DILLON
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CITY OF WINDSOR

Sixth Concession Road/ North Talbot Road

Class Environmental Assessment

April 2016 – 13-8295 – **BOOK 1 OF 2**

DILLON CONSULTING

CITY OF WINDSOR

Sixth Concession Road/ North Talbot Road

Class Environmental Assessment

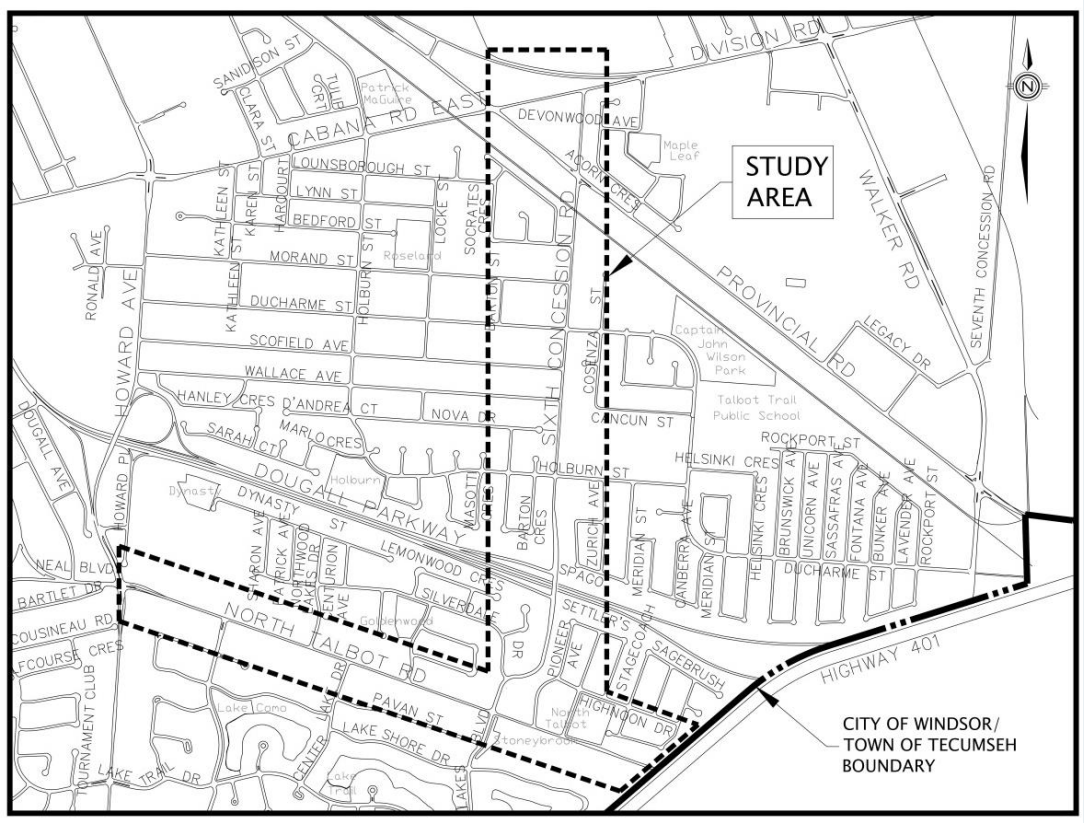
April 2016 – 13-8295

Executive Summary

1.0 INTRODUCTION

The City of Windsor initiated a Municipal Class Environmental Assessment (EA) study to provide improved Sixth Concession Road/North Talbot Road corridors that will serve the needs of the transportation system and area growth for a 20-year period, to 2035.

The limits of the Study Area as shown in the below figure, includes Sixth Concession Road from Division Road (as extended from Cabana Road during the study) to North Talbot Road (approximate distance 2.2 km), and North Talbot Road from Howard Avenue to the east City limits (approximate distance 1.9 km).



STUDY AREA

Previously, after lengthy public consultations and a 2004 council resolution, pork chop islands were installed on Wallace Avenue, Scofield Avenue, Morand Street, Ducharme Street and Socrates Crescent at Sixth Concession Road. In addition, a speed bump was installed on Scofield Avenue, east of Howard Avenue and two all-way stops located at Morand Street and Wallace Avenue along Sixth Concession Road were installed. These installations remain

contentious within the neighbourhood. Other key issues identified by the City and localized concerns from residents addressed by this Class EA study includes:

- The lack of active transportation facilities (discontinuous sidewalks, enhanced cycling and transit accommodations).
- Traffic control issues at Ducharme Street and Sixth Concession Road intersection.
- Speed and traffic volume concerns.
- Non-compliance to stop controls.
- Non-compliance to left turn restrictions (pork chop islands) on Sixth Concession Road.
- Drainage issues/rural cross sections upgraded to urban cross sections.
- Concerns any changes will encourage cut-through traffic into Old Roseland neighbourhood, west of Sixth Concession Road.

2.0 PROBLEMS AND OPPORTUNITIES

Based on the review of the existing conditions and the analysis of existing traffic volumes, projected future travel demands and concerns raised by the public, the problems for the Study Area include:

- Intersection Delays – some intersections require modifications, including turn lanes, improved traffic control or roundabouts.
- Traffic Speed – higher traffic speeds create safety concern for all modes of transportation.
- Pedestrian and Cyclist Safety – there is a need to improve facilities within the Study Area and provide system connections including transit connections.
- Open Ditches – many members of the community have indicated a desire to have the ditches enclosed to create an urban roadway cross section.
- Roadway has sufficient capacity for projected volume for study timeline.

Road modifications within the Study Area will present the following opportunities for the Study Area:

- Enhanced traffic safety and efficiency.
- Reduced traffic infiltration through the local road system.
- Provision of improved transit, pedestrian and cycling facilities within the Study Area.
- Provision of enclosed drainage system to the Study Area for maintenance, safety and aesthetic improvements.

In conclusion, modifications to the Sixth Concession Road/North Talbot Road corridors are needed to address traffic control issues, pedestrian and cyclist safety and drainage. The

improved transportation corridors will serve the needs of the transportation system and area growth for a 20-year period to 2035.

3.0 CONSULTATION

Consultation with the public, agencies, utilities and First Nations is a key component in the development and completion of Class EAs. Local knowledge, issues, concerns and suggestions provide invaluable information for the process and ultimately the completion of the study with the best possible solution.

Four primary methods for consulting the public were used throughout the study:

- City of Windsor Project Website (www.Windsor EAs.ca).
- Notices and comment sheets mailed to the project mailing list and published.
- Two Public Information Centres (PICs).
- Road Safety, Urban Design and Streetscape Workshop.

All notices were published in the Windsor Star to promote the study, make people aware of the PICs and direct residents and stakeholders to the City's website for more information. In addition to being published in the newspaper, notices were also distributed to City of Windsor Council as a communication item, agencies, utility companies, First Nations, property owners with addresses in the Study Area, and individuals who expressed an interest in the study. The notices were also posted on the City's website (www.WindsorEAs.ca).

PIC #1 was held on February 26, 2014, at the Roseland Golf & Curling Club to provide information about the EA process and the project, including problems and opportunities identified in the corridors and issues related to the alternative solutions, design opportunities and options, environmental considerations and evaluation criteria.

The Road Safety, Urban Design and Streetscape Workshop was held on April 1, 2014, from 2:00 p.m. to 5:00 p.m. at the Roseland Golf & Curling Club to discuss alternative design options for Sixth Concession Road and North Talbot Road including intersection improvements, traffic calming measures and intersection traffic control upgrades. The workshop focused on road safety, urban design and streetscape for the two corridors.

PIC #2 was held on June 26, 2014, at the Roseland Golf & Curling Club to provide information on the Class EA study process, the evaluation of design alternatives, the recommended design alternative and the potential impacts and associated mitigation measures.

A summary of the EA process and a description of the preferred alternative was presented to City Council on June 1, 2015. A copy of the presentation, Council Report and Council Resolution are included in **Appendix A** of this ESR.

The comments received throughout the study and at public meetings are discussed throughout this Environmental Study Report and in **Appendix A**.

4.0 ALTERNATIVE SOLUTIONS

To determine the best approach for the Study Area, the project team evaluated the following alternative solutions:

- Alternative 1: Do Nothing
- Alternative 2: Traffic Demand Management
- Alternative 3: Operational Modifications along Corridors
- Alternative 4: Urbanize Corridors
- Alternative 5: Improve Other Roads in the Network

The assessment of the alternative solutions and improvements to road safety is summarized in **Section 5.0** of this Environmental Study Report and resulted in the following recommendations:

1. Operational Modifications along Corridors – including traffic calming measures, traffic management (e.g., one way signs), localized widening, dedicated turning lanes, intersection modifications and potential closures of minor intersections.
2. Urbanize Corridors – ensuring that the corridor widths are sufficient to provide pedestrian/cycling and transit facilities and curbs/gutters and to enclose remaining open ditches.

5.0 PREFERRED DESIGN ALTERNATIVE

The preferred design for the Sixth Concession Road and North Talbot Road comprises the following and is discussed in detail in **Section 8.1** of this ESR:

- Two through lanes for vehicular traffic.
- On street cycling lanes on both sides of the road (includes 1.5 m bike lanes with a 0.3 m painted buffer, as per Council direction received on June 1, 2015). This configuration is consistent with the traffic calming objectives for this project and is supported by the heuristic evaluation and examination of site conditions undertaken.
- Continuous sidewalks on both sides of the road.
- Traffic calming measures.
- Urban cross section.

The preferred design includes 1.5 m wide sidewalks on both sides of Sixth Concession Road and North Talbot Road. Sidewalks are offset from the road by a minimum of a 2.0 m wide landscaped boulevard. Uncontrolled pedestrian crossings have been marked at multiple locations along Sixth Concession Road and North Talbot Road.

Traffic calming measures include (and work together):

- 3.3 m wide traffic lanes (in both directions).
- 1.8 m wide on road bike lanes (in both directions).
  - Includes 1.5 m bike lanes with a 0.3 m painted buffer, as per Council direction received on June 1, 2015).
- The use of mini and full size roundabouts at key locations.
- The use of landscaping and streetscape features to visually narrow the roadway.
- Convert the roads to an urban cross section: An urban cross section is usually paired with a speed limit of 40 km/hr to 60 km/hr. As a result, there is a prior expectation among motorists that slower speeds are expected on streets that have raised curbs. This being the case, it is desirable to convert the cross section from open ditch to curb-and-gutter from a speed management perspective.

These elements work together to provide the traffic calming desired.

Intersections with improvements include:

- Turning lanes and additional eastbound and westbound through lanes at Sixth Concession and Provincial Road.
- Mini roundabout at Ducharme Street and Sixth Concession Road.
- Full size roundabout at Holburn Street and Sixth Concession Road.
- Full size roundabout at Sixth Concession Road and North Talbot Road.
- Mini roundabouts on North Talbot Road at:
  - Goldenwood Drive.
  - Northwood Lakes Drive.
  - Southwood Lakes Boulevard West.

No changes are proposed at the intersection of Howard Avenue and North Talbot Road.

The existing pork-chop islands (Socrates Crescent, Morand Street, Ducharme Street, Scofield Avenue and Wallace Avenue) should be removed during the reconstruction effort, easing access for area residents and emergency services. If shortcutting through the Old Roseland neighbourhood becomes an issue at any time after reconstruction, it is recommended that a neighbourhood traffic calming study be undertaken. The purpose of this study would be to identify the scope and magnitude of the problem and appropriate solutions within the neighbourhood and not on Sixth Concession Road. Public participation should be an integral part of any traffic calming study.

The preferred design plans for North Talbot Road (Plates 1 to 6) and Sixth Concession Road (Plates 7 to 13) are found in this Environmental Study Report.

6.0 CONSTRUCTION IMPLEMENTATION AND PHASING

Implementation of each corridor in its entirety is important to ensure the overall traffic calming strategy is realized – the benefits will only become evident when all improvements in each corridor are in place.

The core of the solution to the issues impacting the Sixth Concession Road corridor is to ensure that traffic in the corridor can readily flow in the north-south direction, and that existing impediments to that flow be removed or modified. Refer to **Section 8.2** of this ESR for more detail.

Construction phasing should be planned as follows:

<u>Sixth Concession Road (added A and B for Phase 2 and Phase 3)</u>

- **Phase 1** – Construction on Sixth Concession Road should commence with the Sixth Concession Road and Provincial Road intersection. Inclusion of the rail crossing is required based on its proximity to the intersection once the recommended improvements are constructed at the Provincial Road and Sixth Concession Road intersection, the existing pork chop islands can be removed. Construction north to Cabana Road may be included in this phase.
- **Phase 2A** – Construction on Sixth Concession Road should include the full size roundabout at Sixth Concession Road and Holburn Street.
- **Phase 2B** – Construction of the mini roundabout at Sixth Concession Road and Ducharme Street to minimize construction impacts to the neighborhood or as budget allows. It should also include line painting to create two 3.3 m vehicular lanes for the full length of Sixth Concession Road. The existing all-way stops on Sixth Concession Road can be modified to minor street stop control at any time.
- **Phase 3** – Subsequent phases can address the connecting road links on Sixth Concession Road.

North Talbot Road (Added A and B for Phase 1)

- **Phase 1A** – Construction on North Talbot Road should include the full size roundabout at North Talbot Road and Sixth Concession Road.
- **Phase 1B** – Construction of the three mini roundabouts on North Talbot Road at Southwood Lakes Boulevard, Northwood Lakes Drive and Goldenwood Drive. It should also include line painting to create two 3.3 m vehicular lanes for the full length of North Talbot Road.
- **Phase 2** – Subsequent phases can address the connecting road links on North Talbot Road.

It must be noted that although this phasing will likely provide improved traffic calming over that which exists today, the greatest traffic calming benefit will only be realized when the full system is constructed.

7.0 PRELIMINARY COST ESTIMATE

The preliminary cost for the improvements is estimated at $13.26 million, as summarized in the table below. The Grand Total costs include a 20% Contingency Allowance and 15% Engineering. Refer to **Section 8.3** of this ESR for more detail.

PRELIMINARY CONSTRUCTION COST ESTIMATE

	SIXTH CONCESSION ROAD CORRIDOR				NORTH TALBOT ROAD CORRIDOR		
Description	**Phase 1**	**Phase 2A**	**Phase 2B**	**Phase 3**	**Phase1A**	**Phase 1B**	**Phase 2**
Road Works	$1,608,959	$424,788	$190,263	$623,588	$522,033	$610,463	$1,584,078
Drainage Works	$719,225	$247,024	$189,082	$566,636	$30,290	$35,290	$370,015
Traffic Signals/ Street lighting	$230,000	$105,000	$55,000	$155,000	$70,000	$50,000	$300,000
Utilities and Services	$78,704	$111,111	$92,593	$273,149	$95,556	$207,778	$274,445
SUBTOTAL	**$2,636,888**	**$887,923**	**$526,938**	**$1,618,373**	**$717,879**	**$903,531**	**$2,528,538**
Contingency Allowance (20%)	$527,378	$177,585	$105,388	$323,675	$143,576	$180,706	$505,708
Engineering (15%)	$395,533	$133,188	$79,041	$242,756	$107,682	$135,530	$379,281
GRAND TOTAL (excluding HST)	**$3,559,799**	**$1,198,696**	**$711,367**	**$2,184,804**	**$969,137**	**$1,219,767**	**$3,413,527**

8.0 POTENTIAL ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION

Many of the environmental concerns related to this project have been mitigated through the process by which the preferred design was selected, as described in **Section 7.0** of this Environmental Study Report. Specific mitigation measures have been selected and committed to by the City of Windsor to address potential impacts as discussed in **Section 8.4**. It is recommended that these commitments presented in the Environmental Study Report become part of the contract package so that contractors are aware of the requirements prior to tendering. The City of Windsor will work with authorities during detail design and prior to the start of construction to ensure that the proposed works are acceptable, and to obtain the required permits.

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1.0 Introduction

1.1 Purpose of the Study

The City of Windsor (City) initiated a Municipal Class Environmental Assessment (EA) Study to provide improved Sixth Concession Road/North Talbot Road corridors that will serve the needs of the transportation system and area growth for a 20-year period, to 2035. Previously, after lengthy public consultations and a 2004 council resolution, pork chop islands were installed on Wallace Avenue, Scofield Avenue, Morand Street, Ducharme Street and Socrates Crescent at Sixth Concession Road. In addition, a speed bump was installed on Scofield Avenue, east of Howard Avenue, and two all-way stops located at Morand Street and Wallace Avenue along Sixth Concession Road were installed. An all-way stop was also installed in 2005 at Holburn Street. These installations remain contentious within the neighbourhood. Other key issues identified by the City and localized concerns from residents to be addressed by this Class EA Study include:

- The lack of active transportation facilities (discontinuous sidewalks, improved cycling and transit accommodations).
- Traffic control issues at Ducharme Street and Sixth Concession Road intersection.
- Neighbourhood cut-through traffic.
- Speed and traffic volume concerns.
- Non-compliance to stop controls.
- Non-compliance to left turn restrictions on Sixth Concession Road.
- Drainage issues/rural cross sections upgraded to urban cross sections.
- Concerns any changes will encourage cut-through traffic into Old Roseland neighbourhood, west of Sixth Concession Road.

The following tasks were undertaken as part of the Class EA Study:

- Identify existing and long-term mobility requirements in the Sixth Concession Road and North Talbot Road corridors based upon estimates for future growth within and adjacent to the Study Area.
- Identify significant technical, environmental and public concerns and constraints associated with the provision of infrastructure improvements within the Study Area.
- Identify alternative solutions that recognize the contribution of various modes of travel (e.g., auto, walking, cycling, transit).
- Complete an assessment of alternative solutions and design concepts that incorporate the concerns and values of the public and affected agencies/ministries.
- Identify measures needed to mitigate impacts and public concerns associated with the recommended improvements.

- Prepare a preliminary design for the improvements.
- Prepare an Environmental Study Report (ESR) that documents the planning process used to define the solution and design of improvements within the Study Area and complies with the requirements of the Municipal Class EA Study process.

1.2 Study Area

The limits of the Study Area, as shown on **Figure 1**, includes Sixth Concession Road from Division Road (as extended from Cabana Road during the Study) to North Talbot Road (approximate distance 2.2 km), and North Talbot Road from Howard Avenue to the east City limits (approximate distance 1.9 km).

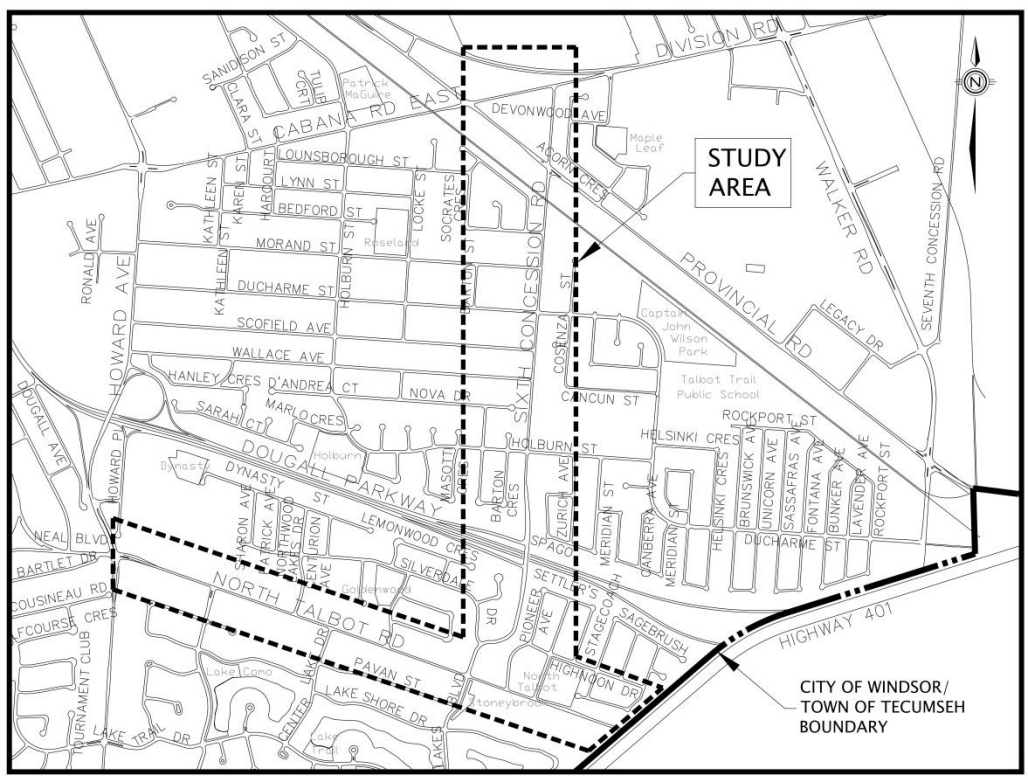

FIGURE 1: STUDY AREA

1.3 Municipal Class Environmental Assessment Process

The Class EA Study process ensures that all projects are carried out with consistency, effectiveness, efficiency and fairness. This planning process provides a consistent method of identifying and assessing economic, social and environmental impacts and concerns before improvements or additions to municipal infrastructure are undertaken, ensuring that potential impacts from all municipal projects are addressed and mitigated.

The Municipal Engineers Association (MEA) Municipal Class EA document, 2000, as amended in 2007 and 2011, defines four schedules under which projects may be planned with the associated processes required for each. The four types of projects are referred to as "schedules", with projects classed as Schedule A, A+, B or C, depending on the anticipated level of environmental impact, and for some projects, the anticipated construction costs. The schedule in which a project applies determines the planning and design phases that must be followed.

Schedule A projects are minor operational and upgrade activities and may go ahead without further assessment once Phase 1 of the Class EA process is complete (i.e., the problem is reviewed and a solution is confirmed).

Schedule A+ projects are limited in scale, have minimal adverse environmental impacts, and require no documentation; however, the public is to be advised of the project prior to implementation.

Schedule B projects must proceed through the first two phases of the process. Proponents must identify and assess alternative solutions to the problem, inventory impacts and select a preferred solution. They must also contact relevant agencies and affected members of the public. Provided that no significant impacts are found and no requests are received to elevate the project to a Schedule C, or undertake the project as an Individual EA through a Part II Order request, the project may proceed to detailed design (Phase 5).

Schedule C projects require more detailed study, public consultation and documentation, as they may have more significant impacts. Projects categorized as Schedule C must proceed through all five phases of assessment. Schedule C projects may potentially result in adverse impact(s), and as such, a public consultation program is needed to ensure that stakeholders and local residents within the Study Area are provided with the opportunity to provide meaningful input.

This study was conducted in accordance with Schedule C of the Municipal Class EA document. As a Schedule C project, the study proceeded under the full planning and documentation procedures as illustrated in **Figure 2**.

The Schedule C process includes the following five phases:

- Phase 1: Identification of the problem or opportunity.
- Phase 2: Assessment and evaluation of alternative solutions.
- Phase 3: Assessment and evaluation of the alternative design concepts for the preferred solution.
- Phase 4: Documentation in an ESR.
- Phase 5: Project implementation.

The filing of this ESR completes the planning and preliminary design stage of the project. The ESR is placed on the public record and made available for review for a thirty calendar day period. A public notice is published at the time of filing. Copies of the ESR are available for review and comment on the City's website, www.WindsorEAs.ca, and during normal business hours at the following locations:

City of Windsor Library Budimir Branch	Windsor City Hall City Clerk's Office	Public Works – Operations
1310 Grand Marais Road West Windsor, ON N9E 1E4 **Hours:** Monday to Wednesday: 10:00 a.m. to 9:00 p.m. Thursday: 10:00 a.m. to 6:00 p.m. Friday to Saturday: 9:00 a.m. to 5:00 p.m. Sunday: 1:00 p.m. to 5:00 p.m.	350 City Hall Square West Windsor, ON N9A 6S1 **Hours:** Monday to Friday 8:30 a.m. to 4:30 p.m.	1266 McDougall Street Windsor, ON N8X 3M7 **Hours:** Monday to Friday 8:30 a.m. to 4:30 p.m.

The Class EA Study process contains a provision that allows for changing the status of a project from a Class EA to an Individual EA through a Part II Order request. Members of the public, interest groups, government agencies and others may request that an Individual EA be prepared for a specific project if they feel their concerns have not been addressed through the Class EA planning process. The Minister of the Environment and Climate Change determines whether or not this is necessary, and the decision in this regard is final. The Minister can:

- Deny with or without conditions.
- Refer the matter to mediation.
- Require the proponent to comply with Part II of the *Environmental Assessment Act*.

If the Part II Order is granted, the project cannot proceed unless an Individual EA is prepared. The Individual EA is subject to a formal government review and approval process, and may result in a formal public hearing. Anyone wishing to request a Part II Order of the Sixth Concession/North Talbot Road Class EA Study must submit a written request before the end of the thirty calendar day review period, to the Minister of the Environment and Climate Change at the following address, with a copy sent to the City of Windsor and Dillon Consulting Limited:

Honourable Glen R. Murray
Ministry of the Environment and Climate Change
11th Floor, Ferguson Block
77 Wellesley Street West
Toronto, ON M7A 2T5
Fax: 416-314-8452

Director, Environmental Approvals Branch
Ministry of the Environment and Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, ON M4V 1P5
EAAS1Bgen@ontario.ca

Ms. Jennifer Leitzinger, P.Eng.
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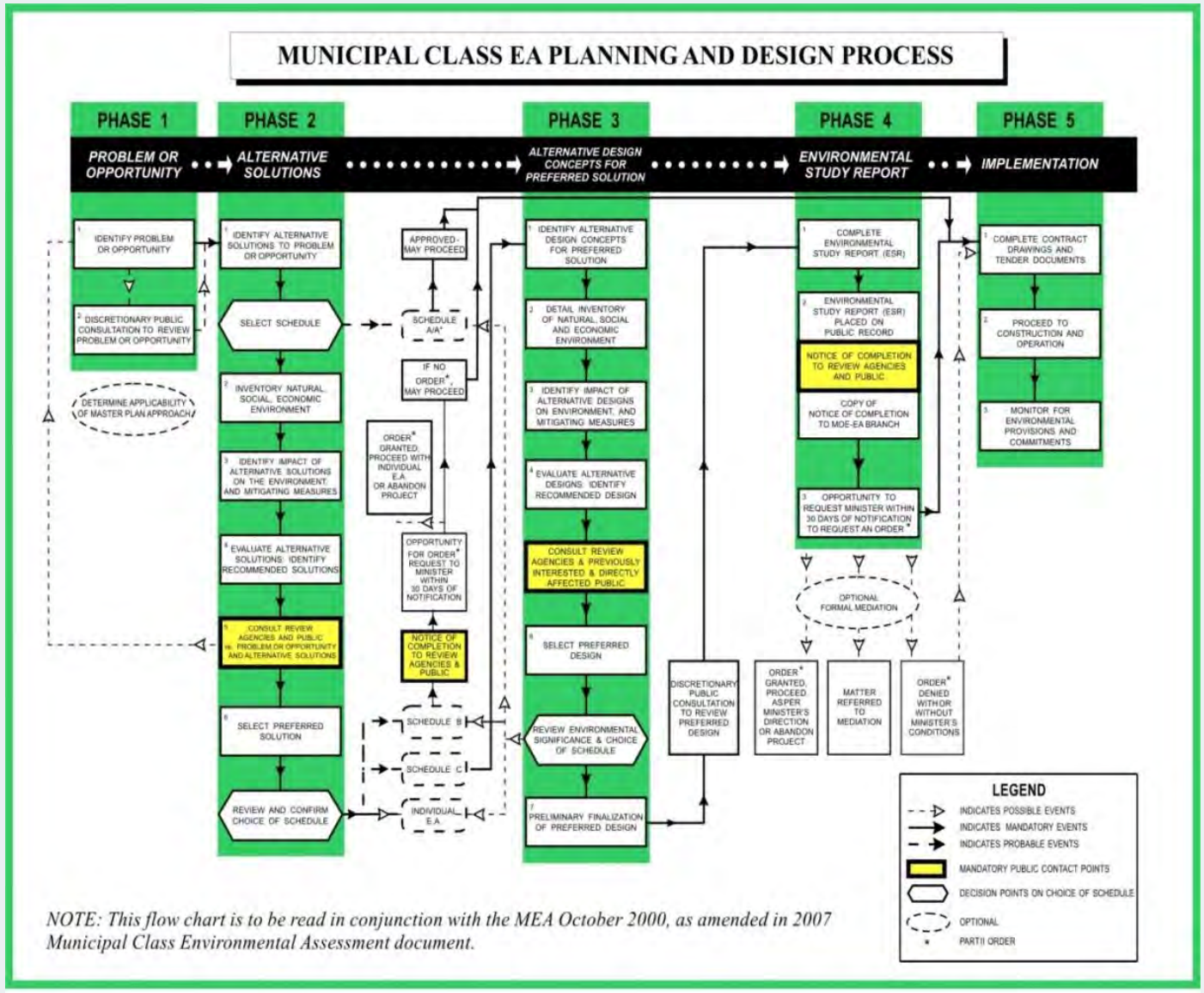


FIGURE 2: MUNICIPAL CLASS EA PLANNING AND DESIGN PROCESS

1.4 Project Team

The City retained Dillon Consulting Limited (Dillon) to carry out the Class EA Study. The project team included representatives from the City of Windsor and Dillon. General direction was provided by City staff with project team meetings held at key points during the study and prior to presenting study findings to public and agency stakeholders.

Representative staff from the City of Windsor on the project team included:

- Jennifer Leitzinger, Project Manager
- Josette Eugeni, Transportation Planning
- Jane He, Engineering Department
- Simona Simion, Planning Department
- Jeff Hagan, Transportation Planning
- Mike Clement, Parks Development
- Andrew Lewis, Contract Administrator
- Frank Scarfone, Property Coordinator
- John Wolf, Traffic Operations

A team of consultants, led by John Zangari, included:

- Paula Neto, EA Process and Consultation
- Kyle Edmunds, Municipal Engineering
- Michael Flainek, Transportation Planning
- Doug Green, Transportation Planning
- Daniel Bourassa, Natural Environment
- Kiran Chhiba, Urban Design/Landscaping
- Kimberly Horvath, Project Administration

Dillon retained two sub-consultants as part of the project team including:

- Intus Road Safety Engineering Inc., to review and assess Road Safety and Traffic Calming in the Study Area.
- Fisher Archaeological Consulting to complete the Stage 1 Archaeological Assessment.

2.0 Consultation

2.1 Purpose and Objectives of Consultation Efforts

The involvement of the community – residents, stakeholders and those who may be potentially affected by a project – is an integral part of the Class EA Study process. The purpose of the consultation process is to provide an opportunity for the public to gain an understanding of the study process, contribute to the process of development and selection of alternatives, and provide feedback at important stages in the EA process. Specifically, the consultation efforts for this project had the following objectives:

- Generate awareness of the project and provide opportunities for involvement throughout the planning process.
- Facilitate constructive input from public and agency stakeholders at key points in the EA process, prior to decision-making.

The contact list for this project included potentially interested/affected federal agencies, provincial ministries, First Nations, municipalities, local agencies, interest groups, utilities and property owners within the Study Area. The list was updated throughout the study with names added or removed as requested.

2.2 Agencies

The following ministries, municipalities, agencies and other authorities were contacted at the project initiation stage through correspondence, notifying them of the study commencement and requesting their comments and interest in participating in the study:

Federal Agencies:
Fisheries and Oceans Canada
Canadian National Railway

Provincial Agencies:
Ministry of Transportation
Ministry of Tourism, Culture and Sport
Ministry of the Environment and Climate Change
Ministry of Municipal Affairs and Housing
Ministry of Natural Resources and Forestry

Municipal Agencies and Authorities:
Essex Region Conservation Authority
Essex-Windsor EMS
Central Ambulance Communications Centre
Windsor Police Services
Windsor Fire and Rescue
Town of Tecumseh Fire/Rescue
Town of Tecumseh
Municipal Property Assessment Corporation
Windsor Bicycling Committee
Windsor Essex County Health Unit

Utilities:
ENWIN Utilities
Bell Canada
Cogeco Cable Services
Hydro One
Union Gas
Windsor Utilities Commission
MNSI Cable
Canada Post

School Board Contacts:
Conseil Scolaire de District Des Ecoles Catholiques du Sud-ouest
Greater Essex County District School Board
Windsor-Essex Catholic School Board
Windsor-Essex Student Transportation Services
First Lutheran Christian Academy

Agencies were sent general correspondence throughout the study as required. Relevant agency correspondence is included in **Appendix A**.

2.3 First Nations

The following First Nations and Ministry were contacted at the project initiation stage through correspondence during the study, notifying them of the study commencement and requesting their comments and interest in participating in the study:

- Ministry of Aboriginal Affairs.
- Walpole Island First Nation/Bkejwanong Territory.
- Caldwell First Nation.
- Aamjiwnaang First Nation.
- Moravian of the Thames (Delaware Nation).

The list of First Nations was provided by the Ministry of Aboriginal Affairs. Relevant First Nations correspondence is included in **Appendix A**.

2.4 Public Involvement

Public involvement is a key component in the development and completion of Class EAs. Local knowledge, issues, concerns and suggestions provide invaluable information for the process, and ultimately the completion of the study with the best possible solution.

Four primary methods for consulting the public were used throughout the study:

- City of Windsor Project Website (www.Windsor EAs.ca).
- Notices and comment sheets mailed to the project mailing list and published.
- Two Public Information Centres (PICs).
- Road Safety, Urban Design and Streetscape Workshop.

2.4.1 Notices

Notices were published in the Windsor Star to promote the study, make people aware of the PICs and direct residents and stakeholders to the City's website for more information. The public notices are provided in **Appendix A**, including:

- Notice of Study Commencement.
- Notice of PIC #1.
- Notice of PIC #2.
- Notice of Completion.

In addition to being published in the newspaper, notices were also distributed to agencies, utilities, First Nations, property owners with addresses in the Study Area, and individuals who expressed an interest in the study. The notices were also posted on the City's website (www.WindsorEAs.ca).

2.4.2 Public Meetings

PICs provide an opportunity to explain project details to attendees and address questions and comments using a one-on-one approach. Two PICs were held at key milestones during the Class EA Study at the Roseland Golf & Curling Club, located at 455 Kennedy Drive West in Windsor, Ontario.

PIC #1

PIC #1 was held on February 26, 2014, to provide information about the EA process and the project, including problems and opportunities identified in the corridor, and issues related to the alternative solutions, design opportunities and options, environmental considerations and evaluation criteria. Residents were encouraged to provide written and/or verbal comments by March 14, 2014, and register to be added to the mailing list and kept informed of the project progress.

A notice advertising PIC #1 appeared in the February 19 and 22, 2014 editions of the Windsor Star. Dillon mailed a copy of the notice to the project contact list on February 11, 2014. PIC #1 was attended by 92 people, including residents and representatives from Windsor Police Service and the Windsor Bicycling Committee.

Comments received and questions asked generally included topics such as:

- Poor pedestrian/cyclist access at the rail tracks on Sixth Concession Road.
- Lack of active transportation facilities along both corridors.
- Support for the elimination of roadside ditches along both corridors.
- Support for the elimination of the pork chop islands.

- Concern regarding lack of compliance with left turn restrictions on Sixth Concession Road (pork chop islands).
- Concerns that any changes will increase cut-through traffic in Old Roseland.
- Support to eliminate roadside ditches along both corridors.
- Cut through traffic at Holburn Street and Wallace Avenue (coming from Walker Gate Estates).
- School bus access (turning movements) at Holburn Street to Talbot Trail Public School.
- Speed and traffic volume concerns.
- Noise.
- Concerns with Sixth Concession Road and Provincial Road intersection.
- Support for roundabouts.
- Concerns with access to Roseland neighbourhood at North Talbot Road.
- Support for elimination of left turn restrictions and stop signs on Sixth Concession Road.
- Support for a four-way stop at Ducharme Street.
- Existing traffic calming not functioning.

Those people in attendance were asked to fill out an application form indicating their interest in participating in the Road Safety, Urban Design and Streetscape Workshop. A total of 15 workshop applications were received expressing an interest in participating.

A full summary of comments received and PIC #1 materials are provided in **Appendix A**.

Road Safety, Urban Design and Streetscape Workshop

A Road Safety, Urban Design and Streetscape Workshop was held on April 1, 2014, from 2:00 p.m. to 5:00 p.m. at the Roseland Golf & Curling Club. A total of 15 workshop applications were received by the project team expressing an interest in participating; of those interested, 11 attended.

The purpose of the workshop was to openly discuss alternative design options for Sixth Concession Road and North Talbot Road, including intersection improvements, traffic calming measures and intersection traffic control upgrades. The workshop focused on road safety, urban design and streetscape for the two corridors.

Attendees were encouraged to share their questions, comments and concerns during the workshop. The following provides a summary of the key ideas and discussion points generated at the workshop:

- Desire for pedestrian and bike facilities throughout both corridors and on both sides of the street.

- Areas requiring special attention regarding pedestrian and cyclist safety include:
  - Sixth Concession Road/Dougall Parkway.
  - Sixth Concession Road/CN Rail crossing.
  - Sixth Concession Road/Ducharme Street.
  - Sixth Concession Road/Holburn Street.
- Desire for a cycling and pedestrian friendly connection to Devonwood Conservation Area and Cabana Road.
- Accessibility for persons with disabilities should be addressed throughout the Study Area including ramps at intersections.
- Roundabout at Sixth Concession and North Talbot Road could be treated as a gateway/anchor into the area.
- Desire for connection of communities in the area.
- Creating "complete streets" is a critical success factor.
- Visual cues and side friction (e.g., vegetation, street furniture, road treatments) implemented to slow drivers down in residential areas.
- Consider different coloured bike lanes to give the illusion of reduced pavement width for motorists.
- Need for proper transitioning of sidewalks and bike lanes (outside of Study Area).
- Ensure that improvements deal with the issue of traffic "cutting through" the residential neighbourhood west of Sixth Concession Road.

Following the workshop, the project team developed and evaluated alternative design options for the Study Area, incorporating ideas generated from the workshop discussion. The recommended alternative design was presented at the final PIC (PIC #2) to obtain feedback from the community.

A full summary of comments received and a copy of workshop materials is provided in **Appendix A**.

PIC #2

PIC #2 was held on June 26, 2014, to provide information on the Class EA Study process, the evaluation of design alternatives, the recommended design alternative and the potential impacts and associated mitigation measures.

A notice advertising PIC #2 appeared in the June 18 and 21, 2014, editions of the Windsor Star. Dillon mailed a copy of the notice to the project contact list on June 12, 2014. PIC #2 was attended by 54 people, including residents and a representative from the Windsor Bicycling Committee. Written comments were requested by July 17, 2014.

Overall, the response to the project was positive, and most residents were pleased with the recommended design. Comments and questions asked generally included topics such as:

- Roundabout safety.
- Traffic.
- Rail crossing safety.
- Pork chop islands.
- Connection to Devonwood Conservation Area.
- Landscaping.
- Cycling/pedestrian safety.
- Alternative designs.
- Construction timing.
- Storm sewer/water connection.

Specific comments relating to potential property impacts were received by the project team and were addressed individually with property owners.

A full summary of comments received and PIC #2 materials is provided in **Appendix A**.

2.4.3 Council Meetings

A summary of the EA process and a description of the preferred design was presented to City Council on June 1, 2015. As per Council direction from Report CR 106/2015, the preferred design will mirror the physical attributes of those being used for Cabana Road, including a 0.3 m painted buffer within the 1.8 m bike lane. This direction will be carried forward into the preferred alternative and detail design for the Sixth Concession Road and North Talbot Road corridors. The Council Report and Council resolution are included in **Appendix A** of this ESR.

3.0 Needs and Justification

Phase 1 of the Class EA Study process involves identifying the problems and opportunities within the Study Area. For this study, Phase 1 included a transportation assessment, including existing conditions, projected future conditions and required future transportation infrastructure required within the Study Area.

3.1 Existing Road Network

Both North Talbot Road and Sixth Concession Road are designated as Class I Collector Roads, as defined by the City of Windsor's Official Plan (OP). Class I Collector Roads are designed to carry moderate volumes of traffic (up to 8,000 vehicles per day), with a minimum right-of-way (ROW) width of 28 m. Direct property access may be permitted with some controls.

North Talbot Road is a two lane road running east/west, with one travel lane in each direction. There are 505 m of sidewalk on the north side of North Talbot Road over its 1.8 km length; however, the sidewalk is not continuous along its length. The speed limit is 50 km/hr. North Talbot Road was closed at the Highway 401 overpass during a portion of the Class EA Study and was reopened to traffic in May 2014.

The existing ROW width varies throughout the Study Area (25.3 m and 26.2 m). The OP and Bicycle Use Master Plan (BUMP) indicate that bike lane facilities are to be provided along the corridor.

Sixth Concession Road is a two lane road running north/south, with one travel lane for each direction. The speed limit is 50 km/hr. Within the Study Area, traffic signals are located at the intersections of:

- Sixth Concession Road and the Dougall Parkway westbound off-ramp.
- Sixth Concession Road and Provincial Road.

The existing ROW width varies throughout the Study Area (20.1 m and 24.4 m). The OP and BUMP indicates that bike lane facilities are to be provided along the corridor.

Dougall Parkway is a designated Expressway that connects to/from the west at Sixth Concession Road. It is a four lane divided roadway with a speed limit varying from 100 km/hr to 50 km/hr. Bikes and pedestrians are prohibited.

Cabana Road East is a two lane, Class II Arterial roadway that runs east/west, with a speed limit of 50 km/hr. There are no sidewalks on Cabana Road East at Sixth Concession Road. East of Sixth Concession Road to Devonwood Avenue, the speed limit is 50 km/hr. Cabana Road then becomes Division Road, and the speed limit changes to 60 km/hr. Bike lanes exist on Cabana Road East, approximately 100 m west of the intersection with Sixth Concession Road to Sunrise Court.

Provincial Road is a two lane, Class II Arterial roadway that runs northwest/southeast, and intersects Cabana Road East and Sixth Concession Road. It has a speed limit of 60 km/hr. Bike lanes exist on Provincial Road from Marentette Avenue to north of Sixth Concession Road.

Howard Avenue is a two lane, Class II Arterial roadway with a speed limit of 50 km/hr. It runs north/south through the Study Area. There are sidewalks on both sides of Howard Avenue from North Talbot Road to Tuson Way, and on the east side of the road from Wallace Avenue to Cabana Road East. There are no sidewalks on the Dougall Parkway overpass.

Dougall Parkway, Cabana Road, Provincial Road and Howard Avenue are all truck routes. Cabana Road is not a truck route west of Provincial Road.

Holburn Street is a two lane, Class II Collector with a speed limit of 50 km/hr. There are cycling lanes and sidewalks on both sides of the roadway west of Sixth Concession Road. A sidewalk is provided on the south side of Holburn Street east of Sixth Concession Road to Ducharme Street.

Ducharme Street runs from Walker Road on the east to Howard Avenue on the west. From Walker Road to Sixth Concession Road, Ducharme Street is a two lane, Class II Collector with cycling lanes and sidewalks on both sides of the roadway, and a speed limit of 50 km/hr. West of Sixth Concession Road, Ducharme Street is considered a local road with a signed bike route to Holburn Street.

3.2 Local Roads

The following Local Roads intersect Sixth Concession Road or North Talbot Road within the Study Area:

- Socrates Crescent
- Silverdale Drive
- Centre Lake Drive
- Morand Street
- Old West Avenue
- Northwood Lakes Drive
- Scofield Avenue
- Pioneer Avenue
- Southwood Lakes Drive
- Wallace Avenue
- Goldenwood Drive

The City's OP designates Local Roads are designed to carry low volumes of traffic, with a minimum width of 20 m. Cycling facilities and on-street parking are permitted.

Existing intersection geometry and traffic controls for the Study Area intersections are provided on **Figure 3**.

Southwood Lakes Boulevard intersects North Talbot Road opposite Sixth Concession Road and at a point approximately 900 m to the west. For the purposes of this study, all references to the intersection of North Talbot Road/Southwood Lakes Boulevard refer to the western intersection.

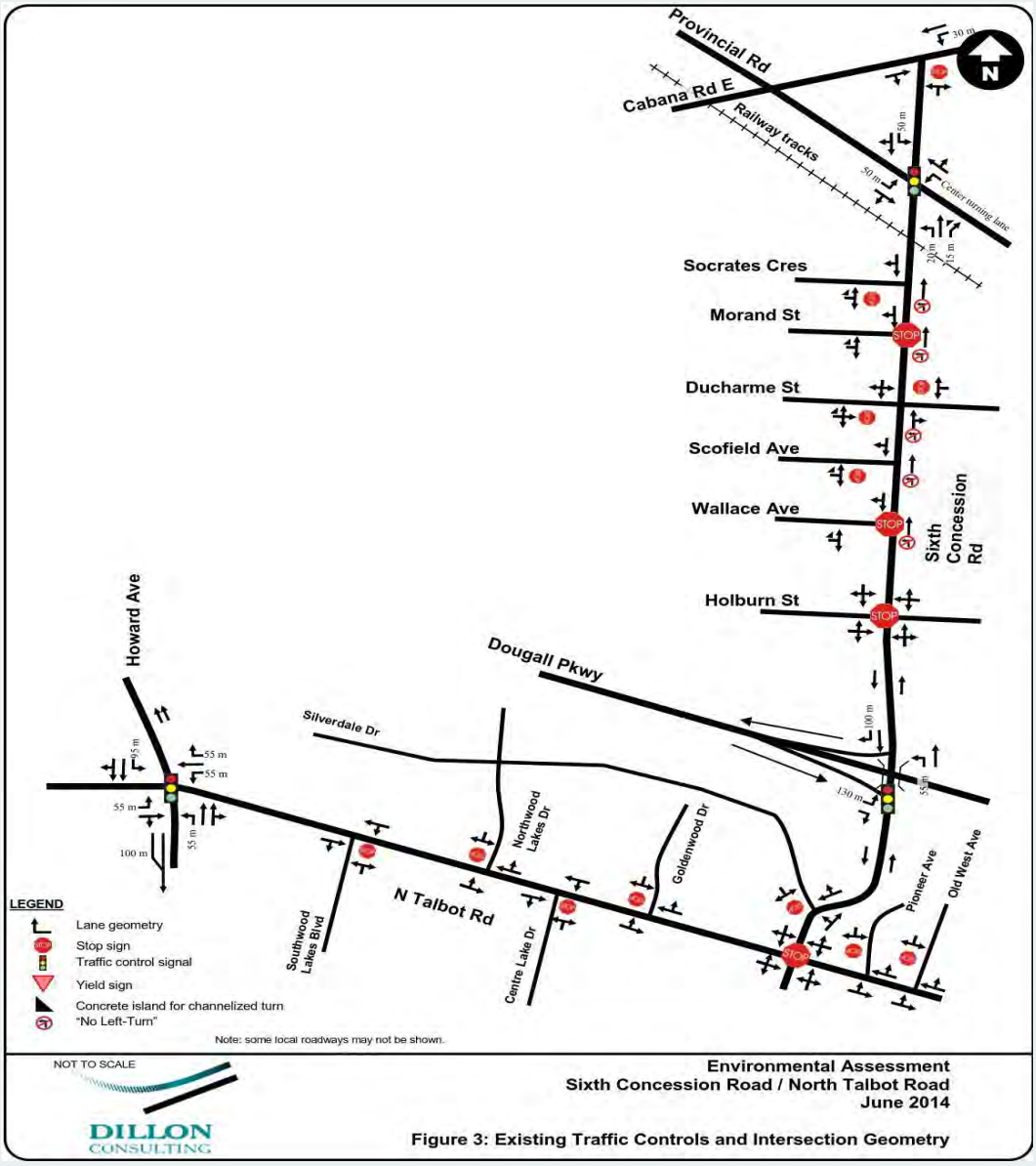


FIGURE 3: EXISTING GEOMETRY AND TRAFFIC CONTROLS

3.3 Existing Transit

The Walkerville #8 bus route services a portion of Sixth Concession Road from Holburn Street, south to North Talbot Road and travels east on North Talbot Road to Walker Road. Route #7 and Route #6 also pass at the outer edges of the Study Area. The Talbot Trail Public School is serviced by private school buses. The existing bus routes are presented on Figure 4 of the Transportation Report, found in **Appendix B**.

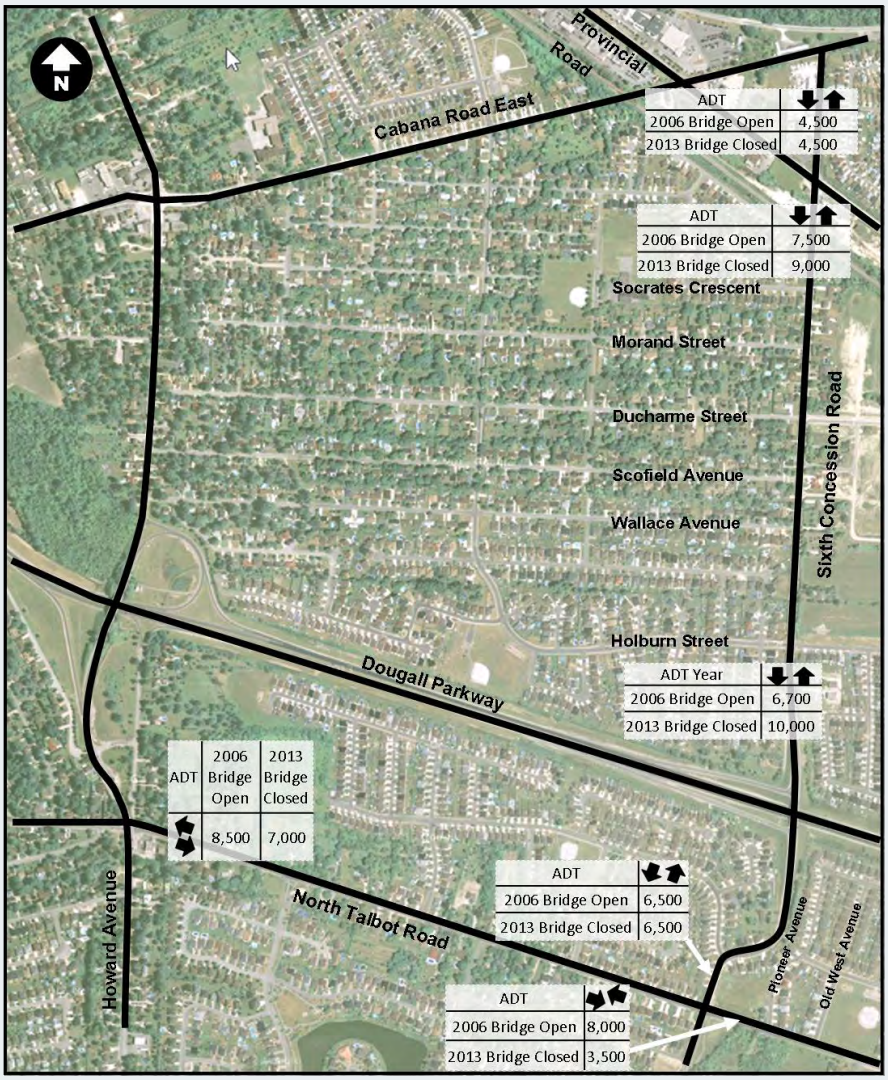
3.4 Active Transportation

Existing pedestrian and bicycle facilities are illustrated in Figure 5 of the Transportation Report, found in **Appendix B**. On-road bicycle lanes exist on Sixth Concession Road from North Talbot Road to north of the Dougall Parkway. Approximately 505 m of discontinuous sidewalk exists on the north side of North Talbot Road. A sidewalk is present on both sides of Sixth Concession Road from North Talbot Road to just north of the Dougall Parkway. The majority of the Study Area lacks sidewalks and on-road cycling facilities. City planning documents indicate future bike lanes for North Talbot Road and Sixth Concession Road.

3.5 Existing Traffic Operations

Historical turning movement count (TMC) data, automatic traffic recorder (ATR) data, and speed data within the Study Area was obtained from the City. This data was supplemented by traffic counts undertaken by Dillon in December 2013. It should be noted that the North Talbot Road bridge overpass of Highway 401 was closed at the time traffic counts were undertaken in December 2013. Timing of the reopening was unknown at the time that the traffic counts were undertaken. The bridge reopened in May 2014.

The Average Daily Traffic (ADT) volumes based on the 2013 turning movement counts and the historic traffic volumes from the 2006 ATR data (when the North Talbot Road bridge overpass of Highway 401 was open to traffic) are illustrated on **Figure 4** for comparison purposes.



Source: Google Earth, December 2013

FIGURE 4: AVERAGE DAILY TRAFFIC VOLUMES

Table 1 and **Table 2**, respectively, indicate the existing signalized and unsignalized intersection operations in the Study Area during the a.m. and p.m. peak hours, based on the adjusted existing traffic volumes to reflect traffic conditions with the North Talbot Road overpass at Highway 401 open to traffic.

For signalized intersections, the analysis focused on performance measures such as intersection capacity utilization and level of service (LOS), intersection approaches and the intersection as a whole. Capacity utilization is determined from the ratio of traffic volume to capacity (v/c ratio), whereas LOS is determined from control delay per vehicle (in seconds per vehicle, sec/veh). Control delay is the portion of the total delay attributed to traffic signal operation for a signalized intersection.

The intersection LOS is a qualitative measure of operational performance and is based on control delay. LOS is given in terms of six levels, from A to F inclusive. LOS A is representative of a control delay of less than 10 sec/vehicle, and is referred to as free flow operating conditions. LOS F is representative of a control delay of greater than 80 sec/vehicle and is referred to as restricted flow operating conditions. Detailed intersection performance worksheets are included in **Appendix B**.

TABLE 1: SIGNALIZED INTERSECTION OPERATIONS

Intersection	Peak Hour	Overall LOS	Overall v/c	Overall Delay (s)	v/c > 0.90
Sixth Concession Road and Provincial Road	AM	B	0.46	18.7	None
	PM	C	0.91	30.8	Eastbound traffic 0.96
Sixth Concession Road and Dougall Parkway EB Off-Ramp	AM	A	0.37	8.3	None
	PM	A	0.39	9.2	None
North Talbot Road and Howard Avenue	AM	B)	0.26	13.5	None
	PM	A (B)	0.44	11.8	None
Note:	Values in red indicate low LOSs, indicating the potential need to improve the intersection traffic control and/or lane geometry.				

The Sixth Concession Road/Provincial Road intersection is currently operating at an acceptable LOS C; however, the eastbound through movement is near capacity. The intersection operation could be improved by adding additional eastbound and westbound through travel lanes, as indicated in the Provincial Road/Division Road Class EA (2007).

TABLE 2: UNSIGNALIZED INTERSECTION OPERATIONS

Intersection	Approach/ Movement	AM			PM		
		LOS	Delay (s/veh)	95th Queue (m)	LOS	Delay (s/veh)	95th Queue (m)
Sixth Concession Road and Cabana Road East	WBL	A	8.5	2.3	A	9.9	6.7
	NB	B	13.7	13.7	C	19.1	15.9
Sixth Concession Road and Socrates Crescent	EB	B	11.9	1.8	B	14.6	1.2
	NB	A	0.0	0.0	A	0.1	0.1
Sixth Concession Road and Morand Street	EB	A	8.9	--	A	8.9	--
	NB	B	12.7	--	A	10.0	--
	SB	A	9.3	--	B	12.0	--

Intersection	Approach/ Movement	AM			PM		
		LOS	Delay (s/veh)	95th Queue (m)	LOS	Delay (s/veh)	95th Queue (m)
	WB	B	14.0	9.9	B	13.6	6.7
	SB	A	3.4	1.6	A	1.3	1.2
Sixth Concession Road and Scofield Avenue	EB	B	11.5	0.3	B	13.1	0.7
Sixth Concession Road and Wallace Avenue	EB	A	8.3	--	A	8.5	--
	NB	A	9.9	--	A	8.7	--
	SB	A	8.7	--	B	10.3	--
Sixth Concession Road and Holburn Street	EB	B	12.3	--	A	9.9	--
	WB	C	23.5	--	B	13.8	--
	NB	D	26.5	--	B	13.6	--
	SB	B	13.1	--	B	14.6	--
Sixth Concession Road and Dougall Parkway W/B on-ramp	NB	A	8.7	3.6	A	8.9	3.2
	SB	A	0.0	0.0	A	0.0	0.0
Sixth Concession Road and Silverdale Drive	EB	B	14.7	6.3	B	14.3	3.8
	NB	A	0.1	0.1	A	0.3	0.2
Sixth Concession Road and North Talbot Road	EB	B	12.6	--	C	21.2	--
	WB	B	13.5	--	C	21.7	--
	NB	B	12.0	--	B	13.1	--
	SB	B	11.1	--	C	22.9	--
North Talbot Road and Southwood Lakes Boulevard	NB	B	12.6	5.8	C	15.5	5.9
North Talbot Road and Northwood Lakes Boulevard	SB	B	13.3	4.5	B	13.0	2.2
North Talbot Road and Centre Lake Drive	NB	B	12.9	2.3	B	12.6	1.0
North Talbot Road and Goldenwood Drive	SB	B	11.4	2.2	B	12.9	0.8
North Talbot Road and Pioneer Avenue	SB	B	10.8	1.4	B	11.0	1.0
North Talbot Road and Old West Avenue	SB	B	11.0	5.7	B	11.5	4.1

Each of the unsignalized intersections operates at acceptable levels, and no immediate modifications are required to address capacity constraints.

3.5.1 Existing Traffic Speeds

The speed limit is 50 km/hr on both North Talbot Road and Sixth Concession Road. **Table 3** summarizes the observed operating speeds along both corridors, as observed by the City.

TABLE 3: EXISTING TRAFFIC SPEEDS

Road	Speed Limit	Average Speed	85th Percentile[1]
North Talbot Road	50 km/hr	55 km/hr	62 km/hr
Sixth Concession Road	50 km/hr	58 km/hr	65 km/hr

Note: [1] 85th Percentile Speed is the speed at which 15% of drivers exceed. 85% of drivers drive at or below the 85th Percentile Speed.

A section of roadway can be evaluated as a candidate for traffic calming based on a number of criteria, including speed, traffic volume, collisions, proximity to pedestrian generators, bicycle routes and residential frontage in the area. The evaluation is based on point scoring in which the speed criterion receives points when the 85th percentile speed exceeds 10 km/hr above the speed limit as is the case on both North Talbot Road and Sixth Concession Road. Existing traffic calming along Sixth Concession Road includes turn prohibitions and channelization islands (pork chop islands).

3.5.2 Collision History

Collision data for Sixth Concession Road and North Talbot Road for the period of July 1, 2008, to July 1, 2013, was provided by the City. As shown on **Figure 5**, a total of 107 vehicle collisions were reported at intersections within the Study Area. An additional 11 midblock collisions were reported during the same period.

FIGURE 5: VEHICLE COLLISION SUMMARY – JULY 1, 2008 TO JULY 1, 2013

At intersections within the Study Area, rear-end collisions dominate, followed by angle and turning collisions. **Table 4** summarizes percentage of typical collision types occurring at intersections within the Study Area. Personal injuries were reported in nearly a third (31%) of all collisions occurring within the Study Area, for a total of 36 collisions.

TABLE 4: INTERSECTION COLLISION TYPE

Intersection Collision Type	Percentage of Collision Type Occurring at Intersections	Collision Symbol
Rear End	37	
Angle	21	
Turning	21	
Approaching	9	
Sideswipe	6	
Other	6	-

Sixth Concession Road/Cabana Road East

A total of 15 collisions occurred over the five year analysis period, of which 11 were rear end collisions. During the 2012-2013 Cabana Road/Provincial Road reconstruction, intersection modifications occurred, which included a westbound left turn lane (note: the permanent solution also includes the left turn lane). The City will continue to monitor collisions at this location.

Sixth Concession Road/Provincial Road

A total of 39 collisions occurred over the five year analysis period, of which 20 were rear end collisions. As part of the detour plan for the 2012-2013 Cabana Road/Provincial Road reconstruction, intersection modifications occurred, which included northbound and southbound left turn lanes on Sixth Concession Road. The City will continue to monitor collisions at this location.

Sixth Concession Road/Ducharme Street

A total of five collisions occurred over the five year analysis period, of which all were classified as an angled or turning collision type.

Sixth Concession Road/Holburn Street

A total of eight collisions occurred over the five year analysis period, of which six were classified as an angled or turning collision type.

North Talbot Road/Howard Avenue

A total of 15 collisions occurred over the five year analysis period, involving a mix of collision types. Reconstruction of this intersection occurred in 2010.

Mid-Block Collisions

According to the City of Windsor's 2012 Road Safety Report (May 2013), there are no road segments along Sixth Concession Road or North Talbot Road that are experiencing an unusually

high collision rate. The Study Area is not ranked within the top 25 mid-block collision locations. **Table 5** summarizes the mid-block collision data from July 2008 to July 2013.

TABLE 5: MID-BLOCK COLLISION HISTORY, 2008 TO 2013

Road	Between	No. of Collisions	Average No. of Collisions per Year
Sixth Concession	Cabana Road and Provincial Road	1	0.2
Sixth Concession	Provincial Road and Socrates Crescent	2	0.4
Sixth Concession	Dougall Parkway EB Off Ramp and Silverdale Drive	4	0.8
North Talbot	Old West Avenue and North Talbot Road	1	0.2
North Talbot	Howard Avenue and Southwood Lakes Boulevard	3	0.6
	Total	11	

Note: There were no collisions to report in the remaining road sections in the Study Area.

Discussion

To properly evaluate if this section of roadway (Sixth Concession Road from Dougall Parkway to Silverdale Drive) is truly experiencing an unacceptably high collision rate, this section of roadway should be considered in context relative to the City as a whole. This area did not rank in the top 25 mid-block collision locations within the City according to the City of Windsor 2012 Road Safety Report. Additional traffic calming within this section of roadway may not reduce the collision frequency. The existing curve warning signage and 30 km/hr speed advisory tabs should be maintained, and the pavement markings identified in that section north of the Dougall Parkway should be incorporated in this section. No other changes are required.

The collision patterns at the intersections of Sixth Concession Road/Provincial Road and North Talbot/Howard Avenue were also reviewed. The intersections provide the required lane geometry to operate in a safe manner. It is noted however, that the intersections of Sixth Concession/Cabana Road East, Sixth Concession/Provincial Road were modified in 2012-2013 by adding new left turn lanes. These new turn lanes should result in reduced collision frequency going forward at these intersections. Based on the historical collision patterns and the recent intersection modifications, there are no immediate further geometric improvements to address intersection collision frequency.

As such, a Road Safety Audit was not necessary; however, the City will continue to monitor these intersections over time to determine if recent modifications are reducing collision frequency.

3.6 Future Conditions

3.6.1 Road Network – Planned Improvements

Three Class EA studies previously completed may affect the Study Area for the study corridor as shown on **Figure 6**, including:

1. Cabana Road/Division Road Class EA (November 2005) – the preferred design includes:

- A four-lane cross section with bike lanes plus curbs and gutters.
- During detailed design, a number of residential streets may be considered for closure to reduce the number of access points to Cabana Road and improve the flow of traffic along the corridor.
- The future widening of Cabana Road will also require property acquisition throughout the corridor. The preferred road alignment was designed in a manner that attempts to minimize property acquisition, wherever possible.
- The Howard Avenue and Cabana Road intersection was completed in 2005-2006.

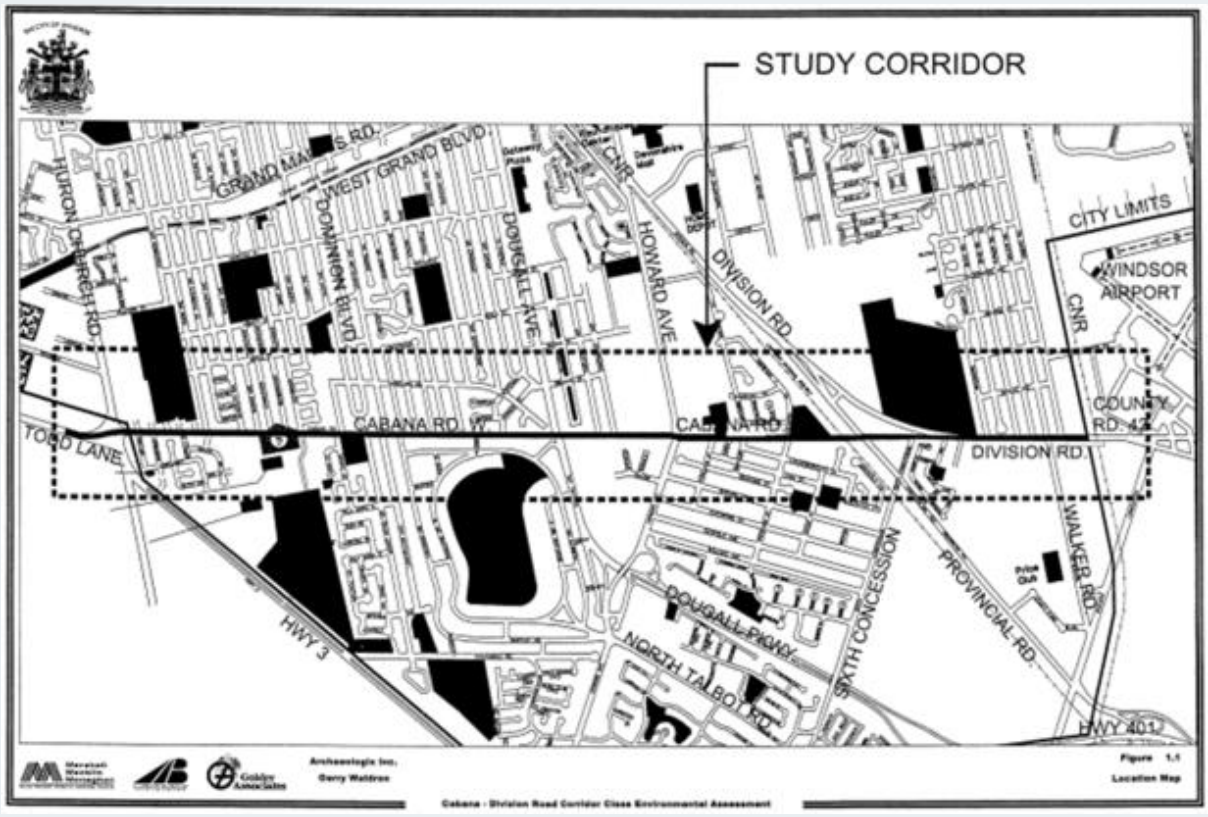


FIGURE 6: CABANA ROAD/DIVISION ROAD CLASS EA

2. Provincial Road/Division Road Class EA (March 2007) – the preferred design for the study corridor as shown on **Figure 7**, includes:

   - The widening of Division Road to five lanes (four through lanes and one continuous two-way left turn lane) from north of Sydney Avenue to Marentette Avenue.
   - The widening of Provincial Road to five lanes from the junction with Division Road near Marentette Avenue to Walker Road.
   - The widening of Cabana Road East from two lanes to four from the DRTP rail to Barracuda Avenue.
   - The improvement of Division Road from Cabana Road East to Marentette Avenue.
   - The improvement of Sixth Concession Road between the DRTP rail and Cabana Road East.
   - Improvements to all intersections within the Study Area – the Provincial and Cabana Road intersection was completed in 2012-2013.
   - Providing pedestrian and bicycle facilities throughout the corridor.

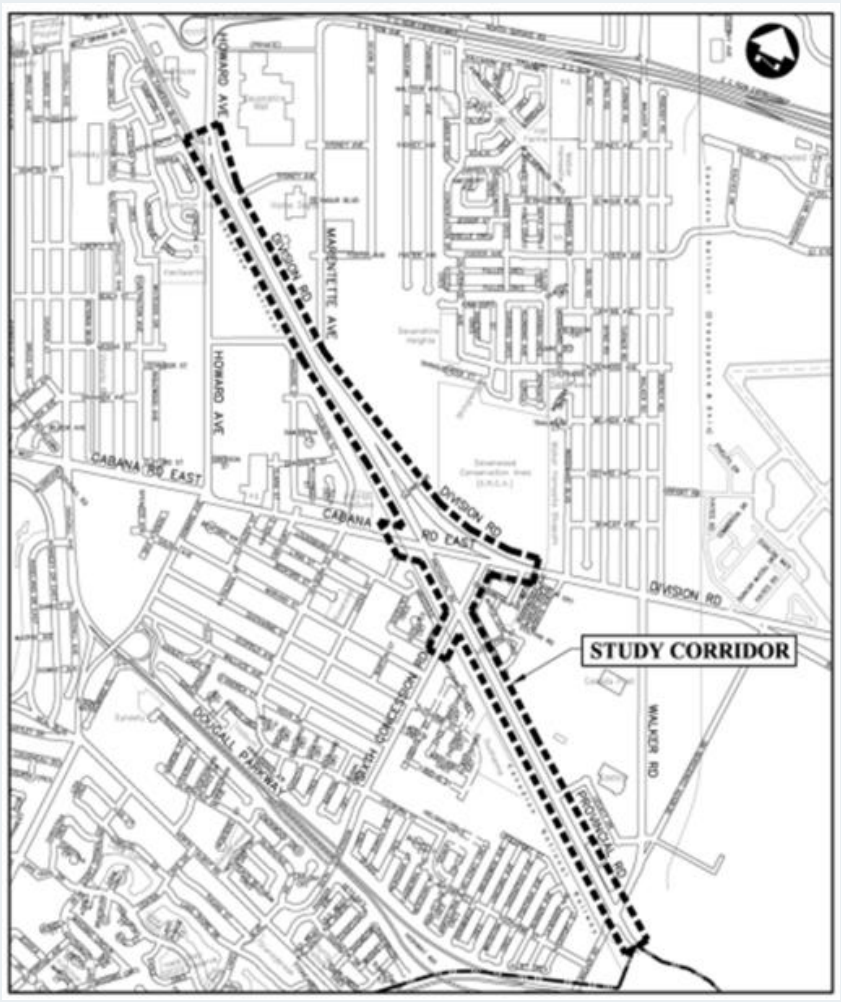


FIGURE 7: PROVINCIAL ROAD/DIVISION ROAD CLASS EA

3. Howard Avenue Class EA (May 2003) – the preferred design for the study corridor as shown on **Figure 8**, includes:

- A four-lane cross section with turning lanes at signalized intersections from Highway 3 to Dougall Parkway.
- A three-lane cross section including a continuous centre two-way left-turn lane from Dougall Parkway to Cabana Road.
- A four-lane cross section from Cabana Road to Division Road.
- The improvement of pedestrian and bicycle facilities between Division Road and Grand Marais Road.
- Improvements to the Dougall Parkway/Howard Avenue Interchange.
- Improvements to the South Cameron Boulevard/DRTP Rail/Division Road Intersection Complex.
- The addition of east and west sidewalks and on- and off-street bicycle lanes along Howard Avenue between Highway 3 and Division Road.
- The Howard Avenue and North Talbot Road intersection was completed in 2009-2010.

All proposed changes include bike lanes, sidewalks and curb and gutters.

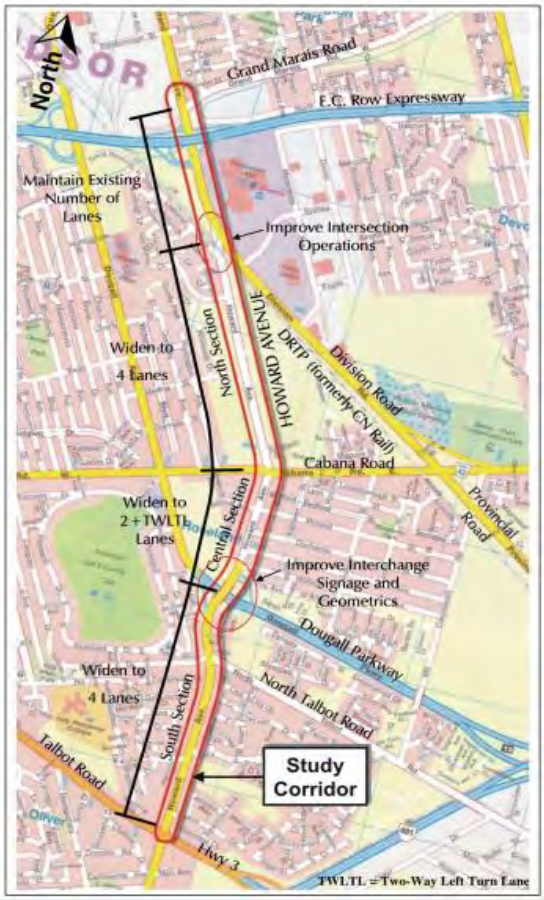


FIGURE 8: HOWARD AVENUE CLASS EA

Future forecasts indicate the intersection of Sixth Concession Road and Provincial Road will operate at a LOS E by the 2035 time horizon if no changes are made to the intersection geometry. The City of Windsor considers a LOS E as requiring mitigation.

The traffic analysis for this study has assumed that modifications to Cabana Road, Provincial Road and Howard Avenue would not have a direct impact on Sixth Concession Road or North Talbot Road.

3.6.2 Transit Network

The Transit Master Plan (TMP) (July 2006) outlines the proposed route and service changes in central, west, south and east areas of Windsor. The TMP identifies a short term service implementation plan (from 2007 to 2011) and a long term service implementation plan (from 2012 to 2016).

Within the Study Area, the Walkerville #8 route is to remain unchanged. The TMP calls for additional short term transit routes 101B and Dominion 5, which would service Sixth Concession Road and North Talbot Road, respectively, within the Study Area. There were no long term service route changes identified. At the time of writing this report, these transit routes have not been implemented.

There are no extra transit routes for the Talbot Trail Public School (serviced by private school buses).

3.6.3 Planned Active Transportation Facilities

As shown on Schedule F, Roads and Bikeways, of the City of Windsor Official Plan, North Talbot Road between Howard Avenue and Provincial Highway 401 and Sixth Concession Road between Dougall Parkway and Cabana Road are designated as a 'Proposed Bikeway'. Sixth Concession Road between North Talbot Road and Dougall Parkway Road is designated as 'Bikeway', and the bikeways are in place.

The City of Windsor's Bicycle Use Master Plan (May 2001) aims to expand the City's existing cycling network, promote awareness, improve the cycling-transit link and provide end-of-trip facilities. According to Map 4: Recommended Cycling Network (Completed) in BUMP, bike lanes are recommended along North Talbot Road and Sixth Concession Road. The Master Plan identifies these bike lanes as achievable in the longer term (years five through 20). A portion of the Windsor Loop (42.5 km circular loop connecting the city around its perimeter) follows along Cabana Road to Devonwood Conservation Area. As per Council Report # 17663, the connection includes a two-way bicycle facility on the north side of Division Road that leads to the entrance of the conservation area.

3.6.4 Anticipated Future Development Trip Generation

There are several vacant lands in proximity of the Study Area which may be developed in the future. These future developments are expected to have some impact on the Study Area road network. **Section 4.1.3** provides a discussion of future development activity and vacant lands.

Table 6 and **Table 7** identify the anticipated development characteristics of the various residential, commercial and industrial developments expected to develop and have an impact on the Study Area within the 2035 time horizon. The Institute of Transportation Engineers (ITE) Trip Generation Manual, 8th Edition, was utilized to identify the number of vehicle trips generated by each potential development.

TABLE 6: ANTICIPATED FUTURE RESIDENTIAL LAND USES

Property	Type	ITE LUC Description	Units
Walker Gates Estates	Detached dwellings	Single-Family Detached Housing	350
Silverdale/Dynasty	Detached dwellings	Single-Family Detached Housing	150
1110 North Talbot	Detached dwellings	Single-Family Detached Housing	5
		Total	505

TABLE 7: ANTICIPATED COMMERCIAL AND INDUSTRIAL LAND USES

Property	Type	Assumed Land Use	Lot Area	Assumed Coverage	Estimated Gross Floor Area (GFA)
1110 North Talbot	Commercial	Shopping Centre	0.8 ha	40%	34,000 sq.ft.
4785 Walker Road	Industrial	General Light Industrial	2.3 ha	40%	101,000 sq.ft.
4845 Walker Road	Industrial	General Light Industrial	1.4 ha	40%	60,600 sq.ft.
				Total	195,600 sq.ft.

3.7 Problem/Opportunity Statement

Based on the review of the existing conditions and the analysis of existing traffic volumes, projected future travel demands and concerns raised by the public, the problems for the Study Area include:

- Intersection Delays – some intersections require modifications, including turn lanes, improved traffic control or roundabouts.
- Traffic Speed – higher traffic speeds create safety concern for all modes of transportation.
- Pedestrian and Cyclist Safety – there is a need to improve facilities within the Study Area and provide system connections including transit connections.
- Open Ditches – many members of the community have indicated a desire to have the ditches enclosed to create an urban roadway cross section.
- Roadway has sufficient capacity for projected volume for study timeline.

Road modifications within the Study Area will present the following opportunities for the Study Area:

- Enhanced traffic safety and efficiency.
- Reduced traffic infiltration through the local road system.
- Provision of improved transit, pedestrian and cycling facilities within the Study Area.
- Provision of improved/enclosed drainage system to the Study Area.

In conclusion, modifications to the Sixth Concession Road/North Talbot Road corridors are needed to address traffic control issues, pedestrian and cyclist safety and drainage. The improved transportation corridors will serve the needs of the transportation system and area growth for a 20-year period to 2035.

The core of the solution to the issues impacting the Sixth Concession Road corridor is to ensure that traffic in the corridor can readily flow in the north-south direction and the existing impediments to that flow be removed or modified.

4.0 Existing Environmental Conditions

4.1 Socio-Economic Environment

4.1.1 Official Plan and Municipal Transportation Policies

City of Windsor Official Plan

To facilitate future planning, the City of Windsor is divided into a number of planning districts. As shown on Schedule A, Planning Districts and Policy Areas, of the Official Plan, the majority of the Study Area is located within the Roseland Planning District. The northern portion of the Study Area falls within the Devonshire Planning District. The eastern portion of the Study Area falls within the North Roseland Secondary Plan area.

As shown on Schedule B, Greenway System of the Official Plan, both corridors are designated as "Proposed Recreationways" and the southern portion of Sixth Concession Road (from north of Dougall Parkway to North Talbot Road) is an existing "Recreationway". A Recreationway is a planned network of multi-use pedestrian and cycling trails designed to serve recreational movements. As shown on Schedule C, Development Constraint Areas of the Official Plan, there are no constraints within the Study Area. A natural heritage area is located on the north side of Division Road/Cabana Road East, just beyond the northern limits of the Study Area. The Windsor International Airport and associated airport operating area are located to the east and northeast of the intersection of Sixth Concession Road and Cabana Road.

As shown on Schedule D, Land Use of the Official Plan, lands along North Talbot Road and Sixth Concession Road are primarily designated "Residential". Permitted uses include:

- Low, medium and high profile dwelling units.
- Community services and minor institutional uses.
- Neighbourhood commercial uses.
- Open spaces.
- Emergency services.
- Home based occupations.

The garden centre on the north side of North Talbot Road, east of Northwood Lakes Drive, pre-existed the current "Residential" designation and is considered a permitted use.
Lands north of the rail crossing on Sixth Concession Road, including those at the Provincial Road/Sixth Concession Road and Cabana Road East/Sixth Concession Road intersections are designated "Commercial Corridor". These lands are intended for vehicle oriented commercial uses such as retail, wholesale stores and office uses. North of Provincial Road, lands along the east side of Sixth Concession Road are designated "Residential".

As shown on Schedule F, Roads and Bikeways, North Talbot Road and Sixth Concession Road are designated as "Class I Collector Roads", and are designed to carry moderate volumes of traffic with a minimum ROW width of 28 m. The speed limit is 50 km/hr on both North Talbot Road and Sixth Concession Road. Direct property access may be permitted with some controls. Both corridors are also designated as "Proposed Bikeway". One section of Sixth Concession Road, south of Holburn Street, is an established "Bikeway". The Dougall Parkway is a designated "Expressway" that connects at Sixth Concession Road.

North Roseland Secondary Plan

As shown on Schedule NR2-1 of the Official Plan, the North Roseland Planning Area Secondary Plan applies to the area bounded by CN/CP railway tracks on the north/northeast, Sixth Concession Road on the west and Highway 401 on the south/southeast. The area encompasses approximately 108 ha, and is referred to as the North Roseland Planning Area & Concept Plan. According to Schedule NR2-7 of the Official Plan, Land Use Designations and Concept Plan, most of the area is designated as "Low Profile Residential". Lands along Ducharme Street are designated "Minor Institutional" and "Community Park" to accommodate Talbot Trail Public School and Captain John Wilson Park. A naturalized stormwater retention pond is located next to the park. Lands designated "Mixed Use" at the Holburn Street/Ducharme Street intersection are reserved for medium/high profile residential development, neighbourhood commercial development, community facilities and/or other institutional uses (e.g., places of worship and day nurseries). These lands remain undeveloped. As per Schedule D, Land Use of the Official Plan, the parcels fronting Walker Road were re-designated from "Business Park" to "Commercial Corridor" by Official Plan Amendment 32 and Official Plan Amendment 23. Most of these lands are vacant, with the exception of the Empire Roofing Corporation, located on the east side of Walker Road.

City of Windsor Bicycle Use Master Plan

The BUMP (May 2001) aims to expand the City's existing cycling network, promote awareness, improve the cycling-transit link and provide end-of-trip facilities. According to the Recommended Cycling Network (Map 4), bike lanes are recommended along North Talbot Road and Sixth Concession Road. The Master Plan identifies these bike lanes as achievable in the longer term (years five through 20).

Official Plan Schedules and maps discussed above are included in **Appendix C**.

4.1.2 Existing Land Use

Land uses along North Talbot Road and Sixth Concession Road are primarily residential, consisting of single-family dwelling units. Additional land uses include:

- A restaurant and convenience store are located on southeast corner of the Howard Avenue/North Talbot Road intersection.

- Stoneybrook Park and North Talbot Park are located east of Sixth Concession Road on North Talbot Road.
- The Extendicare Southwood Lakes long-term care facility is located on North Talbot Road, east of the Study Area, near Highway 401.
- An ESSO station and convenience store is located north of the rail line on the east side of Sixth Concession Road. An auto body repair shop is located on the west side of the road.
- An auto services shop and a boat centre are located north of Provincial Road on the west side of Sixth Concession Road.
- A motel is located on Cabana Road East, just west of the intersection at Sixth Concession Road.
- 1450 Provincial Road – a furniture store at the northwest corner of Sixth Concession Road and Provincial Road intersection.
- 1.14 acre of commercial zoned vacant land at the southwest corner of Sixth Concession Road and Provincial Road intersection.
- 1325 Division Road – a commercial zoned vacant land that is adjacent to the Division-Sixth Concession intersection.

A CN Rail track crosses Sixth Concession Road south of Provincial Road and an elevated overpass carries traffic on Sixth Concession Road over the Dougall Parkway.

4.1.3 Future Development Activity

Large portions of the Study Area are already fully developed as residential. According to the City of Windsor Planning Department (November 2013), development potential within the Study Area includes (see **Figure 9**):

1. A vacant former auto hauler site (14.7 ha) located north of Provincial Road (just outside the Study Area) is designated “Industrial” in the Official Plan. It is possible that this parcel could be amended to another land use designation in the future.
2. An additional 350 detached dwellings is estimated for the Walker Gate Estates residential subdivision located between Walker Road and Sixth Concession Road.
3. Lots within Walker Gate Estates (Walker Road frontage) are designated for commercial use, although there are no approved site plans to develop either the north (2.3 ha) or south (1.4 ha) portions of these lands.
4. Existing plans of subdivision on the north side of North Talbot Road have provided for the future extension of Silverdale Drive and Dynasty Street. There are a number of larger lots that represent the rear portion of the lots fronting onto Howard Avenue; an estimated 150 single detached units could be located within this area.
5. In recent years, a 0.8 ha lot on the northeast corner of the North Talbot Road/Sixth Concession Road intersection has been the subject of a development application to

allow for residential and commercial uses; five single detached dwellings (fronting on Pioneer Avenue), and a neighbourhood commercial development are proposed.

6. 1.14 acre of commercial zoned vacant land at the southwest corner of Sixth Concession Road and Provincial Road intersection.
7. 1325 Division Road – A commercial zoned vacant land that is adjacent to the Division-Sixth Concession intersection.
8. South side of North Talbot Road, east of Southwood Lakes - property is privately owned and zoned Holding-RD1.4.

FIGURE 9: POTENTIAL FUTURE DEVELOPMENT ACTIVITY

4.2 Natural Environment

4.2.1 Terrestrial Resources

A search and analysis of the records and resources identified no Life or Earth Science Areas of Natural and Scientific Interest (ANSI), valley lands, wetlands, woodlands or Environmentally Significant Areas within the Study Area. A single conservation area, the Devonwood Conservation Area, administered by Essex Region Conservation Authority (ERCA), is located within 120 m of the Study Area, north of Division Road, and is classified by the Natural Heritage Information Centre (NHIC) as a Life Science ANSI. As a result, the Devonwood Conservation Area is subject to this background review.

Devonwood Conservation Area

The Devonwood Conservation Area is a 44 ha forest. The dominant soil series of the Devonwood Conservation Area is the Brookston Clay loam, with poor natural drainage. Dominant tree species include Red and White Ash, White Elm, Red, Pin and Bur Oak, Shagbark Hickory and Silver Maple. Parts of the woodlot are managed for forestry by the ERCA. A picnic area and nature trails throughout the Devonwood Conservation Area's interior provide recreational opportunities for the public. The Devonwood Conservation Area is home to eight oak species; White Oak (*Quercus alba*), Swamp White Oak (*Quercus bicolor*), Bur Oak (*Quercus macrocarpa*), Chinquapin Oak (*Quercus muehlenbergii*), Pin Oak (*Quercus palustris*), Red Oak (*Quercus rubra*), Shumard Oak (*Quercus shumardii*) and Black Oak (*Quercus velutina*). The Devonwood Conservation Area is home to one species at risk (SAR), Kentucky Coffee-tree (*Gymnocladus dioicus*), listed as threatened within Ontario, and 12 Species of Conservation Concern (SOCC) (provincial S-Rank of S1 to S3). Refer to Table 2 and Section 5.9 of the Natural Environment report in **Appendix D** for a complete list of SAR and SOCC.

4.2.2 Fisheries and Aquatic Habitat

The Study Area is located within two sub-watershed catchment areas of the ERCA watershed catchment area. The portion of the Study Area located to the east of Sixth Concession Road and northeast of Dougall Parkway is within the Little River sub-watershed. The portion of the Study Area located west of Sixth Concession Road and southwest of Dougall Parkway is within the Turkey Creek sub-watershed. A search and analysis of the records and resources identified no watercourses or watercourse crossings within the Study Area.

4.2.3 Species at Risk

In Ontario, the *Endangered Species Act*, 2007 (ESA, 2007) was developed to protect wildlife species in the province. The ESA, 2007 provides two types of habitat protection: "general" and "regulated". When a species is newly listed as endangered or threatened on the Species at Risk in Ontario (SARO) list, its habitat is also protected under the ESA, 2007. Further, effective June 30, 2013, an additional 65 species in Ontario now receive general habitat protection. These species previously only had species protection and a permit was typically not required through abiding by timing windows. Development within this protected habitat may now require a permit.

The required habitat for the list of SAR or SOCC is not within the Study Area. The Study Area is dominated by residential development.

4.3 Cultural Environment

4.3.1 Built and Cultural Heritage Resources

The Ministry of Tourism, Culture and Sport (MTCS) checklist, "Screening for Impacts to Built Heritage and Cultural Heritage Landscapes" helps determine whether the EA project has the potential to impact cultural heritage resources. The screening checklist has been completed for this project and is included in **Appendix E**. There are no built heritage or cultural heritage landscape features in the Study Area; therefore, a heritage impact assessment was not completed.

4.3.2 Archaeological Resources

Fisher Archaeological Consulting (FAC) completed a Stage 1 Archaeological Assessment (AA) of the Sixth Concession Road/North Talbot Road Study Area. A Stage 1 AA consists of background research and a site inspection to determine the potential for the presence of undocumented cultural heritage resources, and whether known cultural heritage resources exist within the Study Area. The archaeological Study Area consists solely of the current ROW for North Talbot Road and Sixth Concession Road within the overall Study Area.

During the Stage 1 AA, FAC determined that the Sixth Concession Road/North Talbot Road ROW has low archaeological potential for Aboriginal sites. However, there is high potential for historic Euro-Canadian sites due to the mid-19th century construction of both roads, unless the ROW has been extensively disturbed in modern times. The field inspection confirmed that, while much of the archaeological Study Area has been disturbed by infrastructure (ditching, utilities, etc.), and adjacent subdivisions, there are sections of minimal to no apparent disturbance that may retain high archaeological potential.

Based on the findings of the Stage 1 AA, FAC recommended that:

- A Stage 2 AA be conducted on the sections of the archaeological Study Area that may retain high potential, with the understanding that potential may be reduced during the assessment due to high levels of modern disturbance.
- Locations within the Study Area deemed to be of low potential require no further archaeological work.

The Stage 2 AA will be completed during the detail design phase. Archaeological clearance from the MTCS will be required prior to construction, and the Stage 1 AA has been sent to MTCS for review. The Stage 1 Archaeological Assessment is included in **Appendix E**.

4.4 Technical Environment

4.4.1 Drainage and Stormwater Management

As part of this EA study, previously published reports which have impact on the Study Area were reviewed. The Southwood Lakes Development – Hydraulic Design Report (Hanna Ghobrial & Associates – June 1990), and the Provincial/Division Road Drainage Study and Storm and Sanitary Sewer Functional Design Report (AECOM – May 2011) were reviewed and incorporated into this study.

Sanitary

Sixth Concession Road is serviced by a 250 mm diameter sewer from Holburn Street to Morand Street and a 675 mm diameter trunk sewer from Provincial Road to Morand Street. Sixth Concession Road south of Highway 401 is serviced by a local 250 mm diameter sewer which discharges to North Talbot Road. North Talbot Road is serviced by a 600 mm diameter trunk sewer from Highway 401 to Howard Avenue.

Sixth Concession Road between Cabana Drive and Provincial Road have been covered by sanitary sewers. As per Provincial-Division EA, a 250 mm sanitary sewer will be installed. Isolated locations may need to be reviewed and provided sanitary sewer services during detailed design to determine sanitary sewer service requirements.

Existing Drainage – North Talbot Road

The North Talbot Road corridor is a semi-urban cross section; current drainage is provided by roadside ditches and driveway culverts. These ditches drain to a sewer system which forms part of the Southwood Lakes stormwater management system. The stormwater management facilities within Southwood Lakes have been designed for the 100 year storm event for a 440 acre drainage area. The existing sewer system along North Talbot Road is not continuous. There is approximately 1,200 m of sewer in place for the approximately 1,780 m of roadway.

The Southwood Lakes Development – Hydraulic Design Report provides design for the drainage area which is bounded by Dougall Parkway to the north, Highway 3 to the south, Howard Avenue to the west and Highway 401 to the east. The total drainage area is approximately 178 ha (440 ac). The sewer system was designed for the five year storm event.

Currently, there are some drainage issues which exist within the North Talbot Road corridor. During higher intensity rain events, runoff ponds develop in areas along the north side of North Talbot Road.

The roadside ditch along the south side of North Talbot Road also causes a roadside safety hazard. There is not a sufficient shoulder along the south side, separating the travel lane from the ditch.

Existing Drainage – Sixth Concession Road

The existing drainage pattern for Sixth Concession Road is divided by Dougall Parkway into two drainage areas. South of Dougall Parkway, the Sixth Concession Road drainage is included in the Southwood Lakes drainage area. The drainage from the urban cross section is collected by a local sewer, which discharges to a trunk sewer on North Talbot Road. North of Dougall Parkway, there is a semi-urban/rural hybrid cross section. There is a shallow roadside swale along the west side of the road, and a deeper roadside ditch (forms part of the 5th Concession Drain) along the east side. There are portions of the roadside ditch that have been enclosed along the frontages of some homes.

As part of the overall drainage plan for the Provincial/Division Road Drainage Study, the runoff from the Sixth Concession Road corridor, north of the Dougall Parkway, was included. Under that study, the Sixth Concession cross section was assumed to be a 13 m wide roadway within a 21.9 m ROW. The roadway section consisted of two, 3.65 m driving lanes, two, 1.5 m bike lanes and two, 1.2 m sidewalks (total hard surface width = 12.7 m).

At the time of the Provincial/Division Road Drainage Study, the City noted that the drain along Sixth Concession Road was difficult to maintain in its present form, and requested that the open drain be enclosed.

4.4.2 Utilities

The following utilities were noted under existing conditions:

North Talbot Road

- From the City Limits west to Goldenwood Drive, Enwin Power Lines has an aerial pole line located on the north side of the ROW. All hydro poles have streetlights mounted on them. The poles are all precast concrete. Communication service lines are attached overhead on the utility poles. Individual services to the properties are buried underground.
- From Goldenwood Drive west to Howard Avenue, Enwin Power Lines has an aerial pole line located on the south side of the ROW. All hydro poles have streetlights mounted on them. The poles are all precast concrete. Communication service lines are attached overhead on the utility poles. Individual services to the properties are buried underground.
- Natural gas service for properties on North Talbot Road is provided along the south side of the ROW.
- Existing water service for North Talbot Road is provided by a 300 mm diameter PVC watermain.

Sixth Concession Road

- From North Talbot Road to Dougall Parkway, Enwin Power Lines hydro service is buried underground, and transformers are located on the east side of the ROW. Concrete streetlights are installed along the west side of the roadway. Street lighting is mounted to wooden poles.
- From Dougall Parkway north, Enwin Power Lines has an existing 27.6 kVa overhead hydro line on wood poles located along the west side of Sixth Concession Road.
- Natural gas service for properties on Sixth Concession Road is provided along the west side of the ROW. In addition to local low pressure natural gas services, there is a 500 mm diameter steel high pressure gas pipeline along the south side of the CN rail corridor, which crosses Sixth Concession Road.
- Existing water service for Sixth Concession Road is provided by a 200 mm diameter PVC watermain.
- CN Rail did not confirm regular use of this track at this time. However, CN Rail maintains their ability to use this track at any time. CN Rail will comment on specific design details at the detailed design stage of the project.

5.0 Alternative Solutions

5.1 Description and Evaluation of Alternative Solutions

Phase 2 of the Class EA process consists of the identification and evaluation of alternatives solutions to address the problems/opportunities identified in Phase 1.

To determine the best approach for the Study Area, the project team evaluated the following alternative solutions:

- Alternative 1: Do Nothing.
- Alternative 2: Transportation Demand Management.
- Alternative 3: Operational Modifications along Corridors.
- Alternative 4: Urbanize Corridors.
- Alternative 5: Improve Other Roads in the Network.

Do Nothing

This alternative consists of making no changes within the Study Area. This alternative solution was included as a basis to compare other alternatives. This alternative does not address the problems and opportunities identified in the Study Area, and was therefore not carried forward for further consideration.

Transportation Demand Management

This alternative consists of implementing strategies to reduce the demands on the roads and shifting demands to time periods outside of the congestion periods. Examples of Transportation Demand Management (TDM) strategies include the use of alternative modes of transportation (i.e., transit, cycling, walking), encouraging carpooling, etc. This alternative provides some improvement to the corridors, but as a stand-alone measure it would not efficiently and safely accommodate future travel demands.

Operational Modifications along Corridors

This alternative includes the consideration of traffic calming measures, traffic management (e.g., one way signs), localized widening, dedicated turning lanes, intersection modifications and potential closures of minor intersections. Operational modifications will best address problems in the Study Area relating to intersection delays, traffic speed and safety, and is therefore carried forward to Phase 3 – Alternative Designs.

Urbanize Corridors

This alternative consists of widening corridors just enough to provide pedestrian/cycling and transit facilities and curbs/gutters, and enclose remaining open ditches. This alternative, in

conjunction with operational modifications, addresses problems and opportunities related to pedestrian and cyclist safety and concerns regarding open ditches, and is therefore carried forward to Phase 3 – Alternative Designs.

Improve Other Roads in the Network

This alternative consists of upgrading adjacent and/or parallel roadways to reduce the travel demand on North Talbot Road and Sixth Concession Road. Parallel roadways immediately adjacent to the Study Area do not provide the role and function of Sixth Concession Road and North Talbot Road in the arterial road network. This alternative does not address the problems and opportunities noted in the Study Area, and is therefore not carried forward for further consideration.

Table 8 provides a summary of the evaluation and how each alternative addresses the problems identified in the Study Area.

TABLE 8: SUMMARY OF EVALUATION OF ALTERNATIVE SOLUTIONS

	Intersection Days	Traffic Speed	Pedestrian and Cycling Safety	Open Ditches	Carry Forward
Do Nothing	X	X	X	X	No
TDM	✓	X	X	X	No
Operational Modifications	✓	✓	✓	X	Yes
Urbanize Corridors	X	X	✓	✓	Yes
Improve Other Roads in the Network	✓	X	X	X	No

5.2 The Recommended Alternative Solution

The assessment of the alternative solutions and improvements to road safety resulted in the following recommendations:

1. Operational Modifications along Corridors – including traffic calming measures, traffic management (e.g., one way signs), localized widening, dedicated turning lanes, intersection modifications and potential closures of minor intersections.
2. Urbanize Corridors – including widening corridors just enough to provide pedestrian/cycling and transit facilities and curbs/gutters, and enclose remaining open ditches.

5.3 Development of Operational Modifications along Corridors

There are many different ways to improve road safety and operations within the Study Area. The following sections provide a discussion of the solutions recommended by the project team.

5.3.1 Alternatives to Reduce Collisions

The project team considered alternatives solutions to improve safety at intersections experiencing >5 collisions (see red highlighted numbers on **Figure 10**). The predominant type of collision occurring and existing intersection conditions (e.g., geometry, signal timing and traffic volumes) were taken into consideration by the project team when developing alternative solutions. Alternatives include improving traffic controls to reduce collision risk and providing advanced left turn signal phasing at high volume intersections to reduce turning collisions.

Intersection traffic control upgrades were recommended for the following intersections:

- Sixth Concession Road and Provincial Road – lengthening left turn lane, additional through lane capacity on Provincial Road, modify signal phasing, provide northbound right turn parallel lane.
- Sixth Concession Road and Cabana Road – addition of a left turning lane.
- Sixth Concession Road and Ducharme Street – consider alternative traffic controls or a roundabout.
- Sixth Concession Road and Holburn Street – consider a roundabout or traffic control signal, add turn lanes.

As discussed in **Section 3.5.2**, collision patterns at the intersections of Sixth Concession Road/Provincial Road and North Talbot/Howard Avenue were also reviewed. The intersections provide the required lane geometry to operate in a safe manner. It is noted however, that the intersections of Sixth Concession/Cabana Road East, Sixth Concession/Provincial Road were modified in 2012-2013 by adding new left turn lanes. These new turn lanes should result in reduced collision frequency going forward at these intersections. The North Talbot Road and Howard Avenue intersection was reconstructed in 2009-2010 and is signalized. Based on the historical collision patterns and the recent intersection modifications, there are no immediate further geometric improvements to address intersection collision frequency, and no further need for safety audits at this time.

FIGURE 10: VEHICLE COLLISION SUMMARY

5.3.2 Alternatives to Reduce Driving Speeds and Traffic Calming

Intus Road Safety Engineering Incorporated (Intus) was included on the project team to review traffic calming measures to reduce vehicle operating speeds, and reduce collision frequency/severity in the Study Area. Intus produced a Technical Memo to summarize the findings and recommendations, and is presented in **Appendix B**.

As previously discussed, speeds on Sixth Concession Road and North Talbot Road (i.e., 85th percentile speed >10 km/hr over the speed limit), and neighbourhood concerns respecting shortcutting traffic in the Old Roseland neighbourhood, were identified as problems in the Study Area that require a solution. The focus of the traffic calming on Sixth Concession Road is to better manage operating speeds while not encouraging shortcutting through the Old Roseland neighbourhood. The focus of traffic calming on North Talbot Road is to better manage operating speeds.

Speed Management

Speed management is required along both Sixth Concession Road and North Talbot Road, except for Sixth Concession Road between Dougall Parkway and North Talbot Road. In this latter section of Sixth Concession Road, the horizontal alignment of the road is generally sufficient to manage speed. The existing curves have an advisory speed of 30 km/hr.

According to the Transportation Association of Canada (TAC) Canadian Guide to Neighbourhood Traffic Calming, 1998, the most effective physical measures for speed reduction are:

- Vertical deflections – speed humps, raised crossings, elevated intersections, etc.
- Horizontal deflections – chicanes.
- Road narrowings – curb extensions, raised medians and lane narrowings.
- Obstacles on the road – traffic circles and mini-roundabouts.

The following solutions were recommended for speed management in the Study Area:

- Place mini-roundabouts or raised intersections at the Ducharme Street intersection with Sixth Concession Road, and the Southwood Lakes Boulevard West, Northwood Lakes Drive and Goldenwood Drive intersections with North Talbot Road.
- Use a roundabout or a raised intersection at the intersection of Sixth Concession Road and North Talbot Road and Sixth Concession Road and Holburn Street.
- Do not add lanes to either road beyond what is strictly necessary (i.e., LOS F) and allow the slowest vehicle in the traffic stream to set the "pace".
- Use the narrowest through lane widths possible – research shows that collision risk is relatively insensitive to lane widths between 3.0 m and 3.7 m on urban streets. A lane width of 3.25 m or 3.30 m seems appropriate for through lanes on a collector street classification.
- If lanes of 3.5 m or wider are desired, consider implementing 3.0 m lanes, and painting a 1.0 m wide median with hatching. This allows motorists to edge onto the median when passing cyclists and maintains a narrow lane.
- Convert the roads to an urban cross section: A rural cross section is ordinarily associated with speed limits of 60 km/hr to 80 km/hr whereas an urban cross section is usually paired with a speed limit of 40 km/hr to 60 km/hr. As a result, there is a prior expectation among motorists that slower speeds are expected on streets that have raised curbs. This being the case, it is desirable to convert the cross section from open ditch to curb-and-gutter from a speed management perspective.
- Plant street trees at regular intervals and use other street furniture to add detail to the street scene to influence the motorist's control of speed through "optical flow" of objects passing through peripheral field of view.

Shortcutting Traffic

The Intus Technical Memo summarizes and revisits the history relating to shortcutting traffic in the Old Roseland neighbourhood, and the concerns expressed by the community over the pork chop islands. The memo indicates that with any shortcutting traffic issue, improving traffic

operations on the arterial roadway system in order to reduce undue delay is always preferable to inhibiting movements in the local street system. This is mainly because restrictions on traffic movement are nondiscriminatory, and the increased delay that is intended for through traffic also affects emergency vehicle response times, transit routes, and the convenience of travel for the neighbourhood residents. In this regard, the City of Windsor has already made strides to reduce neighbourhood shortcutting through road improvements, and will continue to do so with the reconstruction of Sixth Concession Road and North Talbot Road.

The memo recommends that the islands implemented by the City in 2004 be retained until such time as Sixth Concession Road is reconstructed. The islands should be removed during the reconstruction effort, easing access for area residents and emergency services. If shortcutting through the Old Roseland neighbourhood becomes an issue at any time after reconstruction, then it is recommended that a neighbourhood traffic calming study be undertaken to identify the scope and magnitude of the problem, and appropriate solutions. Public participation should be an integral part of any traffic calming study.

In addition to the recommended solutions, an urbanized roadway cross section will include:

- Continuous sidewalks along Sixth Concession Road and North Talbot Road to improve pedestrian safety and promote active living.
- Continuous on-road cycling lanes on Sixth Concession Road and North Talbot Road to improve bicycle safety and promote active living.
- Provision of improved transit, pedestrian and cycling facilities within the Study Area.

5.4 Consultation Summary

As discussed in **Section 2.0**, PIC #1 was held on February 26, 2014, at the conclusion of Phase 2 of the Class EA Study process. The purpose of PIC #1 was to provide information about the EA process and the project, including problems and opportunities identified in the corridors, and issues related to the alternative solutions, design opportunities and options, environmental considerations and evaluation criteria. Residents were encouraged to provide written and/or verbal comments and input, and to register to be added to the mailing list and be kept informed of the project progress.

Overall, the response to the project was positive, and most residents were pleased with the recommended solutions. Comments and concerns focused on the following:

- The lack of active transportation facilities (discontinuous sidewalks, improved cycling and transit accommodations).
- Traffic control issues at Ducharme Street and Sixth Concession Road intersection.
- Neighbourhood cut-through traffic.

- Speed and traffic volume concerns.
- Non-compliance to stop controls.
- Non-compliance to left turn restrictions on Sixth Concession Road.
- Drainage issues/rural cross sections upgraded to urban cross sections.
- Concerns any changes will encourage cut-through traffic into Old Roseland neighbourhood, west of Sixth Concession Road.

The complete summary of PIC #1 with comments received is provided in **Appendix A**.

6.0 Alternative Designs

6.1 Development of Alternative Designs

Alternative design concepts represent different ways of carrying out the preferred solution. For this Class EA Study, the project team hosted a Roadside Safety, Urban Design and Streetscape Workshop after the preferred solution was confirmed, proceeding PIC #1. The purpose of the workshop was to openly discuss alternative design options for Sixth Concession Road and North Talbot Road, including intersection improvements, traffic calming measures and intersection traffic control upgrades.

The workshop focused on road safety, urban design and streetscape for the two corridors. Members of the project team presented a summary of the EA process to date, and a detailed review of the problems and opportunities discussed in the Transportation Report prepared by Dillon. In addition, Intus presented an overview of what traffic calming is, and techniques used to enhance road safety in residential neighbourhoods. Dillon discussed key elements of urban design for the Study Area, including the provision of landscaping, boulevard trees and appropriate street furniture. Attendees were encouraged to share their questions, comments and concerns during the workshop.

The following provides a summary of the key ideas and discussion points generated at the workshop:

- Desire for pedestrian and bike facilities throughout both corridors and on both sides of the street.
- Areas requiring special attention regarding pedestrian and cyclist safety include:
  - Sixth Concession Road/Dougall Parkway.
  - Sixth Concession Road/CN Rail crossing.
  - Sixth Concession Road/Ducharme Street.
  - Sixth Concession Road/Holburn Street.
- Desire for a cycling and pedestrian friendly connection to Devonwood Conservation Area and Cabana Road.
- Accessibility for persons with disabilities will be addressed throughout the Study Area including ramps at intersections.
- Roundabout at Sixth Concession and North Talbot Road could be treated as a gateway/anchor into the area.
- Desire for connection of communities in the area.
- Creating “complete streets” is a critical success factor.
- Visual cues and side friction (e.g., vegetation, street furniture, road treatments) slow drivers down in residential areas.

- Consider different coloured bike lanes to give the illusion of reduced pavement width for motorists.
- Need for proper transitioning of sidewalks and bike lanes (outside of Study Area).
- Ensure that improvements deal with the issue of traffic "cutting through" the residential neighbourhood west of Sixth Concession Road.

Alternative designs for the Study Area were developed and evaluated, incorporating ideas generated from the workshop discussion.

6.1.1 Cycling Facilities

The cycling facility assessment process as part of this EA study was not to determine whether or not a cycling facility should be provided, but rather the type of facility that should be recommended. To determine the appropriate cycling facility to include in the alternative designs for Sixth Concession Road and North Talbot Road, a review of various cycling application heuristics, as identified in *Ontario Traffic Manual Book 18: Cycling Facilities* (OTM Book 18) pages 31 to 39, was completed by the project team. OTM Book 18 provides guidance on the planning, design and operation of cycling facilities in Ontario, and incorporates current best practices in Ontario, Canada and internationally. The manual includes a bicycle facility type selection process and was followed for this Class EA Study.

The application of the heuristic evaluation and the examination of all site conditions concluded that dedicated bicycle lanes are appropriate for the Sixth Concession and North Talbot Road corridors, and are suitable for experienced and novice cyclists in a residential environment.

The three step process as outlined in the manual was followed, and the results are summarized below:

- Step 1: Facility pre-selection based on vehicle speeds and average daily traffic volumes:
  - Vehicle speeds within the Study Area are 50 km/hr to 60 km/hr.
  - Average daily traffic volumes within the Study Area by 2035 are 10,000 vehicles to 13,000 vehicles.

As illustrated on **Figure 11**, the North Talbot and Sixth Concession Road corridors fall within the lower threshold of the gradual transition from designated cycling operating space (white) to alternate road or separated facilities (red). The nomograph does not contain precisely defined lines between the three operating environment categories since there are no absolute thresholds where one particular facility type is preferred over another. The types of bicycle facilities that are suitable for urban cross sections include exclusive bicycle lanes, separated bicycle lanes or raised cycle tracks.

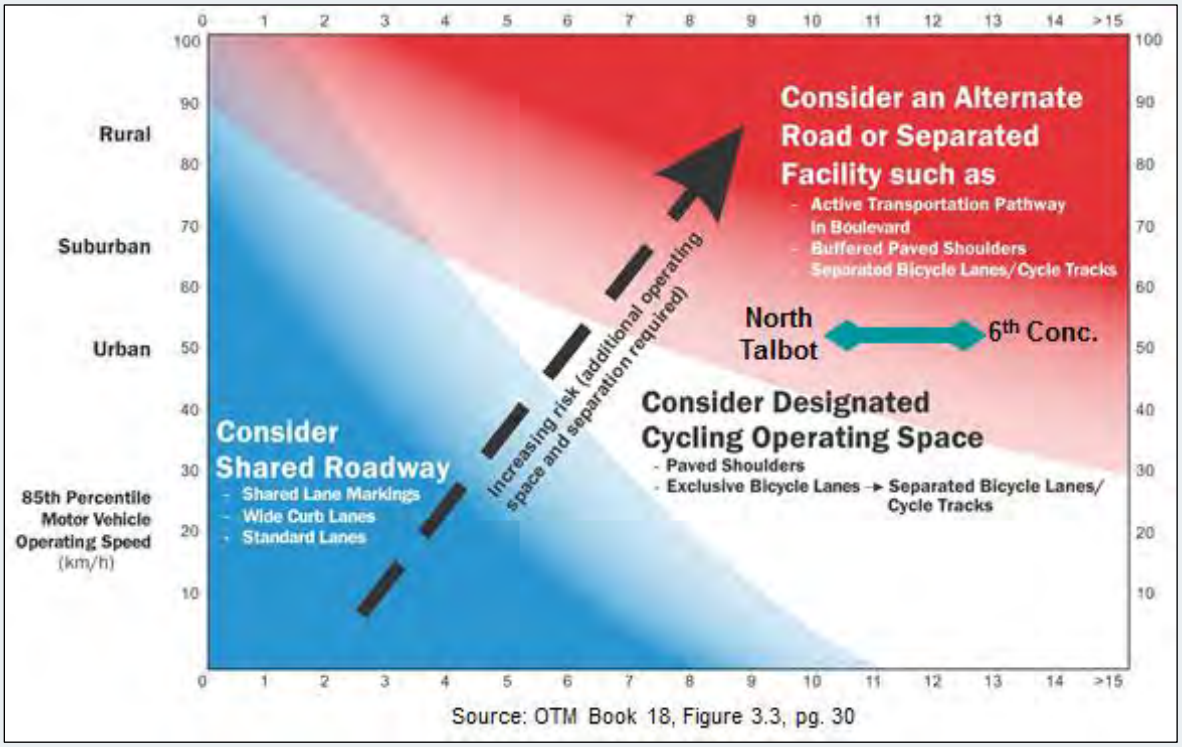


FIGURE 11: DESIRABLE CYCLING FACILITY PRE-SELECTION NOMOGRAPH

Step 2 below examines other relevant Study Area factors to assist in determining the most appropriate cycling facility.

- Step 2: Examine other relevant Study Area factors:
  - The Study Area is a residential neighbourhood with multiple driveways along each corridor and multiple road intersections.
  - Higher volumes of traffic and higher speeds are observed along both corridors.
  - It is expected that there will be variable skill levels of bicycle facility users.
- There are transit stops along the corridors. Facilities separated from the roadway are generally not preferred in situations with numerous driveways or unsignalized intersections.
- There are less than 30 trucks/buses per hour present in a single curb lane.
- There is no evidence of conflict areas/collisions between cyclists and motor vehicles.
- If a cycle track was recommended, the road width would have to be increased to provide for the maneuverability of larger vehicles, resulting in increased vehicular speeds.

In Step 3 of the bicycle facility type selection process, the project team confirmed and justified the bicycle facility selected. The project team concluded that the use of a physical barrier is not recommended, as the overall corridor design combines several elements which work together and provide the friction between vehicles and cyclists to assist with traffic calming measures.

A separated facility was not selected for the following reasons:

- Separated facilities are generally not preferred in situations with numerous driveways or unsignalized intersections.
- If the "optical width" of the road is increased to accommodate separated bike lanes, then a negative impact on speed management may result. Introducing bollards in the buffered space may mitigate the effects of speed; however, the project team is not aware of any substantive research on the use and effects of buffered bike lanes with bollards.
- There are less than 30 trucks/buses per hour present in a single curb lane within the Study Area (which is the threshold limit for cyclist preference for a separated facility).
- There is no evidence of conflict areas/collisions between cyclists and motor vehicles within the Study Area.

Aside from a couple of comments suggesting the provision of separated bike lanes, comments received at the second PIC were supportive of the recommended design as presented, with a suggestion to consider painted or coloured bike lanes to offer greater visibility to alert drivers. As per Council Resolution received on June 1, 2015, the 1.8 m bike lanes will include a 0.3 m painted buffer as per Council Resolution CR 106/2015. This configuration is consistent with the traffic calming objectives for this project and is supported by the heuristic evaluation and examination of site conditions undertaken. Please refer to **Appendix A** of this ESR for a copy of the Council Report and Resolution.

6.1.2 Intersection Controls

The intersections of Sixth Concession Road/North Talbot Road, Sixth Concession Road/Holburn Street, Sixth Concession Road/Morand Street and Sixth Concession Road/Wallace Street are currently all-way stops. The All-Way Stop signs on Sixth Concession at Morand Street and Wallace Avenue can be modified to minor street stop control at any time. Motorists and residents should not see a significant impact on operating conditions or roadway capacity with the removal of the All-Way Stop signs. Traffic speeds within close proximity (within 100 m) of the All-Way Stop signs will be higher as vehicles will not be required to stop; however, travel speeds should be equal or slightly lower than current operating speeds away from the intersections.

By 2035, the intersections of Sixth Concession/North Talbot Road and Sixth concession/ Holburn Street will require upgrades (traffic signals or roundabouts). The project team concluded that roundabouts are the preferred intersection control for the Study Area for the following reasons:

- Reduces unnecessary delay.
- Reduces severity of vehicular collisions.
- Improves travel time through the reduction of queuing, loss of time in use due to time when all lights are red, advanced green and amber.
- Eliminates stopping and acceleration of traffic.
- Lower operating and maintenance costs (depending on aesthetic treatment of the full size roundabout centre island).
- Provides a reduction in cut-through traffic from Sixth Concession Road due to unimpeded travel.
- Improves response times of emergency vehicles over stopped conditions.

A typical mini roundabout plan and cross section is illustrated on the following page in **Figure 12**. Mini roundabouts typically have a 10 m radius, are 125 mm high at the centre and 25 mm at the curb line.

Due to the traffic volumes at the intersections of Sixth Concession Road and North Talbot Road, and Sixth Concession Road and Holburn Street, as well as a desired change in road character at these locations, full-sized roundabouts were the recommended intersection treatments.

The Study Area intersections will be operating at a LOS C or better by 2035 with the planned intersection controls and road improvements implemented.

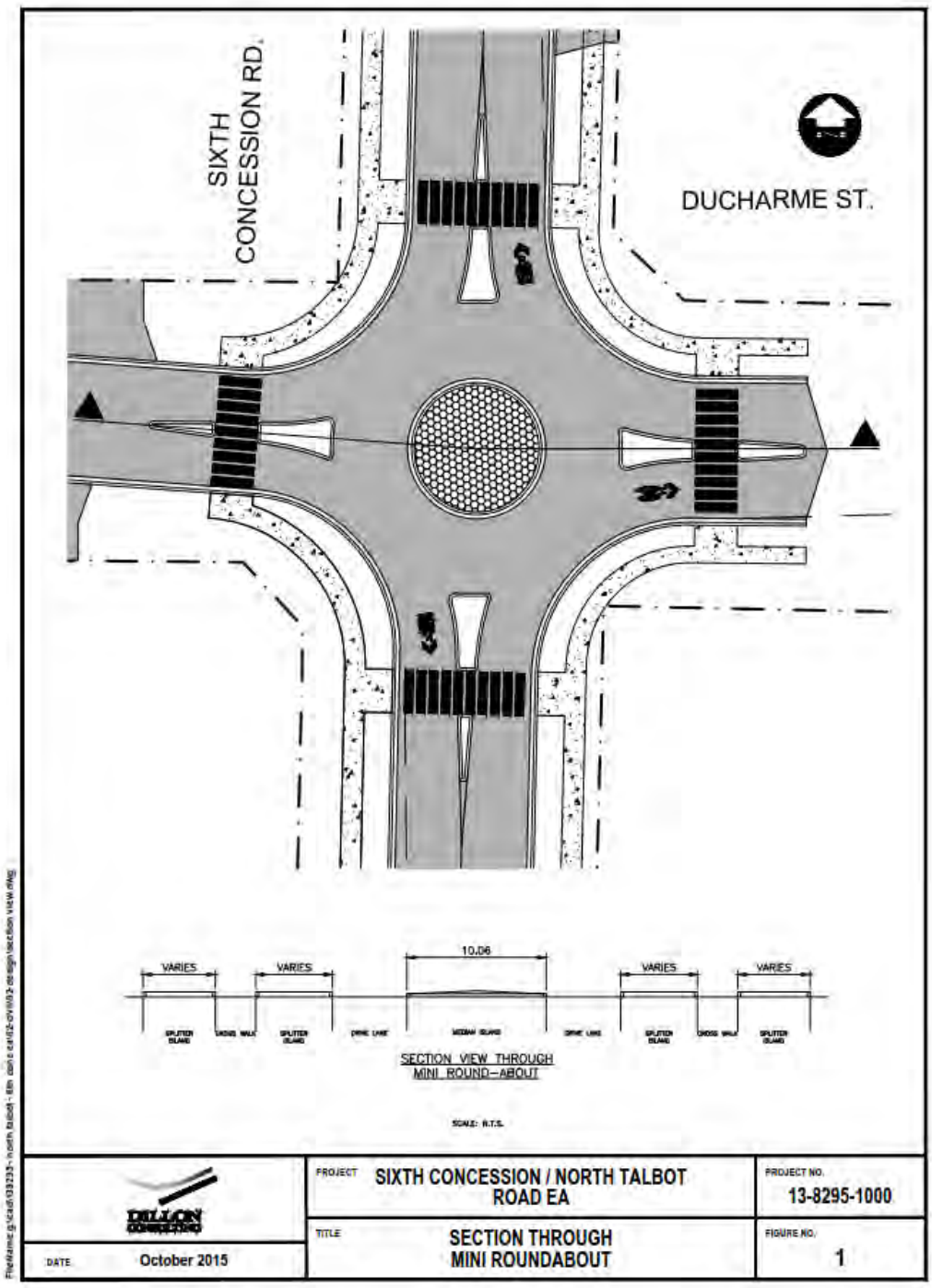


FIGURE 12: TYPICAL MINI ROUNDABOUT PLAN AND CROSS SECTION

6.2 Design Alternatives – Sixth Concession Road

Alternatives for Sixth Concession Road include:

Alternative 1

Potential improvement options include:

- 1.8 m bike lanes on both sides of the road.
- 1.5 m sidewalks on both sides of the road.
- Two, 3.3 m travel lanes.
- Left turn lane at Ducharme Street (SB).
- Traffic signals at North Talbot Road/Sixth Concession and Holburn Street/Sixth Concession Road.
- Urban Cross Section.
- Street Lighting.

A typical cross section for this alternative is shown on **Figure 13**.

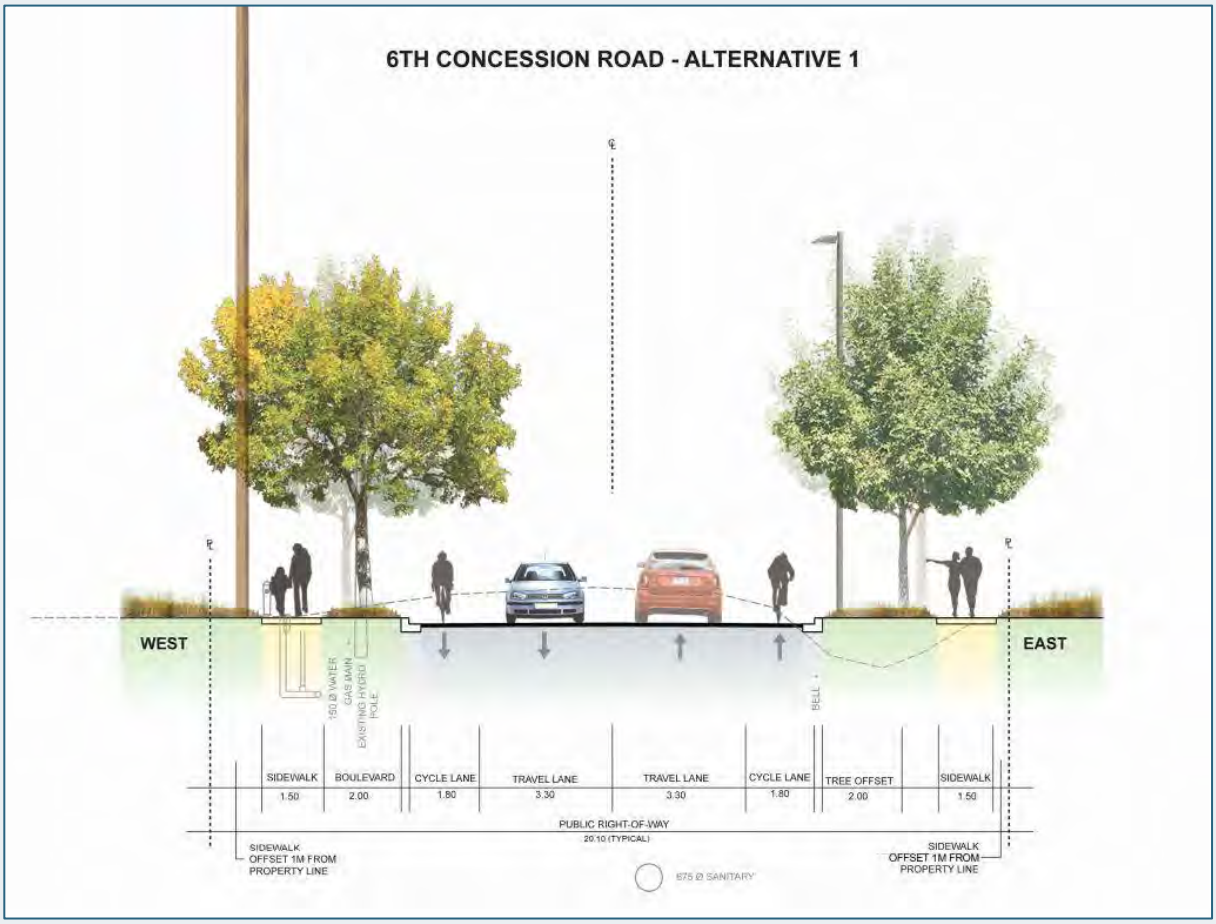


FIGURE 13: ALTERNATIVE 1 – SIXTH CONCESSION ROAD

Alternative 2

Potential improvement options include:

- 1.8 m bike lanes on both sides of the road.
- 1.5 m sidewalks on both sides of the road.
- Two, 3.3 m travel lanes.
- One, 3.4 m centre dual left turn lane.
- Roundabout at Sixth Concession Road/North Talbot Road intersection.
- Urban Cross Section.
- Street Lighting.

A typical cross section for this alternative is shown on **Figure 14**.

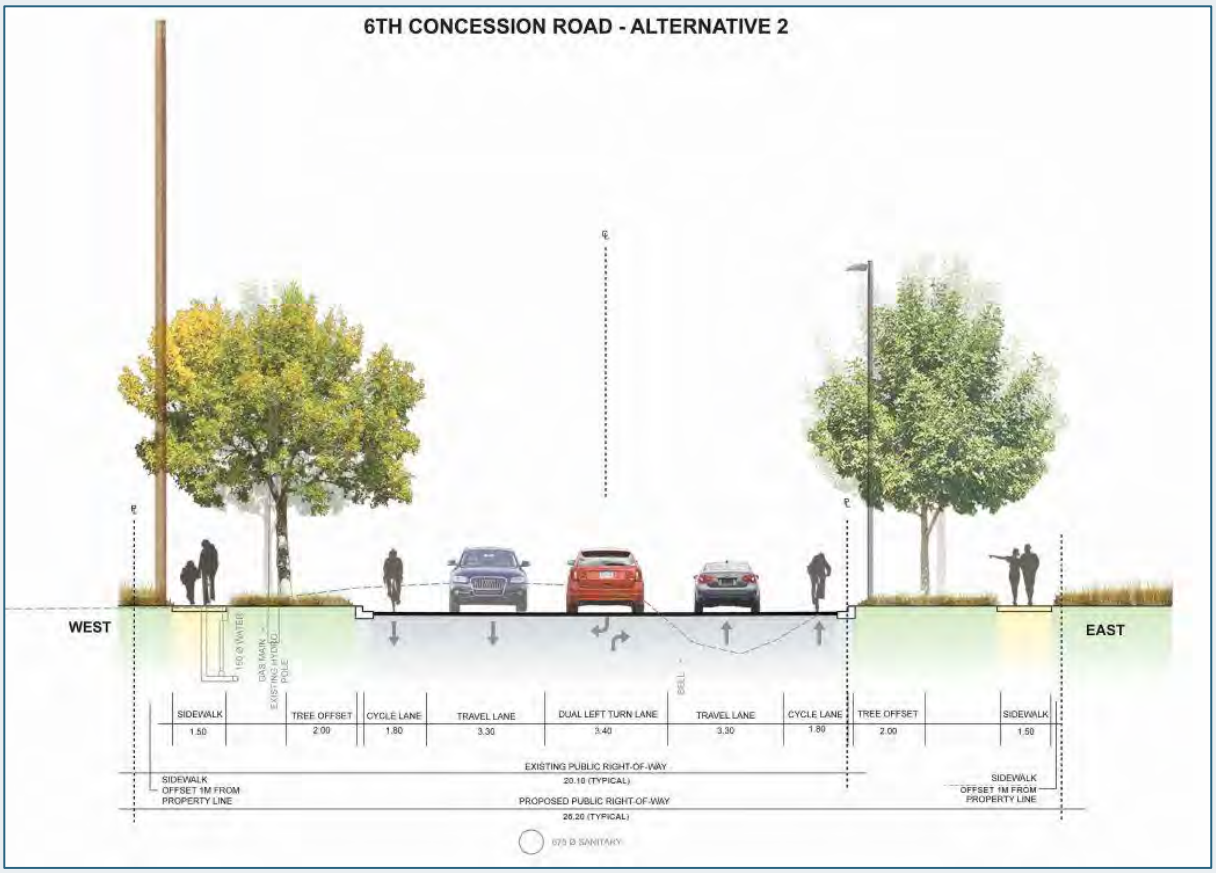


FIGURE 14: ALTERNATIVE 2 – SIXTH CONCESSION ROAD

Alternative 3

Potential improvement options include:

- 1.8 m bike lanes on both sides of the road.
- 1.5 m sidewalks on both sides of the road.
- Two, 3.3 m travel lanes.
- Mini roundabout at Ducharme Street.
- Roundabouts at Sixth Concession Road/North Talbot Road and Holburn Street/Sixth Concession Road.
- Urban cross section.
- Street lighting.

A typical cross section for this alternative is shown on **Figure 15**.

FIGURE 15: ALTERNATIVE 3 – SIXTH CONCESSION ROAD

6.2.1 Evaluation of Design Alternatives – Sixth Concession Road

Several factors and criteria were used in the assessment of the three design alternatives, including natural environment, socio-economic environment, cultural environment, technical considerations, transportation and cost. **Table 9** provides a summary of the evaluation of the alternative designs for Sixth Concession Road.

6.2.2 Recommended Alternative Design – Sixth Concession Road

The evaluation concludes that Alternative 3 is the recommended design alternative based on the following rationale:

- Improved pedestrian movements at mini roundabouts.
- Traffic operations and safety.
- The combination of 3.3 m lane widths with mini and full sized roundabouts provide a higher level of traffic speed control along the corridor.
- Ability to provide landscaping in the boulevard and full-sized roundabouts.
- Operation/maintenance costs are slightly lower.

6.3 Design Alternatives – North Talbot Road

Alternatives for North Talbot Road include:

Alternative 1

- 1.8 m bike lanes on both sides of the road.
- 1.5 m sidewalks on both sides of the road.
- Two, 3.3 m travel lanes.
- Left turn lanes at Southwood Lakes Boulevard West (westbound), Northwood Lakes Drive (eastbound), Old West Avenue South (eastbound).
- Traffic signals at Sixth Concession Road/North Talbot Road.
- Urban cross section.
- Street lighting.

A typical cross section for this alternative is shown on **Figure 16**.

Table 9: Evaluation of Alternatives – Sixth Concession Road

6th CONCESSION ROAD ROAD DESIGN ALTERNATIVES				
		ALTERNATIVE 1	**ALTERNATIVE 2**	**ALTERNATIVE 3**
FACTOR & CRITERIA	**MEASURE**	**Potential improvement options include:** • 1.8 m bike lanes on both sides of the road • 1.5 m sidewalks on both sides of the road • Two 3.3 m travel lanes • Left turn lane at Ducharme Street (SB) • Traffic signals at North Talbot Road/6th Concession & Holburn Street/6th Concession Road	**Potential improvement options include:** • 1.8 m bike lanes on both sides of the road • 1.5 m sidewalks on both sides of the road • Two 3.3 m travel lanes • One 3.4 m centre dual left turn lane with no left turn permitted at Socrates, Morand, Ducharme, Scofield, Wallace • Roundabout at 6th Concession Road/North Talbot Road intersection	**Potential improvement options include:** • 1.8 m bike lanes on both sides of the road • 1.5 m sidewalks on both sides of the road • Two 3.3 m travel lanes • Mini roundabouts at Ducharme Street & Holburn Street • Roundabout at 6th Concession Road /North Talbot Road intersection
Natural Environment				
Vegetation	Potential for tree and vegetation removals. Alternatives that preserve vegetation are preferred	No impact	Minimal impact to vegetation north of Holburn Street and 6th Concession Road	No impact
Terrestrial habitat	Potential for destruction/removal of existing terrestrial habitat. Alternatives that provide for opportunities to protect or create terrestrial habitat are preferred	No impact	No impact	No impact
Aquatic species and habitats	Potential for destruction/removal of existing aquatic habitat. Alternatives that provide for opportunities to protect or create aquatic habitat are preferred	No impact	No impact	No impact
Species at Risk	Potential for impacts to Species at Risk and/or their habitat	No impact	No impact	No impact
SUMMARY			**Alternatives are comparable**	
Socio-Economic Environment				
Existing and planned land uses	Appropriateness of design for existing and planned future land uses along the corridor	Appropriate for a residential setting	Less appropriate for a residential setting	Appropriate for a residential setting
Policy framework	Consistency with municipal and provincial policies, goals and objectives	Consistent	Consistent	Consistent
Aesthetic considerations	Effects of the design on visual landscapes and streetscapes and their further connection to communicate appropriate driving conditions	Ability to provide landscaping in boulevard	Diminishes available boulevard area for landscaping	Ability to provide landscaping in boulevard Paved roundabouts do not provide for landscaping opportunity
Property requirements	Requirement for property and/or easement acquisition(s)	Some property required at SW corner of Provincial Road and 6th Concession Road	Impacts largest number of property frontages due to a wider ROW width (from 20 to 26 m) Some property required at SW/SE/NW corners of Provincial Road and 6th Concession Road	Some property required at SW/SE/NW corners of Provincial Road and 6th Concession Road Property impacts at SE corner of Ducharme and 6th Concession Road
Property access/impacts to local business	Short-term or long-term disruption of property owners and local businesses	Temporary closure of 6th Concession Road required during period of construction (timing dependent on funding)	Temporary closure of 6th Concession Road required during period of construction (timing dependent on funding)	Temporary closure of 6th Concession Road required during period of construction (timing dependent on funding)
SUMMARY		**Comparable to Alterative 3: Some property impacts and landscaping opportunities exist**	**Impacts to property frontages and less appropriate for a residential setting**	**Comparable to Alterative 1: Some minimal property impacts; landscaping opportunities exist**
Cultural Environment				
Lands with archaeological potential	Potential for impacts on registered archaeological sites	Stage 2 Archaeological Assessment required in areas identified as High Potential	Stage 2 Archaeological Assessment required in areas identified as High Potential	Stage 2 Archaeological Assessment required in areas identified as High Potential
Built heritage resources	Potential for impacts on designated properties, buildings of architectural/historical interest and cemeteries	No impact	No impact	No impact
SUMMARY			**Alternatives are comparable**	
Technical Considerations				
Drainage	Potential for drainage impacts and improvements	Roadside ditches are replaced with an enclosed stormwater system	Roadside ditches are replaced with an enclosed stormwater system	Roadside ditches are replaced with an enclosed stormwater system
Snow removal & storage	Ability of design to accommodate winter maintenance equipment/vehicles and snow storage	No impacts	No impacts	Mini roundabouts require some additional manoeuvring of winter maintenance vehicles
Utilities	Utility constraints and requirements to be considered as part of the design	Final requirements for any relocation of gas and underground communication lines will be determined at the detail design stage Significant impacts – relocation of hydro lines required to accommodate street trees and sidewalks	Final requirements for any relocation of gas and underground communication lines will be determined at the detail design stage Significant impacts - relocation of hydro lines required to accommodate street trees and sidewalks	Final requirements for any relocation of gas and underground communication lines will be determined at the detail design stage Significant impacts - relocation of hydro lines required to accommodate street trees and sidewalks
Construction staging and phasing	Ease and practicality of construction, including construction duration and need for road closures and/or detours	Construction duration similar to Alternative 3 Temporary detours required	Construction duration slightly increased due to additional pavement and utility relocation Temporary detours required	Construction duration similar to Alternative 1: may be slightly longer due to roundabouts Temporary detours required
SUMMARY			**Alternatives are comparable**	
Transportation Considerations				
Road Safety	Relative ability to reduce potential for collisions of all roadway users recognizing alignment/geometry, intersections, presence of auxiliary lanes, number/spacing/accesses	Higher potential for collisions due to higher operating speeds along the corridor	Higher potential for collisions due to higher operating speeds Potential to reduce rear end mid-block collision types due to left-turn lane	Lower potential for collisions due to lower operating speeds Potential to reduce severity of collisions
Ability to accommodate active transportation	Ability of design to provide safe, connected, effective, attractive and convenient cycling, pedestrian and transit facilities	Similar to Alternatives 2 & 3	Similar to Alternatives 1 & 3	Similar to Alternatives 1 & 2 Pedestrian movements are improved with mini and full-sized roundabouts; splitter islands reduce time that pedestrians are exposed or in conflict with vehicle traffic.
Transit serviceability	Relative ability to accommodate transit vehicles	High potential to accommodate transit vehicles	High potential to accommodate transit vehicles	High potential to accommodate transit vehicles however buses will have to transition over mini roundabouts resulting in a reduction of travel speed
Network capacity and continuity	Relative ability to provide sufficient capacity and level of service (LOS) to accommodate projected traffic volumes	Level of Service (LOS) is generally acceptable during AM and PM Capacity is acceptable but at upper limits; marginally better than Alternative 3	LOS is generally acceptable during AM and PM Improved through lane capacity as local access to property is provided with a left-turn lane Capacity is acceptable (capacity is greater than Alternatives 1 & 3)	LOS is generally acceptable during AM and PM Capacity is acceptable
Traffic speed control	Relative ability to encourage appropriate traffic speed for the road classification taking into consideration adjacent land uses	A lane width of 3.3 m will assist with traffic speed control	A lane width of 3.3 m will assist with traffic speed control	The combination of 3.3 m lane widths with mini and full-sized roundabouts provide a higher level of traffic speed control along corridor
Traffic infiltration (potential impact on cut-through traffic)	Relative ability to reduce potential cut-through traffic on local streets	Removal of stop conditions may provide a reduction in neighbourhood cut-through traffic due to unimpeded travel on the collector roadway	Removal of stop conditions may provide a reduction in neighbourhood cut-through traffic due to unimpeded travel on the collector roadway	Mini and full-sized roundabouts provide a reduction in cut-through traffic due to unimpeded travel (with a reduction in travel speed)
Emergency services access and response times	Relative impact on access and response time of emergency vehicles	Access and emergency response time is not negatively impacted	Access and emergency response time is not negatively impacted	Access and emergency response time may be marginally reduced compared to Alternatives 1 & 2 due to roundabouts
SUMMARY		**Comparable to Alterative 2; however capacity is at upper limits**	**Travel speed is not reduced; higher potential for collisions**	**Roundabouts provide traffic calming effects and reduced cut-through traffic**
Cost				
Capital costs	Relative capital costs	Equal to Alternative 3 (left turn lanes versus mini roundabouts and traffic signals)	Higher compared to Alternatives 1 & 3	Equal to Alternative 1 (mini roundabouts versus left turn lanes)
Operation and maintenance costs	Relative operation and maintenance costs	Higher than Alternative 3 due to traffic signals but slightly lower than Alternative 2	Slightly higher than Alternatives 1 & 3 due to additional pavement width	Slightly lower than Alternative 1
SUMMARY		**Higher operation and maintenance costs**	**Higher capital, operation and maintenance costs**	**Capital costs and operation/maintenance costs equal or lower**

RECOMMENDED ALTERNATIVE

Evaluation Legend: Recommended; Comparable; Not Recommended

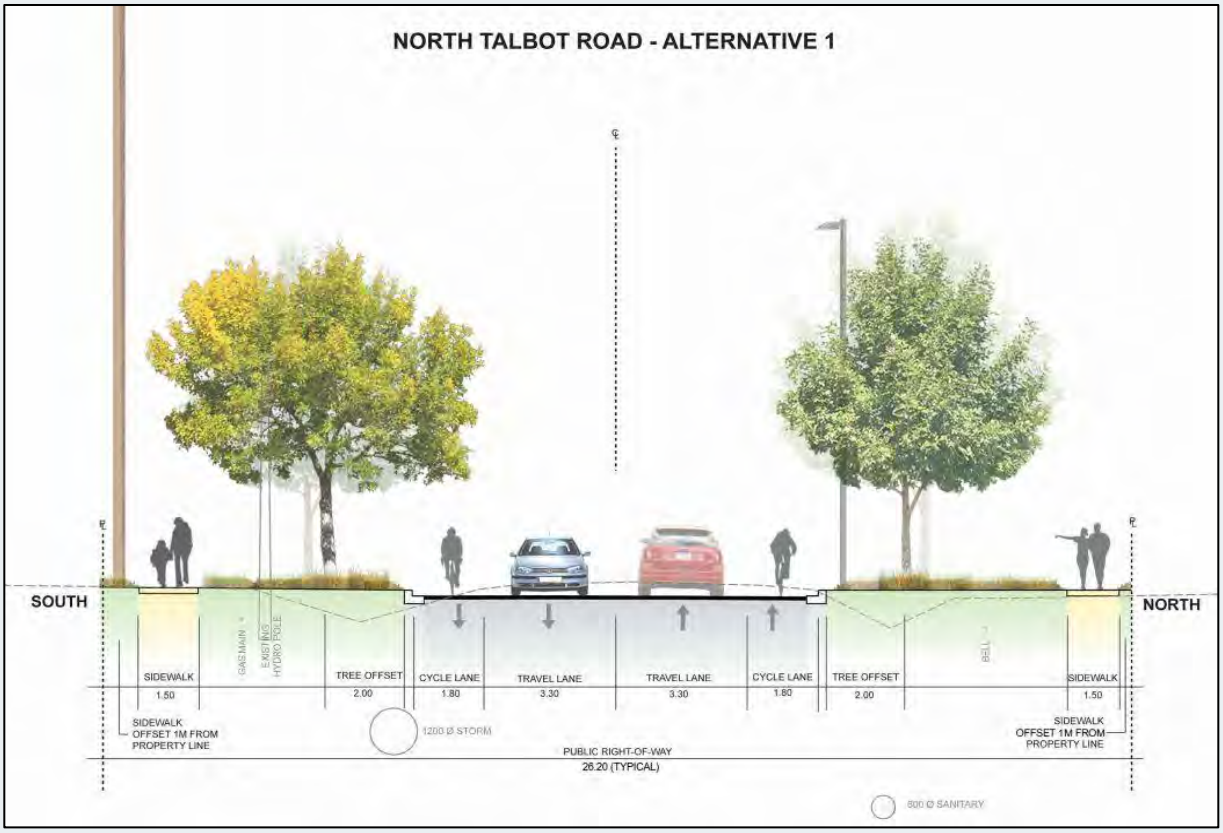


FIGURE 16: ALTERNATIVE 1 – NORTH TALBOT ROAD

Alternative 2

- 1.8 m bike lanes on both sides of the road.
- 1.5 m sidewalks on both sides of the road.
- Two, 3.3 m travel lanes.
- One, 3.4 m centre dual left turn lane.
- Roundabout at Sixth Concession Road/North Talbot Road.
- Urban cross section.
- Street lighting.

A typical cross section for this alternative is shown on **Figure 17**.

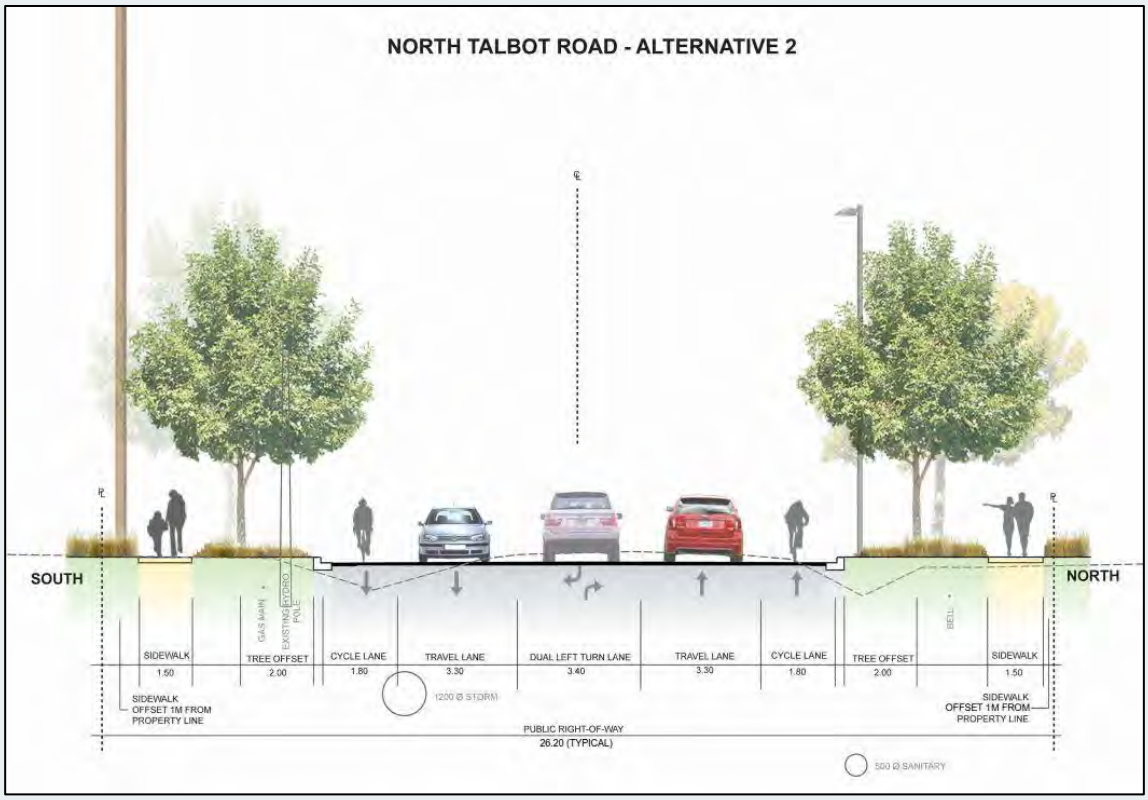


FIGURE 17: ALTERNATIVE 2 – NORTH TALBOT ROAD

Alternative 3

Potential improvement options include:

- 1.8 m bike lanes on both sides of the road.
- 1.5 m sidewalks on both sides of the road.
- Two, 3.3 m travel lanes.
- Mini roundabouts at Southwood Lakes Boulevard West, Northwood Lakes Drive and Goldenwood Drive.
- Left turn lanes at Old West Avenue South (eastbound).
- Roundabout at Sixth Concession Road/North Talbot Road.
- Urban cross section.
- Street lighting.

Table 10: Evaluation of Alternatives – North Talbot Road

NORTH TALBOT ROAD - ROAD DESIGN ALTERNATIVES				
		ALTERNATIVE 1	**ALTERNATIVE 2**	**ALTERNATIVE 3**
FACTOR & CRITERIA	**MEASURE**	**Potential improvement options include:** • **1.8 m bike lanes on both sides of the road** • **1.5 m sidewalks on both sides of the road** • **Two 3.3 m travel lanes** • **Left turn lanes at Southwood Lakes Blvd (WB), Northwood Lakes Drive (EB), Old West Avenue (EB)** • **Traffic signals at 6th Concession Road/North Talbot Road**	**Potential improvement options include:** • **1.8 m bike lanes on both sides of the road** • **1.5 m sidewalks on both sides of the road** • **Two 3.3 m travel lanes** • **One 3.4 m centre dual left turn lane** • **Roundabout at 6th Concession Road/North Talbot Road**	**Potential improvement options include:** • **1.8 m bike lanes on both sides of the road** • **1.5 m sidewalks on both sides of the road** • **Two 3.3 m travel lanes** • **Mini roundabouts at Southwood Lakes Blvd, Northwood Lakes Drive & Goldenwood Drive** • **Left turn lanes at Old West Ave (EB)** • **Roundabout at 6th Concession Road/North Talbot Road**
Natural Environment				
Vegetation	Potential for tree and vegetation removals. Alternatives that preserve vegetation are preferred	No impacts	No impacts	No impacts
Terrestrial habitat	Potential for destruction/removal of existing terrestrial habitat. Alternatives that provide for opportunities to protect or create terrestrial habitat are preferred	No impacts	No impacts	No impacts
Aquatic species and habitats	Potential for destruction/removal of existing aquatic habitat. Alternatives that provide for opportunities to protect or create aquatic habitat are preferred	No impacts	No impacts	No impacts
Species at Risk	Potential for impacts to Species at Risk and/or their habitat	No impacts	No impacts	No impacts
SUMMARY		**Alternatives are comparable**		
Socio-Economic Environment				
Existing and planned land uses	Appropriateness of design for existing and planned future land uses along the corridor	Appropriate for a residential setting	Appropriate for a residential setting although slightly greater pavement width	Appropriate for a residential setting
Policy framework	Consistency with municipal and provincial policies, goals and objectives	Consistent	Consistent	Consistent
Aesthetic considerations	Effects of the design on visual landscapes and streetscapes and their further connection to communicate appropriate driving conditions	Ability to provide landscaping in boulevard	Ability to provide landscaping in boulevard although extra lane diminishes available area for landscaping	Ability to provide landscaping in boulevard Mini roundabouts do not provide for landscaping opportunity
Property requirements	Requirement for property and/or easement acquisition(s)	No anticipated property impacts	Property impacts at NE/SE corner of 6th Concession Road and North Talbot Road due to roundabout	Property impacts at NE/SE corner of 6th Concession Road and North Talbot Road due to roundabout Property impacts at Northwood Lakes (south side of North Talbot Road) due to mini roundabout
Property access/impacts to local business	Short-term or long-term disruption of property owners and local businesses	Temporary closure of North Talbot Road required during period of construction (timing dependent on funding)	Temporary closure of North Talbot Road required during period of construction (timing dependent on funding)	Temporary closure of North Talbot Road required during period of construction (timing dependent on funding)
SUMMARY		**No anticipated property impacts**	**Property impacts**	**Property impacts**
Cultural Environment				
Lands with archaeological potential	Potential for impacts on registered archaeological sites	Stage 2 Archaeological Assessment required in areas identified as High Potential	Stage 2 Archaeological Assessment required in areas identified as High Potential	Stage 2 Archaeological Assessment required in areas identified as High Potential
Built heritage resources	Potential for impacts on designated properties, buildings of architectural/historical interest and cemeteries	No impact	No impact	No impact
SUMMARY		**Alternatives are comparable**		
Technical Considerations				
Drainage	Potential for drainage impacts and improvements	Road side ditches are replaced with an enclosed stormwater system	Road side ditches are replaced with an enclosed stormwater system	Road side ditches are replaced with an enclosed stormwater system
Snow removal & snow storage	Ability of design to accommodate winter maintenance equipment/vehicles and snow storage	No impact	No impact	Mini roundabouts require some additional manoeuvring of winter maintenance vehicles
Utilities	Utility constraints and requirements to be considered as part of the design	Final requirements for any relocation of gas and underground communication lines will be determined at the detail design stage Significant impacts – relocation of hydro lines required to accommodate street trees and sidewalks	Final requirements for any relocation of gas and underground communication lines will be determined at the detail design stage Significant impacts – relocation of hydro lines required to accommodate street trees and sidewalks	Final requirements for any relocation of gas and underground communication lines will be determined at the detail design stage Significant impacts – relocation of hydro lines required to accommodate street trees and sidewalks
Construction staging and phasing	Ease and practicality of construction, including construction duration and need for road closures and/or detours	Construction duration similar to Alternative 3 Temporary detours required	Construction duration slighting increased due to additional pavement Temporary detours required	Construction duration similar to Alternative 1; may be slightly longer due to roundabouts Temporary detours required
SUMMARY		**Alternatives are comparable**		
Transportation Considerations				
Road Safety	Relative ability to reduce potential for collisions of all roadway users recognizing alignment/geometry, intersections, presence of auxiliary lanes, number/spacing/accesses	Higher potential for collisions due to higher operating speeds and lack of dedicated turning lanes along the corridor	Higher potential for collisions due to higher operating speeds Potential to reduce rear end m id-block collision types due to left turn lane	Lower potential to for collisions due to lower operating speeds Potential to reduce severity of collisions
Ability to accommodate active transportation	Ability of design to provide safe, connected, effective, attractive and convenient cycling, pedestrian and transit facilities	Similar to Alternatives 2 & 3	Similar to Alternatives 1 & 3	Similar to Alternatives 1 & 2 Pedestrian movements are improved with mini roundabouts; splitter islands reduced time that pedestrians are exposed to/or in conflict with vehicle traffic
Transit serviceability	Relative ability to accommodate transit vehicles	High potential to accommodate transit vehicles	High potential to accommodate transit vehicles	High potential to accommodate transit vehicles however buses will have to transition over mini roundabouts resulting in a reduction of travel speed
Network capacity and continuity	Relative ability to provide sufficient capacity and level of service (LOS) to accommodate projected traffic volumes	Level of Service (LOS) is generally acceptable during AM and PM Capacity is acceptable; marginally better than Alternative 3	LOS is generally acceptable during AM and PM Capacity is acceptable (capacity is greater than Alternatives 1 & 3)	LOS is generally acceptable during AM and PM Capacity is acceptable
Traffic speed control	Relative ability to encourage appropriate traffic speed for the road classification taking into consideration adjacent land uses	A lane width of 3.3 m will assist with traffic speed control	A lane width of 3.3 m will assist with traffic speed control	The combination of 3.3 m lane widths with mini and full-sized roundabouts provide a higher level of traffic speed control along corridor
Traffic infiltration (potential impact on cut-through traffic)	Relative ability to reduce potential cut-through traffic on local streets	No existing concern noted	No existing concern noted	No existing concern noted
Emergency services access and response times	Relative impact on access and response time of emergency vehicles	Access and emergency response time is not negatively impacted	Access and emergency response time is not negatively impacted	Access and emergency response time may be marginally reduced compacted to Alternative 1 & 2 due to roundabouts
SUMMARY		**No speed control measures in place; higher potential for collisions**	**No speed control measures in place; higher potential for collisions**	**Mini roundabouts provide traffic calming effect; lower potential for collisions; pedestrian movements improved at mini roundabouts**
Cost				
Capital costs	Relative capital costs	Lowest capital costs	Capital costs are higher compared to Alternatives 1 & 3	Capital costs are higher than Alternative 1, but lower than Alternative 2
Operation and maintenance costs	Relative operation and maintenance costs	Similar to Alternative 3	Slightly higher than Alternatives 1 & 3 due to additional pavement width	Similar to Alternative 1
SUMMARY		**Lowest capital costs; comparable operation and maintenance costs**	**Highest capital, operation and maintenance costs**	**Moderate capital costs; operation and maintenance costs comparable to Alternative 1**

Evaluation Legend: Recommended; Comparable; Not Recommended

RECOMMENDED ALTERNATIVE

A typical cross section for this alternative is shown on **Figure 18**.

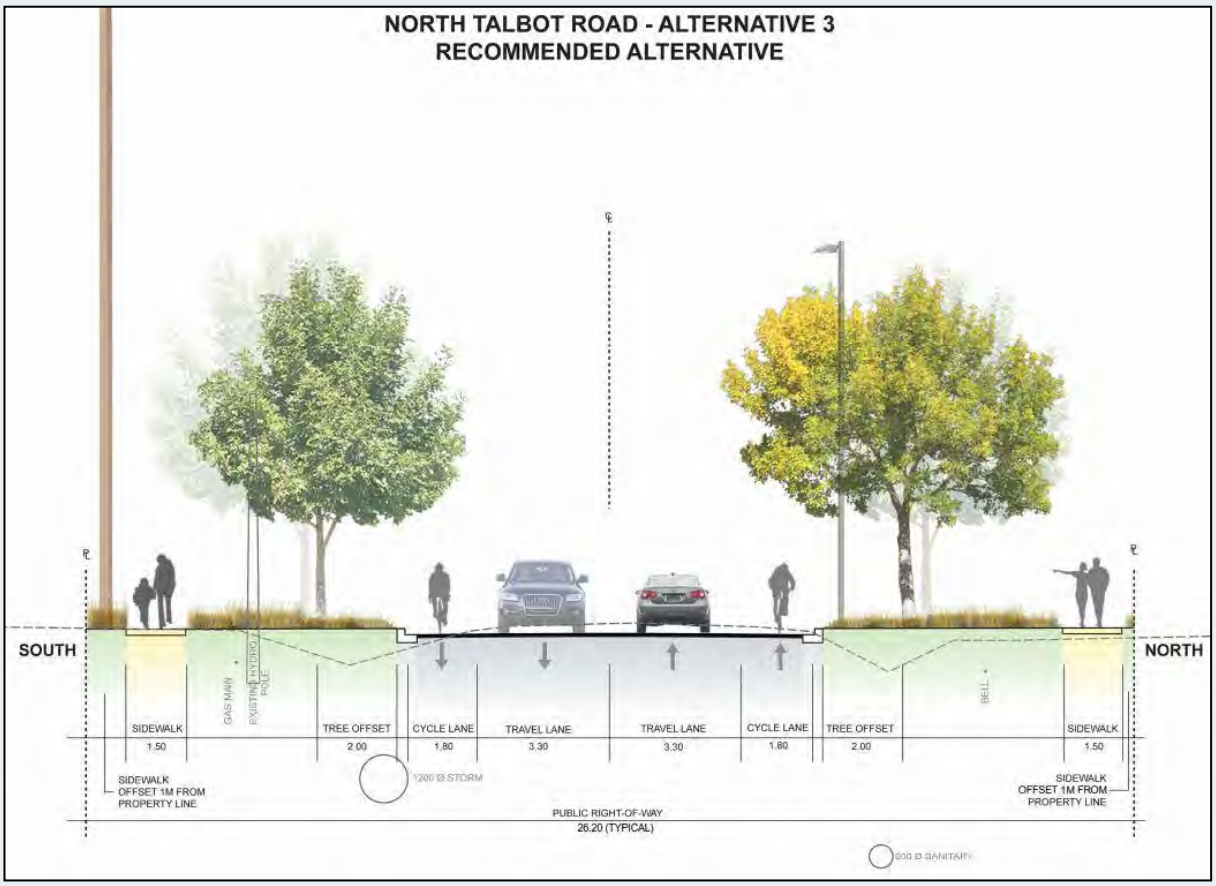


FIGURE 18: ALTERNATIVE 3 – NORTH TALBOT ROAD

6.3.1 Evaluation of Alternative Designs – North Talbot Road

Several factors and criteria were used in the assessment of the three design alternatives, including natural environment, socio-economic environment, cultural environment, technical considerations, transportation and cost. **Table 10** provides a summary of the evaluation of the alternative designs for North Talbot Road.

The evaluation concludes that Alternative 3 is the recommended design alternative based on the following rationale:

- Improved pedestrian movements at mini roundabouts.
- Traffic operations and safety.
- The combination of 3.3 m lane widths with mini and full-sized roundabouts provide a higher level of traffic speed control along the corridor.
- Ability to provide landscaping in the boulevard and full-sized roundabouts.
- Some property impacts (see **Table 11**).

7.0 Anticipated Impacts and Proposed Mitigation

7.1 Socio-Economic Environment

Property acquisitions in all instances is for additional boulevard area and enclosed drainage ditches, and therefore, will remain essentially unchanged compared to its existing use. The preferred design results in very little private property impacts with no buildings displaced (shown in blue shading on preferred design plans following this report). **Table 11** provides a summary of property impacts and area of property required. Once Council approves funding for the road improvement project, a detailed design will be completed for the improvements including the roundabout(s). Temporary closure of the road corridors may be required during periods of construction (timing dependent on funding). Temporary detour routes will be established at the detailed design stage. The construction timing and staging is to be determined.

TABLE 11: SUMMARY OF PROPERTY IMPACTS

PROPERTY ADDRESS	AREA OF PROPERTY REQUIRED	TYPE OF PROPERTY ACQUISITION	Roll Number
SIXTH CONCESSION ROAD			
1420 Provincial Road	115.5 m^2	Fee Simple	3739-070-160-02001-0000
1527 Provincial Road	34.1 m^2	Fee Simple	3739-070-160-00700-0000
3945 Acorn Crescent Road	7.6 m^2	Fee Simple	3739-070-160-02450-0000
3949 Acorn Crescent Road	5.7 m^2	Fee Simple	3739-070-160-02450-0000
3953 Acorn Crescent Road	3.7 m^2	Fee Simple	3739-070-160-02450-0000
3957 Acorn Crescent Road	3.6 m^2	Fee Simple	3739-070-160-02450-0000
3961 Acorn Crescent Road	3.7 m^2	Fee Simple	3739-070-160-02450-0000
3965 Acorn Crescent Road	3.6 m^2	Fee Simple	3739-070-160-02450-0000
3969 Acorn Crescent Road	3.5 m^2	Fee Simple	3739-070-160-02450-0000
3973 Acorn Crescent Road	3.4 m^2	Fee Simple	3739-070-160-02450-0000
3977 Acorn Crescent Road	3.4 m^2	Fee Simple	3739-070-160-02450-0000
3981 Acorn Crescent Road	3.3 m^2	Fee Simple	3739-070-160-02450-0000
3985 Acorn Crescent Road	3.2 m^2	Fee Simple	3739-070-160-02450-0000
3989 Acorn Crescent Road	3.2 m^2	Fee Simple	3739-070-160-02450-0000
3993 Acorn Crescent Road	3.1 m^2	Fee Simple	3739-070-160-02450-0000

PROPERTY ADDRESS	AREA OF PROPERTY REQUIRED	TYPE OF PROPERTY ACQUISITION	Roll Number
3997 Acorn Crescent Road	2.6 m^2	Fee Simple	3739-070-160-02450-0000
3825 Sixth Concession Road	29.2 m^2	Fee Simple	3739-070-160-00100-0000
3945 Sixth Concession Road	10.4 m^2	Fee Simple	3739-070-120-02500-0000
3960 Sixth Concession Road	10.4 m^2	Fee Simple	3739-070-150-22920-0000
NORTH TALBOT ROAD			
NE Sixth Concession Road/ North Talbot Road	120.1 m^2	Fee Simple	3739-070-140-10600-0000
SE Sixth Concession Road/ North Talbot	57.5 m^2	Fee Simple	3739-070-145-10650-0000
1090 North Talbot Road	353.1 m^2	Land Conveyance	3739-070-140-03600-0000
4396 Pioneer Avenue	17.1 m^2	Fee Simple	3739-070-140-37000-0000
4397 Old West Avenue South	22.9 m^2	Fee Simple	3739-070-140-38700-0000
North Talbot Park	331.5 m^2		City Owned

Property acquisitions for the Cabana/Sixth Concession and Provincial/Sixth Concession intersections were compared to the property acquisitions identified in the Provincial/Division Road Class Environmental Assessment. Property required along Cabana Road has already been purchased as part of the construction of the Provincial/Cabana intersection improvements, and therefore, has not been identified as part of this study. Property requirements for the Provincial/Sixth Concession intersection have increased based on the analysis completed as part of this study.

The Socio-Economic Existing Conditions Report is provided in **Appendix C** of this ESR.

7.2 Natural Environment

There are no impacts anticipated to aquatic or terrestrial features within the Study Area. Landscaping will be completed as part of the project with specific details to be confirmed at the detail design stage.

The Natural Environment Existing Conditions Report is provided in **Appendix D** of this ESR.

7.3 Cultural Environment

As noted previously, the Study Area has high potential for historic Euro-Canadian material due to the historic nature of North Talbot Road and Sixth Concession Road. The potential exists for impacts to archeological resources in undisturbed areas along the corridors.

A Stage 2 Archaeological Assessment will be completed at the detailed design stage. In the event that any aboriginal remains or significant aboriginal artifacts are uncovered during further assessment work, all First Nations will be contacted immediately. Please refer to **Appendix E** for the Cultural Environment Background Reports.

7.4 Technical Environment

The relocation of hydro lines is required to accommodate street trees and sidewalks. Final requirements for any relocation of gas and underground communication lines will be determined at the detail design stage, as these requirements may vary depending on the actual date of construction.

Existing natural gas distribution by Union Gas is 'newer' construction (after 1981), and no plan for replacement or upgrades has been considered at this time.

Windsor Utilities Commission (WUC) has plans to upgrade existing watermains along Sixth Concession Road, Provincial Road and Division Road.

- Sixth Concession Road – North Talbot Road to Holburn Street – 300 mm main.
- Sixth Concession Road – South of CN Rail to Provincial Road – 200 mm main.
- Sixth Concession Road – Provincial Road to Division Road – 600 mm main.
- Provincial Road – Lone Pine Street to Sixth Concession Road – 600 mm main.
- Division Road – Division Road/Sixth Concession intersection – 900 mm main.

Timing of these upgrades is not known at this time.

No other upgrades have been identified from the Utility Companies at this time. Further consultation will be required at the time of detailed design.

Background information relating to the drainage is provided in **Appendix F** of this ESR.

7.5 Consultation Summary

As discussed in **Section 2.0**, PIC #2 was held on June 26, 2014 at the conclusion of Phase 3 of the Class EA Study process. The purpose of PIC #2 was to provide the public with an

opportunity to review new project information, discuss concerns and ask questions of the project team regarding:

- EA study process to date.
- Evaluation of design alternatives.
- Recommended design alternative.
- Potential impacts and associated mitigation measures.
- A summary of the next steps in the study.

Residents were encouraged to provide written and/or verbal comments and input, and to register to be added to the mailing list and kept informed of the project progress.

Overall, the response to the project was positive, and most residents were pleased with the recommended design. Comments and concerns focused on the following:

- Roundabout safety.
- Traffic.
- Rail crossing safety.
- Pork chop islands.
- Connection to Devonwood Conservation Area.
- Landscaping.
- Cycling/pedestrian safety.
- Alternative designs.
- Construction timing.
- Storm sewer/water connection.

Specific comments relating to potential property impacts were received by the project team and were addressed individually with property owners. The complete summary of PIC #2, with specific comments received and project team responses, is provided in **Appendix A**.

A summary of the EA process and a description of the preferred design was presented to City Council on June 1, 2015. As per Council Resolution CR 106/2015, the preferred design will mirror the physical attributes of those being used for Cabana Road, including a 0.3 m painted buffer within the 1.8 m bike lane. This direction will be carried forward into the preferred alternative and detail design for the Sixth Concession Road and North Talbot Road corridors. The Council Report and Council resolution are included in **Appendix A** of this ESR.

7.6 Preferred Alternative Design

Based on comments received, the project team concluded that Alternative 3 for both Sixth Concession Road and North Talbot Road is the preferred design, subject to minor refinements to address key issues identified. **Section 8.0** provides a summary of the project description for the preferred design.

8.0 Project Description

8.1 Description of the Preferred Design

The preferred design for the Sixth Concession Road and North Talbot Road comprises two through lanes throughout the Study Area. Property required in all instances is for additional boulevard area and enclosed drainage ditches, with the exception of the roundabout at Sixth Concession North Talbot Road (see **Section 7.1**) and therefore, will remain essentially unchanged compared to its existing use. The right-of-way widths in cross sections (26.2 m North Talbot Road/20.1 m Sixth Concession Road) reflect the width required to accommodate the necessary road cross section and provide sufficient width for utility installations, without negatively impacting the use of fronting residential properties.

Typical cross sections illustrating the various design features are presented on **Figure 15** and **Figure 18**.

The preferred design plans for North Talbot Road (Plates 1 to 6) and Sixth Concession Road (Plates 7 to 13) are found following this report.

8.1.1 Intersections

Intersections with improvements include:

- Turning lanes and additional eastbound and westbound through lanes at Sixth Concession Road and Provincial Road.
- An additional northbound left turning lane at Provincial Road and Cabana Road intersection.
- Mini roundabout at Ducharme Street and Sixth Concession Road.
- Left turn lanes will be provided at Old West Avenue South (eastbound only).
- Full size roundabout at Holburn Street and Sixth Concession Road.
- Full size roundabout at Sixth Concession Road and North Talbot Road.
- Mini roundabouts on North Talbot Road at:
    - Goldenwood Drive.
    - Northwood Lakes Drive.
    - Southwood Lakes Boulevard West.

No changes are proposed at the intersection of Howard Avenue and North Talbot Road.

The existing pork-chop islands (Socrates Crescent, Morand Street, Ducharme Street, Scofield Avenue and Wallace Avenue) should be removed during the reconstruction effort, easing access for area residents and emergency services. If shortcutting through the Old Roseland neighbourhood becomes an issue at any time after reconstruction, it is recommended that a

neighbourhood traffic calming study be undertaken. The purpose of this study would be to identify the scope and magnitude of the problem and appropriate solutions within the neighbourhood and not on Sixth Concession Road. Public participation should be an integral part of any traffic calming study.

8.1.2 Railway Crossing

The Community Based Strategic Rail Study (April 2008) is a strategic planning study to assess opportunities for rail rationalization and modal integration in the City. The study identifies a number of at-grade rail crossings, including one along Sixth Concession Road. The Rail Study states that better grading design along with signalization and signage at the crossings is recommended to reduce impacts to local road traffic and improve safety for pedestrians and road users. The removal of redundant rail corridors, including the CASO Subdivision that crosses Sixth Concession, is identified as a key feature of the ultimate scenario.

Current and future railway and vehicle traffic does not warrant a grade separation at this crossing. However, improvements are required to address the cross section of the preferred design. An increase to the width of the platform is required to accommodate and provide safety for the cycle lanes and sidewalks.

Grading improvements will be required to the current at-grade crossing to provide a smoother and more desired crossing for vehicles. Any upgrades will need to be discussed with the railway company at the time of detailed design and development of a crossing agreement. At that time, the railway will be able to determine their usage and protection requirements of the crossing.

There are no impacts to adjacent properties anticipated.

8.1.3 Pedestrian and Cyclist Facilities

The project team confirmed and justified the bicycle facility selected. The project team concluded that the use of a physical barrier is not recommended, as the overall corridor design combines several elements which work together and provide the friction between vehicles and cyclists to assist with traffic calming measures.

A separated facility was not selected for the following reasons:

- Separated facilities are generally not preferred in situations with numerous driveways or unsignalized intersections.
- If the “optical width” of the road is increased to accommodate separated bike lanes, then a negative impact on speed management may result. Introducing bollards in the buffered space may mitigate the effects of speed; however, the project team is not

aware of any substantive research on the use and effects of buffered bike lanes with bollards.

- There are less than 30 trucks/buses per hour present in a single curb lane within the Study Area (which is the threshold limit for cyclist preference for a separated facility).

The preferred design includes 1.8 m bike lanes and 1.5 m sidewalks on both sides of the road for both corridors. As per direction from Council Resolution CR 106/2015 dated June 1, 2015, the preferred design for bike lanes will mirror the physical attributes of those being used for Cabana Road, including a 0.3 m painted buffer within the 1.8 m bike lane. This direction is consistent with the traffic calming measures recommended by this project, is supported by the heuristic evaluation and examination of site conditions undertaken, and will be carried forward into the preferred alternative and detail design for the Sixth Concession Road and North Talbot Road Corridors. The Council Report and Council Resolution are included in **Appendix A** of this ESR.

8.1.4 Cabana Road Pedestrian Crossing

Council Report # 17663, CR209/2014 – Cabana Road Cycling Facilities was brought forward to City Council on May 4, 2015, to discuss the Cabana Road connection to the Devonwood Conservation Area.

This recommended connection includes a two-way bicycle facility on the north side of Division Road that leads to the entrance of the Devonwood Conservation Area. Warrant studies for half-signals to provide controlled crossings on Cabana Road and Division Road in the vicinity of Sixth Concession Road will be undertaken prior to confirming their installation.

The Council Report recommends pavement markings consisting of dashed lines with chevrons through the Sixth Concession Road and Cabana Road intersection. These pavement markings assist with guiding cyclists through the intersection and discouraging motorists from entering the bike lanes.

8.1.5 Drainage and Stormwater Management Requirements

North Talbot Road

The drainage area included in the analysis of storm sewer requirements on North Talbot Road included the lots located north of North Talbot Road and that section of Sixth Concession Road located south of the Dougall Parkway.

The cross section of the recommended design for North Talbot Road will result in a marginal increase in the runoff from the corridor as compared to the existing cross section. Currently, the composite 'c' value for the existing North Talbot Road corridor is 0.50. For the recommended cross section, the composite 'c' value increases by 14% to 0.57. Supporting

calculations for this can be found in **Appendix F.** For a full depth lot fronting on North Talbot Road, a composite 'c' value for the lot in combination with the recommended road cross section, is 0.43. This compares to the composite 'c' value identified in prior drainage reports of 0.35.

The total area draining to the stormwater ponds within Southwood Lakes (to which the storm sewers on North Talbot Road drain) is approximately 180 ha. The North Talbot Road corridor represents 3.60 ha or 2% of this total area and is located downstream of approximately 38% of the full drainage area. For a five year storm event, the increase in flow resultant from the recommended cross section is 2.1% at Lake Grande, 2.3% at Lake Laguna and a 2.0% increase at Lake Como. In order to ensure that these increases, as marginal as they may be, do not negatively impact storage levels in these ponds, an assessment of the need for appropriate methodologies to reduce or delay storm sewer discharge to the ponds, must be undertaken when detailed design is commenced. This assessment is to include a hydraulic analysis under dynamic conditions during larger storm events to ensure the detailed design coincides with previous studies. Supporting calculations are provided in **Appendix F**.

With the upgrade from a semi-urban cross section to an urban cross section, regrading of the roadway and boulevards will be required. The elevation of the roadway will be lowered to allow for positive drainage of the boulevard towards the curb line. Where it is not practical to lower the road a sufficient amount for drainage, localized catch basins will be installed in the boulevard. Future road grading will also allow for temporary surface storage of stormwater during a 100 year storm event.

The regrading of the roadway and boulevards, along with the enclosure of the open drain will eliminate the current ponding issues that occur along the north side of North Talbot.

Determination of these grading design and drainage components will be developed during the detailed design stage.

Storm sewer requirements on North Talbot Road comprise the following:

- Install a new sewer from the existing storm structure 7RC3264 located at the west leg of Southwood Lakes Boulevard to approximately 150 m east of Howard Avenue.
- Extend the sewer between Northwood Lakes Drive to Centre Lake Drive.
- Install a new sewer east of Old West Avenue South to collect stormwater resulting from converting the road cross section from rural to urban and the elimination of existing ditches.

Storm sewer requirements on Sixth Concession Road comprise the following:

- Drainage recommendations for Sixth Concession Road were outlined as part of the Provincial/Division Road Drainage Study. From this report, Functional Design Alternatives 5A or 5B were developed and consist of the drainage improvements for Sixth Concession Road. As part of these improvements, the 5th Concession Drain will be enclosed with a storm sewer ranging in size from 750 mm to 975 mm in diameter.

8.1.6 Utilities and Services

North Talbot Road

- The aerial hydro and communication service pole line will be relocated from its current location, to 1 m from the south limit of the ROW from Goldenwood west. Road crossings will be installed to provide service lines to individual properties.
- The natural gas main location will remain unchanged. Since the surface elevation of the road will now be lower to accommodate the urban cross section, the service connections crossing North Talbot Road will need to be reviewed for lowering during final design.
- There are no current plans by the WUC to upgrade the existing water main along the North Talbot Road corridor. Plans may change depending upon the date that construction proceeds. Property services crossing the roadway will require review during final design to determine if there is adequate cover after the roadway has been lowered.
- Street lighting will be designed to meet the current City of Windsor standards at the time of detailed design.

Sixth Concession Road

- South of Dougall Parkway, no major changes will be required to existing hydro, communication and natural gas services. Local adjustments may need to be reviewed at the intersection of the North Talbot Road and the Sixth Concession Road roundabout.
- North of Dougall Parkway, the overhead hydro and communication service will be relocated to 0.75 m from the west limit of the ROW. Road crossings will be installed to provide service lines to individual properties.
- A new lowered natural gas main will be required to provide adequate cover over the main and services. This is due to the roadway cross section conversion from rural to urban, and subsequent lowering of the road profile.
- Underground communication lines along the east side of Sixth Concession Road will require relocation to beyond the limits of the new roadway.
- WUC plans to install a 300 mm diameter watermain along the Sixth Concession Road corridor from North Talbot Road to Holburn Street, and a new 200 mm diameter main from Provincial Road to the south side of the railway corridor. Plans may change depending upon the date that construction proceeds. Property services crossing the

roadway will require review during final design to determine if there is adequate cover after the roadway has been lowered.

- Street lighting will be designed to meet the current City of Windsor standards at the time of detailed design.

8.1.6.1 Consultation With Utilities

All affected utility companies were contacted at the outset of the project, and information related to future upgrade needs was requested. None of the utility companies, except for WUC-Water, identified the need to upgrade their facilities in either corridor. For purposes of estimating the cost of construction relating to changes required for each of these utilities, Dillon included cost estimates for each utility based on the nature of the impact (i.e. need for relocation) and on historical costs for similar work. When these projects proceed to detailed design, it will be necessary to contact each utility company to revisit their needs at that time and to further discuss the details of the proposed work and the impact on the utility's facilities.

8.1.7 Transit Windsor

Transit stop placement will be reviewed with Transit Windsor during detail design. The existing transit stop locations are illustrated on the preferred design plans. Roundabouts are designed to accommodate buses.

8.2 Construction Implementation and Phasing

Implementation of each corridor in its entirety is important to ensure the overall traffic calming strategy is realized – the benefits will only become evident when all improvements in each corridor are in place.

In addition, the following factors will also affect the timing/staging of construction of the preferred undertaking:

- Obtaining the necessary approvals.
- Obtaining the required funding.
- Acquiring the necessary property.
- Detailed designing of the roadway.

Construction phasing should be planned as follows:

<u>Sixth Concession Road (added A and B for Phase 2 and Phase 3)</u>

- **Phase 1** –Construction on Sixth Concession Road should commence with the Sixth Concession Road and Provincial Road intersection. Inclusion of the rail crossing is required based on its proximity to the intersection. Once the recommended

improvements are constructed at the Provincial Road and Sixth Concession Road intersection, the existing pork chop islands can be removed. Construction north to Cabana Road may be included in this phase.

- **Phase 2A** – Construction on Sixth Concession Road should include the full size roundabout at Sixth Concession Road and Holburn Street.
- **Phase 2B** – Construction of the mini roundabout at Sixth Concession Road and Ducharme Street to minimize construction impacts to the neighborhood or as budget allows. It should also include line painting to create two 3.3 m vehicular lanes for the full length of Sixth Concession Road. The existing all-way stops on Sixth Concession Road can be modified to minor street stop control at any time.
- **Phase 3** – Subsequent phases can address the connecting road links on Sixth Concession Road.
- The core of the solution to the issues impacting the Sixth Concession Road corridor is to ensure that traffic in the corridor can readily flow in the north-south direction, and that existing impediments to that flow be removed or modified.

North Talbot Road (Added A and B for Phase 1)

- **Phase 1A** – Construction on North Talbot Road should include the full size roundabout at North Talbot Road and Sixth Concession Road.
- **Phase 1B** – Construction of the three mini roundabouts on North Talbot Road at Southwood Lakes Boulevard, Northwood Lakes Drive and Goldenwood Drive. It should also include line painting to create two 3.3 m vehicular lanes for the full length of North Talbot Road.
- **Phase 2** – Subsequent phases can address the connecting road links on North Talbot Road.

It must be noted that although this phasing will likely provide improved traffic calming over that which exists today, the greatest traffic calming benefit will only be realized when the full system is constructed.

The City may choose to initiate the construction phasing on Sixth Concession Road and North Talbot Road concurrently.

8.3 Preliminary Cost Estimate

Unit price estimates were prepared for both road corridors. Utility relocation costs, as necessary, were prepared for both road corridors and have been included as a separate line item. Costs to relocate overhead plant including power lines, Cogeco Cable and Bell Canada have been included in the cost estimates. The need for any relocation of underground Union Gas plant must be determined at the time that final grading plans are prepared.

The cost estimate for Sixth Concession Road includes: removals, road works (curbs, road base, asphalt, sidewalks, driveways), storm sewers (1400 m of sewers, manholes and catch basins), street lighting, traffic signals, boulevard restoration. The costs of the improvements to the CN Rail crossing have been included. The cost estimate for North Talbot Road includes: removals, road works, storm sewers (560 m of sewers), street lighting and boulevard restoration. Property acquisitions are not included in these costs.

The preliminary cost for the improvements is estimated at $13.26 million including a 20% Contingency Allowance and 15% Engineering, as summarized in **Table 12**.

TABLE 12: PRELIMINARY CONSTRUCTION COST ESTIMATE

	SIXTH CONCESSION ROAD CORRIDOR				NORTH TALBOT ROAD CORRIDOR		
Description	**Phase 1**	**Phase 2A**	**Phase 2B**	**Phase 3**	**Phase1A**	**Phase 1B**	**Phase 2**
Road Works	$1,608,959	$424,788	$190,263	$623,588	$522,033	$610,463	$1,584,078
Drainage Works	$719,225	$247,024	$189,082	$566,636	$30,290	$35,290	$370,015
Traffic Signals/ Street lighting	$230,000	$105,000	$55,000	$155,000	$70,000	$50,000	$300,000
Utilities and Services	$78,704	$111,111	$92,593	$273,149	$95,556	$207,778	$274,445
SUBTOTAL	**$2,636,888**	**$887,923**	**$526,938**	**$1,618,373**	**$717,879**	**$903,531**	**$2,528,538**
Contingency Allowance (20%)	$527,378	$177,585	$105,388	$323,675	$143,576	$180,706	$505,708
Engineering (15%)	$395,533	$133,188	$79,041	$242,756	$107,682	$135,530	$379,281
GRAND TOTAL (excluding HST)	**$3,559,799**	**$1,198,696**	**$711,367**	**$2,184,804**	**$969,137**	**$1,219,767**	**$3,413,527**

8.4 Mitigation Measures and Detailed Design Commitments

Many of the environmental concerns related to this project have been mitigated through the process by which the recommended design was selected, as described in this ESR. The anticipated impacts and proposed mitigation measures have been described in **Section 7.0** and committed to by the City. This section provides a detailed list of specific commitments to be carried forward to Phase 5 of the Municipal Class EA process, Implementation. It is recommended that these commitments presented in the ESR become part of the contract package so that contractors are aware of the requirements prior to tendering. The City of Windsor will work with authorities during detail design and prior to the start of construction to ensure that the proposed works are acceptable, and to obtain the required permits.

8.4.1 Property Impacts and Agreements

The preferred design results in minor private property impacts with no buildings displaced (see Preferred Design Plans following this report). There will be minimal impact on commercial and residential property access.

CN advised, via email on October 2, 2014, that trains do not run through this section; however, the rail ROW is maintained by CN. The City will need to address the proposed improvements by means of a crossing agreement with CN.

As per **Section 8.1.2**, grading improvements will be required to current at-grade crossing to provide a smoother and more desired crossing for vehicles. Any upgrades will need to be discussed with the railway company at the time of detailed design and development of a crossing agreement. At that time, the railway will be able to determine their usage and protection requirements of the crossing.

The limits of the property and scope will be included in this agreement and will be confirmed as part of the detailed design.

8.4.2 Temporary Disruption to Traffic Flow and Property Access

Local property owners, affected public and agencies will be notified of the construction schedule prior to the commencement of construction activities. Proper signage will be provided for detour route(s) during temporary road closures. Any closures will be minimized to the greatest extent possible. For properties with driveways located in close proximity to, or adjacent to the mini roundabout, the location of the driveways will be determined at detailed design.

Restricted access to local residents and businesses will be minimized through cooperation with property owners.

8.4.3 Vegetation and Urban Design

The use of non-invasive, native trees and vegetation species will be utilized in the development of the landscaping for the project. The City will investigate opportunities to enhance the urban canopy and urban design features within the Study Area as part of the detail design process.

The locations and quantity/style of site furnishings, including benches and waste/recycling receptacles, will be determined during detailed design. The location and specifications of the neighbourhood feature will also be determined during detailed design and current City standards will be used at the time of installation. The centre of the full size roundabout at Sixth Concession Road and North Talbot Road will include enhanced urban design features, and will be determined during detailed design.

Appendix G contains conceptual urban design/conceptual plans developed as part of this EA process.

8.4.4 Disruption to Utilities

Relocations and utility improvement works will be coordinated to minimize disruptions in service, where possible, through liaison and contract requirements.

8.4.5 Archaeology

In the event that any aboriginal remains or significant aboriginal artifacts are uncovered during further assessment work, all First Nations will be contacted immediately. A copy of the Stage 2 Archaeological Assessment will be sent to First Nations.

As per **Appendix E** [Cultural Environment, Fisher Archaeological Consulting (FAC)] recommends the following:

1) That a Stage 2 Archaeological Assessment be conducted on the sections of the Archaeological Study Area which may retain high potential as depicted on Figures 7 and 8 in the FAC report with the understanding that potential may be reduced during the assessment due to high levels of modern disturbance; and
2) That the locations within the Study Area deemed to be low potential (also on Figures 7 and 8 in the FAC report) require no further archaeological work.

8.4.6 Noise

Construction noise constraints will be incorporated into contract documents.

Construction activities throughout the project will conform to current local municipal Noise By-laws giving due consideration to such factors as the time of day, proximity and size of equipment and type of operation.

Contractors are required to keep idling of construction equipment to a minimum, and maintain equipment in good working order to reduce noise from the construction activities.

8.4.7 Air Quality

Apply water and dust suppressants during construction to protect air quality due to dust.

Transit Windsor

No changes have been made to the existing public transit routes and stop locations. During detailed design, Transit Windsor should be consulted to review transit routes and stop locations.

DILLON CONSULTING LIMITED
WINDSOR, ONTARIO

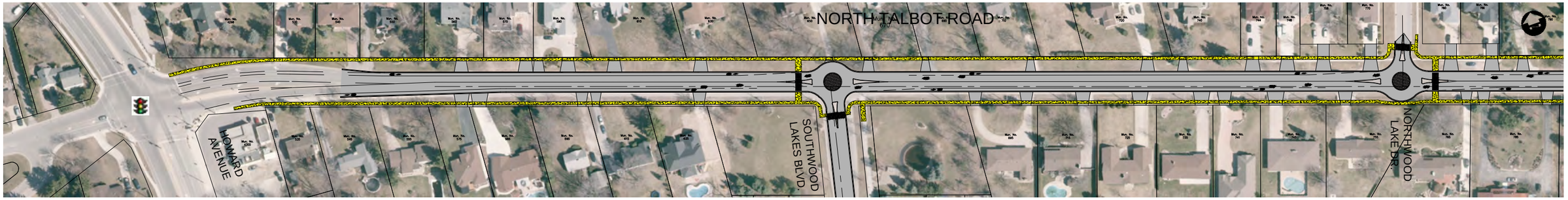
John Zangari, P.Eng.
Project Manager

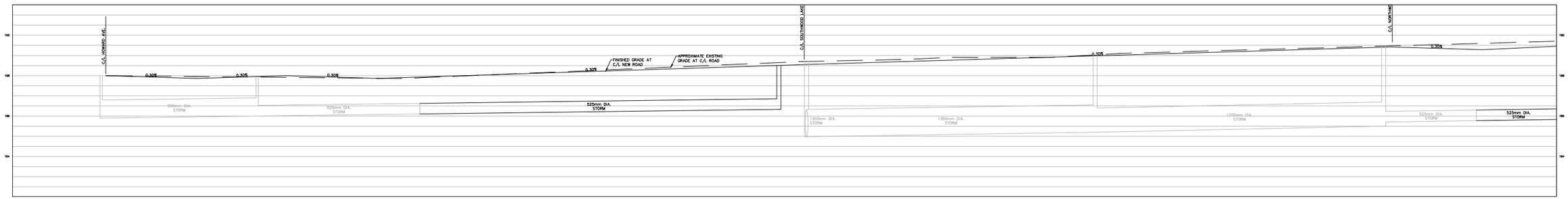
Paula Neto, MCIP, RPP
Environmental Planner

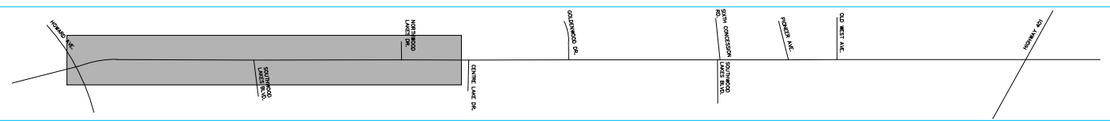
Preferred Design

City Of Windsor
Sixth Concession Road/North Talbot Road
Class Environmental Assessment
October 2015 – 13-8295

DILLON CONSULTING







THE CITY OF WINDSOR
ONTARIO, CANADA

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SIXTH CONCESSION ROAD / NORTH TALBOT ROAD EA
OPTION 3
PREFERRED DESIGN

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FIGURE 1

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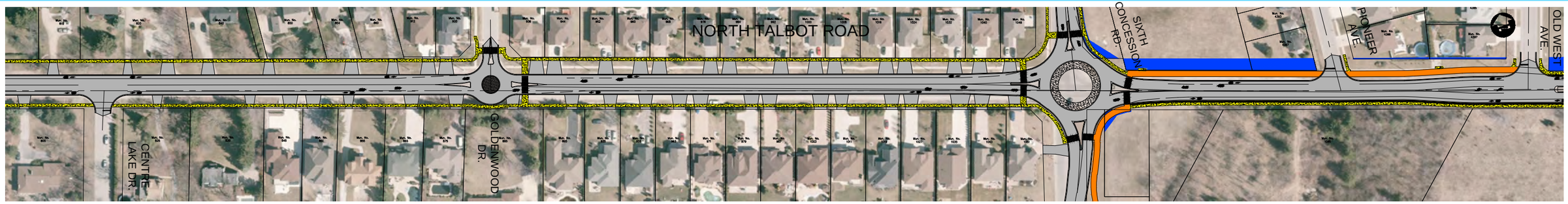

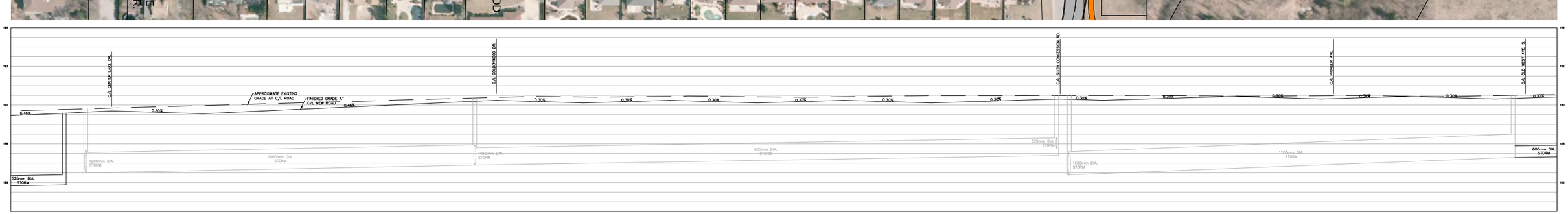

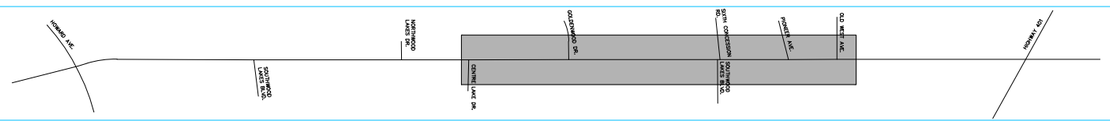

THE CITY OF WINDSOR
ONTARIO, CANADA

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SIXTH CONCESSION ROAD / NORTH TALBOT ROAD EA
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FIGURE 2

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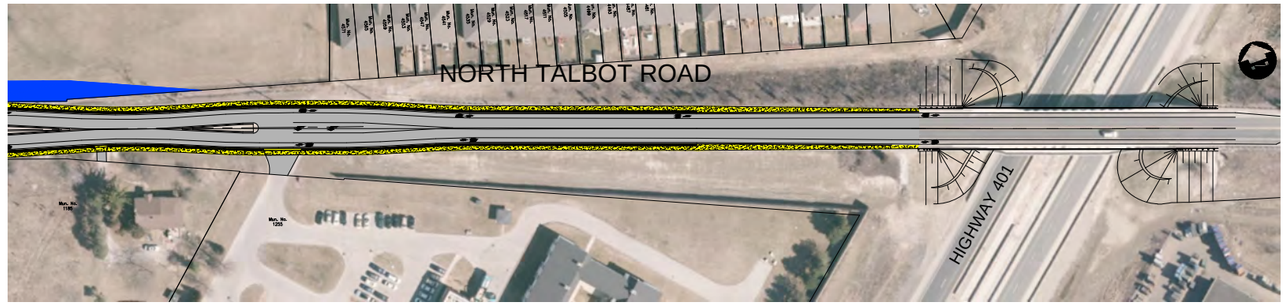

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SIXTH CONCESSION ROAD / NORTH TALBOT ROAD EA
OPTION 3
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FIGURE 3

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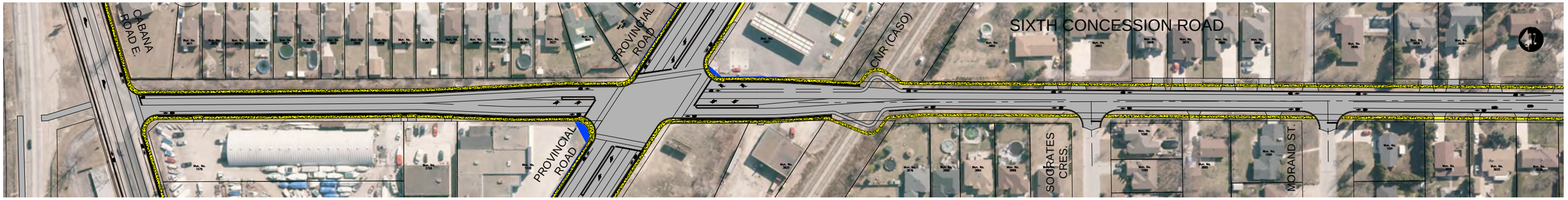

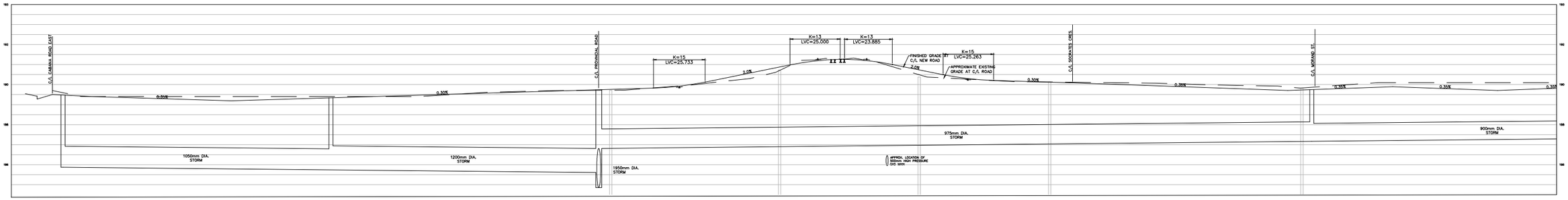

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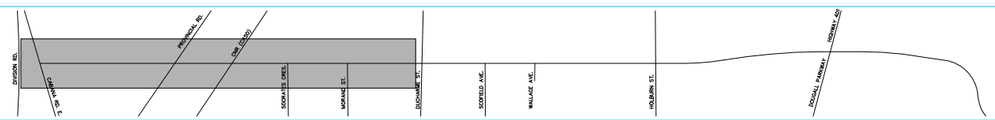

SIXTH CONCESSION ROAD / NORTH TALBOT ROAD EA
OPTION 3
PREFERRED DESIGN

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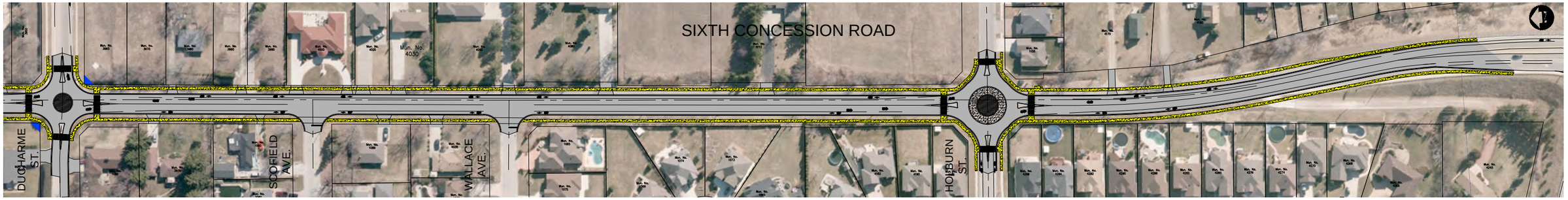
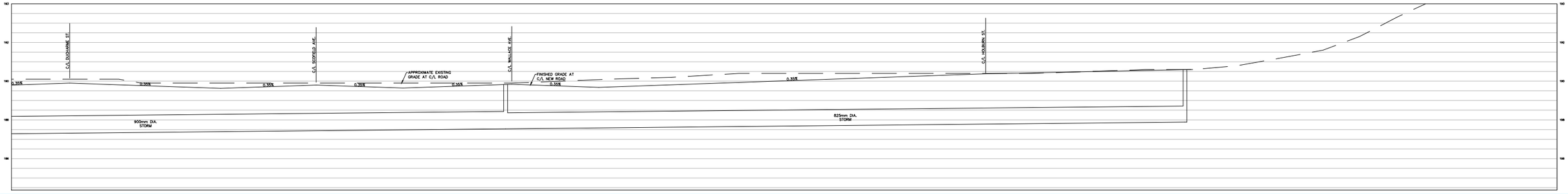
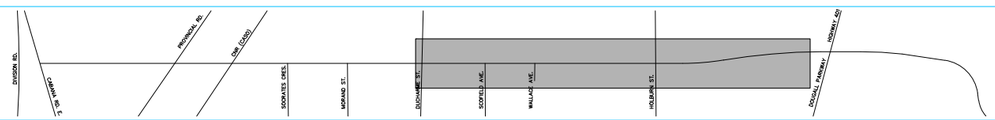
FIGURE 4

FILENAME: G:\CAD\138295 - NORTH TALBOT - 6TH CONC EA\02-CIVIL\01-CONTRACT\138295-02-PLPR-FIG-OP3.DWG







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SIXTH CONCESSION ROAD / NORTH TALBOT ROAD EA
OPTION 3
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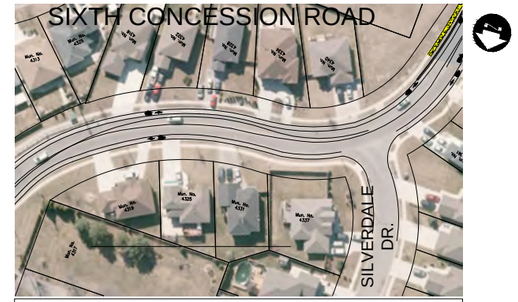
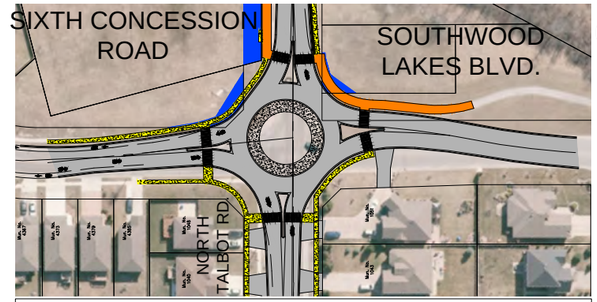
SCALE: H 1:1000
V:1:10

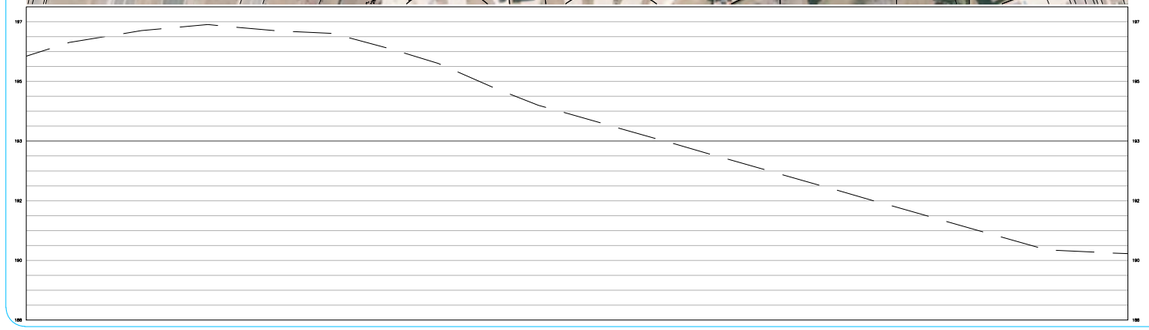
APRIL, 2016

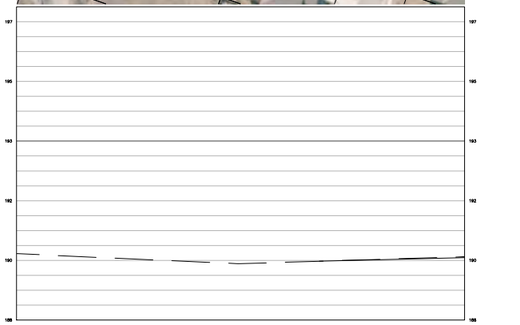
FIGURE 5

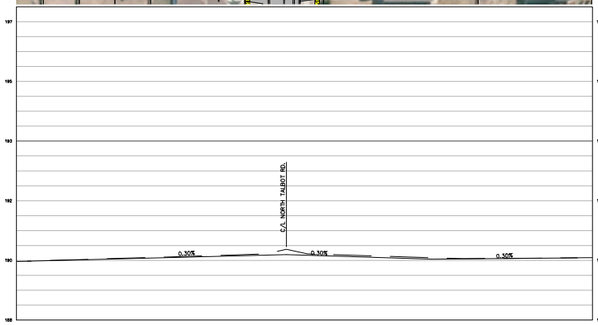
FILENAME: G:\CAD\138295 - NORTH TALBOT - 6TH CONC EA\02-CIVIL\01-CONTRACT\138295-02-PLPR-FIG-OP3.DWG

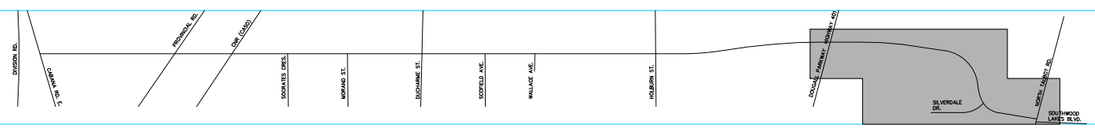












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OPTION 3
PREFERRED DESIGN

SCALE: H 1:1000
V:1:10

APRIL, 2016

FIGURE 6

FILENAME: G:\CAD\138295 - NORTH TALBOT - 6TH CONC EA\02-CIVIL\01-CONTRACT\138295-02-PLPR-FIG-OP3.DWG

NORTH TALBOT ROAD

FILENAME: G:\CAD\138295 - NORTH TALBOT - 6TH CONC EA\02-CIVIL\03-REPORTS\EA\138295-02-PLN-FIG.DWG PLOTTED BY: ZANGARI, RICHARD
PLOT DATE: 2016-04-04 @ 10:47:15 AM PLOT SCALE: 1:4 PLOT STYLE: DILLON-STANDARD.CTB

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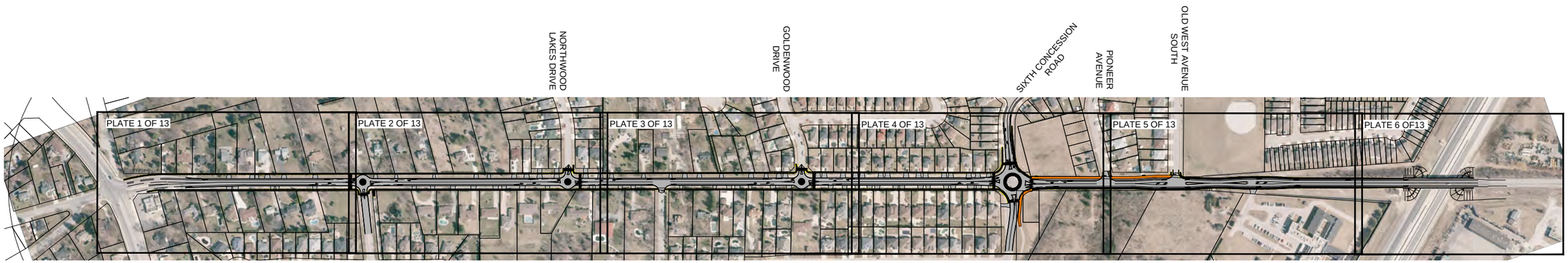
PREFERRED DESIGN

SCALE: 1:6000 APRIL, 2016

PHASING PLAN

NORTH TALBOT ROAD



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PREFERRED DESIGN

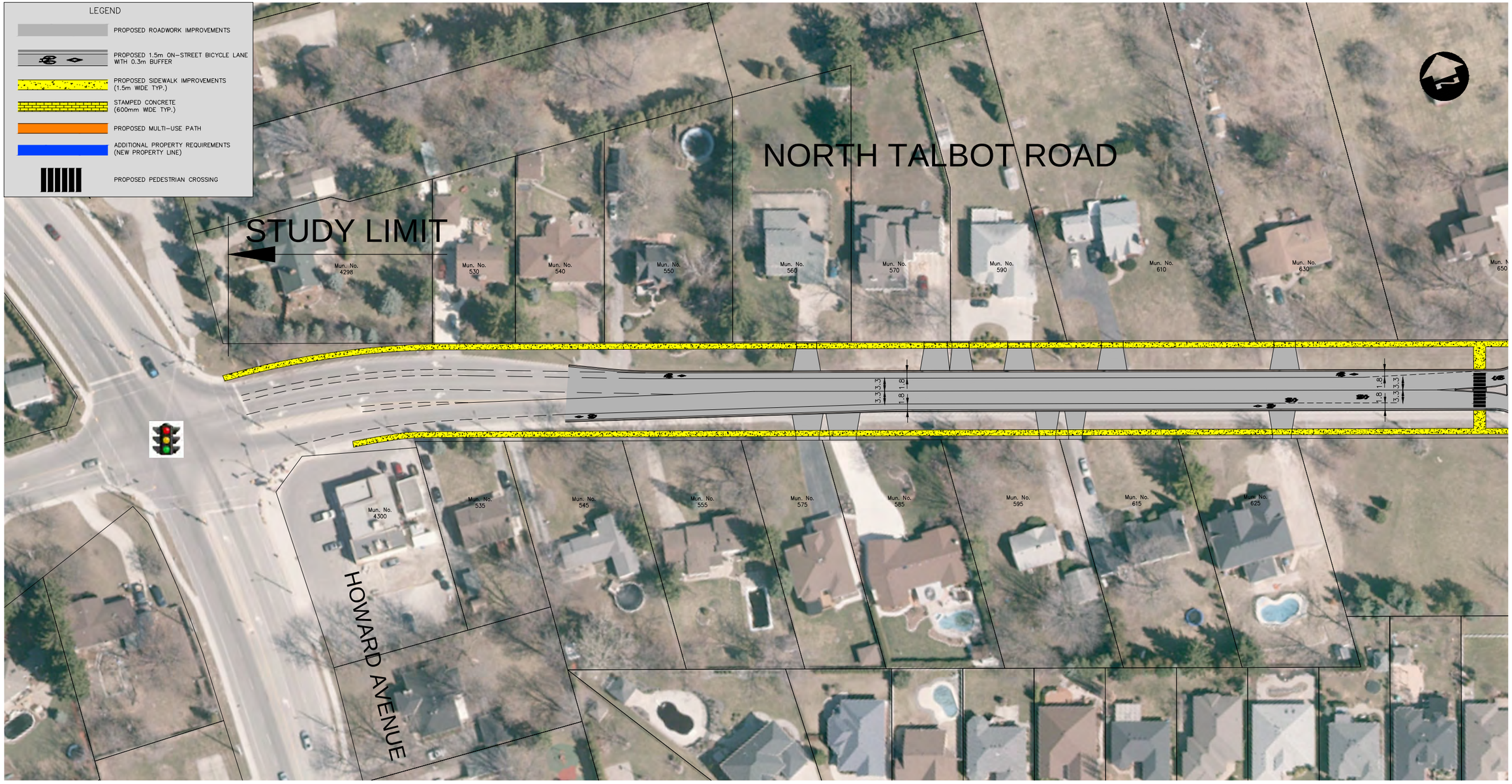
SCALE: 1:6000 APRIL, 2016

PLATE INDEX

FILENAME: G:\CAD\13625 - NORTH TALBOT - 6TH CONC EA\02-CIVIL\03-REPORTS\EA\13625-02-PLN-FIG.DWG PLOTTED BY: ZANGARI, RICHARD
PLOT DATE: 2016-04-04 @ 10:47:47 AM PLOT SCALE: 1:1 PLOT STYLE: DILLON-STANDARD.CTB

LEGEND

- PROPOSED ROADWORK IMPROVEMENTS
- PROPOSED 1.5m ON-STREET BICYCLE LANE WITH 0.3m BUFFER
- PROPOSED SIDEWALK IMPROVEMENTS (1.5m WIDE TYP.)
- STAMPED CONCRETE (600mm WIDE TYP.)
- PROPOSED MULTI-USE PATH
- ADDITIONAL PROPERTY REQUIREMENTS (NEW PROPERTY LINE)
- PROPOSED PEDESTRIAN CROSSING



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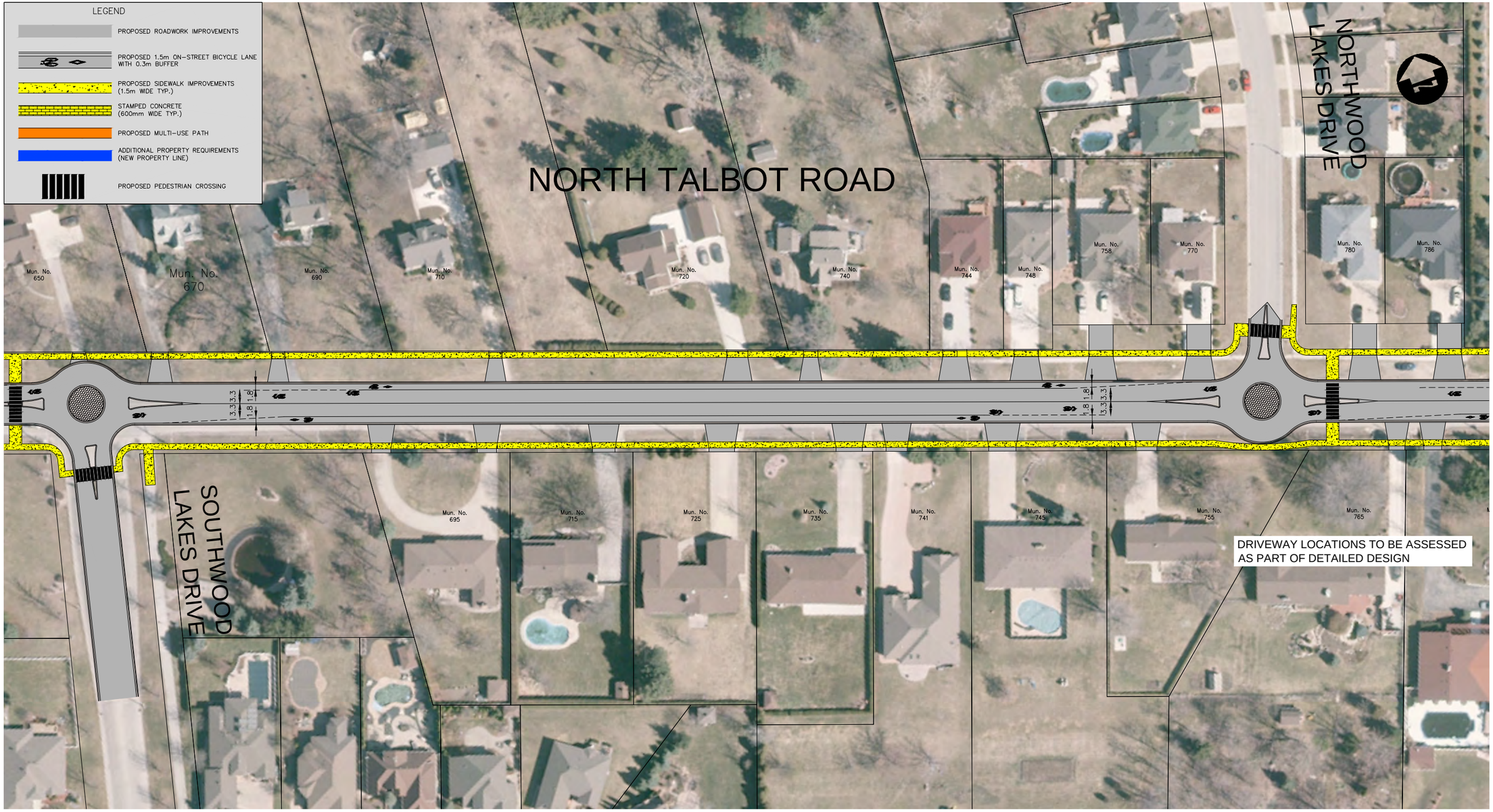
PREFERRED DESIGN

PLATE 1

Howard Avenue to Southwood Lakes Boulevard

SCALE: 1:1000 APRIL, 2016

FILENAME: G:\CAD\13825 - NORTH TALBOT - 6TH CONC EA\02-CIVIL\03-REPORTS\EA\13825-02-PLN-FIG.DWG PLOTTED BY: ZANGARI, RICHARD
PLOT DATE: 2016-04-04 @ 10:48:16 AM PLOT SCALE: 1:1 PLOT STYLE: DILLON-STANDARD.CTB



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PREFERRED DESIGN

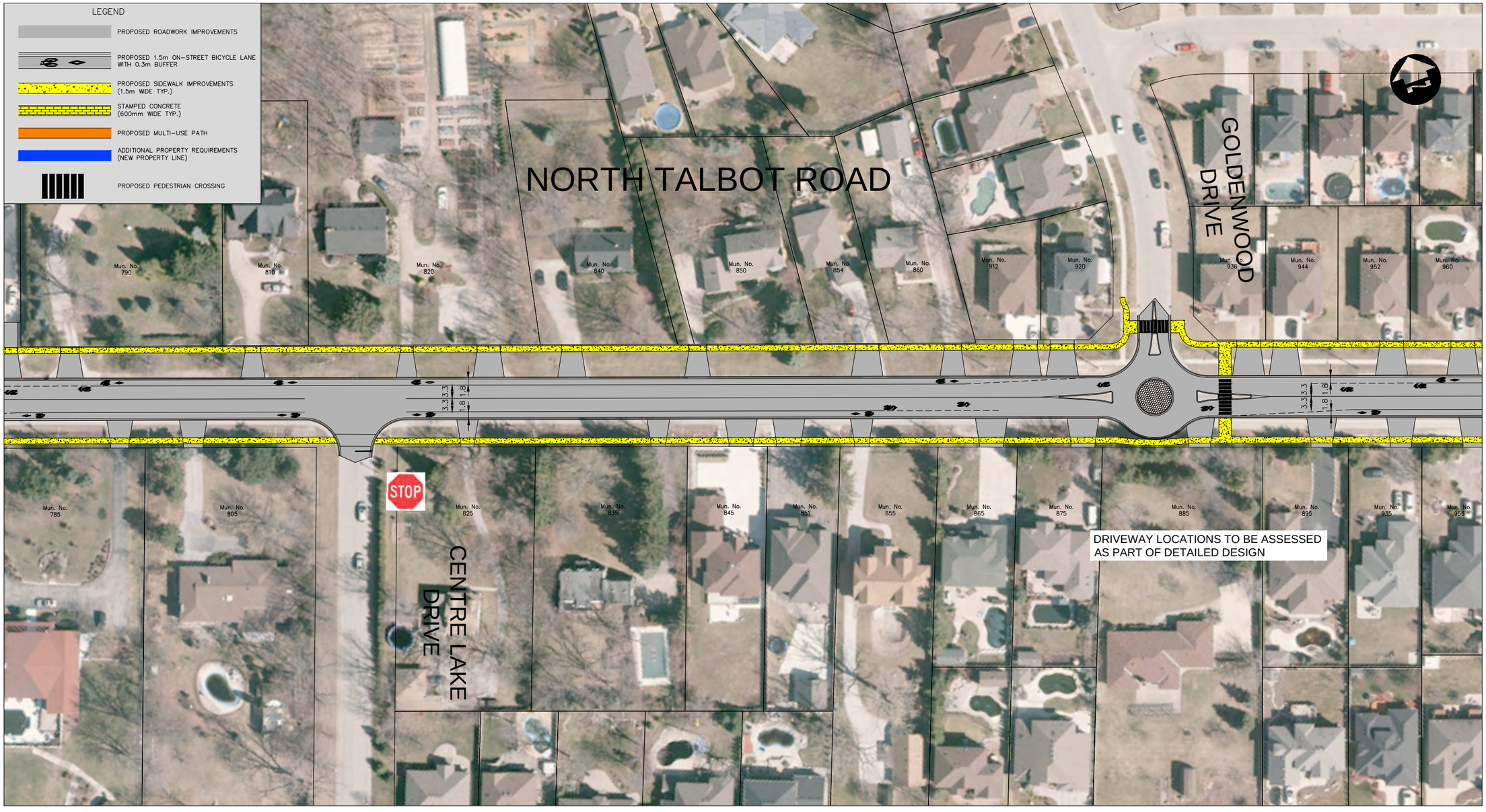
PLATE 2

Southwood Lakes Boulevard to Northwood Lakes Boulevard

SCALE: 1:1000

APRIL, 2016

FILENAME: G:\CAD\138295 - NORTH TALBOT - 6TH CONC EA\02-CIVIL\03-REPORTS\EA\138295-02-PLN-FIG.DWG PLOTTED BY: ZANGARI, RICHARD
PLOT DATE: 2016-04-04 @ 10:48:47 AM PLOT SCALE: 1:1 PLOT STYLE: DILLON-STANDARD.CTB



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SIXTH CONCESSION ROAD / NORTH TALBOT ROAD EA

PREFERRED DESIGN

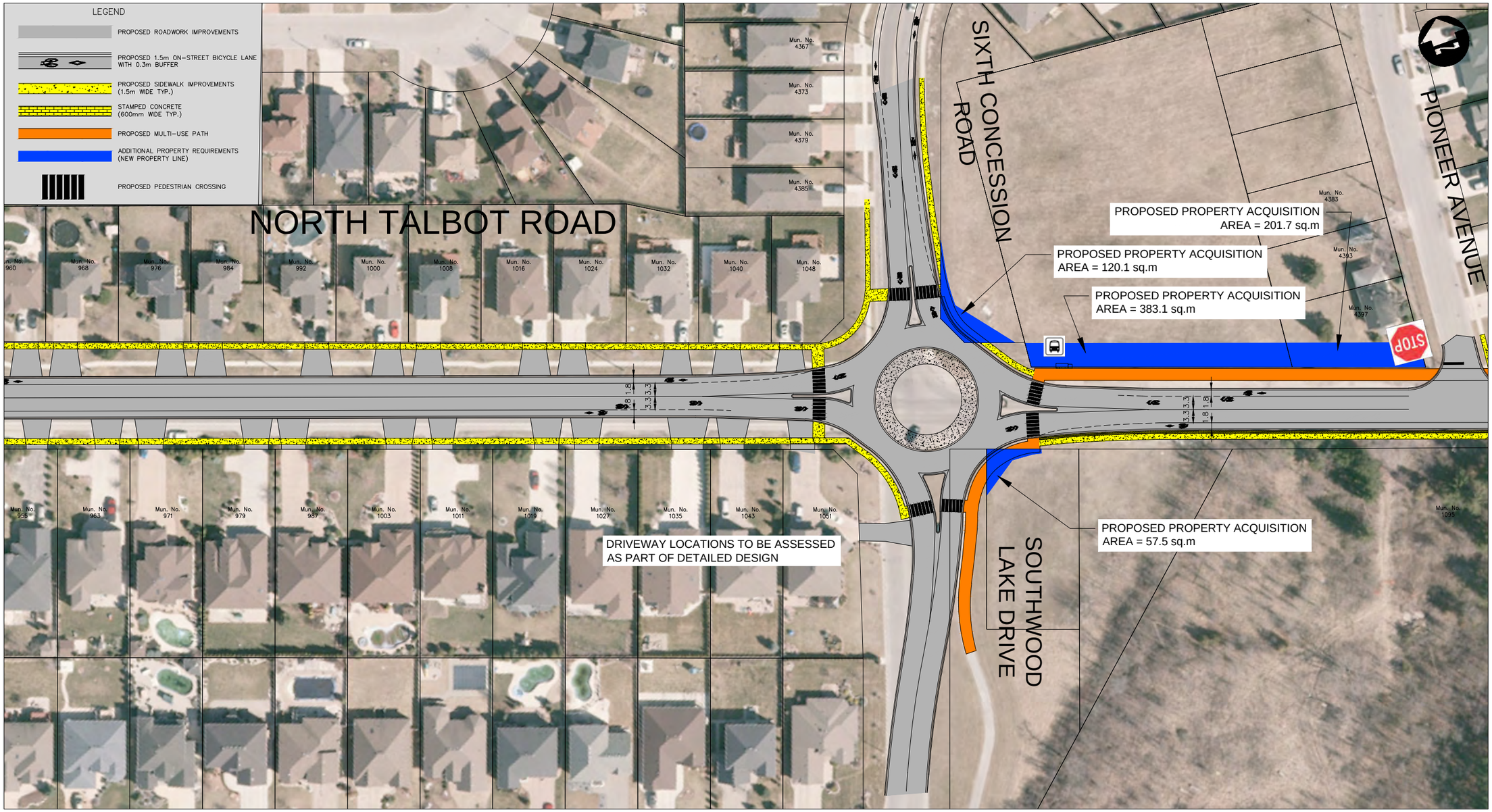
PLATE 3

Northwood Lakes Boulevard to Goldenwood Drive

SCALE: 1:1000

APRIL, 2016

FILENAME: G:\CAD\13295 - NORTH TALBOT - 6TH CONC EA\02-CIVIL\03-REPORTS\EA\13295-02-PLN-FIG.DWG PLOTTED BY: ZANGARI, RICHARD
PLOT DATE: 2016-04-04 @ 10:49:59 AM PLOT SCALE: 1:1 PLOT STYLE: DILLON-STANDARD.CTB



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SIXTH CONCESSION ROAD / NORTH TALBOT ROAD EA

PREFERRED DESIGN

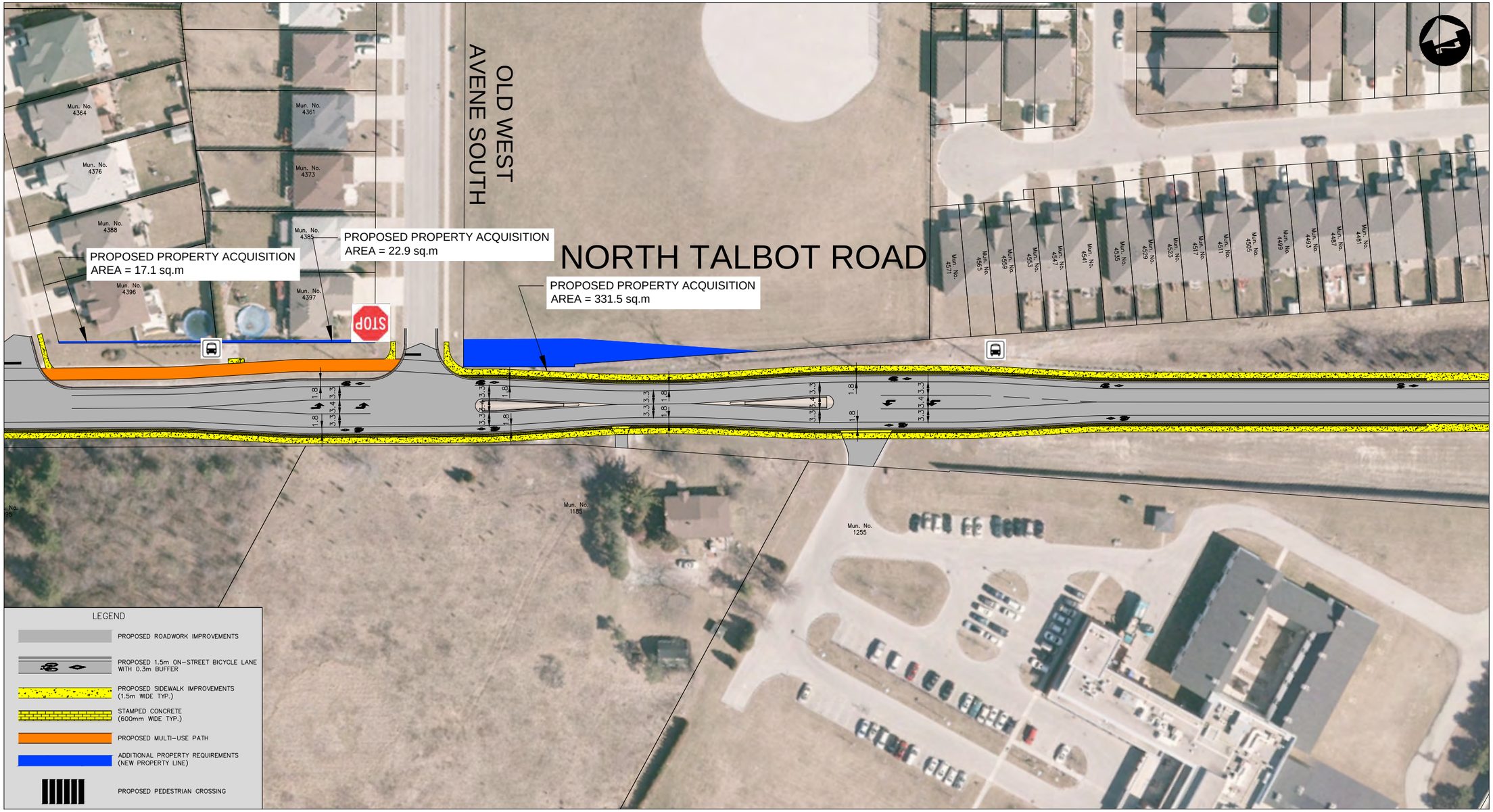
PLATE 4

Goldenwood Drive to Pioneer Avenue

SCALE: 1:1000

APRIL, 2016

FILENAME: C:\CAD\138295 - NORTH TALBOT - 6TH CONC EA\02-CIVIL\03-REPORTS\EA\138295-02-PLN-FIG.DWG PLOTTED BY: ZANGARI, RICHARD
PLOT DATE: 2016-04-04 @ 10:59:23 AM PLOT SCALE: 1:4 PLOT STYLE: DILLON-STANDARD.CTB



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SIXTH CONCESSION ROAD / NORTH TALBOT ROAD EA

PREFERRED DESIGN

PLATE 5

Pioneer Avenue to 60m West of Study Limits

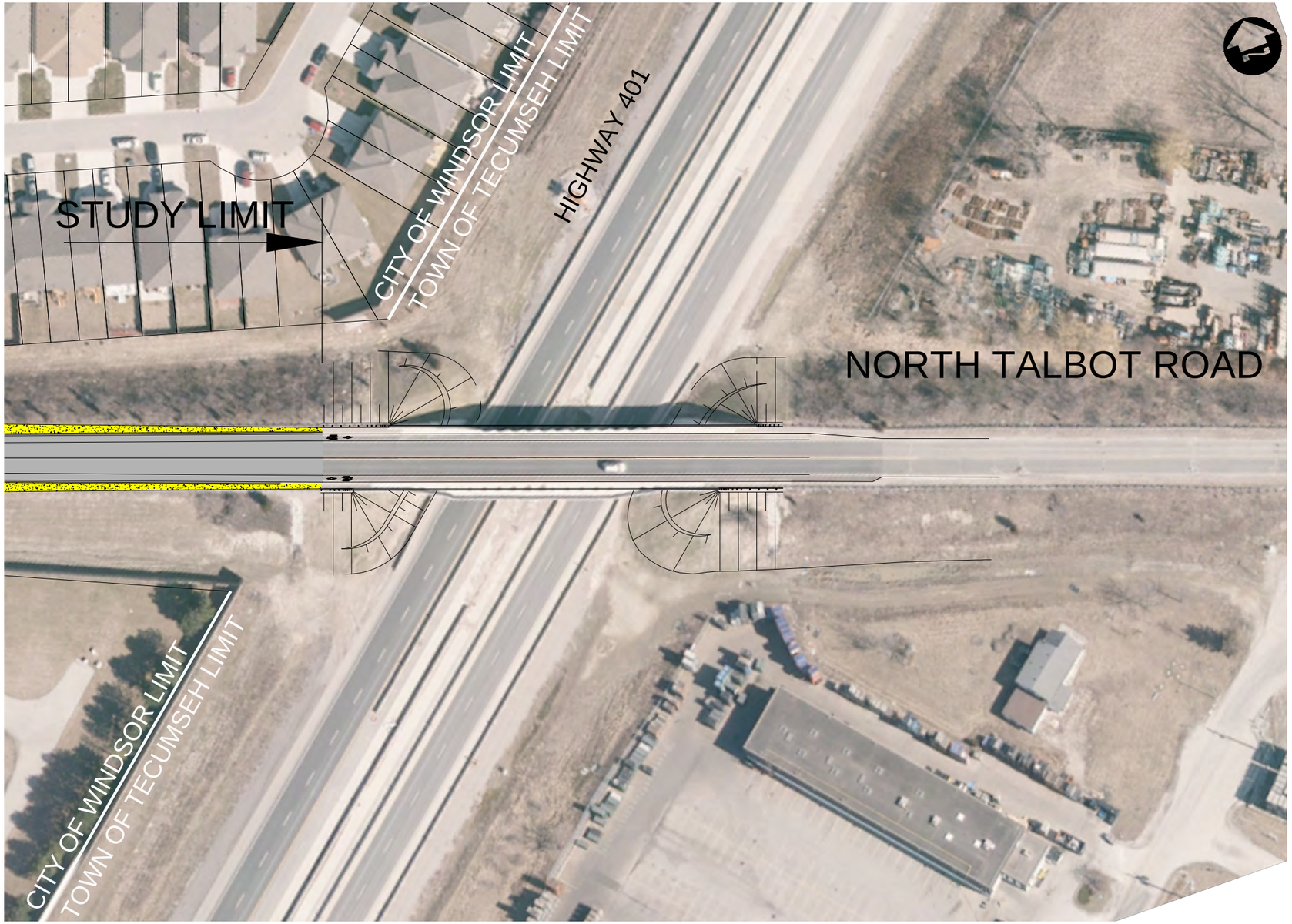
SCALE: 1:1000

APRIL, 2016

FILENAME: G:\CAD\138295 - NORTH TALBOT - 6TH CONC EA\02-CIVIL\03-REPORTS\EA\138295-02-PLN-FIG.DWG PLOTTED BY: ZANGARI, RICHARD
PLOT DATE: 2016-04-04 @ 10:50:48 AM PLOT SCALE: 1:4 PLOT STYLE: DILLON-STANDARD.CTB

LEGEND

- PROPOSED ROADWORK IMPROVEMENTS
- PROPOSED 1.5m ON-STREET BICYCLE LANE WITH 0.3m BUFFER
- PROPOSED SIDEWALK IMPROVEMENTS (1.5m WIDE TYP.)
- STAMPED CONCRETE (600mm WIDE TYP.)
- PROPOSED MULTI-USE PATH
- ADDITIONAL PROPERTY REQUIREMENTS (NEW PROPERTY LINE)
- PROPOSED PEDESTRIAN CROSSING



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SIXTH CONCESSION ROAD / NORTH TALBOT ROAD EA

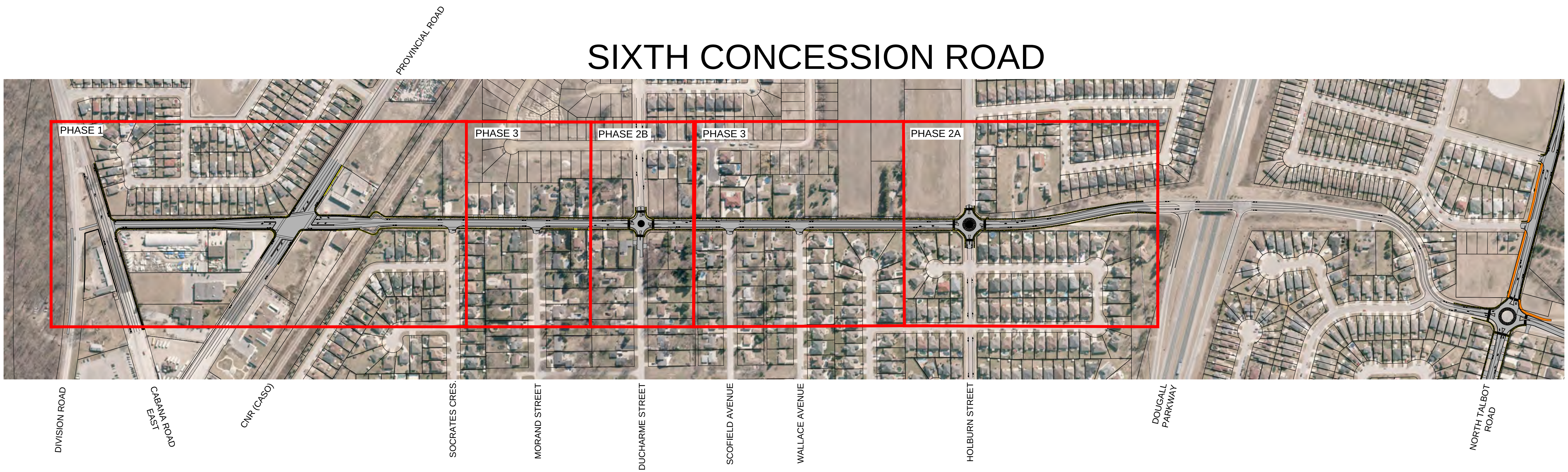
PREFERRED DESIGN

PLATE 6

60m West of Study Limits to Study Limits (Highway 401)

SCALE: 1:1000 APRIL, 2016

SIXTH CONCESSION ROAD



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SIXTH CONCESSION ROAD /
NORTH TALBOT ROAD EA

PREFERRED DESIGN

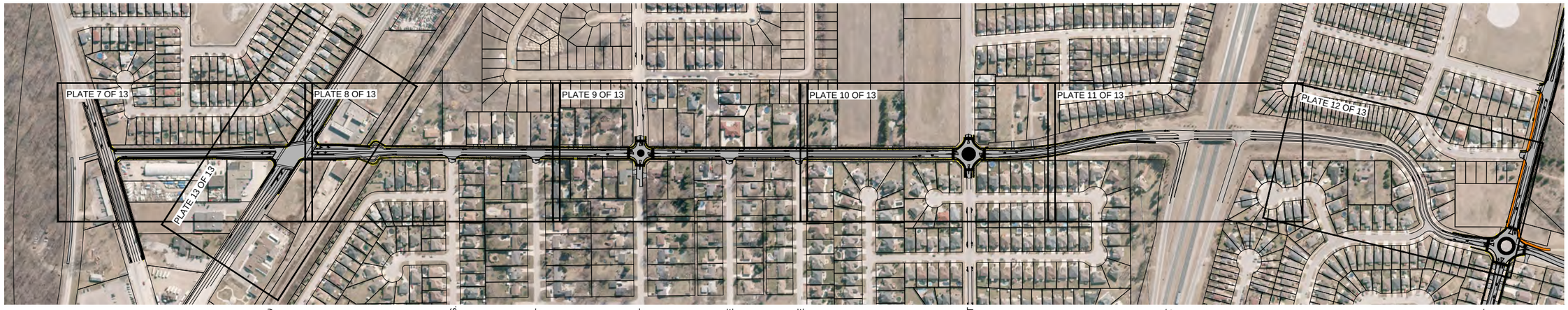
SCALE: 1:6000

APRIL, 2016

PHASING PLAN

FILENAME: G:\CAD\138295 – NORTH TALBOT – 6TH CONC EA\02-CIVIL\03-REPORTS\EA\138295-02-PLN-FIG.DWG PLOTTED BY: ZANGARI, RICHARD
PLOT DATE: 2016-04-04 @ 10:51:43 AM PLOT SCALE: 1:4 PLOT STYLE: DILLON-STANDARD.CTB

SIXTH CONCESSION ROAD



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SIXTH CONCESSION ROAD / NORTH TALBOT ROAD EA

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SCALE: 1:6000 APRIL, 2016

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SIXTH CONCESSION ROAD / NORTH TALBOT ROAD EA

PREFERRED DESIGN

PLATE 7

Cabana Road to Provincial Road

SCALE: 1:1000

APRIL, 2016

FILENAME: C:\CAD\13829S - NORTH TALBOT - 6TH CONC. EA\02-DWL\03-REPORTS\EA\13829S-02-PLN-FIG.DWG PLOTTED BY: ZANGARI, RICHARD
PLOT DATE: 2016-04-04 @ 10:52:32 AM PLOT SCALE: 1:4 PLOT STYLE: DILLON-STANDARD.CTB

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SIXTH CONCESSION ROAD / NORTH TALBOT ROAD EA

PREFERRED DESIGN

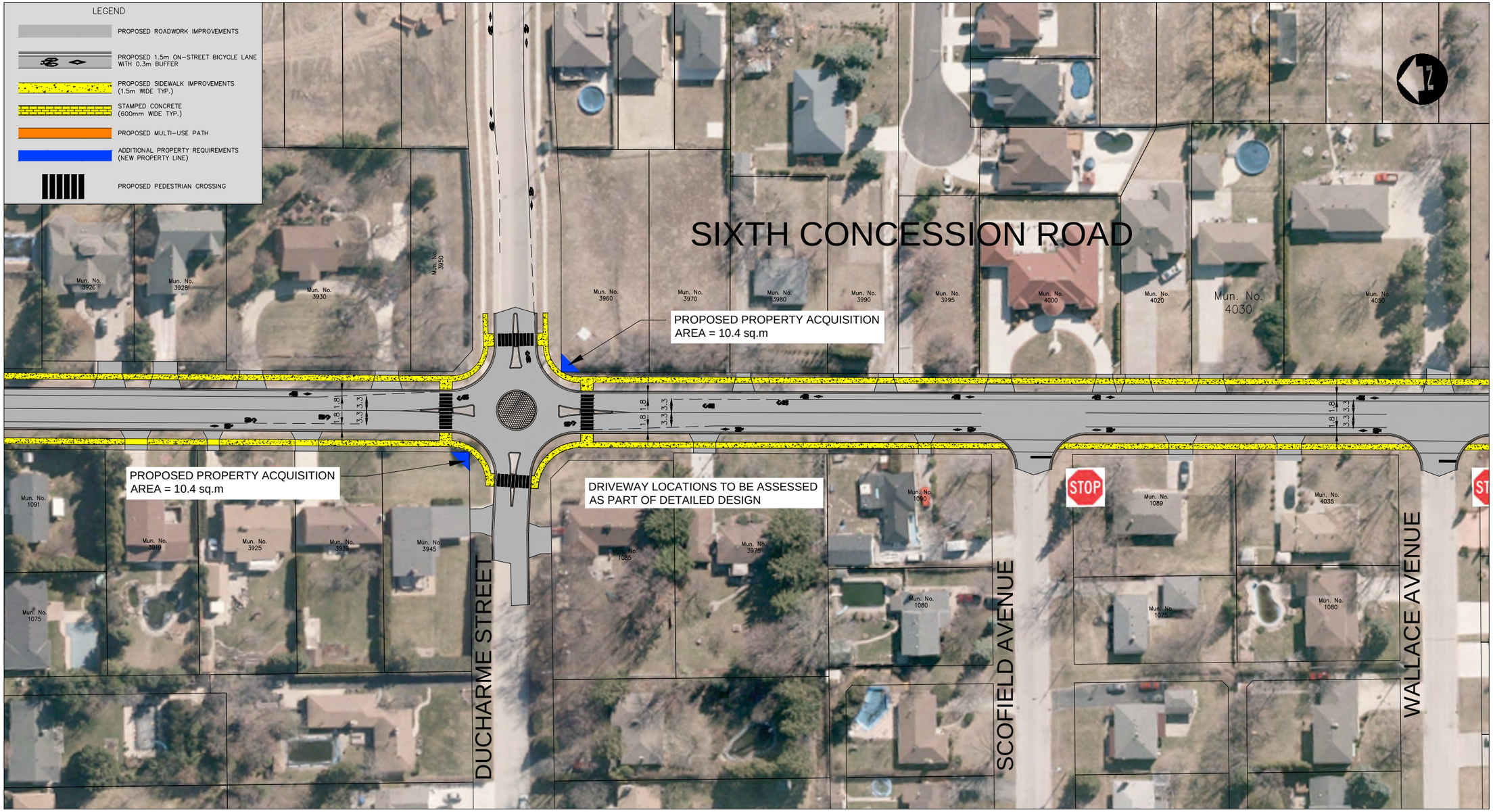
PLATE 8

Provincial Road to Morand Street

SCALE: 1:1000

APRIL, 2016

FILENAME: C:\CAD\13825 - NORTH TALBOT - 6TH CONC EA\02-CIVIL\03-REPORTS\EA\13825-02-PLN-F16.DWG PLOTTED BY: ZANGARI, RICHARD
PLOT DATE: 2016-04-04 @ 10:52:38 AM PLOT SCALE: 1:4 PLOT STYLE: DILLON-STANDARD.CTB



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SIXTH CONCESSION ROAD / NORTH TALBOT ROAD EA

PREFERRED DESIGN

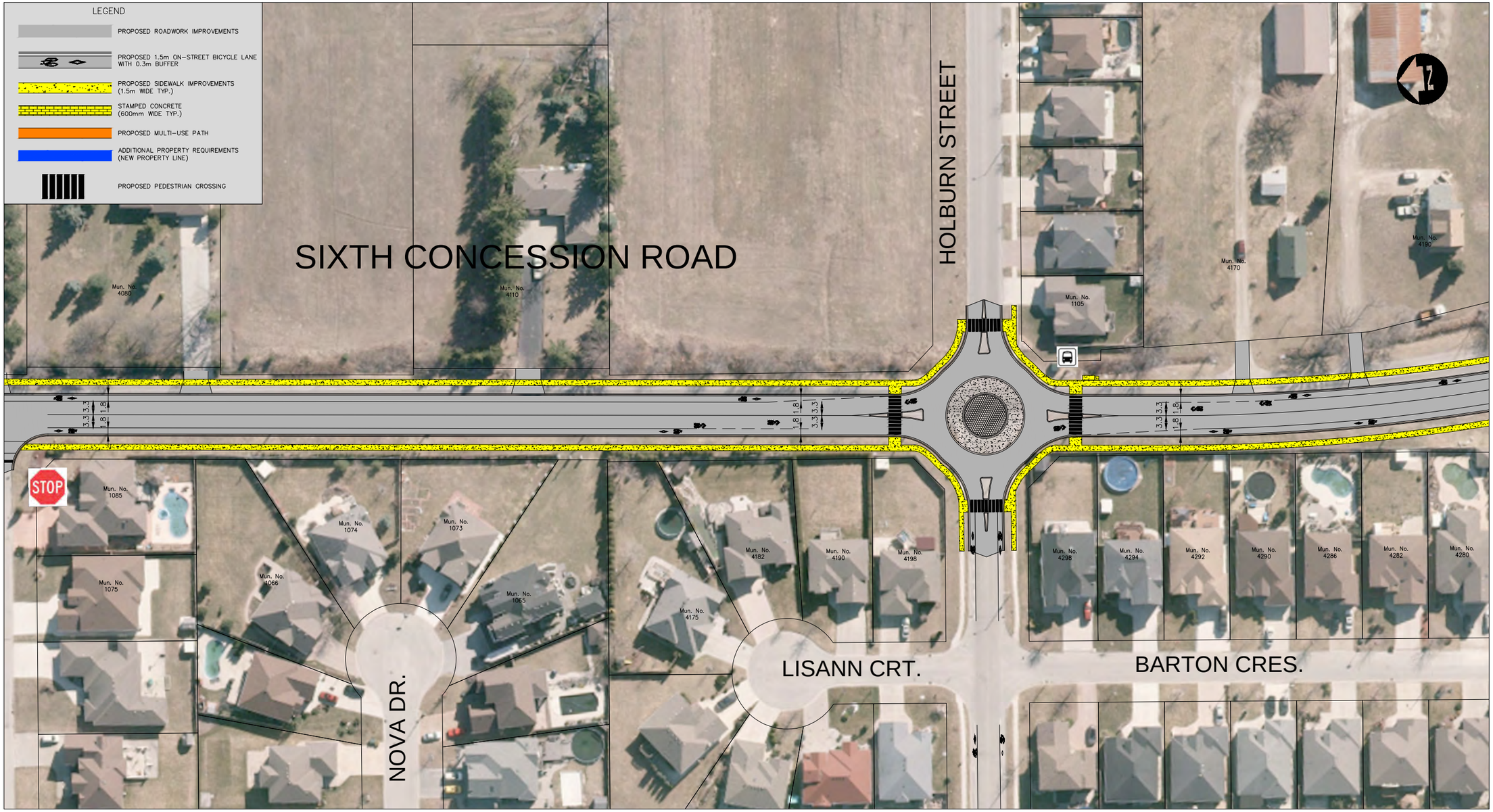
PLATE 9

Morand Street to Wallace Avenue

SCALE: 1:1000

APRIL, 2016

FILENAME: C:\CAD\136295 - NORTH TALBOT - 6TH CONC EA\02-CIVIL\03-REPORTS\EA\136295-02-PLN-FIG.DWG PLOTTED BY: ZANGARI, RICHARD
PLOT DATE: 2016-04-04 @ 10:53:24 AM PLOT SCALE: 1:4 PLOT STYLE: DILLON-STANDARD.CTB



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SIXTH CONCESSION ROAD / NORTH TALBOT ROAD EA

PREFERRED DESIGN

PLATE 10

Wallace Avenue to 230m North of Dougall Parkway

SCALE: 1:1000

APRIL, 2016

FILENAME: G:\CAD\13829 - NORTH TALBOT - 6TH CONC EA\02-CIVIL\03-REPORTS\EA\13829-02-PLN-FIG.DWG PLOTTED BY: ZANGARI, RICHARD
PLOT DATE: 2016-04-04 @ 10:54:20 AM PLOT SCALE: 1:4 PLOT STYLE: DILLON-STANDARD.CTB

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PLATE 11

230m North of Dougall Parkway to 130m South of Dougall Parkway

SCALE: 1:1000 APRIL, 2016

FILENAME: C:\CAD\13625 - NORTH TALBOT - 8TH CONC EA\02-CIVIL\03-REPORTS\EA\13625-02-PLN-FIG.DWG PLOTTED BY: ZANDARL, RICHARD
PLOT DATE: 2016-04-04 @ 10:54:46 AM PLOT SCALE: 1:4 PLOT STYLE: DILLON-STANDARD.CTB

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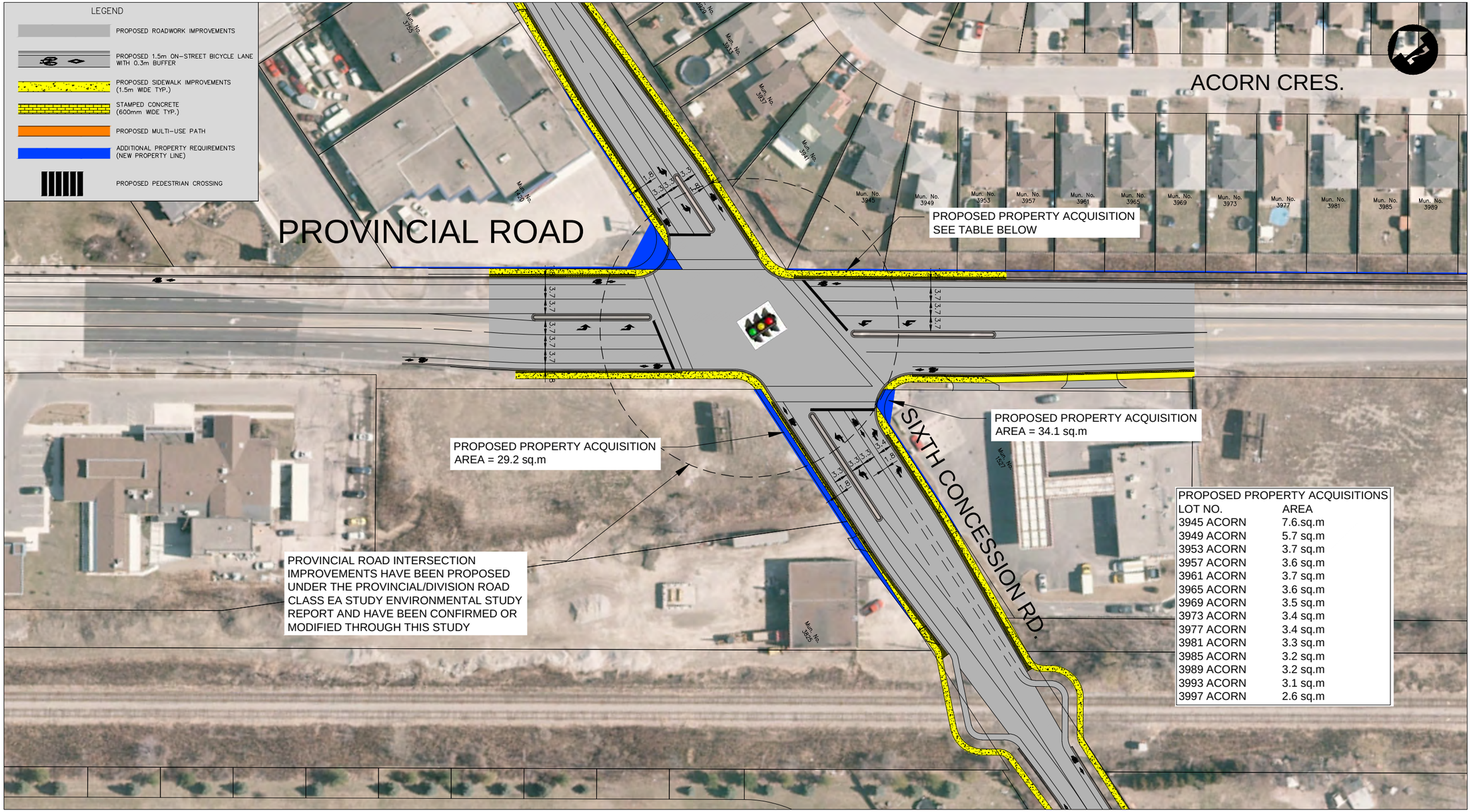
PLATE 12

130m South of Dougall Parkway to North Talbot Road

SCALE: 1:1000

APRIL, 2016

FILENAME: G:\CAD\138295 - NORTH TALBOT - 6TH CONC. EA\02-CIVIL\03-REPORTS\EA\138295-02-PLN-FIG.DWG PLOTTED BY: ZANGARI, RICHARD
PLOT DATE: 2016-04-04 @ 10:55:09 AM PLOT SCALE: 1:1 PLOT STYLE: DILLON-STANDARD.CTB



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SIXTH CONCESSION ROAD / NORTH TALBOT ROAD EA

PREFERRED DESIGN

PLATE 13

Provincial Road / Sixth Concession Intersection

SCALE: 1:1000 APRIL, 2016

FILENAME: G:\CAD\13295 - NORTH TALBOT - 6TH CONC EA\02-CIVIL\03-REPORTS\EA\13295-02-PLN-FIG.DWG PLOTTED BY: ZANGARI, RICHARD
PLOT DATE: 2016-04-04 @ 10:55:39 AM PLOT SCALE: 1:4 PLOT STYLE: DILLON-STANDARD.CTB