catchment area, this entire reach likely experiences highly intermittent flows due to its relatively small upstream drainage area.

Culvert 27

The watercourse at Culvert 27 (Station 17+890) originates on the north side of Highway 3 in a small (0.5 m wide) intermittent tall grass dominated ditch. At the time of investigation, the upstream channel was dry within approximately 60 m of the culvert crossing. Upstream run-off is collected from agricultural and residential properties. Within 20 m upstream of the Highway 3 culvert crossing, the channel widens into a stagnant cattail-dominated pool with silty substrate. This pooled area also collects run-off from two cattail ditches running along the north side of Highway 3.

The downstream channel is 4 m wide with a flat bottom containing very deep (> 600 mm) silt deposits and sporadic floating vegetation (duckweed). Dense canopy cover is provided by scrubby vegetation for approximately 35 m downstream. Beyond this small scrub canopy, cover becomes sparse. Channel morphology consists of a low gradient flat area through agricultural fields. Positioned in the most upstream section of the catchment area, this entire reach likely experiences highly intermittent flows due to its relatively small upstream drainage area.

Culvert 28

The watercourse at Culvert 28 (Station 18+790) originates on the north side of Highway 3 in a 2 m wide ditch that parallels the service road on the northside of Highway 3. Upstream run-off is collected from agricultural and residential properties. Within 35 m upstream of the Highway 3 culvert crossing, the channel widens into a stagnant pool with submergent pondweed and silty substrate. This pooled area also collects run-off from two cattail ditches running along the north side of Highway 3.

The downstream channel is 4 m wide with a flat bottom containing deep (> 400 mm) silt deposits and sporadic floating vegetation (duckweed). Canopy cover is lacking along the entire downstream reach. Channel morphology consists of a low gradient flat area through agricultural fields. Located in the most upstream section of the catchment area, this entire reach likely experiences highly intermittent flows due to its relatively small upstream drainage area.

4.1.3 Vegetation

The vegetation in the Study Area is primarily within the Niagara Section of the Deciduous Forest Region (Rowe, 1972) that is also known as the Carolinian Forest Zone. Extensive tracts or large stands of woodland are virtually non-existent across the predominantly agricultural setting, as only 3% of the Essex County landscape is comprised of woodland (Reily and Mohr, 1994). As a result, even small (less than 4 ha) woodland stands are often considered important in Essex County. Vegetation communities in this area are comprised almost entirely of broad-leaved deciduous trees including sugar maple, beech, basswood, red maple, red oak, white oak, and bur oak, in addition to the sporadic distribution of many of Ontario's less common trees.

Based upon MNR Forestry Resource Information maps, there are no large wooded areas within the Study Area. No tree stands occur along the right-of-way or within 200 m adjacent to the right-of-way in Section2, while six stands are positioned adjacent to the right-of-way in Section 3 and two additional stands are positioned within 200 m of the right-of-way. With the exception of an 18 ha stand in Section 3, the tree stands immediately adjacent to the right-of-way range in size from 4 to 6 ha. The 18 ha stand, named the Ruthren Rocky Woods, is designated as a Life Science Significant Site under the Provincial Areas of Natural and Scientific Interest (ANSI) program.

Wetland Habitat

No provincially or locally significant wetlands occur within or adjacent to the Study Area. Wetland habitat is restricted to several grass and cattail-dominated stands, which occur sporadically along the side of Highway 3 throughout the Study Area. In general, these areas appear to have formed in the drainage ditches as a result of low gradient across the flat terrain.

Impacts to these stands will likely include the removal of some areas as a result of ditch improvements along Highway 3. Since they are likely to re-establish due to their inherent resilience, the removal/disruption of these areas is not considered to impact the local natural environment.

Significant Natural/Areas Designations

There is only one significant natural area: the Ruthven Rocky Woods designated as an ANSI (ERCA, 1992).The Ruthven Rocky Woods Significant Site is located in Section 3, south of Highway 3 and immediately west of Graham Sideroad. The ANSI program describes this area as supporting an oak-hickory tree association. This 18 ha stand should be considered a significant natural feature within the Study Area due to its relatively large size and mature state. As such, this feature should not be encroached upon or adversely affected if at all possible.

According to MNR, there are no Provincial Parks, Candidate Nature Reserves or conservation areas situated within, or adjacent to, the Study Area (OMNR, 1983 and pers. com. MNR, 2000).

Corridors and Linkages

As a result of the dominant agricultural setting, no treed habitat linkages or significant wildlife movement corridors exist within the Study Area.

Groundwater

The majority of residences along Highway 3 are supplied with potable water via municipal watermains. As a result, the reliance on groundwater for domestic water use is not common. For those residences that are supplied potable water via groundwater, their supply comes from deep confined overburden and fractured bedrock aquifer(s) at depths well below the planned depth of any excavations (i.e. 15 m or more at most locations).

4.2 Social/Cultural Environment

4.2.1 Existing Land Use

Highway 3 serves both regional and local functions. Reflecting this, the local economy is focussed largely on manufacturing and agricultural activities. Development in the corridor is concentrated near the U.S. border, in particular between the Highway 3-Highway 401 interchange and the City of Windsor, with the balance remaining largely in agricultural use.

Regionally, Highway 3 serves as the main link between the Ambassador Bridge to the U.S. and Highway 401 and serves as a major connector between southwestern Ontario manufacturers and the large automobile producing complex centered in Detroit, Michigan, directly across the U.S. border from the City of Windsor. Highway 3 also plays a role in delivering agricultural products to markets in Canada and the U.S.

Locally, Highway 3 serves as an inter-city commuter route within Essex County. As a result, traffic levels have increased over time with the growth of the County.

Essex County has a strong manufacturing economy, dominated by the large automotive sector centered in the City of Windsor. This reflects its proximity to the large auto complex centred in Detroit, directly across the border from the City of Windsor. Over 800 manufacturers are located in Essex County, producing over 1.5 million cars per year, and a range of other automotive related and consumers durables[2].

Essex County is the location of the largest agricultural area in eastern Canada. The agricultural area consists of about 325,000 acres of farmland made up mostly of field crops. Other agricultural activities include vegetable processing (ketchup), fruit crops and dairy, beef and swine farms. The estimated value of agricultural and livestock production in Essex County is $200 million per year.[3]

The Town of Leamington, located within Essex County, is the largest greenhouse vegetable growing area in Canada. The greenhouse industry has an estimated local economic impact of $1 billion annually.

The pattern of development in the Highway 3 corridor reflects the local economy and the function of the route. As previously mentioned, development in the corridor is concentrated near the U.S. border with the balance (and majority) of the route used largely for agriculture. Businesses in the corridor are concentrated near the Highway 3-Highway 401 interchange. This area includes a relatively large industrial park, community and institutional uses, and a number of other businesses and homes. Commercial activity throughout the balance of the corridor is relatively limited, characterized largely by rural and farm-based uses and some limited commercial development at major intersections.

The following summary describes the existing land uses adjacent to Highway 3 within each Section.

- **Section 2, Outer Drive to Essex Road 34 (Talbot Road)**
  - Section 2 is approximately 6.9 km in length, of which only the first kilometre or so is developed. The remaining 5.9 km is characterized by limited farm-based residential and commercial uses.
  - The developed portion of Section 2 accommodates a mix of uses. In total about 100 commercial establishments and residences have direct access to the Highway. Outer Drive provides access from Highway 3 to a relatively large employment area providing private services.
  - The mix of uses within the corridor is made up of a fairly diverse collection of employment and commercial facilities, including some small manufacturers, distributors, and a software firm, and community servicing establishments including Victoria Memorial Park Cemetery, Green Lawn Park Cemetery, family golf centre, and government buildings. The Chrysler Greenway (part of Trans-Canada Trail system) is also located within Section 2.
  - The remainder of Section 2 is primarily designated Agricultural Area. In keeping with this designation, farming is the dominant use, again with limited farm-based residential and commercial uses located at major intersections.

- **Section 3, Essex Road 34 (Talbot Road) to Essex Road 34 (Leamington By-pass)**
  - Section 3 is mainly an agricultural corridor. The main function of Highway 3 within Section 3 is an inter-city commuter function within the County of Essex.

[2] *Human Resources Development Canada (HRDC) 2000 Windsor/Essex County Community Profile*

[3] *Human Resources Development Canada (HRDC) 2000 Windsor/Essex County Community Profile*

- Section 3 is characterized mostly by rural and farm-based uses. There are a small number of built-up areas of development at intersections but the pattern of development in this section reflects the predominant land use designation of Agricultural Area.
- The largest built-up area along the Highway 3 corridor is in the Town of Essex characterized by residential and limited commercial, employment and government uses.
- The Study Area terminates at Essex County Road 34, where large tracts of land are designated for industrial use.

4.2.2 Property Contamination

The presence of contaminated soils within the existing highway right-of-way was not examined as part of this preliminary design. There is limited potential for the discovery of contaminated soils due to the predominantly residential and agricultural adjacent land uses. Exceptions include an independent gas station located between Sexton Sideroad and Oldcastle Road, and the pond once using for food processing on the Domric property (potentially affected by the extension of Division Road and realignment of South Talbot Road (Service Road). Additional studies (e.g., Phase I Site Assessment) may be required for specific lands in detail design.

4.2.3 Agriculture

Much of the land within the Study Area is farmed in a soybean system. The soybean system is extensively utilized in areas associated with the Brookston clay loam soil series. Soybeans are the dominant crop type, with corn, market vegetables, and forage/pasture systems also recorded in or close to the study corridor.

In terms of intensive agricultural operations, the only significant portions of the study corridor that contain intensive agricultural infrastructure are located in the following areas:

i) the Leamington area – several, large greenhouse facilities were recorded in this area. These facilities are modern and represent a substantial capital investment in specialty crop operations (horticulture); and,

ii) immediately east of Windsor (south of Highway 3 between Malden Road and Howard Avenue) several large active livestock facilities were recorded in this general area.

Within the Highway 3 study limits, there were several barns located in close proximity to the highway. In general, these barns do not appear to be associated with large scale agricultural operations.

Based on the results of the agricultural land use survey undertaken for the Study Area, agricultural land uses are estimated to comprise approximately 90% of the land base.

As long as the existing corridor is maintained, any proposed highway improvements should have little impact on the agricultural resource base. Similarly, as long as the existing corridor is maintained, the potential negative effects of any proposed highway improvements on the current agricultural community is expected to be relatively low.

4.2.4 Archaeological Resources and Built Heritage/Cultural Landscape Features

4.2.4.1 Archaeological Resources

Three of the 20 registered sites within 2 km of the Study Area are located adjacent to, or in close proximity to, the existing right-of-way. The three sites in proximity to the Highway 3 corridor include:

1. The first site was registered in 1979 as a precontact lithic scatter of undetermined date situated near the junction of Highway 3 and the Leamington Bypass, north of the Village of Ruthven. This site is beyond the existing road allowance, and will not be impacted by proposed improvements.

2. The second site was registered in 1979 as a late Woodland period campsite and is located near the Leamington Bypass. This site is beyond the project limits and will not be affected.

3. The third site registered in 1993, is a precontact lithic scatter of undetermined date located near the first site. There will not be any impacts, as this site is located outside of the existing Highway 3 road allowance.

4.2.4.2 Built Heritage/Cultural Landscape Features

Within Section 2, a total of 26 built heritage features and 30 cultural landscape units exist. Fourteen of the 26 built heritage features and 8 of the 30 cultural landscape units are adjacent to Highway 3, with the remaining features primarily located south of Highway 3 along South Talbot Road.

Section 3 is free of any adjacent structures since the corridor was cleared in the past 25 years to permit the construction of the Highway 3 alignment. The only instance where cultural heritage resources may be directly affected is where the route intersects with adjoining road rights-of-way that form roadscapes (these are landscapes that are historically associated with the original township surveys, agricultural settlement, and transportation). Typically these adjoining roadscapes are two lane, gravel or paved surfaces, with narrow or no shoulders, flanked by grassed ditches, fences and/or tree lines. Any adverse effects are usually limited to intersection improvements such as vegetation removal for sight lines.

4.2.4.3 Highway and Construction Noise

There are a number of existing Noise Sensitive Areas (NSAs) within the Study Area, which primarily consist of residences. Existing noise conditions at the NSAs are dominated by traffic on Highway 3 with measured sound exposures ranging from 55 dBA to 64 dBa.

In terms of construction noise, the following noise by-laws are in effect:

- **City of Windsor (By-Law 6716):** Operation of any equipment in connection with construction is prohibited in residential areas between 20:00 hrs to 6:00 hrs.
- **Township of Tecumseh (By-Law 2000-12):** The operation of any item of construction equipment is prohibited in a residential area, agricultural area of commercial area without effective muffling in good

working order and in constant operation. The operation of any equipment in connection with construction is prohibited between 20:00 hrs to 7:00 hrs in residential, agricultural and commercial areas.

- **Town of Essex (By-Law 220):** The operation of any item of construction equipment is prohibited in a residential area and institutional area without effective muffling in good working order and in constant operation. The operation of any equipment in connection with construction is prohibited between 20:00 hrs to 7:00 hrs.
- **Former Township of Gosfield South located in the Township of Kingsville (By-Law 12-1985):** The operation of any item of construction equipment in a residential area without effective muffling devices in good working order and in constant operation. The operation of any equipment in connection with construction is prohibited between 22:00 hrs to 7:00 hrs.

4.3 Transportation and Engineering

The highway characteristics of individual sub-study areas are described in the following text.

4.3.1 Section 2 - Outer Drive to Essex Road 34 West Limit (Talbot Road), 6.9 km

Section 2 is designated as a Special Controlled Access Highway, and has approximately 100 entrances in the 6.9 km length. This section of the Highway was originally part of a planned four-lane facility with a 9.1 m median from Windsor to Fort Erie. The project commenced in the mid-1930's with right-of-way acquisition. General grading work for four lanes followed but was halted during World War II. During this time, highway planners focused on the development of a new highway corridor, Highway 401, linking most of the major population centres in Southern Ontario. Following the war, construction commenced on the new Highway 401. Construction work for the four-lane facility between Windsor and Fort Erie never resumed in the Highway 3 corridor within this sub-study area.

The existing Highway utilizes what were to be the ultimate westbound lanes. The advanced grading work completed in the 1930's for the additional eastbound lanes remains unused to-date. A divided highway section through the Essex Road 34 West Limit (Talbot Road) intersection at Maidstone was eventually constructed on the ultimate divided highway alignment. The following summarizes the features for this section:

Section Length:	▪ 6.9 km
No. of Lanes:	▪ 2 lanes
Posted Speed:	▪ 80 km/h
Highway Alignment:	▪ Generally flat and straight except at the Essex Road 34 West Limit (Talbot Road) intersection
Median:	▪ None except at Essex Road 34 West Limit (Talbot Road) intersection
Access:	▪ 6 intersections ▪ 101 driveways (mainly farm and field entrances)
Nominal Right-of-Way Width:	▪ 45 m
Predominant land uses:	▪ Agricultural/Residential/Commercial
Sensitive features:	▪ Agricultural/residential/commercial/ properties adjacent to highway ▪ Victoria Memorial Park Cemetery ▪ Green Lawn Park Cemetery ▪ Chrysler Greenway (part of Trans Canada Trail system) ▪ Predominantly Class 1 to 3 soils ▪ Local aquifer crossing Highway 3

4.3.2 Section 3 – Essex Road 34 West Limit (Talbot Road) to Essex Road 34 (Leamington By-pass), 26.6 km

Section 3 from Maidstone to Leamington was constructed in two phases, between 1970 and 1982, as a two-lane staged freeway with controlled access. Access is limited to public sideroad intersection locations. The existing two-lane facility represents the ultimate westbound lanes of the future originally-planned divided highway configuration. The following summarizes the existing features for Section 3:

Section Length:	▪ 26.6 km
No. of Lanes:	▪ 2 lanes
Posted Speed:	▪ 80 km/h
Highway Alignment:	▪ Generally flat and straight except near the east limit
Median:	▪ None
Access:	▪ 16 intersections
Nominal Right-of-Way Width:	▪ 75 m
Predominant land uses:	▪ Agricultural/Residential/Commercial
Sensitive features:	▪ Predominantly Class 1 to 3 soils ▪ Specialty crop lands at the East Limit (Essex Road 34) ▪ Three registered archaeological sites within 2 km of the Highway ▪ Local aquifer crossing Highway 3

4.4 Traffic

Traffic demands on Highway 3 will increase within the 20-year planning horizon. As such, the Level of Service (a measure of mobility for users of the roadway)[4] for the existing roadway will continue to degrade if no improvements are implemented. This will result in an increased risk for all users on Highway 3 in terms of reduced safety and an increased level of frustration and inconvenience. In addition, the key role that Highway 3 performs, in terms of providing quality transportation for the movement of goods and services in Essex County and the City of Windsor, will also be diminished.

4.4.1 Traffic Forecast Used to Develop and Assess Alternatives

The base year traffic volumes used for the assessment of alternatives were developed based on 1997 estimated AADT volumes. Forecasts of future traffic volume growth for the 2007 and 2017 horizon year were developed based on observed historical growth in the Highway 3 corridor between 1985 and 1995. The historic data revealed a trend in which the time period from 1985 to 1990 had a significantly higher growth rate compared to the time period from 1990 to 1997.

Within each section of the highway, the following annual growth rates were used:

- Section 2 (Highway 401 to Maidstone) – 4 % from 1997 to 2007, 2 % from 2007 to 2017
- Section 3 (Maidstone to Leamington) – 4 % from 1997 to 2007, 2 % from 2007 to 2017

The growth rates were compounded annually and applied to the 1997 AADT volumes.

A summary of the existing and projected mainline traffic volumes, commercial vehicle percentages and existing and projected Levels of Service (assuming no improvement) are shown in **Table 4.1.** These traffic forecasts were used as the original basis for the assessment of corridor alternatives.

Table 4.1 – Existing and Projected Levels of Service

Location	Annual Average Daily Traffic (1997 AADT)	Commercial Vehicle Percentage (1996)	Existing Level of Service (1997)	2007 Projected AADT	2017 Projected AADT	2017 Level of Service (No Improvements)
Section 2						
Highway 401 to Walker Road	11,500	6.4	D	17,000	20,800	E
Walker Road to Essex 34 West Limit (Talbot Road)	13,000	6.5	D	19,200	23,500	E
Section 3						
Essex 34 West Limit (Talbot Road) to Essex 23	15,500	6.2	E	22,900	28,000	F
Essex 23 to Essex 29 (Division Road)	12,000	8.0	D	17,800	21,700	E
Essex 29 (Division Road) to Essex 18	8,000	10.0	C	11,800	14,400	D
Essex 18 to Essex 34 (Leamington By-pass)	6,500	8.4	C	9,600	11,700	D

Note: AADT based on April, August and October 1997 counts

Highway 3 from Highway 401 to Essex Road 29 (Division Road) is operating at Level of Service "D" with the exception of the portion from Essex Road 34 West Limit (Talbot Road) to Essex Road 23, which is operating at Level of Service "E" based on 1997 volumes. The section of Highway 3 from Essex Road 29 (Division Road) to Essex Road 34 (Leamington By-pass) is operating at Level of Service "C". It is expected to operate at Level of Service "D" in 2003.

4.4.2 Updated Traffic Conditions

Since 1997, daily traffic volumes in the Highway 3 corridor have continued to grow, although at a lower rate than originally forecast. **Table 4.2** shows the latest official published AADT volumes for the Highway 3 corridor, based on the 1998-2003 Provincial Highways Traffic Volumes publication.

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[4] **LOS 'A'** - Describes the highest quality of traffic service, when motorists are able to travel at their desired speed. Without strict enforcement, this highest quality would result in average speeds of 90 km/h or more. The passing frequency required to maintain these speeds has not reached a demanding level so passing demand is well below the passing capacity, and platoons of three or more vehicles are rare. Drivers are delayed no more than 35% of their travel time by slow moving vehicles.

LOS 'B' – Characterizes traffic flow with speeds of 80 km/hr or slightly higher on level terrain highways. The demand for passing to maintain desired speeds becomes significant and approximates the passing capacity at the lower boundary of LOS B. Drivers are delayed in platoons 50% of the time. Above this flow rate, the number of platoons increases dramatically.

L**OS 'C'** – Describes further increases in flow, resulting in noticeable increases in platoon formation, platoon size and frequency of passing impediments. The average speed still exceeds 70 km/hr on level terrain, even though unrestricted passing demand exceeds passing capacity. At higher volumes the chaining of platoons and significant reduction in passing capacity occur. Although traffic flow is stable, it is susceptible to congestion due to turning traffic and slow moving vehicles. Percent time spent following may reach 65%.

LOS 'D' – Describes unstable traffic flow. The two opposing traffic streams begin to operate separately at higher volume levels, as passing becomes extremely difficult. Passing demand is high, but passing capacity approaches zero. Mean platoon sizes of 5-10 vehicles are common, although speeds of 60 km/h still can be maintained under base conditions. The proportion of no-passing-zones along the highway section usually has little influence on passing. Turning vehicles and roadside distractions cause major shock waves in traffic stream. Motorists are delayed in platoons for nearly 80% of their travel time.

LOS 'E' – Percent time spent following is greater than 85% under these traffic flow conditions. Even under base conditions, speed may drop below 60 km/h. Average travel speeds on highways with less than base conditions will be slower, even down to 40 km/h on sustained upgrades. Passing is virtually impossible and platooning becomes intense, as slower vehicles or other interruptions are encountered. Operating conditions at capacity are unstable and difficult to predict.

LOS 'F' – Represents heavily congested flow with traffic demand exceeding capacity. Volumes are lower than capacity and speeds are highly variable.

Table 4.2 – Updated Corridor Traffic Volumes

Location	Annual Average Daily Traffic (1997 AADT)[1]	Annual Average Daily Traffic (2003 AADT)	Current Annual Growth Rate (1997-2003)	Average Sectional Growth Rate	Updated Projections[2]	
					2007 AADT	2017 AADT
Section 2						
Highway 401 to Walker Road	11,000	11,700	1.0%	1.5%	12,400	15,100
Walker Road to Essex 34 West Limit (Talbot Road)	12,400	13,900	1.9%		14,750	18,000
Section 3						
Essex 34 West Limit (Talbot Road) to Essex 23	14,900	16,800	2.0%	3.6%	19,350	23,600
Essex 23 to Essex 29 (Division Road)	10,900	12,400	2.2%		14,300	17,400
Essex 29 (Division Road) to Essex 18	6,850	8,400	3.5%		9,700	11,800
Essex 18 to Essex 34 (Leamington By-pass)	6,200	9,100	6.6%		10,500	12,800

Note:1)1997 / 2003 AADT based Provincial Traffic Volumes, 1998-2003
2) 2007 AADT based on Average Sectional Growth Rate, 2017 AADT based on original growth forecast of 2% per year from 2007-2017.

For Section 2, the average growth in AADT has been 1.5% per year over the past 6 years, which is significantly lower than the original forecast of 4% per year. Section 3 has grown at approximately 3.6% per year, with the highest growth rates observed closer to Leamington. The observed growth rate for section 3 is much closer to the original growth forecast of 4% per year. Based on these updated growth trends revised forecasts were developed for 2007 and 2017. The 2007 AADT forecasts assume a continuation of current observed growth trends (based on the average sectional growth rates from **Table 4.2**) while the 2017 AADT forecasts apply the same 2% annual growth rate between 2007 and 2017, as was assumed previously.

The slower growth in daily volumes may result in 2017 forecast volumes not being reached until after 2020 for the majority of the study area, with the exception of the eastern-most section between Essex Road 18 and Essex Road 34.

Since the original Traffic and Safety Study for this project was completed in 2000, a number of other changes have occurred in the area, warranting a review of the proposed preliminary design prior to finalization of the Preliminary Design Study.

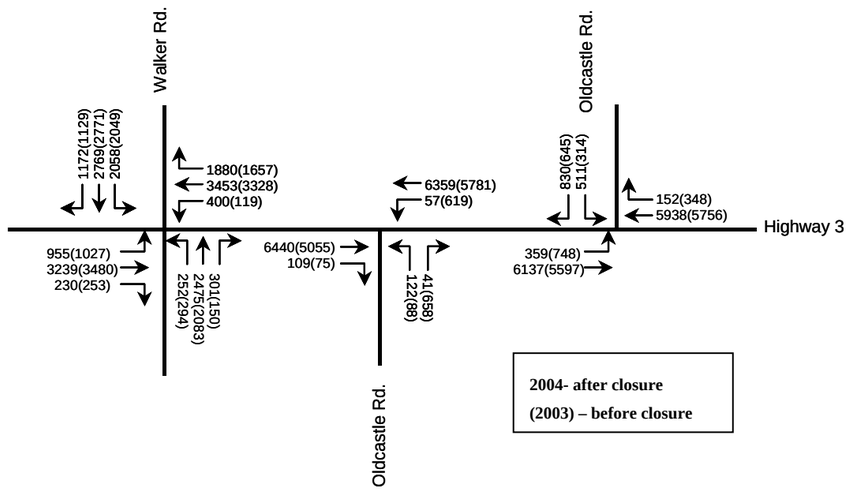
Most notably, in June 2004 the Town of Tecumseh closed Oldcastle Road, south of Highway 3, to eliminate one leg of the five-leg intersection at Walker Road and South Talbot Road. It was expected that many of the vehicles travelling along Oldcastle Road were using this route as a "shortcut" to continue south to access South Talbot Road, thereby avoiding the traffic signals and higher traffic volumes on Walker Road. It was expected that this closure may result in a redistribution of local traffic to the Highway 3 - Walker Road intersection, potentially changing the design requirements at this location. A review of the need for a southbound dual left turn lane at the Walker Road intersection was also undertaken due to the relatively high left turn demand projected for the future horizon years[5].

4.4.3 Effect of Oldcastle Road Closure

Updated traffic count data at the Highway 3 - Walker Road intersection and the east and west junctions of Oldcastle Road at Highway 3 for June 2003 and July 2004 was reviewed. The counts represented conditions before and after the closure of Oldcastle Road at Walker Road. Earth Tech also undertook a review of the original growth forecasts used to project future volumes for this intersection using the updated traffic data and previous data obtained for the year 1997. The results of our review are discussed below.

Figure 4.3, below, illustrates the 2003 and 2004 estimated AADT's on Oldcastle Road and Walker Road before and after the closure of Oldcastle Road at Walker Road.

Figure 4.3 - AADT Volumes Before & After Closure



[5] The original Highway 3 Traffic & Safety Study (Earth Tech, October 2000) noted an existing SB Left Turn DHV volume of 260 vph in 1997 which was projected to grow to 310 vph in 2002, and 380 vph in 2007, based on the estimated growth rates used in the T&S Study.

When comparing the 2003 and 2004 volumes, the south leg of Oldcastle Road shows a sharp decrease in daily traffic volumes, reducing from 1445 vehicles/day to 335 vehicles/day. Oldcastle Road north of Highway 3 has seen a 40% increase in the daily volume of southbound vehicles, while the northbound direction has dropped by approximately 50% since the closure. Left turn movements from Highway 3 to both legs of Oldcastle Road have reduced significantly, with the eastbound left dropping by 50% and the westbound left dropping by over 90%. Details are shown in **Table 4.3**

Table 4.3 - Comparison of 2004 AADT to 2003 AADT - Oldcastle Road – North and South of Highway 3

Daily Approach Volumes	2003 AADT	2004 AADT	Change %
Oldcastle Road - North of Highway 3			
Southbound	960	1340	39.5%
Northbound	1095	510	-53.4%
Oldcastle Road - South of Highway 3			
Northbound	750	160	-78.7%
Southbound	695	165	-76.3%

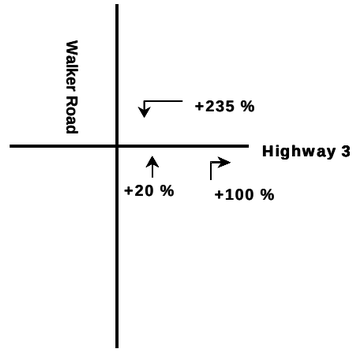
Based on the traffic counts undertaken at Walker Road before and after the closure of Oldcastle Road, it is obvious that there have been changes in the traffic demands as a result of the Oldcastle Road closure. The most significant changes have been observed for the westbound-to-southbound left turn (increased by 235%), the northbound-to-eastbound right turn (increased by 100%), and the northbound-through movement (increased by 20%).

Many of the vehicles that used the north leg of Oldcastle Road going south to access South Talbot Road simply turn right and then left at Highway 3 and Walker Road, rather than using southbound Walker Road. Vehicles travelling westbound on Highway 3 that used to turn left at Oldcastle Road, also continue west and turn left at Walker Road. The northbound right turn movements at the Walker Road - Highway 3 intersection have increased significantly since the closure. Most of the reduction in northbound traffic on the south leg of Oldcastle Road was traffic proceeding north to turn right on Highway 3. The major traffic flow changes at the Highway 3 - Walker Road intersection as a result of the Oldcastle Road closure are illustrated in **Figure 4.4**.

4.4.4 Review of Highway 3 / Walker Road Intersection Growth

In the Highway 3 Traffic & Safety Report, growth rates were developed based on a review of historical AADT trends on the Highway 3 corridor between 1985 and 1997. Based on the historical growth rate trends a future compound growth rate of 4% per year was assumed between 1997 and 2007, with a lower growth rate of 2% per year for the 2007 to 2017 period. The growth rate was applied equally to Highway 3 mainline volumes and the sideroad volumes.

Figure 4.4– Movements with Largest Change After Closure of Oldcastle Road



To assess the design of the Highway 3 - Walker Road intersection, Earth Tech reviewed the actual observed growth on Highway 3, between 1997 and 2003, using previous Ministry inventory counts taken just east of Outer Drive. The estimated ADT for 1997 and 2003 at this station are shown in **Table 4.4** below:

Table 4.4 – Estimate ADT for 1997 and 2003

Count Date	ADT
August 1997	10801
July / August 2003	10858
6-Year Growth in ADT	0.5%

When the 1997 and 2003 counts were compared, the growth over the 6 year period was only 0.5%, or less than 0.1% per year. The counts were taken at roughly the same time of year to avoid the effects of seasonal variation in demand.

Historical volumes on Walker Road were also reviewed, based on a comparison of traffic counts undertaken at the Highway 3 - Walker Road intersection in 1997 and again in 2004, prior to the closure of Oldcastle Road. During the 8 hour period of the traffic counts (covering the a.m. peak hours, the mid- day off peak, and the p.m. peak hours), traffic volumes on Walker Road have dropped approximately 15% over the past 7 years, with a 20% reduction in the southbound direction and an 8% reduction in the northbound direction.

The reduction in peak hour traffic, between 1997 and 2004, was more pronounced. The a.m. peak hour volumes on Walker Road were approximately 20% lower in 2004 compared to 1997 counts, while the p.m. peak hour volume was approximately 30% lower. Most of the decline is due to substantially lower traffic volumes on southbound Walker Road, with 2004 a.m. and p.m. peak volumes 37% and 33% lower respectively, than in 1997.

The reason for the apparent decrease in volumes on Walker Road is not clear. The County of Essex has undertaken significant upgrades to Walker Road between Highway 3 and Highway 401 over the past few years, to widen this facility to 4 and 5 lanes. The construction work for this widening occurred during 2002

and 2003, with the work completed and the road open to traffic during the time of the before-after counts at the Walker Road - Highway 3 intersection. It is recognized that some local travel pattern diversion that occurred during the construction period may have translated into a longer-term shift in travel routes, but it is unlikely that this could account for the entire reduction.

It is understood that there has been some significant growth in commercial development along Walker Road within the City of Windsor, which may be reducing the attractiveness of this route for commuters traveling to and from homes within Essex County and employment areas in Windsor. Furthermore, the Chrysler Van Assembly plant in Windsor closed in 2003. Since Walker Road served as a primary access route to this facility, the plant closure may be partially responsible for the reduced traffic volumes.

An examination of Statistics Canada Census data between 1996 and 2001, as summarized in **Table 4.5** below, shows that the municipalities located along the Highway 3 corridor (Towns of Tecumseh, Essex, Kingsville, and Leamington) have shown an overall 6% increase in population during this time period. Estimates of future population growth in the Highway 3 corridor suggest that the County is planning to direct a fair portion of their new growth into established settlement areas, which is reflected by the relatively aggressive population growth forecasts used for these communities in the Essex- Windsor Regional Transportation Study.

Table 4.5 - Growth in Population

1996-2001 Growth in Population Windsor – Essex County				Projected 2021 Population Windsor – Essex County	
Municipality	**1996 Population**	**2001 Population**	**Growth 1996-2001**	**2021 Projected Population**	**Growth 2001-2021**
County of Essex	350,329	374,975	7%	463,751	24%
Communities Along Highway 3 Corridor					
Essex	19,437	20,085	3.3%	24,818	24%
Tecumseh	23,151	25,105	8.4%	35,259	40%
Kingsville	18,409	19,619	6.6%	23,828	21%
Leamington	25,389	27,138	6.9%	34,133	26%
Total	**86,386**	**91,947**	**6.4%**	**118,038**	**28%**

Source: Statistics Canada and Essex-Windsor Regional Transportation Study, Transportation System Needs & Opportunities Interim Report, March 2004

Employment growth projections being used in the Essex-Windsor Regional Transportation Study highlight aggressive employment growth assumptions, particularly in the communities along the Highway 3 corridor. It is expected that this will increase opportunities for living and working within the same community, and help to reduce the dependency on commuting to and from the Windsor urban area. While this is not expected to significantly reduce the volumes using Highway 3, the increase in employment in these communities may partially offset the impact of new population growth. Employment growth is illustrated in **Table 4.6.**

Table 4.6 – Employment Growth

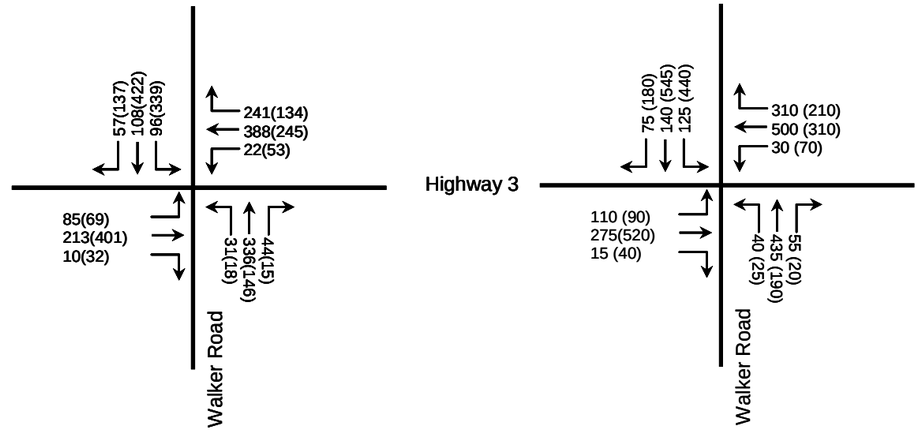
Projected 2001 - 2021 Employment Growth Windsor – Essex County			
Municipality	**2001 Employment**	**2021 Projected Employment**	**Growth 2001-2021**
County of Essex	159,782	212,314	33%
Communities Along Highway 3 Corridor			
Essex	3,736	9,417	152%
Tecumseh	8,497	11,739	38%
Kingsville	4,295	7,080	65%
Leamington	9,480	15,604	65%
Total	**26,008**	**43,840**	**69%**

Source: Essex-Windsor Regional Transportation Study, Transportation System Needs & Opportunities Interim Report, March 2004

The above considerations do illustrate that the original growth rate assumptions used for the Highway 3 corridor may be overly aggressive, given the most recent trends observed in the past few years and the future projections being used in the Essex-Windsor Transportation Study.

Based on the above analysis, future 2017 traffic volumes were projected using an adjusted intersection growth rate of 2% (compounded) per year, which is still very conservative, and better reflects the actual history of growth over the past 6 years on Highway 3. It was assumed that the peak hour growth rate would match the daily growth rate. **Figure 4.5** below shows the peak hour volumes for 2004 and 2017 at the Highway 3/ Walker Road intersection.

Figure 4.5 – Highway 3 / Walker Road - 2004 & 2014 Peak Hour Volumes AM (PM)



4.5 Road Safety Assessment

4.5.1 Assessment Used for Development and Assessment of Alternatives

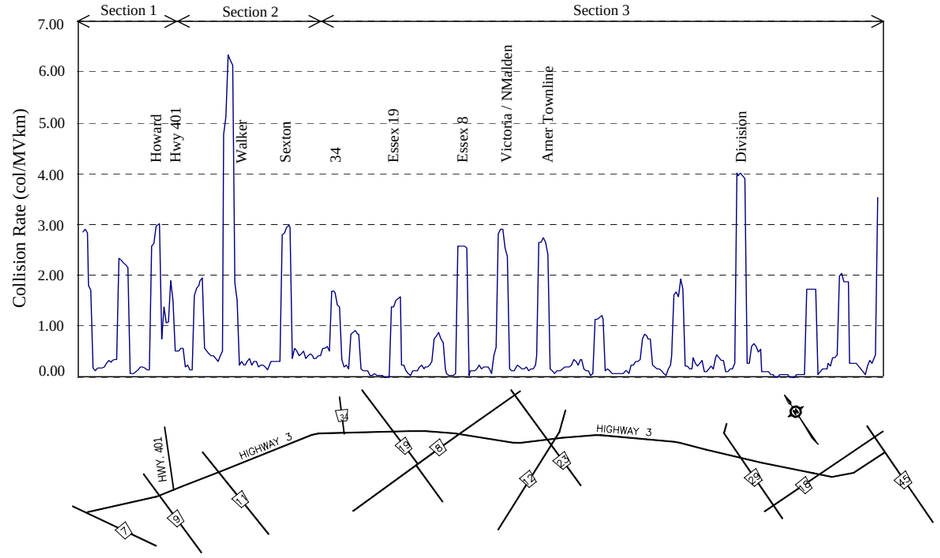
Ontario Provincial Police collision reports were reviewed for the period 1995 to 1998. A summary for this 3.5-year period is shown in **Table 4.7**.

Table 4.7 – Collision Statistics 1995 to 1998 (3.5 Year Sample)

Road Section	Collisions			Severity		
	Total	Day	Night	Property Damage Only	Injury	Fatality
Section 2 (7.2 km) Highway 401 to Essex Road 34 West Limit (Talbot Road)	110	68	42	80	27	3
Section 3 (25.5 km) Essex Road 34 West Limit (Talbot Road) to Essex Road 34 (Leamington By-pass)	212	144	68	122	85	5
TOTAL	**322**	**212**	**110**	**202**	**112**	**8**

A moving vehicle collision rate graph (collisions per million vehicle kilometres) is shown in **Figure 4.6**. To account for potential discrepancies in reporting/recording the exact collision locations, a rolling average approach was used to determine collision rates throughout the Study Area.

Figure 4.6 – 1988 to 1998 Moving Vehicle Collision Rate Graph

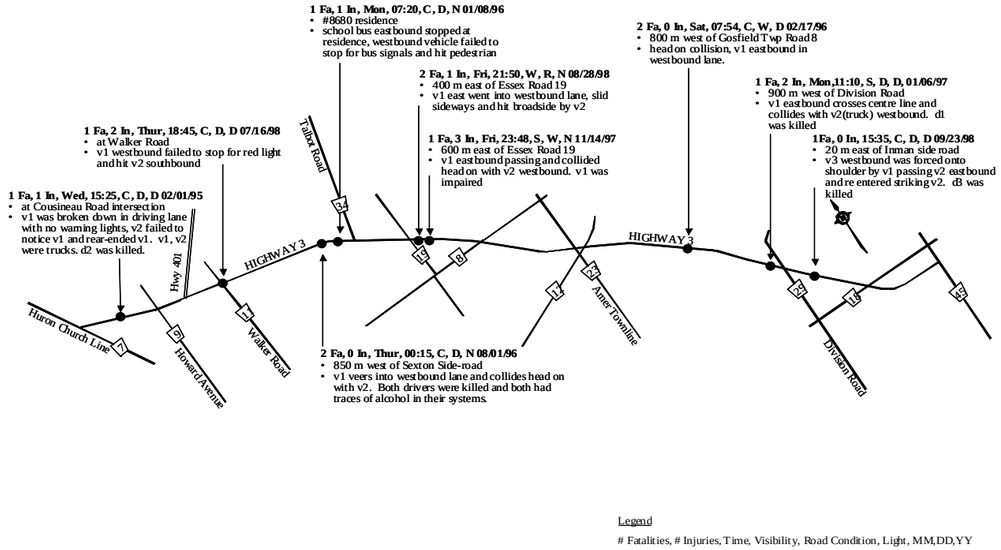


The number of fatal collisions is a major concern on the portion of Highway 3 within the study limits. The location and description of fatal collisions during the period of 1995 to 1998 are shown in **Figure 4.7.**

Within Section 2, from Outer Drive to Essex Road 34 West Limit (Talbot Road), the majority of the accidents are rear-end accidents, which are divided equally between non-intersection related and intersection related accidents. A total of 16 accidents are driveway-related (mostly turning movement).

Within Section 3, from Essex Road 34 West Limit (Talbot Road) to Essex Road 34 (Leamington By-pass), the majority of the accidents are non-intersection related accidents. A substantial component of the total number of accidents are single vehicle accidents.

Figure 4.7 – Location of Fatal Collisions



The operational performance function (OPF) is an indication of how a road is operating compared to other road facilities of similar classification and within the same area of the Province. An analysis was undertaken to compare the observed collision expensive against the theoretical safety performance for similar King's Highways. Based on this analysis:

- The total number of collisions occurring on mainline Highway 3 (excluding signalized intersections), are less than theoretical values, except in Section 2, where they are equal to theoretical.
- The number of injury and fatality collisions (excluding signalized intersections) are less than theoretical values, except in Section 3, where they are considerably more than theoretical. However, the absolute number of fatalities in Section 2 is as much, if not more, of a concern than the Section 3 safety issues.
- The number of collisions occurring at signalized intersections is generally at or below theoretical values, with the exception of the Walker Road intersection, which is considerably higher than theoretical.

4.5.2 Recent Safety Assessment

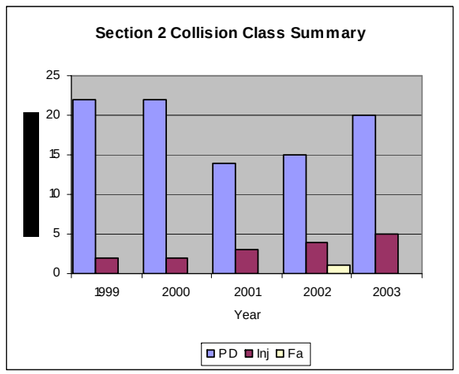
Recent collision statistics provided by the Ministry of Transportation from 1999 to 2003 (5 year sample) were also review to assess if collision patterns had changed significantly from those experienced during the 1995-1998 period. A summary of the updated collision statistics, between 1999 and 2003, is provided in **Table 4.8**, below. Based on average sectional AADT volumes, an average collision rate for each section was calculated based on the average number of yearly collisions for each section.

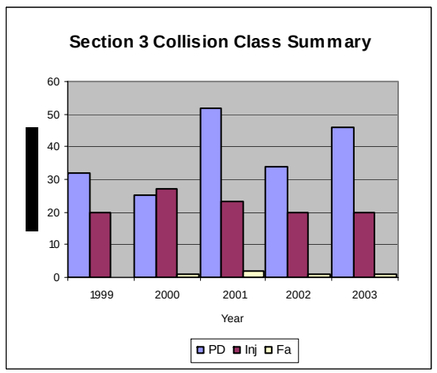
Table 4.8 – Collision Statistics 1999 to 2003 (5 Year Sample)

Road Section	Collisions			Severity		
	Total	AADT	Collision Rate	Property Damage Only	Injury	Fatality
Section 2 (7.2 km) Highway 401 to Essex Road 34 West Limit (Talbot Road)	105	12900	0.6	85	19	1
Section 3 (25.5 km) Essex Road 34 West Limit (Talbot Road) to Essex Road 34 (Leamington By-pass)	308	12000	0.5	189	110	5
TOTAL	**413**	**12200**	**0.54**	**274**	**129**	**6**

Figure 4.8 illustrates the breakdown of collisions for Section 2 and Section 3 by class of collision and year.

Figure 4.8 – Collision Statistics 1999 to 2003 by Class of Collision (5 Year Sample)





Section 2 Collision Summary:

The total number of collisions that took place within Section 2 from 1999 to 2003 was 105, with the following general collision characteristics:

- Over the past 5 years, the average collision rate has dropped from 0.98 (1995-1998) to 0.6 for the 1999 to 2003 time period suggesting a significant improvement to safety conditions within this section. Some of this reduction may be attributable to the various minor improvements made to intersections within the study area over the past few years.
- 81% of the collisions involved property damage (85).
- 18% of the collisions involved injuries (19). The past 5 year period has shown in increasing trend in injury class collisions, illustrated in **Figure 4.8** above. Despite this increasing trend, the proportion of injury collisions over the past 5 years was approximately 18%, which is less than the 25% proportion observed between 1995 and 1998.
- 1% of collisions were classed as a fatality (1 fatal collision, year 2002 within the section from Essex Road 11 to West Junction of Essex Road 34).

Section 3 Collision Summary:

The total number of collisions that took place within Section 3 from 1999 to 2003 was 308, with the following general collision characteristics:

- Over the past 5 years, the average collision rate has improved from 0.62 (1995-1998) to approximately 0.50 for the 1999 to 2003 time period, indicating some improvement to safety conditions within this section.
- 62% of the collisions involved property damage (189).
- 36% of the collisions involved injuries (110) compared to 40% of the collisions during 1995-1998. Over the past 5 years, there has been a decreasing trend in the number injury collisions experienced each year on this section of Highway 3.
- 2% of collisions involved fatality (5 fatal collisions altogether)

A summary of the fatal collisions within the study limits from 1999 to 2003 is summarized in **Table 4.9**:

Table 4.9 – Summary of Fatal Collision Statistics 1999 to 2003 (5 Year Sample)

	from-to	Fatal collisions					
		1999	2000	2001	2002	2003	Total
Section 2	Highway 401-Essex Road 11						1 (17%)
	Essex Road 11-Essex Road 34				1		
Section 3	Essex Road 34-Essex Road 19						5 (83%)
	Essex Road 19- Essex Road 23						
	Essex Road 23-Essex Road 27			1			
	Essex Road 27- Essex Road 29					1	
	Essex Road 29- Essex Road 18			1			
	Essex Road 18-Essex Road 34		1		1		

The summary of this updated collision data suggests an overall reduction in collision rates throughout the study area, compared to the previous collision statistics used in the evaluation of alternatives . An overall collision rate of 0.54 is calculated for the entire study limits based on the new collision statistics compared to 0.70 based on the previous data.

In addition, considering the fact that the provincial average collision rate for King's Highways is typically 1.0 collisions/MVkm, the above numbers imply that collision rates along Highway 3 are lower than the provincial average.

Given all these, the findings of the new collision statistics is in line with the previous assessments and suggest an overall improvement to the safety conditions of the Highway within the study limits, some of which can be attributed to recent improvements noted previously in this report.

4.6 Summary of Traffic Operations

As traffic volumes increase along the Highway 3 corridor, motorists will experience longer periods of delay when leaving or entering Highway 3. As mainline volumes continue to increase and the overall Highway 3 level of service decreases, the availability of safe passing opportunities will continue to decrease as well. Left unchecked, this could have a negative impact on safety within the corridor, resulting in motorists having increased difficulty in passing slower moving vehicles, such as the numerous trucks and farm related

vehicles using this corridor. Widening Highway 3 to 4 through lanes, plus turning lanes where required, will alleviate many of the safety and capacity concerns within the planning horizon for this study.

Highway 3 intersection Levels of Service are detailed in **Section 4.2** of the "Traffic and Safety Report". A brief summary of the improvements required at the Highway 3 intersections is as follows:

- Outer Drive, Essex Road 29 (Division Road) and Essex Road 8 warrant traffic signals within five years. Traffic signals were installed in 2003 at the Division Road intersection, at the Essex Road 8 in 2004 and Outer Drive in 2005.
- Existing signalized intersections, including signals installed at the three intersections noted above, will operate at Level of Service "C" or better in 2007.
- Minor realignment, closures, adding turning lanes to meet current design standards, and improving pavement markings should be considered to improve both capacity and safety.

4.7 Infrastructure Deficiencies

Improvements eliminating infrastructure deficiencies should be incorporated into the selected design option. The existing infrastructure deficiencies are described below.

4.7.1 Drainage

A "Drainage Report – Culvert Sizing" (Earth Tech Canada, April 2000) document was prepared for this project. Several culverts were found to be undersized, in poor condition, and/or require rehabilitation within the study limits to ensure that anticipated flows are conveyed adequately. The deficiencies identified in the Drainage Report fall into one of the following categories:

- A number of entrance culverts are smaller than a recommended minimum size. In cases where these culverts are starting to deteriorate, clog with sediment or excessive debris, or where catchment areas are relatively large, the entrance culverts are recommended to be replaced with a new 600 mm culvert. These recommendations are made to prevent future drainage problems should these culverts be allowed to deteriorate further.
- A number of larger entrance culverts on the north side of Highway 3 near the western project limits are recommended to be upsized. This recommendation is based on the calculated hydraulic capacity compared with the requirement to convey large infrequent design flows. The existing culverts are not perceived to have caused historic flooding or roadway overtopping, but are recommended to be upsized to accommodate potential infrequent large flows in the future.
- Some entrance and transverse culverts are recommended for replacement due to deteriorating structural condition.
- The ditches have become overgrown or partially filled with sediment in several locations. These problems are limited to the culverts and ditches within the Highway corridor. Earth Tech recommends cleaning the channel and culvert inlets from sediment and debris at these locations.

A culvert crossing Highway 3 at station 14+750 (culvert 14) is recommended to be replaced with a larger box culvert due to calculated hydraulic capacity. Again, while Earth Tech had no evidence of historic flooding or roadway overtopping, the recommendation is based on the requirement to convey potential infrequent large flows in the future.

The roadside ditches and culverts should be cleaned out to remove sediment and debris.

Additional culverts were identified in a new surveyed base plan covering Section 2 and the western portion of Section 3, that was produced in late 2004. However, the new survey did not cover most of Section 3, so there is insufficient information available to develop a drainage design for the median in Section 3. As a result, verification and recommendations for the new culverts, and a drainage design for the median in Section 3 will be provided in detail design. It is also noted that any shown culvert extensions have been based on typical cross-section and engineering judgment due to the lack of original ground elevations.

4.7.2 Illumination and Signals

An assessment of existing illumination and traffic signals was conducted and reported on in October 1999.

The existing illumination at Oldcastle Road and Essex Road 23 intersections needs to be replaced to meet current specifications. The existing traffic signals also need to be replaced to meet current specifications at the Essex Road 23 intersection.

5 ROLE, FUNCTION AND CLASSIFICATION OF HIGHWAY 3

5.1 Highway Network Assessment

At the time of its construction in the 1930's, Highway 3 was envisaged as a major corridor between Windsor and Fort Erie. Substantial improvements to the provincial highway freeway system over the past 70 years have dramatically influenced the travel pattern on Highway 3, including the following recent upgrades:

- Widening of Highway 401 from London to Woodstock from 4 to 6 lanes;
- Completing Highway 403 from Woodstock to Hamilton to connect with the QEW; and,
- Widening the QEW from Hamilton to St. Catharines, from 4 to 6 lanes.

As a result of these improvements, longer distance trips have shifted to the freeway corridors, leaving Highway 3 to primarily service regional and local travel between the communities along the north shore of Lake Erie.

It should be noted that Highway 3 is no longer continuous between Windsor and Fort Erie. Traffic volumes in this corridor decrease significantly to the east of Leamington. In the Wheatly area, approximately 10 km east of Leamington, the Annual Average Daily Traffic (AADT) volume barely exceeds 1000 vehicles. Due to the low volumes and local nature of the travel patterns, MTO transferred the jurisdiction for the link between Leamington (Highway 77) and St. Thomas (Highway 4) to Essex County, the Municipality of Chatham-Kent, and Elgin County in the late 1990's.

The portion of the Highway 3 corridor between Highway 77 in the Town of Leamington and Windsor was retained as an arterial highway due to its role in linking the provincial highway system to the:

- Ambassador Bridge International Crossing;
- Point Pelee Ferry;
- Regional Airport on Point Pelee Island; and,
- Marine port in Leamington.

Beyond the project limits, Highway 3 from Todd Lane/Cabana Road to Highway 401 also serves as the easterly portion of the main corridor between Highway 401 and the Ambassador Bridge crossing into the United States. As mentioned previously, the MTO is currently seeking approvals for a new international crossing and associated road connections under a separate environmental assessment study known as the Detroit River International Crossing (DRIC). Any resultant crossing improvements will likely have a substantial impact on the future role of this portion of the Highway 3 corridor.

5.2 Traffic

The traffic in Sections 2 and 3 is essentially local and regional (less than 50 km) within Essex County. As mentioned earlier, long distance through traffic is negligible considering that the total AADT on former Highway 3, 10 km east of Leamington, barely exceeds 1000 vehicles. The commercial traffic percentage in Sections 2 and 3 varies from 6.2% to 10%. This represents a range of 550 to 950 vehicles per day. The commercial traffic supports the Essex County manufacturing, agricultural, and greenhouse vegetable economy. The commuter traffic is normally related to employment, shopping and social activities. The tourist influence increases the volumes by a range of 600 to 800 vehicles per day (SADT) as noted in the MTO "1996 Traffic Volumes" report.

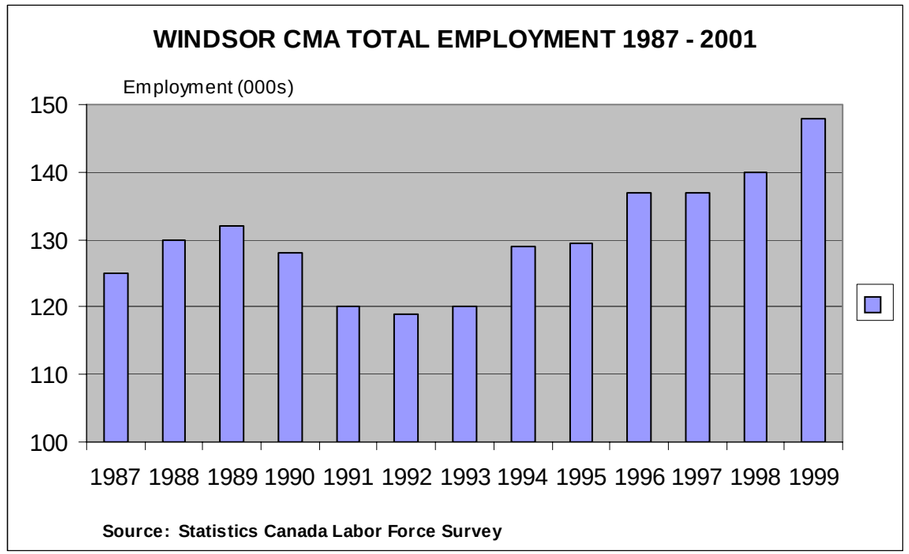
5.3 Land Use Planning Implications

A "Land Use Planning Implications of Proposed Improvements to Highway 3 in the County of Essex Report" (Hemson Consulting, August 2001) was prepared for this project. This study involved a review of the potential effects on the land uses in the Study Area as designated in the relevant local and regional official plans. Aerial photographs and field verification were used in conjunction with the official plans.

5.3.1 Economic Conditions in Essex County

As noted in **Figure 5.1,** employment in the Windsor metropolitan area reflects the general pattern of recession and recovery that occurred in the southern Ontario economy over the past decade. With the effects of the North American Free Trade Agreement (NAFTA), and a general restructuring of manufacturing having largely run their course, employment is now growing rapidly.

Figure 5.1 – Windsor CMA Total Employment 1987 - 2001



Essex County is also the largest agricultural area in eastern Canada, with about 325,000 acres of farmland, which is made up mostly of field crops, but also includes agricultural activities such as processing vegetables, fruit crops and dairy, beef and swine farms. The estimated value of agricultural and livestock production is $200 million per year.[6]

Within Essex County, the Town of Leamington is the largest and most intense greenhouse vegetable growing area in Canada. The greenhouse industry has an estimated $1 billion local economic impact annually.

5.3.2 Future Patterns of Development

The City of Windsor is exploring opportunities for expanding its boundaries. This could potentially impact portions or all of Highway 3 in Section 2 from Outer Drive to Essex Road 34 West Limit (Talbot Road). Should this occur, opportunities to reduce the number of direct access points, such as implementing back-lot development should be considered. No major changes to existing land use designations, other than the potential boundary changes to the City of Windsor, are anticipated.

Considering the historic growth and the predominantly agricultural land use environment, it is likely that only limited growth will occur during the next 20-year period. Historic population growth distribution trends within the existing communities will likely continue into the future. During the 20-year period from 1976 to 1996, the population for Essex County increased 13%, while the City of Windsor population remained relatively constant (even though total employment increased substantially). During the same period, the population for the Town of Essex increased 21% and the population for the Town of Leamington increased 45%. The greater rate of increase in growth in Leamington, relative to the Town of Essex and other urban areas, is likely a direct result of growth in the intense greenhouse vegetable growing capacity in this area and the increase in total employment in the City of Windsor. This future population growth distribution will result in some future increases in commuter traffic destined for employment in the Windsor area.

The Windsor Area Long Range Transportation Study (1999) generally supports these growth rate and growth distribution conclusions.

5.4 Role and Function of the Highway

The primary role and function of Highway 3 from Outer Drive to Essex Road 34 at the Leamington By-Pass is to serve the commuter, commercial, and recreational traffic within Essex County.

In addition, Highway 3:

- provides direct access to adjacent properties in Section 2. This includes providing services (i.e. mail delivery, school bussing, etc.) and the movement of farm vehicles on the shoulder. Within Section 3, access to Highway 3 is limited to public road intersections. Therefore, services to adjacent residences (i.e. roadside mail delivery, school bussing, etc.) are not a factor and movement of farm equipment is generally limited to crossing the Highway at intersections; and,
- links the Point Pelee Ferry, the Regional Airport on Point Pelee Island, and the local Marine Port in Leamington to the provincial highway system.

5.5 Classification of the Highway

The primary criteria for the classification of the provincial highway system developed by MTO's Provincial Planning Office, and contained in the Southwestern Ontario Transportation Perspective document, are shown in **Table 5.1** below:

[6] *Human Resources Development Canada (HRDC) 2000 Windsor/Essex County Community Profile*

Table 5.1 - Ontario Highway Network – Primary Classification Criteria

LEVEL	LONG DISTANCE ROLE		VOLUMES		
	Function	Classification	AADT	SADT	Commercial Vehicles/day
Provincial	International Interprovincial Municipal Connector >50,000 pop.	Freeway or National Hwy. System	>10,000	>10,000	>1,000
Regional	Inter-regional >50 km >10,000 pop.	Arterial	5-10,000	5-10,000	500-1,000
Area	Intercity Municipal Commuter >5,000 pop.	Collector or Local	<5,000	<5,000	<500

The classification criteria factors relating to the portion of Highway 3 from Outer Drive to Essex Road 34 (Leamington By-pass) are summarized as follows:

- Leamington population is 17,100 (2001) based on previous Town boundaries, which has increased to 27,000 (2001) as a direct result of the municipal boundary expansion;
- Average trip lengths less than 50 km (long distance through trips fewer than 1000 vehicles per day);
- Existing traffic consists mainly of intercity/municipal commuter traffic;
- Existing commercial traffic in the range of 550 to 950 vehicles/day;
- Existing tourist traffic in the 600 to 800 vehicles/day range;
- Existing AADT in the 6,500 to 15,500 vehicles/day range; and,
- Limited population growth expectations due to the predominant agricultural land use.

Given all of the above, it is concluded that:

- an arterial roadway in the Highway 3 corridor from Highway 401 to Essex Road 34 at the Leamington By-pass (Sections 2 and 3) will continue to provide the level and type of services needed in this corridor; and,
- the ultimate role and function, classification, and capacity improvements for Highway 3 from Todd Lane/Cabana Road to Highway 401 will be redefined after the recommendations of the EA study known as the Detroit River International Crossing Study (DRIC)are available. In the interim, Highway 3 in Sections 1 and 1A will continue to function as an arterial provincial highway.

6 PLANNING ALTERNATIVES AND EVALUATION

The primary study objectives, along with the role and function defined for Highway 3, have guided the generation and evaluation of the planning alternatives and selection of the preferred planning alternative for this corridor.

6.1 Generation of the Planning Alternatives

As stated in Section 1 of this report, the study area for the Highway 3 corridor was divided into distinct sections reflecting the different characteristics of the existing roadway configuration and access (Sections 2 and 3 being the subject of this study, and Sections 1 and 1A deferred to a future date). As a result, planning alternatives were generated separately for both Sections 2 and 3 within a 20-year planning period. However, consideration was given to maintaining flexibility, where feasible, for future transportation needs beyond the planning period.

In Sections 2 and 3 of the study area, the "Do Nothing" Planning Alternative was included to provide a benchmark for comparatively evaluating the other alternatives.

In addition, the rehabilitation of infrastructure deficiencies noted in **Section 4.7** of this report was included as part of each of the generated alternatives. This includes replacing/rehabilitating culverts, rehabilitating the existing pavement structures, and updating traffic signals, illumination and signage (where required) to restore/extend the infrastructure life span.

6.1.1 Section 2 - Outer Drive to Essex Road 34 West Limit (Talbot Road), 6.9 km

The following six planning alternatives were generated for Section 2:

Alternative 1 – Do Nothing

- Includes the rehabilitation of infrastructure.

Alternative 2 – Operational and Safety Improvements

- Intersection improvements including minor realignment at Sexton Road and Oldcastle Road and add left/right turn lanes, where required;
- Add/improve traffic control with upgraded signage, signalization, and pavement markings;
- No additional through lanes;
- Rehabilitate infrastructure.

Alternative 3 – Increase Vehicle Occupancy

- Introduce transit service;
- Provide shuttle service;
- Promote carpooling/expand commuter parking lots;
- Rehabilitate infrastructure.

Alternative 4 – Add Capacity in the Existing Corridor

- Add two additional lanes (four through lanes plus continuous centre, two-way left turn lane);
- Rehabilitate infrastructure.

Alternative 5 – Add Capacity in a New Corridor

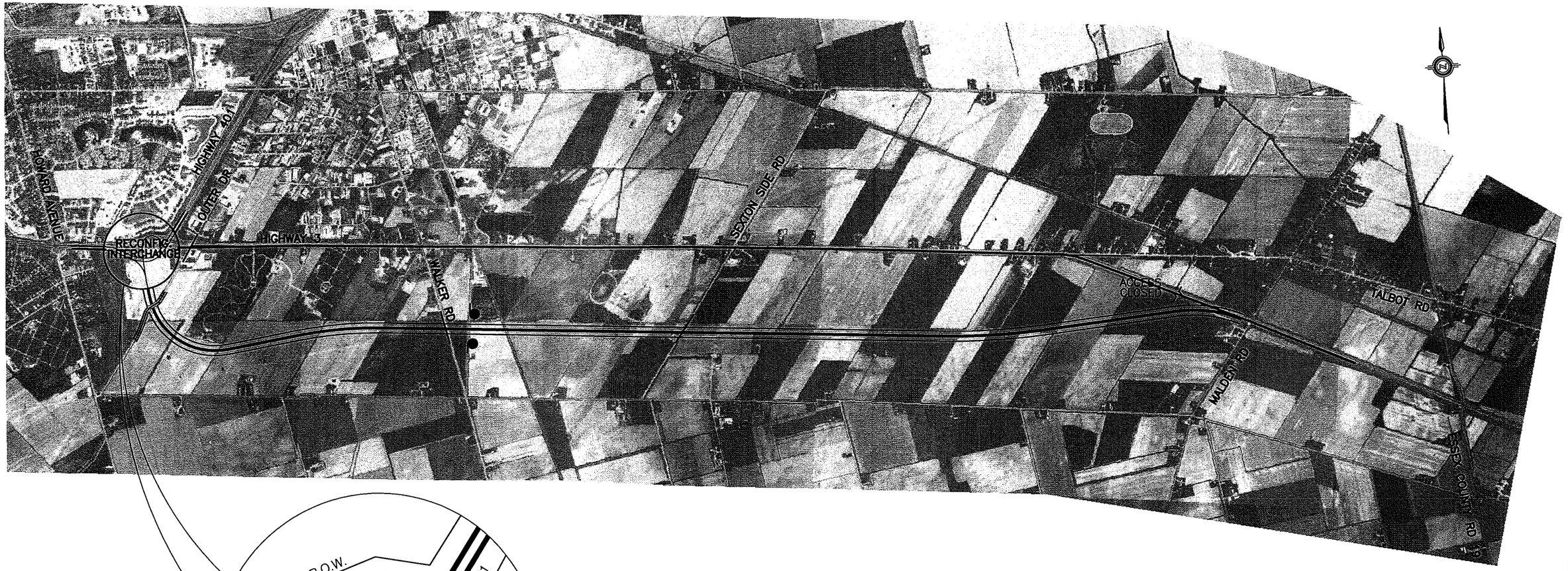
Construct 4 lanes within a new highway corridor (see **Exhibit 6.1**). Four basic lanes are required to address safety and capacity concerns.

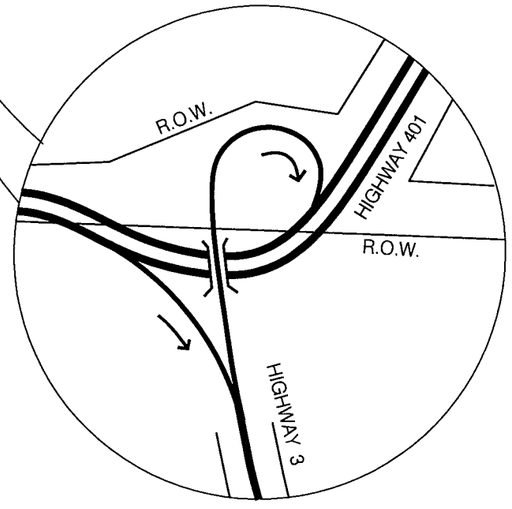
- The new corridor alternative would generally parallel the existing Highway 3 on the back lot line between Highway 3 and South Talbot Road. Some deviation from the back lot line would be required to avoid the cemetery lands. Staying on or close to the back lot line would minimize the creation of land-locked parcels and generally minimize disruption to farm operations. The new corridor was not considered north of Highway 3 for a number of reasons, but primarily because there is considerable existing development to the north of Highway 3;
- Develop new intersections at Walker Road and Sexton Sideroad within the new corridor;
- Construct a new interchange at Highway 401. The only feasible design for a new interchange would require moving the existing interchange in a southerly direction and providing the westbound connection from Highway 3 east of Highway 401, to Highway 3 west of Highway 401, with an inner loop ramp connection. The eastbound connection would be a direct ramp. Existing Highway 3 would be closed just west of Outer Boulevard;
- Construct a new grade separation at Outer Drive;
- Close current Highway 3 from Malden Road to Essex Road 34 West Limit (Talbot Road) and close Oldcastle Road South;
- Rehabilitate infrastructure within the existing corridor.

The rationale for providing additional capacity through a new corridor was related to enhancing safety through providing a highway with no direct private access. Also, the new corridor was consistent in character with Section 3.

Alternative 6 – Hybrid Alternative

- A combination of Planning Alternative 2, Operational and Safety Improvements, and Planning Alternative 4, Add Capacity in the Existing Corridor.





EarthTech A tyco International Ltd. Company	Ontario Ministry of Transportation	SCALE NOT TO SCALE DATE JANUARY /06	W.P. 315-98-00 HIGHWAY No. 3 - WINDSOR TO LEAMINGTON ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN	SECTION 2 ALTERNATIVE 5 - ADD CAPACITY IN NEW CORRIDOR	EXHIBIT 6.1

6.1.2 Section 3 – Essex Road 34 West Limit (Talbot Road) to Essex Road 34 (Leamington By-pass), 26.6 km

The following five planning alternatives were generated in Section 3 for evaluation:

Alternative 1 – Do Nothing

- Includes the rehabilitation of infrastructure.

Alternative 2 – Operational and Safety Improvements

- Intersection improvements including minor realignment, adding left/right turn lanes (where warranted), and selected intersection closure opportunities to improve intersection spacing and safety;
- Improve traffic control by improved signage, signalization, signal timing and pavement markings;
- Provide new traffic signals at Essex Road 8 and at Essex Road 29 (Division Road);
- No additional through lanes;
- Rehabilitate infrastructure.

Alternative 3 – Increase Vehicle Occupancy

- Introduce transit service;
- Provide shuttle service;
- Promote carpooling/expand commuter parking lots;
- Rehabilitate infrastructure.

Alternative 4 – Add Capacity in the Existing Corridor

- Provide two additional lanes (a total of 4 through lanes). Similarly, four basic lanes are necessary in Section 3 to address safety (severity of the collisions (fatality and injury) is a major concern) and mobility concerns.;
- Rehabilitate infrastructure.

Alternative 5 – Hybrid Alternative

- A combination of Planning Alternative 2, Operational and Safety Improvements, and Planning Alternative 4, Add Capacity in the Existing Corridor.

Unlike Section 2, adding capacity via a new corridor was not considered in this section because this portion of Highway 3 was constructed on a new alignment in the past 20 to 30 years, with access restricted to public road intersections. The former Highway 3 was subsequently transferred to Essex County (Essex Road 34).

6.2 Evaluation of the Planning Alternatives

After generating the planning alternatives for Sections 2 and 3, they were comparatively evaluated according to a descriptive or qualitative assessment. A descriptive or qualitative evaluation was undertaken based on criteria/indicators developed within the following factors representing the broad definition of the environment described in the EA Act:

- **Transportation** having regard for the technical suitability, traffic mobility and operations, safety, and other engineering aspects of the alternative.
- **Natural Environment** having regard for protecting the natural and physical components of the environment (i.e., air, land, water and biota) including natural and/or environmentally sensitive areas.
- **Social/ Cultural Environment** having regard for residents, neighbourhoods, businesses, agricultural resources, community character, social cohesion and community features, heritage features/landscapes, and archaeological remains.
- **Project Economics** having regard for the capital, utility, and property costs of the alternative including cash flow requirements.

Within each factor, study-specific evaluation criteria and indicators were developed based on a review of the Ministry's Class EA for Provincial Transportation Facilities (2000), the existing conditions of the study area, the planning alternatives being considered, the need/justification for the project, and public/agency input (see **Table 6.1**).

Table 6.1: Evaluation Criteria Rationale

Factor/Criteria	Indicator	Rationale
Transportation		
Geometrics	Roadway alignment	Roadway alignment characteristics are directly correlated to the operational and safety performance of the facility. Higher design speeds generally govern posted speed and warrant flat (large radius) curves to maintain lateral friction of the vehicle, flatter sideslopes, wider lanes/shoulders and limited grades (not an issue in this section of Highway 3). The length of the roadway section considered is important because it affects travel time and the ability of the facility to attract users. Curves (measured in radius and total length) in the roadway alignment increase the collision potential (a function of curve length and operating speed) and the combination of long tangents and relatively sharp curves violates driver expectation.
	Sideroad alignment	Sideroad alignment influences driver behaviour/responses to the intersections and how they function (i.e., sightlines to intersections, turning operation performance at intersections).
	Intersection configuration	The angle of the intersection (skew angle) influences the safety and operations of the intersection and potentially influences the right-of-way requirements. The preferred intersection configuration has a 90º skew (right angle) because it minimizes the conflict points (locations where vehicle paths cross within the intersection foot print), allows for maximum driver visibility, reduces pedestrian crossing lengths, and minimizes right-of-way. Tolerable skew angles are from 70º to 90º, with higher skews being preferable.
Mobility	Travel demand	Travel demand governs the number of lanes provided in the corridor, based on accepted capacity formulae. The travel demand is expressed in terms of the number of vehicles traversing the roadway in a unit period of time. Design hour volume (DHV) reflects the 30th highest hour and is generally used to define the design needs of the facility.
	Travel time	The selection of a route by a driver is partially influenced by anticipated travel time savings (other influences include route continuity, convenience, personal assessment of inherent risk, traffic volume/composition, etc.). In general, shorter routes of similar class highways result in lower travel times and therefore become more attractive to the driver.
	Intersection operations	The volume-capacity ratio (V/C) is a measure of the operational effectiveness of the intersection, with a lower V/C ratio being desirable. Higher V/C ratios are symptomatic of increased delay for traffic – usually turning traffic – and often occur at high collision locations. Lower V/C ratios are desirable.
	Major travel patterns	The effectiveness of the facility to accommodate major established travel patterns is important because of the influence on route selection. In Section 2, one major travel pattern exists with traffic from Highway 3 destined to the industrial employment areas north of the existing highway. This results in major turning volumes at Walker Road, which must be accommodated.
	Local travel patterns	Area residents/businesses in the vicinity of Highway 3 utilize established travel patterns for commuting, shopping, etc. Closing/modifying intersections, consolidating entrances, etc., may negatively affect these local travel patterns.
Safety	Collision potential	Road safety is a critical concern in the Highway 3 corridor in terms of frequency and severity of collisions. As traffic volumes increase, the collision potential also increases (non-linear relationship). A lower collision potential is preferable.
	Intersection/ entrance frequency/type	Intersection and entrance density in a major influence on the collision potential of a given segment of roadway. This is because each entrance or intersection introduces a decision and conflict point. Fewer accesses are preferable.
	Adjacent resident safety for entering/ exiting highway	Access to the highway was identified as a concern during the public information centre and during other contacts. In most cases, driveways include a turn-around area to eliminate the need to back out onto the highway. As such, only turning into the driveways has been touted as a major concern by the public. In addition, mail delivery currently requires some property owners to cross the roadway to reach their mailbox. While difficult to explicitly measure safety, one way to comparatively measure it is the daily exposure of traffic (number of vehicles passing residence), with lower traffic exposure being preferred.
	Accommodate multi-use needs	In Section 2, several property owners and others utilize portions of the right-of-way for non-auto/truck/recreational vehicle use. Pedestrian and bicycle use of the corridor is minimal. Agriculture vehicles do use the highway and potentially pose a safety problem due to the significant speed differential (very slow farm equipment versus high speed highway traffic) and size. An existing trail (Chrysler Greenway) exists along the former railway corridor that crosses Highway 3 in Oldcastle area. This conflict poses a safety concern to trail users. An objective is to accommodate multi-user needs by lowering the number of potential conflicts between users.
	Driver comfort/task	The comfort of the driver is directly influenced by the driver task. Driver task is governed by the perception load, and actions/reactions of the driver while operating the vehicle in the corridor. Roadside environment, road configuration, access density and signage comprehension demands are primary influences on the driver. At this time, influence on driver task can only be assessed on the basis of access density, because signage placement has not been finalized. It is desirable to reduce the number of accesses to lower driver task.
Constructability	Staging and detour requirements	Staging and detours potentially affect through traffic and access to properties. A measure of this is the number of accesses affected by construction activities. An objective is to reduce the number of access affected.
	Utility impacts	There are a number of major utilities in the Study Area (watermain, high tension power distribution line, gas line, Bell and pipelines) that cross the existing and the potential new Highway 3 corridors. These utilities may require relocation where conflicts are identified and, in the case of the pipelines, will most likely require permit approvals. It is desirable to minimize the number of major utility conflicts because of cost and delay.

Factor/Criteria	Indicator	Rationale
Natural Environment		
Vegetation	Wooded areas	Although Essex County provides excellent growing conditions for natural vegetation, only 3% of the landscape is comprised of woodland because of the predominantly agricultural setting. As a result, even small (less than 4 ha) wooded areas are often considered important in Essex County. Therefore, an objective of the comparative evaluation is to minimize the loss of existing wooded areas through highway construction.
Surface water	Surface watercourses	The Study Area transverses five subwatersheds: Little River, Pike Creek, Canard River, Belle River, and Wigle Creek. Since Essex County is imperfectly drained, numerous dredged ditches and tile drains have been installed to provide satisfactory conditions for crop cultivation. Consequently, the abundance of natural channel systems providing fish habitat has been reduced compared to other areas of the province. Despite this, fish species diversity is highest in this region compared to any other area in Ontario. Establishing new water crossings and/or realigning watercourses associated with highway construction activities can permanently destroy fish habitat and temporarily affect downstream water quality as it relates to fish and their habitat, as well as other aquatic and terrestrial species dependent on the water resource.
Groundwater	Beach ridges	A surficial sand and gravel beach ridge deposit in the order of 1 to 2 m thick exists within the Study Area. Beach ridges are characteristically sandy or gravelly in texture and may be susceptible to surficial contamination from sources such as road salt and septic bed leaching. As a result, they may provide a permeable pathway for surficial contaminants to migrate to surface watercourses and drainage ditches. For these reasons, an objective of the comparative evaluation is to minimize the length of the beach ridge crossed by a highway facility.
Social/Cultural Environment		
Property	Property requirements	Acquiring private property could negatively affect the enjoyment and/or economic viability of the remaining property and/or result in project implementation delays and higher overall project costs. An objective of the comparative evaluation is to minimize the need for acquiring private property, number of properties affected, and potential buy-outs.
Noise	Ambient noise after construction	The Study Area includes a number of residences situated either along or in the vicinity of the existing Highway 3 corridor. Current sound exposures measured along Section 2 of Highway 3 range between 62 dBA and 64 dBA. Since new or upgraded highway facilities can result in slight increases in sound exposures as traffic increases, an objective of the comparative evaluation is to minimize future noise impacts.
Community/ Recreational	Residences	The Study Area includes a number of residences located either along or in the vicinity of the existing Highway 3 corridor. The construction of new or upgraded highway facilities could require the displacement of residences located within the proposed right-of-way. Residents of Essex County have established homes not expecting to be displaced by a land use such as a highway. Some residents have resided at their present location for a long time. Therefore, an objective of the comparative evaluation is to minimize the number of residences displaced and the effects on those residents displaced.
Commercial/ Industrial	Businesses	The Study Area includes a number of businesses situated either along or in the vicinity of the existing Highway 3 corridor. The construction of new or upgraded highway facilities could either require the displacement of businesses located within the proposed right-of-way and/or negatively affect their commercial viability through reduced exposure to passing traffic. Therefore, an objective of the comparative evaluation is to minimize the number of businesses displaced and not negatively affect the commercial viability of existing businesses.
Agricultural	Agricultural Resources	The Study Area is generally comprised of prime agricultural lands (Class 1 – 3 soils) with approximately 90% of the land base being currently associated with agricultural land uses. Systematic tile drainage systems have been constructed extensively throughout the non-urbanized portion of the Study Area with two local areas dominated by intensive agricultural operations (several large greenhouse facilities in the Leamington area and several large active livestock facilities south of Highway 3 between Malden Road and Howard Avenue). The existing agricultural land uses could be consumed or sterilized through new or upgraded highway facilities. As a result, an objective of the comparative evaluation is to minimize the consumption/sterilization of existing agricultural land uses.
Heritage	Cultural landscape units	The Study Area includes a variety of Cultural Landscape Units (CLU) including farm complexes, roadscapes, and historical settlements. These landscapes tend to be valued by a community and are significant to the understanding of the history of a people or place. Highway construction activities have the potential to impact cultural landscapes. This includes the loss or displacement of landscapes through their removal and the disruption of landscapes by introducing physical, visual, audible or atmospheric elements that are not in keeping with their setting.
	Built heritage features	The Study Area includes a variety of Built Heritage Features (BHF) including houses, barns, sheds, and structures, and stores. These features are associated with architectural, cultural, social, political, economic, and/or military history and land to be identified as being important to a community. Highway construction activities have the potential to impact BHFs. This includes the loss or displacement of such features through their removal or demolition and the disruption of such features by introducing physical, visual, audible or atmospheric elements that are not in keeping with their setting.
Archaeology	Archaeological potential	The Study Area exhibits archaeological potential beyond the existing disturbed rights-of-way based on registered archaeological sites in the vicinity, the historical land use of the area, and the presence of several watercourses in the area. Highway projects can destroy existing precontact and historic archaeological remains through their construction (i.e. clearing, excavating, stockpiling, construction traffic, etc.). Therefore, all lands where work is proposed beyond 50 cm from existing disturbed rights-of-way should be subject to a Stage 2 archaeological assessment.

Factor/Criteria	Indicator	Rationale
Project Economics		
Capital cost	Construction cost	Construction cost has a major influence on the scheduling of the work and may affect the Ministry's capability to fund the project. Therefore, an objective of the comparative evaluation is to minimize the construction cost of the preferred planning alternative.
Maintenance cost	Maintenance cost	Annual maintenance costs are significant during the lifecycle of the project. Configuration and roadway elements potentially govern maintenance costs. As a result, an objective of the comparative evaluation is to minimize annual highway maintenance costs.
Utility cost	Utility relocation cost	Utility relocation costs are borne to create/reallocate space but does not contribute to the performance of the facility. Therefore, an objective of the comparative evaluation is to minimize the utility relocation costs associated with the preferred planning alternative.
Property cost	Total property expenditures	Property expenditures to acquire right-of-way are influenced by the quantity (area), location and land use of the required property but do not contribute to the performance of the facility. Therefore, an objective of the comparative evaluation is to minimize the total property expenditures of the preferred planning alternative.
Cash flow requirements	Duration of construction program	Cash flow requirements for the project may influence schedule. Lower cash flow requirements are preferable.

Once developed, the evaluation criteria/indicators were applied to each of the generated planning alternatives to identify potential effects on the environment as a means of determining the relative advantages and disadvantages for each alternative. With the relative advantages and disadvantages for each alternative determined, recommendations on whether to eliminate or carry forward a planning alternative were made.

6.3 Selection of the Preferred Planning Alternatives

6.3.1 Section 2 - Outer Drive to Essex Road 34 West Limit (Talbot Road), 6.9 km

The first four planning alternatives were all eliminated from further consideration in the study (see **Table 6.2**) for the following reasons:

Alternative 1 – Do Nothing. Although this alternative has the lowest potential negative effects on the natural and social/cultural environments and relatively minor overall costs, it does not address any of the safety and operational issues or needed capacity within the highway corridor. Consequently, it was eliminated from further consideration in the study.

Alternative 2 – Operational and Safety Improvements offers the following advantages:

- Addresses the safety and operational issues
- Tied for the least potential negative effects on the natural environment
- Relatively low potential negative effects on the social/cultural environment
- Relatively moderate overall costs

However, it does not address the corridor mobility needs of providing four through lanes. Alternative 6 – Hybrid Alternative, which combines this alternative with Alternative 4, better addresses the overall needs in the corridor. Therefore, unlike Alternative 6, this alternative was eliminated from further consideration in the study.

Alternative 3 – Increase Vehicle Occupancy includes the introduction of an enhanced transit presence and/or carpooling in the corridor to improve mobility and safety. Although this alternative is tied with the 'Do Nothing' with the least potential negative effects on the natural and social/cultural environments and has the second lowest overall costs of the alternatives considered, it requires a significant cultural change in the way area residents travel from one place to another in order to effectively improve mobility and safety. Therefore, the actual transfer of motorists from automobiles to transit or carpooling is expected to be minimal. In addition, if shuttle/transit are introduced slower speeds and frequent stops to serve local residents could increase travel time and decrease mobility, and therefore decrease mobility and safety at intersections. Since this alternative cannot address the identified concerns, it was eliminated from further consideration as a stand alone alternative in the study. It could be considered in conjunction with other improvements.

Alternative 4 – Add Capacity in the Existing Corridor addresses the four lane capacity needs and fits within the existing corridor, but does not provide the operational and safety improvements that are included in Alternative 2. Alternative 6 – Hybrid Alternative, which combines this alternative with Alternative 2, better addresses the overall needs in the corridor. Therefore, unlike Alternative 6, this alternative was eliminated from further consideration in the study.

The last two planning alternatives developed for Section 2, Planning Alternative 5 – Add Capacity in a New Corridor and Planning Alternative 6 – Hybrid Alternative**,** were both recommended for further consideration based on the comparative evaluation carried out (see **Table 6.2**).

The rationale for carrying these two alternatives forward is summarized below:

Alternative 5 – Add Capacity in a New Corridor. Although this alternative has higher potential negative effects on the natural and social/cultural environments and relatively higher overall costs than the other alternatives considered, it has the following advantages:

- Effectively addresses the safety and operational issues within the corridor
- Provides the needed capacity through a new facility without entrances.

A new corridor would increase safety by eliminating all entrances along the highway. Mobility for long distance travellers would therefore be enhanced; however, short distance and local users would be inconvenienced by having to travel farther to reach the new Highway 3. The character of the new highway would be similar to Section 3 providing more consistency and comfort to drivers. It's expected that a new alignment would affect fewer utilities.

Recognizing the transportation advantages and the fact that the majority of the potential negative effects on the natural and social/cultural environments could be minimized and/or possibly eliminated through standard mitigation measures, Alternative 5 was carried forward for further consideration.

Alternative 6 – Hybrid Alternative also offers the following advantages:

- Effectively addresses the safety and operational issues (i.e., rehabilitating pavement and minor intersection improvements, potentially realigning old Sexton Road, realigning Old Castle Road North, adding left/right turn lanes where required, maintaining existing entrances, and providing various median treatments for improved safety (TWLTL provides increased capacity and maintains direct access to existing entrances))
- Provides the required four-lane capacity essentially fitting it within the existing corridor/right-of-way
- Relatively low and moderate potential negative effects on the natural and social/cultural environments respectively
- Relatively moderate overall costs

In recognition of these advantages compared to the other alternatives considered, Alternative 6 was carried forward for further consideration.

Since both Alternatives 5 and 6 were recommended for further consideration, they were carried forward for a more detailed comparative evaluation in order to select a preferred planning alternative for Section 2. In order to carry out this more detailed comparative evaluation, specific measures were developed for each of the previously applied indicators. **Table 6.3** identifies these additional measures as well as summarizes their application to both Alternatives 5 and 6. The results of applying the measures were quantified specifically for some of the indicators and presented as ranges for some of the other indicators. This reflected the fact that each of these two recommended planning alternatives could be implemented in slightly different ways.

Table 6.2 – Section 2 – Planning Alternatives, Outer Drive to Talbot Road

Factor/Criteria	Indicator	Planning Alternatives					
		1	2	3	4	5	6
		Do Nothing (Base case) *include pavement rehabilitation*	**Operations and Safety Improvements Only** *include intersection improvements/ realignment, intersection consolidations, flush median(TWLTL), and pavement rehabilitation*	**Increase Vehicle Occupancy** *includes transit/shuttle service, carpooling, and pavement rehabilitation*	**Add Capacity in the Existing Corridor** *include intersection improvements, flush median(TWLTL), adding more lanes, and pavement rehabilitation*	**Add Capacity in a New Corridor and rehabilitate roadway in existing corridor** *include add lanes in the new corridor, and pavement rehabilitation in the existing corridor*	**Hybrid Alternative (Operational/Safety Improvements and Add Capacity in Existing Corridor)** *include intersection improvements/ realignment, intersection consolidations, flush median(TWLTL), adding more lanes, and pavement rehabilitation*
Transportation							
Geometrics	*Roadway alignment*	• Existing alignment with 1 curve remains	• Potential for realigning existing alignment with 1 curve	• Existing alignment with 1 curve remains	• Existing alignment with 1 curve remains	• New alignment required with 3 to 5 curves • Tight radii are necessary to connect new route to existing alignment at Highway 401 interchange (Section 1)	• Potential for realigning existing alignment with 1 curve
Mobility	*Travel demand*	• Does not accommodate the predicted traffic volume	• Partially accommodates predicted traffic volume	• Partially accommodates predicted traffic volume	• Accommodates predicted traffic volume	• Accommodates predicted traffic volume	• Accommodates predicted traffic volume
	Travel time	• Travel time increased	• Travel time decreased	• Travel time increased (slower speed/ frequent stops with introduction of transit/shuttle service), or decreased (introduction of carpooling)	• Travel time decreased	• Travel time increased (longer highway length)	• Travel time decreased
	Intersection operations	• Intersection operations degrade	• Intersection operations improved	• Intersection operations degrade	• Intersection operations improved	• Intersection operations improved	• Intersection operations improved
	Major travel patterns	• Does not accommodate major travel patterns at Walker Road intersection	• Potential for accommodating major travel patterns at Walker Road intersection	• Does not accommodate major travel patterns at Walker Road intersection	• Potential for accommodating major travel patterns at Walker Road intersection	• Potential for accommodating major travel patterns at Walker Road intersection	• Potential for accommodating major travel patterns at Walker Road intersection
Safety	*Collision potential*	• Collision potential increased	• Collision potential reduced	• Collision potential increased (slower speed/frequent stops with introduction of transit/shuttle service) or decreased (introduction of carpooling)	• Collision potential reduced	• Collision potential reduced	• Collision potential reduced
	Intersection/ entrance frequency/type	• Existing intersection/ entrance frequency and type remain	• Potential for reducing intersection/entrance frequency	• Existing intersection/ entrance frequency and type remain	• Existing intersection/ entrance frequency and type remain	• Existing intersection/ entrance frequency/type remain within the existing corridor, and no entrances permitted in the new corridor	• Potential for reducing intersection/entrance frequency
	Adjacent resident safety for entering/ exiting the highway	• Adjacent resident safety entering/ exiting the highway decreased	• Adjacent resident safety entering/ exiting the highway increased	• Adjacent resident safety entering/ exiting the highway decreased	• Adjacent resident safety entering/ exiting the highway increased	• Adjacent resident safety entering/ exiting the highway increased	• Adjacent resident safety entering/ exiting the highway increased

Factor/Criteria	Indicator	Planning Alternatives					
		1	**2**	**3**	**4**	**5**	**6**
		Do Nothing (Base case) *include pavement rehabilitation*	**Operations and Safety Improvements Only** *include intersection improvements/ realignment, intersection consolidations, flush median(TWLTL), and pavement rehabilitation*	**Increase Vehicle Occupancy** *includes transit/shuttle service, carpooling, and pavement rehabilitation*	**Add Capacity in the Existing Corridor** *include intersection improvements, flush median(TWLTL), adding more lanes, and pavement rehabilitation*	**Add Capacity in a New Corridor and rehabilitate roadway in existing corridor** *include add lanes in the new corridor, and pavement rehabilitation in the existing corridor*	**Hybrid Alternative (Operational/Safety Improvements and Add Capacity in Existing Corridor)** *include intersection improvements/ realignment, intersection consolidations, flush median(TWLTL), adding more lanes, and pavement rehabilitation*
	Accommodate multi-use needs	• Existing corridor allows for farm equipment movement • 1 trail crossing exists (2 lanes)	• Existing corridor allows for farm equipment movement • 1 trail crossing exists (2 to 5 lanes)	• Existing corridor allows for farm equipment movement • 1 trail crossing exists (2 lanes)	• Existing corridor allows for farm equipment movement • 1 trail crossing exists (4 to 5 lanes)	• Existing corridor allows for farm equipment movement, but farm equipment prohibited from using the new corridor • 2 trail crossing exists (each with 2 lanes)	• Existing corridor allows for farm equipment movement • 1 trail crossing exists (4 to 5 lanes)
	Driver comfort/task	• High driver task	• Potential to lower driver task	• High driver task	• High driver task	• Potential to lower driver task with majority of traffic moved to new corridor	• High driver task
Constructability	*Utility impacts*	• No disruption to utilities	• Disruption to utilities (water, bell, hydro, and gas)	• No disruption to utilities	• Disruption to utilities (water, bell, hydro, and gas)	• Disruption to utilities (water, bell, hydro, and gas)	• Disruption to utilities (water, bell, hydro, and gas)
Natural Environment							
Vegetation	*Wooded areas*	• No wooded areas removed	• No wooded areas removed	• No wooded areas removed	• No wooded areas removed	• Portion of 2 wooded areas potentially removed	• No wooded areas removed
Surface water	*Surface watercourses*	• No new watercourse crossings or realignments	• No new watercourse crossings or realignments	• No new watercourse crossings or realignments	• No new watercourse crossings or realignments	• 2 potential new watercourse crossings (Pike Creek tributaries – have been modified for agricultural purposes) and 1 potential watercourse realignment (Canard River sub-watershed tributary – has been modified for agricultural purposes)	• No new watercourse crossings or realignments
Groundwater	*Beach ridges*	• 1.3 km of beach reach crossed	• 1.3 km of beach reach crossed	• 1.3 km of beach reach crossed	• 1.3 km of beach reach crossed	• 2.1 km of beach reach crossed	• 1.3 km of beach reach crossed
Social/Cultural Environment							
Property	*Property requirements*	• No property requirements	• Minor property requirements	• No property requirements	• Minor property requirements	• Significant property requirements	• Minor property requirements
Noise	*Ambient noise after construction*	• Minor noise level increase anticipated (2017)	• Minor noise level increase anticipated (2017)	• Minor noise level increase anticipated (2017)	• Minor noise level increase anticipated (2017)	• Significant noise level decrease in the existing corridor (2017), but significant noise level increase in the new corridor (2017)	• Minor noise level increase anticipated (2017)
Commercial/ industrial	*Businesses*	• No businesses displaced	• No businesses displaced	• No businesses displaced	• Potentially 2 businesses displaced	• Potentially 2 businesses displaced	• Potentially 2 businesses displaced
Agriculture	*Agricultural resources*	• No consumption of agricultural land use	• No consumption of agricultural land use	• No consumption of agricultural land use	• No consumption of agricultural land use	• Significant consumption of agricultural land uses	• No consumption of agricultural land use

Factor/Criteria	Indicator	Planning Alternatives					
		1	**2**	**3**	**4**	**5**	**6**
		Do Nothing (Base case) *include pavement rehabilitation*	**Operations and Safety Improvements Only** *include intersection improvements/ realignment, intersection consolidations, flush median(TWLTL), and pavement rehabilitation*	**Increase Vehicle Occupancy** *includes transit/shuttle service, carpooling, and pavement rehabilitation*	**Add Capacity in the Existing Corridor** *include intersection improvements, flush median(TWLTL), adding more lanes, and pavement rehabilitation*	**Add Capacity in a New Corridor and rehabilitate roadway in existing corridor** *include add lanes in the new corridor, and pavement rehabilitation in the existing corridor*	**Hybrid Alternative (Operational/Safety Improvements and Add Capacity in Existing Corridor)** *include intersection improvements/ realignment, intersection consolidations, flush median(TWLTL), adding more lanes, and pavement rehabilitation*
Heritage	*Cultural landscape units*	• No removal/disruption of cultural landscape units anticipated	• 6 CLU disrupted	• No removal/disruption of cultural landscape units anticipated	• 6 CLU disrupted	• 6 CLU disrupted	• 6 CLU disrupted
	Built heritage features (BHF)	• No disruption/displacement of BHF anticipated	• 1 BHF displaced and 3 BHF disrupted	• No disruption/displacement of BHF anticipated	• 1 BHF displaced and 3 BHF disrupted	• 1 BHF displaced	• 1 BHF displaced and 3 BHF disrupted
Archaeology	*Archaeological potential*	• No impacts anticipated to lands beyond 50cm from the existing disturbed ROW	• Potential impacts anticipated to lands beyond 50cm from the existing disturbed ROW	• No impacts anticipated to lands beyond 50cm from the existing disturbed ROW	• Potential impacts anticipated to lands beyond 50cm from the existing disturbed ROW	• Potential impacts anticipated to lands beyond 50cm from the existing disturbed ROW	• Potential impacts anticipated to lands beyond 50cm from the existing disturbed ROW
Project Economics							
Capital cost	*Construction cost*	• Minor capital cost	• Moderate capital cost	• Minor capital cost	• Moderate capital cost	• Significant capital cost	• Moderate capital cost
Utility cost	*Utility relocation cost*	• No utility relocation cost	• Minor utility relocation cost	• No utility relocation cost	• Minor utility relocation cost	• Moderate utility relocation cost	• Minor utility relocation cost
Property cost	*Total property expenditures*	• No property cost	• Minor property cost	• No property cost	• Minor property cost	• Significant property cost	• Minor property cost
Cash flow requirements	*Duration of construction program*	• Single year construction program and no on-going (annual) cost	• Single year construction program and no on-going (annual) cost	• Single year construction program and on-going (annual) carpool program (manage rideshare; “guaranteed-ride-home”, etc.) and/or transit system costs	• Multi- year construction program and no on-going (annual) cost	• Multi- year construction program and no on-going (annual) cost	• Multi- year construction program and no on-going (annual) cost
	Other requirements	• No other requirements	• No other requirements	• Public education program required	• No other requirements	• No other requirements	• No other requirements
Recommendations		• **Does not address any of the identified concerns**	• **Partially addresses the identified concerns**	• **Potentially address some of the identified concerns**	• **Partially addresses the identified concerns**	• **Addresses the identified concerns with impacts that can be eliminated and/or mitigated through standard mitigative measures**	• **Addresses the identified concerns with impacts that can be eliminated and/or mitigated through standard mitigative measures**
		Eliminated from further consideration	**Eliminated from further consideration**	**Eliminated from further consideration**	**Eliminated from further consideration**	**Carry forward for further consideration**	**Carry forward for further consideration**

Table 6.3 – Section 2 – Outer Drive to Talbot Road

Factor/Criteria	Indicator	Measure	Planning Alternatives	
			5 - Add Capacity in a New Corridor and Rehabilitate roadway in existing corridor	**6 - Hybrid Alternative (Operational/Safety Improvements and Add Capacity in Existing Corridor)**
			Quantification	**Quantification**
			The alternative involves the construction of a new (bypass) 4 lane road corridor on new right-of-way parallel and to the south of the existing Highway 3 right-of-way. In addition, the existing road will be rehabilitated to a serviceable condition.	*The alternative involves the widening of the existing 2 lane roadway within the existing right-of-way to provide a minimum of 4 basic lanes. Intersection and safety improvements are also included.*
Transportation				
Geometrics	*Roadway alignment*	Design speed	• 100 km/h to 120 km/h • restriction to 80 km/h at Highway 401 interchange through ramps	• 100 km/h
		Segment length of roadway	• 9.1 km	• 8.8 km
		No. of curves	• 5	• 1
		Min/Max curve radius	• Min: R-500 • Max: R-5000	• R-582.125 (maintain existing)
		Total length of curved alignment	• 2.9 km	• 0.3 km
		Total length of tangential alignment	• 6.2 km	• 8.5 km
Mobility	*Travel demand*	Flow density (2017 DHV)	• 240 (existing corridor) • 2160 (new corridor)	• 2400
	Travel time	Minutes traversing road (2017 DHV)	• 8.3 min. (new highway, 2 lanes) • 7.1 min. (new highway, 4 lanes)	• 6.9 min. (4 lanes)
	Intersection operations	V/C ratio at Walker Road (2017)	• Existing Intersection • LOS A (4 lanes on Walker) • New Intersection • LOS C (4 lanes on Walker and Hwy. 3)	• LOS D (4 lanes on Hwy. 3) • LOS B (4 lanes on Walker and Hwy. 3)
	Accommodate major travel patterns	Turning volume at Walker Road (2017 DHV)	• Existing Highway • 130 east approach • 100 west approach • 1090 north approach • 1040 south approach • New Highway • 1190 east approach • 900 west approach • 1040 north approach • 510 south approach	• 1320 east approach • 1000 west approach • 1090 north approach • 510 south approach
Safety	*Collision potential*	C/Year	• Existing corridor • 8.8 (2 lanes) • New Corridor • 50.1 to 57.7 (2 lanes) • 49.4 to 56.8 (4 lanes undivided) • 33.4 to 38.4 (4 lanes divided)	• Existing corridor • 64.2 (2 lanes) • 63.4 (4 lanes undivided) • 53.8 (5 lanes)
	Intersection/ entrance frequency/type	No. of intersections	• 3 + 6 on existing corridor	• 6
		No. of entrances	• 0	• 69 residential entrances • 20 commercial/institutional entrances • 12 field entrances
	Resident safety enter/exit highway	Potential traffic volume reduction on existing road (by 2017)	• 21,150 AADT	• 0
	Accommodate multi-use needs	Agricultural vehicle usage	• Agricultural vehicles will be prohibited from using new roadway • Agricultural vehicles can continue to use existing corridor	• Agricultural vehicles can continue to use existing corridor
		Trail crossing	• 2 crossings (Chrysler Greenway)	• 1 crossing (Chrysler Greenway)

Factor/Criteria	Indicator	Measure	Planning Alternatives	
			5 - Add Capacity in a New Corridor and Rehabilitate roadway in existing corridor	**6 - Hybrid Alternative (Operational/Safety Improvements and Add Capacity in Existing Corridor)**
			Quantification	**Quantification**
			The alternative involves the construction of a new (bypass) 4 lane road corridor on new right-of-way parallel and to the south of the existing Highway 3 right-of-way. In addition, the existing road will be rehabilitated to a serviceable condition.	*The alternative involves the widening of the existing 2 lane roadway within the existing right-of-way to provide a minimum of 4 basic lanes. Intersection and safety improvements are also included.*
	Driver comfort/task	No. of conflict points eliminated	• 101 entrances • 1 intersection	• If service road provided, 35 entrances will be eliminated
Constructability	*Utility impacts*	Hydro towers impacted	• 2 Hydro towers require relocation	• No impacts
		Pipelines impacted	• No impacts anticipated to the 3 pipelines crossing the existing corridor west of Sexton Side Road • Permit approvals required for 3 pipelines crossing the new corridor west of Sexton Side Road (Federal) • COCHIN Pipeline, NGL DOME Pipeline	• No impacts anticipated to the 3 pipelines crossing the existing corridor west of Sexton Side Road • COCHIN Pipeline, NGL DOME Pipeline
Natural Environment				
Vegetation	*Wooded areas*	No, size, and type of wooded areas removed	• 2 • 1.2 ha of a 6 ha (20%) immature white ash removed • 0.6 ha of a 2 ha (30%) immature red oak wooded area removed	• Several individual trees may be impacted
Surface water	*Surface watercourses*	No. of new watercourse crossings	• 2 • Pike Creek tributaries – have been modified for agricultural purposes	• No new watercourse crossing unless service roads provided
		No. and length of watercourse realignments	• 1 • 270 m of a Canard River subwatershed tributary – has been modified for agricultural purposes	• No watercourse realignments
Groundwater	*Beach ridges*	Length of beach ridge crossed	• 1.3 (existing corridor) • 0.8 km (new corridor) • Total. 2.1 km	• 1.3 km
Social/Cultural Environment				
Property	*Property requirements*	No. of properties impacted	• 29	• 38 with Service Roads

Factor/Criteria	Indicator	Measure	Planning Alternatives	
			5 - Add Capacity in a New Corridor and Rehabilitate roadway in existing corridor	**6 - Hybrid Alternative (Operational/Safety Improvements and Add Capacity in Existing Corridor)**
			Quantification	**Quantification**
			The alternative involves the construction of a new (bypass) 4 lane road corridor on new right-of-way parallel and to the south of the existing Highway 3 right-of-way. In addition, the existing road will be rehabilitated to a serviceable condition.	*The alternative involves the widening of the existing 2 lane roadway within the existing right-of-way to provide a minimum of 4 basic lanes. Intersection and safety improvements are also included.*
		Total property required	• 75 ha (ROW) • 27.0 ha (Buyout) • 102.0 ha (Total)	• 1.5 ha (ROW) • 0.6 ha (Buyout) • 2.1 ha (Total)
		No. of potential buyouts	• 1 (future subdivision) • Potentially 2 commercial properties at NE and SE quadrants of Walker Road/Highway 3 intersection	• Potentially 2 commercial properties at NE and SE quadrants of Walker Road/Highway 3 intersection
Noise	*Ambient noise after construction*	Noise level increased/ decreased (2017)	• +5 to 8 dBA (2 receivers) • +8 to 10 dBA (2 receivers) • >+10 dBA (3 receivers) • -5 to 10 dBA (69 receivers)	• 1 dBA increase in the existing corridor
Commercial/ Industrial	*Businesses*	No. and type of businesses displaced	• Potentially 2 commercial properties at NE and SE quadrants of Walker Road/Highway 3 intersection	• Potentially 2 commercial properties at NE and SE quadrants of Walker Road/Highway 3 intersection
		Existing business exposure to vehicles based on average vehicle per day (2017 AADT)	• 2,350 •	• 23,500
Agriculture	*Agricultural Resources*	No. of farms affected	• 45	• 0
		Total agricultural area consumed or sterilized	• 75 ha (Included land currently being used for farming that may be revised for the development of sub-division)	• 0 ha
Heritage	*Cultural landscape units*	No. of CLU potentially disrupted/displaced	• 6 disrupted (4 roadscapes and 2 farm complex)	• 6 disrupted
	Built heritage features	No. of BHF potentially disrupted/displaced	• 1 displaced	• 1 displaced • 3 disrupted
Archaeology	*Archaeological potential*	Total area subjected to Stage 2 assessment	• 75 ha (moderate to high potential)	• 1.0 ha if service roads or distributor driveways are provided (moderate to high potential)

Factor/Criteria	Indicator	Measure	Planning Alternatives	
			5 - Add Capacity in a New Corridor and Rehabilitate roadway in existing corridor	**6 - Hybrid Alternative (Operational/Safety Improvements and Add Capacity in Existing Corridor)**
			Quantification	**Quantification**
			The alternative involves the construction of a new (bypass) 4 lane road corridor on new right-of-way parallel and to the south of the existing Highway 3 right-of-way. *In addition, the existing road will be rehabilitated to a serviceable condition.*	*The alternative involves the widening of the existing 2 lane roadway within the existing right-of-way to provide a minimum of 4 basic lanes. Intersection and safety improvements are also included.*
Project Economics				
Capital cost	*Construction cost*	Anticipated construction cost	• $21.8 M to $29.1 M • ($1.8M rehabilitating existing) ($19.4 M to $26.7 M new corridor) • ($0.6M Walker Road widening) •	• $8.3 M to $11.8 M • ($7.0 M to $10.5 M widening) ($0.7M rehabilitation) • ($0.6M Walker Road widening)
Maintenance cost	*Maintenance cost*	Annual maintenance cost	• $200k (MTO) • $97k (County, assuming transfer) • $297k (Total)	• $194 k
Utility cost	*Utility relocation cost*	Cost of relocate hydro towers	• $500k	• $0
Property cost	*Total property expenditures*	Property required to provide proposed right-of-way	• $2.1 M	• $0.1 M if Service Road is provided
		Property buyout cost	• $4.27 M	• $0.07 M
Cash flow requirements	*Duration of construction program*	Timing when funding is required	• 5 year delivery time assumed • $3.2 M (Year 2) • $3.2 M (Year 3) • $10.9 M to $14.5 M (Year 4) • $10.9 M to $14.5 M (Year 5)	• 5 year delivery time assumed • $0.09 M (Year 2) • $0.09 M (Year 3) • $4.1 M to $5.9 M (Year 4) • $4.1 M to $5.9 M (Year 5)

The principal differences between the two alternatives are highlighted in **Table 6.4**.

Table 6.4: Principal Differences between Alternatives 5 and 6 (Section 2)

Criteria	Alternative 5 – Add Capacity in a New Corridor	Alternative 6 – Hybrid Alternative in the Existing Corridor
Transportation	▪ More roadway curves – less desirable geometrics	▪ Better geometrics in terms of length/number of curves
	▪ Two major intersections required at Walker Road (existing and new corridors); operation is at LOS ‘C’ at 2017.	▪ One major intersection required at Walker Road (existing to be reconstructed); operation is at LOS ‘D ‘at 2017.
	▪ No entrances – access restricted to public road intersections	▪ 101 entrances (69 residential, 20 comm./inst., 12 field)
	▪ Two crossings of the Chrysler Greenway	▪ One crossing of the Chrysler Greenway
	▪ Two hydro towers to be relocated	▪ No hydro tower relocations
	▪ Flexibility for a potential new border crossing connection would be more complex and costly	▪ Flexibility for a potential new border crossing corridor to Highway 401 is maintained
Natural Environment	▪ New corridor intercepts 2 watercourses and affects two small woodlots.	▪ Selected trees are affected
	▪ 2.1km of sensitive beach ridge impacted	▪ 1.3km of sensitive beach ridge impacted
Social/Cultural Environment	▪ 102 ha of new ROW required – primarily agricultural lands	▪ 2.1 ha of new ROW required
	▪ Noise significantly decreased in existing corridor, but increased for a few receivers in new corridor	▪ Minor noise increase in existing corridor
	▪ 45 farms affected	▪ No impacts to farmlands
	▪ 75ha of moderate to high archaeological potential	▪ 1ha of moderate to high archaeological potential, (if service roads provided)
	▪ Existing businesses will not be supported (exposure and direct access to 90% of all traffic in this corridor will be lost)	▪ Existing businesses will be supported (exposure and direct access to all traffic in this corridor will be retained)
	▪ Residents and businesses will experience out-of-way travel to Windsor as existing Highway 3 will have to be closed at Outer Boulevard, and Outer Boulevard will only be grade-separated at Highway 3	▪ Direct access to Windsor is maintained
Project Economics	▪ $21.8 to 29.1M capital cost	▪ $8.2 to 9.9M capital cost
	▪ $6.4M property cost	▪ $0.2 M property cost

While Alternatives 5 and 6 have similar traffic carrying capabilities, Alternative 6 (widening within the existing Highway 3 corridor) has lower property and agricultural impacts. It also has less impact on the businesses along the existing corridor because it maintains their exposure to, and access for, all traffic in this corridor. The new alignment corridor would reduce this exposure by up to 90%. Alternative 6 also

provides a direct route to Windsor for the adjacent residences and businesses. A new alignment corridor requires the existing Highway 3 to be closed just west of Outer Drive, and Outer Drive to be grade-separated at new Highway 3, resulting in significant out-of-way travel to and from Windsor.

The existing corridor better serves the study objectives as they relate to linking the communities, supporting the local economy, and limiting impacts on the natural environment. The new corridor would also complicate the opportunity for a connection to a potential new border-crossing corridor along a Highway 401 extension. Alternative 6 would result in a minor increase in noise levels for receivers in the existing corridor, similar to all the alternatives.

Safety for both the travelling public and adjacent property users is a major concern in this area. Therefore, transferring 90% of the traffic to a new corridor without direct access has the potential for reducing accidents. However, several related factors merit consideration, including:

- The geometrics on the new alignment are less desirable due to the introduction of horizontal curves, including an inner loop at the Highway 401 Interchange. This may significantly offset the margin of additional safety provided by not having direct access to the new alignment.
- The out-of-way travel incurred by the closure of existing Highway 3 just west of Outer Drive and grade-separating Outer Drive on the new Highway 3 corridor results in additional travel distance, more intersections, and an increased number of left and right turns. This also has the potential to offset the margin of additional safety provided by not having direct access to the new alignment.
- There are opportunities to increase capacity and improve the safety for vehicles entering/exiting Highway 3 from/to private driveways by constructing a two-way left turn lane (TWLTL). A tall wall barrier would also improve safety by restricting left turns to public road intersections and turnarounds.
- The local School Boards could be encouraged to revise the school bus routing to eliminate the requirement for children to cross Highway 3.

Safe gap opportunities (>6 sec) were analyzed for the existing corridor (Alternative 6). Delays of up to 2.5 minutes for turning traffic can be expected at the end of the planning horizon (2017). The conclusion of this analysis is that Highway 3 will operate safely within the planning horizon. As previously noted in **Section 4.4**, the traffic growth projections for Sections 2 and 3 are optimistic. If traffic growth rates are lower than assumed, the delay time for turning traffic at 2017 would decrease.

In summary, the Ministry can provide reasonably similar facilities, in terms of mobility and safety, for both the existing and new corridor. Although Alternative 5 (New Corridor) has the advantage of reduced noise, Alternative 6 (Existing Corridor) has the advantage of a superior alignment, low property and agricultural impacts, reduced business impacts, reduced out-of-way travel to the Windsor area, less impact on the natural environment and more flexibility in accommodating a future potential new border crossing connection. In addition, the capital cost for Alternative 5 (New Corridor) is in the range of $21.8 to $29.1 M versus a capital cost for Alternative 6 (Existing Corridor) of approximately $8.2 to $9.9 M.

On the basis of this detailed evaluation, ***Alternative 6 – Hybrid Alternative*** was selected as the preferred planning alternative for Section 2.

6.3.2 Section 3 – Essex Road 34 West Limit (Talbot Road) to Essex Road 34 (Leamington By-pass), 26.6 km

Unlike Section 2 where two planning alternatives were recommended for further consideration before selecting a preferred planning alternative, ***Planning Alternative 5 – Hybrid Alternative*** was selected as the preferred planning alternative for Section 3 without the need for further more detailed comparative evaluation (see **Table 6.5**). The reasons for selecting Planning Alternative 5 – Hybrid Alternative was as follows:

- Addresses the transportation factor requirements best among the five alternatives comparatively evaluated. Therefore, there are no outstanding identified concerns.
- The potential negative effects on the natural and social/cultural environment are expected to be relatively minor and similar to the next best planning alternative in terms of addressing the transportation factor requirements. In addition, the relatively minor potential negative effects can be minimized through the application of standard mitigation measures.

The other planning alternatives were all eliminated from further consideration in the study for the following reasons:

Alternative 1-Do Nothing and ***Alternative 3 - Increase Vehicle Occupancy*** were eliminated for the same reasons they were in Section 2 (see **Section 6.3.1**).

Alternative 2 – Operational and Safety only addresses the safety and operational issues without addressing the mobility (capacity) issue despite having the potential for less potential negative effects on the natural and social/cultural environment.

Alternative 4 – Add Capacity in the Existing Corridor addresses the capacity requirements within the corridor, but does not include other operational and safety improvements provided via Alternative 5 – Hybrid Alternative despite having relatively similar potential negative effects on the natural and social/cultural environment and anticipated costs.

Table 6.5 – Section 3 – Planning Alternatives, Talbot Road to Essex Road 34

Factor/Criteria	Indicator	Planning Alternatives				
		1	2	3	4	5
		Do Nothing (Base case) *include rehabilitate infrastructure*	**Operations and Safety Improvements Only** *include intersection improvements/ realignment, intersection consolidations, flush median, and rehabilitate infrastructure*	**Increase Vehicle Occupancy** *include transit/shuttle service, carpooling, and rehabilitate infrastructure*	**Add Capacity in the Existing Corridor** *include intersection improvements, adding more lanes, and rehabilitate infrastructure*	**Hybrid Alternative (Operational/Safety Improvements and Add Capacity in Existing Corridor)** *include intersection improvements/ realignment, intersection consolidations, adding more lanes, flush median, and rehabilitate infrastructure*
Transportation						
Geometrics	*Sideroad alignment*	• Existing alignments remain	• Potential for re-aligning existing sideroads	• Existing alignments remain	• Existing alignments remain	• Potential for re-aligning existing sideroads
Mobility	*Travel demand*	• Does not accommodate predicted traffic volume between Talbot and Essex 23	• Partially accommodates predicted traffic volume between Talbot and Essex 23	• Partially accommodates predicted traffic volume between Talbot and Essex 23	• Accommodates predicted traffic volume between Talbot and Essex 23	• Accommodates predicted traffic volume between Talbot and Essex 23
	Intersection operations	• Intersection operations degrade	• Potential for improving intersection operations	• Intersection operations degrade	• Potential for improving intersection operations	• Potential for improving intersection operations
	Local travel patterns	• Existing local travel patterns remain	• Potential for affecting existing local travel patterns	• Existing local travel patterns remain	• Existing local travel patterns remain	• Potential for affecting existing local travel patterns
Safety	*Collision potential*	• Collision potential increased	• Collision potential decreased	• Collision potential increased (slower speed/frequent stops with introduction of transit/shuttle service) or decreased (introduction of carpooling)	• Collision potential decreased	• Collision potential decreased
	Intersection frequency	• Existing intersection frequency remains	• Potential for reducing intersection frequency	• Existing intersection frequency remains	• Existing intersection frequency remains	• Potential for reducing intersection frequency
Natural Environment						
Vegetation	*Wooded areas*	• No wooded areas removed	• No wooded areas removed	• No wooded areas removed	• Portions of 7 wooded areas potentially removed	• Portions of 7 wooded areas potentially removed
Social/Cultural Environment						
Property	*Property requirements*	• No property requirements	• Minor property requirements	• No property requirements	• Minor property requirements	• Minor property requirements
Agriculture	*Agricultural resources*	• No consumption of agricultural land use	• Minor consumption of agricultural land use	• No consumption of agricultural land use	• Minor consumption of agricultural land use	• Minor consumption of agricultural land use
Heritage	*Cultural landscape units (CLU)*	• No removal/disruption of cultural landscape units anticipated	• Potential disruption of cultural landscape units anticipated	• No removal/disruption of cultural landscape units anticipated	• Potential disruption of cultural landscape units anticipated	• Potential disruption of cultural landscape units anticipated
Archaeology	*Archaeological potential*	• No impacts anticipated to lands beyond 50cm from the existing disturbed ROW	• Potential impacts anticipated to lands beyond 50cm from the existing disturbed ROW	• No impacts anticipated to lands beyond 50cm from the existing disturbed ROW	• Potential impacts anticipated to lands beyond 50cm from the existing disturbed ROW	• Potential impacts anticipated to lands beyond 50cm from the existing disturbed ROW
Project Economics						
Capital Cost	*Construction cost*	• Minor capital cost	• Moderate capital cost	• Minor capital cost	• Minor (intersection improvements) to significant (adding lanes) capital cost	• Minor (intersection improvements) to significant (adding lanes) capital cost
Property cost	*Total property expenditures*	• No property cost	• Minor property cost	• No property cost	• No property cost	• Minor property cost

Factor/Criteria	Indicator	Planning Alternatives				
		1	2	3	4	5
		Do Nothing (Base case) *include rehabilitate infrastructure*	**Operations and Safety Improvements Only** *include intersection improvements/ realignment, intersection consolidations, flush median, and rehabilitate infrastructure*	**Increase Vehicle Occupancy** *include transit/shuttle service, carpooling, and rehabilitate infrastructure*	**Add Capacity in the Existing Corridor** *include intersection improvements, adding more lanes, and rehabilitate infrastructure*	**Hybrid Alternative (Operational/Safety Improvements and Add Capacity in Existing Corridor)** *include intersection improvements/ realignment, intersection consolidations, adding more lanes, flush median, and rehabilitate infrastructure*
Recommendations		• **Does not address any of the identified concerns**	• **Partially addresses the identified concerns**	• **Potentially addresses some of the identified concerns**	• **Partially addresses the identified concerns**	• **Only planning alternative that addresses the identified concerns with impacts that can be eliminated and/or mitigated through standard mitigative measures**
		Eliminated from further consideration	**Eliminated from further consideration**	**Eliminated from further consideration**	**Eliminated from further consideration**	**Carry forward for further consideration**

7 DESIGN OPTIONS AND EVALUATION

Following the selection of the preferred planning alternatives, design options for implementing them were generated and evaluated leading to the selection of preferred design options for both Sections 2 and 3.

7.1 Section 2 - Outer Drive to Essex Road 34 West Limit (Talbot Road), 6.9 km

7.1.1 Generation of the Design Options

7.1.1.1 Highway 3 Mainline

Traffic demands require that the existing Highway 3 be widened to four lanes in Section 2. Three design options were developed to provide additional through lanes. In all cases, at-grade intersections are maintained and improved with turning lanes for left and right turn movements, where appropriate.

Option 2-A, Four Lanes with Narrow Flush Paved Median (**Exhibit 7.1**) provides a four-lane roadway with the through lanes separated by a 1.0 m to 1.5 m wide flush paved median. This is conceptually consistent with the road configuration developed in the 1960's Functional Planning Report.

Option 2-B, Four Lanes with TWLTL (**Exhibit 7.2)** proposes a 4 m to 5 m wide two-way left turn (TWLTL) lane to improve the safety for vehicles entering/exiting Highway 3 from/to private driveways, and to increase the capacity of the Highway.

Option 2-C, Four Lanes with Divided Median **(Exhibit 7.3)** provides a 6 m wide flush paved median with tall-wall barrier to prohibit left turns from entering/exiting private driveways and avoiding median crossover collisions. In this option, a turnaround is incorporated with the Oldcastle Road North realignment (**Exhibit 7.5**). Similarly, turnarounds at the west limit of Section 2 may be achieved by utilizing Outer Drive, Howard Avenue and Highway 3. Turnarounds at the east limit of Section 2 may be achieved by utilizing Essex Road 34.

7.1.1.2 Intersections

Oldcastle Road

The existing configuration at Oldcastle Road, where the north leg was originally realigned away from the former railway crossing, creates an undesireable intersection arrangement on Highway 3. The realignment created a discontinuity in Oldcastle Road resulting in two intersections located 105 m apart. The railway has now been removed, and the ROW is used for the Chrysler Greenway Trail.

A design option was developed for left turn lanes on Highway 3 to serve both intersections (**Exhibit 7.4**). However, this resulted in substandard geometry (two substandard back-to-back left turn lanes). Therefore, two additional design options were developed to line up the north and south leg of Oldcastle Road. In the first option, the north leg was realigned to line up with the south leg. **(Exhibit 7.5)**. The second option was prepared to re-align the south leg **(Exhibit 7.6)**.

Sexton Road

The current geometry at the Sexton Road intersection is less than desirable. The MTO previously purchased the right-of-way to facilitate the realignment of Sexton Road at some point in the future in order to improve the undesirable skew angle to a 90 degree intersection.

In conjunction with mainline options in Section 2, two sub-options have been developed to improve the intersection angle at Sexton Road. Sub-Option 1 applies to Mainline Options 2-A and 2-B, while Sub-Option 2 applies to Mainline Option 2-C. See **Exhibit 7.7**.

Sub-Option 1 or 2 will be evaluated to identify a preferred sub-option, which will then be included together with the preferred Mainline Option. The turnaround shown in Sub-Option 2 would only be included if Mainline Option 2-C is the preferred option.

7.1.2 Evaluation of the Design Options

After generating the design options for Section 2, they were comparatively evaluated according to a descriptive or qualitative assessment similar to the Planning Alternatives. The evaluation was undertaken based on criteria developed within the same factors (categories of consideration) representing the broad definition of the environment previously described in **Section 6.2** of this report. Within each category of consideration, study-specific evaluation criteria were developed based on a review of theMTO's Class EA for Provincial Transportation Facilities (2000), the existing conditions of the study area, the design options being considered, the need/justification for the project, and public/agency input (see **Table 7.1**).

Table 7.1 - Evaluation Criteria for Design Options

Categories of Consideration	Criteria
Transportation	▪ Potential effects on existing traffic operations ▪ Potential for enhancing user safety ▪ Potential for meeting highway design standards ▪ Potential effects on construction staging/scheduling ▪ Potential effects on existing utilities ▪ Potential for flexibility in the future
Natural Environment	▪ Potential for short-term construction related effects on downstream surface water quality and quantity ▪ Potential for altering surface watercourses ▪ Potential for loss of vegetation
Social Environment	▪ Potential for short-term traffic related effects on/or residents, businesses, community facilities and roadway users

Categories of Consideration	Criteria
	▪ Potential for removing residences, businesses and/or community facilities ▪ Potential effects on access ▪ Potential for requiring private property or temporary easements ▪ Potential effects on current development applications ▪ Potential for loss of possible archaeological resources ▪ Potential for disrupting built heritage features/cultural landscape units
Project Economics	▪ Potential capital costs

Once developed, the evaluation criteria were applied to each of the generated design options to identify potential effects on the environment as a means of determining the relative advantages (most preferred) and disadvantages (least preferred) for each option. With the relative advantages and disadvantages for each option determined, technically preferred design options were recommended.

7.1.3 Selection of the Technically Preferred Design Options

7.1.3.1 Highway 3 Mainline

Option 2-B, which maximizes the safety of entrance users without eliminating left turns to and from entrances, is recommended as the technically preferred design option (see **Table 7.2**).

7.1.3.2 Intersections

Oldcastle Road

The option of realigning the north leg of Oldcastle Road is recommended as the technically preferred design option. The disjointed Oldcastle Road was created to move the north leg away from the former railway. This significant constraint has been removed, therefore the north leg can be realigned back to provide a safer intersection. Not to eliminate the jog would create substandard intersections and potentially hazardous left turn lanes as shown in **Exhibit 7.4**. The south leg realignment shown in **Exhibit 7.6** carries unjustifiably high construction cost with the need to purchase a significant area for new right-of-way.

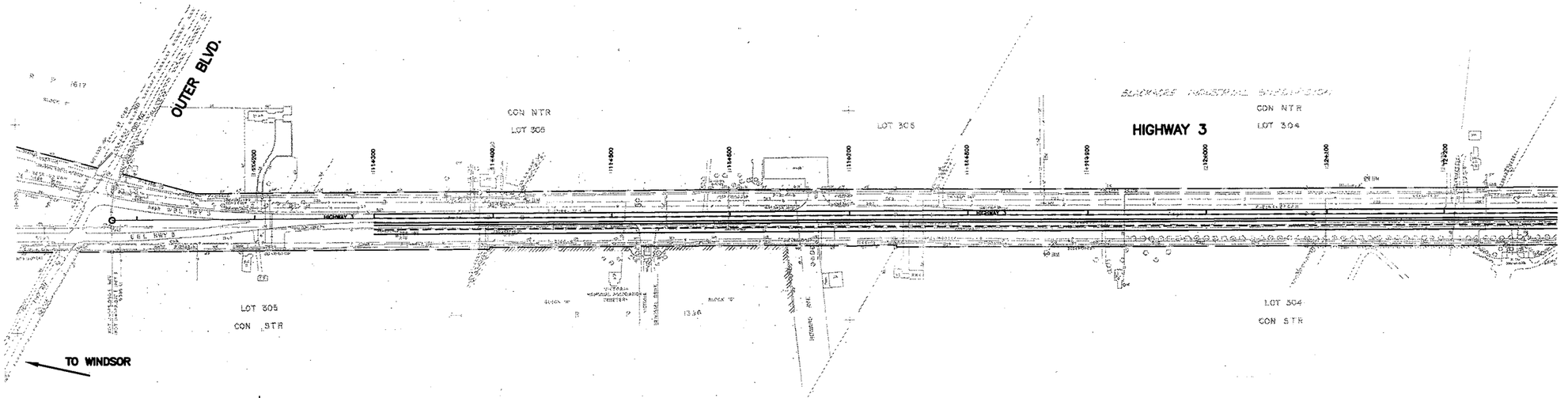
Sexton Road

The recommended minimum angle of an intersection is 70 degrees. The immediate approaches of Sexton Road, both on the north side and on the south side of Highway 3, were previously realigned to intersect Highway 3 at an angle of 80 degrees resulting in an offset intersection. However, the existing Sexton Road "road allowance" intersects Highway 3 at a 60 degree angle which provided an opportunity to improve the minimum angle of the intersection. With this in mind, several additional issues were considered in the evaluation of alternatives:

- There are no identified concerns relating to the operation of and safety at this intersection currently.
- At PIC #2, two written comments objected to the sub-options.
- Widening and improving the turning radius may impact private property in the southwest quadrant of the intersection.
- While it would be desirable that the realignment (Sexton Road Sub-Options 1 or 2, **Exhibit 7.7**) be implemented in conjunction with this project, the added cost of $350,000 is not justified at this time. However, the property previously purchased by MTO for the potential realignment should be retained by the MTO in order to retain the viability of the realignment option for implementation at some future date.

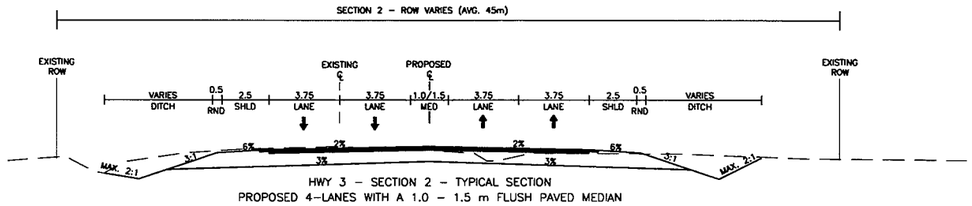
As a result of the above noted considerations, it is recommended that the Sexton Road realignment (Sub-Options 1 or 2) not be implemented until some later date.

TWP SANDWICH SOUTH



WEST LIMIT
SECTION 2

NOTE: MORE DETAILED PLANS FOR OUTER BLVD. INTERSECTION WILL BE DEVELOPED WHEN THE PREFERRED INTERCHANGE OPTION IS SELECTED. THE INTERSECTION IMPROVEMENTS WILL INCLUDE TRAFFIC SIGNALS AND WARRANTED TURNING LANES.



HWY 3 – SECTION 2 – TYPICAL SECTION
PROPOSED 4–LANES WITH A 1.0 – 1.5 m FLUSH PAVED MEDIAN

January 9, 2006

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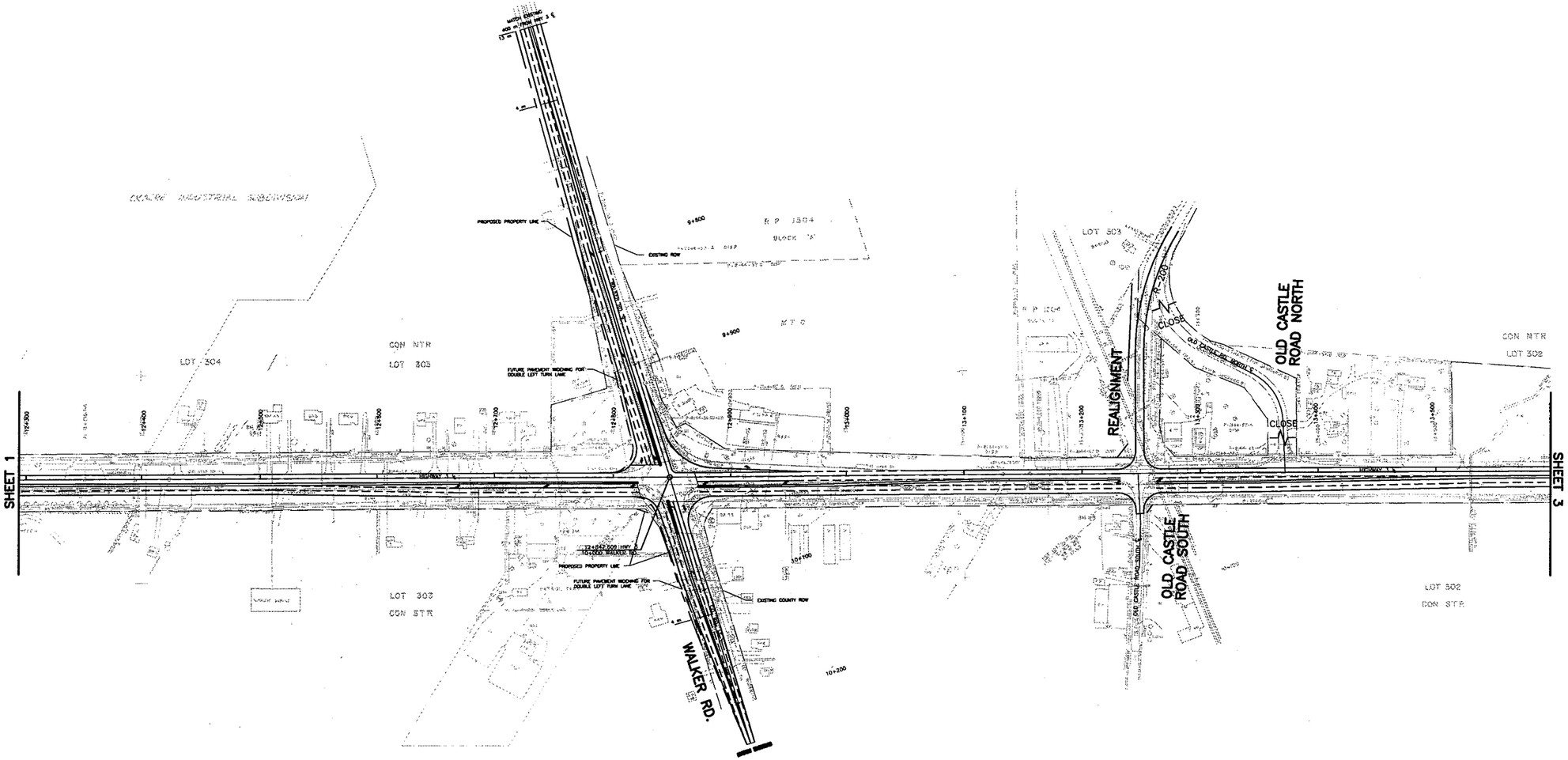
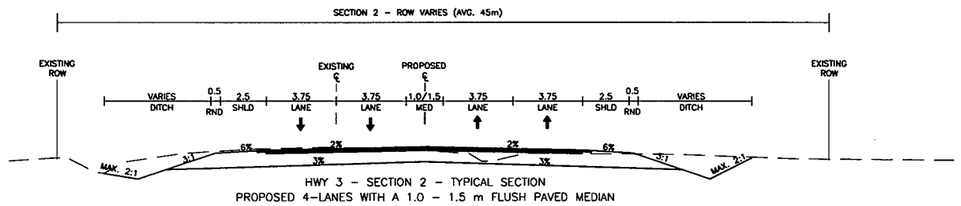
EarthTech A tyco International Ltd. Company	Ontario Ministry of Transportation	SCALE 20.0m 0 40.0m Horizontal DATE JANUARY 06,2006	W.P. 315-98-00 HIGHWAY No. 3 - WINDSOR TO LEAMINGTON ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN	SECTION 2 OUTER BLVD. TO ESSEX RD. 34 WEST LIMIT (TALBOT ROAD) OPTION 2 - A FOUR (4) LANES WITH A 1.0 - 1.5 m FLUSH PAVED MEDIAN	EXHIBIT 7.1 SHEET 1 OF 4





HWY 3 – SECTION 2 – TYPICAL SECTION
PROPOSED 4–LANES WITH A 1.0 – 1.5 m FLUSH PAVED MEDIAN

January 9, 2006

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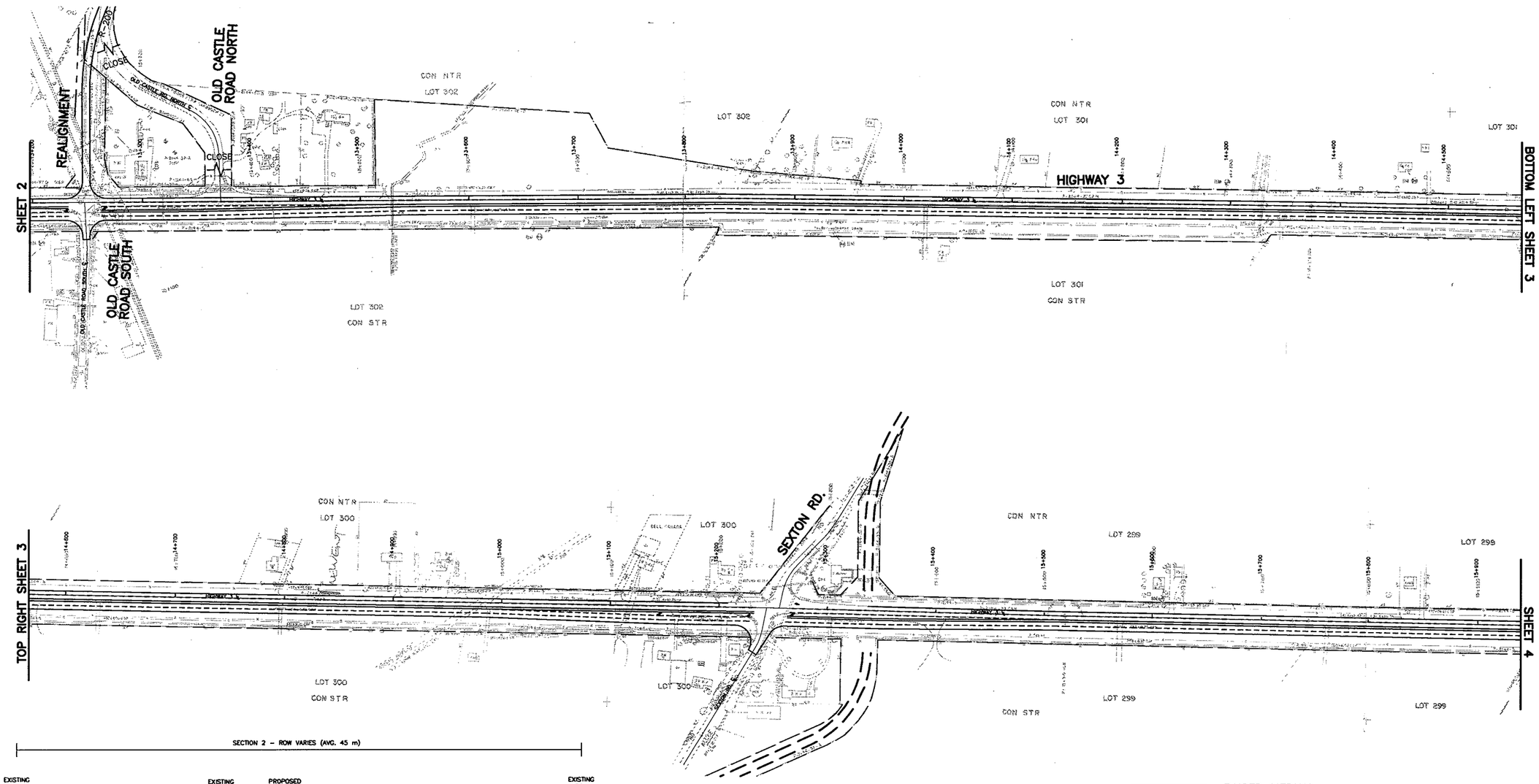
EarthTech A tyco International Ltd. Company	Ontario Ministry of Transportation	SCALE 20.0m 0 40.0m Horizontal DATE JANUARY 06,2006	W.P. 315-98-00 HIGHWAY No. 3 - WINDSOR TO LEAMINGTON ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN	SECTION 2 OUTER BLVD TO ESSEX RD. 34 WEST LIMIT (TALBOT RD.) OPTION 2 - A FOUR (4) LANES WITH A 1.0 - 1.5 m FLUSH PAVED MEDIAN	EXHIBIT 7.1 SHEET 2 of 4



January 9, 2006

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Horizontal

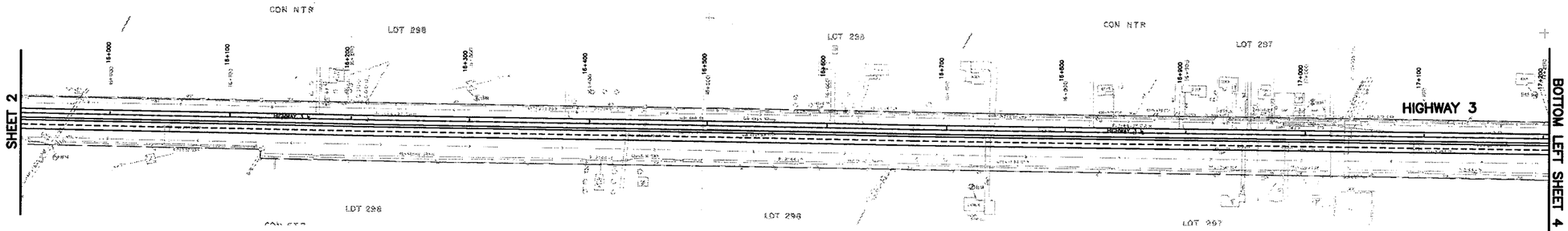
DATE
JANUARY 2006

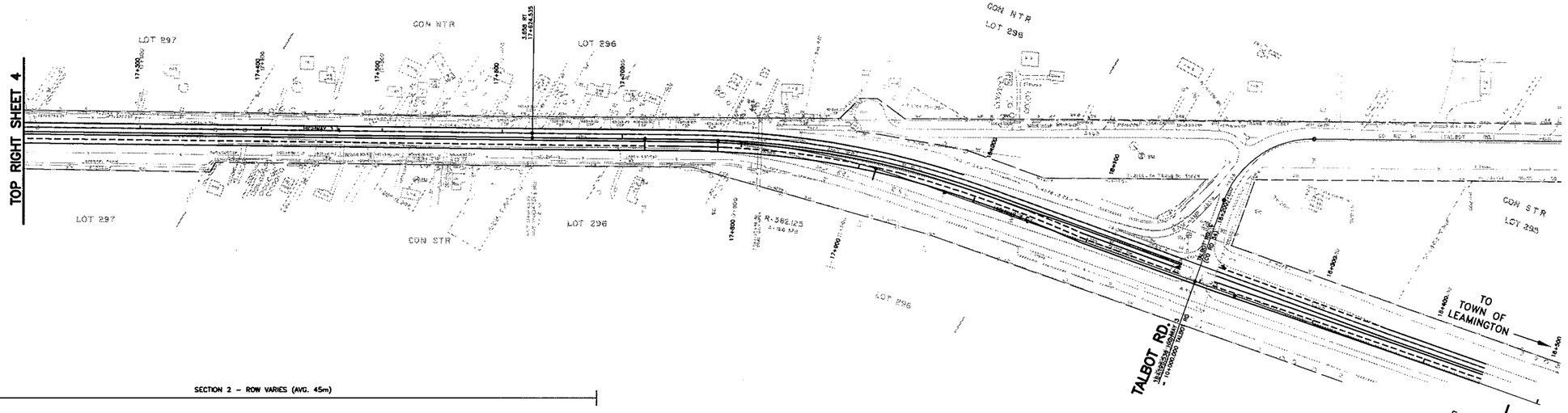
W.P. 315-98-00
HIGHWAY No. 3 - WINDSOR TO LEAMINGTON
ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN

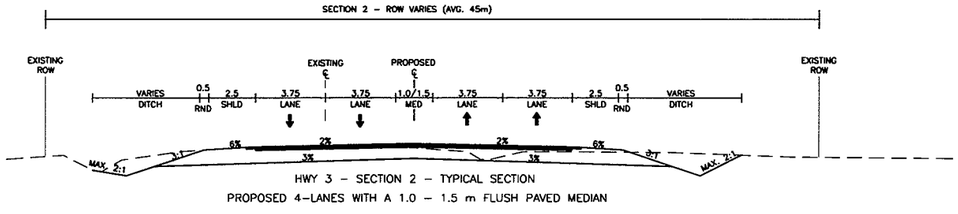
SECTION 2
OUTER BLVD. TO ESSEX RD. 34 WEST LIMIT (TALBOT RD.)
OPTION 2 - A
FOUR (4) LANES WITH A 1.0 - 1.5 m FLUSH PAVED MEDIAN

EXHIBIT 7.1

SHEET 3 of 4







HWY 3 – SECTION 2 – TYPICAL SECTION
PROPOSED 4–LANES WITH A 1.0 – 1.5 m FLUSH PAVED MEDIAN

RAISED MEDIAN
DIVIDED MEDIAN
EXISTING RIGHT–OF–WAY
PROPOSED RIGHT–OF–WAY
EXISTING SIGNALIZED INTERSECTION
PROPOSED SIGNALIZED INTERSECTION

January 9, 2006

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SCALE
20.0m 0 40.0m
Horizontal

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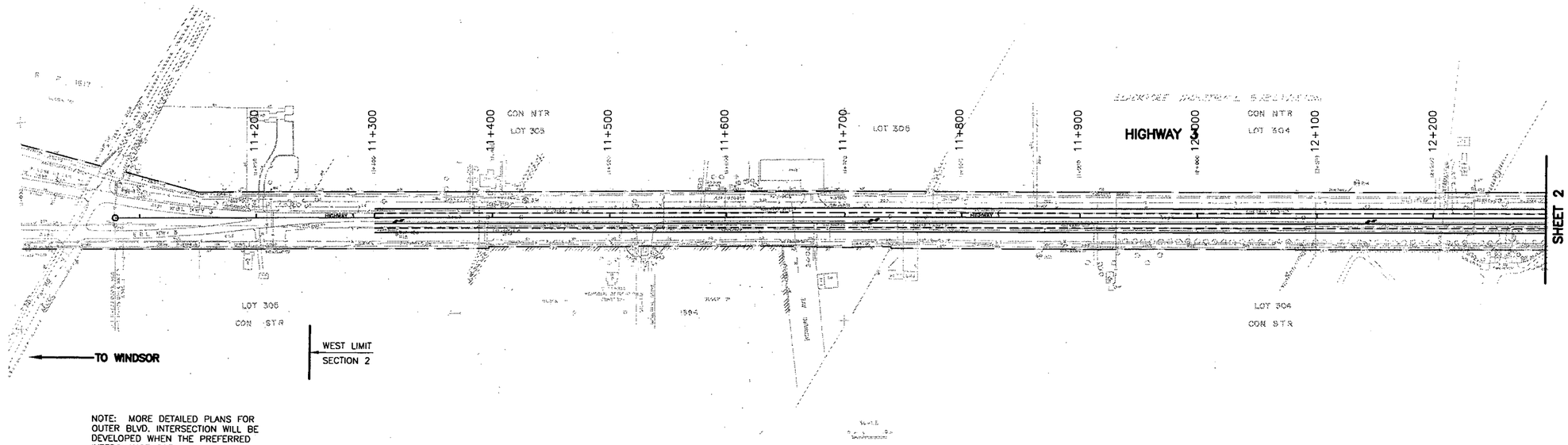
HIGHWAY No. 3 - WINDSOR TO LEAMINGTON
ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN

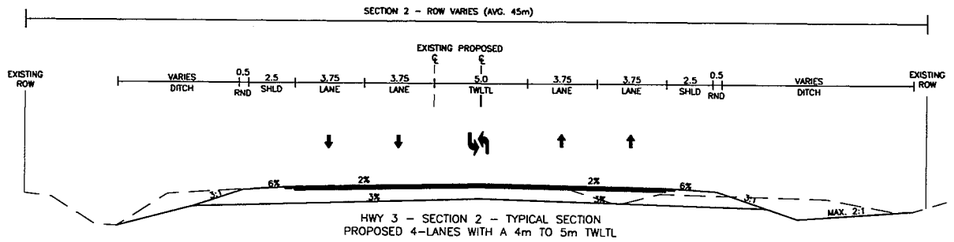
SECTION 2
OUTER BLVD. TO ESSEX RD. 34 WEST LIMIT (TALBOT RD.)
OPTION 2 - A
FOUR (4) LANES WITH A 1.0 - 1.5 m FLUSH PAVED MEDIAN

EXHIBIT 7.1

SHEET 4 of 4



NOTE: MORE DETAILED PLANS FOR OUTER BLVD. INTERSECTION WILL BE DEVELOPED WHEN THE PREFERRED INTERCHANGE OPTION IS SELECTED. THE INTERSECTION IMPROVEMENTS WILL INCLUDE TRAFFIC SIGNALS AND WARRANTED TURNING LANES.



HWY 3 – SECTION 2 – TYPICAL SECTION
PROPOSED 4–LANES WITH A 4m TO 5m TWLTL

January 9, 2006

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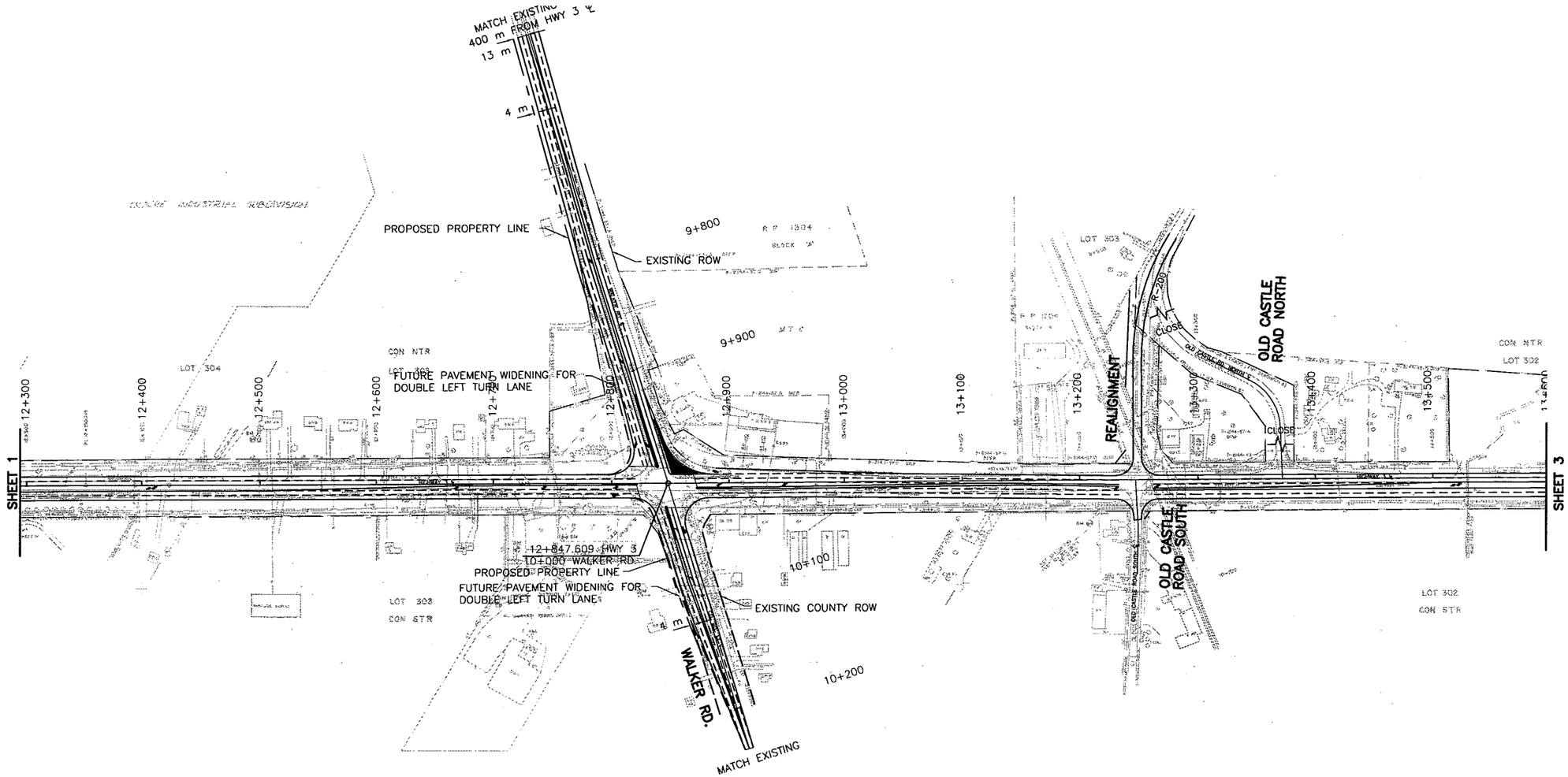
EarthTech A tyco International Ltd. Company	Ontario Ministry of Transportation	SCALE 20.0m 0 40.0m Horizontal DATE JANUARY 06, 2006	W.P. 315-98-00 HIGHWAY No. 3 - WINDSOR TO LEAMINGTON ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN	SECTION 2 OUTER BLVD. TO ESSEX RD. 34 WEST LIMIT (TALBOT RD.) OPTION 2-B FOUR (4) LANES WITH A 4 m TO 5 m TWO WAY LEFT TURN LANE	EXHIBIT 7.2 SHEET 1 OF 4



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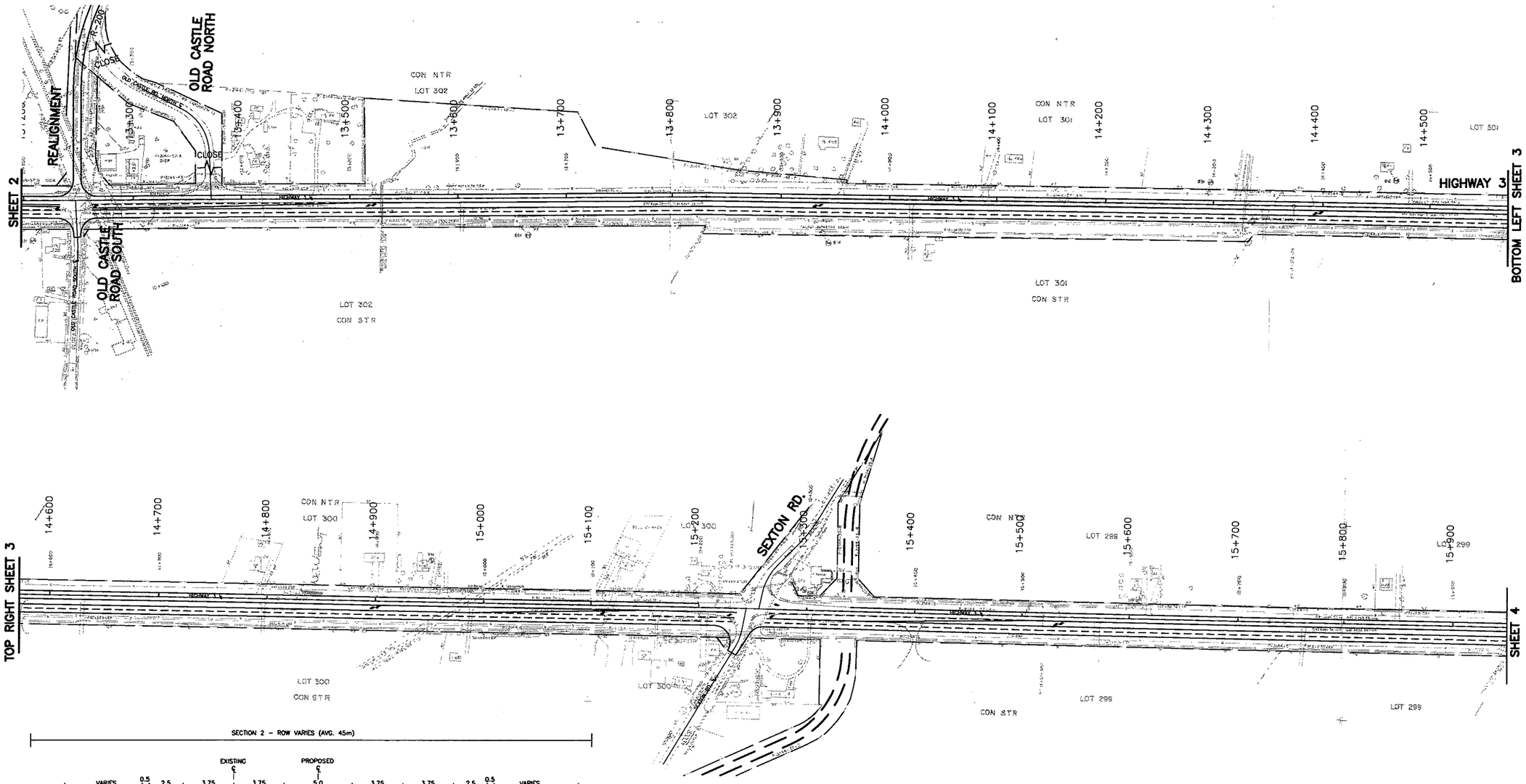

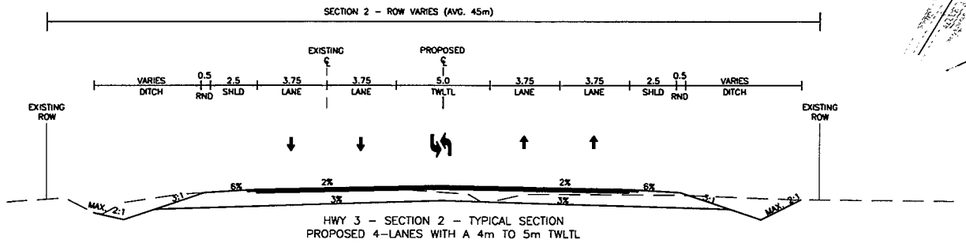

HWY 3 – SECTION 2 – TYPICAL SECTION
PROPOSED 4–LANES WITH A 4m TO 5m TWLTL

RAISED MEDIAN
DIVIDED MEDIAN
EXISTING RIGHT–OF–WAY
PROPOSED RIGHT–OF–WAY
EXISTING SIGNALIZED INTERSECTION
PROPOSED SIGNALIZED INTERSECTION

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HIGHWAY No. 3 - WINDSOR TO LEAMINGTON
ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN

SECTION 2
OUTER BLVD. TO ESSEX RD. 34 WEST LIMIT (TALBOT RD.)
OPTION 2-B
FOUR (4) LANES WITH A 4 m TO 5 m TWO WAY LEFT TURN

EXHIBIT 7.2

SHEET 3 OF 4

January 9, 2006

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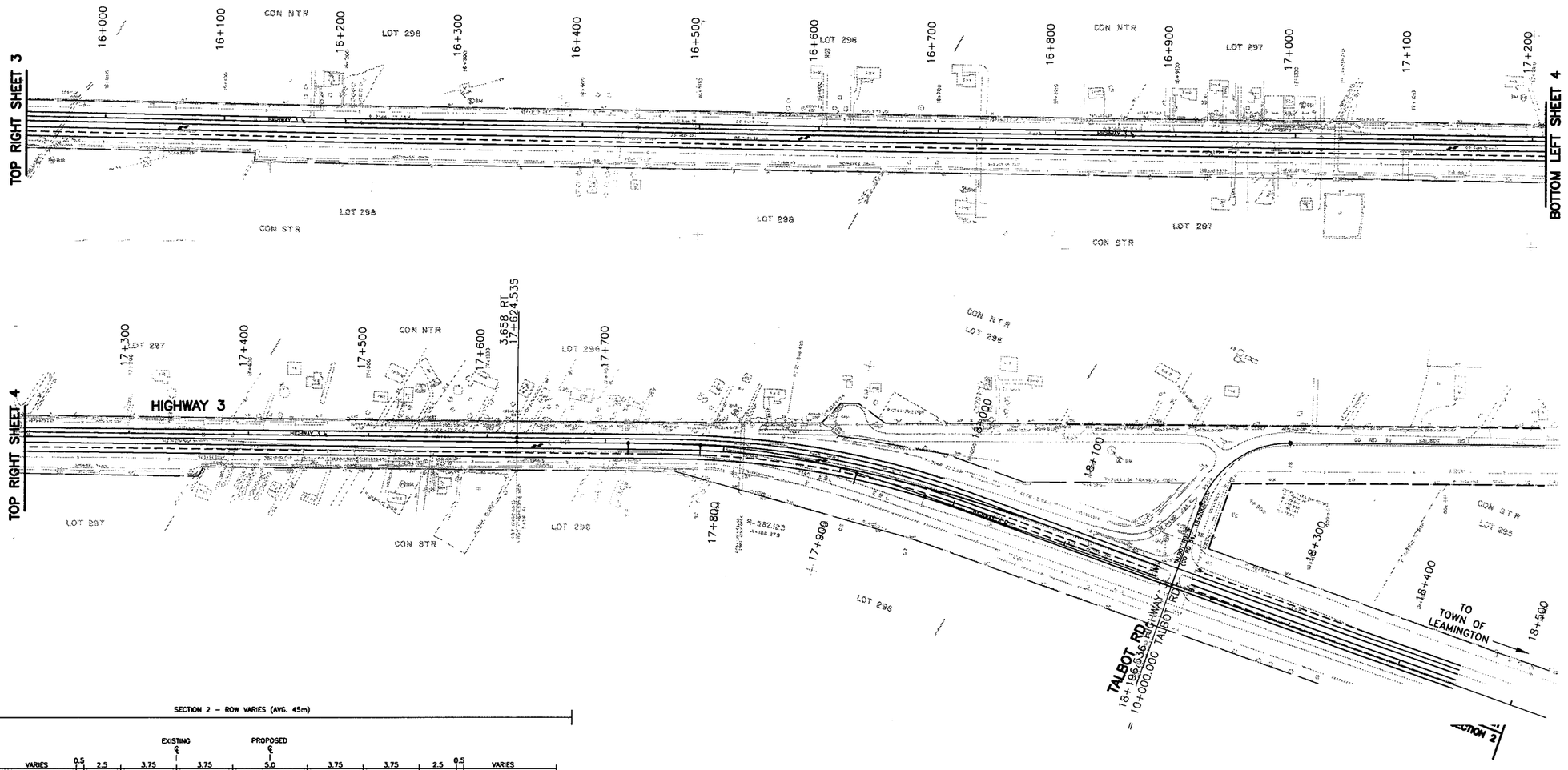

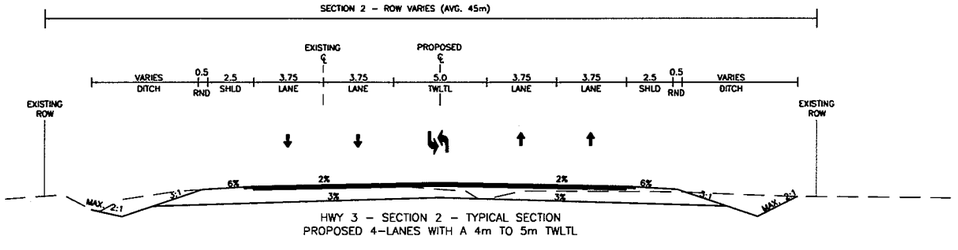

HWY 3 – SECTION 2 – TYPICAL SECTION
PROPOSED 4–LANES WITH A 4m TO 5m TWLTL

RAISED MEDIAN
DIVIDED MEDIAN
EXISTING RIGHT–OF–WAY
PROPOSED RIGHT–OF–WAY
EXISTING SIGNALIZED INTERSECTION
PROPOSED SIGNALIZED INTERSECTION

January 9, 2006

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JANUARY 06, 2005

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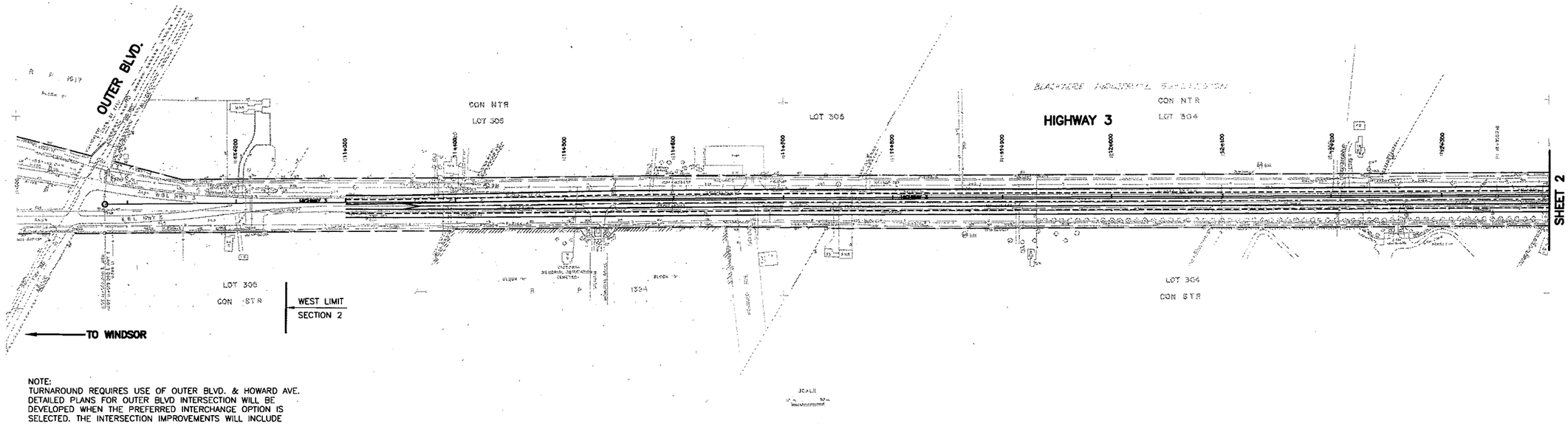
HIGHWAY No. 3 - WINDSOR TO LEAMINGTON
ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN

SECTION 2
OUTER BLVD. TO ESSEX RD. 34 WEST LIMIT (TALBOT RD.)
OPTION 2-B
FOUR (4) LANES WITH A 4 m TO 5 m TWO WAY LEFT TURN LANE

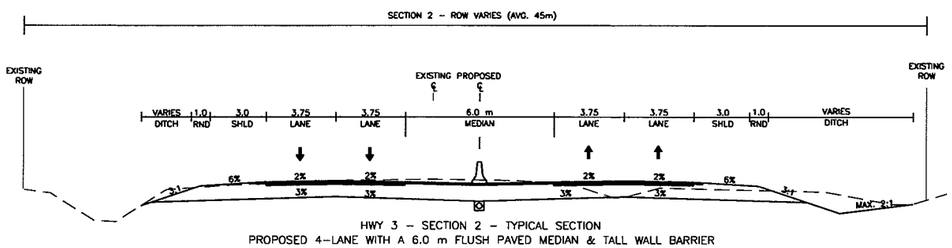
EXHIBIT 7.2

SHEET 4 OF 4

TWP SANDWICH SOUTH



NOTE:
TURNAROUND REQUIRES USE OF OUTER BLVD. & HOWARD AVE. DETAILED PLANS FOR OUTER BLVD INTERSECTION WILL BE DEVELOPED WHEN THE PREFERRED INTERCHANGE OPTION IS SELECTED. THE INTERSECTION IMPROVEMENTS WILL INCLUDE TRAFFIC SIGNALS AND WARRANTED TURNING LANES.



HWY 3 – SECTION 2 – TYPICAL SECTION
PROPOSED 4–LANE WITH A 6.0 m FLUSH PAVED MEDIAN & TALL WALL BARRIER

January 9, 2006

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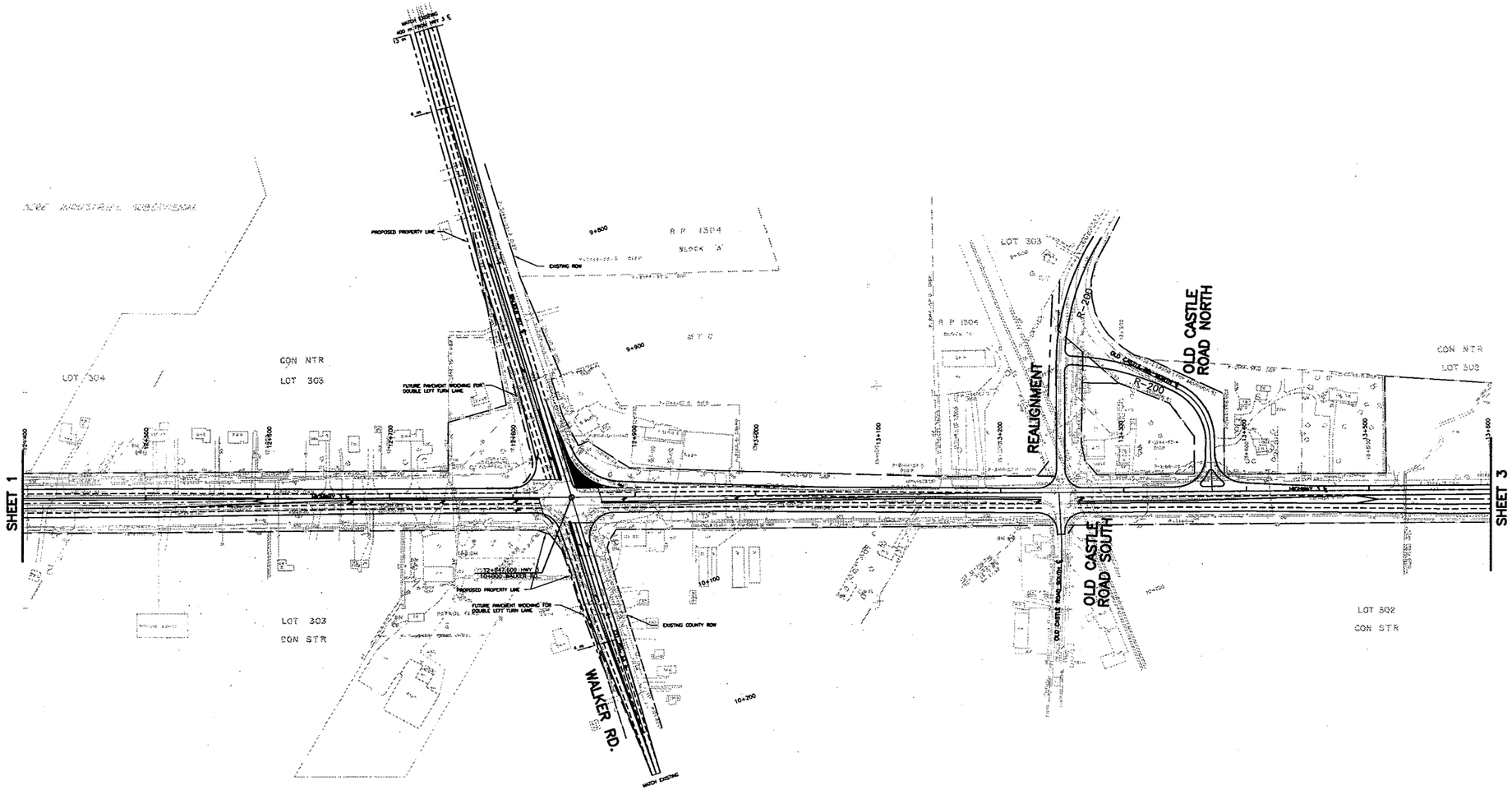

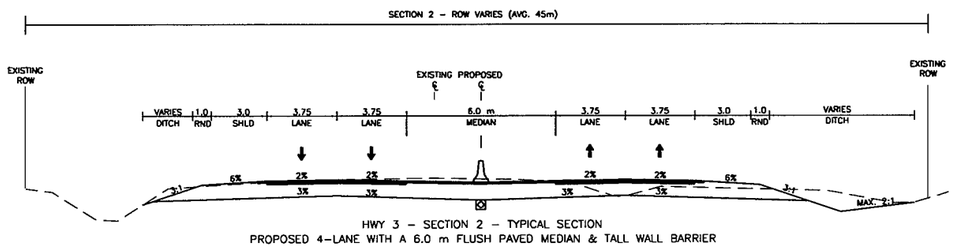

HWY 3 – SECTION 2 – TYPICAL SECTION
PROPOSED 4–LANE WITH A 6.0 m FLUSH PAVED MEDIAN & TALL WALL BARRIER

January 9, 2006

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Ontario

SCALE
20.0m 0 40.0m
Horizontal

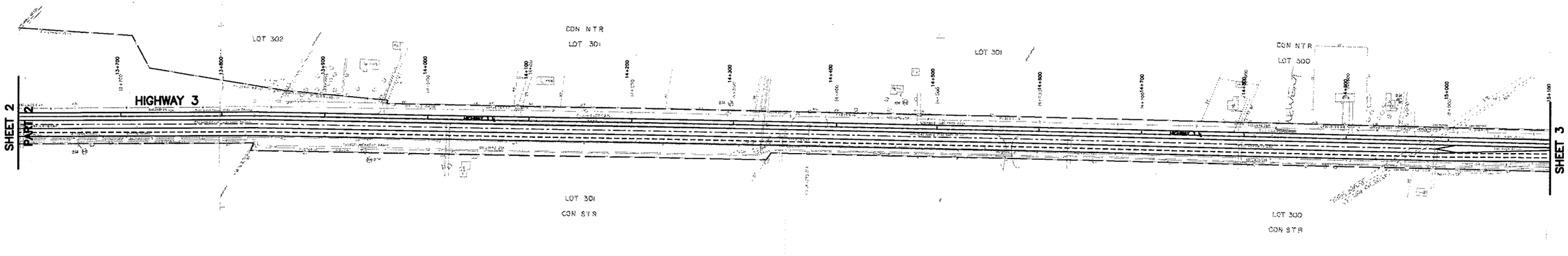
DATE
JANUARY 06, 2006

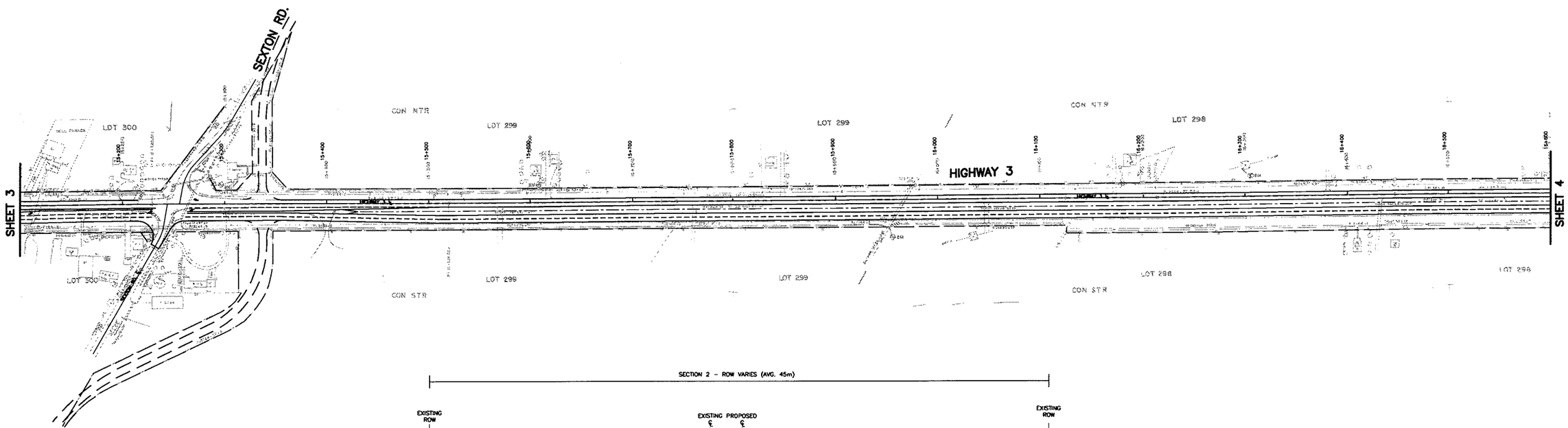
W.P. 315-98-00
HIGHWAY No. 3 - WINDSOR TO LEAMINGTON
ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN

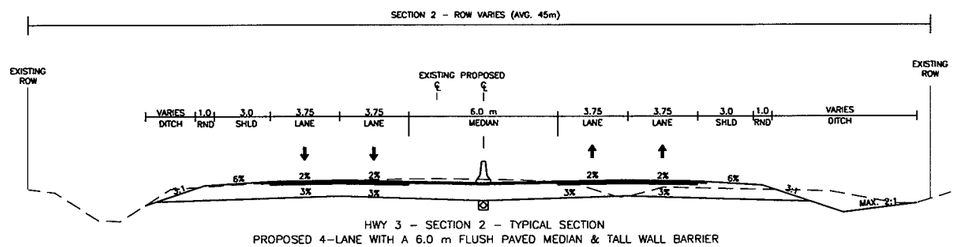
SECTION 2
OUTER BLVD. TO ESSEX RD. 34 WEST LIMIT (TALBOT RD.)
OPTION 2-C - FOUR (4) LANES WITH A 6.0 m FLUSH PAVED MEDIAN & TALL WALL BARRIER

EXHIBIT 7.3

SHEET 2 OF 4







HWY 3 – SECTION 2 – TYPICAL SECTION
PROPOSED 4–LANE WITH A 6.0 m FLUSH PAVED MEDIAN & TALL WALL BARRIER

EarthTech
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Ontario Ministry of Transportation

SCALE
20.0m 0 40.0m
Horizontal

DATE
JANUARY 06, 2006

W.P. 315-98-00
HIGHWAY No. 3 - WINDSOR TO LEAMINGTON
ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN

SECTION 2
OUTER BLVD. TO ESSEX RD. 34 WEST LIMIT (TALBOT RD.)
OPTION 2-C - FOUR (4) LANES WITH A 6.0 m FLUSH PAVED MEDIAN & TALL WALL BARRIER

EXHIBIT 7.3
SHEET 3 OF 4

January 9, 2006
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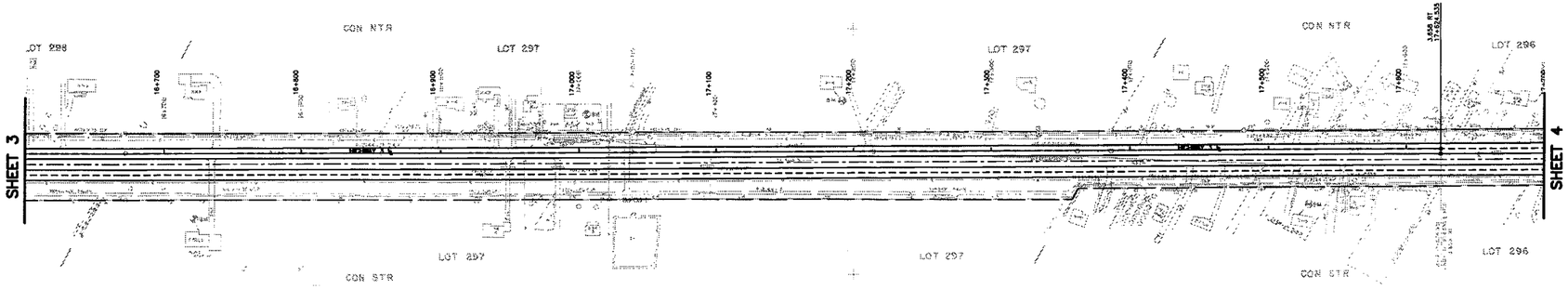
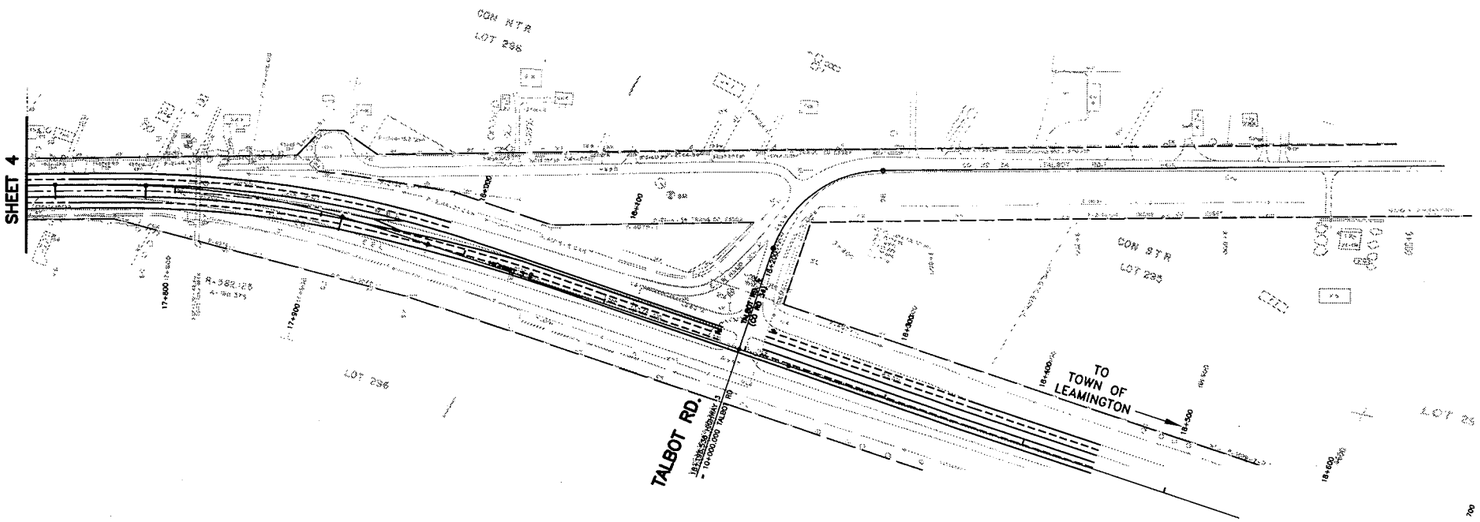
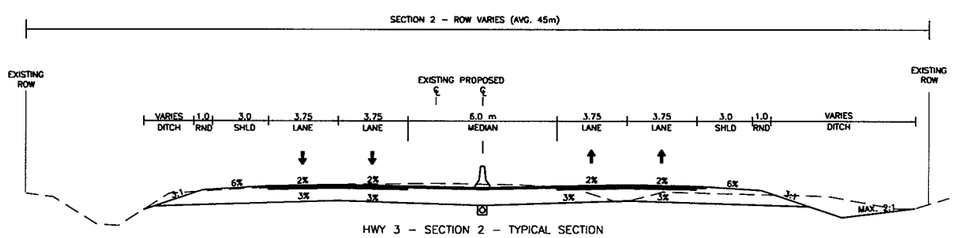
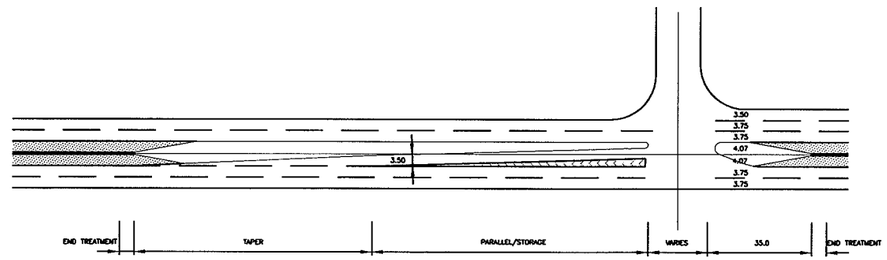






HWY 3 – SECTION 2 – TYPICAL SECTION
PROPOSED 4–LANE WITH A 6.0 m FLUSH PAVED MEDIAN & TALL WALL BARRIER



TYPICAL SIDEROAD INTERSECTION

January 9, 2006

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Horizontal

DATE
JANUARY 06,2006

W.P. 315-98-00
HIGHWAY No. 3 - WINDSOR TO LEAMINGTON
ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN

SECTION 2
OUTER BLVD. TO ESSEX RD. 34 WEST LIMIT (TALBOT RD.)
OPTION 2-C - FOUR (4) LANES WITH A 6.0 m FLUSH PAVED MEDIAN & TALL WALL BARRIER

EXHIBIT 7.3

SHEET 4 OF 4

EarthTech A tyco International Ltd. Company	Ministry of Transportation Ontario	SCALE 10.0m 0 20.0m Horizontal DATE JANUARY 06, 2006	W.P. 315-98-00 HIGHWAY No. 3 - WINDSOR TO LEAMINGTON ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN	SECTION 2 OLDCASTLE ROAD MINOR ADJUSTMENTS TO EXISTING CONDITION	EXHIBIT 7.4

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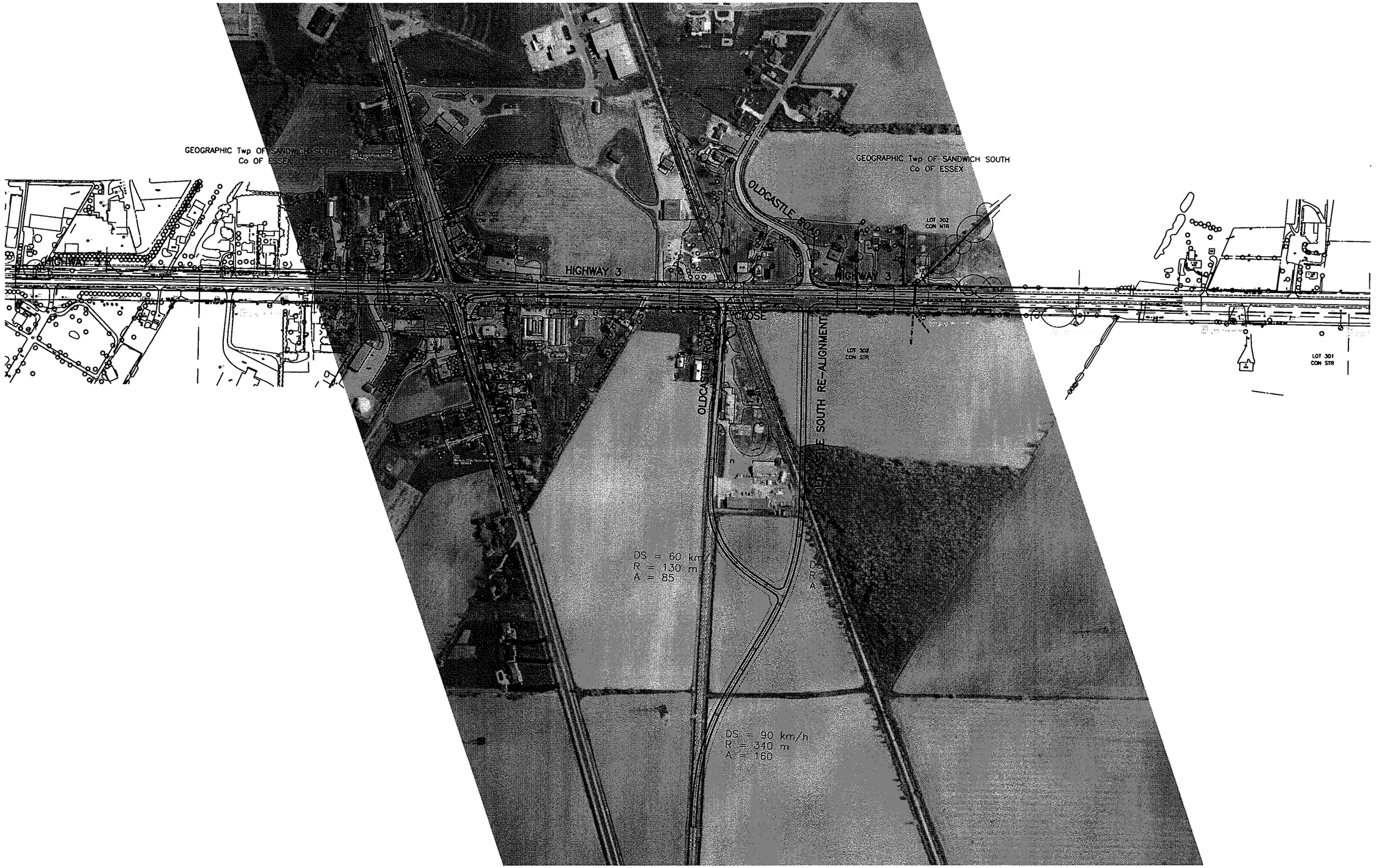
EarthTech A tyco International Ltd. Company	Ontario Ministry of Transportation	SCALE 10.0m 0 20.0m Horizontal DATE JANUARY 06, 2006	W.P. 315-98-00 HIGHWAY No. 3 - WINDSOR TO LEAMINGTON ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN	SECTION 2 OLDCASTLE ROAD REALIGNMENT PREFERRED DESIGN	EXHIBIT 7.5



EarthTech A tyco International Ltd. Company	Ontario Ministry of Transportation	SCALE 10.0m 0 20.0m Horizontal DATE JANUARY 06, 2006	W.P. 315-98-00 HIGHWAY No. 3 - WINDSOR TO LEAMINGTON ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN	SECTION 2 OLDCASTLE ROAD SOUTH REALIGNMENT	EXHIBIT 7.6

January 9, 2006

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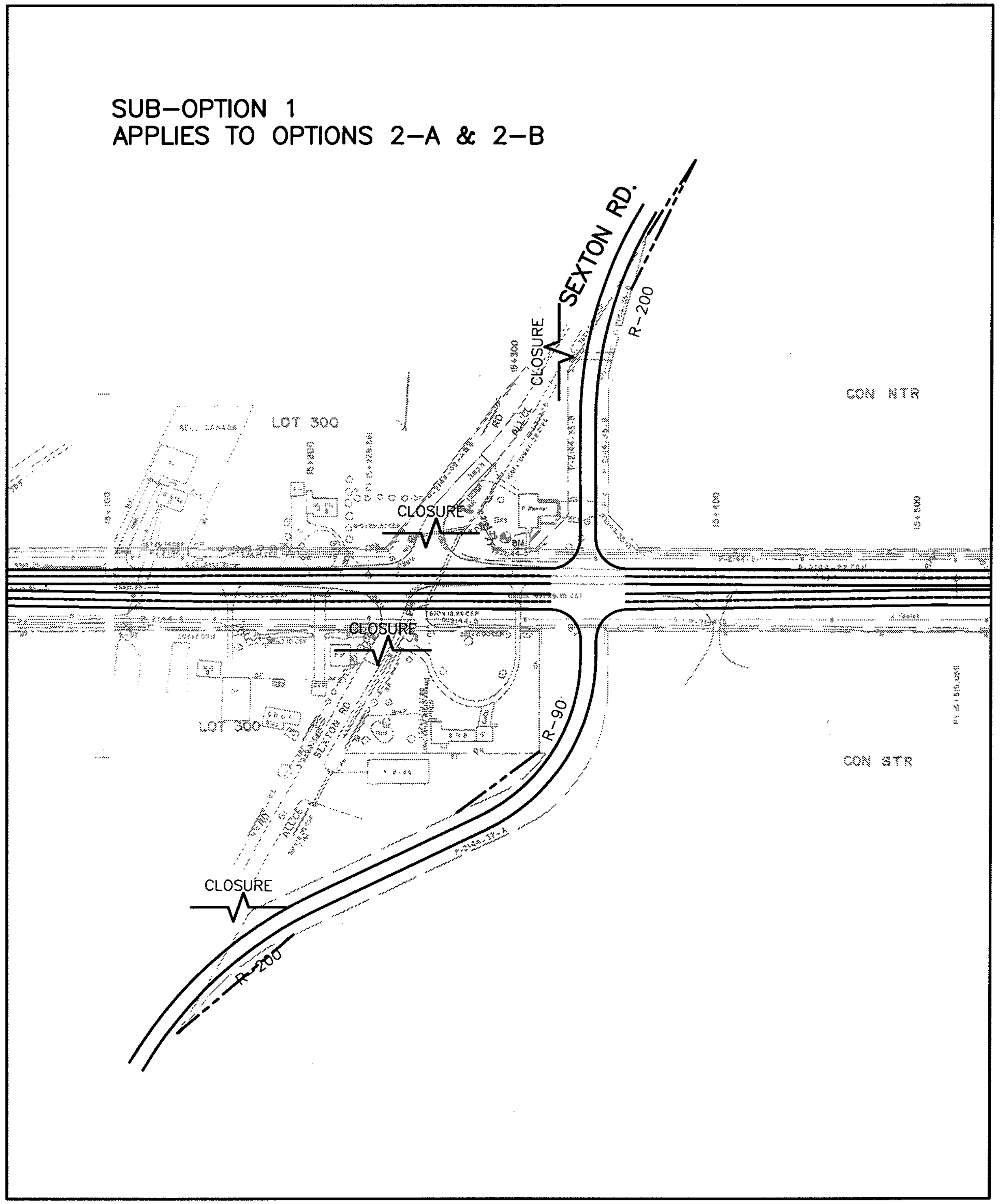

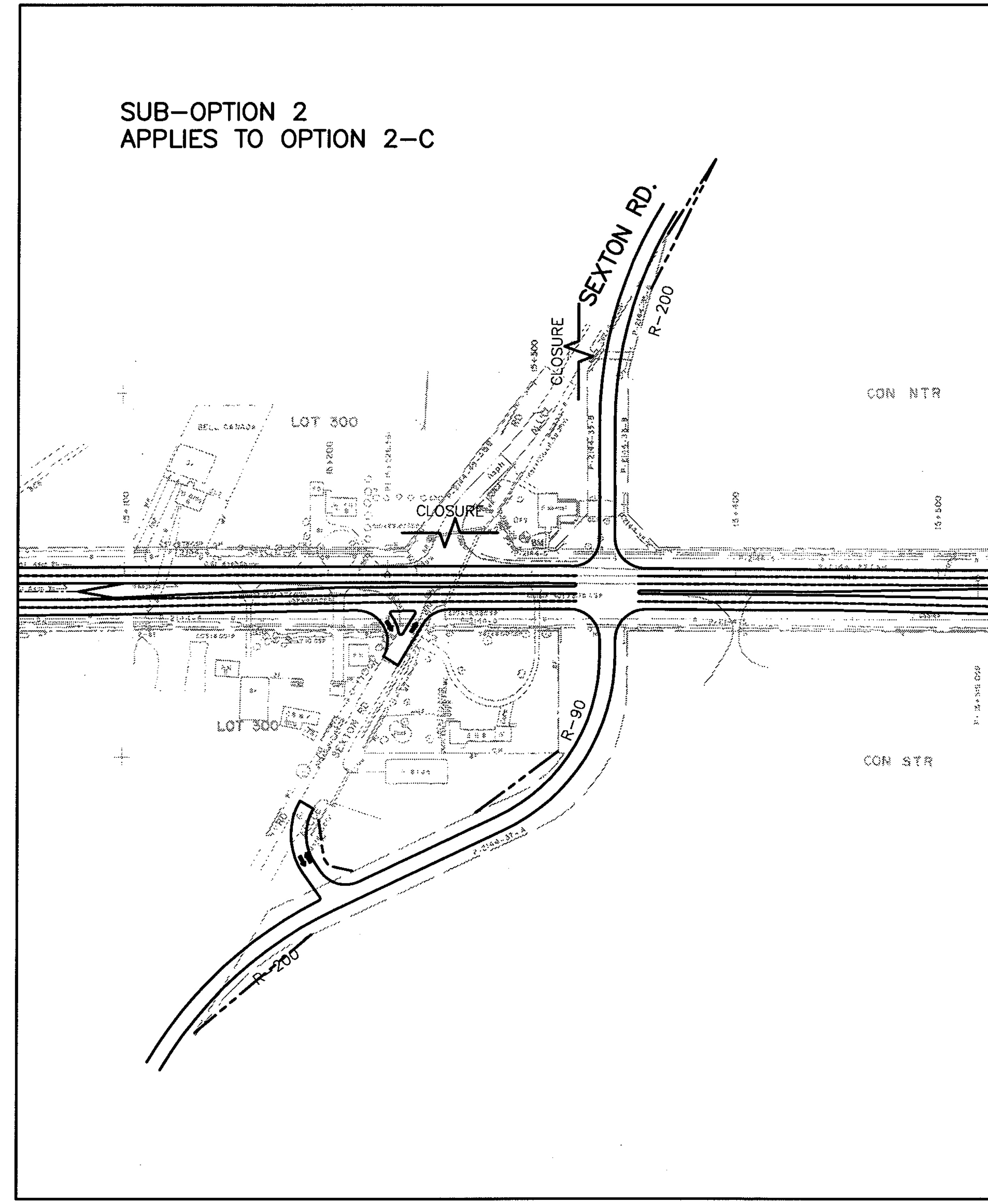

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Ontario Ministry of Transportation

SCALE 15 0 30 Horizontal

DATE JANUARY 06, 2006

W.P. 315-98-00
HIGHWAY No. 3 - WINDSOR TO LEAMINGTON
ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN

SECTION 2
SEXTON ROAD REALIGNMENT
SUB-OPTIONS

EXHIBIT 7.7

Table 7.2 - Section 2 – Outer Drive to Essex Road 34 West Limits (Talbot Road)

Evaluation of Design Options

CATEGORIES OF CONSIDERATION	CRITERIA	DESIGN OPTIONS		
		OPTION 2-A FOUR LANES WITH 1.0 TO 1.5 M FLUSH PAVED MEDIAN	**OPTION 2-B FOUR LANES WITH 4.0 TO 5.0 M TWLTL**	**OPTION 2-C FOUR LANES WITH 6 M FLUSH PAVED MEDIAN WITH TALL WALL BARRIER**
TRANSPORTATION (1), (2), (3)	**Potential effects on existing traffic operations**	▪ Enhanced traffic operations at improved intersections and for through traffic due to widening to 4 lanes ▪ Through traffic will continue to be obstructed by left turning movements to adjacent entrances.	▪ Enhanced traffic operations at improved intersections and for through traffic due to widening to 4 lanes ▪ Through traffic will not be obstructed by left turning movements to adjacent entrances because of the TWLTL. ▪ Increased capacity due to the TWLTL	▪ Enhanced traffic operations at improved intersections and for through traffic due to widening to 4 lanes ▪ Through traffic will not be obstructed by left turning movements as these are eliminated. Marginal increases in left turn movements at intersections and use of a new turnaround at Oldcastle Road will accommodate turnaround needs.
	Potential for enhancing safety	▪ Enhanced user safety at improved intersections and for through traffic due to widening to 4 lanes. ▪ Moderate potential for head on collisions ▪ Significant potential for rear end collisions for left turns to entrances ▪ School busing and mail delivery providers will be encouraged to provide service in both directions to eliminate the need for pedestrians crossing the highway between intersections ▪ Additional lanes will provide enhanced safety for farm vehicles traveling on the highway shoulders.	▪ Enhanced user safety at improved intersections and for through traffic due to widening to 4 lanes. ▪ Minimal potential for head on collisions ▪ Substantially reduced potential for rear end collisions for left turns to entrances ▪ School busing and mail delivery providers will be encouraged to provide service in both directions to eliminate the need for pedestrians crossing the highway between intersections ▪ Additional lanes will provide enhanced safety for farm vehicles traveling on the highway shoulders. ▪ TWTL provides refuge area to enhance safety for left turns from entrances	▪ Enhanced user safety at improved intersections and for through traffic due to widening to 4 lanes. ▪ Potential for head on collisions eliminated ▪ No potential for rear end collisions for left turns to entrances as these are eliminated ▪ School busing and mail delivery providers will be encouraged to provide service in both directions to eliminate the need for pedestrians crossing the highway between intersections ▪ Additional lanes will provide enhanced safety for farm vehicles traveling on the highway shoulders.
	Potential effects on construction staging/scheduling	▪ Some entrance disruptions during construction	▪ Some entrance disruptions during construction ▪ Due to the wider cross-section, traffic staging will be less disruptive	▪ Some entrance disruptions during construction ▪ Tall wall barrier construction will require a longer construction time period.
NATURAL ENVIRONMENT (4) (5)	**Potential for altering surface water courses**	▪ No surface watercourses altered.	▪ Surface watercourse altered through a 2 m culvert extension. (Pike Creek tributary may provide warmwater baitfish habitat)	▪ Surface watercourse altered through a 4 m culvert extension. (Pike Creek tributary may provide warm water baitfish habitat)
SOCIAL ENVIRONMENT (6) (7) (8) (9)	**Potential effects on access**	▪ Existing access remains unchanged	▪ Existing access remains unchanged, but will improve user comfort for left turns to and from entrances.	▪ Existing access reduced to right-in/right-outs (tall wall barrier installed). Turnaround opportunities restricted to the use of intersections and a new turnaround. ▪
PROJECT ECONOMICS	**Potential capital costs**	▪ Lowest capital costs ($12.2M)	▪ Second lowest capital costs ($13.7M)	▪ Highest capital costs ($15.8M)
EVALUATION SUMMARY		▪ Enhanced traffic operations and safety at improved intersections ▪ Does not address rear end collision potential for left turns to existing entrances.	▪ Enhanced traffic operations and safety at improved intersections ▪ Enhanced safety for entrance users without eliminating left turns to and from entrances. ▪ Increased capacity due to the TWLTL	▪ Enhanced traffic operations and safety at improved intersections ▪ Eliminate head on collision potential ▪ Most impact on access as it eliminates left turns to and from entrances ▪ Highest Cost

Recommended

LEGEND: Most preferred Least preferred

NOTES:

1. All design options have a 2017 planning horizon and will require widening from 2 to 4 lanes. The existing mainline Level of Service is at the upper range of "D" west of Walker Road and at the lower range of "E" east of Walker Road.
2. In all design options at-grade intersections are maintained and improved with turning lanes. Oldcastle Road will be realigned to eliminate the existing jog at the intersection with Highway 3. The Walker Road intersection will be protected for possible future N-E double left turn lanes as per the Essex County approved EA study.
3. Bell and Hydro relocation required for each option – minimal effects in each option.
4. All design options were considered similar in terms of "Potential for short-term construction related effects on downstream surface water quality and quantity". Effects are anticipated over 1 construction season and would be minimized through standard mitigation measures.
5. All design options were considered similar in terms of "Potential for Loss of Vegetation". Effects are anticipated to result in minor losses of sporadic vegetation (i.e. small shrubs and trees).
6. All design options were considered similar in terms of "Potential for short-term construction related effects on residents, business, community facilities and roadway users". Effects are anticipated over 1 construction season and would be minimized through standard mitigation measures.
7. All design options were considered similar in terms of "Potential for requiring private property or temporary easements". Approximately 0.7 ha of private property would be required for each of the 3 design options.
8. All design options were considered similar in terms of "Potential for loss of possible archaeological resources" because all options require private property that exhibits archaeological potential. Propose work beyond the existing disturbed right-of-way will be subject to a Stage 2 archaeological assessment.
9. All design options were considered similar in terms of "Potential for disrupting built heritage features and cultural landscape units". Appropriate mitigation measures would be investigated to address the potential disruption.

7.2 Section 3 - Essex Road 34 West Limit (Talbot Road) to Essex Road 34 (Leamington By-pass), 26.6 km

7.2.1 Generation of the Design Options

Traffic demands require that the existing Highway 3 be widened to four lanes in Section 3. Intersection improvements include turning lanes to separate traffic and improve safety and capacity.

7.2.1.1 Highway 3 Mainline

The following three design options were developed to provide improvements for the mainline (see **Exhibit 7.8**).

Option 3-A, Four Lanes with Narrow Flush Median provides the intersection upgrades and a continuous four-lane cross-section separated by a 1.0 m to 1.5 m wide flush paved median.

Option 3-B, Four Lanes with a Divided Median provides the intersection upgrades and a continuous 4 lane cross-section separated by a 6 m flush paved median with tall-wall barrier.

Option 3-C – Four Lanes with Divided Median provides intersection upgrades and a continuous four-lane cross-section separated by a 15 m grassed median, as originally envisioned for this section of Highway 3 in the 1960's Functional Planning Report.

7.2.1.2 Intersections

Highway 3/Essex Road 29 (Division Road)

Division Road (Essex County Road 29) is a two-lane roadway that connects Kingsville, south of Highway 3, to Cottam, north of Highway 3. Division Road crosses Highway 3 and has a "T" intersection with South Talbot Road Service Road immediately north of Highway 3. The Highway 3 and South Talbot Road intersections are only separated by 35 m at Division Road. The intersection of Highway 3 and Division Road is signalized.

The short distance between the Highway 3 and the South Talbot Road "T" intersection immediately to the north is not desirable. Traffic using Division Road north of Highway 3 must immediately turn left or right after going through the traffic signals. The issue is further complicated by the fact that large trucks, serving Domric Enterprises and other local areas, use this intersection. Trucks that come from South Talbot Road to enter Highway 3 cannot make the required manoeuvres without encroaching on the opposing lane on the north leg of the Highway 3 and Division Road signalized intersection.

As a result, design options were developed (modify or relocate the Division Road intersection with Highway 3), comparatively evaluated, and a technically preferred option was recommended and presented at PIC No. 3. The technically preferred design option included the realignment of Division Road south of Highway 3 to meet the Inman Road intersection (see **Exhibit 7.9**). However, there were a number of objections raised at, and subsequent to, PIC No. 3 stating that the realignment of Division Road would result in out-of-way travel for drivers using Division Road north and south of Highway 3, and that the farming operations south of Highway 3 would be adversely affected. There were also concerns about the indirect access that would result for the Domric operation on the north side of Highway 3 at Division Road.

Shortly after PIC No. 3, the commercial warehouse/at Division Road (Domric property) suffered major fire damage (Fall 2002), which resulted in an opportunity to redevelop this property. Through discussions between the MTO and the property owner, design options beyond those shown at PIC No.3 were developed to address the undesireable intersection spacing. These new Design Options, A, B, and C, are shown in **Exhibits 7.10, 7.11 and 7.12**, respectively.

Intersection Closures

Sub-options for intersection closures have been developed for intersections at:

- Ellis Sideroad;
- Inman Sideroad;
- Gosfield North (Con. 9);
- Gosfield North (Con. 8); and/or
- Upcott Sideroad

Any recommended road closures will be included with the recommended technically preferred design option for the Highway 3 Mainline portion of Section 3 (Options 3-A, 3-B, or 3-C).

Access to the Town of Essex

The Highway 3 and Victoria Avenue intersection is only 30 m from the South Talbot Road and Victoria Avenue intersection to the north. Also, the Highway 3 and Essex Road 8 intersection is only 60 m from the Essex Road 8 and South Talbot Road/Pinkerton Road intersection to the south. The short spacing causes traffic operations to be less than desirable.

The short distance on Victoria Avenue between the intersections with Highway 3 and South Talbot Road is of specific concern given the Town's desire to support additional development north of Highway 3. While the intersection currently operates satisfactorily, it is expected that as traffic grows and the Town continues to develop, safety and operational issues will arise in the future.

As a result, a traffic analysis of the "compound" intersection of Highway 3/Victoria and Victoria/South Talbot Road was undertaking assuming that current growth trends in background traffic will be maintained. The analysis indicated that the "compound" intersection would operate at a Level of Service 'C' in the a.m. and p.m. peak periods in the planning horizon year of 2017 based on an assumed background traffic growth rate of 2% per year. Traffic operations are satisfactory now and will continue to be satisfactory beyond the year 2017 with a widened Highway 3. This is based on no connection being constructed between South

Talbot Road and the new commercial development on County Road 8, and no significant increase in traffic from development added to the intersection.

However, given the desire of the Town for new development, possible design options to improve the Victoria Avenue intersections to support new development were considered:

- Realign South Talbot to move the intersection with Victoria Avenue further north away from Highway 3
- Realign Highway 3 to move the intersection with Victoria Avenue further south away from South Talbot Road
- Limit the traffic moves on South Talbot Road at Victoria Avenue. This could be done by closing the east leg of South Talbot Road or making South Talbot Road a one-way running eastbound from Victoria Avenue

The preceding design options would affect the community by changing traffic patterns and/or have significant property and cost implications. Consequently, a combination of options that involve both Highway 3 and the municipal road network may be required in order to effectively address potential future traffic operations requirements..

Given the interdependency of the municipal and provincial network, and the possible community, property and cost implications, it was concluded that rather than further developing and comparatively evaluating the previously identified possible design options as part of this study, they should be considered under a more comprehensive approach. Therefore, the MTO has suggested to the Town of Essex that they partner in a transportation study to address the forecasted operational and safety concerns at both Victoria Avenue and Essex Road 8 where there is close spacing between the Highway 3 intersection and the adjacent municipal intersection.

7.2.2 Evaluation of the Design Options

After generating the design options for Section 3, they were comparatively evaluated according to a descriptive qualitative assessment similar to that used for the design options for Section 2. The evaluation was undertaken based on criteria developed within the same factors (categories of consideration) previously described in Section 6.2 of this report. Within each category of consideration, study-specific evaluation criteria were developed based on a review of the MTO's Class EA for Provincial Transportation Facilities (2000), the existing conditions of the study area, the design options being considered, the need/justification, and public/agency input (see **Table 7.1**).

As with Section 2, once developed, the evaluation criteria were applied to each of the generated design options to identify potential effects on the environment as a means of determining the relative advantages (most preferred) and disadvantages (least preferred) for each option. With the relative advantages and disadvantages for each option determined, technically preferred design options were recommended.

7.2.3 Selection of the Technically Preferred Design Options

7.2.3.1 Highway 3 Mainline

Option 3-C, which reduces the potential for head-on collisions substantially without major cost implications, is recommended as the technically preferred design option (**Table 7.3)**.

7.2.3.2 Intersections

Highway 3/County Road 29 (Division Road)

New design options were developed and comparatively evaluated along with the previously recommended technically preferred design option based on additional archaeological and natural environmental information. Since the original archaeological and natural environmental investigations undertaken as part of this study did not cover the Domric property, a Stage 2 Archaeological Assessment and Terrestrial Investigation of the Domric property were carried out. The Stage 2 Archaeological Assessment resulted in the recovery of no archaeological materials or remains. As such, it was recommended that the proposed area be cleared of further archaeological concern.

In the case of the Terrestrial Investigation, the key recommendation related to the pin oak trees located on the berm surrounding the pond at the north end of the Domric property. Mitigation measures such as transplanting the immature pin oak trees and compensating for the lost mature pin oaks in another area will be put into place.

The results of comparatively evaluating the three new design options together with the previously recommended technically preferred design option are summarized in **Table 7.4.** Based on the comparative evaluation, Option C was recommended as the technically preferred design option. Option C improves traffic operations at South Talbot Road by directly connecting to Division Road, which reduces turning movements and improves safety. This alignment, in addition to the closure of Inman Sideroad at Highway 3, enhances safety by separating Highway 3 traffic from South Talbot Road traffic and eliminating conflicts at a minor sideroad.

The recommended technically preferred design option was presented at PIC No. 4 and was generally supported by the public in attendance. Subsequent to PIC No. 4, minor alignment improvements were undertaken to improve the road alignment. The revised alignment for the Division Road – South Talbot Road intersection is shown on **Exhibit 7.13**.

Table 7.3 - Section 3 – Essex Road 34 West Limits (Talbot Road) to Essex Road 34 (Leamington Bypass)
Evaluation of Design Options

CATEGORIES OF CONSIDERATION [6]	CRITERIA	DESIGN OPTIONS		
		OPTION 3-A FOUR LANES WITH 1.0 TO 1.5 M FLUSH PAVED MEDIAN	**OPTION 3-B FOUR LANES WITH 6 M FLUSH PAVED MEDIAN WITH TALL WALL BARRIER**	**OPTION 3-C FOUR LANES WITH 15 M GRASSED MEDIAN**
TRANSPORTATION [1], [2], [3]	**Potential effects on existing traffic operations**	▪ Enhanced traffic operations at improved intersections and for through traffic due to widening to 4 lanes	▪ Enhanced traffic operations at improved intersections and for through traffic due to widening to 4 lanes	▪ Requires increased crossing time for sideroad traffic, fully protected left turn phases at signalized intersection and slotted left turn lane. ▪ Enhanced traffic operations at improved intersections and for through traffic due to widening to 4 lanes ▪ Left turns at intersections do not operate as well with wide medians ▪ Encourages higher operating speeds ▪ Requires an undesirable transition from 4 lanes with a divided median and at grade intersections to 4 lanes plus a TWLTL and direct access.
	Potential for enhancing safety	▪ Enhanced user safety at improved intersections and for through traffic due to widening to 4 lanes ▪ Reduced potential for head on collisions, with use of median rumble strips.	▪ Enhanced user safety at improved intersections and for through traffic due to widening to 4 lanes ▪ Potential for head-on collisions is eliminated	▪ Enhanced user safety at improved intersections and for through traffic due to widening to 4 lanes ▪ Left turns at intersections with wide median are potentially less safe ▪ Revised standard for median width is 30 m ▪ Substantially reduced potential for head-on collisions ▪ Transitioning from 4 lanes with a divided median and at grade intersections a 4 lanes plus a TWLTL and direct access could result in reduced safety
	Potential effects on construction staging/scheduling	▪ Allows for phased implementation, i.e., passing lanes, 4 lanes at signalized intersections, etc. ▪ New lane construction involves widening of existing pavement. Moderate impact on traffic due to staging requirements	▪ Does not lend itself to a phased implementation, i.e. selected passing lane ▪ New lane construction involves widening of existing pavement. Moderate impact on traffic due to staging requirements ▪ This option will tend to increase operating speeds and could have a negative safety impact on the operation of the entrances in Section 2.	▪ Does not lend itself to a phased implementation, i.e. selected passing lanes. ▪ New lanes constructed to the south of the existing lanes – minimal impact on existing traffic ▪ This cross-section is not compatible with any of the options in Sections 1 and 2.
NATURAL ENVIRONMENT [4] [5]	**Potential for altering surface water courses**	▪ 5 surface watercourses altered through 10 m culvert extensions [2]	▪ 5 surface watercourses altered through 15 m culvert extensions [2]	▪ 5 surface watercourses altered through new culvert construction (30 m length) [2]
PROJECT ECONOMICS	**Potential capital costs**	▪ Lowest capital costs ($28.5M)	▪ Highest capital costs ($39.5M)	▪ 2nd highest capital costs ($30.9M)
EVALUATION SUMMARY		▪ Due to relatively low and substantial variations in traffic volumes, phased implementation is a consideration i.e. selected passing lanes ▪ Intersection operations are best for this option ▪ Median rumble strips will reduce potential for head-on collisions	▪ Does not lend itself to phased implementation i.e. selected passing lanes ▪ Intersection operations are good for this option ▪ Eliminates head-on collisions ▪ Substantially more costly	▪ Does not lend itself to phased implementation, i.e. selected passing lanes. ▪ Generally poor intersection operation (requires increased crossing time for sideroad traffic, fully protected left turn phases at signalized intersection and slotted left turn lane ▪ Current MTO standard for median width is 30 m ▪ Undesirable transition to Section 2 (cross-section and higher speed) ▪ Reduced potential for head-on collisions
				Recommended

LEGEND: Most preferred Least preferred

NOTES:

1. All design options have a 2017 planning horizon and will require widening from 2 to 4 lanes. The existing mainline Level of Service is in the mid-range of "E" west of Essex Road 23, the upper range of "D" from Essex Road 23 to Essex Road 29 (Division Road) and at the upper limit of "C" from Essex Road 29 (Division Road) easterly to Essex Road 34 (Leamington By-pass).
2. In all options, the remaining at-grade intersections are improved with turning lanes. New traffic signals are recommended at Essex Road 8 and Essex Road 29 (Division Road).
3. Bell and Hydro relocation required for each option – minimal effects in each option.
4. All design options were considered similar in terms of "Potential for short-term construction related effects on downstream surface water quality and quantity". Effects are anticipated over 3-5 construction seasons and would be minimized through standard mitigation measures.
5. The 5 watercourses potentially altered are all associated with agricultural drains and include Culvert 17 (Station 15+950), Culvert 18 (Station 10+000), Culvert 26 (Station 16+890), Culvert 27 (Station 17+890) and Culvert 28 (Station 18+790).
6. Social Environment - All design options were considered similar in terms of "Potential for short-term construction related effects on residents, business, community facilities and roadway users". Effects are anticipated over 3-5 construction seasons and would be minimized through standard mitigation measures. In addition, all design options were considered similar in terms of "Potential for loss of possible archaeological resources" because all options propose work beyond the existing disturbed right-of-way. Proposed work beyond the existing disturbed right-of-way will be subject to a stage 2 archaeological assessment.

Table 7.4 - Section 3 – Essex Road 29 (Division Road) Extension to Service Road Re-Alignment

Evaluation of Design Sub-Options

CATEGORIES OF CONSIDERATION	CRITERIA	PREVIOUSLY "PREFERRED" DESIGN OPTION	NEW DESIGN OPTIONS		
			OPTION A	OPTION B	OPTION C
TRANSPORTATION [1, 2]	**Potential effects on existing traffic operations**	▪ Consolidates movements at Inman Rd. ▪ Moderately increases travel times for Division Rd. traffic.	▪ Separate South Talbot Rd. from Highway 3- Division Rd. intersection. ▪ Minimally increases travel times for Division Rd. traffic. ▪ Traffic operations at South Talbot Rd. – Division Rd. intersection compromised by turning movements.	▪ Separate South Talbot Rd. from Highway 3- Division Rd. intersection. ▪ Minimally increases travel times for Division Rd. traffic. ▪ Traffic operations at South Talbot Rd. – Division Rd. intersection compromised by turning movements.	▪ Separate South Talbot Rd. from Highway 3- Division Rd. intersection. ▪ Minimally increases travel times for Division Rd. traffic. ▪ Traffic operations at South Talbot Rd. – Division Rd. intersection improved by directly connecting to Division Rd. reducing turning movements.
	Potential for enhancing safety	▪ Traffic signals at Inman Rd. intersection ▪ Closure of Division Rd. intersection reduces potential collisions	▪ Increased separation between South Talbot Rd. and Highway 3 significantly improves safety. ▪ Proposed "T" intersection between realigned Division Rd. and South Talbot Rd. is at 87° where 90° is preferred. ▪ Closure of Inman Rd. intersection reduces potential collisions.	▪ Increased separation between South Talbot Rd. and Highway 3 significantly improves safety. ▪ Proposed "T" intersection between realigned Division Rd. and South Talbot Rd. is at 104° where 90° is preferred. ▪ Closure of Inman Rd. intersection reduces potential collisions.	▪ Increased separation between South Talbot Rd. and Highway 3 significantly improves safety. ▪ Proposed "T" intersection between realigned Division Rd. and South Talbot Rd. is at 94° where 90° is preferred. ▪ Proposed alignment favours main traffic movements, west of the Division Rd. extension, reducing turning movements. ▪ Closure of Inman Rd. intersection reduces potential collisions.
NATURAL ENVIRONMENT Option B Preferred	**Potential for short-term construction related effects on downstream surface water quality and quantity**	▪ Moderate construction related impacts on downstream surface water quality and quantity due to extensive road. reconstruction required (approximately 1688m) over 1 construction season, which would be minimized through standard mitigation measures.	▪ Minor construction related impacts on downstream surface water quality and quantity due to road construction (approximately 1226m) over 1 construction season, which would be minimized through standard mitigation measures.	▪ Minor construction related impacts on downstream surface water quality and quantity due to road construction (approximately 1163m) over 1 construction season, which would be minimized through standard mitigation measures.	▪ Minor construction related impacts on downstream surface water quality and quantity due to road construction (approximately 1218m) over 1 construction season, which would be minimized through standard mitigation measures.
	Potential for altering permanent man-made pond	▪ Does not impact ponds	▪ Alteration of 828 m2 of the western pond as a result of the proposed roadway crossing the lower portion of the pond. ▪ Although the eastern pond would be impacted, it is currently dry and not in use.	▪ Although the eastern pond would be impacted, it is currently dry and not in use.	▪ Alteration of 278 m2 of the western pond as a result of the proposed roadway crossing the lower portion of the pond. ▪ Although the eastern pond would be impacted, it is currently dry and not in use.
	Potential impact to existing vegetation	▪ A variety of existing vegetation would be removed including crops, all of which are considered provincially "very common" and "common"; no implications are anticipated.	▪ A variety of existing vegetation would be removed, most of which are considered provincially "very common" and "common"; no implications are anticipated. ▪ However, several "provincially rare" to "uncommon" immature and mature pin oak (Quercus palustris) trees would be removed. ▪ Mitigation measures such as transplanting the immature and compensation for the lost mature pin oak trees should be considered.	▪ A variety of existing vegetation would be removed, most of which are considered provincially "very common" and "common"; no implications are anticipated. ▪ However, several "provincially rare" to "uncommon" mature pin oak (Quercus palustris) trees would be removed. ▪ Compensation for the lost mature pin oak trees should be considered.	▪ A variety of existing vegetation would be removed, most of which are considered provincially "very common" and "common"; no implications are anticipated. ▪ However, several "provincially rare" to "uncommon" immature and mature pin oak (Quercus palustris) trees would be removed. ▪ Mitigation measures such as transplanting the immature and compensation for the lost mature pin oak trees should be considered.

CATEGORIES OF CONSIDERATION	CRITERIA	PREVIOUSLY "PREFERRED" DESIGN OPTION	NEW DESIGN OPTIONS		
			OPTION A	OPTION B	OPTION C
SOCIAL ENVIRONMENT [3, 4, 5]	**Potential for short-term traffic related effects of residents, businesses, community facilities and roadway users**	▪ Moderate road reconstruction to existing roadway resulting in moderate short term traffic related effects.	▪ Minimal road construction on existing roads resulting in minimal short term traffic related effects.	▪ Minimal road construction on existing roads resulting in minimal short term traffic related effects.	▪ Minimal road construction on existing roads resulting in minimal short term traffic related effects.
	Potential for removing residences, businesses and/or community facilities	▪ No residences or businesses would be removed	▪ 1 residence (northwest corner of Division Rd. / South Talbot Rd. intersection) would be removed	▪ No residences or businesses would be removed	▪ No residences or businesses would be removed
	Potential effects on access	▪ Closure of Division Rd. at Highway 3 results in out of way travel for residents on Division Rd. south of Highway 3.	▪ 1 property owner's access to Division Rd. from South Talbot Rd., which is located on the north side of South Talbot Rd. east of Division Rd., would be impacted by the closure of South Talbot Rd. at Division Rd. with a cul-de-sac. ▪ Closure of Inman Rd. at Highway 3 results in out of way travel for residents on Inman Rd. north and south of Highway 3.	▪ 1 property owner's access to Division Rd. from South Talbot Rd., which is located on the north side of South Talbot Rd. east of Division Rd., would be impacted by the closure of South Talbot Rd. at Division Rd. with a cul-de-sac. ▪ 2 driveway accesses along Division Rd. would be impacted. ▪ Closure of Inman Rd. at Highway 3 results in out of way travel for residents on Inman Rd. north and south of Highway 3.	▪ 1 property owner's access to Division Rd. from South Talbot Rd., which is located on the north side of South Talbot Rd. east of Division Rd., would be impacted by the closure of South Talbot Rd. at Division Rd. with a cul-de-sac. ▪ Closure of Inman Rd. at Highway 3 results in out of way travel for residents on Inman Rd. north and south of Highway 3.
	Potential for requiring private property or temporary easements	▪ 3.05 hectares of private property would be required	▪ 2.15 hectares of private property would be required	▪ 2.05 hectares of private property would be required	▪ 2.21 hectares of private property would be required
	Potential impacts on existing land use	▪ The Ludke Farm would be bisected into 3 lots affecting farming operations	▪ Proposed alignment supports redevelopment of the lands between Highway 3 and South Talbot Rd.	▪ Proposed alignment supports redevelopment of the lands between Highway 3 and South Talbot Rd.	▪ Proposed alignment supports redevelopment of the lands between Highway 3 and South Talbot Rd.
PROJECT ECONOMICS	**Potential capital costs**	▪ $1,070,000 + property	▪ $860,000 + property	▪ $820,000 + property	▪ $860,000 + property
EVALUATION SUMMARY		▪ Disrupts existing land uses. ▪ Creates out-of-way travel for majority of road users	▪ Requires removal of one home at South Talbot / Division Rd. intersection ▪ Requires vehicles to turn onto Division Rd. at South Talbot ▪ Supports redevelopment of Domric property	▪ Avoids home at South Talbot / Division Rd. intersection ▪ Requires vehicles to turn onto Division Rd. at South Talbot ▪ Limits size of redevelopment of Domric property	▪ Avoids home at South Talbot / Division Rd. intersection ▪ Provides direct route for Division Rd. traffic ▪ Supports redevelopment of Domric property

LEGEND: Most preferred Least preferred

NOTES:

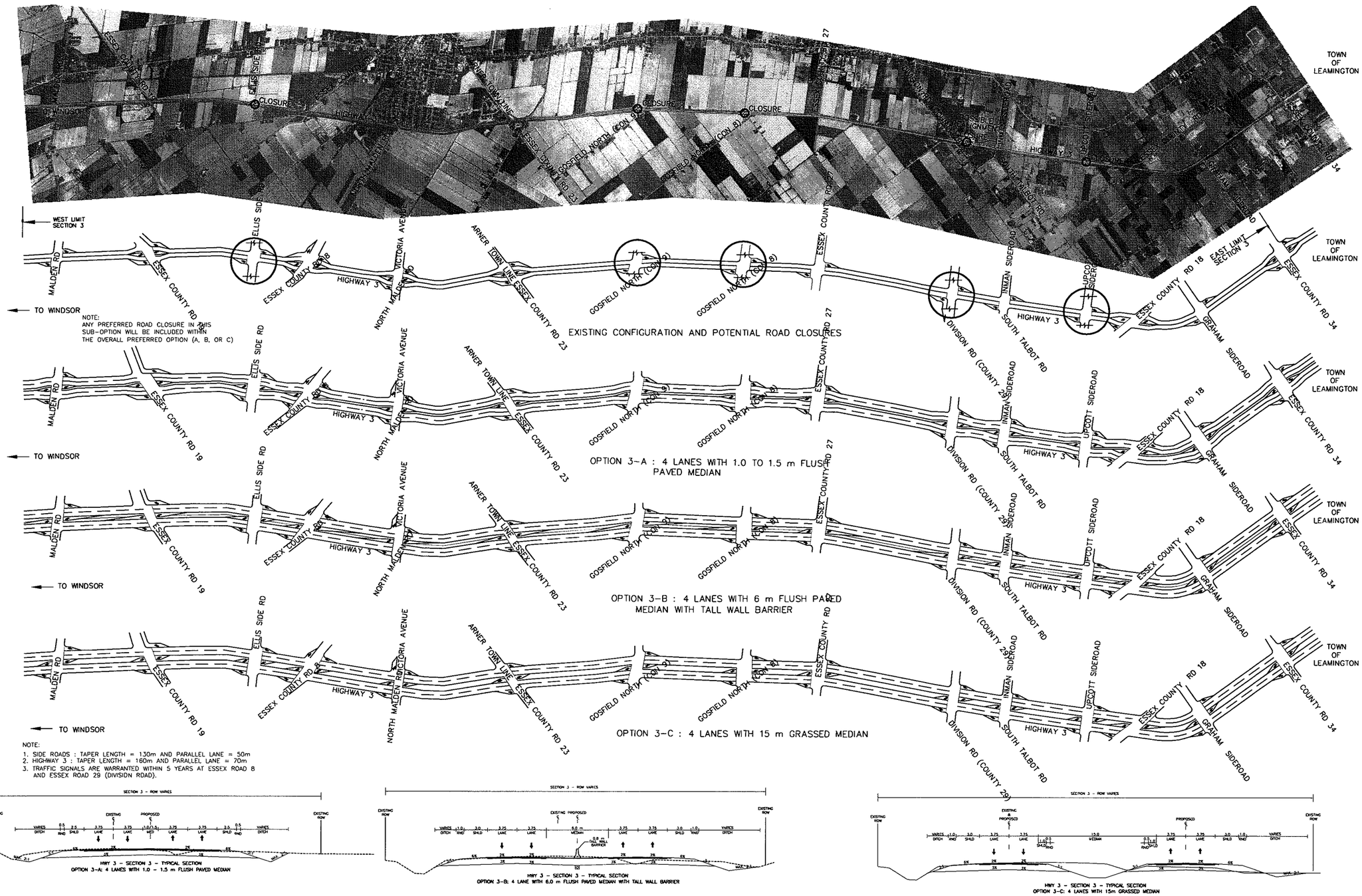
[1] Bell and hydro utilities require relocation for each option (minimal effects)

[2] All design options were considered similar in terms of "Potential for meeting highway design standards" as they all provide separation between the Highway 3 intersection and South Talbot Road intersection.

[3] All design options were considered similar in terms of "Potential loss of possible archaeological resources" and "Potential for disrupting built heritage features/cultural landscape units" as all options have low to no areas of archaeological concern and have no built heritage features.

[4] All design options were considered similar in terms of "Potential short term construction related effects on residents, businesses, community facilities, and roadway users" as effects are anticipated over 1 construction season and would be minimized through standard mitigation measures.

[5] All design options were considered similar in terms of "Potential for traffic noise impacts. The Traffic Noise Assessment that was conducted by Earth Tech determined each design option would result in similar insignificant noise increases of approximately 1-2 dBA



NOTE:
ANY PREFERRED ROAD CLOSURE IN THIS SUB-OPTION WILL BE INCLUDED WITHIN THE OVERALL PREFERRED OPTION (A, B, OR C)

NOTE:
1. SIDE ROADS : TAPER LENGTH = 130m AND PARALLEL LANE = 50m
2. HIGHWAY 3 : TAPER LENGTH = 160m AND PARALLEL LANE = 70m
3. TRAFFIC SIGNALS ARE WARRANTED WITHIN 5 YEARS AT ESSEX ROAD 8 AND ESSEX ROAD 29 (DIVISION ROAD).

EarthTech A tyco International Ltd. Company	Ministry of Transportation Ontario	SCALE NOT TO SCALE DATE 25/09/05	W.P. 315-98-00 HIGHWAY No. 3 - WINDSOR TO LEAMINGTON ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN	OPTIONS 3-A, 3-B AND 3-C	EXHIBIT 7.8

January 9, 2006

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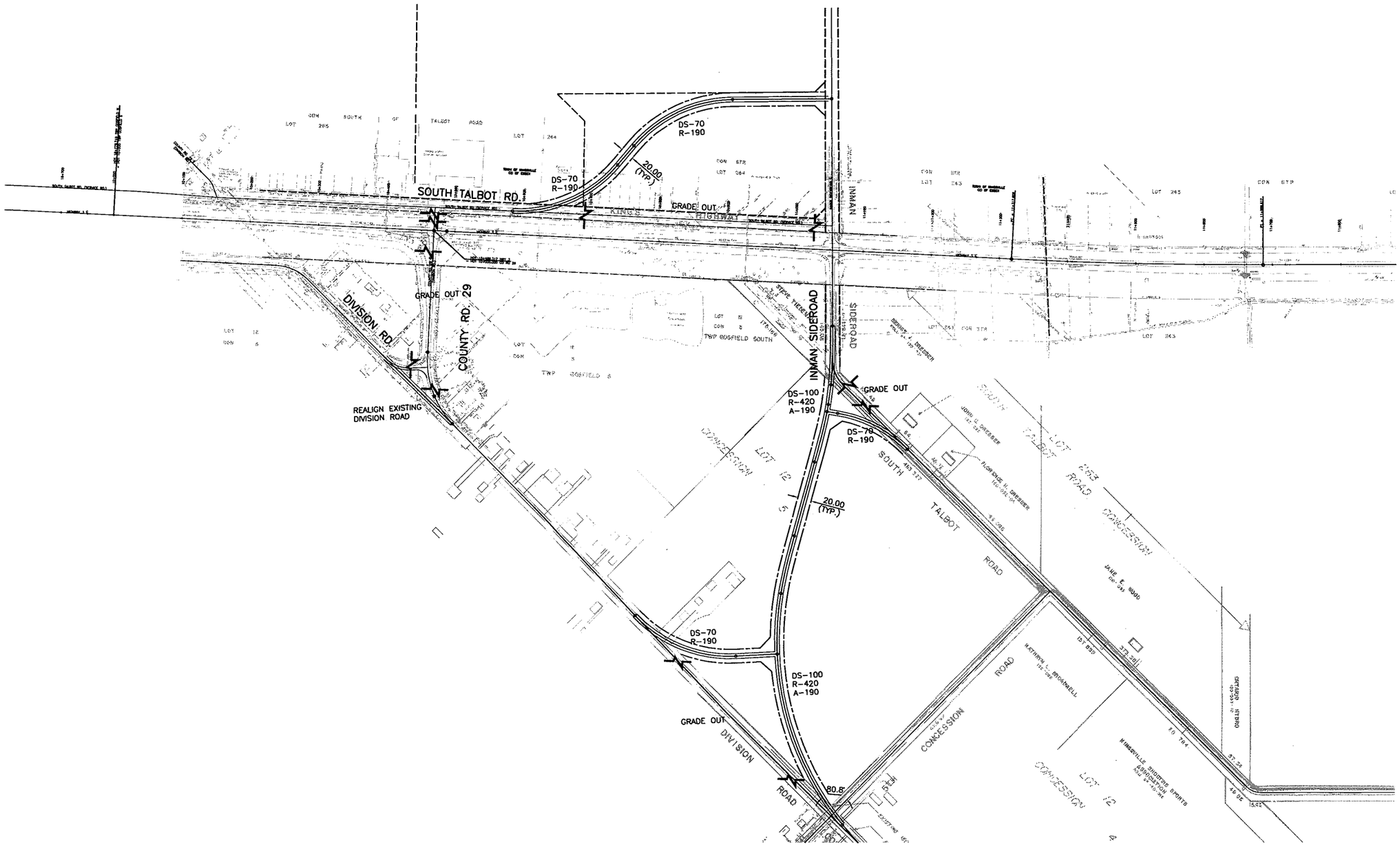

EarthTech A tyco International Ltd. Company	Ministry of Transportation Ontario	SCALE 20 0 40 Horizontol DATE SEPTEMBER 30, 2005	W.P. 315-98-00 HIGHWAY No. 3 - WINDSOR TO LEAMINGTON ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN	SECTION 3 DIVISION ROAD REALIGNMENT ORIGINAL OPTION - PRESENTED AT PIC NO. 3	EXHIBIT 7.9

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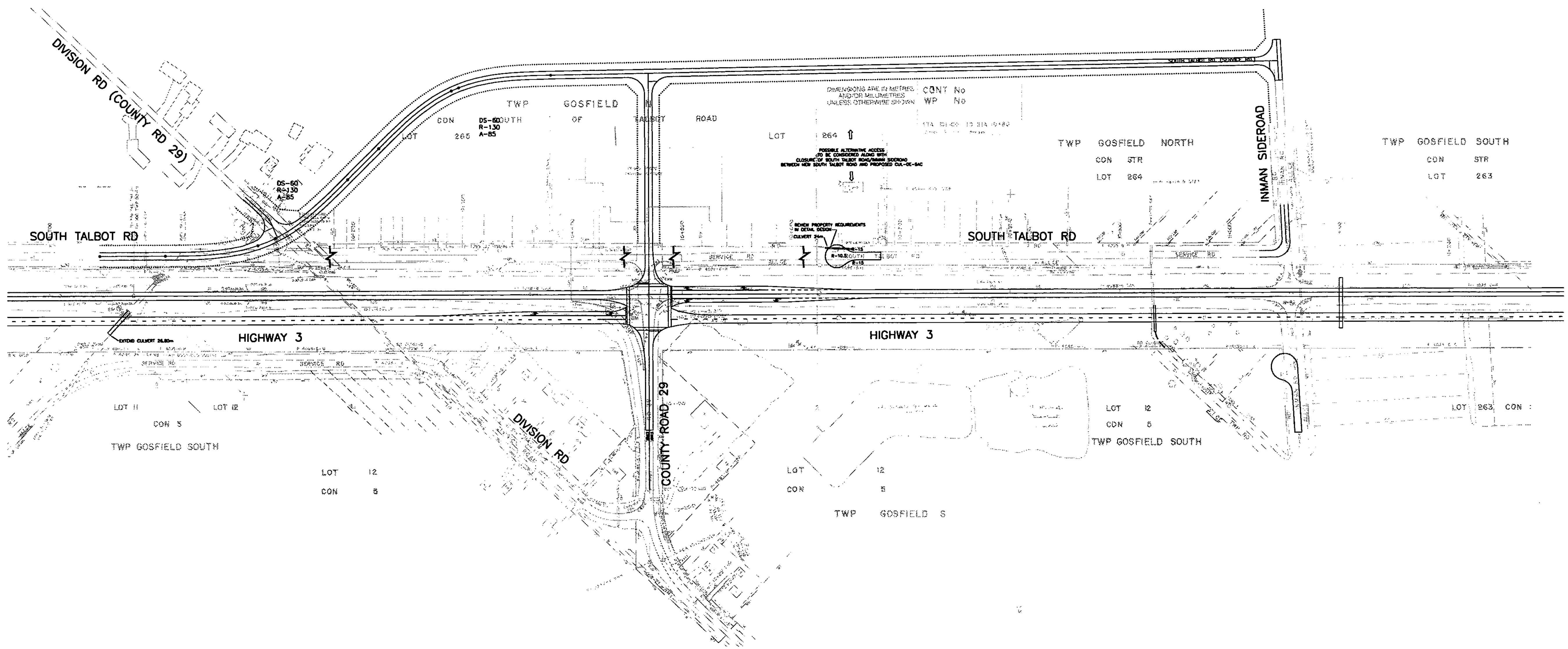

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EarthTech
A tyco International Ltd. Company

Ministry of Transportation
Ontario

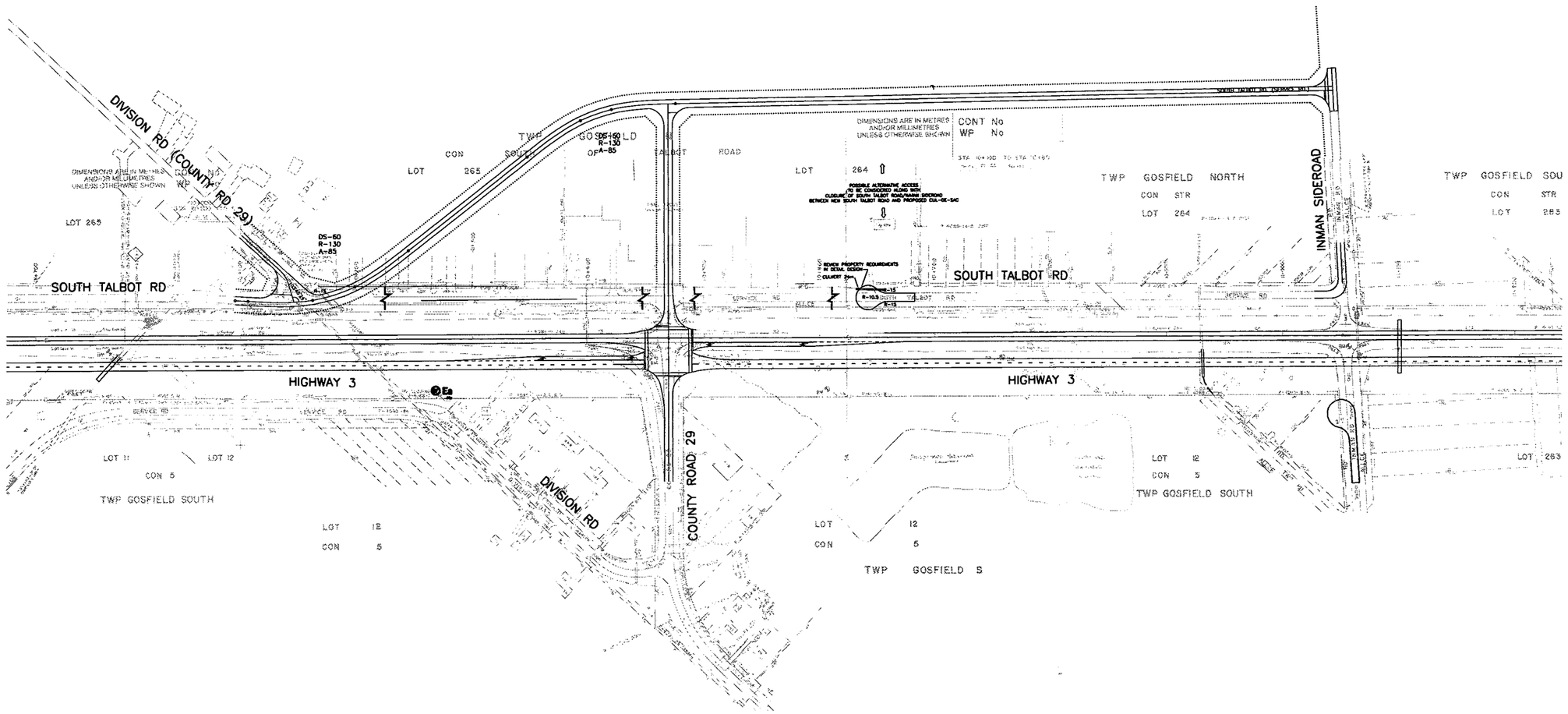
SCALE
20 0 40
Horizontal

DATE
SEPTEMBER 30 2005

W.P. 315-98-00
HIGHWAY No. 3 - WINDSOR TO LEAMINGTON
ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN

SECTION 3
DIVISION ROAD REALIGNMENT
OPTION A

EXHIBIT
7.10



EarthTech A tyco International Ltd. Company	Ontario Ministry of Transportation	SCALE 20 0 40 Horizontal DATE SEPTEMBER 30, 2005	W.P. 315-98-00 HIGHWAY No. 3 - WINDSOR TO LEAMINGTON ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN	SECTION 3 DIVISION ROAD REALIGNMENT OPTION B	EXHIBIT 7.11

January 9, 2006

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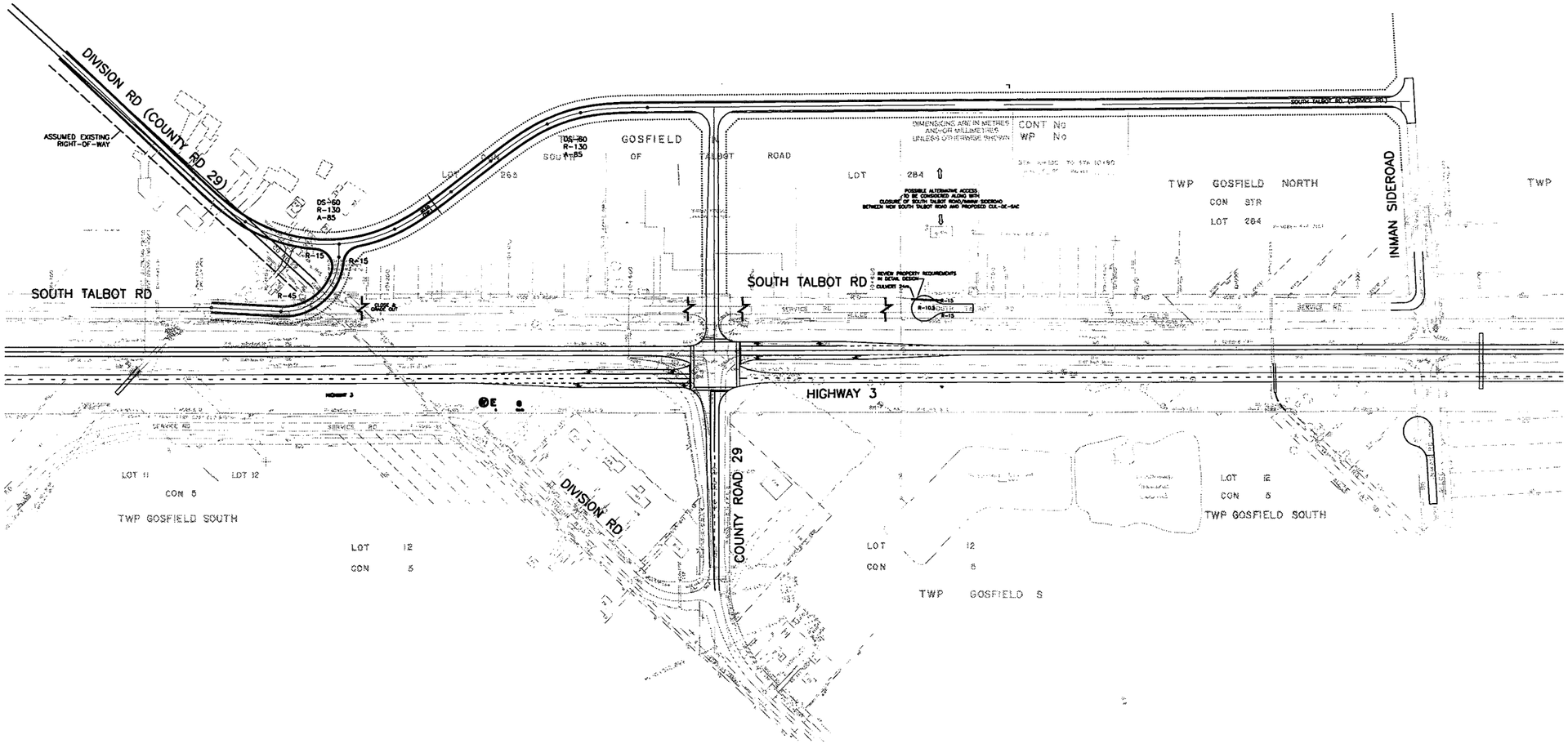

EarthTech A tyco International Ltd. Company	Ontario Ministry of Transportation	SCALE 20 0 40 Horizontal DATE SEPTEMBER 30, 2005	W.P. 315-98-00 HIGHWAY No. 3 - WINDSOR TO LEAMINGTON ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN	SECTION 3 DIVISION ROAD REALIGNMENT OPTION C	EXHIBIT 7.12

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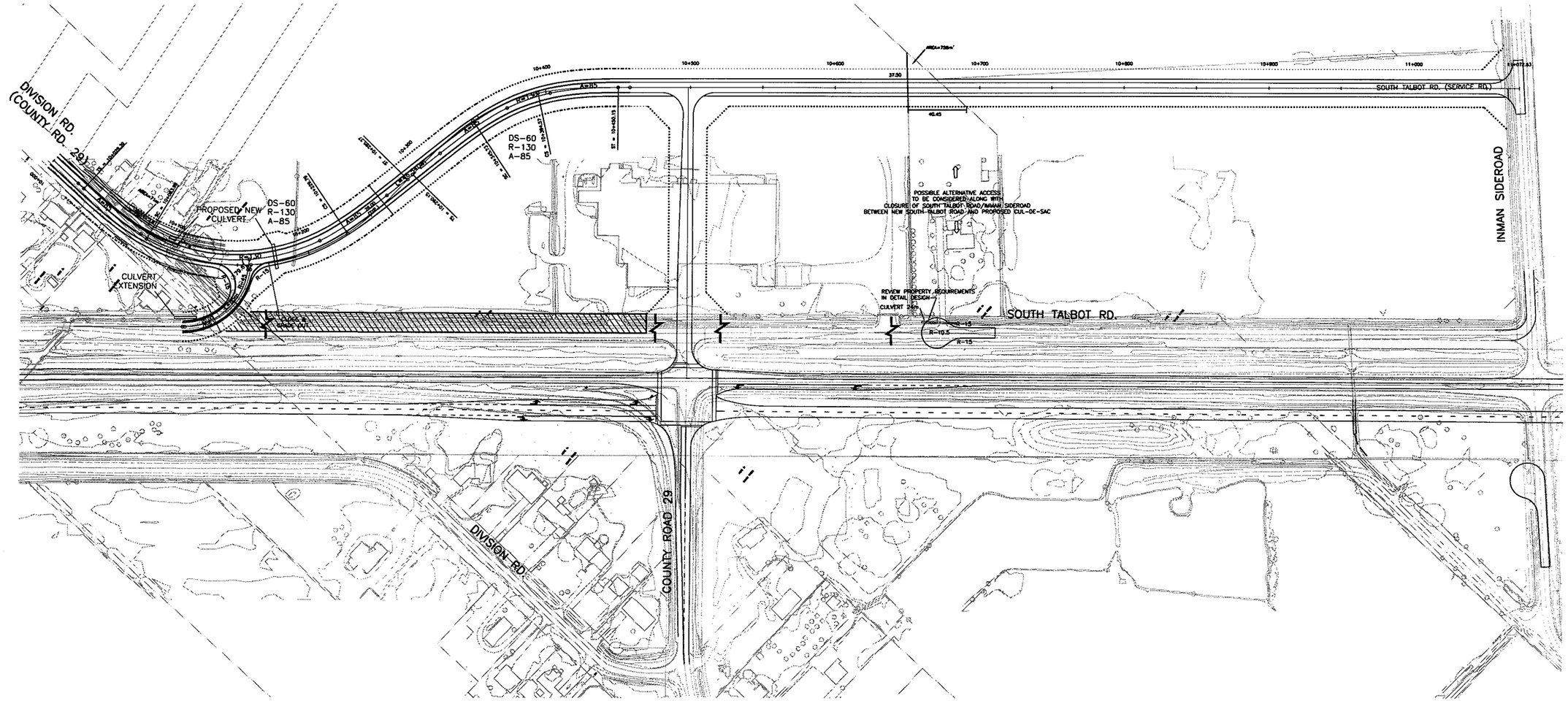

EarthTech A tyco International Ltd. Company	Ontario Ministry of Transportation	SCALE 20 0 40 Horizontal DATE SEPTEMBER 30, 2005	W.P. 315-98-00 HIGHWAY No. 3 - WINDSOR TO LEAMINGTON ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN	SECTION 3 DIVISION ROAD REALIGNMENT OPTION C - ADJUSTED	EXHIBIT 7.13

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Intersection Closures

The comparative evaluation of the proposed intersection closures is shown in **Table 7.5**

The project team recommendations, presented at PIC No. 3, were to close Ellis Sideroad and Upcott Sideroad. Also, the Division Road intersection was shown as closed in conjunction with the Division Road alternative that was shown as preferred at PIC#3. The closure of Concession 8 and Concession 9 was not recommended, given the excessive out-of-the-way travel that would be required for residences south of Highway 3. Also there is acceptable intersection spacing between sideroads

Subsequent to PIC No.3, the recommendation for the Ellis Sideroad intersection was reconsidered to reflect concerns raised by the public regarding lack of alternative routes for farm vehicle movements and out-of-way travel. As a result of this review, it was decided that Ellis Road will remain open at Highway 3. However, the public and municipality were informed that if traffic operations become a problem or significant traffic is generated creating a warrant for traffic signals, the MTO may recommend that the intersection be closed, or that a grade separation be constructed over Highway 3. The revised comparative evaluation of the proposed intersection closures is shown in **Table 7.5**

At PIC No.4 the technically preferred alternative included the closure of Upcott, as shown at PIC No.3, along with the closure of Inman Road in conjunction with the new Division Road alternative. Subsequent to PIC No.4, the issue was raised that, with the closure of two consecutive intersections, there would be significant out-of-the-way travel for users of Upcott Sideroad, including an agricultural business that operates on both sides of Highway 3. In response, a further review was undertaken. The review concluded that, with only Imman Road closed, significant out-of-the-way travel would be avoided and satisfactory intersection spacing could be maintained on Highway 3. Most intersections on Highway 3 are more than 1 km apart, but the distance between Division Road and Inman Road is only 590 m. Closing Inman Sideroad will eliminate this less than desirable intersection spacing.

As a result of this review, it was decided that Upcott Sideroad will remain open at Highway 3. However, the public and municipality were informed that if traffic operations become a problem or significant traffic is generated creating a warrant for traffic signals, the Ministry may recommend that the intersection be closed or that a grade separation be constructed over Highway 3.

It is recommended that the Inman Road intersection be closed. Closure of the Inman Sideroad intersection will result in limited out-of-the-way travel requirements given its relatively close proximity to adjacent intersections. The closure of the Inman Road intersection is recommended because it will reduce the collision potential and improve the traffic flow on Highway 3.

With the closure of the Inman Sideroad intersection at Highway 3, the section of Inman Sideroad from the proposed South Talbot Road to the existing South Talbot Road (approximately 170 m to the south) and South Talbot Road between Inman Sideroad and the proposed cul-de-sac east of Division Road would serve as access for only one property. Alternative access to this property could be provided from the New South Talbot Road. This would require that a new driveway be constructed from the back of the property along with other modifications to the property. The option of alternative access was discussed with the landowner. Given that MTO is not currently in a position to discuss specific property modifications to accommodate a new access, this option could not be further pursued under this study. It is recommended the option of alternative access be further explored in detail design when more specific information can be provided.

Table 7.5 – CLOSURE OF ELLIS SIDEROAD, GOSFIELD NORTH (CON. 8 AND 9) AND UPCOTT SIDEROAD

CONSIDERATIONS	ELLIS SIDEROAD	GOSFIELD NORTH (CON 8 AND 9)	UPCOTT SIDEROAD
Proximity to adjacent intersections, safety, out-of-way travel and project economics	▪ Located between Essex Road 19, which has traffic signals, and Essex Road 8, which is recommended for new traffic signals. Ellis Sideroad is located 1 km west of Essex Road 8 and 2 km east of Essex Road 19 ▪ Closure will result in safer access to and from Highway 3 at the adjacent signalized intersections ▪ Closure eliminates a conflict point on Highway 3 ▪ Some out-of-way travel (maximum 1 km) for 5 residences with direct access to Ellis Sideroad between Highway 3 and Essex Road 34 (Talbot Road) ▪ Reduces cost if intersection is closed as upgrading is not required ▪ One written objection was received at PIC No. 2	▪ Both sideroads are located between Essex Road 23, which has traffic signals, and Essex Road 27, which does not warrant traffic signals. The sideroad spacing is generally >2 km, except for Con. 8 which is approximately 1 ½ km west of Essex Road 27. ▪ Closure will result in safer access to and from Highway 3 at the adjacent signalized Essex Road 23 intersection. ▪ Closure eliminates two conflict points on Highway 3 ▪ Out-of-way travel on the north side of Highway 3 is not an issue as alternate access to Highway 3 would be along the existing frontage road (South Talbot Road) between the intersections with Essex Roads 23 and 27 ▪ South of Highway 3 some out-of-way travel will result for residences on both Con. 8 and Con. 9 sideroads. On Con. 9, 7 residences are affected with maximum 1.5 km out-of-way-travel for Highway 3 westbound and 5.5 km for Highway 3 eastbound. On Con. 8, 13 residences are affected with maximum 1.5 km out-of-way travel for Highway eastbound and 2 km for Highway 3 westbound ▪ Reduces cost if intersections are closed as upgrading is not required ▪ One written objection to each closure was received at PIC No. 2	▪ Located between Essex Road 29 (Division Road), which is recommended for new traffic signals, and Essex Road 18, which does not warrant traffic signals. Upcott Road is located less than 1 km west of Essex Road 18 and 2+ km east of Essex Road 29 (Division Road). ▪ Closure eliminates a conflict point on Highway 3. This is especially desirable because of the close proximity of Upcott Sideroad to Essex Road 18. ▪ Some out-of-way travel (maximum 1 km) for three direct accesses to Upcott Sideroad between Highway 3 and Essex Road 34 (Talbot Road) ▪ Reduces cost if intersection is closed, as upgrading is not required ▪ No objections at PIC No. 2
Evaluation Summary	▪ Closure of Ellis Sideroad both north and south of Highway 3 is recommended mainly because of the close proximity to Essex Road 8, the minimal impact on out-of-way travel requirements and improved safety with alternate access to Highway 3 at the adjacent signalized intersections.	▪ Closure of Con. 8 and 9 is not recommended, as excessive out-of-way travel would be required for residences south of Highway 3. Also there is acceptable spacing between sideroads.	▪ Closure of Upcott Sideroad both north and south of Highway 3 is recommended mainly because of the close proximity to Essex Road 18 and the minimal impact on out-of-way travel requirements.
RECOMMENDATION	***Close*** [1]	***Do Not Close***	***Close***

NOTES:

1. Subsequent to PIC No. 3, it was decided that Ellis Rd remain open

Table 7.6 - ROAD CLOSURES: Evaluation Summary of Design Sub-Options

CLOSURE OF ELLIS SIDEROAD, GOSFIELD NORTH (CON. 8 AND 9) AND UPCOTT SIDEROAD:

CONSIDERATIONS	ELLIS SIDEROAD	GOSFIELD NORTH (CON 8 AND 9)	UPCOTT SIDEROAD
Proximity to adjacent intersections, safety, out-of-way travel and project economics	▪ Located between Essex Road 19, which has traffic signals, and Essex Road 8, which is recommended for new traffic signals. Ellis Sideroad is located 1 km west of Essex Road 8 and 2 km east of Essex Road 19 ▪ Closure will result in safer access to and from Highway 3 at the adjacent signalized intersections ▪ Closure eliminates a conflict point on Highway 3 ▪ Out-of-way travel (maximum 1 km) for 5 residences with direct access to Ellis Sideroad between Highway 3 and Essex Road 34 (Talbot Road) ▪ Reduces cost if intersection is closed as upgrading is not required ▪ One written objection was received at PIC2 ▪ Farming operations would be significantly impacted. Machinery may need to travel through Essex urban area to access fields on either side of Highway 3. ▪ Impacts new commercial developments at Ellis Road – Highway 3 intersection.	▪ Both sideroads are located between Essex Road 23, which has traffic signals, and Essex Road 27, which does not warrant traffic signals. The sideroad spacing is generally >2 km, except for Con. 8 which is approximately 1 ½ km west of Essex Road 27. ▪ Closure will result in safer access to and from Highway 3 at the adjacent signalized Essex Road 23 intersection. ▪ Closure eliminates two conflict points on Highway 3 ▪ Out-of-way travel on the north side of Highway 3 is not an issue as alternate access to Highway 3 would be along the existing frontage road (South Talbot Road) between the intersections with Essex Roads 23 and 27 ▪ South of Highway 3 some out-of-way travel will result for residences on both Con. 8 and Con. 9 sideroads. On Con. 9, 7 residences are affected with maximum 1.5 km out-of-way-travel for Highway 3 westbound and 5.5 km for Highway 3 eastbound. On Con. 8, 13 residences are affected with maximum 1.5 km out-of-way travel for Highway eastbound and 2 km for Highway 3 westbound ▪ Reduces cost if intersections are closed as upgrading is not required ▪ One written objection to each closure was received at PIC2	▪ Located between Essex Road 29 (Division Road), which is recommended for new traffic signals, and Essex Road 18, which does not warrant traffic signals. Upcott Road is located less than 1 km west of Essex Road 18 and 2+ km east of Essex Road 29 (Division Road). ▪ Closure eliminates a conflict point on Highway 3. This is especially desirable because of the close proximity of Upcott Sideroad to Essex Road 18. ▪ Some out-of-way travel (maximum 1 km) for three direct accesses to Upcott Sideroad between Highway 3 and Essex Road 34 (Talbot Road) ▪ Reduces cost if intersection is closed, as upgrading is not required ▪ No objections at PIC2
Evaluation Summary	▪ Closure of Ellis Sideroad both north and south of Highway 3 is not recommended mainly because of the impacts to agricultural and commercial operations along Ellis Sideroad.	▪ Closure of Con. 8 and 9 is not recommended, as excessive out-of-way travel would be required for residences south of Highway 3. Also there is acceptable spacing between sideroads.	▪ Closure of Upcott Sideroad both north and south of Highway 3 is recommended mainly because of the close proximity to Essex Road 18 and the minimal impact on out-of-way travel requirements.
RECOMMENDATION	***Do Not Close***	***Do Not Close***	***Close***[1]

NOTES:

1. Subsequent to PIC #4, it was decided for Upcott Road to remain open

8 RECOMMENDED PLAN

8.1 Section 2

8.1.1 Mainline Geometric Features

- **Horizontal Alignment** - The existing mainline horizontal alignment will be maintained. Design Criteria related to the horizontal alignment for Section 2 are shown in **Appendix D.**
- **Cross-Section** - The existing 2-lane cross-section will be widened to 4 lanes with a 4-5 m wide centre two-way left turn lane and 2.5 m wide partially paved shoulders. To accommodate the widening, it is proposed that the existing roadway platform be generally widened to the south with the north edge of the existing pavement moved approximately 1-2 m further north. This will optimize the highway cross-section within the existing right-of-way.
- **Turning Lanes** – Left turn lanes will be provided on Highway 3 at all intersections.

8.1.2 Intersections

Several sideroad intersections will be improved to address skew angles or to consolidate the number of intersections with Highway 3

Walker Road

The final configuration for Walker Road will include the following:

- Additional through lanes on Walker Road providing two through lanes in each direction across Highway 3
- Lengthened left-turn lanes on Walker Road
- Channelized right-turn lanes similar to the current configuration
- Curb and gutter to avoid additional property taking
- Revised illumination and signals

Oldcastle Road

Oldcastle Road is a two lane Township road that is currently discontinuous at Highway 3. It is recommended that the north leg be realigned to connect to the south leg at Highway 3. The existing north leg will be closed with a cul-de-sac at the end.

Outer Drive

Outer Drive is a two lane paved roadway that intersects Highway 3 at a substandard 60° skew angle. Currently, Highway 3 splits eastbound and westbound in the vicinity of this intersection due to the Highway 401 – Highway 3 interchange. Given the uncertainty with respect to the future configuration of the Highway 3 – Highway 401 interchange, and the unconventional nature of the intersection with Outer Drive, it was decided that any improvements to the Outer Drive intersection with Highway 3 will have to be reviewed as part of any proposed Highway 401 interchange improvements. Therefore, the current project does not include improvements to the Outer Drive intersection.

8.1.3 Illumination and Traffic Signals

Illumination and signalization is provided where warranted. Illumination will be added at the new intersection of Oldcastle Road. Revisions to existing illumination and signals at intersections will be required to accommodate the new 4-lane cross-section on Highway 3. The nature and extent of the signal/illumination plant relocation will be determined in detail design. A summary is provided in **Table 8.1** below.

Table 8.1 – Section 2 - Electrical Requirements

	Location	Existing Traffic Signals to be Revised/Upgraded as Required	Existing Illumination to be Revised/Upgraded as Required
Section 2	Outer Drive	✔	✔
	Walker Road	✔	✔
	Oldcastle Rd. S.		✔
	Oldcastle Rd. N.		✔
	Sexton Rd.		✔
	Talbot Rd.		✔

8.1.4 Property

In general, the proposed Highway 3 mainline improvements can be undertaken within the existing road allowance. However, some minor property taking will be required to widen and/or realign the sideroads as follows:

- **Walker Road** - Narrow slivers of property (approximately 4.5 m wide) will be required along the two western quadrants to accommodate the widening of Walker Road for two through lanes and one left turn lane.
- **Oldcastle Road** - as a result of the realignment of the north leg of Oldcastle Road in order to line up with the south leg, property will be required at the west side of the new cul-de-sac north of Highway 3, and property will be required in a corridor approximately 20 m wide for the new north leg realignment. In addition, two triangular pieces of property will be required to provide for intersection sight lines in the southern quadrants.
- **Sexton Road** – two triangular pieces of property will be required in the two southern quadrants in order to provide for intersection sight lines and culvert extensions.

8.1.5 Drainage

Generally, the existing drainage patterns will be maintained, including the rural ditches for the mainline and sideroads. Most existing cross-culverts will be extended to accommodate the widening, and several culverts

will be replaced due to an existing unsatisfactory condition (deterioration) or to increase flow capacity. Curb and gutter with underground storm sewers will be introduced at various intersections in an effort to avoid additional property taking.

8.1.6 Entrances

All accesses will be reviewed during detail design to ensure that they meet current MTO standards for Highway 3 (a Class III Special Controlled access highway). As part of this review, during detail design, MTO will review opportunities to reduce the number of access points on Highway 3 where more than one access serves a property or where a property has alternative access via a municipal road. Commercial entrances and existing paved private entrances will be revised to meet MTO standards and will be paved to a minimum offset distance of 3 m from the Highway 3 edge of pavement. A smooth grade will be maintained by feathering.

8.1.7 Utilities

Aerial Hydro One lines are located predominantly in Section 2 along the south side of the Highway 3 right-of-way. It is anticipated that significant adjustment and relocations will be required.

Bell Canada and Cogeco Cable TV have aerial and underground lines/cable within the project limits on the south side of Highway 3. Relocation of telephone poles and adjustments to manholes will be required.

Watermains are located along the north side of the Highway 3 right-of-way from the start of Section 2 to approximately 300 m east of Oldcastle Road, at which point they then run along the south side. Some valves and valve chambers will require adjustment and some hydrant relocations will be required on the south side.

Natural gas lines are located along the north side of the Highway 3 right-of-way from the start of Section 2 to Walker Road but no relocations will be required. There are however, three significant natural gas pipeline crossings (2 high vapour pressure, 1 oil) located about 2 km east of Oldcastle Road. Normal construction procedures must be followed while working in the vicinity of the pipelines, but lowering of the pipelines is not envisaged.

Fibre optic cable is located along the Chrysler Greenway. This cable may be affected by the Oldcastle Road realignment and may have to be lowered.

8.1.8 Cost

A construction cost estimate was prepared for Section 2. A detailed breakdown of costs and major quantities is contained in **Appendix E**. The total cost of the recommended improvements would be approximately $13.7 million in 2002 dollars (or approximately $14.9 million in 2005 dollars).

8.2 Section 3

8.2.1 Mainline Geometric Features

- **Horizontal Alignment** - the existing mainline horizontal alignment will remain. Design criteria related to the horizontal alignment for Section 3 are shown in **Appendix D.**
- **Cross-Section** - it is proposed that the existing roadway platform will be twinned in Section 3. The westbound lanes (north side) will be maintained, and the eastbound lanes will be newly constructed south of the existing Highway 3 road platform. The 4-lane cross-section will include a 15 m wide grassed median, and 2.5 m wide partially paved shoulders.

8.2.2 Intersections

Generally, there will not be any changes to the existing alignments or to the configuration of lanes on the sideroads at intersections with Highway 3. The upgrades will only involve adjustments to the new cross-section of the mainlines and improvements to turning radii. However, a significant realignment at Division Road is proposed, and the length of the left turn lanes at County Road 34 are recommended for improvement.

Division Road (County Road 29)

The south leg of Division Road will be extended to intersect a relocated Service Road (South Talbot Road). Since the existing Service Road is offset from Highway 3 approximately 33 m, it is proposed that the Service Road be shifted to the northeast by approximately 165 m to provide a more desirable separation between Highway 3 and the Service Road. Also, a horizontal curve was introduced to directly connect Division Road to the Service Road in order to eliminate turning movements that occur at Division Road and the Service Road intersection.

The proposed realignment design will improve traffic operations at the Service Road by directly connecting to Division Road, which will reduce turning movements and improve safety.

Inman Sideroad Closure

In order to eliminate the undesirable short intersection spacing between Division Road and Inman Sideroad, it is proposed that Inman Sideroad be closed at Highway 3. While most intersections on Highway 3 are more than 1 km apart, the distance between Division Road and Inman Sideroad is only 590 m. Closing Inman Sideroad will eliminate this less than desirable intersection spacing, and thereby reduce collision potential and improve traffic flow on Highway 3.

8.2.3 Illumination and Traffic Signals

Illumination and signalization will be provided where warranted. Revisions to existing illumination and signals at intersections will be required to accommodate the new 4-lane cross-section on Highway 3. The nature and extent of the signal/illumination plant relocation will be determined in detail design. A summary of existing conditions and recommended improvements are summarized in **Table 8.2** below.

Table 8.2 – Section 3 - Electrical Requirements

	Location	Existing Traffic Signals to be Revised/Upgraded as Required	Existing Illumination to be Revised/Upgraded as Required
	Malden Rd.		✔
Section 3	Essex Rd. 19	✔	✔
	Ellis Rd.		
	Essex Cty Rd. 8	✔	✔
	Victoria St./ N. Malden Rd.	✔	✔
	Hwy 23/ Arner Town Line	✔	✔
	Con. Rd. 9 (Cameron)		
	Con. Rd. 8 (Marsh Rd.)		
	Essex Rd. 27		✔
	Division Rd. 29	✔	✔
	South Talbot/ Inman Rd.		
	Upcott Side Rd.		
	Essex Rd. 18		
	Graham Side Rd.		
	County Rd. 34	✔	✔

8.2.4 Property

In general, the proposed Highway 3 mainline improvements can be undertaken within the existing road allowance. However, significant property acquisitions are anticipated to accommodate the South Talbot Road and Division Road (Essex Road 29) realignment north of Highway 3 where approximately a 26 m wide corridor is required for the relocation of the Service Road (South Talbot Road), and a 30 m wide corridor for the extension of the south leg of Division Road. Additional property will be required for the cul-de-sac at Inman Sideroad.

8.2.5 Drainage

Generally, the existing drainage pattern will be maintained, including the rural ditches for the mainline and sideroads. Most existing cross-culverts will be extended to accommodate the proposed road works, and several culverts will be replaced due to an existing unsatisfactory condition or to increase flow capacity. Installation of ditch inlets in the grassed median will be required. Curb and gutter will be provided at several intersections in an effort to avoid additional property taking, to provide channelization and/or improve drainage at the intersections.

8.2.6 Entrances

There are no entrances along Section 3.

8.2.7 Utilities

There are few aerial Hydro One lines within Section 3. Most of the existing hydro lines are located within the South Talbot Road right-of-way. No impacts are anticipated, although relocation may be required at sideroad intersections.

Bell Canada and Cogeco Cable TV have lines/cable within the project limits predominantly along the north side of the Highway 3 right-of-way. No adjustments or relocations will be required along Highway 3, although some relocations will be required at sideroad intersections.

There are some watermains which cross Highway 3 in Section 3. These may have to be lowered.

There are no local natural gas lines along the Highway 3 corridor that require relocation. However, minor impacts may occur at a few sideroad intersections due to gas pipe crossings which may have to be lowered.

8.2.8 Cost

A construction cost estimate was prepared for Section 3. A detailed breakdown of costs and major quantities is contained in **Appendix E**. The total cost of the recommended improvements would be approximately $30.9 million in 2002 dollars (or approximately $33.7 million in 2005 dollars).

9 ENVIRONMENTAL ISSUES, CONCERNS AND MITIGATION MEASURES

Section 9 outlines the potential environmental effects associated with the implementation of the proposed Highway 3 improvements based on an assessment of the existing Study Area and external agency/public comments. Wherever possible, direct impacts on the environment have been avoided or minimized through the choice of designs. However, where the potential for residual effects associated with the preferred design exists, mitigation measures have been identified.

In addition to the project specific approaches developed for mitigating residual environmental effects, the MTO has developed a number of standardized environmental protection measures, including:

- Watercourse / fisheries protection
- Erosion and sedimentation control
- Construction and noise constraints
- Environmentally Sensitive Area avoidance
- Management of excess materials

The specific combination of mitigative and environmental protection approaches to be implemented will be developed in the detail design stage of the project.

The sections below outline the residual environmental concerns identified and the proposed mitigation measures to be carried forward. A summary of these concerns and the proposed mitigation are contained in **Table 9.1** at the end of the Section.

9.1 Natural Environment

9.1.1 Encroachment on Fisheries and Aquatic Habitat

No significant fisheries watercourses exist within the study area. Detailed field investigations revealed the presence of five channels in Section 3 that may provide seasonal opportunities for warmwater baitfish habitat. However, their intermittent flow regime, lack of canopy cover and deep silt deposits likely prohibit the establishment of a resident fish community at any of these crossings.

Modifications to culverts and roadside drainage ditches have the potential to affect flow patterns, water quality and fish habitat. If not mitigated properly, impacts resulting from construction activities may affect resident fish populations both in the immediate vicinity and downstream.

General mitigation measures to minimize potential effects to existing watercourses where works are proposed include:

- Minimize the areas of watercourse disturbance / alteration.
- Minimize the impact to riparian habitat.
- Prevent debris and/or deleterious substances (e.g., silt) from entering the watercourses during construction.
- Stabilization and re-vegetation of all disturbed soils as soon as feasible following construction.
- Sediment laden water originating from construction areas must be contained and treated using temporary sediment control basins, flow checks, sediment fencing, and filter bags (e.g., water pumped from construction areas).
- All construction material and debris will be stockpiled outside of the regulatory floodplains in a manner that prevents materials from entering watercourses.
- Debris and litter will be removed from the site frequently and the construction staging areas will be kept tidy.
- Where required, an environmental inspector will be available to inspect/supervise in-water construction activities.

Best Management Practices (BMPs) for protection of the aquatic habitat and surrounding natural features will be followed. In Section 3 where there are five potential baitfish crossings (Culvert 17 (Station 15+950), Culvert 18 (Station 10+000), Culvert 26 (Station 16+890), Culvert 27 (Station 17+890) and Culvert 28 (Station 18+790)), this means only permitting in-water works during the warmwater fisheries timing window from July 1 to March 31, prohibiting in-water work between April 1 and June 30.

While the new culvert installations and/or extensions in these five channels in Section 3 have the potential to result in the harmful alteration, disruption or destruction (HADD) of fish habitat, the intermittent flow regime and relatively poor habitat diversity presented at each crossing is expected to allow for work to be done “in the dry” and avoid HADD of fish habitat (also due to the construction of open concrete culverts). Final determination of HADD will occur in detail design. Should HADD of fish habitat be identified in detail design, Federal Department of Fisheries and Oceans (DFO) approvals, including a detailed Letter of Intent to Implement Construction Measures and a Fisheries Habitat Compensation Plan, will have to be obtained.

Potential enhancement opportunities include the addition of instream woody cover, the establishment of canopy cover, rock protection at the inlets and outlets of culverts, and riffle and/or pool creation at culvert outlets.

Site-specific construction mitigation measures, enhancement opportunities, and habitat compensation planning will be determined at the detailed design stage in consultation with MNR and DFO.

9.1.2 Encroachment on Vegetation and Wetlands

The Study Area is characterized as primarily agricultural in nature with very few tree stands. While no tree stands exist within 200 m of the ROW in Section 2, six exist within 200 m of the ROW in Section 3. These tree stands range in size from 4 ha to 18 ha. The 18 ha tree stand in Section 3 is designated as a Life Science Site under the Provincial Areas of ANSI program. There are also several provincially rare to uncommon pin oak trees located on the berm surrounding the pond at the north end of the Domric property in Section 3 that will likely be affected by the realignment of South Talbot Road at Division Road.

- While no adverse effects on the six tree stands in Section 3 are anticipated since the road works will remain within the existing ROW, tree protection barriers are recommended for placement prior to construction for any trees or large shrubs located close to roadwork activities.

It is expected that the existing pin oak trees will be impacted by the extension of Division Road and realignment of South Talbot Road. However, since other stands of pin oak exist in the area, measures including transplanting of immature trees and replacement of more mature trees will be considered in accordance with current Ministry standards. Detail design will determine the exact location of the realigned roadways, allowing for identification of the number and age of pin oaks requiring relocation / replacement. Wherever possible, the design will minimize the total number of pin oaks affected.

In terms of wetlands, no provincially or locally significant wetlands exist in the Study Area and wetland habitat is restricted to sporadic grass and cattail dominated stands within ditches adjacent to the highway.

Potential adverse effects to wetland habitat would be minimal and would likely include the removal of some grass and cattail stands as a result of ditch improvements. Since they are likely to re-establish due to their inherent resilience, the removal/disruption of these areas is not considered to impact the local natural environment. No specific mitigation measures are required.

9.1.3 Temporary Impairment of Surface Water Quality

It is anticipated at this stage that the proposed improvements will not change the overall surface water flow patterns. This will have to be confirmed in detail design.

However, these construction activities will disturb the existing soils during construction resulting in the potential to adversely affect surface water quality. As a result, standard mitigation measures will be used for erosion and sediment control to prohibit sediment from entering watercourses. Specifically, the following surface water protection measures for this project will include, but not be restricted to, the following:

- Silt fencing (OPSD 219.110) will be put in place adjacent to construction areas to prevent runoff from migrating towards watercourses.
- Rock checks (OPSD 219.210) or silt fence flow checks (OPSD 219.190) will be installed along all toes-of-slope and within all ditches flowing towards watercourses to slow flow velocities, reduce erosive forces, and trap suspended particulates.
- All vegetated cover not specified for removal will be preserved in order to minimize erosion and sedimentation.
- All excavated materials or soils requiring stockpiling will be in accordance with OPSS 180.07.06 and placed in pre-determined locations, as specified in the contract. The perimeter of stockpiles will be encircled with light duty silt fence barrier (OPSD 219.110) to prevent the erosion and/or deposition of this material into the watercourses or onto private property.
- Excess silt fence (a 25 metre supply), straw bales (25 individual bales) and rip-rap (5 cubic metres) should be maintained on site, prior to the commencement of grading operations and throughout the duration of construction, in case of an emergency; and,
- The placement and integrity of all erosion and sediment control measures should be monitored regularly (weekly and following rain events) and maintained throughout the construction period. These structures are to be removed only after 100% of all work has been completed, the trapped sediments have been removed, and the soils of the construction areas have been fully stabilized.
- All equipment cleaning, maintenance and fuelling operations will be prohibited within 50 metres of any watercourses and controlled to prevent any discharge of petroleum products.
- Construction material, excess material, construction debris and empty containers will be stored at least 50 m away from tributaries.
- Petroleum, chemical or other liquids will be stored as to prevent discharge to the environment. Any spills must be reported immediately to the Ministry of the Environment's (MOE's) Spill Action Centre at 1-800-268-6060 and to the local municipality when they cause or are likely to cause any of the following:
  - impairment to the quality of the natural environment - air, water, or land;
  - injury or damage to property or animal life;
  - adverse health effects;
  - safety risk;
  - making property, plant, or animal life unfit for use;
  - loss of enjoyment of normal use of property; or
  - interference with the normal conduct of business.
- Where the work involves the emission of dust and debris the Contractor should take whatever measures are necessary to prevent dust and debris from entering tributaries, adjacent drainage ditches or escaping beyond the Highway 3 road allowance.
- Effluent resulting from concrete cutting/grinding that does not dry will be managed according to MTO NSSP Management of Effluent from Concrete Cutting/Grinding and incorporated into construction activities.

Additionally, to the greatest extent possible, the quality of surface water will be maintained through enhanced ditches and swales before entering watercourses. Enhanced swales will also be considered as a best management approach to avoid stormwater quantity impacts to receiving watercourses. The MTO is aware that road salt in stormwater run-off from the roadway will also impair surface water quality. However, road salt is among the most effective snow and ice control material available for winter road safety. MTO employs best salt management practices and will continue to investigate ways to control and reduce salt usage while ensuring highway safety.

9.1.4 Loss/Degradation of Ground Water

As previously mentioned, the majority of residences along the Highway 3 study area are supplied with potable water via municipal water mains. As a result, the reliance on groundwater for domestic water use is not common and no impacts to domestic potable water is anticipated.

Potable water wells along Highway 3 obtain their supply from deep confined overburden and fractured bedrock aquifers(s) at depths well below the planned depth of any excavations (i.e., 15 m or more at most locations). Therefore, it is unlikely that the proposed Highway 3 improvements will impact groundwater resources, such as diversion of groundwater flow and/or loss in well yield, since excavations will not extend

to those depths, and no dewatering of the deep aquifer is required. However, any shallow wells in close proximity to areas of dewatering or excavations within the shallow aquifer will be identified in detail design to determine the potential for interference and any associated monitoring requirements.

Additionally, since the majority of the Highway 3 Study Area is situated on low permeability clay and silt soils, shallow aquifers in these areas are not generally present, and there is no indication that there are any shallow potable wells being used (MOE well water records). Therefore, there is little potential for contamination of potable water from surficial contaminants (i.e., road salt) emanating from road surface run-off. The MOE well records indicate that the potable aquifers are deep and confined, therefore protected from surficial contamination by thick layers of clay.

With regard to groundwater quality impacts from surface water, the first priority is to maximize the quality of roadway run-off in the drainage design. This means preventing erosion and filtering highway run-off through any combination of water quality swales, filter strips or other means before it reaches receiving watercourses, wetlands, and/or areas with recharge potential. The proposed drainage design will be reviewed during detail design to maximize run-off quality for both surface water and groundwater protection.

Groundwater protection will also be achieved through the implementation of standard MTO environmental protection measures for Dewatering, Product Storage and Handling, Equipment Maintenance and Fuelling, Works Yard Development, and Facility Maintenance.

9.2 Social / Cultural Environment

9.2.1 Encroachment on Private Property

In general, the proposed Highway 3 mainline improvements can be undertaken within the existing road allowance. Additional property will only be required in the following areas:

Section 2

- **Realignment of Oldcastle Road:** As a result of the realignment of the north leg of Oldcastle Road to line up with the south leg, property will be required for the new cul-de-sac north of Highway 3 (approximately 260 m^2), and approximately 3,050 m^2 along the new north leg realignment. Property will also be required in the two south quadrants of the intersection to provide sight lines at the revised intersection. Approximately 30 m^2 will be required in the south-west quadrant, and approximately 180 m^2 in the south-east quadrant.
- **Sexton Road:** Property will be required in two southern quadrants for intersection sight lines and culvert extensions. Approximately 54 m^2 will be required in southwest quadrant and 45 m^2 will be required in southwest quadrant.
- **Walker Road:** Property will be required in the two western quadrants to accommodate widening for two through lanes and one left turn lane in each direction. Approximately 360 m^2 will be required in northwest quadrant, and approximately 1,000 m^2 in southwest quadrant.

Section 3

- **Extension of Division Road and Re-Alignment of South Talbot Road:** Approximately 30,180 m^2 (3.02 ha) of property will be required for the Division Road extension and South Talbot Road realignment north of Highway 3.
- **Inman Sideroad:** The cul-de-sac at Inman Sideroad will require approximately 590 m^2 of property.

In all cases, property taking requirements will be confirmed in detail design. Once finalized, the Ministry will survey the lands identified and commence an evaluation to prepare an appraisal. Once completed, the property owner will be contacted by the Ministry to commence compensation negotiations. If an agreement is reached, the process will end with the purchase of the required land by the Ministry. If an agreement is not reached, the Ministry will inform the landowner of his/her rights with respect to the expropriation process.

9.2.2 Increase in Noise and Vibration

Operational Noise Effects

Sound exposures resulting from future road traffic (at least 10 years beyond the forecast completion of the roadway improvements) were modelled at 15 representative receptors for concern for future traffic levels (the “build” condition with the proposed improvements in place) and existing “no-build” scenarios.

The noise assessment found that there would not be a significant increase in noise (an increase of more than 5 decibels is considered “significant”) for any receptors in Sections 2 and 3 in the future “build” condition. Noise increases considered to be “just noticeable” (a 3.1 to 5.0 decibel increase) were noted for four receptors located in Section 2, and four receptors in Section 3.

The MOE and MTO joint protocol for addressing the noise impact of new or retrofit highway projects indicates that increases of 5 decibels or less above the existing ambient level do not require mitigation.

Construction Noise Effects

It is anticipated that during construction there will be a temporary increase in noise and vibration in the project area related to construction equipment operation and concrete structure removal work. However, the potential impacts are expected to be minor because construction noise impacts are temporary, and with the implementation of standard mitigation measures throughout the construction period the impacts will be minimized.

MTO has special provisions that cover the requirements for control of construction noise produced by the Contractor’s operations. Recommended mitigation measures include maintaining construction equipment and noise muffling devices in proper working order, operating equipment only as required (i.e., no excessive idling) and generating noise only as permitted by the local municipality’s noise control by-law. In this case, Sections 2 and 3 pass through the Towns of Tecumseh, Essex, and Kingsville. The following noise control by-laws are in effect in these towns:

- Town of Tecumseh (By-Law 2000-12): The operation of any item of construction equipment is prohibited in a residential area, agricultural area or commercial area without effective muffling in good working order

and in constant operation. The operation of any equipment is connection with construction is prohibited between 20:00 hrs to 7:00 hrs in residential, agricultural and commercial areas.

- Town of Essex (By-Law 220): The operation of any item of construction equipment is prohibited in a residential area & institutional area without effective muffling in good working order and in constant operation. The operation of any equipment in connection with construction is prohibited between 20:00 hrs and 7:00 hrs.
- Former Township of Gosfield located in the Town of Kingsville (By-Law 12-1985): The operation of any item of construction equipment in a residential area without effective muffling devices in good working order and in constant operation. The operation of any equipment in connection with construction is prohibited between 22:00 hrs and 7:00 hrs.

The contract documents developed in detail design will contain these noise control commitments, including commitments to adhere to the local noise by-laws.

Should short-term exemptions to the timing restrictions of a noise by-law be required, this may be obtained by making a proposal to the respective Council to obtain permission.

9.2.3 Temporary Increase in Dust, Fumes and Odours

MTO's special provisions along with OPSS 506 should be included in the Contract Documents in order to control dust emissions. Through these control measures, dust emissions would be prevented from entering surface waters, reaching traffic or pedestrians, or extending beyond the highway right-of-way.

Mitigation measures for dust control will be incorporated into construction activities and will include, but not be restricted to: the termination of concrete structure work during periods of high wind; the use of low dust generating technologies; using wet type blades and grinders where asphalt sawing or concrete sawing/grinding is required; vacuuming surfaces to remove dust and debris; and implementing dust suppression techniques such as applying water, calcium chloride, etc.

It is anticipated that odour emissions and fumes will be short in duration and limited to the periods of construction machinery operation and the application of hot mix asphalt. The implementation of standard mitigation measures such as minimizing combustion emissions from equipment (proper maintenance, operate only as required, and restrict idling to the minimum necessary to perform the specified work) is anticipated to minimize these potential impacts.

MOE criteria for noxious gases and particulate matter should not be exceeded.

9.2.4 Loss of Potential Agricultural Resources

While the mainline widening of Highway 3 will not extend beyond the existing ROW, in some areas, lands within the ROW are currently being leased for agricultural operations. As a result, it is estimated that approximately 14 ha of land will be taken out of agricultural use to accommodate the widening.

9.2.5 Loss of Potential Archaeological Resources and Built Heritage/Cultural Landscape Features

The cultural heritage assessment, including a Stage 1 Archaeological Resource Assessment and Built Heritage/Cultural Landscape Assessment has confirmed that the Study Area exhibits archaeological potential, and contains several built heritage features and cultural landscape units. As a result, the proposed improvements to Highway 3 have the potential to impact cultural heritage resources, including precontact and historic archaeological remains, built heritage features, and cultural heritage landscapes.

Archaeological Assessment Mitigation Measures

The Stage 1 Archaeological Assessment determined that three archaeological sites have been registered within the Study Area. Based on the proximity of these registered archaeological sites, the historical land use of the area, and the presence of several watercourses within the Study Area, it was concluded that the Study Area exhibits archaeological potential beyond existing disturbed soils within the ROW

Mitigation measures recommended include:

- Any areas where work is proposed beyond the disturbed soils of the ROW, any staging areas, access roads, equipment parking areas, or other areas affected by construction activities, should be subject to a Stage 2 archaeological assessment.
- The office of the Regulatory and Operations Group, Ministry of Culture (MCL), should be notified immediately in the event that deeply buried archaeological remains are encountered during construction activities.
- The MCL and the Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ministry of Consumer and Commercial Relations should be notified immediately in the event that human remains are encountered during construction

A Stage 2 Archaeological Resource Assessment of the proposed Division Road extension was undertaken. No archaeological materials or remains were recovered. As such, it is recommended that the proposed study corridor be cleared of further archaeological concern.

Built Heritage/Cultural Landscape Mitigation Measures

Road widening may have a variety of impacts upon built heritage and cultural landscapes in Section 2 (none in Section 3), including the loss or displacement of resources through removal or demolition and the disruption of resources by introducing physical, visual, audible or atmospheric elements that are not in keeping with the resources and/or their setting.

Accordingly, in detail design, consideration will be given to the roadway configuration in Section 2 to avoid any identified, aboveground, cultural heritage resource. Should it be determined in Detail Design that identified, aboveground, cultural heritage resources will be affected by loss or displacement, further research will be undertaken to identify the specific heritage significance of the affected cultural heritage resource and the appropriate mitigation measures adopted, such as detailed recording where appropriate.

Where it is determined in detail design that features are to be disrupted by introducing physical, visual, audible or atmospheric elements that are not in keeping with the resources and/or their setting, suitable measures such as landscaping, buffering or other forms of mitigation should be adopted.

In this regard, provincial guidelines should be consulted in detail design for advice, and further heritage assessment work undertaken as necessary to mitigate adverse effects.

9.2.6 Recreational Trail

The Chrysler Greenway Trail crosses the existing Highway 3 corridor. The Essex Region Conservation Authority (ERCA) has expressed concern with trail users crossing Highway 3 once the roadway has been widened. MTO and ERCA continue to work together to develop an acceptable pedestrian crossing for Highway 3. Options include developing pedestrian access to Walker Road to allow pedestrians to cross at the traffic signals.

9.3 Transportation and Engineering

9.3.1 Temporary Disruption of Traffic

In Section 2, it is anticipated that construction of the new lanes will occur on the south side of the existing roadway allowing for two lanes of traffic to remain on the existing roadway. Once constructed, traffic will be detoured onto the new lanes. However, due to the proximity of the construction activities, a reduced posted speed through the construction zone will be required.

In Section 3, there will similarly be minimal impact to traffic during construction of the new eastbound lanes, since the construction will take place on the south side of the existing roadway, and therefore both lanes of travel will remain open during peak hours. Once the eastbound lanes are completed there will be an opportunity to re-route two-way traffic onto the completed sections of the new eastbound lanes. However, depending on the rehabilitation needs for the existing lanes (future eastbound), the Ministry may elect to maintain eastbound traffic on the existing lanes during the rehabilitation.

Generally it is expected that construction staging will be conducted such that two lanes of traffic (one lane in each direction) will be maintained during peak hours. Off peak lane closures may be required during various phases of construction (flagmen or temporary signals would control movements through a single lane). Determination of the need for lane closures will be made in detail design. In addition, the need for temporary access at intersections will be identified in detail design.

Access to properties will be maintained at all times throughout the construction phase. Should temporary closure of access be required, the Contractor will either provide an alternate access, or arrange for the closure in advance with the landowner.

A Traffic Management Plan and standard traffic control measures developed during detail design will be used to safely coordinate traffic flow.

9.3.2 Management of Excess Construction Materials

Various types of materials (i.e. asphalt, concrete, soil, etc.) will be generated during construction of the project and will require appropriate management. This includes soils generated by the extension of Division Road and re-alignment of South Talbot Road (e.g., from the berm and sedimentation within the pond). The quantities and exact nature of any excess materials will be determined in detail design.

The MTO and MOE protocol identifying material-by-material management options both inside and outside the construction areas will be followed during construction.

All excess materials will be managed in accordance with the appropriate OPSS. The materials may be reused as a construction material or managed as engineered fill. It will be determined in detail design where excess materials may be used within the Study Area. Materials may also be temporarily stockpiled in preparation for these uses or removed from the site, if required. Where an excess material management option cannot meet constraints, other options must be pursued or the material must be disposed of as waste.

Site protection is provided by the imposition of constraints and for the protection of water and air quality adapted from existing legislation. The constraints on the management of these materials involve discussion and written agreements with property owners and may involve consultation with MOE and other authorities.

Table 9.1: Summary of Identified Concerns and Proposed Mitigation / Commitments to Future Work

FACTOR	AGENCY	ISSUE / CONCERN	PROPOSED MITIGATION / COMMITMENTS TO FUTURE WORK
GENERAL			
Compliance	All	▪ Ensure that Contractors and Sub-Contractors comply with environmental protection measures.	▪ Develop operation-specific monitoring requirements. ▪ Refer to Section 10.4, Monitoring, for standard construction inspection requirements.
NATURAL ENVIRONMENT			
Fisheries and Aquatic Habitat	MTO, MNR, DFO	▪ This section of Highway 3 crosses several watercourses. ▪ Replacement or extension of existing culverts can affect water quality and fish habitat. ▪ Construction activities in and around watercourses and drainage ditches can result in suspended sediments in the surface water run-off and within watercourses.	▪ The potential affects on existing watercourses is expected to be minimal as a result of implementing and monitoring the proposed mitigation measures. ▪ In addition, Best Management Practices (BMPs) for protection of the aquatic habitat and surrounding natural features will be followed. In Section 3 where there are five potential baitfish crossings, in-water works will only be permitted during the warm water fisheries timing window from July 1 to March 31, prohibiting in-water work between April 1 and June 30. ▪ While the new culvert installations and/or extensions in the five channels in Section 3 have the potential to result in the harmful alteration, disruption or destruction (HADD) of fish habitat, the intermittent flow regime and relatively poor habitat diversity presented at each crossing is expected to allow for work to be done “in the dry” and avoid HADD of fish habitat (also due to the construction of open concrete culverts). Final determination of HADD will occur in detail design. ▪ Potential enhancement opportunities include the addition of instream woody cover, the establishment of canopy cover, rock protection at the inlets and outlets of culverts, and riffle and/or pool creation at culvert outlets.
Vegetation and Wetlands	MNR	▪ The Study Area is characterized as primarily agricultural in nature with very few tree stands. ▪ While no tree stands exist within 200 m of the ROW in Section 2, six exist within 200 m of the ROW in Section 3 (one of is designated as a Life Science Site under the Provincial Areas of Natural and Scientific Interest (ANSI) program). ▪ There are also several provincially rare to uncommon pin oak trees that will be affected by the realignment of South Talbot Road at Division Road. ▪ No provincially or locally significant wetlands exist in the Study Area and wetland habitat is restricted to sporadic grass and cattail dominated stands within ditches adjacent to the highway.	▪ While no adverse effects on the six tree stands in Section 3 are anticipated since the road works will remain within the existing ROW, tree protection barriers are recommended for any trees or large shrubs located close to construction activities. Tree protection barrier will be put in place prior to construction. ▪ It is expected that the existing pin oak trees along South Talbot Road at Division Road will be impacted by the extension of Division Road and realignment of South Talbot Road. However, since other stands of pin oak exist in the area, measures including transplanting of immature trees and replacement of more mature trees will be considered in accordance with current Ministry standards. detail design will determine the exact location of the realigned roadways, allowing for identification of the number and age of pin oaks requiring relocation / replacement. Wherever possible, the design will minimize the total number of pin oaks affected. ▪ The potential for removal of some grass and cattail stands as a result of ditch improvements is not considered to impact the local natural environment since they are likely to re-establish due to their inherent resilience.
Surface Water Quality	MTO, MNR, DFO	▪ Construction activities involved in the creation of new roadside drainage and the extension of some existing culverts will significantly disturb the existing soils resulting in the potential to adversely affect surface water quality during construction (suspended sediments and other contaminants).	▪ To minimize the impact of construction activities on surface water quality, standard mitigation measures will be used for erosion and sediment control to prohibit sediment from entering watercourses (e.g., silt fencing, flow checks). ▪ Additionally, to the greatest extent possible, the quality of surface water will be maintained through enhanced ditches and swales before entering watercourses. Enhanced swales will also be considered as a best management approach to avoid stormwater quantity impacts to receiving watercourses. ▪ The MTO is aware that road salt in stormwater run-off from the roadway will also impair surface water quality. However, road salt is among the most effective snow and ice control material available for winter road safety. MTO employs best salt management practices and will continue to investigate ways to control and reduce salt usage while ensuring highway safety.

FACTOR	AGENCY	ISSUE / CONCERN	PROPOSED MITIGATION / COMMITMENTS TO FUTURE WORK
Groundwater Quantity and Quality	MTO, MOE	▪ The majority of residences along the Highway 3 study area are supplied with potable water via municipal water mains. As a result, the reliance on groundwater for domestic water use is not common. Where groundwater wells are used, records show these to be from a deep, confined aquifer at depths well below the planned depth of any excavations (i.e., 15 m or more at most locations). ▪ Therefore, it is unlikely that the proposed Highway 3 improvements will impact groundwater resources, such as diversion of groundwater flow and/or loss in well yield, and no impacts to domestic potable water is anticipated. ▪ Additionally, since the majority of the Highway 3 Study Area is situated on low permeability clay and silt soils, shallow aquifers in these areas are not generally present, and there is no indication that there are any shallow potable wells being used (MOE well water records). Therefore, there is little potential for contamination of potable water from surficial contaminants (i.e., road salt) emanating from road surface run-off.	▪ Any shallow wells in use and in close proximity to areas of dewatering or excavations within the shallow aquifer will be identified in detail design to determine the potential for interference and any associated monitoring requirements. ▪ The proposed drainage design will be reviewed during detail design to maximize run-off quality for both surface water and groundwater protection. While salt use and impacts will not be eliminated, continued improvements in salt management will reduce effects by reducing the amount of salt in the environment. ▪ Groundwater protection will also be achieved through the implementation of standard MTO environmental protection measures for Dewatering, Product Storage and Handling, Equipment Maintenance and Fuelling, Works Yard Development, and Facility Maintenance.
SOCIAL / CULTURAL ENVIRONMENT			
Property	MTO, Land Owners	▪ Widening outside the existing MTO Right-of-Way (ROW) is expected. As a result, private property is required in order to implement the project.	▪ Engineering surveys will be used to confirm property requirements. Once finalized, the Ministry will survey the lands identified and commence an evaluation to prepare an appraisal. Once completed, the property owner will be contacted by the Ministry to commence compensation negotiations. If an agreement is reached, the process will end with the purchase of the required land by the Ministry. If an agreement is not reached, the Ministry will inform the landowner of his/her rights with respect to the expropriation process.
Highway and Construction Noise	MTO, MOE, Residents & Businesses	▪ The noise assessment found that there will not be a significant increase in noise (an increase of more than 5 decibels is considered “significant”) for any receptors in Sections 2 and 3 in the future “build” condition. Noise increases considered to be “just noticeable” (a 3.1 to 5.0 decibel increase) were noted for four receptors located in Section 2, and four receptors in Section 3.	▪ The MOE and MTO joint protocol for addressing the noise impact of new or retrofit highway projects indicates that increases up to 5 decibels above the existing ambient level do not require mitigation. ▪ MTO has special provisions that cover the requirements for control of construction noise produced by the Contractor’s operations. Recommended mitigation measures include maintaining construction equipment and noise muffling devices in proper working order, operating equipment only as required (i.e., no excessive idling) and generating noise only as permitted by the local municipality’s noise control by-law. ▪ The contract documents developed in detail design will contain these noise control commitments, including commitments to adhere to the local noise by-laws.
Construction Dust, Fumes and Odours	MTO, MOE, Residents & Businesses	▪ Construction activities, including the operation of construction equipment and the application of hot mix asphalt, may result in the emission of dust, fumes and odours.	▪ MTO’s special provisions along with OPSS 506 and standard mitigation measures will be included in the Contract Documents in order to control dust emissions. Through these control measures, dust emissions entering surface waters, reaching traffic or pedestrians, or extending beyond the highway right-of-way will be minimized. ▪ It is anticipated that odour emissions and fumes will be short in duration and limited to the periods of construction machinery operation and the application of hot mix asphalt. The implementation of standard mitigation measures such as minimizing combustion emissions from equipment (proper maintenance, operate only as required, and restrict idling to the minimum necessary to perform the specified work) is anticipated to minimize these potential impacts.
Agriculture	MTO	▪ The majority of the lands surrounding this section of Highway 3 is under agricultural use.	▪ While the mainline widening of Highway 3 will not extend beyond the existing ROW, in some areas, lands within the ROW are currently being leased for agricultural operations. As a result, it is estimated that approximately 14 ha of land will be taken out of agricultural use to accommodate the widening. ▪ Any impact on artificial drainage systems from the proposed undertaking will be addressed to ensure their proper working order.

FACTOR	AGENCY	ISSUE / CONCERN	PROPOSED MITIGATION / COMMITMENTS TO FUTURE WORK
Archaeology / Heritage	MTO	▪ The Stage 1 Archaeological Assessment has determined that three archaeological sites have been registered within the Study Area. Based on the proximity of these registered archaeological sites, the historical land use of the area, and the presence of several watercourses within the Study Area, it was concluded that the Study Area exhibits archaeological potential beyond the existing disturbed ROW. ▪ Road widening may have a variety of impacts upon built heritage and cultural landscapes including the loss or displacement of resources through removal or demolition and the disruption of resources by introducing physical, visual, audible or atmospheric elements that are not in keeping with the resources and/or their setting.	▪ Any areas where work is proposed beyond the disturbed ROW, any staging areas, access roads, equipment parking areas, or other areas affected by construction activities, should be subject to a Stage 2 archaeological assessment in detail design. Where archaeological resources are encountered, appropriate measures will be developed for protection or salvage. ▪ The office of the Regulatory and Operations Group, Ministry of Culture (MCL), will be notified immediately in the event that deeply buried archaeological remains are encountered during construction activities. The MCL and the Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ministry of Consumer and Commercial Relations should be notified immediately in the event that human remains are encountered during construction. ▪ In detail design, consideration will be given to the roadway configuration in Section 2 to avoid any identified, aboveground, cultural heritage resource. Should it be determined in Detail Design that identified, aboveground, cultural heritage resources will be affected by loss or displacement, further research will be undertaken to identify the specific heritage significance of the affected cultural heritage resource and the appropriate mitigation measures adopted, such as detailed recording where appropriate.
Recreation		▪ Essex Region Conservation Authority expressed concerns about trail users crossing Highway 3.	▪ The MTO will pursue available options with the Conservation Authority during the detail design stage.
TRANSPORTATION AND ENGINEERING			
Traffic Disruption	MTO, Local Municipalities, Landowners, Motorists	▪ Motorists may experience delays or disruption during construction. ▪ Concerns regarding access to properties during construction. ▪ Concerns regarding access to local roadways during construction.	▪ Generally it is expected that construction staging will be conducted such that two lanes of traffic (one lane in each direction) will be maintained during peak hours. Off peak lane closures may be required during various phases of construction (flagmen or temporary signals would control movements through a single lane). Determination of the need for lane closures will be made in detail design. In addition, the need for temporary access at intersections will be identified in detail design. ▪ Access to properties will be maintained at all times throughout the construction phase. Should temporary closure of access be required, the Contractor will either provide an alternate access, or arrange for the closure in advance with the landowner.
Excess Construction Materials	MTO, MOE	▪ Excess materials may be generated. ▪ Potential for encountering contaminated soils and possible impacts if materials are not properly managed.	▪ MTO and MOE protocol identifying material-by-material management options both inside and outside the construction areas will be followed during construction. ▪ Where possible, materials will be recycled or reused in conjunction with construction. In addition, methods will be considered in detail design to reduce excess materials. Where materials are generated that are in excess of contract requirements they are managed in accordance with Ontario Provincial Standard Specifications (OPSS 180).

10 FUTURE WORK AND MONITORING

Based on the potential adverse effects and concerns associated with the implementation of the proposed Highway 3 improvements described in the previous section, commitments have been made for future work and monitoring to ensure environmental protection. These commitments and monitoring requirements are described below.

10.1 Public and Agency Consultation

External agencies, stakeholders and the interested public will be engaged in the detail design stage to review and comment on the Detail Design and the proposed approaches to address identified concerns. This will include the following:

- Consultation with Essex County and the Towns of Essex, Kingsville, La Salle, Leamington, and Tecumseh will be ongoing through the detail design phase to discuss various design refinements associated with the proposed improvements. Specific areas to be addressed include pavement rehabilitation and construction staging strategies, intersection improvements at municipal roads and needed improvements to support new developments.

- Consultation with the Town of Essex to discuss working together to explore opportunities to improve the road network to support future traffic growth and continued development in the Town of Essex.

- Consultation with the Ministry of Culture wherever undisturbed soils within the Highway 3 right-of-way may be impacted by the detail design (regarding the potential for archaeological resources).

- Consultation with the Essex Region Conservation Authority will continue regarding their recommendation that extensive treeplanting and other naturalization features be included, and regarding the safe crossing of Highway 3 by pedestrians using the Chrysler Greenway trail.

- Consultation with Essex County, the Towns of Essex, Leamington, La Salle, Tecumseh, and Kingsville, emergency services and the Ontario Provincial Police will be required to present the construction staging plans and finalize contract provisions to minimize impacts to traffic and to provide temporary access where necessary and feasible (however it is expected that 2-lanes of traffic will remain open during peak times).

- Consultation with the Ontario Provincial Police to ensure improvement recommendations are met.

- Consultation with utility companies will be required to determine specific locations, conflicts, utility relocations and timing as necessary.

- Consultation with affected property owners will be on ongoing throughout the detail design phase to review the design plans in the context of impacts to properties (property taking).

- Consultation with property owners with regard to accesses to Highway 3 in acknowledgement that the MTO will look for opportunities to reduce the number of access points where more than one access serves a property or the property has alternative access via a municipal road.

- Consultation with affected property owners and municipality concerning closure of Inman Sideroad from the proposed South Talbot Road to the existing South Talbot Road (approximately 170 m to the south) and South Talbot Road between Inman Sideroad and the proposed cul-de-sac east of Division Road.

- Consultation with local businesses, developers and residents will be ongoing through the detail design phase to discuss various design issues associated with the proposed improvements. Specific issues include: drainage concerns; and landscaping within the Highway 3 corridor.

Throughout the Preliminary Design phase, the Project Team has attempted to address all comments and requests for additional information from external adjacencies, adjacent residents / business owners and the public. This commitment to encouraging input and addressing issues and concerns will continue throughout the detail design phase.

10.2 Design and Construction Report

In the detail design stage, a Design and Construction Report (DCR) will be developed to document the transportation plan to the design implementation level of detail. The DCR will detail the approaches that have been developed to address the concerns and associated mitigation concepts described in this TESR. The DCR will be made available to the public for review, but will not be eligible for “bump-up” to an Individual EA under the Environmental Assessment Act.

10.3 Addressing Changes During Detail Design

This TESR was prepared on the basis of the recommended preliminary design for the improvements to Highway 3 within the study limits. During the detail design stage, contract drawings and specifications will be developed to allow the project to be tendered for construction. There is a possibility that minor design modifications or refinements will be incorporated during detail design or as a result of recommendations made by the Contractor. Such modifications may result in environmental benefit or impact that have not been anticipated or identified in this TESR. However, should this occur, the modifications are not anticipated to alter the basic intent of the undertaking. Any such changes resulting from design modifications/refinements will be discussed with the appropriate external agencies and /or property owners prior to construction.

Should the design modifications be considered significant and not simply minor refinements of the commitments outlined in this TESR, an Addendum may be required. If an Addendum is prepared, only the changes documented in the Addendum would be eligible for “bump-up” to an individual EA under the Environmental Assessment Act.

10.4 Monitoring

On-site construction administration/inspection staff retained by the MTO will ensure that the environmental protection measures outlined in this TESR and further developed during detail design are implemented and maintained properly.

Monitoring and maintenance will ensure that:

- Individual mitigating measures are providing the expected control and/or protection continuously throughout the construction period;
- The mitigating measures are adequate to minimize or eliminate adverse impacts;
- Additional mitigating measures are provided if required to address any unanticipated environmental impacts which arise during construction;
- Adequate information is available for the assessment of the mitigative measures; and,
- Environmental monitoring should include periodic site visits and inspections throughout the course of the work by the Contract Administrator (CA) or the MTO representative to administer the environmental control aspects of the contract and ensure their application and effectiveness (e.g., confirm the proper placement and maintenance of all erosion and sediment control measures). In the event that the CA determines that controls are unacceptable, the Contractor should be made to cease those operations as identified by the CA, which are causing the issue of concern. Such operations will remain suspended until otherwise directed by the CA in writing.

Environmental specialist staff will be available if needed to review construction activities with significant mitigating measures or environmental concerns. The timing and frequency of the involvement of specialist staff will be determined by the schedule of the construction activities, sensitivity of the environmental concerns, and the development of any unforeseen environmental problems.

If the impacts of construction are different than anticipated, or if the method of construction is such that there are greater than anticipated impacts, the Contractor's methods of construction operation will be changed or modified to reduce those impacts.

The MTO has an internal process to identify and address updates to the Ontario Provincial Standard Specifications, and MTO Special Provisions and Non-Standard Special Provisions included in construction contracts. This includes ongoing review of unanticipated events that occur during other construction contracts and incorporation of required updates into future contract provisions. This helps to assess the effectiveness of the contract provisions to ensure that they are providing the expected control and/or protection.

10.5 Future Considerations

10.5.1 Car Pool Parking Lot

An informal survey was undertaken in the summer of 2004 by staff of the Area Maintenance Contractor and MTO staff to determine if there were a significant number of vehicles parked along the shoulder of Highway 3 in the vicinity of Division Road.

The survey results confirmed the belief that there are a significant number of commuters who are carpooling, and leaving their vehicles on the side of Highway 3 during the day. It should be noted that the survey was completed during the typical summer vacation time, and it is reasonable to assume that the actual number of vehicles parked on the shoulder during the rest of the year would be higher.

While the MTO is open to considering the need for a new carpool parking lot, this issue is for consideration by others at a future date as it is beyond the scope of this study.

10.5.2 Town of Essex Transportation Review

The Highway 3 and Victoria Avenue intersection is only 30 m from the South Talbot Road and Victoria Avenue intersection to the north. Also, the Highway 3 and Essex Road 8 intersection is only 60 m from the Essex Road 8 and South Talbot Road/Pinkerton Road intersection to the south. The short spacing between intersections causes traffic operations to be less than desirable. While these intersections currently operate satisfactorily, it is expected that as traffic grows and the Town continues to develop, safety and operational issues will arise in the future.

While possible design options to improve the intersections to support new development were explored, these options may adversely affect the community by changing traffic patterns and/or have significant property and cost implications. Consequently, it was decided that in order to effectively address potential future traffic operation requirements, a combination of options that involve both Highway 3 and the municipal road network would be necessary. As a result of this interdependency between the municipal and provincial network, along with the possible community, property and cost implications, it was concluded that further developing and comparatively evaluating the possible design options as part of this study was not feasible and should rather be considered under a more comprehensive approach. Therefore, the MTO and the Town have agreed to partner together on a transportation study to address the forecasted operational and safety concerns.