TOWN OF OAKVILLE

SIXTH LINE FROM DUNDAS STREET
TO HIGHWAY 407 ETR
CLASS ENVIRONMENTAL ASSESSMENT STUDY
TOWN OF OAKVILLE PROJECT NO. EA-067-11

APPENDICES

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MAY 5, 2014

Appendix A – Consultation Material and Correspondences

Appendix A.1 – Communication and Consultation Plan

OAKVILLE

Sixth Line Class EA (Dundas Street to Highway 407 ETR) Communication and Consultation Plan

May 2012

MORRISON HERSHFIELD

Sixth Line Class EA (Dundas Street to Highway 407 ETR) Communication and Consultation Plan

May 2012

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Project No. EA-067-11

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1. INTRODUCTION

This report documents the Communication and Consultation Plan carried out as part of the Sixth Line Class Environmental Assessment (EA) (Dundas Street to Highway 407 ETR) in accordance with the requirements set out in the Request for Proposal (PROP-30-2011) from the Town of Oakville (Town) November, 2011.

1.1 Project Description

In April 2012, the Town of Oakville initiated a Class Environmental Assessment (EA) Study to determine future road needs and improvements for the Sixth Line corridor between Dundas Street to Highway 407 ETR in the Town of Oakville.

The project is being undertaken to comply with the Environmental Assessment Act, to define the needs and justification, and to determine a project construction phasing schedule. A Class Environmental Assessment is a process that enables the planning and implementation of municipal infrastructure projects to be undertaken in accordance with an approved procedure designed to protect the environment (including residents). The current approved procedure is the June 2000 Municipal Engineers Association (MEA) Municipal Class Environmental Assessment.

1.2 Purpose of Communication and Consultation Plan

The Communication and Consultation Plan will outline:

- Goals and objectives of the communication and consultation plan;
- Who should be contacted;
- When should the stakeholders be contacted; and
- How the stakeholders should be contacted.

This plan outlines the appropriate communication and consultation strategy for the Sixth Line Class EA, but allows for flexibility throughout the study process. It is important to adjust the communication and consultation plan, as appropriate, based on the latest information for the study.

2. GOALS AND OBJECTIVES OF COMMUNICATION AND CONSULTATION PLAN

2.1 Goals

- To share an understanding of the corridor transportation and operational needs;
- To create 'buy in' to the problem / opportunity;
- To work with the community to develop an acceptable preferred solution and design alternative; and
- To establish credibility and trust with the public and all stakeholders, and good working relationships.

2.2 Objectives of Communications Plan

- To inform the public, stakeholders, Councillors, government agencies and interest groups of the project in a timely manner;
- To provide accurate and consistent message to the intended audience;
- To provide targeted information to individuals who may have specific or unique concerns regarding the project. For example, noise issues, property impacts, environmental concerns;
- To inform the Project Team members and the TAC of the stakeholders' concerns; and
- To communicate that this will be a fair and balanced planning process.
- To include two-way dialogue between the public and the project team.
- To obtain meaningful public input throughout the study process.

2.3 Objectives of Consultation Plan

- To identify concerns associated with the project early on in the process and to anticipate other concerns;
- To assist the Project Team and the TAC in developing alternative planning solutions;
- To assist the Project Team and the TAC in developing alternative design concepts for a preferred solution;
- To involve the public and stakeholders in developing mitigation measures and criteria for evaluating alternative concepts; and
- To provide feedback on how the public's involvement has influenced the design / outcome of the project.

3. STAKEHOLDER COMMUNICATION

An enhanced public participation process that provides a variety of opportunities for the project team and the public to learn, share and respond to each other is a key element of this project. It is important to implement a proactive public consultation process to ensure appropriate dialogue between parties with a number of competing interests.

3.1 Stakeholders

- **Federal Agencies**
  - Environment Canada
  - Canadian Environmental Assessment Agency
  - Canadian Transportation Agency
  - Transport Canada
  - Transport Canada, Navigable Water Protection
  - Fisheries & Oceans Canada
  - Aboriginal Affairs and Northern Development Canada
  - NAV CANADA
  - Canadian National Railway (CNR)
- **Provincial Agencies**
  - Ministry of Culture
  - Ministry of Natural Resources
  - Ministry of Public Infrastructure Renewal
  - Ministry of the Environment
  - Ministry of Transportation
  - Ministry of Economic Development and Trade
  - Ministry of Health
  - Ministry of Agriculture, Food and Rural Affairs
  - Ministry of Municipal Affairs and Housing
  - Ministry of Tourism
  - Ontario Secretariat of Aboriginal Affairs
  - Ontario Provincial Police
  - 407 ETR
  - GO Transit/Metrolinx
  - Halton Conservation
- **Municipal Government**
  - Town of Oakville
  - Town of Oakville Fire Department
  - Oakville Chamber of Commerce
  - Halton Region
  - Halton Catholic District School Board
  - Halton District School Board

- Halton Healthcare
- Halton Regional Police

- **Utilities**
  - Bell Canada
  - Oakville Hydro Electricity Distribution Inc.
  - Cogeco Cable Solutions
  - Enbridge Gas Distribution Inc.
  - FCI Broadband
  - Hydro One Networks Inc.
  - Hydro One Telecom Inc.
  - Langley Utilities Contracting
  - Plantec Eng. (Bell Canada)
  - Rogers Cable T.V. Ltd.
  - Trans Canada Pipelines Ltd.
- **First Nations**
- **Political Representatives**
- **Residents adjacent to / within the study corridor**
- **Property Owners adjacent to / within the study corridor**
- **Businesses adjacent to / within the study corridor**
- **Local Stakeholders**
- **Churches**

3.2 Communication Methods

It is important to provide a variety of communication methods to ensure that as many stakeholders become involved as possible and as early as possible.

As the first point of contact with the Stakeholders, study commencement notices were published in the local newspaper. Formal letters were sent to property owners, businesses, tenants along the corridor, review/environmental agencies, First Nations and utility companies. A copy of the notice was also delivered to all tenants along Sixth Line.

A record of all stakeholders will be kept up-to-date throughout the study and will include updated addresses with all PIC attendees, and documenting all issues raised, responses, and how these issues were addressed during the Study. All individuals on the lists will be contacted at the appropriate stages to inform them of upcoming meetings and events.

An up-to-date consultation record will also be maintained for the project. The record will document all correspondence sent and the responses received, a summary of the contents and actions taken. The consultation record will be an effective way to track all issues/concerns for discussion at Project Team Meetings.

Another point of contact with the Stakeholders will be provided at the public information centres (PIC). A public information centre notice will be published in the local newspaper. Formal letters will be sent to property owners, businesses, tenants along the corridor, individuals currently on the project mailing and e-mail lists, review/environmental agencies, First Nations and utility companies. A copy of the notice may also be hand delivered to all tenants along Sixth Line. At the PIC, the Stakeholders will be able to communicate directly with Project Team members. Since the project is classified as a Schedule "C" under the MEA, a minimum of two public consultation centres are required, one as part of Phase 2 and one during Phase 3. The PICs will be documented in a stand alone PIC Summary Report, which will become part of the Environmental Study Report. The PIC Summary Report will document the details of the PIC logistics (date, time, place), information presented, and a summary of the written and oral comments received.

Stakeholders will be provided with another opportunity to comment on the Study once the Environmental Study Report is placed on public record for review. A notice of study completion will be published in the local newspaper. Formal letters will be sent to property owners, businesses, tenants along the corridor, individuals currently on the project mailing and e-mail lists, review/environmental agencies, First Nations and utility companies. The notice will inform the Stakeholders that an Environmental Study Report has been completed and it will also provide the location and dates of the public review period. The notice will also outline the Stakeholder's right to request a Part II Order to the Minister of the Environment.

3.3 Technical Advisory Committee

A Technical Advisory Committee (TAC) will be established for the project and will include representatives from:

- Halton Conservation
- Halton Region
- 407 ETR
- Relevant Utilities Agencies

The Town of Oakville and the consultant will also be members of the TAC.

The TAC will provide input on the opportunity of the study; additional issues and concerns within the study area; the problem statement; evaluation criteria; alternative solutions; the identification and evaluation of design concepts; mitigation methods; and the preliminary technically preferred design concept.

The TAC will meet at key points of the study, as follows:

- Completion of Needs Assessment and preparation for PIC identifying and evaluating the planning alternatives; and

- Preparation for PIC identifying and evaluating the design alternatives.

3.4 Stakeholders Group

A Stakeholders Group will be established for the study. A potential list of members could include the following:

- School Boards
- Representative property owners / tenants

The potential Stakeholders Group members will be contacted with a letter inviting them to participate in the Stakeholders Group and requesting them to inform the team of their interest in participating and their representative.

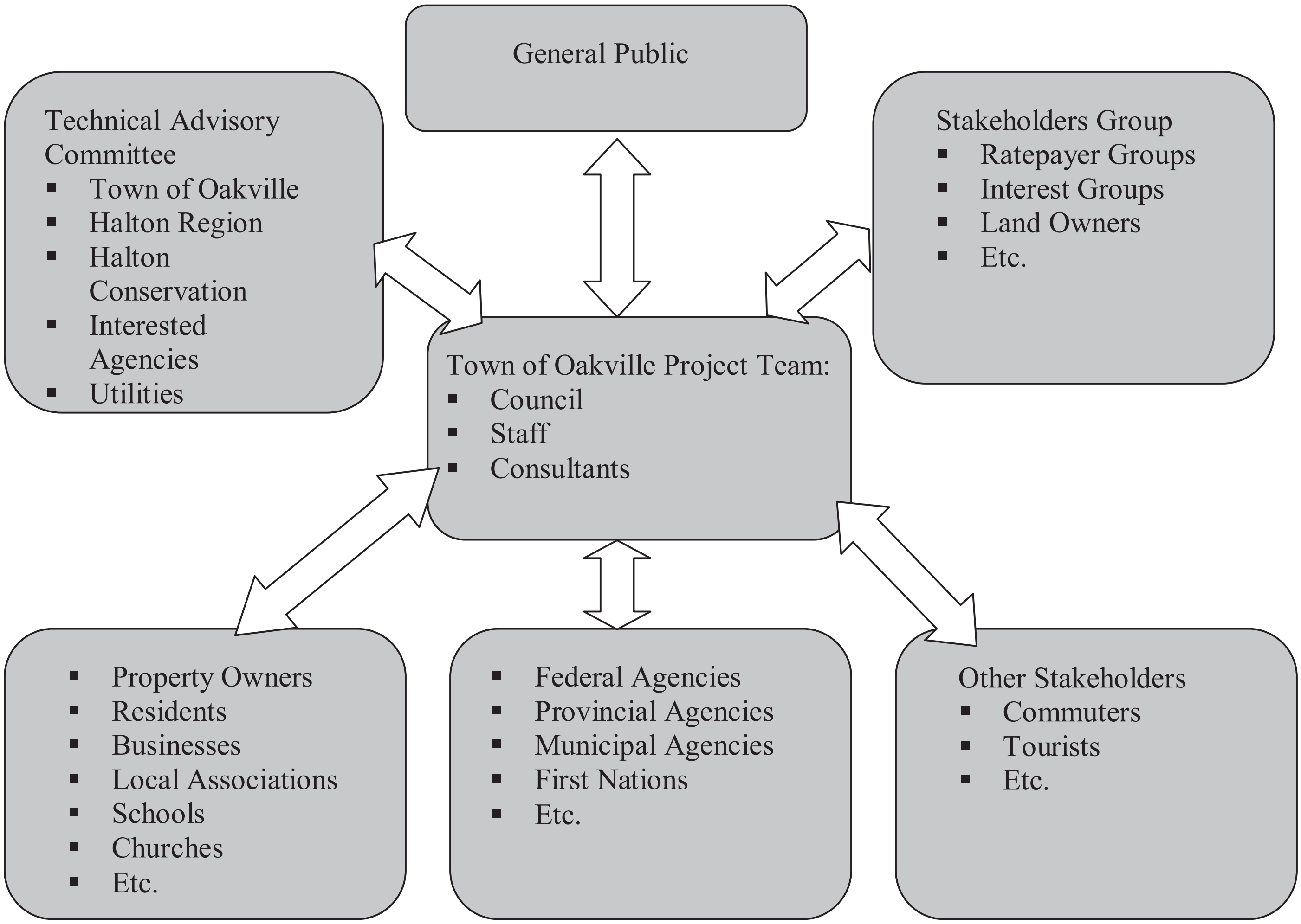
The Stakeholders Group will provide input on the opportunity of the study; additional issues and concerns within the study area; the problem statement; evaluation criteria; alternative solutions; the identification and evaluation of design concepts; mitigation methods; and the preliminary technically preferred design concept.

The Stakeholders Group will meet at key points of the study, as follows:

- Completion of Needs Assessment and preparation for PIC identifying and evaluating the planning alternatives; and
- Preparation for PIC identifying and evaluating the design alternatives.

3.5 Lines of Communication

The following diagram demonstrates the lines of communication between the various stakeholders and the Town of Oakville project team.



4. COMMUNICATION AND CONSULTATION PLAN AND POINTS OF CONTACT

4.1 Throughout the EA process

The following tasks will occur throughout the entire EA study:

- Use a database to track all comments and questions from emails, telephone calls, letters, PIC comment sheets; community meetings; and
- Respond to comments and questions in a timely manner.

4.2 Identify Problem or Opportunity - EA Process Phase 1

4.2.1 Contact List

Create a contact list of potential stakeholders, residents and interest groups, including but not limited to the following:

- Mayors, Councillors, Senior Management, Halton Region Staff;
- Residents and businesses within the study area;
- Halton Conservation;
- Ministry of the Environment and other relevant agencies;
- Heritage Advisory Committees; and
- Any individuals (not currently on the mailing list) who indicated to us that they are interested in being kept informed of the project after receiving the study commencement notice.

Action items

- Identify mailing lists from other studies;
- Update the contact list throughout the study.

4.2.2 Study Commencement Notice

Prepare Notice of Study Commencement and distribute to all on the public contact list by mail. Delivery of notices to all residents/businesses directly fronting, backing or siding onto Sixth Line.

Action items

- Prepare a Study Commencement notice; publish in local newspaper (Town), mail, and deliver to study corridor residents and businesses.

4.3 Identify and evaluate alternative solutions - EA Process Phase 2

4.3.1 Establish Technical Advisory Committee (TAC) and TAC Meeting No. 1

- Introduce the TAC to the project;
- Provide an update on the project status to date;
- Discuss TAC terms of reference;
- Identify issues associated with the project;
- Discuss the needs and justification material;
- Discuss the alternative solutions and preliminary preferred solution;
- Discuss the evaluation of alternatives to the undertaking;
- Get agreement / confirmation on the proposed consultation program and schedule;
- Discuss PIC No. 1 materials;
- Discuss upcoming meetings; and
- Feedback from this meeting used to gauge further steps in the project.

Action items

- Identify and confirm TAC members;
- Prepare Terms of Reference for the TAC;
- Prepare invitation letters;
- Prepare meeting agenda;
- Prepare needs and justification material;
- Prepare preliminary consultation plan up to PIC No. 1;
- Prepare evaluation of alternatives tables;
- Prepare draft PIC No. 1 material;
- Forward meeting material to TAC at least 3 days before the meeting;
- Prepare meeting minutes to be distributed within 5 working days of meeting.

4.3.2 Public Information Centre No. 1 (PIC No. 1)

- To provide the opportunity for meeting the project team, reviewing and confirming issues heard to date, reviewing the problem statement and proposed alternative solutions, and commenting on areas of concern with each alternative solution, and/or the evaluation criteria; and
- PIC will be held in the Town of Oakville as a public open house format and will be held throughout the evening. There is also the potential to have a brief presentation followed by a question and answer period.

Action Items

- Confirm meeting location and book venue (Town);
- Prepare newspaper advertisement for the public meeting, at least one month in advance;
- Publish advertisement in the newspaper, at least two weeks prior to the meeting (Town);
- Send letters to individuals and groups on the contact list, at least two weeks prior to meeting;
- Deliver notices to study corridor residents and businesses backing on, fronting, or siding on Sixth Line, at least two weeks prior to meeting;
- Finalize PIC display boards, and all relevant material; and
- Provide comment forms for participants to fill out/mail back, provide at least a 2-week mail back period.
- Prepare presentation (if required).

4.3.3 Summary of PIC No. 1

The PIC Summary will include:

- Particulars such as date, time, place, etc.;
- Copy of notification letters and distribution list;
- Copy of newspaper ad as well as the name of publication and date;
- Summary of events;
- Copies of written comments received and Consultant responses at and immediately following the PIC;
- Summary of comments received;
- Provide the summary of the PIC to the Town no later than three weeks after the PIC; and
- Respond directly to any specific request/unique concerns from PIC No. 1.
- Incorporate public comments into the socio-economic impact assessment and consider them in the design alternatives.

4.3.4 Stakeholders Group Meeting No. 1

- To obtain the thoughts, potential concerns / issues with the study, of key Stakeholders;
- Introduce the Stakeholders Group to the project;
- Discuss Stakeholders Group terms of reference;
- Discuss the needs and justification;
- Discuss the evaluation of alternatives to the undertaking,
- Discuss PIC No. 1 materials;
- Discuss upcoming meetings;
- Discuss the key issues identified in the group; and
- Document the results of the meeting, summarizing key issues from each stakeholder, and an action plan on how the issues will be addressed.

Action items
- Identify potential non-public agency stakeholders, such as major landowners via co-ordination with Councillor assistants;
- Prepare Terms of Reference for Stakeholders Group;
- Prepare invitation letters;
- Prepare meeting agenda to be sent 1 week prior to meeting;
- Conduct the meeting on a week night, between 7:00 PM and 9:00 PM;
- Confirm meeting location and book venue (Town);
- Invite all potential Stakeholders Group members to the meeting;
- Prepare meeting minutes to be distributed within 5 working days of meeting.

4.4 Identify and evaluate alternative design concepts for preferred solution – EA Process Phase 3

4.4.1 Meetings with Town Councillors and Senior Management No. 1 (if required)

- To brief Councillors and Senior Management at least two weeks in advance of PIC No. 2
- Present the list of issues, the needs and justification, evaluation of the alternatives and PIC No. 2 material; and
- Get feedback from the Councillors and Senior Management; feedback will be used to finalize the material for PIC No. 2, and to move forward to meet with the public.

Action items
- Prepare preliminary list of design alternatives, and evaluation criteria;
- Prepare evaluation of design alternatives tables;
- Prepare draft PIC No. 2 materials;
- Prepare meeting agenda to be sent out 1 week prior to meeting;
- Forward meeting material to Councillors at least one week prior to the meeting;
- Prepare meeting minutes for distribution within 5 working days of meeting. and
- Feedback will be incorporated in the material for PIC No. 2, and to move forward to meet with the public.
- Co-ordination with Councillor assistants to arrange meeting time, co-ordinate with the Town; and
- Prepare presentation.

4.4.2 Utility Co-ordination Meeting No. 1

- Discuss preliminary preferred design; and
- Discuss utility requirements and concerns.

Action items
- Prepare invitation letters;
- Prepare meeting agenda;
- Prepare meeting minutes to be distributed within 5 working days of meeting; and
- Prepare preliminary design alternative.

4.4.3 TAC Meeting No. 2

- Review the results of PIC No. 1;
- Solicit feedback on the PIC;
- Confirm the project status;
- Discuss the design alternatives, evaluation of the alternatives, and the preliminary technically preferred design alternative;
- Discuss methods of mitigating potential impacts;
- Discuss upcoming meeting; and
- Discuss PIC No. 2 materials.

Action items
- Prepare preliminary list of design alternatives, and evaluation criteria;
- Prepare evaluation of design alternatives tables;
- Prepare draft PIC No. 2 materials;
- Prepare meeting agenda to be sent out 1 week prior to meeting;
- Invite TAC to meeting;
- Forward meeting material to TAC at least one week prior to the meeting;
- Prepare meeting minutes for distribution within 5 working days of meeting. and
- Feedback will be incorporated in the material for PIC No. 2, and to move forward to meet with the public.

4.4.4 Stakeholders Group Meeting No. 2

- Discuss the design alternatives, evaluation of the alternatives, and the preliminary technically preferred design alternative;
- Discuss methods of mitigating potential impacts; and
- Discuss PIC No. 2 materials.

Action items
- Conduct the meeting on a week night, between 7:00 PM and 9:00 PM;
- Confirm meeting location and book venue (Town);
- Prepare agenda one week prior to meeting;
- Invite Stakeholders Group members to the meeting;
- Prepare appropriate material for meeting;

- Prepare presentation; and
- Prepare meeting minutes to be distributed within 5 working days of meeting.

4.4.5 Public Information Centre No. 2 (PIC No. 2)

- To provide the opportunity for meeting the project team, reviewing and confirming issues heard to date, reviewing the problem statement and proposed alternative solutions, and commenting on areas of concern with each alternative solution, and/or the preliminary preferred solution;
- To present and discuss the preliminary design alternatives, potential impacts and mitigation measures, and the preliminary preferred solution;
- Make it clear to the public that the recommended design solution is a preliminary preference, not the final design; and
- Public meetings will be held in the evening.

Action Items
- Confirm meeting location and book venue (Town);
- Prepare newspaper advertisement for the public meeting, at least one month in advance;
- Publish advertisement in the newspaper, at least two weeks prior to the meeting (Town);
- Send letters to individuals and groups on the contact list, at least two weeks prior to meeting;
- Deliver notices to study corridor residents and businesses backing on, fronting, or siding on Sixth Line, at least two weeks prior to meeting;
- Finalize PIC display boards, presentation and all relevant material;
- Provide comment forms for participants to fill out/mail back, provide at least a 2-week mail back period; and
- Provide hand-out package for participants.

4.4.6 Summary of PIC No. 2

The PIC Summary will include:
- Particulars such as date, time, place, etc.;
- Copy of notification letters and distribution list;
- Copy of newspaper ad as well as the name of publication and date;
- Summary of events;
- Copies of written comments received and Consultant responses at and immediately following the PIC;
- Summary of comments received;
- Provide the summary of the PIC to the Town no later than three weeks after the PIC; and
- Respond directly to any specific request/unique concerns from PIC No. 2.

4.5 Prepare Environmental Study Report – EA Process Phase 4

4.5.1 Meeting with Property Owners

- Discuss preliminary preferred design; and
- Discuss impacts on property owners.

Action items
- Prepare preliminary preferred design plans.

4.5.2 Utility Coordination Meeting No. 2

- Discuss preliminary preferred design; and
- Discuss utility requirements, relocations and concerns.

Action items
- Prepare composite utility plans for design that identifies need for utility relocation.

4.5.3 Meetings with Town Councillors and Senior Management – No. 2 and Council Presentation

- To present to the Town of Oakville Council and Senior Management, the final findings of the study; and
- Get endorsement of the findings of the study.

Action items
- Get on Committee / Council agendas via co-ordination with Councillor assistants, co-ordinate with the Town; and
- Prepare presentation.

4.5.4 Notice of Study Completion

Action items
- Prepare Notice of Study Completion and distribute to all on the public contact list, publish in local newspaper (Town), and mail to study corridor residents and businesses;
- Finalize ESR;
- Circulate final ESR; and
- Monitor and address any inquiries or comments during 30 day filing period of the ESR.

Appendix A.2 – Stakeholder Sensitivity Analysis

OAKVILLE

TOWN OF OAKVILLE
SIXTH LINE FROM DUNDAS STREET TO HIGHWAY 407
CLASS ENVIRONMENTAL ASSESSMENT STUDY
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MAY 17, 2012

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LIST OF APPENDICES

1 INTRODUCTION

Public Consultation is an important aspect of any Class Environmental Assessment (EA) undertaking. Sixth Line is classified as a Schedule "C" process under the *Municipal Class Environmental Assessment* (2007). This process requires a minimum of two contact points with the public through public information centres. The public is also made aware of the study through a Notice of Study Commencement and at the end of the study a Notice of Study Completion. Following the Notice of Study Completion there is an opportunity for the public to review the final Environmental Study Report (ESR).

The Town of Oakville strives for a higher level of public participation in addition to the minimum requirements set out in the Class EA guidelines to ensure better engagement of the anticipated stakeholders to achieve a successful study. To address this objective, a Stakeholder Sensitivity Analysis (SSA) has been developed. The purpose of the SSA is to identify all potential stakeholders to ensure that all the stakeholders will be included as part of the public consultation process, to be able to obtain a thorough understanding of the stakeholders and their backgrounds, to establish the positions/viewpoints they may have on the undertaking, to pre-determine potential concerns and issues as well as to identify possible strategies/measures to address these concerns prior to the course of the study.

2 IDENTIFICATION OF STAKEHOLDERS

The below noted definition was used as the basis for determining the affected stakeholders, influencer stakeholders and "other" stakeholders. These categories are described in further detail in the following sections along with the identification of the stakeholders under each of these categories.

"Stakeholders" are:

- those whose interests are affected by the issue or those whose activities strongly affect the issue;
- those who possess information, resources and expertise needed for strategy formulation and implementation;
- those who control relevant implementation instruments; and,
- individuals or organizations who are involved in or may be affected by project activities.

2.1 AFFECTED STAKEHOLDERS

The first group of stakeholders are those that are directly or indirectly affected, either positively or negatively, by the project. These individuals can be grouped into the following categories:

- Property owners;
- Residents;
- Businesses; and,
- Local associations (i.e., schools, community centres, religious meeting areas, etc.)

These persons/groups/organizations may share the highest interest in the project as recommendations from this study may directly affect their daily routines or properties that they own or live in. As a result, it is likely that they will also be the most involved throughout the public consultation process and will require the Project Team to address more immediate concerns as the study progresses.

2.2 INFLUENCER STAKEHOLDERS

The second group of stakeholders are those groups/organizations that may be able to influence the outcome of the project either because they can contribute knowledge or ideas to improve project design or mitigate environmental and social impacts, or because they have personal, political, regulatory, or legal influence on the project that needs to be considered. Influencing Stakeholders include the following:

- Federal Government;
- Provincial Government;
- Local Municipal Government;
- Conservation Authorities;
- Utilities;
- Interest Groups;
- Community Groups;
- Environmental Groups;
- Municipal Council and Staff;
- School Boards; and,
- Emergency Services.

Input from identified agencies and interest groups are to be welcomed into the project and requested meetings with agencies or groups that raise concerns and/or issues with the project will be arranged to resolve any such concerns or issues.

Landowner/business meetings will be held, as required, to discuss and resolve issues that arise during consultation and to review concerns that may impact the Environmental Assessment.

Other stakeholder meetings are to be held to resolve issues that arise during the project and for this reason, meeting dates will be on an as-needed basis and scheduled accordingly. It is anticipated that stakeholder meetings will be required with the Halton Conservation Authority, Department of Fisheries and Oceans and the Ministry of Natural Resources to establish the need for a compensation plan for the Fisheries Act authorization.

Meetings and ongoing consultation with the Town of Oakville Engineering/Planning staff will be made throughout the Environmental Assessment process. Presentations will also be made as necessary to Town of Oakville Council to discuss the study.

2.3 THE "OTHER" STAKEHOLDERS

The third group of stakeholders are the Town-wide beneficiaries and the "silent majority". The Town-wide beneficiaries are basically the "commuters" or those persons who reside outside the immediate area of the corridor but use this segment of Sixth Line as a means of travelling between their starting point (i.e., home) and their destinations (i.e., work, school etc.). The "silent majority" refers to the road users and residences within the study area corridor who choose not to participate in the study.

Both the Town-wide beneficiaries and the "silent majority" may have a vested interest in the recommendations of the study; however, it is difficult to engage them in the public consultation process. Based on experience from other EA studies, it is difficult to engage the public at large in the consultation process in terms of having them provide comments or attend the public information centres, unless they may be negatively impacted by the project. In addition, they may not be aware of the project as their residence or place of work may not be located within the study area corridor.

2.4 DYNAMIC STAKEHOLDER IDENTIFICATION PROCESS

In order to ensure that any and all interested stakeholders are involved throughout the public information component of the study, the stakeholder identification process is considered to be a dynamic process. Throughout the course of the study, additional stakeholders may be identified or they may identify themselves and will subsequently be included into the applicable stakeholder group and listing. This process will ensure that all key stakeholders are provided with an opportunity to form an opinion, express their concerns, discuss with Project Team members opportunities to address identified issues and ultimately play a role in determining the final recommendations.

3 STUDY PERSPECTIVES

One of the main components of the SSA is determining or obtaining an understanding of the perspectives of each of the stakeholders on the proposed undertaking and developing a strategy to address these perspectives to ensure the success of the study. Perspectives that are brought forward may be positive or negative; however, the sensitivity aspect of the study will result in the review of the concerns and identify subsequent actions or mitigating measures where applicable to address such concerns. In addition, it will create awareness among Project Team members as to possible oversights in the project direction and allow for the identification of alternative measures to facilitate the success of the study. The SSA will also allow for additional involvement in the study process when requested and if deemed necessary by the Project Team. While initial observations or assumptions may be proven to be incorrect, the SSA also allows for further refinement of each of these perspectives throughout the course of the study.

The subsequent sections identifies the "expectations" that the Town may receive from the stakeholders, the actual "hopes and fears" of the stakeholders and any potential limitations or "roadblocks" to the progression of the study.

3.1 TOWN'S EXPECTATIONS

There is an expectation that the residents immediately adjacent to the Sixth Line corridor will have concerns and possibly object to any proposed improvements within the corridor.

3.2 POTENTIAL "STOPPERS"

The initial anticipation for this project was that alleviating the concern of traffic capacity on Sixth Line would generate the support of the corridor wide residents and the general road users.

Issues that may be encountered on Sixth Line include:

- Opposition from residents immediately adjacent to the road could have concerns about Sixth Line being closer to their property;
- More traffic;
- Increased noise and air pollution;
- Loss of trees;
- Pedestrian safety;
- Increased width of pavement surface; and,
- Town of Oakville support of area residents opposing proposed improvements and lobbying local ward councillors.

As part of the Stakeholder Sensitivity Analysis, the identification of stakeholder groups, an understanding of their background, the Town's perceptions, the stakeholders' perceptions, the assessment of each stakeholder group and their potential contribution to the success of the study, the identification of potential stoppers, the involvement of stakeholders and the Towns' response in addressing noted concerns are summarized in the Stakeholder Sensitivity Analysis matrix in Appendix A.

4 COMMUNICATION STRATEGY

To facilitate the consultation process, notification of consultation activities/opportunities must be given to external agencies and the public. Notifications for many of the activities are provided through advertisements in local newspapers in English. The project does not lie within a designated French Language Services area.

The primary consultation steps that will provide opportunities for public and agency input for this study include: *Study Commencement, two Public Information Centres* and *Study Completion.* Each step in the process will be notified by newspaper advertisements in the local newspaper and the internet through Town of Oakville's website.

In addition, notices will be mailed to members of the public within at least 500 m of the study area to target greater awareness of the project by a larger number of stakeholders. External agencies and members of the public that indicated a desire to be involved in the project from the Notice of Study Commencement will be notified of the PIC by direct letter mailing. The use of a brochure will also be mailed to the public to address general and specific concerns throughout the study process as required. Visualizations will also be used to help stakeholders understand what the proposed road improvements will look like.

4.1 WHEN DOES COMMUNICATION BEGIN

The *Notice of Study Commencement* outlines the study and study area, as discussed in the Class EA process and provides information on how the public may participate in the project.

The *Notice of Public Information Centre (PIC)* Public Notice will be placed in the local newspaper for at least two weeks prior to the PICs. The notice will include a discussion of the study, the Class EA process, PIC specifics (date, time and location) and information on how the public may participate in the project. PIC Notification letters will be distributed to all stakeholders.

4.2 COMMUNICATION MEDIA

The following communication media will be used to urge and inform stakeholders:

- Advertisement in local newspaper;
- Notice distribution;
- Letters to affected stakeholders adjacent to the corridor; and,
- Brochures.

4.3 EXTENDED COMMUNICATION EFFORTS

Input from identified agencies and interest groups will be welcomed into the project and meetings will be convened with agencies or groups that raised concerns and/or issues with the project to crystallize and resolve any such concerns or issues.

Other stakeholder meetings will be convened to resolve issues that arise during the project and for this reason, meeting dates will be on an as-needed basis and scheduled accordingly. It is anticipated that stakeholder meetings will be required with the Halton Conservation Authority, Department of Fisheries and Oceans and the Ministry of Natural Resources to develop the compensation plan for the Fisheries Act authorization.

Presentations to Town of Oakville Engineering/Planning staff and Town Council will be made throughout the Environmental Assessment and Preliminary Design process. It is anticipated that a meeting with the Town of Oakville engineering staff will be convened to present the engineering proposals developed to date and to receive comments. Ongoing consultation will be conducted with the Town engineering staff by the project engineering staff.

5 A SUCCESSFUL STAKEHOLDER SENSITIVITY STRATEGY

A successful stakeholder sensitivity strategy is defined as one that has identified an all encompassing stakeholder database, has an effective communication strategy and most importantly, allows for the involvement of stakeholders throughout the course of the study. The following sections describe briefly four aspects to a successful SSA.

5.1 MITIGATION OF CONCERNS

Issues and concerns that are raised by any stakeholder will be documented in detail and should be discussed amongst the Project Team to identify opportunities or mitigation measures, where feasible. It is noted that concerns related to localized operations would be addressed as part of the preliminary design phase of the study.

5.2 INVOLVEMENT OF STAKEHOLDERS

The involvement of stakeholders is a dynamic process that is evolving throughout the course of the study. Thus, stakeholders are continually added to the mailing list, upon request, and will be provided with notification of all milestone events and public information centres.

5.3 RESPONSE TO CONCERNS

The Project Team is to provide a formal written response to concerns brought to their attention in the form of a letter or an e-mail. Meetings may be held first to discuss concerns and share information.

6 NEXT STEPS

In order to obtain as much support as possible for the proposed improvements, to address concerns noted by stakeholders and to demonstrate "good faith" to the public, the following actions will be undertaken throughout the study process to ensure the success of the project:

1. Ensuring prompt feedback in addressing stakeholder concerns to fulfill the requirements of the EA process with due diligence;

2. Reviewing all noted public issues and undertaking appropriate analysis, as relevant to the success of the study (e.g., review of the Town's proposed growth, further review of needs and transportation opportunities, review of traffic volumes etc.), and providing an appropriate response;

3. Reviewing the stakeholder database to determine if there are other individuals/organizations that should be included on the mailing list;

4. Ensuring the presence of a facilitator for the PICs as part of the communication strategy; and,

5. Meeting with individual stakeholder groups to listen to their concerns and to identify possible opportunities that would be beneficial to the community at large and address concerns identified on Sixth Line.

Appendix "A"
Sensitivity Analysis Matrix

OAKVILLE

Sixth Line Class EA Study
Dundas Street to Highway 407
Stakeholder Sensitivity Analysis

	Their "coordinates"	Town's Perceptions	Their Perceptions	Force Field Analysis	"Tweaks" and Contingency Plans	Role in the Process	Risk Management	Towards a Positive Legacy
Stakeholder Sensitivity Analysis Matrix	Background, mandate, size of organization, membership, past participation in similar undertakings	What positive and/or negative impacts do we expect the underatking to have on them?	What positive and/or negative impacts do THEY expect the undertaking to have on WHOM? What are their "hopes and fears"?	Whose cooperation, expertise or influence would be helpful to the success of the undertaking?	1.Which of these "concerns" can we take off the table by "tweaking" the undertaking? 2. Which ones will remain "on the table unresolved"?	How do they want to be involved/engaged in the underatking as it unfolds?	What could bring the underatking to the knees?	What are the next steps in both process and content terms that will demonstrate the Town's "good faith" in responding to concerns and begin building the constituency for the undertaking?
Affected Stakeholders								
1.0 Affected Stakeholders								
1.1 Residents								
Dundas Street to Highway 407	Residential and business land use.	-	-	The affected stakeholders may share the highest interest in the project therefore their involvement is important to the study success. Working with ward councillors and gaining their support would also assist with the project.	-	-	-	-
1.2 Businesses								
Dundas Street to Highway 407		-	-	The affected stakeholders may share the highest interest in the project therefore their involvement is important to the study success. Working with ward councillors and gaining their support would also assist with the project.	-	Provide technical input. Meet with the project team.	-	Ongoing meetings to discuss study status. Request for input/comments on any preliminary plans/recommendations.
2.0 Influencer Stakeholders								
2.1 Municipalies and their key individuals								
- Town of Oakville								
- Political representatives (i.e. council, mayors etc.)								
MPP, Kevin Flynn								Keep informed.
Mayor Rob Burton								Keep informed.

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Affected Stakeholders								
Alan Johnston (Ward 1 Town & Regional Councillor) Ralph Robinson (Ward 1 Town Councillor) Cathy Duddeck (Ward 2 Town & Regional Councillor) Pam Damoff (Ward 2 Town Councillor) Keith Bird (Ward 3 Town & Regional Councillor) Dave Gittings (Ward 3 Town Councillor) Allan Elgar (Ward 4 Town & Regional Councillor) Roger Lapworth (Ward 4 Town Councillor) Jeff Knoll (Ward 5 Town & Regional Councillor) Marc Grant (Ward 5 Town Councillor) Tom Adams (Ward 6 Town & Regional Councillor) Max Khan (Ward 6 Town Councillor)				Working with ward councillors and gaining their support would also assist with the project.		Keep informed.		Discuss potential PIC dates. Provide any background information as requested. Prepare responses to any concerns identified.
- Technical representatives (i.e. Town staff etc.)								
Director of Engineering and Public Works				Town of Oakville's role is to provide comment on study recommendations and to determine if there are any issues or concerns that need to be addressed. Require Town of Oakville technical staff support of recommendations.		Provide technical input. Meet with the project team.	Does not meet OP or TMP polices.	Ongoing meetings to discuss study status. Request for input/comments on any preliminary plans/recommendations.
Director of Park, Recreation & Culture						Keep informed.		Keep informed.
2.2 Regulatory Agencies and their key individuals								
- Federal governments								
Transport Canada	Sixth Line is located within the Town of Oakville.	Navigable waters possible.	No noted impacts.	Undertaking will be successful if any identifed concerns are addressed/mitigated.		Keep informed.		Keep informed.
Environment Canada	Environment Canada's mandate is to preserve and enhance the quality of the natural environment; conserve Canada's renewable resources; conserve and protect Canada's water resources; forecast weather and environmental change; enforce rules relating to boundary waters; coordinate environmental polices and programs for the federal government. Typically included on the mailing list for Region transportation projects.	Potential Creek Crossings, navigable water (CEAA)	No noted impacts.	Undertaking will be successful if any identifed concerns are addressed/mitigated.	N/A	No noted involvement.	No noted concern.	Keep informed.

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Affected Stakeholders								
Indian and Northern Affairs Canada	INAC is responsible for meeting the federal government's constitutional, treaty, political and legal responsibilities to First Nations, Inuit and Northerners. Typically included on the mailing list for Region transportation projects. Involved in undertakings where there is a potential impact to First Nations land.	No noted impacts.	No noted impacts.	Undertaking will be successful if any identifed concerns are addressed/mitigated.	N/A	No noted involvement.	No noted concern.	Keep informed.
Department of Fisheries and Oceans / Canada Coast Guard	Fisheries and Oceans Canada is responsible for developing and implementing polices and programs in support of Canada's economic, ecological and scientific interests in oceans and inland waters. Typically included on mailing list for Region transportation projects. Involved in undertakings where there is a potential impact to aquatic features.	No noted impacts.	No noted impacts.	Undertaking will be successful if any identifed concerns are addressed/mitigated.	N/A	No noted involvement.	No noted concern.	Keep informed.
Canadian Environmental Assessment Agency	Canadian Environmental Assessment Agency is responsible for providing Canadians with environmental assessments. Involved in undertakings where there is a potential imapct to Environment.	No noted impacts.	No noted impacts.	Undertaking will be successful if any identifed concerns are addressed/mitigated.	N/A	No noted involvement.	No noted concern.	Keep informed.

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Affected Stakeholders								
NAV CANADA	NAV CANADA has been responsible for the safe, orderly and expeditious flow of air traffic in Canadian airspace. Involved in undertakings where there is a potential impact to air traffic.	No noted impacts.	No noted impacts.	Undertaking will be successful if any identifed concerns are addressed/mitigated.	N/A	No noted involvement.	No noted concern.	Keep informed.
Canadian National Railway (CNR)	Canadian National Railway is currently Canada's only transcontinental railway company, spanning Canada from the Atlantic coast in Nova Scotia to the Pacific coast in British Columbia. Involved in undertakings where there is a potential impact to railways.	No noted impacts.	No noted impacts.	Undertaking will be successful if any identifed concerns are addressed/mitigated.	N/A	No noted involvement.	No noted concern.	Keep informed.
- Provincial governments								
Ministry of Natural Resources	The Ministry protects and manages the province's natural resources. Typically included on the mailing list for Region Transportation projects.	No noted impacts.	No noted impacts.	Undertaking will be successful if any identifed concerns are addressed/mitigated.	N/A	No noted involvement.	No noted concern.	Keep informed.
Ministry of Transportation Ontario	The Ministry is responsible for provinical bridges and highways. Typically inculded on the mailing list for Region transportation projects.	Owns land in the Highway 407 area.	Concerned designs do not follow MTO standards	Undertaking will be successful if any identifed concerns are addressed/mitigated.	Highway 407 has been designed to meet MTO standards.	Invlove throughout the EA process. Review and provide comments on plans. Meet with project team.	Their concerns should be mitigated.	Ongoing meetings. Provide with updates as study progresses. Provide with available background info or data requests. Follow-up with any identified concerns (if any).

	Their "coordinates"	Town's Perceptions	Their Perceptions	Force Field Analysis	"Tweaks" and Contingency Plans	Role in the Process	Risk Management	Towards a Positive Legacy
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Affected Stakeholders								
Ministry of Public Infrastructure Renewal	The Ministry is responsible for public infrastructure in the Canadian province of Ontario. Typically inculded on the mailing list for Region transportation projects.	No noted impacts.	No noted impacts.	Undertaking will be successful if any identifed concerns are addressed/mitigated.	N/A	No noted involvement.	No noted concern.	Keep informed.
Ministry of Economic Development and Trade	The Ministry is responsible for the main body in the system of central bodies of the executive power in formation and providing realization of state regulatory policy of economic and social development, regulation of price, industrial, investment, external economic policies, state policy in the sphere of trade, state regional policy, state policy in development of entrepreneurship, technical regulations and security of consumer rights as well as inter-agency coordination for economic and social cooperation of Ukraine with the European Union. Typically included on the mailing list for Region transportation projects.	No noted impacts.	No noted impacts.	Undertaking will be successful if any identifed concerns are addressed/mitigated.	N/A	No noted involvement.	No noted concern.	Keep informed.
Ministry of Health	The Ministry is responsible for overall direction and leadership for the health system, focusing on planning, and on guiding resources to bring value to the health system. Typically included on the mailing list for Region transportation projects.	No noted impacts.	No noted impacts.	Undertaking will be successful if any identifed concerns are addressed/mitigated.	N/A	No noted involvement.	No noted concern.	Keep informed.
407 ETR	Highway 407 is the first electronically operated toll highway opened in the world. Typically included on the mailing list for Region transportation projects.	No noted impacts.	No noted impacts.	Undertaking will be successful if any identifed concerns are addressed/mitigated.	N/A	No noted involvement.	No noted concern.	Keep informed.

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Affected Stakeholders								
Ministry of Culture	The Ministry implements strategies to promote and market Ontario's cultural and heritage attractions. It works with local communities and cultural agencies to preserve Ontario's culture and heritage.	No noted impacts.	No noted impacts.	Undertaking will be successful if any identifed concerns are addressed/mitigated.	N/A	No noted involvement.	No noted concern.	Keep informed.
Ministry of the Environment	The Ministry addresses environmental issues that have local, regional and/or global effects using stringent regulations, targeted enforcement and a variety of innovative programs and intitiatives. Typically included on the mailing list for Region transportation projects. The Ministy ensures that environmental assessments are conducted in accordance with the Environmental Assessment Act.	Creek Crossings	No noted impacts.	Undertaking will be successful if any identifed concerns are addressed/mitigated.	N/A	No noted involvement.	No noted concern.	Keep informed.
Ministry of Municipal Affairs and Housing	The Ministry's goal is strong urban and rural communities with dynamic local economies and a high quality of life in Ontario. Typically included on the mailing list for Region transportation projects.	No noted impacts.	No noted impacts.	Undertaking will be successful if any identifed concerns are addressed/mitigated.	N/A	No noted involvement.	No noted concern.	Keep informed.

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Affected Stakeholders								
Ministry of Tourism	The Ministry of Tourism supports delivery of high quality tourism and recreation experiences to Ontarians and visitors to Ontario. Promoting a sustainable, customer-focused tourism industry and an active population helps improve quality of life, increase pride in our communities and, increase economic growth.	No noted impacts.	No noted impacts.	Undertaking will be successful if any identifed concerns are addressed/mitigated.	N/A	No noted involvement.	No noted concern.	Keep informed.
Ministry of Agriculture and Food	The Ministry's vision is a strong food sector that is integral to Ontario's economy and contributes innovative solutions to protect the environment, to provide safe and nutritious food, to promote the bio-economy and to support the health and well being of Ontarians. Typically included on the mailing list for Region transportation projects.	No noted impacts.	No noted impacts.	Undertaking will be successful if any identifed concerns are addressed/mitigated.	N/A	No noted involvement.	No noted concern.	Keep informed.
Ontario Secretariat for Aboriginal Affairs	Develops and co-ordinates government wide aboriginal policy. Develops and maintains positive relationships with Aboriginal leaders and orginizations.	No noted impacts.	No noted impacts.	Undertaking will be successful if any identifed concerns are addressed/mitigated.	N/A	No noted involvement.	No noted concern.	Keep informed.
- Conservation Authorities								

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Affected Stakeholders								
Halton Conservation	The mission is to work with their partners (municipalities etc.) to ensure that the region is built on a natural foundation of healthy rivers and shorelines, greenspace and biodiversity, and sustainable communities. Typically included on the mailing list for Region transportation projects. Typically a review agency for Region transportation projects.	Creek Crossings	Impacts to the natural environment.	Halton Conservation may influence the final recommendations for this study. Undertaking will be successful if any identified concerns are addressed/mitigated.	Environmental concerns noted by Halton Conservation can be mitigated/addressed as part of the study process.	Involve throughout the EA process. Review and provide comments on study documents. Meet with the project team.	Their concerns should be mitigated.	Ongoing meetings. Provide with updates as study progresses. Provide with available background info or data requests. Follow-up with any identified concerns (if any).
- Transit Authorities								
Oakville Transit	Oakville Transit is a local public transit system provider. Oakville Transit is a Department of the Town of Oakville. Typically included on the mailing list for municipal transportation projects.	No noted impacts.	No noted impacts.	Undertaking will be successful if any identifed concerns are addressed/mitigated.	N/A	No noted involvement.	No noted concern.	Keep informed.
- Regional Government								
- Political representatives (i.e. council, mayors etc.)								
Mayor & Regional Councillor								Keep informed
- Technical representatives (i.e. Region staff etc.)								
Director of Planning and Economic Development								Keep informed
Director of Transportation and Works								
Manager Infrastructure Assets-Waste Wastewater								
General Manager Halton Region Transit								
Manager of Operations VIVA								
Director of Realty Services								
Director Infrastructure Planning								
Manager, Transit Systems Planning								
Halton Region District School Board	Typically included on the mailing list for Region transportation projects.	No noted impacts or none that cannot be mitigated.	No noted impacts.	N/A	N/A	No indication of involvement.	N/A	Keep informed.
Halton Catholic District School Board	Typically included on the mailing list for Region transportation projects.	No noted impacts or none that cannot be mitigated.	No noted impacts.	N/A	N/A	No indication of involvement.	N/A	Keep informed.
- Utilities								

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Affected Stakeholders								
Bell Canada	Typically included on the mailing list for Region transportation projects.	-	May affect existing utility locations.	-	Any concerns can be addressed through appropriate mitigation measures and discussions with representatives.	No noted involvement.	Identified issues (if any) that are not addressed.	Provide preliminary plans and ask for comments, when available. Ensure mitigation of concerns.
Oakville Hydro Electricity Distribution Inc	Typically included on the mailing list for Region transportation projects.	-	May affect existing utility locations.	-	Any concerns can be addressed through appropriate mitigation measures and discussions with representatives.	No noted involvement.	Identified issues (if any) that are not addressed.	Provide preliminary plans and ask for comments, when available. Ensure mitigation of concerns.
Cogeco Cable Solutions	Typically included on the mailing list for Region transportation projects.	-	May affect existing utility locations.	-	Any concerns can be addressed through appropriate mitigation measures and discussions with representatives.	No noted involvement.	Identified issues (if any) that are not addressed.	Provide preliminary plans and ask for comments, when available. Ensure mitigation of concerns.
Enbridge Gas	Typically included on the mailing list for Region transportation projects.	-	May affect existing utility locations.	-	Any concerns can be addressed through appropriate mitigation measures and discussions with representatives.	No noted involvement.	Identified issues (if any) that are not addressed.	Provide preliminary plans and ask for comments, when available. Ensure mitigation of concerns.
FCI Broadband	Typically included on the mailing list for Region transportation projects.	-	May affect existing utility locations.	-	Any concerns can be addressed through appropriate mitigation measures and discussions with representatives.	No noted involvement.	Identified issues (if any) that are not addressed.	Provide preliminary plans and ask for comments, when available. Ensure mitigation of concerns.
Hydro One Networks Inc.	Typically included on the mailing list for Region transportation projects.	-	May affect existing utility locations.	-	Any concerns can be addressed through appropriate mitigation measures and discussions with representatives.	No noted involvement.	Identified issues (if any) that are not addressed.	Provide preliminary plans and ask for comments, when available. Ensure mitigation of concerns.
Hydro One Telecom Inc.	Typically included on the mailing list for Region transportation projects.	-	May affect existing utility locations.	-	Any concerns can be addressed through appropriate mitigation measures and discussions with representatives.	Keep informed. Notify of any changes to the design for future comment.	Identified issues (if any) that are not addressed.	Provide preliminary plans and ask for comments, when available. Ensure mitigation of concerns.
Rogers Cable	Typically included on the mailing list for Region transportation projects.	-	May affect existing utility locations.	-	Any concerns can be addressed through appropriate mitigation measures and discussions with representatives.	No noted involvement.	Identified issues (if any) that are not addressed.	Provide preliminary plans and ask for comments, when available. Ensure mitigation of concerns.
Langley Utilities Contracting	Typically included on the mailing list for Region transportation projects.	-	May affect existing utility locations.	-	Any concerns can be addressed through appropriate mitigation measures and discussions with representatives.	No noted involvement.	Identified issues (if any) that are not addressed.	Provide preliminary plans and ask for comments, when available. Ensure mitigation of concerns.
Plantec Eng. (Bell Canada)	Typically included on the mailing list for Region transportation projects.	-	May affect existing utility locations.	-	Any concerns can be addressed through appropriate mitigation measures and discussions with representatives.	No noted involvement.	Identified issues (if any) that are not addressed.	Provide preliminary plans and ask for comments, when available. Ensure mitigation of concerns.

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Affected Stakeholders								
TransCanada. Natural Gas Pipelines	Typically included on the mailing list for Region transportation projects.	-	May affect existing utility locations.	-	Any concerns can be addressed through appropriate mitigation measures and discussions with representatives.	No noted involvement.	Identified issues (if any) that are not addressed.	Provide preliminary plans and ask for comments, when available. Ensure mitigation of concerns.
- Emergency Services								
Ontario Provincial Police, Chief of Police (William Grodinski)	Typically included on the mailing list for Region transportation projects.	No noted impacts or none that cannot be mitigated.	No noted impacts.	N/A	N/A	No indication of involvement.	N/A	Keep informed.
Town of Oakville Fire Chief, CEMF	Typically included on the mailing list for Region transportation projects.	No noted impacts or none that cannot be mitigated.	No noted impacts.	N/A	N/A	No indication of involvement.	N/A	Keep informed.
Town of Oakville Emergency Medical Services,	Typically included on the mailing list for Region transportation projects.	No noted impacts or none that cannot be mitigated.	No noted impacts.	N/A	N/A	No indication of involvement.	N/A	Keep informed.
Halton Region Police Department	Typically included on the mailing list for Region transportation projects.	No noted impacts or none that cannot be mitigated.	No noted impacts.	N/A	N/A	No indication of involvement.	N/A	Keep informed.
Halton Region Health Unit	Typically included on the mailing list for Region transportation projects.	No noted impacts or none that cannot be mitigated.	No noted impacts.	N/A	N/A	No indication of involvement.	N/A	Keep informed.
2.3 Opinion Leaders on the topic-undertaking								
- Interest groups								
First Nations	Typically included on the mailing list for Region transportation projects.	No noted impacts or none that cannot be mitigated.	No noted impacts.	N/A	N/A	No indication of involvement.	N/A	Keep informed.
3.0 Other								
3.1 Silent Majority								
3.2 Region Wide Beneficiaries								

Appendix A.3 – Stakeholder Mailing List

Title	First Name	Last Name	Position	Agency	Address 1	Address 2	City	Province	Postal Code
Mr.	Barry	Putt	Regional Manager, Navigable Waters Protection	Transport Canada - Marine Safety	100 Front Street South		Sarnia	ON	N7T 2M4
Ms.	Suzanne	Shea	Navigable Waters Protection Officer	Transport Canada	100 Front Street South		Sarnia	ON	N7T 2M4
Ms.	Monique	Mousseau	Regional Manager	Transport Canada	4900 Yonge Street	4th Floor	Toronto	ON	M2N 6A5
Ms.	Dana	Boyter	Fish Habitat Biologist, Southern Ontario District - Burlington Office	Fisheries and Oceans Canada	3027 Harvester Road	Suite 304	Burlington	ON	L7R 4K3
Mr.	Ron	DesJardine	District Manager	Fisheries and Oceans Canada	501 Towerhill Road	Unit 102	Peterboroug	ON	K9H 7S3
	Louise	Knox	Regional Director	Canadian Environmental Assessment Agency	55 St. Clair Avenue East	9th Floor	Toronto	ON	M4T 1M2
Mr.	Robert	Dobos	Manager	Environment Canada	867 Lakeshore Road		Burlington	ON	L7R 4A6
Mr.	Tom	Brankovic		Environment Canada Halton/Peel	1182 North Shore Blvd.		Burlington	ON	L7R 3Z9
Mr.	John	MacTaggart	Engineering & Environmental Services	Canadian National Railway	1 Administration Road	P.O. Box 1000	Concord	ON	L4K 1B9
Mr.	Pierre	Arsemault	General Manager ,System Operations - Intermodal	Canadian National Railway	1 Administration Road	P.O. Box 1000	Concord	ON	L4K 1B9
				NAV Canada	PO Box 3411	Station D	Ottawa	ON	K1P 5L6
Mr.	Dan	Francey	Manager, Transportation Planning and Development	GO Transit and Metrolinx	20 Bay Street	Suite 600	Toronto	ON	M5J 2W3
	Leslie	Woo	Vice President - Transportation Policy and Planning	Metrolinx	20 Bay Street	Suite 901	Toronto	ON	M5J 2N8
				Canadian Transportation Agency	15 Eddy Street	Jules Leger Building	Ottawa	ON	K1A 0N9
Superintendent	Al	Squires	Bureau Commander, Operational Policy and Support Bureau	Ontario Provincial Police	777 Memorial Avenue	3rd Floor	Orillia	ON	L3V 7V3
Ms.	Sheryl	Bennett	Manager, OPP Facilities Section	Ontario Provincial Police	777 Memorial Avenue	2nd Floor	Orillia	ON	L3V 7V3
	Tija	Dirks	Director of Growth Policy, Planning and Analysis	Ministry of Energy and Infrastructure	777 Bay Street	4th Floor	Toronto	ON	M5G 2E5
	Lisa	Myslicki	Environmental Coordinator, Professional Services	Ontario Realty Corporation	1 Dundas Street West	Suite 2000	Toronto	ON	M5G 2L5
Mr.	John	MacKenzie	Director, Non-Core Real Estate Development	Ontario Realty Corporation	1 Dundas Street West	Suite 2000	Toronto	ON	M5G 2L5
Mr.	Geoff	Woods	Senior Planner, Professional Services	Ontario Realty Corporation	1 Dundas Street West	Suite 2000	Toronto	ON	M5G 2L5
Ms.	Carol	Neumann	Rural Planner, Environmental and Land Use Policy	Ontario Ministry of Agriculture, Food and Rural Affairs	6484 Wellington Road 7		Elora	ON	N0B 1S0
Mr.	Steven	Strong	District Planner (Acting) - Aurora District	Ministry of Natural Resources	50 Bloomington Road West	RR 2	Aurora	ON	L4G 3G8
Ms.	Jackie	Burkart	Resource Management Technician - Aurora District	Ministry of Natural Resources	51 Bloomington Road West	RR 2	Aurora	ON	L4G 3G8
Mr.	Warren	May	Halton Area Biologist	Ministry of Natural Resources	51 Bloomington Road West	RR 2	Aurora	ON	L4G 3G8
Mr.	Tom	Farrell	Coordinator, Strategic Planning	Ministry of Natural Resources	51 Bloomington Road West	RR # 2, 3rd Floor	Aurora	ON	L4G 3G9
Mr.	Grant	Wedge		Ministry of Attorney General	720 Bay Street	8th Floor	Toronto	ON	M5G 2K1
Mr.	Roger	Hamner	Regional Director	Ministry of Transportation	1201 Wilson Avenue	Building "D", 7th Floor	Downsview	ON	M3M 1J8
Mr.	Richard	Yeung	Corridor Management Engineer	Ministry of Transportation	1201 Wilson Avenue	Building "D", 7th Floor	Downsview	ON	M3M 1J8
Mr.	Peter	Korpal	Manager, Traffic Office - Central Region	Ministry of Transportation	1201 Wilson Avenue	Building "D", 6th Floor	Toronto	ON	M3M 1J8
	Lija	Whittaker	Project Engineer - Advanced Traffic Management Section	Ministry of Transportation	1201 Wilson Avenue	Building "D", 6th Floor	Toronto	ON	M3M 1J8
Mr.	Jason	White	Head - Planning & Design	Ministry of Transportation	1201 Wilson Avenue	Building "D", 4th Floor	Toronto	ON	M3M 1J8
Ms.	Rina	Kulathinal	Head - Highway Engineering, Peel & Halton	Ministry of Transportation	1201 Wilson Avenue	Building "D", 4th Floor	Toronto	ON	M3M 1J8

Ms.	Tracy	Goodwin	District Manager (Acting), Halton-Peel District Health	Ministry of the Environment	4145 North Service Road	Suite 300	Burlington	ON	L7L 6A3
Mr.	Alex	Philips	Environmental Resource Planner/EA Coordinator - Air, Pesticides & Environmental Planning	Ministry of the Environment	5775 Yonge Street	8th Floor	North York	ON	M2M 4J1
Mr.	Ernie	Hartt	Planning Supervisor, Technical Support Services	Ministry of the Environment	4145 North Service Road	Suite 300	Burlington	ON	L7L 6A3
Ms.	Sarah	Paul	Manager, Global Air Issues	Ministry of the Environment	77 Wellesley St. W	10th Floor	Toronto	ON	M7A 2T5
Ms.	Barb	Slattery	Environmental Resource Planner/EA Coordinator	Ministry of the Environment	119 King Street West	12th Floor	Hamilton	ON	L8P 4Y7
Ms.	Cindy	Batista	Project Evaluator, Project Review Unit	Ministry of the Environment	2 St. Clair Avenue West	Floor 12A	Toronto	ON	M4V 1L5
Ms.	Wendy	Feldman		Ministry of Economic Development and Trade	900 Bay Street		Toronto	ON	M7A 2E1
Mr.	Micheal	Helfinger		Ministry of Economic Development and Trade	900 Bay Street		Toronto	ON	M7A 2E1
Ms.	Narenda	Shaw		Ministry of Health	201 City Centre		Mississauga	ON	L5B 2T4
Mr.	Bruce	Singbush	Director, Real Estate Policy Branch	Ministry of Energy and Infrastructure	777 Bay Street, 2nd Floor	4th Floor	Toronto	ON	M5G 2E5
Mr.	Victor	Doyle	Manager, Community Planning and Development	Ministry of Municipal Affairs and Housing, Central Municipal Services Office	777 Bay Street	2nd Floor	Toronto	ON	M5G 2E5
Ms.	Penny	Young	Heritage Planning, Culture Services Unit	Ministry of Culture, Programs and Services Branch	400 University Avenue	4th Floor	Toronto	ON	M7A 2R9
Mr.	Winston	Wong	Heritage Planning, Culture Services Unit	Ministry of Culture, Programs and Services Branch	400 University Avenue	4th Floor	Toronto	ON	M7A 2R9
Ms.	Catherine	Capella	Archaeological Review Officer	Ministry of Culture	400 University Avenue	4th Floor	Toronto	ON	M7A 2R9
Mr.	Chris	Hodgson	Management Board Secretariat	Constituency Office	14 Lindsey Street North		Lindsey	ON	K9V 1C5
Mr.	David	Cooper	Manager, Environmental & Land Use Policy	Ministry of Agriculture, Food, and Rural Affairs	1 Stone Road West	3rd Floor	Guelph	ON	N1G 4Y2
Mr.	Craig	White	Director, Highway Operations	407 ETR Concession Company	6300 Steeles Avenue		Woodbridge	ON	L4H 1J1
Mr.	Jeff	Booker	Highway Operations Officer	407 ETR Concession Company	6300 Steeles Avenue		Woodbridge	ON	L4H 1J1
Mr.	Imad	Nassereddine	Chief Traffic Operations Officer	407 ETR Concession Company	6300 Steeles Avenue		Woodbridge	ON	L4H 1J1
Mr.	Ed	De Grosbois	Director, Transportation & Works	City of Mississauga	3185 Mavis Road		Mississauga	ON	L5C 1T7
Mr.	Tom	AppaRao	Director, Transportation Planning	Region of Peel	10 Peel Centre Drive	Suita A, 6th Floor	Brampton	ON	L6T 4B9
Mr.	Bob	Edmondson	Director, Watershed Management	Conservation Halton	2596 Britannia Road West	RR 2	Milton	ON	L9T 2X6
Ms.	Jennifer	Lawrence	Manager, Environmental Planning	Conservation Halton	2596 Britannia Road West	RR 2	Milton	ON	L9T 2X6
Ms.	Leah	Smith	Environmental Planner	Conservation Halton	2596 Britannia Road West	RR 2	Milton	ON	L9T 2X6
Ms.	Elaine	Westerhof	Manager of Planning	Halton District School Board	2050 Guelph Line	Box 5005	Burlington	ON	L7R 3Z2
Ms.	Karen	Lacroix	Manager of Transportation	Halton District School Board	2050 Guelph Line	Box 5005	Burlington	ON	L7R 3Z2
Ms.	Marnie	Denton	Public Relations	Halton District School Board	2050 Guelph Line	Box 5005	Burlington	ON	L7R 3Z2
Mr.	Domenico	Renzella	Administrator of Planning, Assessment and Transportation	Halton Catholic District School Board	802 Drury Lane	Box 5308	Burlington	ON	L7R 4L3
Ms.	Sandra	Morgan	Transportation Manager, Planning, Assessment and Transportation	Halton Catholic District School Board	802 Drury Lane	Box 5308	Burlington	ON	L7R 4L3
Mr.	Alex	Duffield	Administrator of Facilities	Halton Catholic District School Board	802 Drury Lane	Box 5308	Burlington	ON	L7R 4L3

	Rasal	Skwarka	Supervisor, Regional Traffic Reconstruction	Halton Regional Police Service	1151 Bronte Road	Box 2700	Oakville	ON	L6M 3L1
Chief	Gary	Crowell	Police Chief	Halton Regional Police Service	P.O. Box 2700		Oakville	ON	L6J 5C7
Mr.	Greg	Sage	Acting Director of Land Ambulance Services	Halton Region Ambulance Services	1179 Bronte Road		Oakville	ON	L6M 3L1
Mr.	John	Pereira	Manager of Operations	Halton Region Emergency Medical Services	1179 Bronte Road		Oakville	ON	L6M 4G3
Ms.	Geza	Gaspardy	Senior Environmental Planner	Halton Ecological and Environmental Advisory Committee (EEAC)	1151 Bronte Road		Oakville	ON	L6M 3L1
Mr.	Stirling	Todd	Senior Planner	Halton Agricultural Advisory Committee (HAAC)	1152 Bronte Road		Oakville	ON	L6M 3L2
Mr.	Nathan	Stewart	Transportation Technician	Halton Regional Cycling Advisory Committee	1151 Bronte Road		Oakville	ON	L6M 3L1
Chief	Richard	Boyes	Fire Chief	Oakville Fire Department	125 Randall Street		Oakville	ON	L6J 1P3
Mr.	Tim	Dennis	Director of Transportation Services	Public Works	Region of Halton	1151 Bronte Road	Oakville	ON	L6M 3L1
Ms.	Maureen	Van Ravens	Manager of Transportation Planning & Roads Operations	Public Works	Region of Halton	1152 Bronte Road	Oakville	ON	L6M 3L2
Ms.	Melissa	Green-	Transportation Engineer	Public Works	Region of Halton	1153 Bronte Road	Oakville	ON	L6M 3L3
Mr.	David	Simpson	Manager of Water Planning Services	Public Works	Region of Halton	1157 Bronte Road	Oakville	ON	L6M 3L7
Mr.	John	Duong	Acting Manager Wastewater Planning	Public Works	Region of Halton	1159 Bronte Road	Oakville	ON	L6M 3L9
Mr.	Darnell	Lambert	Director of Engineering and Construction	Engineering and Construction	Town of Oakville	1225 Trafalgar Road, P.O. Box 310	Oakville	ON	L6J 5A6
Ms.	Dana	Anderson	Director of Planning Services	Planning Services	Town of Oakville	1225 Trafalgar Road, P.O. Box 310	Oakville	ON	L6J 5A6
Mr.	Chris	Mark	Director of Parks and Open Space	Parks and Open Space	Town of Oakville	1225 Trafalgar Road, P.O. Box 310	Oakville	ON	L6J 5A6
Councillor	Marc	Grant		The Corporation of the Town of Oakville	1225 Trafalgar Road		Oakville	ON	L6H 0H3
Councillor	Jeff	Knoll		The Corporation of the Town of Oakville	1225 Trafalgar Road		Oakville	ON	L6H 0H3
Mr.	Simon	Tam	Manager of Traffic Operations	The Corporation of the Town of Oakville	1225 Trafalgar Road		Oakville	ON	L6H 0H3
Mr.	Mark	Covert		The Corporation of the Town of Oakville	1225 Trafalgar Road		Oakville	ON	L6H 0H3
	Janis	Olbina		The Corporation of the Town of Oakville	1225 Trafalgar Road		Oakville	ON	L6H 0H3
Mr.	John	Sawyer	Executive Director	Oakville Chamber of Commerce	2521 Wyecroft Road		Oakville	ON	L6L 6P8
Mr.	Barry	Cole	Director of Transit Services	Transit Services	Town of Oakville	1140 South Service Road West	Oakville	ON	L6L 5T7
Ms.	Joanne	Pheonix		Oakville Transit	1225 Trafalgar Road		Oakville	ON	L6H 0H3
Ms.	Wendy	Botts		Bell Canada	20 Hunter Street West	6th Floor	Hamilton	ON	L8N 3H2
Ms.	Janice	Young	Manager - Right-Of-Way	Bell Canada F3 Section Green	100 Borough Drive		Scarborough	ON	M1P 4W2
Ms.	Amanda	McQuay	Manager of Implementation	Bell Canada	20 Hunter Street West	6th Floor	Hamilton	ON	L8N 3H2
Mr.	Tod	Whiteman		Cogeco Cable Systems	1200 Burloak Drive	P.O. Box 5076 Station	Burlington	ON	L7R 4S6
Ms.	Lyanne	Cane	Planning Co-ordinator	Cogeco Cable	695 Lawrence Road		Hamilton	ON	L8K 6P1
Mr.	Gary	McNeil	General Manager	GO Transit	20 Bay Street	Suite 600	Toronto	ON	M5J 2W2
Mr.	John	Blakely	Assistant Right-Of-Way Agent	Inter Provincial Pipeline Ltd.	801 Upper Canada Drive	P.O. Box 128	Sarnia	ON	N7T 7H8
Mr.	Jack	Hicks	Manager	Inter Provincial Pipeline Ltd.	801 Upper Canada Drive	P.O. Box 128	Sarnia	ON	N7T 7H8

Ms.	Angela	Burley		Microcell	20 Bay Street	Suite 1601	Toronto	ON	M5J 2N8
Mr.	Terry	Crawford	Director of Facilities and Infrastructure	Blink Communications	861 Redwood Square	P.O. Box 1900	Oakville	ON	L6J 5E3
Mr.	Dan	Steele	Director	Oakville Hydro Corporation	861 Redwood Square	P.O. Box 1900	Oakville	ON	L6J 5E3
Mr.	Wayne	Wood	Distribution Engineer	Oakville Hydro Electricity Distribution Inc., Electrical Services Division	861 Redwood Square	P.O. Box 1900	Oakville	ON	L6J 5E3
Mr.	Shane	Deugo	Distribution Engineering Technician	Ontario Hydro Customer Service - Central Territory	301 Mulock Drive		Newmarket	ON	L3Y 4X9
Mr.	Bob	Quick	Planner	Telus	82 Locus Street		Kitchener	ON	N2H 1W9
Ms.	Katherine	Lange		TransCanada Pipelines	11200 Weston Road	P.O. Box 790	Maple	ON	L6A 1S7
Mr.	Satish	Kumar	Coordinator - Crossing and Facilities	TransCanada Pipelines	45 Vogell Road	Suite 310	Richmond	ON	L4B 3P6
Mr.	Ken	McBride	Senior Right-of-Way Agent	TransCanada Pipelines	11200 Weston Road	P.O. Box 790	Maple	ON	L6A 1S7
Mr.	Enzo	Greco	Construction Project Team Lead	Union Gas	360 Strathearne Avenue, N	P.O. Box 10	Hamilton	ON	L8N 3A5
Mr.	Alfred	Roth	C.E.T.	Union Gas	360 Strathearne Avenue, N	P.O. Box 10	Hamilton	ON	L8N 3A5
Mr.	Carmelo	Tancioco	Manager, Special Projects	Enbridge Gas Distribution Inc.	500 Consumers Rd.	4th Floor	North York	ON	M2J 1P8
Mr.	Darrell	Dimitroff	Planning Team Manager	Rogers Cable T.V. Ltd.	3573 Wolfdale Road		Mississauga	ON	L5C 3T6
	Marian	Wright		Rogers Cable Communications	3573 Wolfdale Road		Mississauga	ON	L5C 3T7
Ms.	Riz	Tzimas	Crown Law Office – Civil, Aboriginal Legal Issues Office	Ministry of the Attorney General	720 Bay Street	8th Floor	Toronto	ON	M5G 2K1
Ms.	Pam	Wheaton	Director, Policy and Relationships Branch	The Ministry of Aboriginal Affairs	720 Bay Street	4th Floor	Toronto	ON	M5G 0H4
Mr.	Francois	Lachance	Senior Adviser, Aboriginal and Ministry Relationships Branch	Ontario Ministry of Aboriginal Affairs	160 Bloor St. E	9th Floor	Toronto	ON	M7A 2E6
Mr.	Martin	Rukavina	Adviser, Relationships	Ontario Ministry of Aboriginal Affairs	160 Bloor St. E	9th Floor	Toronto	ON	M7A 2E6
Mr.	Don	Boswell	Senior Claims Analyst, Ontario Research Team, Specific Claims Branch	Department of Indian and Northern Affairs	10 Wellington Street	Room 1310	Gatineau	QU	K1A 0H4
Mr.	Fred	Hosting	Senior Claims Analyst, Specific Claims Branch	Department of Indian and Northern Affairs	10 Wellington Street	Room 1310	Gatineau	QU	K1A 0H4
Ms.	Nicole	Cheechoo	Policy Analyst, Comprehensive Claims Branch, Treaties and Aboriginal Government	Department of Indian and Northern Affairs	10 Wellington Street	8th Floor	Gatineau	QU	K1A 0H4
Mr.	Kevin	Clement	Claims East of Manitoba, Comprehensive Claims Branch	Department of Indian and Northern Affairs	10 Wellington Street	Room 1310	Gatineau	QU	K1A 0H4
Mr.	Franklin	Roy	Director, Litigation Portfolio Operations East, Litigation Management and Resolution Branch	Department of Indian and Northern Affairs	10 Wellington Street	Room 1310	Gatineau	QU	K1A 0H4
	Environment Unit		Re: Environmental Assessment Coordination	Department of Indian and Northern Affairs	25 St. Clair Avenue East	8th Floor	Toronto	ON	M4T 1M2
Mr.	Richard	Saunders	Director-Negotiations	Negotiations Branch	Ontario Secretariat for Aboriginal Affairs	720 Bay Street, 4th Floor	Toronto	ON	M5G 2K1
Chief	James R.	Marsden		Alderville First Nation	PO Box 46 R.R. #4		Roseneath	ON	K0K 2X0
Chief	Tracy	Gauthier		Mississaugas of Scugog Island	22521 Island Road		Port Perry	ON	L9L 1B6
Chief	Bryan	La Forme	C/O Ms. Margaret Sault	Mississaugas of the New Credit	RR #6	2789 Mississauga Road	Hagersville	ON	N0A 1H0
Grand	Thompson	Dooley		Mohawks of Akwesasne	Mohawk Council of Akwesasne	PO Box 579	Cornwall	ON	K6H 5TE
Chief	Joel	Abram		Oneida Nation of the Thames	2212 Elm Avenue		Southwold	ON	N0L 2G0
Sub-Chief	Leroy	Hill		Six Nations Haudenosaunee Confederacy Council	R.R. #2		Ohsweken	ON	N0A 1M0

Chief	Donald R.	Maracle		The Mohawks of the Bay of Quinte	Box 98, 48B Bayshore Road	Tyendinaga	Mohawk	ON	K0K 1X0
Chief	Blaine	Commandant		Wahta Mohawks	Wahta Mohawk Territory	Box 260	Bala	ON	P0C 1A0
Chief	Laurie	Carr		Hiawatha First Nation	123 Paudash Street, R.R. #2		Keene	ON	K0L 2G0
Chief	Keith	Knott		Curve Lake First Nation	22 Winookeeda Road		Curve Lake	ON	K0L 1R0
Chief	Rodney	Monague Jr.		Beausoleil First Nation	1 Ogema Street		Christian	ON	L0K 1C0
Chief	William K.	Montour		Six Nations of the Grand River Territory	P.O. Box 5000		Ohsweken	ON	N0A 1M0
Chief	Sharon	Henry		Chippewas of Mnjikaning First Nation (Rama)	5884 Rama Road	Suite 200	Rama	ON	L0K 1T0
Ms.	Karry	Sandy-McKenzie	Coordinator for Williams Treaties First Nations		8 Creswick Court		Barrie	ON	L4M 2J7
Chief	Barron	King		Moose Deer Point First Nation	3719 Twelve Mile Bay Road	P. O. Box 119	Mactier	ON	P0C 1H0
Mr.	David	Donnelly	Representative	Founding First Nation Circle	49 Wellington St East		Toronto	ON	M5E 1C9
Mr.	Tony	Belcourt	President	Metis Nations of Ontario	500 Old St Patrick St.	Unit 3	Ottawa	ON	K1N 9G4
Mr.	Allan	Dokis	Intergovernmental Affairs Director	Union of Ontario Indians	P.O. Box 711		North Bay	ON	P1B 8J8
Ms.	Rolanda	Elijah	Director of Intergovernmental Affairs	Association of Iroquois & Allied Indians	387 Princess Avenue		London	ON	N6B 2A7
Mr.	Tom	Kotarac		In2ition Marketing Insights	33 Pearl Street	Suite 200	Mississauga	ON	L5M 1X1
Mr.	Dan	Cherepacha	Mattamy Development	Read Voorhees and Associates	2 Duncan Mill Road	Suite 201	Toronto	ON	M3B 1Z4
Ms.	Melissa	Plati	Development Co-ordinator	Trinison Management Corporation	8600 Dufferin Street		Vaughan	ON	L4K 5P5
Mr.	Paul	Brown		Urbantech Consulting	25 Royal Crest Court	Suite 201	Markham	ON	L3R 9X4
Mr.	Francois	DiGiovanni			1351 Falgarwood Drive		Oakville	ON	L6H 2P4

Appendix A.4 – Notice of Study Commencement and Newspaper Advertisement

OAKVILLE

NOTICE OF STUDY COMMENCEMENT

Municipal Class Environmental Assessment Study for Improvements of Sixth Line from Dundas Street to Highway 407 (ETR)

The Study

The Town of Oakville has initiated a Class Environment Assessment (EA) for improvements to Sixth Line from Dundas Street to Highway 407 (ETR), see map. In order to best address operational deficiencies and the need for additional north-south transportation capacity in the area, a number of alternatives will be examined as part of the study including the potential widening of Sixth Line to four lanes, cross-sectional elements, intersection improvements and traffic operations, and the overall impact of improvements on the social, cultural and natural environments.

The Process

This notice indicates the commencement of the Class Environmental Assessment, a study which will define the problem, identify and evaluate alternative solutions, and determine a preferred design in consultation with regulatory agencies and the public. The study is being carried out in accordance with the planning and design process for Schedule 'C' projects as outlined in the *Municipal Class Environmental Assessment* (October 2000, as amended in 2007), which is approved under the Ontario Environmental Assessment Act.

This Study will satisfy Phases 1 to 4 (need and justification, alternative solutions, alternative designs and Environmental Study Report) of the Class EA process for Sixth Line from Dundas Street to Highway 407 (ETR).

A key component of the study will be consultation with interested stakeholders (public and agencies). Two Public Information Centres (PICs) will be held to present the project, review the study scope and discuss issues related to the project including alternative solutions, alternative designs, evaluation criteria, and environmental impacts and mitigation measures. Details regarding the forthcoming PICs will be advertised as the study progresses. Upon completion of the study, an Environmental Study Report (ESR) will be prepared and made available for public review and comment.

It is expected this study will be completed by the end of May 2013. Project updates will be provided through the Town's website at www.oakville.ca

Comments Invited

If you have any questions or comments regarding the study, or wish to be added to the study mailing list, please contact either of the following project team members:

Dale Lipnicky, C.E.T.
Project Leader – Capital Projects
Engineering and Construction
Town of Oakville
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Email: DLipnicky@oakville.ca

Peter C. Wong, P.Eng.
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235 Yorkland Boulevard, Suite 600
Toronto, Ontario M2J 1T1
Phone: 416-499-3110 ext. 1338
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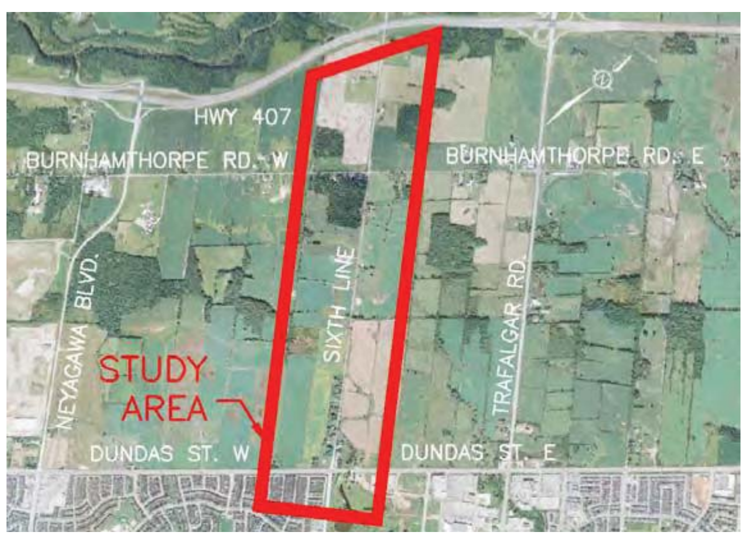


Information will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

This notice first issued on July 4, 2012.

Organ donor group reaching out to Oakvillians

A group of local residents and politicians is challenging Oakvillians to be organ donors and save lives.

The group, which includes organ donation recipient Jennifer Malabar, Oakville MPP Kevin Flynn, Ward 2 Councillor Pam Damoff and Julie Pehar, whose family faced the painful decision to donate the organs of a loved one; last week announced the launch of the 'Oakville Be a Donor' campaign.

"As someone who has benefitted from the generosity of my husband's donation of his kidney, my life has been forever changed because of organ donation," said Malabar.

"Statistics show most people have no issue with organ donation, they just haven't gotten around to registering. We want to raise awareness and make it easy for people to register."

Damoff said for many people, it is difficult to talk to their loved ones about their wishes concerning organ donation, which is something she hopes the group can change.

"Organ donation saves lives — it is that simple," she said. "The more we talk about it, the more people will register."

The group was at the recent Carousel of Nations in Kerr Village as part of Flynn's booth, Canada Day festivities in Bronte and will be at Midnight Madness in downtown Oakville July 20.

Flynn said the Ontario government has made it a priority to bring awareness to the importance of organ donation.

He pointed out the Gift of 8 Movement was started in April to challenge people to improve the rate of organ donation.

Currently only 28 per cent of Oakville residents have registered as organ donors online.

"I am challenging each resident to talk to their loved ones about their wishes, and then register online. People like Jennifer show us all how important organ donation is and that lives can be saved," said Flynn.

While many people have signed their drivers' licences, Trillium Gift of Life advises it is preferable to register online stating it takes only minutes and ensures that one's wishes are known.

The group pointed out that often a driver's licence will not be readily available at the critical moment when a decision needs to be made.

"When families are thrust into making a decision about organ and tissue donation within moments of losing their loved one, it is helpful if you've had a conversation about donation at some point before. It is also an amazing legacy to uphold when you are told your loved one is a registered donor and wanted to donate when they died," said Pehar.

"Most families feel really good about honouring this wish and it can be a small bit of goodness that happens at a devastating moment."

Oakville residents can register as part of the Oakville challenge by visiting www.beadonor.ca/campaign-532.

Residents can follow the Oakville Be A Donor campaign on Twitter (@OakBeADonor) or go to www.beadonor.ca.

Notice of Study Commencement

Municipal Class Environmental Assessment Study for Improvements of Sixth Line from Dundas Street to Highway 407 (ETR)

The Town of Oakville has initiated a Class Environment Assessment (EA) for improvements to Sixth Line from Dundas Street to Highway 407. In order to best address operational deficiencies and the need for additional north-south transportation capacity in the area, a number of alternatives will be examined as part of the study including the potential widening of Sixth Line to four lanes, cross-sectional elements, intersection improvements and traffic operations, and the overall impact of improvements on the social, cultural and natural environments.

The study has now begun and will define the problem, identify and evaluate alternative solutions, and determine a preferred design in consultation with regulatory agencies and the public. The study is being carried out in accordance with the planning and design process for Schedule 'C' projects as outlined in the *Municipal Class Environmental Assessment* (October 2000, as amended in 2007), which is approved under the Ontario Environmental Assessment Act. This study will satisfy Phases 1 to 4 (need and justification, alternative solutions, alternative designs and Environmental Study Report) of the Class EA process for Sixth Line from Dundas Street to Highway 407 (ETR).

A key component of the study will be consultation with interested stakeholders. Two Public Information Centres (PICs) will be held to present the project, review the study scope and discuss issues related to the project including alternative solutions, alternative designs, evaluation criteria, and environmental impacts and mitigation measures. Details regarding the PICs will available on the town's website and published in the local newspaper as the study progresses. Upon completion of the study, an Environmental Study Report (ESR) will be prepared and made available for public review and comment.

It is expected this study will be completed by the end of May 2013. Project updates will be provided through the town's website at www.oakville.ca

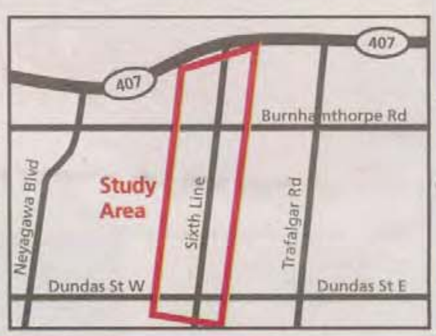
If you have any questions or comments regarding the study, or wish to be added to the study mailing list, please contact either of the following project team members:

Dale Lipnicky, C.E.T., Project Leader – Capital Projects, Engineering and Construction, Town of Oakville, 1225 Trafalgar Road, Oakville, ON L6H 0H3. Tel: 905-845-6601, ext. 3326. Fax: 905-338-4159. dlipnicky@oakville.ca

Peter C. Wong, P.Eng., Manager, Municipal Transportation, Morrison Hersfield Limited, 235 Yorkland Boulevard, Suite 600, Toronto, Ontario M2J 1T1. Tel: 416-499-3110, ext. 1338. Fax: 416-499-9658. pcwong@morrisonhershfield.com

Information will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

This notice first issued on July 4, 2012.



Chamber teams up with community for clean up

The Oakville Chamber of Commerce, Tim Horton's and the Kerr Village BIA are joining forces to take care of the community at the Fourth Annual Environmental Awareness Day on July 7 at the Cross Avenue Tim Horton's.

"It is so rewarding to see how this grassroots event has expanded with more partners and volunteers to assist us with such a worthwhile cause," said Wendy Rinella, Chair of the Oakville Chamber of Commerce. "Raising awareness about recycling and greener living as well as participating in a neighbourhood clean-up benefits us all."

Along with the Chamber, Tim Horton's and Kerr Village BIA, the Home Depot Children's Workshop, M&M Meat Shops, Gear for Tech and Shred-It will be donating proceeds from the day to Big Brothers Big Sisters of Halton.

The event will be host to a community clean up, confidential document shredding, electronic recycling, children's activities, entertainment, raffle and local vendors with green exhibits. Those who sign up as a volunteer for the community clean up will receive a complimentary t-shirt, BBQ and refreshments.

Registration begins at 11:30 am, with the event running from 12 to 2 pm.

Last month the Oakville Chamber of Commerce held its official grand opening of their new office at 700 Kerr Street. Participating in the ribbon cutting are, from left, Ward 2 Town Councillor Pam Damoff, Oakville Chamber of Commerce President John Sawyer, Oakville Mayor Rob Burton, Oakville Chamber of Commerce Chair Wendy Rinella, Oakville Chamber of Commerce Past Chair Mark Brown and Ward 2 Town and Regional Councillor Kathy Duddeck.

Photo by Ian Holroyd

OAKVILLE

www.oakville.ca

www.facebook.com/townofoakville @townofoakville

treat your ash tree

Take action now to protect our tree canopy from the Emerald Ash Borer

What is the Emerald Ash Borer?
The Emerald Ash Borer (EAB) is an invasive insect that attacks and kills ash trees. Every ash tree in Oakville is at risk.

What can I do?
Take action now to protect your private ash trees. Contact a certified arborist to assess whether your ash tree can be treated. Infected trees will die within one to three years if left untreated, and signs of the insect are often invisible until it's too late. Treatments are most effective if administered before August.

For information, like us on Facebook and follow us on Twitter, visit www.oakville.ca, or email us at canopyclub@oakville.ca.

Oakville Canopy Club
OakCanopyClub

Notice of Study Commencement

Municipal Class Environmental Assessment Study for Improvements of Sixth Line from Dundas Street to Highway 407 (ETR)

The Town of Oakville has initiated a Class Environment Assessment (EA) for improvements to Sixth Line from Dundas Street to Highway 407. In order to best address operational deficiencies and the need for additional north-south transportation capacity in the area, a number of alternatives will be examined as part of the study including the potential widening of Sixth Line to four lanes, cross-sectional elements, intersection improvements and traffic operations, and the overall impact of improvements on the social, cultural and natural environments.

The study has now begun and will define the problem, identify and evaluate alternative solutions, and determine a preferred design in consultation with regulatory agencies and the public. The study is being carried out in accordance with the planning and design process for Schedule 'C' projects as outlined in the *Municipal Class Environmental Assessment* (October 2000, as amended in 2007), which is approved under the Ontario Environmental Assessment Act. This study will satisfy Phases 1 to 4 (need and justification, alternative solutions, alternative designs and Environmental Study Report) of the Class EA process for Sixth Line from Dundas Street to Highway 407 (ETR).

A key component of the study will be consultation with interested stakeholders. Two Public Information Centres (PICs) will be held to present the project, review the study scope and discuss issues related to the project including alternative solutions, alternative designs, evaluation criteria, and environmental impacts and mitigation measures. Details regarding the PICs will available on the town's website and published in the local newspaper as the study progresses. Upon completion of the study, an Environmental Study Report (ESR) will be prepared and made available for public review and comment.

It is expected this study will be completed by the end of May 2013. Project updates will be provided through the town's website at www.oakville.ca

If you have any questions or comments regarding the study, or wish to be added to the study mailing list, please contact either of the following project team members:

Dale Lipnicky, C.E.T., Project Leader – Capital Projects, Engineering and Construction, Town of Oakville, 1225 Trafalgar Road, Oakville, ON L6H 0H3. Tel: 905-845-6601, ext. 3326. Fax: 905-338-4159. dlipnicky@oakville.ca

Peter C. Wong, P.Eng., Manager, Municipal Transportation, Morrison Hersfield Limited, 235 Yorkland Boulevard, Suite 600, Toronto, Ontario M2J 1T1. Tel: 416-499-3110, ext. 1338. Fax: 416-499-9658. pcwong@morrisonhershfield.com

Information will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

This notice first issued on July 4, 2012.

Newman murdered by estranged husband: police

By David Lea
OAKVILLE BEAVER STAFF

After nearly six months of investigation, Halton homicide officers announced Friday, they have concluded their investigation into the death of Oakville resident Katherine Newman and confirmed her estranged husband, Kyle Newman, murdered her.

Katherine, 43, was found stabbed to death in her Treetop Terrace residence on Jan. 12.

At about the same time, Kyle, 43, was fatally shot by Halton Regional Police after he charged officers with a knife in his hand at the police station at 95 Oak Walk Dr.

Detective Sergeant John Mans of the Halton Regional Police Service Homicide Unit said the Jan. 12 events could be characterized fairly as an incident of murder/suicide.

"Obviously there were some family issues that have already been alluded to, but as to what happened that day between the two of them, I wouldn't be able to comment. I could guess... so could you, but it would only be a guess."

Detective Sergeant John Mans, Halton Regional Police Service Homicide Unit

"I don't know what else you would call it," he said.

Mans said Kyle had always been a suspect in Katherine's death, but pointed out that a significant portion of the investigation could not begin until the Special Investigations Unit (SIU), which was investigating Kyle's death, concluded its investigation.

That investigation was completed in April with SIU Director Ian Scott determining the officers involved in Kyle's shooting were justified in their actions as they had reasonable grounds to believe they would be seriously harmed or killed if they did not act.

The SIU is an arm's length agency that investigates reports involving police where there has been death, serious injury or allegations of sexual assault.

After the SIU investigation was complete, Mans said Halton police were further able to investigate Katherine's death by processing exhibits and evidence collected during the independent SIU investigation.

A subsequent examination of evidence gathered from Kyle and his vehicle, in addition to other investigative findings have brought homicide detectives to the conclusion that Kyle was responsible for the stabbing death of Katherine.

Katherine Newman

Mans would not say exactly what the evidence was that conclusively pointed to Kyle as being responsible for Katherine's death, noting only that statements and forensics were collected during the investigation.

Mans also said he could not provide an exact motive for Katherine's murder.

"Without the two of them here, it is hard for us to say," he said.

"Obviously there were some family issues that have already been alluded to, but as to what happened that day between the two of them, I wouldn't be able to comment. I could guess... so could you, but it would only be a guess."

Halton Police Deputy Chief Bob Percy said the circumstances surrounding Katherine and Kyle's deaths have greatly affected the Oakville community.

Percy called it a tragic situation that touched many lives.

"Hopefully the completion of the investigation will bring a measure of closure," he said.

"Our thoughts remain with their families."

The Newmans are survived by their three young sons, Thomas, Joshua and James.

Appendix A.5 – PIC #1 Summary Report

TOWN OF OAKVILLE

SIXTH LINE FROM DUNDAS STREET
TO HIGHWAY 407 ETR
CLASS ENVIRONMENTAL ASSESSMENT STUDY
TOWN OF OAKVILLE PROJECT NO. EA-067-11

PUBLIC INFORMATION CENTRE #1 SUMMARY REPORT

MORRISON HERSHFIELD LIMITED
235 YORKLAND BOULEVARD, SUITE 600
TORONTO, ONTARIO, M2J 1T1
TEL: (416) 499-3110
FAX: (416) 499-9658

FEBRUARY 1, 2013

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1 PROJECT INTRODUCTION

The Town of Oakville is conducting a Class Environmental Assessment (EA) study for improvements to Sixth Line between Dundas Street to Highway 407 ETR as shown in **Figure 1**. In order to best address operational deficiencies and the need for additional north-south transportation capacity in the area, a number of alternatives will be examined as part of the study. The study alternatives will include the potential widening of Sixth Line from two lanes to four lanes with the appropriate turning lanes at intersections, cross-sectional elements, intersection improvements, and transit improvements.

The study will review and confirm the need for improvements to the corridor and assess alternative solutions, including an evaluation of potential environmental impacts. Upon completion of the study, an Environmental Study Report (Phase 4 of the Study) will be filed for public review.

A key component of the study will be consultation with interested stakeholders (public and agencies) at Public Information Centres (PICs). The purpose of the PIC is to obtain public input after reviewing the problem being addressed, background information, the alternative solutions and designs being considered, and identifying a preliminary preferred solution and design.

The study is being carried out in accordance with the planning and design process for Schedule 'C' projects as outlined in the *Municipal Class Environmental Assessment* (October 2000, as amended in 2011), which is approved under the *Ontario Environmental Assessment Act*.

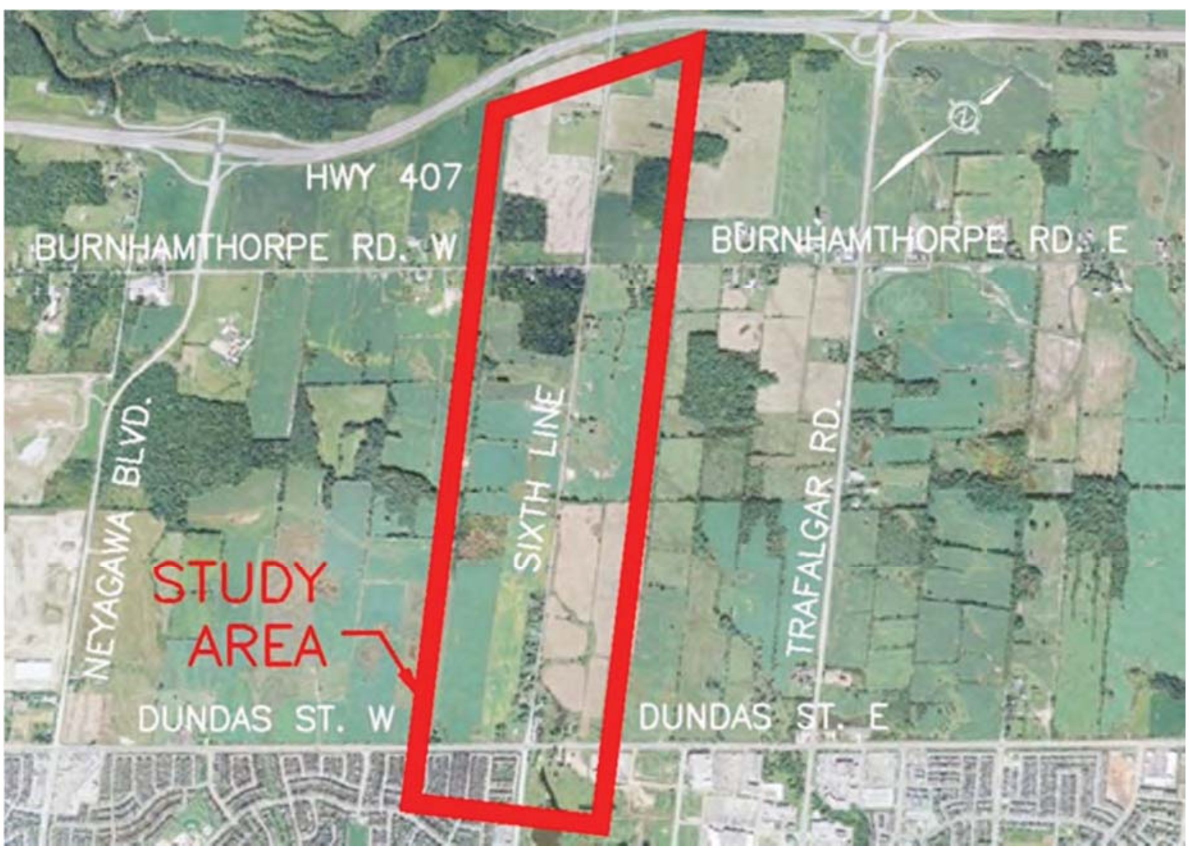

Figure 1 – Study Area Key Plan

2 NOTIFICATIONS

2.1 Public Notification

The public was notified of the PIC #1 for Sixth Line from Dundas Street to Highway 407 by:

- Advertisements that were published in the local newspaper.
- Notices were sent by mail by prior to the PIC to all stakeholders and agencies according to the project mailing list. A copy of the Notice of Public Information Centre #1 is shown in **Appendix A**.
- Online via the Town of Oakville website at www.oakville.ca

2.2 Agencies /Organizations

Notices were sent to relevant agencies on the initial agency list. Contacts from the Municipal, Provincial and Federal government agencies as well as First Nations were also notified about the Study and PICs.

3 PUBLIC INFORMATION CENTRE

A Public Information Centre was arranged for Sixth Line from Dundas Street to Highway 407 ETR (PIC #1). The Public Information Centre was held in the Trafalgar Room at the Oakville Townhall, 1225 Trafalgar Road, Oakville on Tuesday, December 4th, 2012, from 6:00pm to 8:00pm.

The presentation boards for PIC #1 were organized to provide an opportunity for the public to review the problem being addressed, background information, the alternative solutions being considered, evaluation of alternative solutions and identifying a preliminary preferred solution. Comment sheets were provided to members of the public who attended to write comments on display boards.

In total 25 members of public had attended the Public Information Centre for Sixth Line. The Public who attended the PIC were asked to fill the sign-in sheet and to provide comments on comment sheet. A sample comment sheet is presented in **Appendix B**.

4 SIXTH LINE FROM DUNDAS STREET TO HIGHWAY 407 ETR

4.1 Material Presented

The presentation boards for Sixth Line from Dundas Street to Highway 407 ETR are available online at http://www.oakville.ca and in **Appendix C**.

The presentation material includes details on:

- Purpose of the Public Information Centre #1
- Study Purpose
- Objectives of the Study
- Municipal Class EA Process in Ontario
- Study Area

- Study Background – Town's Official Plan "Livable Oakville (2009)" – Road Hierarchy
- Study Background – North Oakville East Secondary Plan (2008) – Land Use
- Study Background – North Oakville East Secondary Plan (2008) – Network Improvements
- Study Background – North Oakville East Secondary Plan (2008) – Transit Improvements
- Study Background – Active Transportation Master Plan (2009) – Recommended Cycling and Transit Network
- Existing Natural Environment Conditions
- Existing Cultural and Built Heritage Conditions
- Existing Archaeological Conditions
- Noise Analysis and Stormwater Management Study
- Needs Assessment – PM Peak Hour Link Performance – Existing and Future (Do Nothing)
- Needs Assessment – PM Peak Hour Intersection Capacity Analysis – Existing (2012) and Future (2031)
- Problem/Opportunity Statement
- Alternative Planning Solutions
- Evaluation Criteria
- Assessment and Evaluation of Alternative Planning Solutions
- Preliminary Preferred Solution
- Next Steps

Members of public were assisted by the Town of Oakville staff and Morrison Hershfield staff to understand the EA process.

Feedback was solicited at the PIC from the participants either in-person or by providing a comment sheet. Participants at the PIC had the choice of submitting their comment sheet via a "comment box" or by mailing the comment sheet to the consultant. Any comments received, except for personal information, would be kept as public record. The comments are summarized below. The completed comment sheets, excluding personal information, are included in **Appendix D**.

4.2 Comments

The PIC provided the public with the opportunity to express their comments and concerns regarding the progress of the project and the presented preliminary preferred solution. In total, 6 comment sheets were collected by drop-in, and email by the deadline date of December 18th, 2012. A summary of the received comments and responses is shown in **Table 1.** The responses can also be found in **Appendix E**.

Table 1 – Summary of PIC #1 Comments and Responses

Item #	Comments	Responses
1	1. Please ensure on-road bike lanes are installed along the whole length of Sixth Line included in the project.	Transportation Demand Initiatives including the provision of 1.5m on-street bike lanes will be carried forward as part of the preferred solution. Pavement layout section will be presented in PIC#2, which is currently scheduled to take place in Spring 2013.
	2. Please liaise with the Town of Milton to ensure that they also widen Sixth Line and install bike lanes north of 407 up to Steeles.	The study area boundary is located to the south of Highway 407 ETR. Improvements to the north of Highway 407 ETR are outside the scope of this environmental assessment.
	3. Please install traffic circles/roundabouts at all junctions along Sixth Line not additional traffic lights. Traffic circles do not need to be large in diameter – can only be a few feet in diameter (see UK practice). Traffic circles smooth out the traffic flow, save on gas wasted idling at lights and save on driver frustration.	Further topographic and legal survey work is currently being undertaken by the Town of Oakville to confirm the available right-of-way within the vicinity of the intersections. If the roundabouts could be installed within the existing right-way or with minimum impacts to the adjacent properties while addressing all traffic problems for the future conditions, then the roundabout option may be considered as an alternative. The completed evaluation will be presented in PIC#2 which is currently scheduled for spring 2013. The alternative design concepts will be evaluated based on the design criteria established for this EA study.
2	I think the Town of Oakville should digitally document the last of the Region's agricultural/rural area's transition to pure suburb. I'm picturing something like Google Streetview except that you would be able to click forward and backwards through time as well as space. If you traced	Comment Noted. This undertaking falls outside of the scope of the Environmental Assessment for improvements to Sixth Line from Dundas Street to Highway 407 ETR.

Item #	Comments	Responses
	the same route down Sixth Line with a camera two or three times a year for ten to fifteen years, a digital archive could be compiled for citizens (present and future) to see a time lapse of a suburb's creation for rural lands.	
3	We are owners of 3043 Sixth Line and are concerned about the road widening of Sixth Line. We understand that it will be widened and that's fine; just concerned of how much land will be taken off our property.	Your particular concerns will be taken into consideration while developing the alternative design concepts. The alternative solutions and the preferred design concepts for the preferred solution will be developed and presented in PIC#2. The PIC#2 is currently scheduled to take place in the spring of 2013. All efforts will be made to minimize loss of property.
4	1. 6th line is a very well used north-westerly route by cyclists. It is one of only 3 "safe" north-westerly routes out of urban Oakville. Therefore how this section of roadway is improved will be of prime interest to many people.	Comment Noted.
	2. For the record the Oakville Cycling Club has more than 200 members in 2012, many of which use 6th line.	Comment Noted.
	3. Present experiences while cycling on the section of 6th line between Dundas and Burnhamthope is with motor vehicles travelling at or above the present 80 km/h speed limit, particularly southbound. The paved portion is narrow making it difficult for vehicles to overtake a cyclist (providing a 1 metre clearance) when an oncoming vehicle is approaching.	Transportation Demand Initiatives including the provision of 1.5m on-street bike lanes has been carried forward as part of the study. Additionally, the existing rural section will be converted to urban section which will also include 1.5m sidewalks. The proposed roadway typical section will be presented in the PIC#2. PIC#2 is currently scheduled to take place in spring 2013.

Item #	Comments	Responses
	4. Traffic calming measures are required, either 'rumble Strips' or 'round-abouts' at intersections. Traffic lights also work but too many in short sections of roadway can cause frustrations to vehicle operators.	Intersection improvements have been carried forward as part of phase 1 of the Class EA. Further topographic and legal survey work is currently being undertaken by the Town of Oakville to confirm available right-of-way within the vicinity of the intersections. If the roundabouts could be installed within the existing right-way while addressing all traffic problems for the future conditions, then further evaluation of roundabout option may be considered for traffic calming. The alternative design concepts will be evaluated based on the design criteria established for this EA study. The PIC#2 is currently scheduled to take place in spring of 2013.
	5. With reference to the North Oakville East Secondary Plan (2008) - Land Use figure that was reproduced and displayed at the Open House on Dec 4, 2012, my comments are:- 5a) It is noted that there could be up to 5 intermediate intersections between Dundas and the present Burnhamthorpe Road and additional 2 more between Burnhamthorpe and the 407. 5b) One of the displays indicates that in the future (2031) these intersections would be controlled via traffic lights and verbally I recall that they would be co-ordinated to work together. A major concern when any road has many traffic signals placed close together (co-ordinated or not) they tend to promote speeding in order that the vehicle operator does not get caught at the next light. I would ask that traffic calming measures be employed as identified in 4	See response to comment#4.

Item #	Comments	Responses
	above at some of these intersections. 5c) It is recognized that 'round-abouts' are new to this area but work well in Britain and Continental Europe. The one recently built on Tremaine Road, Milton is well designed and appears to work well.	
	6. If active transportation is to be taken into consideration for the renovation of 6th Line, then the minimum expectation would be a 1.5 metre wide identified section with a continuous painted line on both sides of the road. It has been proved in other parts of Ontario that where such delineation has been made the life expectancy of the vehicle travelled section last longer due to the edges not breaking away.	Transportation Demand Initiatives including the provision of 1.5m on-street bike lanes has been carried forward as part of the study. Additionally, the existing rural section will be converted to urban section which will also include 1.5m sidewalks. The proposed roadway typical section will be presented in the PIC#2. PIC#2 is currently scheduled to take place in spring 2013.
	7. Any drainage should be via slots in the vertical part of the curb into catch-basins thus eliminating cast drain covers which tend to sink with time. A good example is to be found on McCraney Street west of Trafalgar Road.	Preliminary storm water management (SWM) will be conducted during the next phases of the study. The SWM study will be completed in accordance with the applicable standards and will satisfy the requirements of the Town of Oakville and Conservation Halton. The selection of drainage structure type will be determined during the detailed design phase.
5	1. The effect of noise and vibration from the increased and closer traffic patterns is of particular concern. Anything that can be done to minimize or ameliorate the noise and vibration will be welcome.	A noise assessment study will be undertaken as part of Class EA to evaluate existing and future noise levels within the proposed corridor. If the noise level after the improvements is not within the acceptable range, noise mitigation measures alternatives will be developed in accordance with the current applicable standards and guidelines. Further discussion will take place with the Church's representative prior implementation of the preferred solution.

Item #	Comments	Responses
	2. We are also concerned about the potential loss of property along Sixth Line. Loss of any parking spots because of actions by the Region or Town would be a major problem as we cannot expand the parking areas to the east because of environmental constraints due to the creek and related setback requirements.	The Town of Oakville currently working on completing the topographic and legal survey for the project, upon review of the survey, we will re-evaluate the proposed roadway section and its impact on the right-of-way. The roadway section presented in the PIC#1 was developed to address future traffic conditions. All efforts will be made to minimize loss of property.
	3. Safety has been a key consideration in our discussions with the Region because of the use of our facilities seven days by week. Particularly we have concerns about the lack of a traffic lane from Dundas onto Sixth Line and subsequently access into Munn's Church. The proposed plans may also impact signage for the church. For your information the Region has already developed draft plans for the entranceways into Munn's. Your study should probably review these draft plans.	As per response#2, during the next phases of the study, we will further evaluate the intersection layout which will include the length and the width of the right and left turn lanes. The lanes arrangement at the subject intersection will be finalized based on the completed traffic study for the future conditions. Regarding the existing signs within the Church right-of-way, based on selected preferred solution, the signs locations will be evaluated. If the existing signs are located within the clear zone (the offset necessary to address Roadside Safety guidelines), then new locations for the signs will be proposed and reviewed with the Church's representations. However, the exact locations will be determined during the detailed design phase.
	4. We certainly hope that the Region and Town are coordinating their plans for the intersection of Dundas and Sixth Line, especially as they relate to the daylighting triangle on the northeast corner, and for general safety matters.	The improvements to the Dundas Street/Sixth Line intersection will be coordinated with Halton Region, Approval Agencies and other Stakeholders.

Item #	Comments	Responses
	5. The cumulative and continuing effect of construction in the surrounding vicinity is also a concern. In the last two years there have been a number of construction and utility projects – sewer and water along Dundas, hydro and gas along Sixth Line, and subdivision construction across Sixth Line and south of Dundas east of sixth Line. All of these projects have had negative effects on our operations and fundraising events.	Preliminary construction staging will be evaluated during the next phases of the Class EA. However, final staging plans development and coordination with utility companies will be undertaken during the detail and construction phases of the project.
6	Please note that we have particular concern for the remains of our ancestors. Should excavation unearth bones, remains or other such evidence of a native burial site or any Archaeological findings, we must be notified without delay. In the case of a burial site, Council reminds you of your obligations under the Cemeteries Act to notify the nearest First Nation Government or other community of Aboriginal people which is willing to act as a representative and whose members have a close cultural affinity to the interred person. As I am sure you are aware, the regulations further state that the representative us needed before the remains and associated artifacts can be removed. Should such a find occur, we request that you contact our First Nation immediately.	A stage 1 archaeological assessment study will be undertaken as part of the Class EA to evaluate areas of archaeological potentials within the proposed corridor. Mitigation measures alternatives will be developed in accordance with the current applicable standards and guidelines to minimize archaeological impacts. The project team is committed to consult with all interested parties, including First Nations and to ensure that First Nations interests and concerns are adequately addressed throughout the Class EA process.

4.3 Next Steps

The Sixth Line EA Study from Dundas Street to Highway 407 ETR needs to complete Phase 3 and 4 of Municipal Class EA process. The next steps for the Class Environmental Assessment are;

- Review all comments and suggestions received from the public and agencies;
- Respond to written questions and comments, if response is requested;
- Based on input received from public agencies and other stakeholders, finalize the preliminary preferred solution;
- Prepare alternative designs to implement the preferred solution;
- Assess and evaluate the alternative designs and identify a preliminary preferred design;
- Present the preliminary preferred design at PIC #2 (Tentatively Scheduled for Spring 2013)
- Prepare the Environmental Study Report (ESR);
- File the ESR and make it available for public review and comments for a minimum 30-day public review period.

5 CONTACT INFORMATION

For more information, please contact:

Dale Lipnicky, C.E.T.
Project Leader – Capital Projects
Engineering and Construction
Town of Oakville
1225 Trafalgar Road
Oakville, ON L6H 0H3
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Fax: (905) 338-4159
DLipnicky@oakville.ca

Nasser N. Saad, P.Eng., P.E.
Senior Project Manager, Municipal Transportation
Morrison Hershfield Limited
Suite 175
1005 Skyview Drive
Burlington, ON L7P 5B1
Phone: (905) 319-6668 ext, 1101202
Fax: (905) 316-5548
NSaad@morrisonhershfield.com

Appendix A – Notice of Public Information Centre #1

OAKVILLE

The Town of Oakville

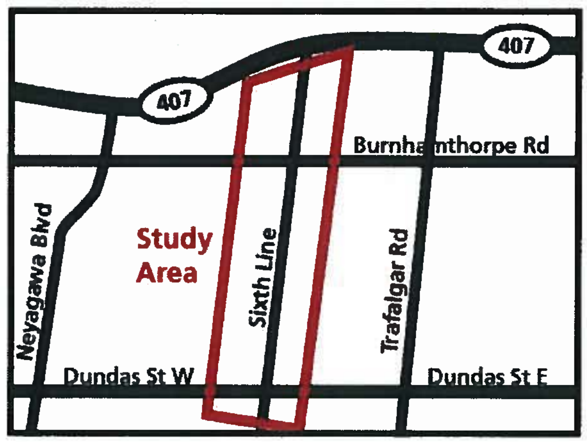
NOTICE OF PUBLIC INFORMATION CENTRE #1

CLASS ENVIRONMENTAL ASSESSMENT STUDY
Sixth Line between Dundas Street to Highway 407 (ETR)
Town of Oakville

The Town of Oakville is undertaking a Class Environmental Assessment Study to identify and confirm the need for improvements to Sixth Line from Dundas Street to Highway 407 (ETR). The study is being conducted in accordance with the *Municipal Class Environmental Assessment* (October 2000, as amended in 2011) as a **Schedule "C"** undertaking.

The Town of Oakville is inviting residents and other stakeholders to attend the first of two Public Information Centres (PICs) for this Study. The first PIC will discuss the:

- Existing conditions and previous work undertaken in the area
- Need and justification for improvements to Sixth Line
- Evaluation criteria
- Evaluation of alternative solutions
- The preferred solution(s)



The PIC will be held at:

Date: **Tuesday, December 4th, 2012**
Time: **6:00 p.m. to 8:00 p.m.**
Location: **Trafalgar Room, 1225 Trafalgar Road, Oakville, ON L6H 0H3**

The format of the PIC will be an informal drop-in centre at 6:30 p.m. Members of the Project team will be in attendance to answer questions and receive comments.

Consultation during the Study, proposed future work, and measures aimed at minimizing environmental impacts will be documented in an Environmental Study Report (ESR). The ESR will be made available for public review when it has been completed at the end of the Study. The status of the project will be documented on the Town's website www.oakville.ca.

Anyone with interest in this Study is encouraged to provide input before any decisions are made. As part of the consultation process, a mailing list for notifications is being compiled. If you wish to receive information about the Study or to provide comments, please contact either of the project team members listed below.

Dale Lipnicky, C.E.T.
Project Leader – Capital Projects
Engineering and Construction
Town of Oakville
1225 Trafalgar Road
Oakville, ON L6H 0H3
Telephone: 905-845-6601 ext.3326
Fax: 905-338-4159
Email: DLipnicky@oakville.ca

Nasser N. Saad, P.Eng., P.E.
Senior Project Manager
Municipal Transportation
Morrison Hershfield Limited
Suite 175
1005 Skyview Drive
Burlington, Ontario, L7P 5B1
phone: (905) 319-6668 ext. 1101202
fax: (905) 316-5548
email: nsaad@morrisonhershfield.com

Thank you for your participation in this study

Wednesday, November 28, 2012 - for immediate release

Public information meeting on December 4 for Class Environmental Assessment Study for Sixth Line between Dundas Street to Highway 407 (ETR)

Tuesday, December 4, 2012 — 6 to 8 p.m.
Town Hall, Trafalgar Room
1225 Trafalgar Road

The Town of Oakville is undertaking a Class Environmental Assessment Study to identify and confirm the need for improvements to Sixth Line from Dundas Street to Highway 407 (ETR). The study is being conducted in accordance with the Municipal Class Environmental Assessment (October 2000, as amended in 2011) as a Schedule “C” undertaking.

You are invited to attend the first of two public meetings, Public Information Centres (PICs) for this study. The first PIC will discuss:

- Existing conditions and previous work undertaken in the area
- Need and justification for improvements to Sixth Line
- Evaluation criteria
- Evaluation of alternative solutions
- The preferred solution(s)

The format of the PIC will be an informal open house. Members of the project team will be in attendance to answer questions and receive comments.

Consultation during the study, proposed future work, and measures aimed at minimizing environmental impacts will be documented in an Environmental Study Report (ESR). The ESR will be made available for public review when it has been completed at the end of the study. The status of the project will be documented on the Sixth Line Environmental Assessment page.

You are encouraged to provide input into this study. As part of the consultation process, a mailing list for notifications is being compiled. If you wish to receive information about the study or to provide comments, please contact:

Dale Lipnicky, C.E.T.
Project Leader – Capital Projects
Engineering and Construction
Town of Oakville
1225 Trafalgar Road
Oakville, ON L6H 0H3
Phone: 905-845-6601, ext.3326
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DLipnicky@oakville.ca

Nasser N. Saad, P.Eng., P.E.
Senior Project Manager, Municipal Transportation
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Burlington, Ontario, L7P 5B1
Phone: 905-319-6668, ext. 1101202
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nsaad@morrisonhershfield.com

Sign up for the town's RSS feeds to get information delivered right to your desktop.

Appendix B – Sample Comment Sheets

OAKVILLE

MORRISON HERSHFIELD

TOWN OF OAKVILLE
SIXTH LINE CLASS ENVIRONMENTAL ASSESSMENT
DUNDAS STREET TO HIGHWAY 407 (ETR)

COMMENT SHEET
PUBLIC INFORMATION CENTRE #1
TUESDAY, DECEMBER 4, 2012

Please provide your comments on any aspect of the study being considered and place your comment sheet in the box provided or submit prior to Tuesday, December 18, 2012:

Mr. Nasser N. Saad, P. Eng., P.E
Manager, Municipal Transportation
Morrison Hershfield Limited
1005 Skyview Drive, Suite 175
Burlington, ON
L7P 5B1

Fax. 905-319-5548
nsaad@morrisonhershfield.com

Comments:

Thank you for your participation. Information received will be maintained on file for use during the study and will be included in the study documentation. With the exception of personal information, all comments received will become part of the public record.

Appendix C – PIC #1 Presentation Boards

Welcome to Public Information Centre #1

Class Environmental Assessment (EA) Study

for

Sixth Line from Dundas Street to Highway 407 (ETR)

December 4, 2012

OAKVILLE

MORRISON HERSHFIELD

Purpose of the Public Information Centre #1

The purpose of holding this Public Information Centre is to:

- Introduce the study and provide an opportunity for the public to review the display boards;
- Provide background information;
- Presents needs and justification (i.e. problem being addressed);
- Present alternative planning solutions;
- Identify the preliminary preferred solution;
- Present potential benefits / impacts associated with the preliminary preferred alternative planning solution;
- Obtain public input and comments; and
- Identify the next steps in the process.

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MORRISON HERSHFIELD

Study Purpose

The purpose of the EA study is to conduct a Schedule 'C' Class Environmental Assessment to address the transportation needs along the Sixth Line corridor, and allow for a comprehensive assessment of the potential impacts of alternatives on the Social, Natural and Cultural Environment, including:

- Operational deficiencies;
- Transit service requirements;
- Pedestrian and cycling needs; and
- The need for additional North-South capacity in consideration of current and future planned development along the study corridor.

Objectives of the Study

The major objectives of this study are to:

- Complete the Municipal Class EA process with participation from the public and affected parties;
- Provide satisfactory consideration to a reasonable range of alternatives;
- Consider the effects on all aspects of the environment and systematic evaluation of alternatives; and
- Develop preliminary preferred design(s) of recommended alternative.

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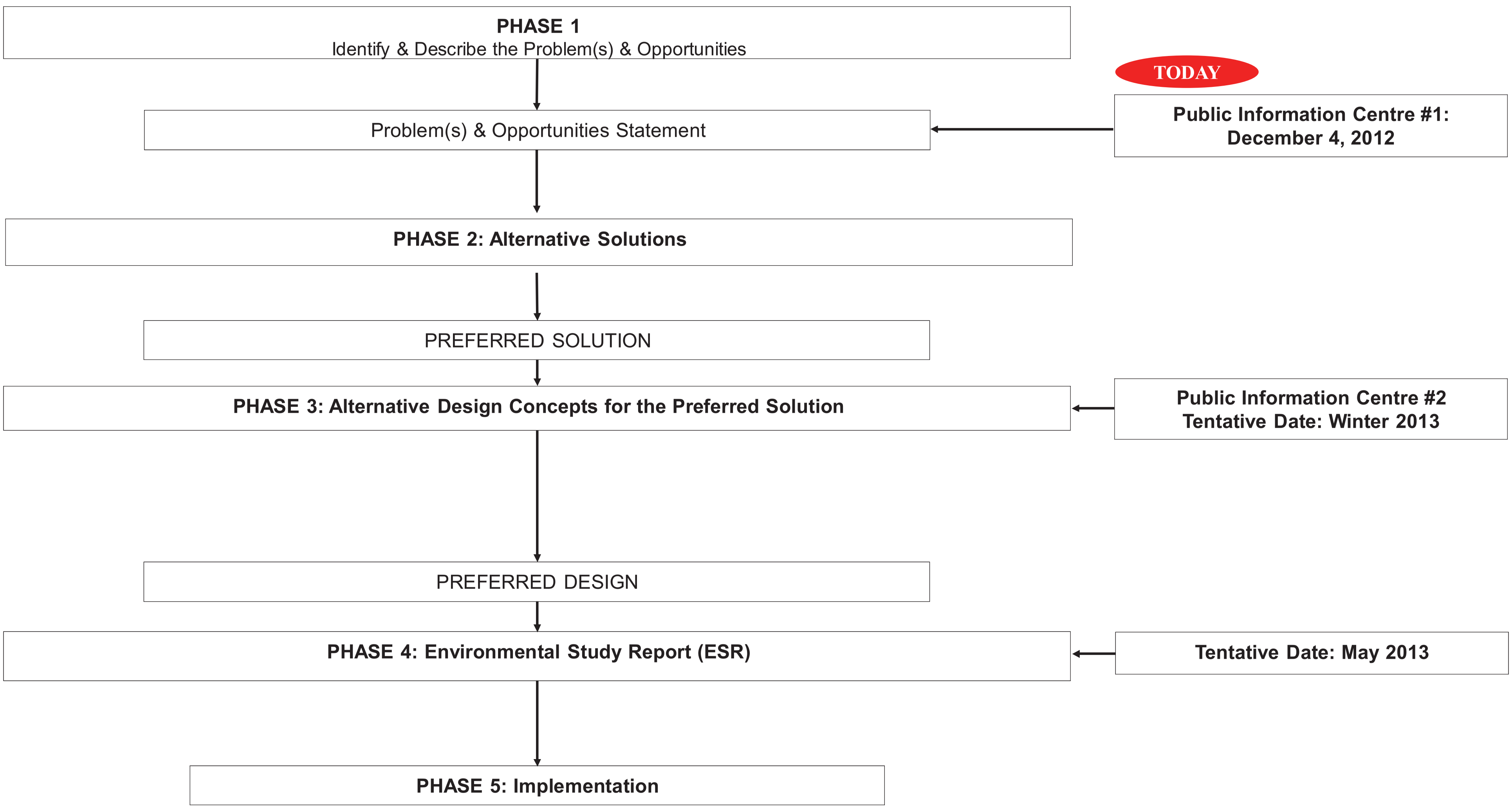
Municipal Class EA Process in Ontario



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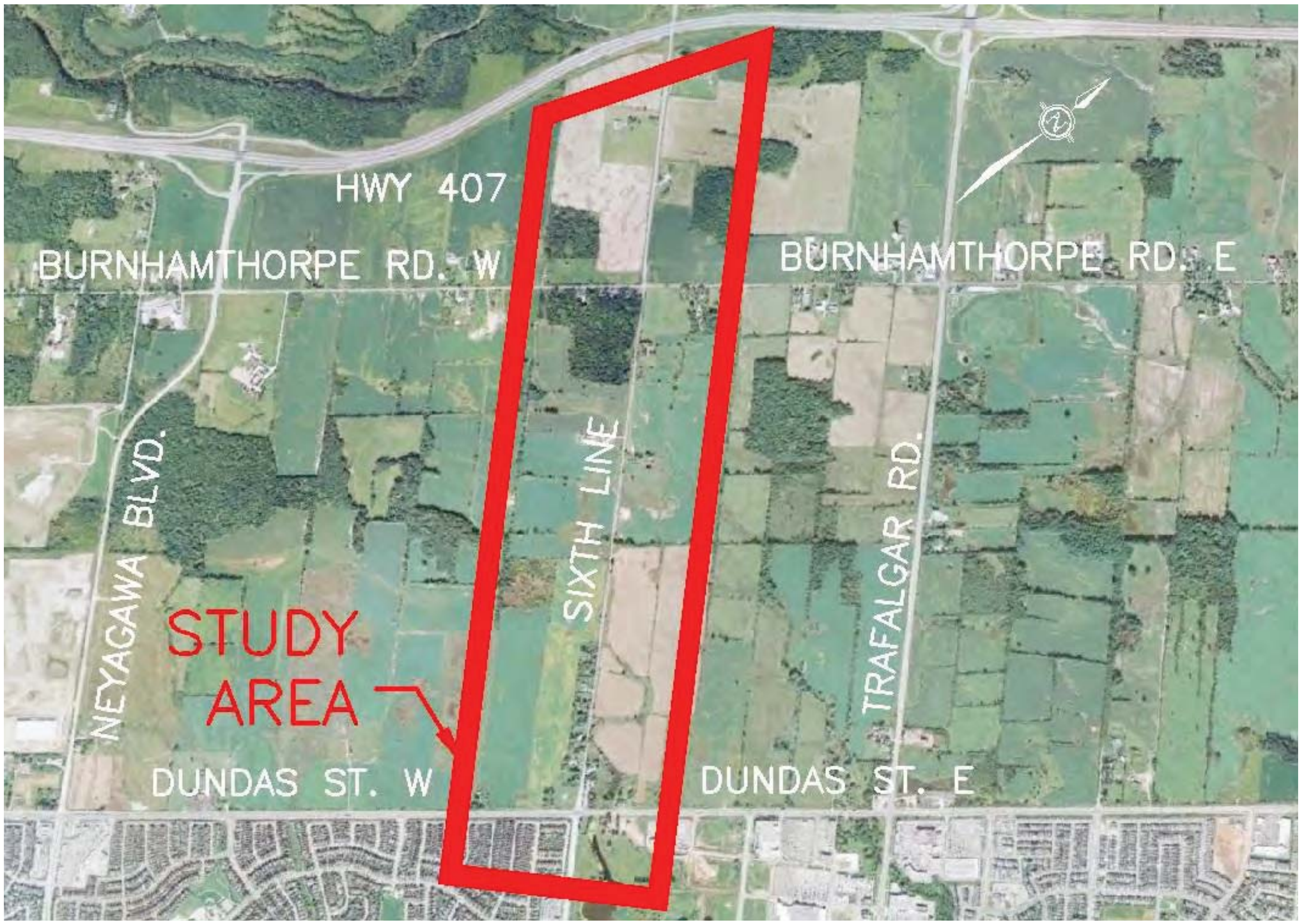
Study Area

Sixth Line from Dundas Street to Highway 407 (ETR)



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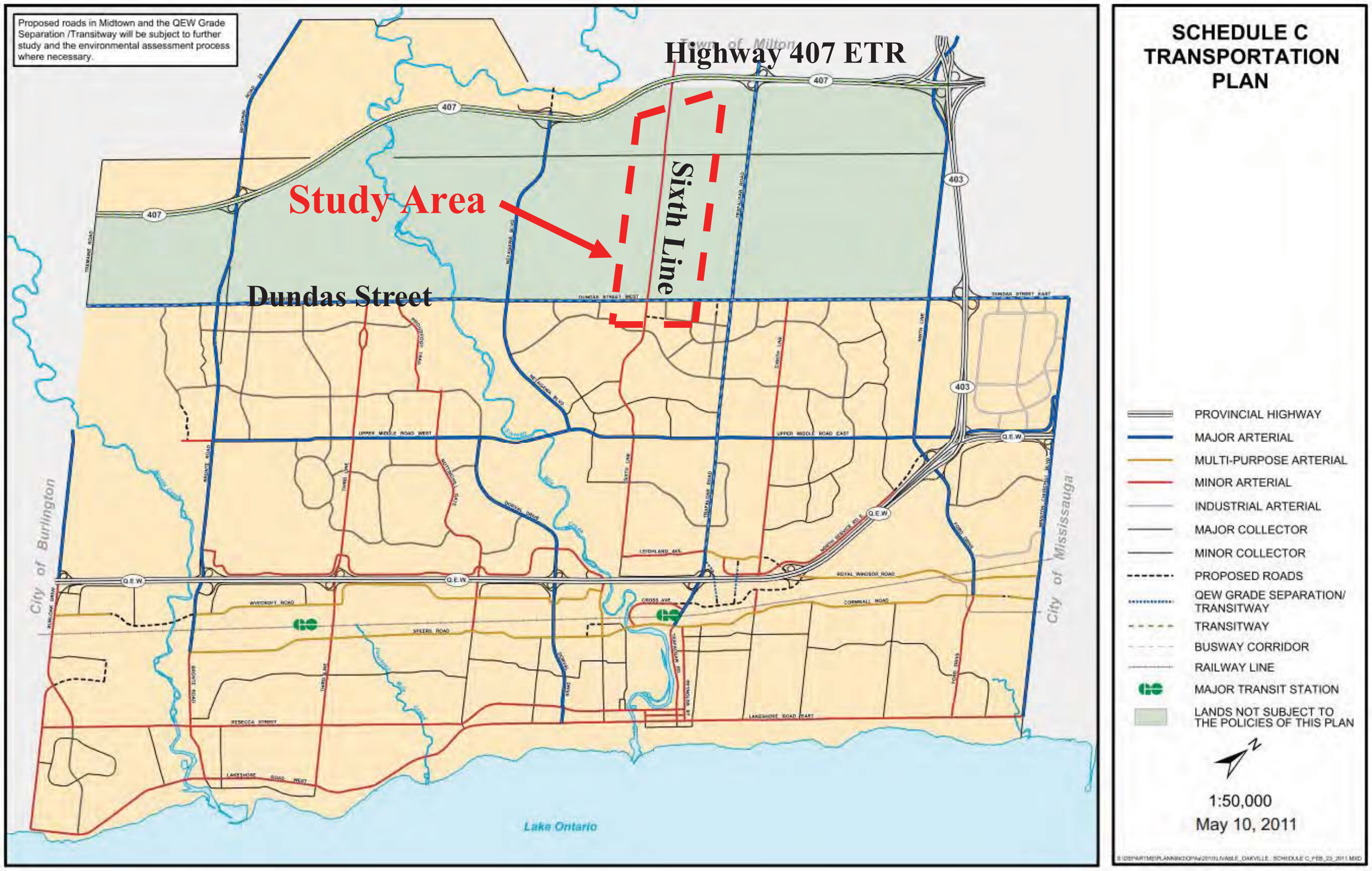
Study Background

Town's Official Plan-Livable Oakville (2009) – Road Hierarchy



Town's Official Plan-Livable Oakville (2009) identifies Sixth Line as Minor Arterial.

Note:

* Figure adopted from Town's Official Plan-Livable Oakville (2009).

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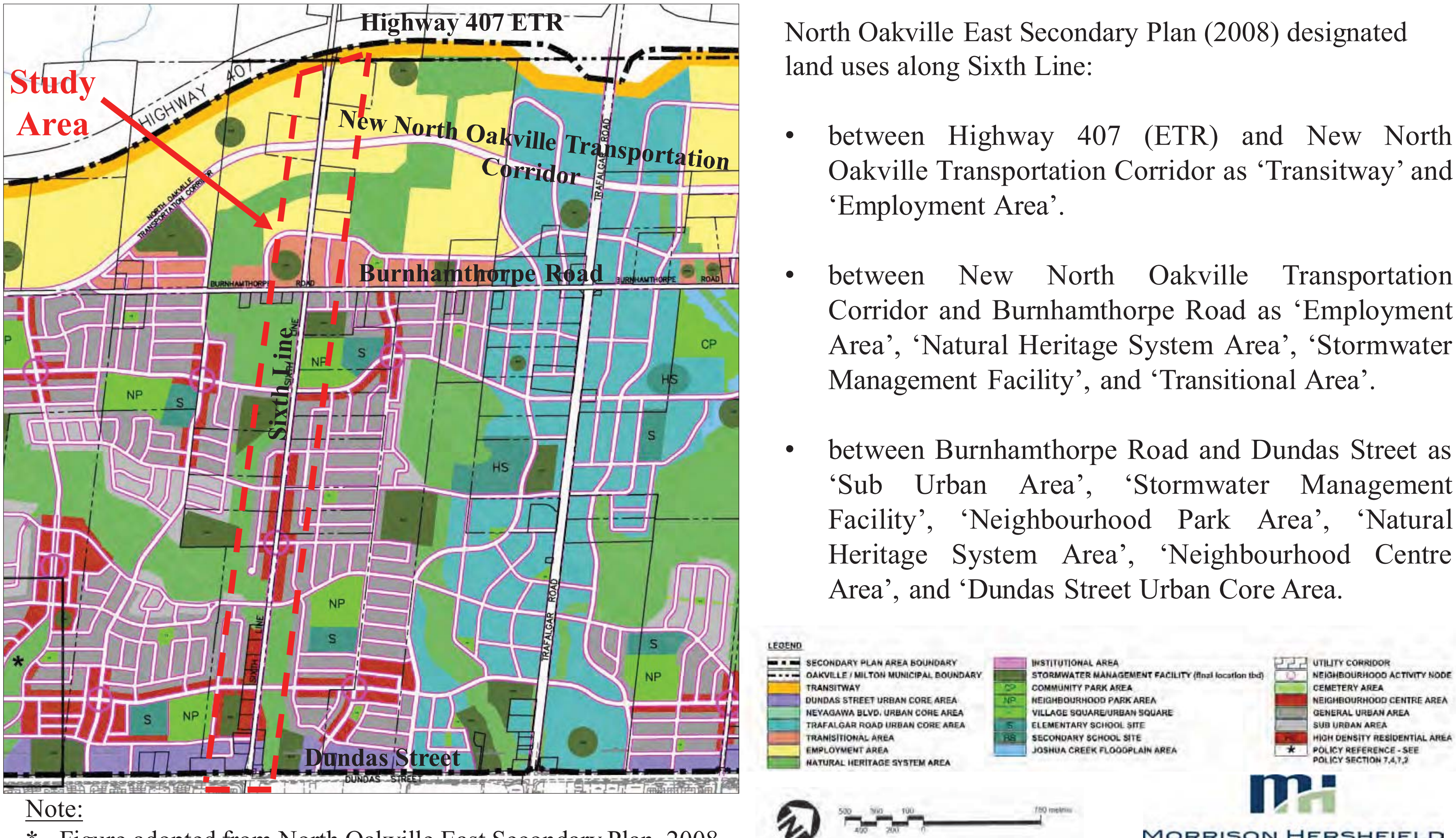
Study Background (Cont'd.)

North Oakville East Secondary Plan (2008) – Land Use



North Oakville East Secondary Plan (2008) designated land uses along Sixth Line:

- between Highway 407 (ETR) and New North Oakville Transportation Corridor as 'Transitway' and 'Employment Area'.
- between New North Oakville Transportation Corridor and Burnhamthorpe Road as 'Employment Area', 'Natural Heritage System Area', 'Stormwater Management Facility', and 'Transitional Area'.
- between Burnhamthorpe Road and Dundas Street as 'Sub Urban Area', 'Stormwater Management Facility', 'Neighbourhood Park Area', 'Natural Heritage System Area', 'Neighbourhood Centre Area', and 'Dundas Street Urban Core Area.

Note:
* Figure adopted from North Oakville East Secondary Plan, 2008

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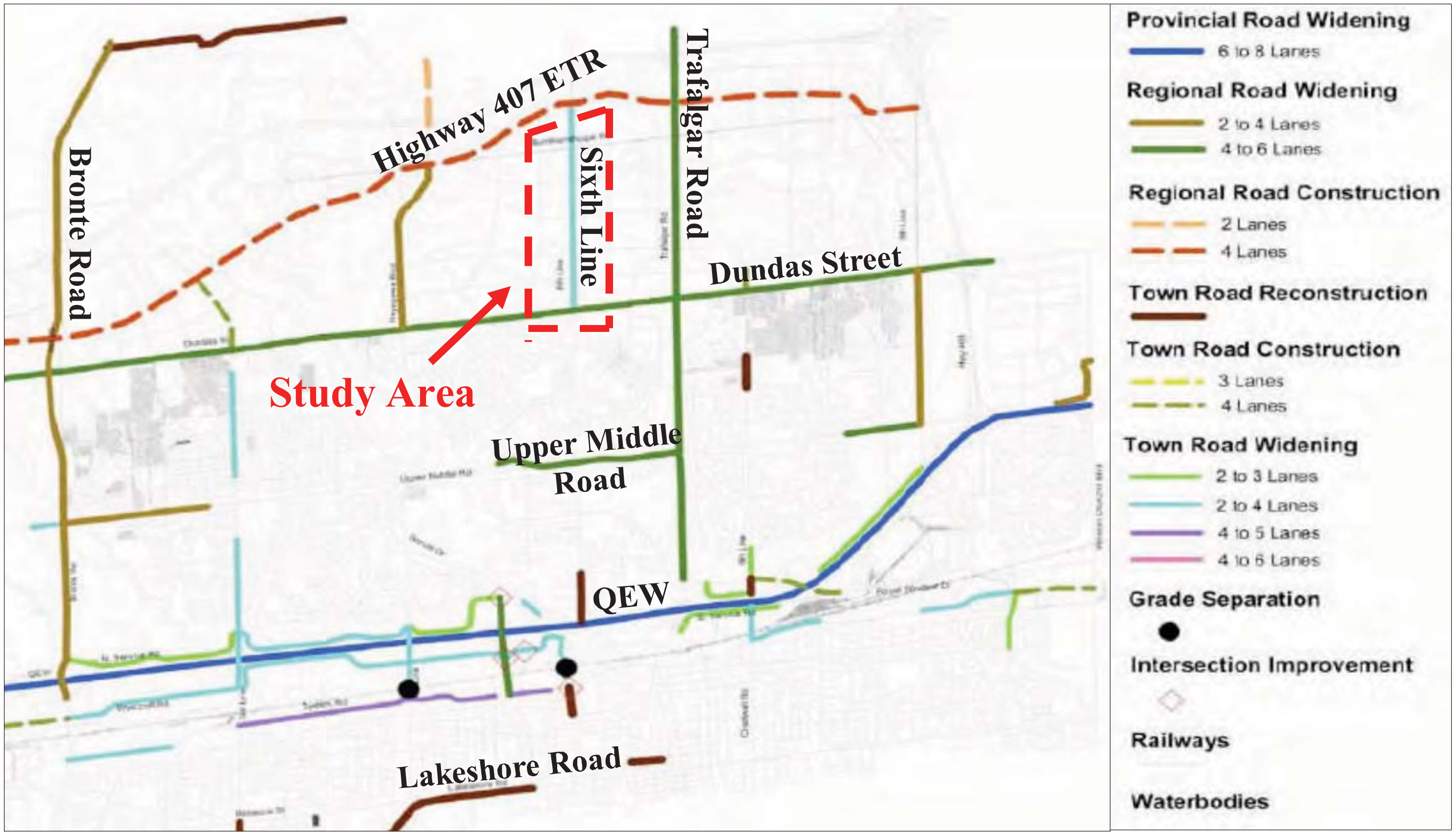
Study Background (Cont'd.)
North Oakville East Secondary Plan (2008) – Network Improvements



Note:
* Figure adopted from North Oakville East Secondary Plan, 2008.

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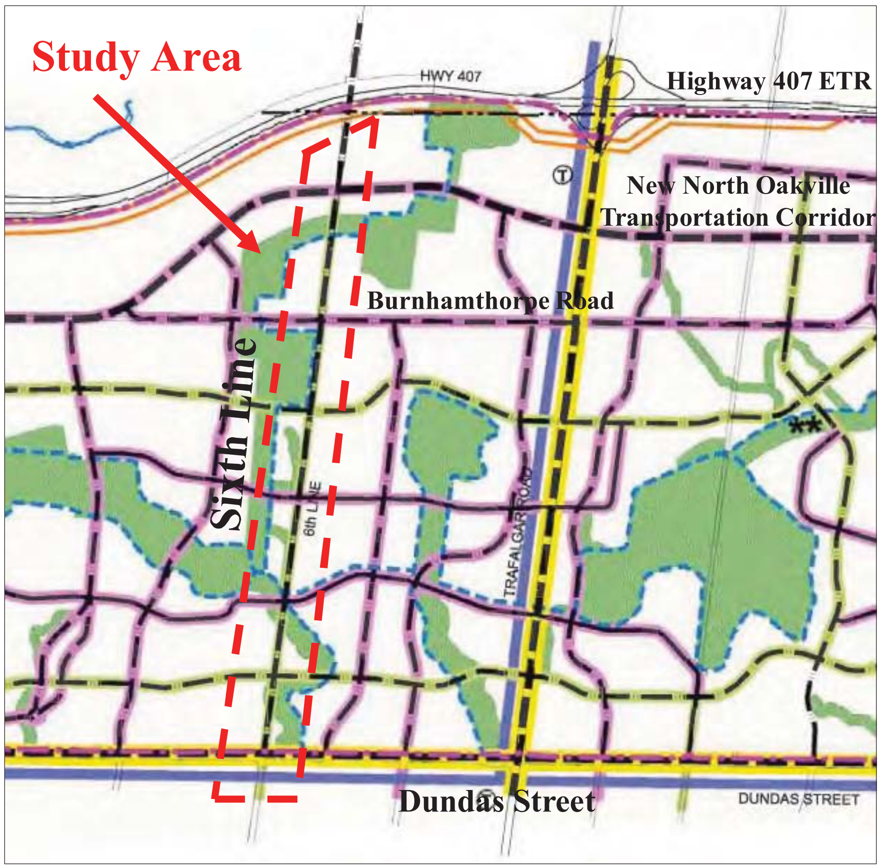
Study Background (Cont'd.)
North Oakville East Secondary Plan (2008) – Transit Improvements



Note:
* Figure adopted from North Oakville East Secondary Plan, 2008

- North Oakville East Secondary Plan (2008) identifies:
  - Sixth Line as Secondary Transit Corridor by 2021; and
  - Dundas Street as Primary Transit Corridor by 2021.

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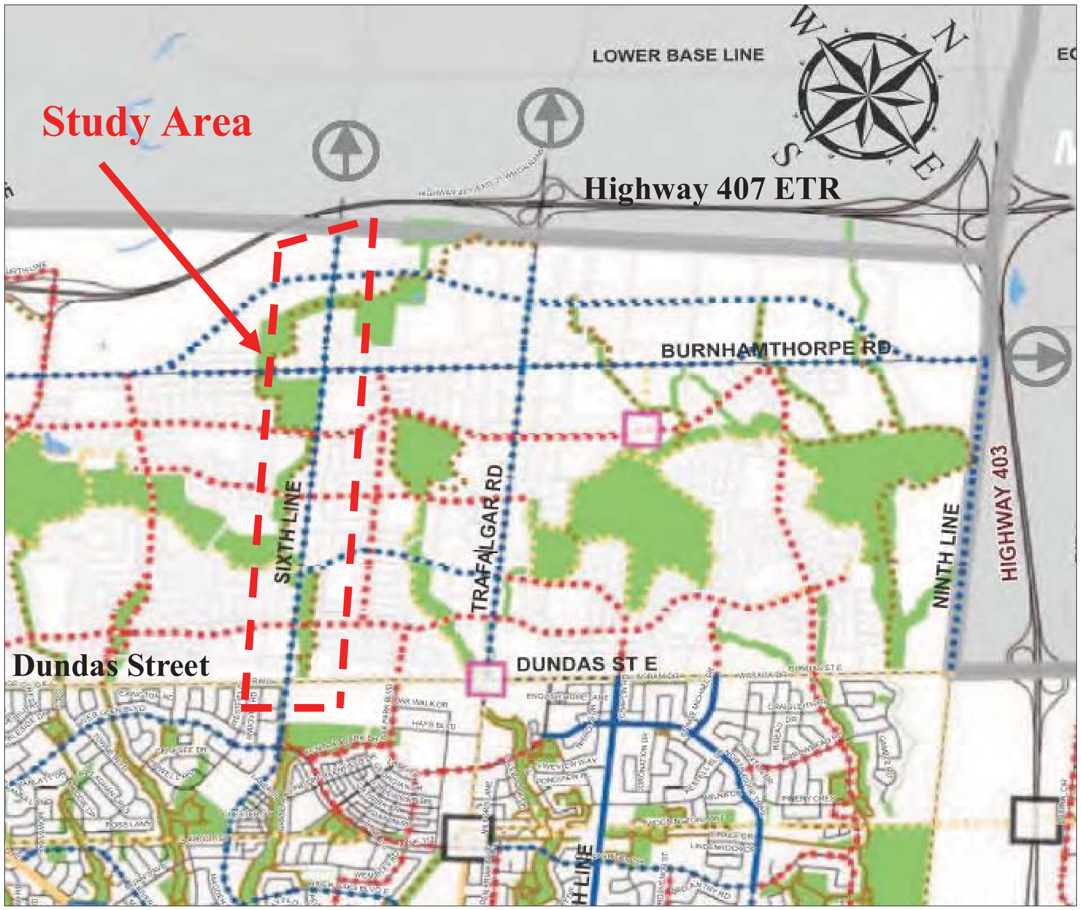
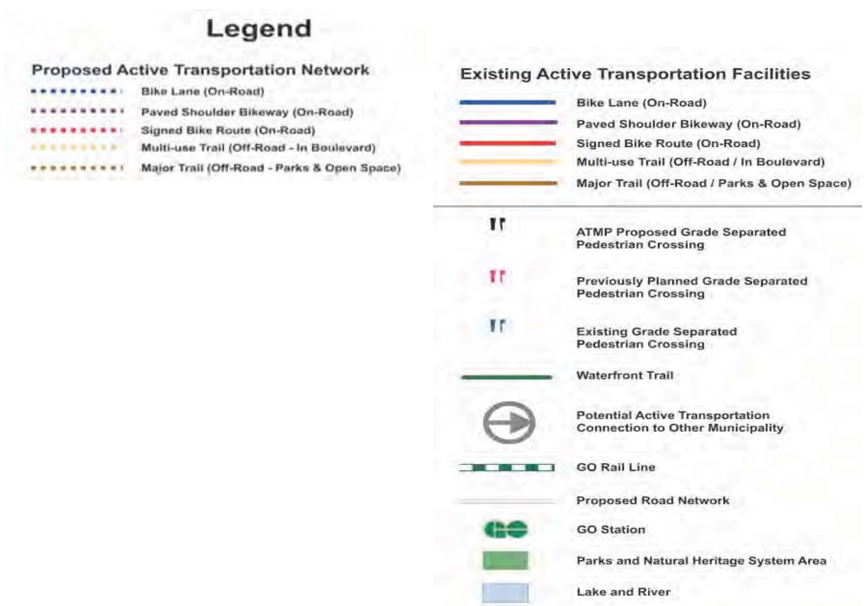
Study Background (Cont'd.)

Town of Oakville Active Transportation Master Plan (2009) – Recommended Cycling and Transit Network



- Town of Oakville Active Transportation Master Plan (2009) identifies:
  - Sixth Line as Bike Lane (On-road); and
  - Dundas Street as Multi-use Trail (Off-Road – In Boulevard).



Note:

* Figure adopted from Town of Oakville Active Transportation Master Plan (2009).

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Existing Natural Environment Conditions

- Within the study area there are two linear aquatic ecosystems that cross Sixth Line however these are ephemeral watercourses and were dry during the field investigation. Neither crossing provides fish habitat.
- Two large ponds were identified at the north end of the study area and both likely support bait fish.
    - One is within the Highway 407 right-of-way and the riparian habitat was limited to grasses and low herbaceous plants.
    - The other is on a private property on the east side of Sixth Line, just south of Highway 407 and was surrounded by mowed grass with some trees.
- The vegetation community within the study area consists of cultural meadow (CUM), deciduous forest (FOD), and agricultural crop land.

Pond on private property on the northeast side of Sixth Line at the north end of the study area.

Ponds within the Highway 407 right-of-way

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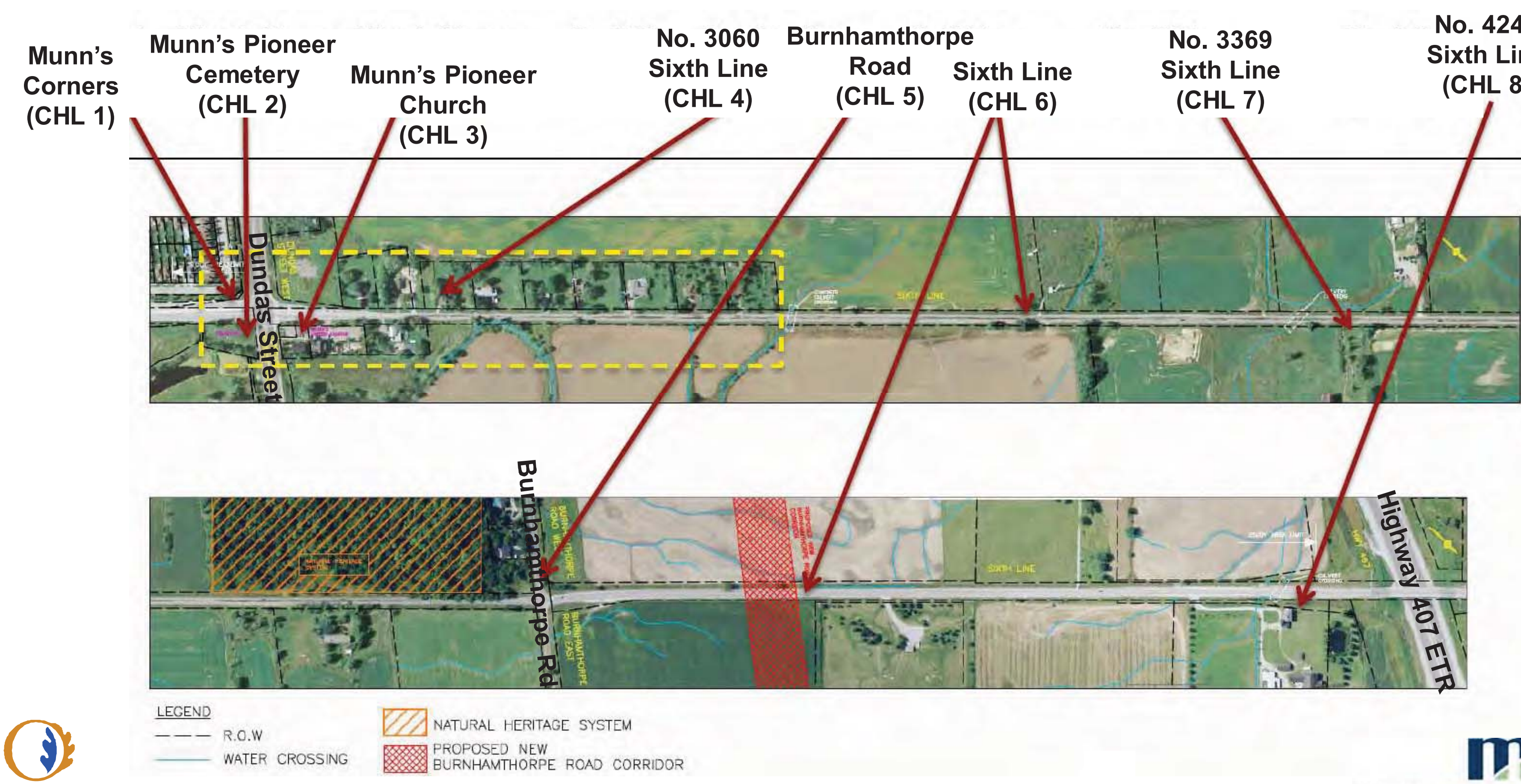
Existing Cultural and Built Heritage Conditions

A total of eight Cultural Heritage Landscapes (CHL) were identified along the study corridor. One is Historical Crossroad Settlement (CHL 1); one Funerary (CHL 2); one Religious (CHL 3); two Residentials (CHL 4 and CHL 7); two Roadscapes (CHL 5 and CHL 6); and one Agricultural: Farm Complex (CHL 8).



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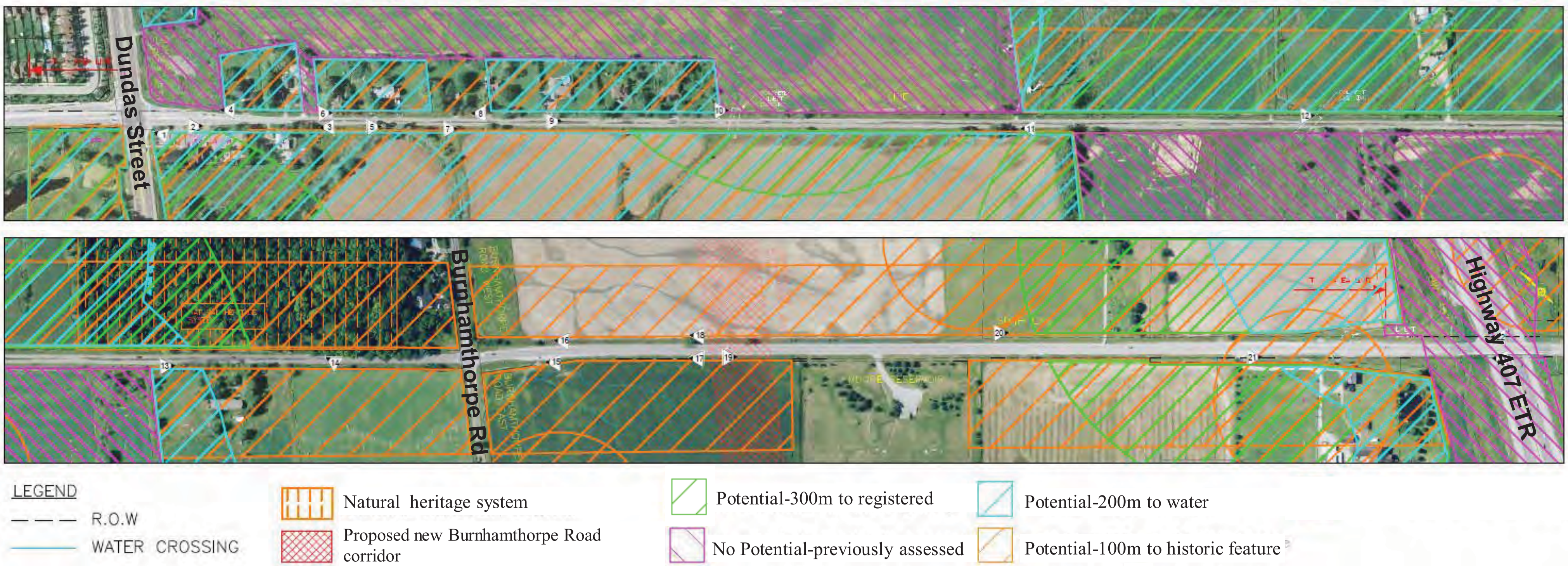
Existing Archaeological Conditions

- Due to the proximity to water, topography and soils the Sixth Line study area has the potential for archaeological remains but extensive and intensive disturbances have removed any archaeological potential from within the current right-of-way. No further work within right-of-way area is required.
- 76 percent of lands adjacent to the Sixth Line right-of-way have potential for archaeological remains. Therefore, any future design changes to the road that require expansion beyond current right-of-way should be subject to a Stage 2 archaeological assessment.
- A Stage 3 investigation will be required to confirm the presence or absence of unmarked graves at the Munn's Cemetery prior to any land-disturbing activities.



Noise Analysis and Stormwater Management Study

- The Noise Impact and Stormwater Management Studies along Sixth Line between Dundas Street to Highway 407 (ETR) will be conducted as part of this study.
- The results of the studies will be presented at the second Public Information Centre tentatively scheduled for early 2013.

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Needs Assessment

PM Peak Hour Link Performance – Existing and Future (Do Nothing)

LEGEND

- V/C ≧ 1.0 (Over Capacity)
- 0.85 < V/C < 1.0 (At Capacity)
- V/C ≦ 0.85 (Below Capacity)

1) V/C – Volume to Capacity ratio threshold used to identify problems (congestion, delay) along the corridor.

2) Signal or potential roundabout at intersections.

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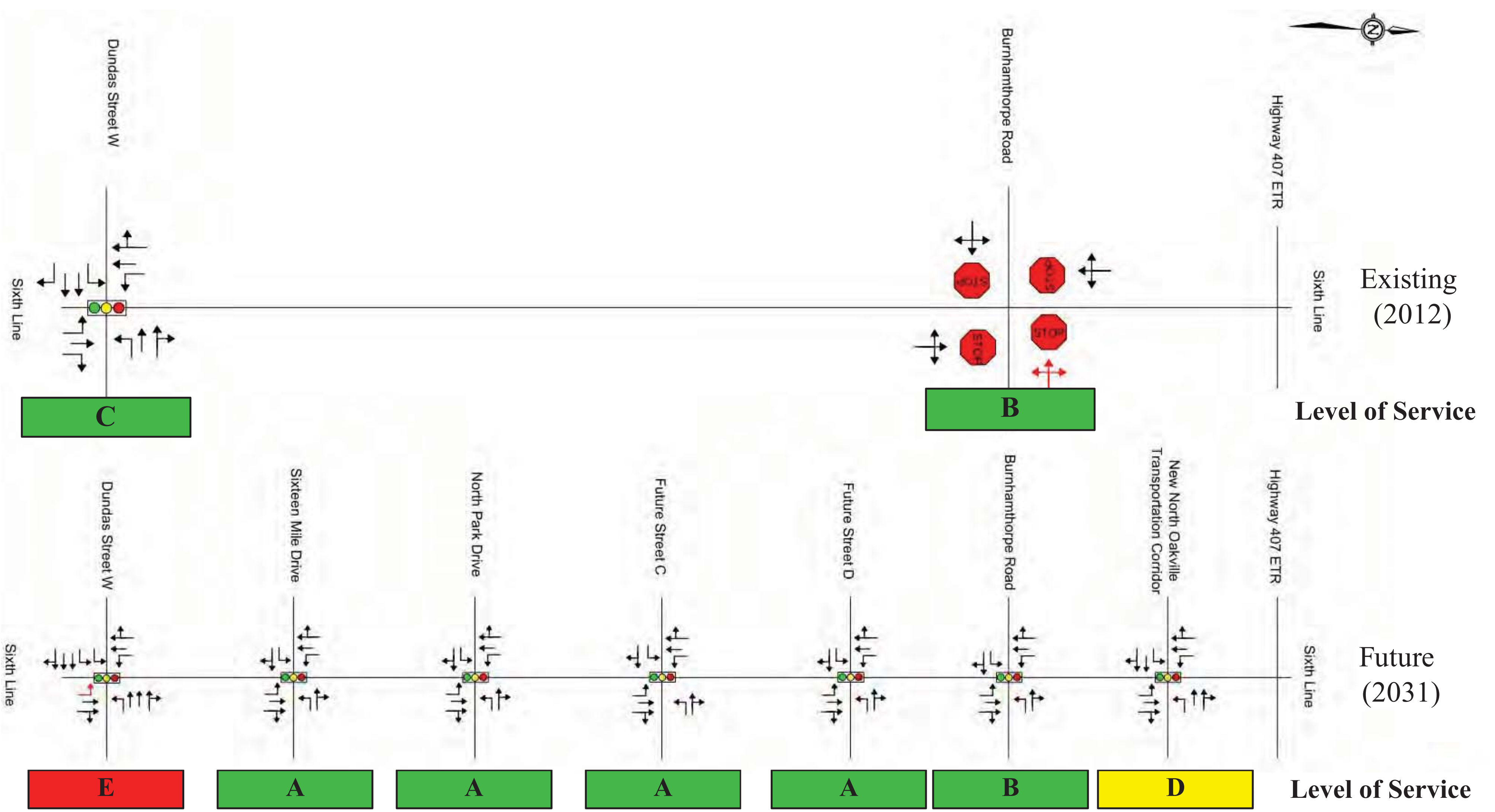
Needs Assessment (Cont'd.)

PM Peak Hour Intersection Capacity Analysis – Existing (2012) and Future (2031)



Problem/Opportunity Statement

Problem

- The Town of Oakville is planning for high population and employment growth that will continue over several decades.
- Transportation analysis confirms that the future traffic volumes will exceed the available north-south capacity within the study area between now and 2031. **Even with network improvements, the north-south roadway network in the immediate and surrounding area of Sixth Line will not be able to accommodate the travel demand growth anticipated over the next 20 years**.
- Roadway safety, intersection levels of service, response of emergency vehicles and natural environment will deteriorate without transportation improvements.

Opportunity

- There is an opportunity to improve Sixth Line between Dundas Street and Highway 407 (ETR) in compliance with the Town's Livable Oakville Plan (Official Plan). The improvements will provide opportunity to improve;
  - transit operations;
  - traffic operations;
  - active transportation including pedestrian and bicycle access;
  - road safety; and
  - enhance streetscaping and landscaping.

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Alternative Planning Solutions

1) Do Nothing.
2) Limit Growth and Development.
3) Transportation Demand Management Initiatives (TDM).
   - ➢ Introduce transit service and transit amenities.
   - ➢ Provide opportunities for Pedestrians and Cyclists in the study corridor.
4) Transportation System Management (TSM).
   - ➢ Programs to reduce congestion and improve traffic flow through traffic signal synchronization and incident management.
   - ➢ Programs to implement transit priority measures.
5) Provide Additional Traffic Lanes Along Sixth Line.
6) Intersection Improvements.
7) Upgrade Other Arterial Corridors or Build New Corridor.

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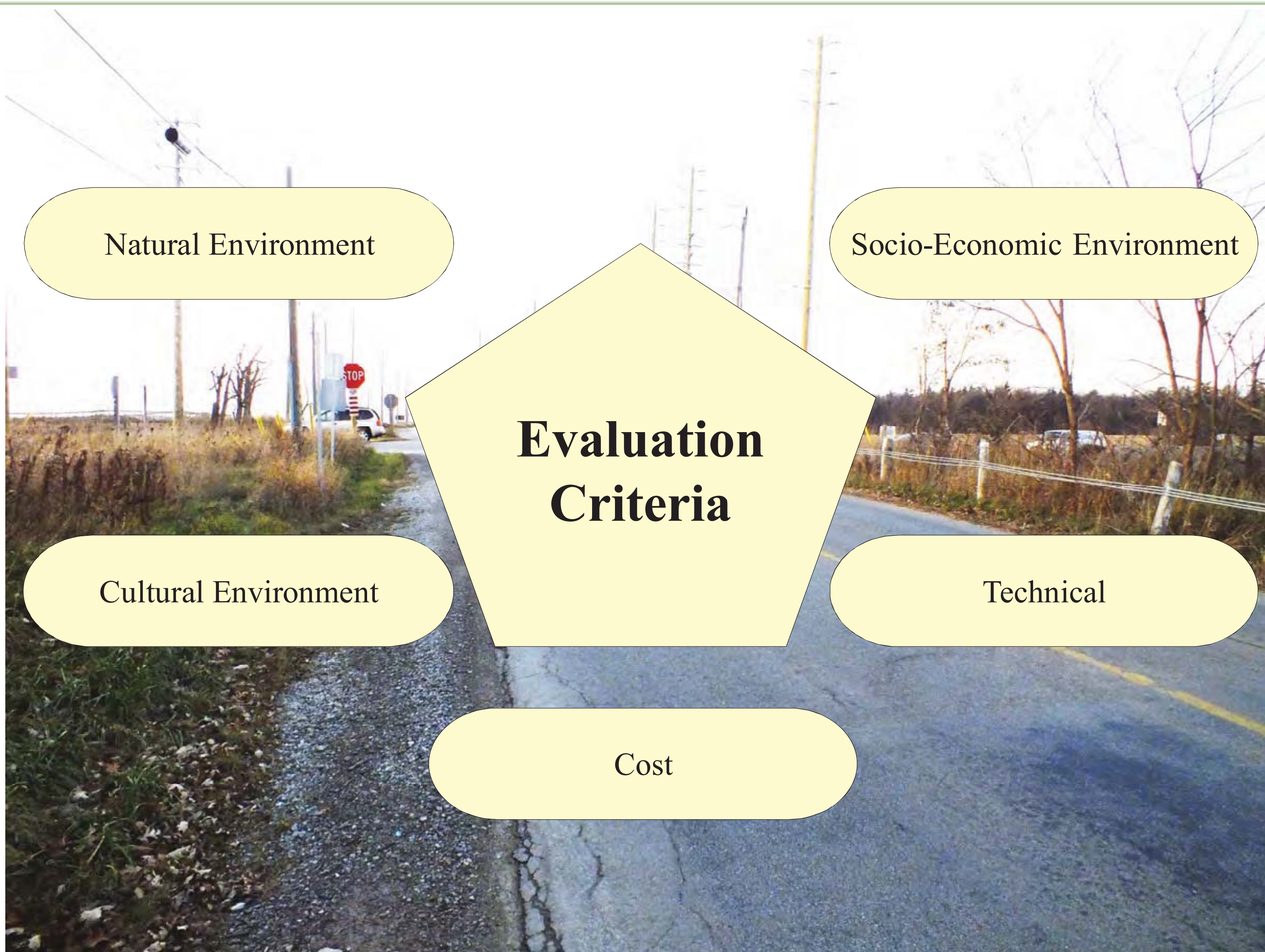

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Socio-Economic Environment

- Resident/Business

  Access
- Property Requirements
- Emergency Response
- Noise
- Air Quality
- Aesthetics/Streetscapes

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Natural Environment

- Watercourses
- Wildlife
- Vegetation
- Fish

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Cultural Environment

- Archaeological Resources
- Cultural and Built Heritage

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Technical

- Planning Objectives
- Transit Services
- Overall Safety
- Opportunity for Pedestrians and Cyclists
- Network Capacity and Level of Service
- Stormwater Management

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Cost

Potential costs for the alternative such as:

- Property
- Capital Costs

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Assessment & Evaluation of Alternative Planning Solutions

Category	Criteria	Indicator	Alternative 1 Do Nothing	Alternative 2 *Limit Growth and Development*	Alternative 3 *Transportation Demand Management Initiatives (TDM)*	Alternative 4 *Transportation System Management (TSM)*	Alternative 5 *Provide Additional Traffic Lanes along Sixth Line*	Alternative 6 *Intersection Improvements*	Alternative 7 *Upgrade other Arterial Corridors or Build a New Corridor*
Transportation/ Technical	Planning Objectives	Ability to meet the Town's Official Plan-Livable Oakville (LO), Transportation Master Plan (TMP) Goals and Objectives	○ Does not meet LO and TMP objectives	○ Does not meet LO and TMP objectives	◕ Meets LO and TMP objectives by supporting alternative modes	◕ Meets LO and TMP objectives	● Meets LO and TMP objectives	● Meets LO and TMP objectives	◔ Does not meet LO and TMP objectives
	Transit Services	Ability to Improve from existing and/or integrate transit services into the overall transportation system	○ No improvement to transit services	◐ Some improvement to transit services due to reduce congestion	◕ Potential for improvements to transit services	● Potential for improvements to transit services	● Potential for improvement to transit services	● Potential for improvement to transit services	◐ Some improvement to transit services due to diversion of traffic to other routes
	Overall Safety	Ability to Improve Safety from existing conditions	○ No safety improvements	◐ Reduced traffic congestion would result in some safety improvements	◐ Reduced traffic congestion would result in some safety improvements	◐ Reduced traffic congestion would result in some safety improvements	● Potential for safety improvements	● Potential for safety improvements at intersections	◕ Reduced traffic congestion would result in some safety improvements
	Opportunities for Pedestrians and Cyclists in the study corridor	Ability to provide opportunities for Pedestrians and Cyclists in the study corridor	○ No impacts	○ No impacts	◐ Encourages active transportation.	◕ Encourages active transportation through improvements to the road cross-section	● Potential to improve access for pedestrians and cyclists	◕ Potential for improvements to pedestrian and cycling facilities at Intersections	○ No impacts
	Network Capacity and Level of Service	Ability to improve traffic congestion and level-of service	○ Increase in congestion due to increase in traffic volume	◐ Potential to limit traffic congestion by limiting traffic growth	◐ Provides some relief from traffic congestion	◐ Provides some relief from traffic congestion	● Improved corridor capacity and level of service on Sixth Line	◕ Provides relief from traffic congestion	◐ Provides some relief from traffic congestion
Cultural Environment	Archaeological Resources	Potential for disruption of archaeological resources	● No impacts	● No impacts	● No impacts	● No impacts	◐ Low potential impacts as widening would occur within areas with archaeological potential	◐ Potential impacts as improvements would occur within areas with archaeological potential	◐ Potential impacts to archaeological resources on other roads
	Cultural and Built Heritage Features	Potential for disruption of built heritage and cultural landscape features	● No impacts	● No impacts	● No impacts	● No impacts	◐ Low potential impacts to heritage properties or features within project area	○ Potential impacts to heritage properties or features within project area	◐ Potential impacts to heritage properties on other roads
Natural Environment	Terrestrial Resources (Wildlife and Vegetation)	Impacts on Terrestrial Species and Habitats	● No impacts on terrestrial resources	● No impacts on terrestrial resources	● No impacts on terrestrial resources	● No impacts on terrestrial resources	◐ Some impacts on terrestrial resources with potential for mitigation	◐ Some impacts on terrestrial resources with potential for mitigation	◐ Some impacts on terrestrial resources with potential for mitigation
	Aquatic Species/ Watercourses	Impacts on watercourses within the project area	● No impacts	● No impacts	● No impacts	● No impacts	◐ Some impacts with potential for mitigation	◐ Some impacts with potential for mitigation	◐ Some impacts with potential for mitigation
Socio-Economic Environment	Residential/ Business Access	Ability to maintain and/or maximize opportunities for improved access into adjacent residential and commercial properties	○ No opportunity for access improvements	○ No opportunity for access improvements	◔ Marginal opportunity for access improvements	◔ Marginal opportunity for access improvements	● Opportunity for Access improvements along the corridor	● Opportunity for access improvements at Intersections	○ No opportunity for access improvements
	Property Requirements	Amount of property required	● No property required	● No property required	● No property required	● No property required	○ Property requirements along Sixth Line	○ Property requirements at Intersections	○ Property requirements along other roads

LEGEND: ● Most Desirable ◕ More Desirable ◐ Neutral ◔ Less Desirable ○ Least Desirable

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Assessment & Evaluation of Alternative Planning Solutions (Cont'd.)

Category	Criteria	Indicator	Alternative 1 Do Nothing	Alternative 2 *Limit Growth and Development*	Alternative 3 *Transportation Demand Management Initiatives (TDM)*	Alternative 4 *Transportation System Management (TSM)*	Alternative 5 *Provide Additional Traffic Lanes along Sixth Line*	Alternative 6 *Intersection Improvements*	Alternative 7 *Upgrade other Arterial Corridors or Build a New Corridor*
	Emergency Response	Access for emergency vehicles	○ Increased response time due to increase in traffic.	◔ No improvement over the existing conditions	◔ Potential for marginal reduction in response time	◐ Potential for marginal reduction in response time	● Potential for reduction in response time	● Potential for reduction in response time	◐ Potential for marginal reduction in response time
	Noise	Ability to minimize impacts on ambient noise levels after construction	○ Increase in noise levels due to increase in traffic and congestion	◐ Existing noise levels to remain the same	◐ Marginal decrease in noise levels due to reduction in traffic volume	◐ Marginal decrease in noise levels due to reduced traffic congestion	◐ Minor increase in noise levels according to MOE guideline	◐ Minor increase in noise levels according to MOE guideline	◐ Potential increase in noise along other roads
	Air Quality	Ability to minimize the air particulate matter and emissions	○ Decrease in air quality due to increase in traffic	◐ Air quality to remain the same	◕ Increase in air quality due to decrease in congestion	◐ Marginal Increase in air quality due to decrease in congestion	◕ Increase in air quality due to reduction in congestion	◕ Increase in air quality due to decrease in congestion	◐ Potential improvement in air quality with reduced traffic congestion
Aesthetics/ Streetscape	Aesthetics	Ability to improve Aesthetics/ Streetscape	◐ No improvement over the existing conditions	◐ No improvement over the existing conditions	◐ No impacts	◐ No impacts	● No impacts to existing landscape and aesthetics but has potential to significantly improve aesthetics along Sixth Line	● No impacts to landscape areas at intersections but has potential to significantly improve aesthetics at intersections	◐ Potential impacts to landscape areas along other roads
Cost	Capital Costs	Cost of implementation and property	● No cost impacts	● No cost impacts	◐ Some cost impacts	◐ Some cost impacts	○ High cost impacts	○ High cost impacts	○ High cost impacts
Ability to Address Problem/Opportunity Statement			No	No	Somewhat	Somewhat	Yes	Somewhat	Somewhat
Recommendation			**Still viable alternative;** Does not address the problem statement, but will be carried forward for comparison purposes.	**Not carried forward;** Policies already exist that place constraints on where growth may occur and/or how much development may occur.	**Carried forward;** In combination with Alternative 5.	**Carried forward;** In combination with Alternative 5.	**Carried forward;** Meets Town's Official Plan-Livable Oakville (LO) and Transportation Master Plan (TMP) Goals and Objectives.	**Carried forward;** In combination with Alternative 5.	**Not Carried forward;** as part of this study

LEGEND: ● Most Desirable ◕ More Desirable ◐ Neutral ◔ Less Desirable ○ Least Desirable

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Preliminary Preferred Solution

The Preliminary Preferred Solution includes a combination of the following:

- Alternative 3: Transportation Demand Management Initiatives (TDM); Alternative 4: Transportation System Management (TSM);
- Alternative 5: Provide additional traffic lanes along Sixth Line; and
- Alternative 6: Intersection improvements.

Next Steps…

Following this Public Information Centre, the Town of Oakville will:

- Review all comments received and reassess / confirm the preliminary preferred solution;
- Respond to all written questions and comments;
- Generate and develop alternative designs to implement the preliminary preferred solution;
- Identify the net impacts of the alternative design concepts on the environment, undertake a comparative evaluation and develop a preliminary preferred design;
- Conduct a second Public Information Centre in early 2013 and present the alternative designs and preliminary preferred design.

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Your Involvement is Important

- What issues are critical to you?
- Please fill out a Comment Sheet
- Please keep in touch with us:

Dale Lipnicky, C.E.T.
Town of Oakville
1225 Trafalgar Road
Oakville, ON L6H 0H3
905-845-6601 Ext. 3326
DLipnicky@oakville.ca

Nasser N. Saad, P. Eng.
Morrison Hershfield Limited
1005 Skyview Drive, Suite 175
Burlington, ON L7P 5B1
(905) 319-6668, Ext. 1101202
nsaad@morrisonhershfield.com

Thank you!

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Appendix D – Completed PIC #1 Comments Sheets

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TOWN OF OAKVILLE
SIXTH LINE CLASS ENVIRONMENTAL ASSESSMENT
DUNDAS STREET TO HIGHWAY 407 (ETR)

COMMENT SHEET
PUBLIC INFORMATION CENTRE #1
TUESDAY, DECEMBER 4, 2012

Please provide your comments on any aspect of the study being considered and place your comment sheet in the box provided or submit prior to Tuesday, December 18, 2012:

Mr. Nasser N. Saad, P. Eng., P.E
Manager, Municipal Transportation
Morrison Hershfield Limited
1005 Skyview Drive, Suite 175
Burlington, ON
L7P 5B1

Fax. 905-319-5548
nsaad@morrisonhershfield.com

Comments:

1. PLEASE ENSURE ON-ROAD BIKE LANES ARE INSTALLED ALONG THE WHOLE LENGTH OF SIXTH LINE INCLUDED IN THE PROJECT.

2. PLEASE LIAISE WITH THE TOWN OF MILTON TO ENSURE THAT THEY ALSO WIDEN SIXTH LINE AND INSTALL BIKE LANES NORTH OF 407 UP TO STEELES.

3. PLEASE INSTALL TRAFFIC CIRCLES / ROUNDABOUTS AT ALL JUNCTIONS ALONG SIXTH LINE NOT ADDITIONAL TRAFFIC LIGHTS.

TRAFFIC CIRCLES DO NOT NEED TO BE LARGE IN DIAMETER – CAN BE ONLY A FEW FEET IN DIAMETER (SEE UK PRACTICE)

TRAFFIC CIRCLES SMOOTH OUT THE TRAFFIC FLOW, SAVE ON GAS WASTED IDLING AT LIGHTS, SAVE ON DRIVER FRUSTRATION.

[redacted]

Thank you for your participation. Information received will be maintained on file for use during the study and will be included in the study documentation. With the exception of personal information, all comments received will become part of the public record.

OAKVILLE

MORRISON HERSHFIELD

TOWN OF OAKVILLE
SIXTH LINE CLASS ENVIRONMENTAL ASSESSMENT
DUNDAS STREET TO HIGHWAY 407 (ETR)

COMMENT SHEET
PUBLIC INFORMATION CENTRE #1
TUESDAY, DECEMBER 4, 2012

Please provide your comments on any aspect of the study being considered and place your comment sheet in the box provided or submit prior to Tuesday, December 18, 2012:

Mr. Nasser N. Saad, P. Eng., P.E
Manager, Municipal Transportation
Morrison Hershfield Limited
1005 Skyview Drive, Suite 175
Burlington, ON
L7P 5B1

Fax. 905-319-5548
nsaad@morrisonhershfield.com

Comments:

We are owners of 3043 Sixth Line and are concerned about the road widening of Sixth Line. We understand that it will be widened and that's fine; just concerned of how much land will be taken off our property

Thanks,

[redacted]

Thank you for your participation. Information received will be maintained on file for use during the study and will be included in the study documentation. With the exception of personal information, all comments received will become part of the public record.

OAKVILLE

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TOWN OF OAKVILLE
SIXTH LINE CLASS ENVIRONMENTAL ASSESSMENT
DUNDAS STREET TO HIGHWAY 407 (ETR)

COMMENT SHEET
PUBLIC INFORMATION CENTRE #1
TUESDAY, DECEMBER 4, 2012

Please provide your comments on any aspect of the study being considered and place your comment sheet in the box provided or submit prior to Tuesday, December 18, 2012:

Mr. Nasser N. Saad, P. Eng., P.E
Manager, Municipal Transportation
Morrison Hershfield Limited
1005 Skyview Drive, Suite 175
Burlington, ON
L7P 5B1

Fax. 905-319-5548
nsaad@morrisonhershfield.com

Comments:

I think the Town of Oakville should digitally document the last of the region's agricultural/rural area's transition to pure suburb. I'm picturing something like Google Streetview, except that you would be able to click forwards & backwards through time as well as space. If you traced the same route down Sixth Line with a camera two or three times a year for ten to fifteen years, a digital archive could be compiled for citizens (present and future) to see a time-lapse of a suburb's creation from rural lands.

Martin-Pierre Blouin

From: Nasser Saad
Sent: Tuesday, December 18, 2012 10:35 AM
To: Sara Fadaee; Martin-Pierre Blouin
Subject: FW: 6th Line EA - Dundas to 407

Nasser N. Saad, P.Eng., P.E
Designated Consulting Engineer
Senior Transportation Manager
nsaad@morrisonhershfield.com
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Dir: 905-319-6668 x1101202 | Fax: 905-319-5548
morrisonhershfield.com

From: [redacted]
Sent: [redacted]
To: Nasser Saad
Cc: David Bosiljevac; David S Harris
Subject: 6th Line EA - Dundas to 407

Dear Mr. Saad,
I have reviewed the 11"x17" drawings handed to me at the Open House held at Oakville Town Hall on Tuesday, Dec 4th, 2012, I respectfully submit my comments as follows:-

1. 6th line is a very well used north-westerly route by cyclists. It is one of only 3 "safe" north-westerly routes out of urban Oakville. Therefore how this section of roadway is improved will be of prime interest to many people.

2. For the record the Oakville Cycling Club has more that 200 members in 2012, many of which use 6th line.

3. Present experiences while cycling on the section of 6th line between Dundas and Burnhamthope is with motor vehicles travelling at or above the present 80 km/h speed limit, particularly southbound. The paved portion is narrow making it difficult for vehicles to overtake a cyclist (providing a 1 metre clearance) when an oncoming vehicle is approaching.

4. Traffic calming measures are required, either 'rumble Strips' or 'round-abouts' at intersections. Traffic lights also work but too many in short sections of roadway can cause frustrations to vehicle operators.

5. With reference to the North Oakville East Secondary Plan (2008) - Land Use figure that was reproduced and displayed at the Open House on Dec 4, 2012, my comments are:-

5a) It is noted that there could be up to 5 intermediate intersections between Dundas and the present Burnhamthorpe Road and additional 2 more between Burnhamthorpe and the 407.

5b) One of the displays indicate that in the future (2031) these intersections would be controlled via traffic lights and verbally I recall that they would be co-ordinated to work together. A major concern when any road has many traffic signals placed close together (co-ordinated or not) they tend to promote speeding in order that the vehicle operator does not get caught at the next light. I would ask that traffic calming measures be employed as identified in 4 above at some of these intersections.

5c) It is recognized that 'round-abouts' are new to this area but work well in Britain and Continental Europe. The one recently built on Tremaine Road, Milton is well designed and appears to work well.

6. If active transportation is to be taken into consideration for the renovation of 6th Line, then the minimum expectation would be a 1.5 metre wide identified section with a continuous painted line on both sides of the road. It has been proved in other parts of Ontario that where such delineation has been made the life expectancy of the vehicle travelled section last longer due to the edges not breaking away.

7. Any drainage should be via slots in the vertical part of the curb into catch-basins thus eliminating cast drain covers which tend to sink with time. A good example is to be found on McCraney Street west of Trafalgar Road.

I trust these comments are taken into consideration and look forward to the next meeting in 2013.

Please note these comments are personal and do not represent a collective comment from the Oakville Cycling Club.

[redacted]

MUNN'S
UNITED CHURCH

MUNN'S UNITED CHURCH
5 Dundas Street East, Oakville,
Ontario, Canada L6H 7C4
Tel: 905 257-8435
Fax: 905 257-8434
office@munnsunited.com
www.munnsunited.com

December 18, 2012

Mr. Nasser N. Saad
Manager, Municipal Transportation
Morrison Hershfield Limited
1005 Skyview Drive, Suite 175
Burlington, ON, L7P 5B1

Dear Mr. Saad:

Munn's United Church, 5 Dundas St E., Oakville is submitting the following comments regarding the Sixth Line Environmental Assessment PIC #1, held on December 4, 2012.

As you may be aware Munn's is currently in discussions *with Halton R*egion concerning the widening of Dundas Street immediately to the south of the church and the effect it will have on our property and enjoyment of same. We have filed an appeal to Regional Official Plan Amendment No. 38 regarding environmental assessments and right of way takings and have requested Ontario Municipal Board assisted mediation to resolve that concern. Overall, we have found the experience of working with Halton Region through the Environmental Assessment process to be challenging. As discussed with you at the first PIC, It is our intention in submitting comments to the Town of Oakville at the beginning of the project that we can have a positive working relationship and proactively addresses our concerns.

We have similar concerns regarding the Sixth Line possible widening as we do with the Region's plans.

In general, as a church, we are worried about our ability to continue to worship in our historic site in peace and quiet. This is not just a Sunday issue as the church facilities are used throughout the week by a non-profit daycare centre, by the church for fundraising events and by outside charitable groups such as Sparks and Pathfinders and Al Anon. The effect of noise and vibration from the increased and closer traffic patterns is of particular concern. Anything that can be done to minimize or ameliorate the noise and vibration will be welcome.

We are also concerned about the potential loss of property along Sixth Line. We already know we will lose property to the south along Dundas and would hate to lose even more along Sixth Line, especially after giving up land in the 1980s in exchange for permission to construct our church hall and day care centre. Loss of any parking spots because of actions by the Region or town would be a major problem as we cannot expand the parking areas to the east because of environmental constraints due to the creek and related setback requirements.

In addition, we certainly hope that the Region and Town are coordinating their plans for the intersection of Dundas and Sixth Line, especially as they relate to the daylighting triangle on the northeast corner, and for general safety matters. Safety has been a key consideration in our discussions with the Region because of the use of our facilities seven days by week. Particularly we have concerns about the lack of a traffic lane from Dundas onto Sixth Line and subsequently access into Munn's Church. The proposed plans may also impact signage for the church. For your information the Region has already developed draft plans for the entranceways into Munn's. Your study should probably review these draft plans.

The cumulative and continuing effect of construction in the surrounding vicinity is also a concern. In the last two years there have been a number of construction and utility projects – sewer and water along Dundas, hydro and gas along Sixth Line, and subdivision construction across Sixth Line and south of Dundas east of sixth Line. All of these projects have had negative effects on our operations and fundraising events.

In the last three months we have had numerous interruptions in our phone and cable services, many for multiple days in a row while the utilities involved find and repair the damage done by the various contractors working on the projects. This is a serious safety issue for us as parents and the daycare are unable to communicate during an outage, and our fire and security systems are not connected. It would be appreciated if any widening of Sixth Line be planned so that the effect on the church is minimized. Of course we are concerned that church members and staff, daycare parents and staff, and all the various groups that use the church on a daily or weekly basis be able to access the property safely and with as little inconvenience as possible, and be in a safe environment once there.

In summary, Munn's is most concerned about changes to Sixth Line that might seriously hinder the operation of the church and the other organizations using our facilities. Items of concern include but are not limited to safety, noise, vibration, accessibility and loss of land (including parking spaces).

Please do not hesitate to contact us if you have any questions or concerns with respect to our comments.

Yours very truly,

Munn's United Church

T Robinson

Ted Robinson and Norm Graham, Trustees.

CC: Oakville Councilors Jeff Knoll and Marc Grant

GOVERNMENT SERVICES BUILDING
AND CULTURAL CENTRE

CURVE LAKE
FIRST NATION

CURVE LAKE, ONTARIO K0L 1R0

PHONE (705) 657-8045
FAX (705) 657-8708

RECEIVED

DEC 13 2012

MH LTD.

December 10, 2012

Dale Lipnicky
1225 Trafalgar Road
Oakville, Ontario L6H 0H3

Dear Dale Lipnicky,

RE: Notice of Public Information Centre #1, Sixth Line Between Dundas Street to Highway 407, Town of Oakville

We would like to acknowledge receipt of your correspondence, which we received on 11/26/2012 regarding the above noted project.

As you may be aware, the area in which your project is proposed is situated within the Traditional Territory of Curve Lake First Nation. Our First Nation's Territory is incorporated within the Williams Treaty Territory and is the subject of a claim under Canada's Specific Claims Policy. We strongly suggest that you provide Karry Sandy-Mackenzie, Williams Treaty First Nation Claims Coordinator, 8 Creswick Court, Barrie, ON L4M 2S7, with a copy of your proposal as your obligation to consult to also extend to the other First Nations of the Williams Treaty.

Although we have not conducted exhaustive research nor have we the resources to do so, Curve Lake First Nation Council is not currently aware of any issues that would cause concern with respect to our Traditional, Aboriginal and Treaty rights.

Please note that we have particular concern for the remains of our ancestors. Should excavation unearth bones, remains or other such evidence of a native burial site or any Archaeological findings, we must be notified without delay. In the case of a burial site, Council reminds you of your obligations under the *Cemeteries Act* to notify the nearest First Nation Government or other community of Aboriginal people which is willing to act as a representative and whose members have a close cultural affinity to the interred person. As I am sure you are aware, the regulations further state that the representative is needed before the remains and associated artifacts can be removed. Should such a find occur, we request that you contact our First Nation immediately. Curve Lake First Nation also has available, trained Archaeological Liaisons who are able to actively participate in the archaeological assessment process as a member of a field crew, the cost of which will be borne by the proponent.

If any new, undisclosed or unforeseen issues should arise, that has potential for anticipated negative environmental impacts or anticipated impacts on our Treaty and Aboriginal rights we require that we be notified regarding these as well.

Thank you for recognizing the importance of consultation and respecting your duty to consult obligations as determined by the Supreme Court of Canada.

Should you have further questions or if you wish to hire a liaison for a project, please feel free to contact Melissa Dokis or Krista Coppaway at 705-657-8045x222 or dutytoconsult@curvelakefn.ca.

Yours sincerely,

Phyllis Williams

Chief Phyllis Williams
Curve Lake First Nation

C.C. Nasser N. Saad Senior Project Manager, Morrison Hershfield Limited

Appendix E – Responses to Comments

MORRISON HERSHFIELD

February 1, 2013

[redacted]

Re: Public Information Centre #1 – Comments

Class Environmental Assessment Study
Sixth Line from Dundas Street to Highway 407 ETR
Town of Oakville Project No. EA-067-11

Dear [redacted],

Thank you for your comments and interest in this Study.

As part of the Class Environmental Assessment Study for Sixth Line between Dundas Street and Highway 407 ETR, the Town of Oakville has identified the need for improvements to the Sixth Line corridor. The project team made available the opportunity for affected and interested parties to provide input to the planning and design investigations. An open house Public Information Centre (PIC #1) was held on December 4th, 2012 from 6:00 pm to 8:00 pm. A total of 25 members of the public attended, and 5 responses were gathered from comment sheets and correspondences.

The project team has gone through all of the received comments from PIC #1, and prepared a set of responses for these comments, in an effort to provide clarification of the study to the public. Below, are the responses to the comments you provided in the PIC:

1) ***Comment:*** Please note that we have particular concern for the remains of our ancestors. Should excavation unearth bones, remains or other such evidence of a native burial site or any Archaeological findings, we must be notified without delay. In the case of a burial site, Council reminds you of your obligations under the Cemeteries Act to notify the nearest First Nation Government or other community of Aboriginal people which is willing to act as a representative and whose members have a close cultural affinity to the interred person. As I am sure you are aware, the regulations further state that the representative us needed before the remains and associated artifacts can be removed. Should such a find occur, we request that you contact our First Nation immediately.

   Response: *A stage 1 archaeological assessment study will be undertaken as part of the Class EA to evaluate areas of archaeological potentials within the proposed corridor. Mitigation measures alternatives will be developed in accordance with the current applicable standards and guidelines to minimize archaeological impacts. The project team is committed to consult with all interested parties, including First Nations and to ensure that First Nations interests and concerns are adequately addressed throughout the Class EA process.*

Based on the input from PIC #1, we will examine **alternative design concepts (Phase 3)**, for implementing the preferred solution of widening Sixth Line between Dundas Street and Highway 407 ETR. The alternative design concepts will be evaluated based on the design criteria established for this EA study. Your particular concerns will be taken into consideration while developing the alternative design concepts.

Once again, we appreciate receiving your comments.

Sincerely,

Nasser N. Saad, P.Eng., P.E
Senior Transportation Manager, Municipal Transportation
Dir.: 905-319-6668 x1101202 | Fax: 905-319-5548
NSaad@morrisonhershfield.com

Cc: Dale Lipnicky, Project Leader, Town of Oakville

MORRISON HERSHFIELD

February 1, 2013

[redacted]

Re: Public Information Centre #1 – Comments

Class Environmental Assessment Study
Sixth Line from Dundas Street to Highway 407 ETR
Town of Oakville Project No. EA-067-11

Dear [redacted],

Thank you for your comments and interest in this Study.

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The project team has gone through all of the received comments from PIC #1, and prepared a set of responses for these comments, in an effort to provide clarification of the study to the public. Below, are the responses to the comments you provided in the PIC:

1) ***Comment:*** Please ensure on-road bike lanes are installed along the whole length of Sixth Line included in the project.

   Response: *Transportation Demand Initiatives including the provision of 1.5m on-street bike lanes have been carried forward as part of the preferred solution.*

2) ***Comment:*** Please liaise with the Town of Milton to ensure that they also widen Sixth Line and install bike lanes north of 407 up to Steeles.

   Response: *The study area boundary is located to the south of Highway 407 ETR. Improvements to the north of Highway 407 ETR are outside the scope of this environmental assessment.*

3) ***Comment:*** Please install traffic circles/roundabouts at all junctions along Sixth Line not additional traffic lights. Traffic circles do not need to be large in diameter – can only be a few feet in diameter (see UK practice). Traffic circles smooth out the traffic flow, save on gas wasted idling at lights and save on driver frustration.

Response: *Further topographic and legal survey work is currently being undertaken by the Town of Oakville to confirm the available right-of-way within the vicinity of the intersections. If the roundabouts could be installed within the existing right-way or with minimum impacts to the adjacent properties while addressing all traffic problems for the future conditions, then the roundabout option may be considered as an alternative. The completed evaluation will be presented in PIC#2 which is currently scheduled for spring 2013. The alternative design concepts will be evaluated based on the design criteria established for this EA study.*

Once again, we appreciate receiving your comments.

Sincerely,

Nasser N. Saad, P.Eng., P.E
Senior Transportation Manager, Municipal Transportation
Dir.: 905-319-6668 x1101202 | Fax: 905-319-5548
NSaad@morrisonhershfield.com

Cc: Dale Lipnicky, Project Leader, Town of Oakville

MORRISON HERSHFIELD

February 1, 2013

[redacted]

Re: Public Information Centre #1 – Comments

Class Environmental Assessment Study
Sixth Line from Dundas Street to Highway 407 ETR
Town of Oakville Project No. EA-067-11

Dear [redacted],

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As part of the Class Environmental Assessment Study for Sixth Line between Dundas Street and Highway 407 ETR, the Town of Oakville has identified the need for improvements to the Sixth Line corridor. The project team made available the opportunity for affected and interested parties to provide input to the planning and design investigations. An open house Public Information Centre (PIC #1) was held on December 4th, 2012 from 6:00 pm to 8:00 pm. A total of 25 members of the public attended, and 5 responses were gathered from comment sheets and correspondences.

The project team has gone through all of the received comments from PIC #1, and prepared a set of responses for these comments, in an effort to provide clarification of the study to the public. Below, are the responses to the comments you provided in the PIC:

1) ***Comment:*** We are owners of 3043 Sixth Line and are concerned about the road widening of Sixth Line. We understand that it will be widened and that's fine; just concerned of how much land will be taken off our property.

Response: *Your particular concerns will be taken into consideration while developing the alternative design concepts. The alternative solutions and the preferred design concepts for the preferred solution will be developed and presented in PIC#2. The PIC#2 is currently scheduled to take place during the spring of 2013. All efforts will be made to minimize loss of property.*

Once again, we appreciate receiving your comments.

Sincerely,

Nasser N. Saad, P.Eng., P.E
Senior Transportation Manager, Municipal Transportation
Dir.: 905-319-6668 x1101202 | Fax: 905-319-5548
NSaad@morrisonhershfield.com

Cc: Dale Lipnicky, Project Leader, Town of Oakville

MORRISON HERSHFIELD

February 1, 2013

[redacted]

Re: Public Information Centre #1 – Comments

Class Environmental Assessment Study
Sixth Line from Dundas Street to Highway 407 ETR
Town of Oakville Project No. EA-067-11

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Thank you for your comments and interest in this Study.

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The project team has gone through all of the received comments from PIC #1, and prepared a set of responses for these comments, in an effort to provide clarification of the study to the public. Below, are the responses to the comments you provided in the PIC:

1) ***Comment:*** 6th line is a very well used north-westerly route by cyclists. It is one of only 3 "safe" north-westerly routes out of urban Oakville. Therefore how this section of roadway is improved will be of prime interest to many people.

   Response: *Comment Noted.*

2) ***Comment:*** For the record the Oakville Cycling Club has more than 200 members in 2012, many of which use 6th line.

   Response: *Comment Noted.*

3) ***Comment:*** Present experiences while cycling on the section of 6th line between Dundas and Burnhamthorpe is with motor vehicles travelling at or above the present 80 km/h speed limit, particularly southbound. The paved portion is narrow making it difficult for vehicles to overtake a cyclist (providing a 1 metre clearance) when an oncoming vehicle is approaching.

   Response: *Transportation Demand Initiatives including the provision of 1.5m on-street bike lanes has been carried forward as part of the study. Additionally, the existing rural* *section will be converted to urban section which will also include 1.5m sidewalks. The proposed roadway typical section will be presented in the PIC#2. PIC#2 is currently scheduled to take place in spring 2013.*

4) ***Comment:*** Traffic calming measures are required, either 'rumble Strips' or 'round-abouts' at intersections. Traffic lights also work but too many in short sections of roadway can cause frustrations to vehicle operators.

Response: *Further topographic and legal survey work is currently being undertaken by the Town of Oakville to confirm available right-of-way within the vicinity of the intersections. If the roundabouts could be installed within the existing right-way while addressing all traffic problems for the future conditions, then further evaluation of roundabout option may be considered for traffic calming. The alternative design concepts will be evaluated based on the design criteria established for this EA study. The PIC#2 is currently scheduled to take place in spring of 2013.*

5) ***Comment:*** One of the displays indicates that in the future (2031) these intersections would be controlled via traffic lights and verbally I recall that they would be co-ordinated to work together. A major concern when any road has many traffic signals placed close together (co-ordinated or not) they tend to promote speeding in order that the vehicle operator does not get caught at the next light. I would ask that traffic calming measures be employed as identified in 4 above at some of these intersections.

Response: *See Response #4.*

6) ***Comment:*** It is recognized that 'round-abouts' are new to this area but work well in Britain and Continental Europe. The one recently built on Tremaine Road, Milton is well designed and appears to work well.

Response: See Response #4.

7) ***Comment:*** If active transportation is to be taken into consideration for the renovation of 6th Line, then the minimum expectation would be a 1.5 metre wide identified section with a continuous painted line on both sides of the road. It has been proved in other parts of Ontario that where such delineation has been made the life expectancy of the vehicle travelled section last longer due to the edges not breaking away.

Response: *See Response #3.*

8) ***Comment:*** Any drainage should be via slots in the vertical part of the curb into catch-basins thus eliminating cast drain covers which tend to sink with time. A good example is to be found on McCraney Street west of Trafalgar Road.

Response: *Preliminary storm water management (SWM) will be conducted during the next phases of the study. The SWM study will be completed in accordance with the applicable standards and will satisfy the requirements of the Town of Oakville and Conservation Halton. The selection of drainage structure type will be determined during the detailed design phase.*

Once again, we appreciate receiving your comments.

Sincerely,

Nasser N. Saad, P.Eng., P.E
Senior Transportation Manager, Municipal Transportation
Dir.: 905-319-6668 x1101202 | Fax: 905-319-5548
NSaad@morrisonhershfield.com

Cc: Dale Lipnicky, Project Leader, Town of Oakville

MORRISON HERSHFIELD

February 1, 2013

[redacted]

Re: Public Information Centre #1 – Comments

Class Environmental Assessment Study
Sixth Line from Dundas Street to Highway 407 ETR
Town of Oakville Project No. EA-067-11

Dear [redacted],

Thank you for your comments and interest in this Study.

As part of the Class Environmental Assessment Study for Sixth Line between Dundas Street and Highway 407 ETR, the Town of Oakville has identified the need for improvements to the Sixth Line corridor. The project team made available the opportunity for affected and interested parties to provide input to the planning and design investigations. An open house Public Information Centre (PIC #1) was held on December 4th, 2012 from 6:00 pm to 8:00 pm. A total of 25 members of the public attended, and 5 responses were gathered from comment sheets and correspondences.

The project team has gone through all of the received comments from PIC #1, and prepared a set of responses for these comments, in an effort to provide clarification of the study to the public. Below, are the responses to the comments you provided in the PIC:

1) ***Comment:*** The effect of noise and vibration from the increased and closer traffic patterns is of particular concern. Anything that can be done to minimize or ameliorate the noise and vibration will be welcome.

   Response: *A noise assessment study will be undertaken as part of Class EA to evaluate existing and future noise levels within the proposed corridor. If the noise level after the improvements is not within the acceptable range, noise mitigation measures alternatives will be developed in accordance with the current applicable standards and guidelines. Further discussion will take place with the Church's representative prior implementation of the preferred solution.*

2) ***Comment:*** We are also concerned about the potential loss of property along Sixth Line. Loss of any parking spots because of actions by the Region or Town would be a major problem as we cannot expand the parking areas to the east because of environmental constraints due to the creek and related setback requirements.

   Response: *The Town of Oakville currently working on completing the topographic and legal survey for the project, upon review of the survey, we will re-evaluate the proposed roadway section and its impact on the right-of-way. The roadway section presented in the*

PIC#1 was developed to address future traffic conditions. All efforts will be made to minimize loss of property.

3) **Comment:** Safety has been a key consideration in our discussions with the Region because of the use of our facilities seven days by week. Particularly we have concerns about the lack of a traffic lane from Dundas onto Sixth Line and subsequently access into Munn's Church. The proposed plans may also impact signage for the church. For your information the Region has already developed draft plans for the entranceways into Munn's. Your study should probably review these draft plans.

   ***Response:** As per response#2, during the next phases of the study, we will further evaluate the intersection layout which will include the length and the width of the right and left turn lanes. The lanes arrangement at the subject intersection will be finalized based on the completed traffic study for the future conditions. Regarding the existing signs within the Church right-of-way, based on selected preferred solution, the signs locations will be evaluated. If the existing signs are located within the clear zone (the offset necessary to address Roadside Safety guidelines), then new locations for the signs will be proposed and reviewed with the Church's representations. However, the exact locations will be determined during the detailed design phase.*

4) **Comment:** We certainly hope that the Region and Town are coordinating their plans for the intersection of Dundas and Sixth Line, especially as they relate to the daylighting triangle on the northeast corner, and for general safety matters.

   ***Response:** The improvements to the Dundas Street/Sixth Line intersection will be coordinated with Halton Region, Approval Agencies and other Stakeholders.*

5) **Comment:** The cumulative and continuing effect of construction in the surrounding vicinity is also a concern. In the last two years there have been a number of construction and utility projects – sewer and water along Dundas, hydro and gas along Sixth Line, and subdivision construction across Sixth Line and south of Dundas east of sixth Line. All of these projects have had negative effects on our operations and fundraising events.

   ***Response:** Preliminary construction staging will be evaluated during the next phases of the Class EA. However, final staging plans development and coordination with utility companies will be undertaken during the detail and construction phases of the project.*

Based on the input from PIC #1, we will examine **alternative design concepts (Phase 3)**, for implementing the preferred solution of widening Sixth Line between Dundas Street and Highway 407 ETR. The alternative design concepts will be evaluated based on the design criteria established for this EA study. Your particular concerns will be taken into consideration while developing the alternative design concepts.

Once again, we appreciate receiving your comments.

Sincerely,

Nasser N. Saad, P.Eng., P.E
Senior Transportation Manager, Municipal Transportation
Dir.: 905-319-6668 x1101202 | Fax: 905-319-5548
NSaad@morrisonhershfield.com

Cc: Dale Lipnicky, Project Leader, Town of Oakville

Appendix A.6 – PIC #2 Summary Report

TOWN OF OAKVILLE

SIXTH LINE FROM DUNDAS STREET

TO HIGHWAY 407 ETR

CLASS ENVIRONMENTAL ASSESSMENT STUDY

TOWN OF OAKVILLE PROJECT NO. EA-067-11

PUBLIC INFORMATION CENTRE #2 SUMMARY REPORT

MORRISON HERSHFIELD LIMITED
235 YORKLAND BOULEVARD, SUITE 600
TORONTO, ONTARIO, M2J 1T1
TEL: (416) 499-3110
FAX: (416) 499-9658

JANUARY 16, 2014

MORRISON HERSHFIELD

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1 PROJECT INTRODUCTION

The Town of Oakville is conducting a Class Environmental Assessment (EA) study for improvements to Sixth Line between Dundas Street to Highway 407 ETR as shown in **Figure 1**. In order to best address operational deficiencies and the need for additional north-south transportation capacity in the area, a number of alternatives will be examined as part of the study. The study alternatives will include the potential widening of Sixth Line from two lanes to four lanes with the appropriate turning lanes at intersections, cross-sectional elements, intersection improvements, and transit improvements.

The study will review and confirm the need for improvements to the corridor and assess alternative solutions, including an evaluation of potential environmental impacts. Upon completion of the study, an Environmental Study Report (Phase 4 of the Study) will be filed for public review.

A key component of the study will be consultation with interested stakeholders (public and agencies) at Public Information Centres (PICs). The purpose of the PIC is to obtain public input after reviewing the problem being addressed, background information, the alternative solutions and designs being considered, and identifying a preliminary preferred solution and design.

The study is being carried out in accordance with the planning and design process for Schedule 'C' projects as outlined in the *Municipal Class Environmental Assessment* (October 2000, as amended in 2011), which is approved under the *Ontario Environmental Assessment Act*.

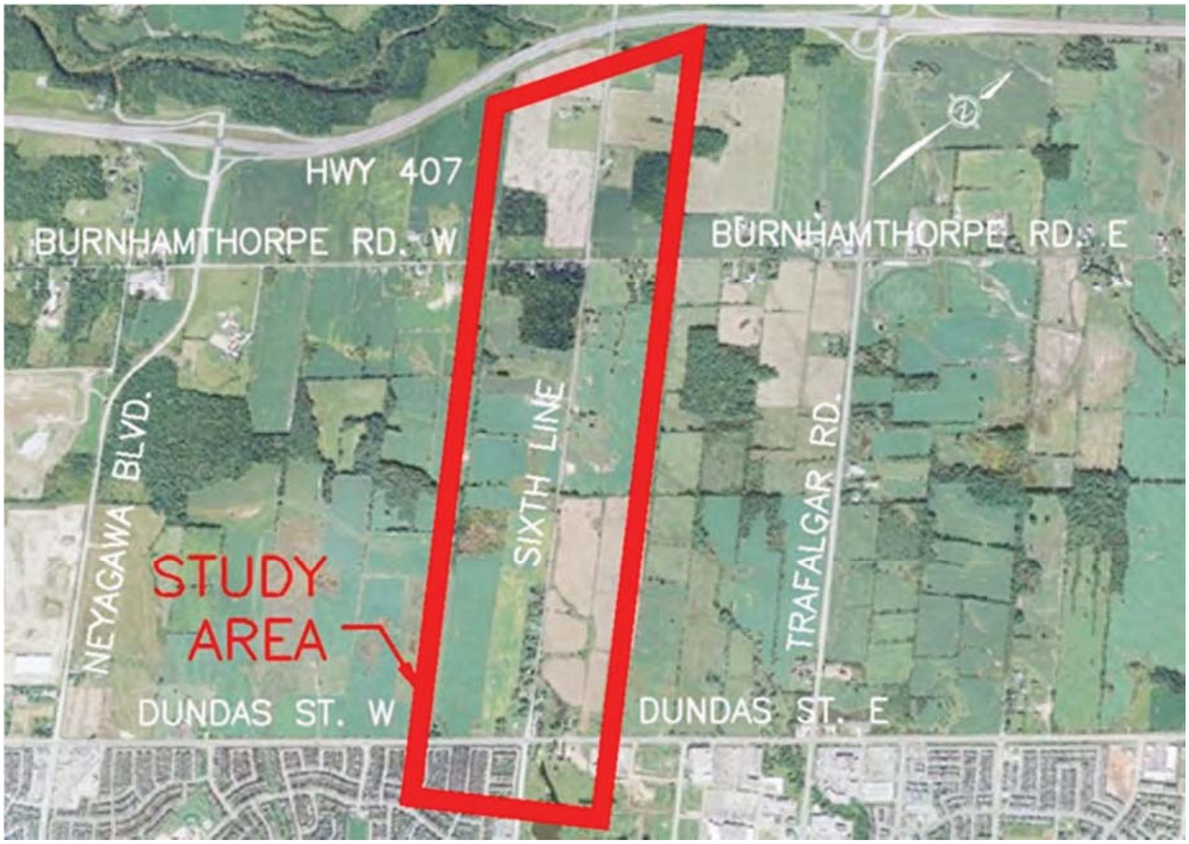


Figure 1 – Study Area Key Plan

2 NOTIFICATIONS

2.1 Public Notification

The public was notified of the PIC #2 for Sixth Line from Dundas Street to Highway 407 by:

- Advertisements that were published in the local newspaper.
- Notices were sent by mail by prior to the PIC to all stakeholders and agencies according to the project mailing list. A copy of the Notice of Public Information Centre #2 is shown in **Appendix A**.
- Online via the Town of Oakville website at www.oakville.ca

2.2 Agencies /Organizations

Notices were sent to relevant agencies on the initial agency list. Contacts from the Municipal, Provincial and Federal government agencies as well as First Nations were also notified about the Study and PICs.

3 PUBLIC INFORMATION CENTRE

A Public Information Centre was arranged for Sixth Line from Dundas Street to Highway 407 ETR (PIC #2). The Public Information Centre was held in the Committee Room #1 at the Oakville Townhall, 1225 Trafalgar Road, Oakville on Wedensday, October 2nd, 2013, from 6:00pm to 8:00pm.

The presentation boards for PIC #2 were organized to provide an opportunity for the public to review the summary of studies completed since the first public information centre, the alternative designs considered, evaluation of alternative designs and identifying a preliminary preferred design and the potential benefits, impacts and mitigation measures associated with the preliminary preferred design. Comment sheets were provided to members of the public who attended to write comments on display boards.

A total of 12 members of the public had attended the Public Information Centre for Sixth Line. The Public who attended the PIC were asked to fill the sign-in sheet and to provide comments on comment sheet. A sample comment sheet is presented in **Appendix B**.

4 SIXTH LINE FROM DUNDAS STREET TO HIGHWAY 407 ETR

4.1 Material Presented

The presentation boards for Sixth Line from Dundas Street to Highway 407 ETR are available online at http://www.oakville.ca and in **Appendix C**.

The presentation material includes details on:

- Purpose of the Public Information Centre #2
- Study Purpose
- Objectives of the Study
- Municipal Class EA Process in Ontario

- Study Area
- Summary of Public Information Centre #1 – Problem/Opportunity Statement
- Summary of Public Information Centre #1 – Preliminary Preferred Solution
- Summary of Feedback and Responses from PIC #1
- Summary of Studies Completed for EA Study
- Alternative Designs for the Widening of Sixth Line from Dundas Street to Highway 407 (ETR)
- Alternative Design Evaluation Criteria
- Assessment & Evaluation of Alternative Designs
- Existing Archaeological Conditions
- Preliminary Preferred Design - Plan and Profile
- Preliminary Preferred Design – Typical Sections
- Preliminary Preferred Design – Key Features
- Preliminary Preferred Design – Landscaping Concepts
- Preliminary Preferred Design – Construction Phasing
- Next Steps

Members of public were assisted by the Town of Oakville staff, Region of Halton staff and Morrison Hershfield staff to understand the EA process.

Feedback was solicited at the PIC from the participants either in-person or by providing a comment sheet. Participants at the PIC had the choice of submitting their comment sheet via a "comment box" or by mailing the comment sheet to the consultant. Any comments received, except for personal information, would be kept as public record. The comments are summarized below. The completed comment sheets, excluding personal information, are included in **Appendix D**.

4.2 Comments

The PIC provided the public with the opportunity to express their comments and concerns regarding the progress of the project and the presented preliminary preferred solution. In total, 1 comment sheet was collected by drop-in, and email by the deadline date of October 11th, 2013. A summary of the received comments and responses is shown in **Table 1.**

Table 1 – Summary of PIC #2 Comments and Responses

Item #	Comments	Responses
1	1. Intersection locations inconsistent with draft plan. 2. Requires direct frontage as per draft plan. 3. Matching of grades to proposed development grades.	The preliminary preferred design was revised for consistency with the draft plan.

4.3 Next Steps

The Sixth Line EA Study from Dundas Street to Highway 407 ETR needs to complete Phase 4 of Municipal Class EA process. The next steps for the Class Environmental Assessment are:

- Review all comments and suggestions received from the public and agencies;
- Respond to written questions and comments, if response is requested;
- Based on input received from public agencies and other stakeholders, finalize the preliminary design of the preferred alternative;
- Prepare the Environmental Study Report (ESR);
- File the ESR and make it available for public review and comments for a minimum 30-day public review period.

The ESR is scheduled to file in spring 2014. Once the ESR is complete, it will be filed with the Ministry of Environment. A 30 day public review and comment period will follow the filing of the ESR, during which any outstanding issues will be resolved.

5 CONTACT INFORMATION

For more information, please contact:

Dale Lipnicky, C.E.T.
Project Leader – Capital Projects
Engineering and Construction
Town of Oakville
1225 Trafalgar Road
Oakville, ON L6H 0H3
Phone: (905) 845-6601 ext.3326
Fax: (905) 338-4159
DLipnicky@oakville.ca

John Grebenc, P.Eng.
Vice President, Municipal Transportation
Morrison Hershfield Limited
Suite 600
235 Yorkland Boulevard
Toronto, ON M2J 1T1
Phone: (416) 499-3110 ext, 1810
Fax: (416) 499-9658
JGrebenc@morrisonhershfield.com

Appendix A – Notice of Public Information Centre #2

To be the most livable town in Canada.

Notice of Public Information Centre #2

Sixth Line Environmental Assessment

Dundas Street to Highway 407 ETR

Wednesday, October 2, 2013 6–8 p.m.

1225 Trafalgar Road, Oakville, ON — Committee Room 1

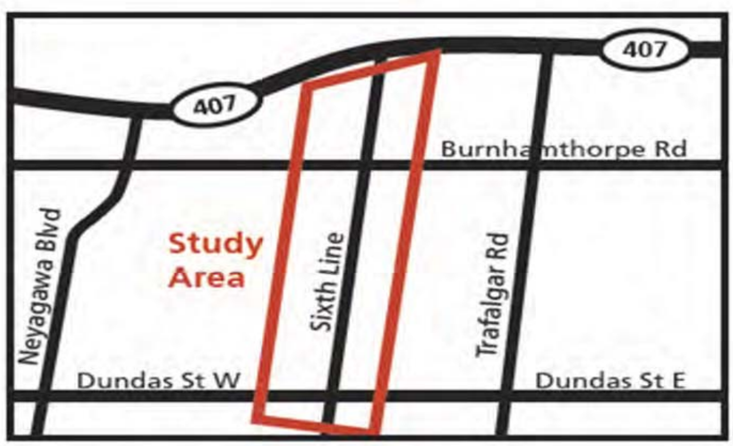
You are invited to join us for this open house to review the preferred alternative for improvements to Sixth Line.

The meeting will be a drop-in format with members of the project team in attendance to answer questions and receive comments. If you are unable to attend this meeting, please provide any comments you may have on the reverse side of this letter and return to either of the team members by regular mail or email by October 11.

This Class Environmental Assessment Study will identify and confirm the need for improvements to Sixth Line from Dundas Street to Highway 407 (ETR). The study is being undertaken in accordance with Schedule C of the Municipal Class Environmental Assessment (October 2000, as amended in 2007 and 2011) which is approved under the Ontario *Environmental Assessment Act*.

Morrison Hershfield Limited has been retained to assist with the study.

The first Public Information Centre (PIC#1) was held on December 4, 2012 to review the transportation need and justification for the widening of Sixth Line and an assessment of alternative solutions.



Contact:

Dale Lipnicky, C.E.T.
Town of Oakville
1225 Trafalgar Road
Oakville, ON L6H 0H3
Telephone: 905-845-6601, ext.3326
Fax: 905-338-4159
Email: dlipnicky@oakville.ca

John Grebenc, P. Eng.
Morrison Hershfield Limited
235 Yorkland Boulevard, Suite 600
Toronto, ON M2J 1T1
phone: 416-499-3110
fax: 416-499-9658
jgrebenc@morrisonhershfield.com

Monday, September 16, 2013 - for immediate release

Public information meeting on October 2, 2013, for Class Environmental Assessment Study for Sixth Line between Dundas Street to Highway 407 (ETR)

Wednesday, October 2, 2013, 6 to 8 p.m.
Committee Room 1
1225 Trafalgar Road
Oakville, ON

The Town of Oakville is undertaking a Class Environmental Assessment Study to identify and confirm the need for improvements to Sixth Line from Dundas Street to Highway 407 (ETR). The study is being undertaken in accordance with Schedule C of the Municipal Class Environmental Assessment (October 2000, as amended 2007 and in 2011) which is approved under the Ontario Environmental Assessment Act. Morrison Hershfield Limited has been retained to assist with the study. The first Public Information Centre was held on December 4, 2012, to review the transportation need and justification for the widening of Sixth Line and an assessment of alternative solutions.

The second meeting will be a drop-in format with members of the project team in attendance to answer questions and receive comments.

If you are unable to attend this meeting, please send your comments to either of the project team members listed below.

Dale Lipnicky, C.E.T.
Project Leader – Capital Projects
Engineering and Construction
Town of Oakville
1225 Trafalgar Road
Oakville, ON L6H 0H3
Telephone: 905-845-6601, ext.3326
Fax: 905-338-4159
dlipnicky@oakville.ca

John Grebenc, P. Eng.
Vice President
Municipal Transportation
Morrison Hershfield Limited
Suite 600
235 Yorkland Boulevard
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phone: 416-499-3110
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jgrebenc@morrisonhershfield.com

Sign up for the town's RSS feeds to get information delivered right to your desktop.

Appendix B – Sample Comment Sheets

OAKVILLE

MORRISON HERSHFIELD

TOWN OF OAKVILLE
SIXTH LINE CLASS ENVIRONMENTAL ASSESSMENT
DUNDAS STREET TO HIGHWAY 407 (ETR)

COMMENT SHEET
PUBLIC INFORMATION CENTRE #2
WEDNESDAY, OCTOBER 2, 2013

Please provide your comments on any aspect of the study being considered and place your comment sheet in the box provided or submit prior to Friday, October 11, 2013:

Dale Lipnicky, C.E.T.
Town of Oakville
1225 Trafalgar Road
Oakville, ON L6H 0H3
Telephone: 905-845-6601, ext.3326
Fax: 905-338-4159
Email: dlipnicky@oakville.ca

John Grebenc, P. Eng.
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235 Yorkland Boulevard, Suite 600
Toronto, ON M2J 1T1
phone: 416-499-3110, ext.1810
fax: 416-499-9658
jgrebenc@morrisonhershfield.com

Comments:

Thank you for your participation. Information received will be maintained on file for use during the study and will be included in the study documentation. With the exception of personal information, all comments received will become part of the public record.

Thank you for your participation in this study

Appendix C – PIC #2 Presentation Boards

Welcome to Public Information Centre #2

Class Environmental Assessment (EA) Study

for

Sixth Line from Dundas Street to Highway 407 (ETR)

October 2, 2013

OAKVILLE

MORRISON HERSHFIELD

Purpose of the Public Information Centre #2

The purpose of holding this Public Information Centre is to:

- Provide a summary of Public Information Centre #1;
- Provide a summary of the studies completed since Public Information Centre #1;
- Present alternative designs considered for improving Sixth Line;
- Identify the preliminary preferred design;
- Present potential benefits / impacts associated with the preliminary preferred alternative design;
- Obtain public input and comments; and
- Identify the next steps in the process.

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Study Purpose

The purpose of the EA study is to conduct a Schedule 'C' Class Environmental Assessment to address the transportation needs along the Sixth Line corridor, and allow for a comprehensive assessment of the potential impacts of alternatives on the Social, Natural and Cultural Environment, including:

- Operational deficiencies;
- Transit service requirements;
- Pedestrian and cycling needs; and
- The need for additional North-South capacity in consideration of current and future planned development along the study corridor.

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Objectives of the Study

The major objectives of this study are to:

- Complete the Municipal Class EA process with participation from the public and affected parties;
- Provide satisfactory consideration to a reasonable range of alternatives;
- Consider the effects on all aspects of the environment and systematic evaluation of alternatives; and
- Develop preliminary preferred design(s) of recommended alternative.

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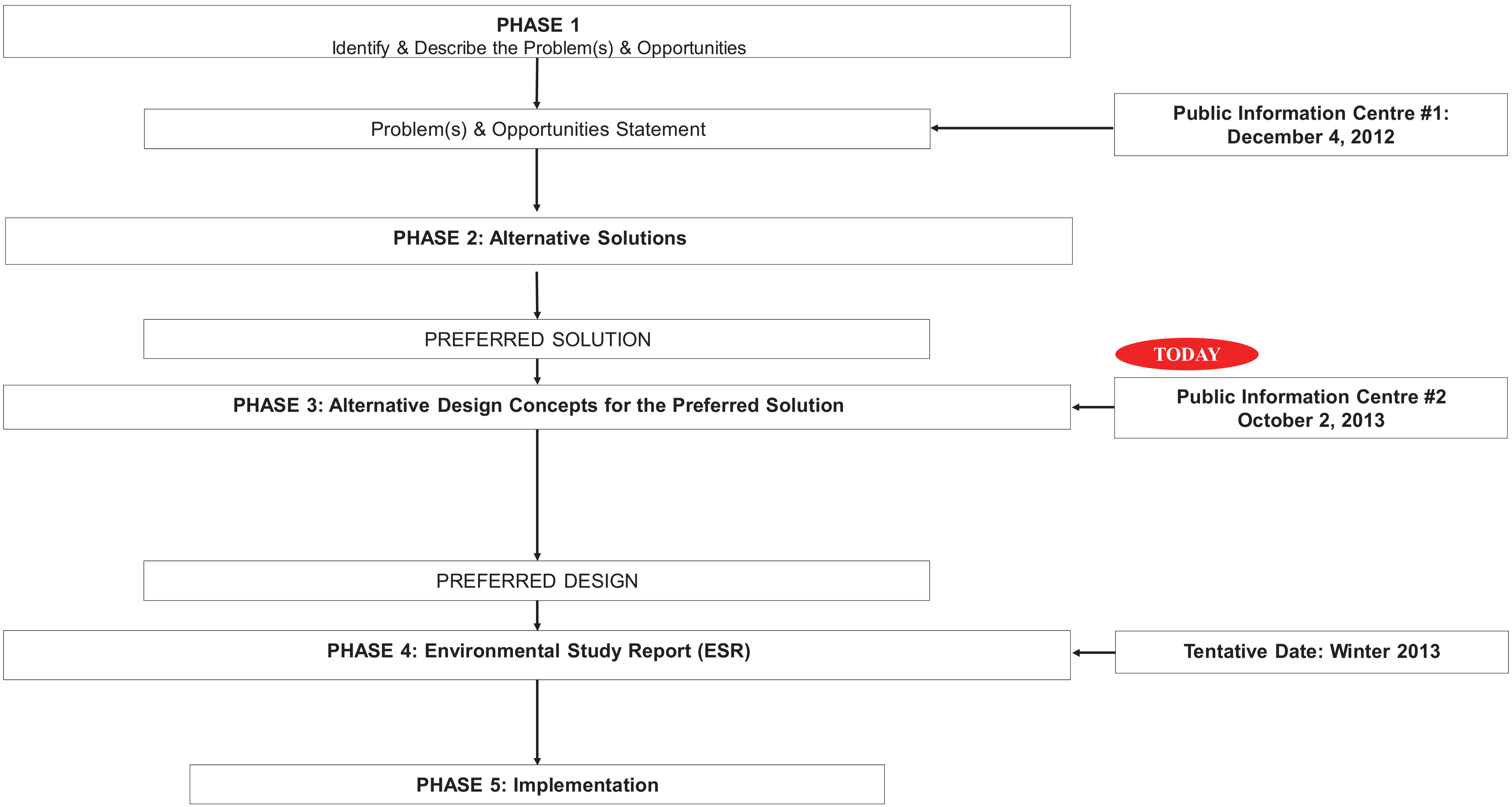
Municipal Class EA Process in Ontario



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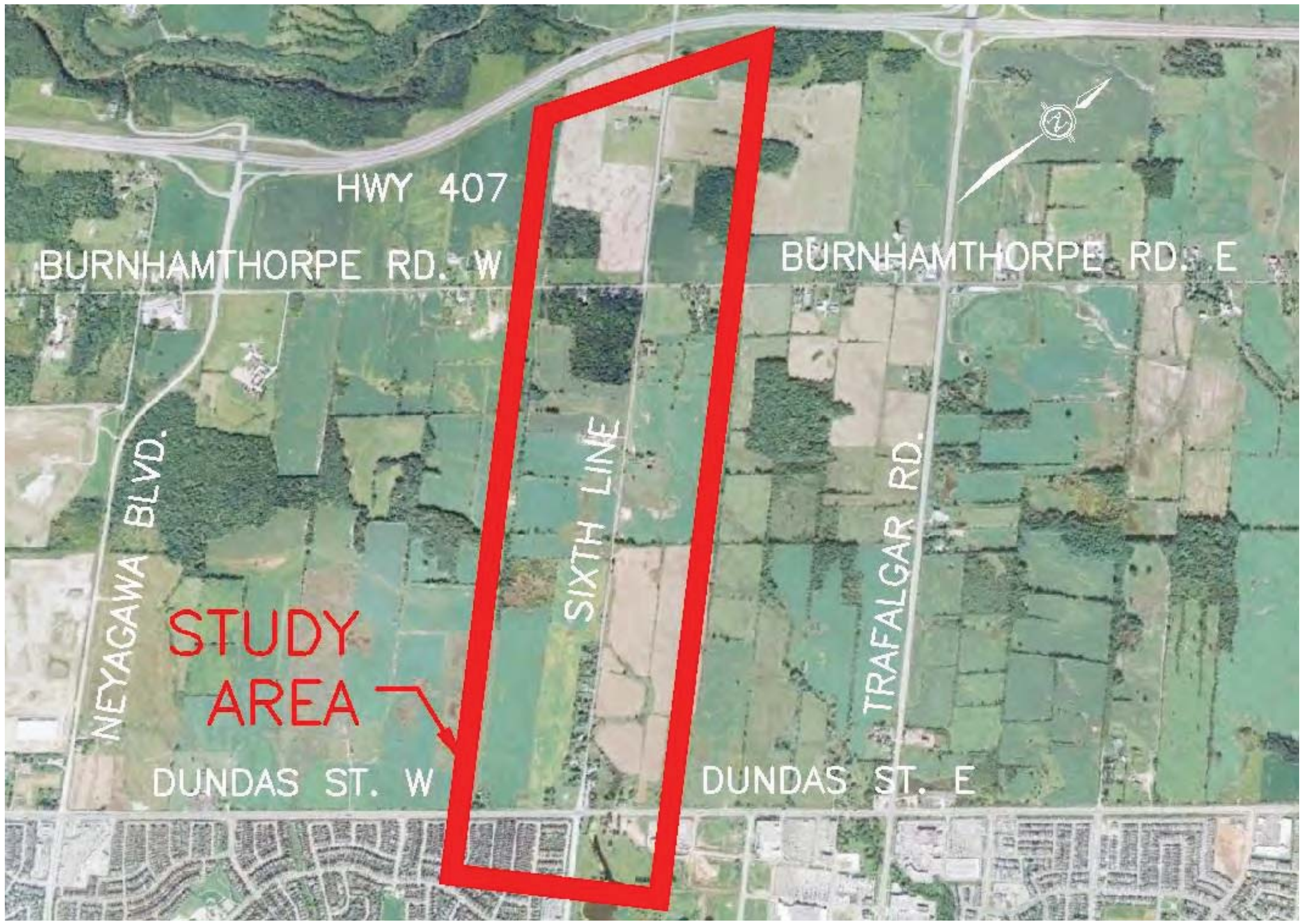
Study Area

Sixth Line from Dundas Street to Highway 407 (ETR)



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Summary of Public Information Centre #1
Problem/Opportunity Statement

Problem

- The Town of Oakville is planning for high population and employment growth that will continue over several decades.
- Transportation analysis confirms that the future traffic volumes will exceed the available north-south capacity within the study area between now and 2031. **Even with network improvements, the north-south roadway network in the immediate and surrounding area of Sixth Line will not be able to accommodate the travel demand growth anticipated over the next 20 years**.
- Roadway safety, intersection levels of service, response of emergency vehicles and natural environment will deteriorate without transportation improvements.

Opportunity

- There is an opportunity to improve Sixth Line between Dundas Street and Highway 407 (ETR) in compliance with the Town's North Oakville Secondary Plan. The improvements will provide opportunity to improve;
  - transit operations;
  - traffic operations;
  - active transportation including pedestrian and bicycle access;
  - road safety; and
  - enhance streetscaping and landscaping.

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Summary of Public Information Centre #1 (Cont'd.)
Preliminary Preferred Solution

The Preliminary Preferred Solution includes a combination of the following:

- Alternative 3: Transportation Demand Management Initiatives (TDM);
- Alternative 4: Transportation System Management (TSM);
- Alternative 5: Provide additional traffic lanes along Sixth Line; and
- Alternative 6: Intersection improvements.

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Summary of Feedback and Responses from PIC #1

General Comment	General Response
Active Transportation (i.e. Bike Lanes)	Transportation Demand Initiatives including the provision of 1.5m on-street bike lanes have been carried forward as part of the study. Additionally, the existing rural section will be converted to an urban section which will also include sidewalks along both sides of Sixth Line.
Property Frontage	Property frontage impacts will be taken into consideration while developing and evaluating the alternative design concepts. All efforts will be made to minimize impacts to property.
Round-about Installation	Intersection improvements have been carried forward as part of Preferred Solution. If the roundabouts could be installed within the existing right-way while addressing all traffic problems for the future conditions, then further evaluation of roundabout option may be considered for traffic calming. The alternative design concepts will be evaluated based on the design criteria established for this EA study.
Storm Water Management	A Preliminary Storm Water Management (SWM) Study will be conducted as part of this study to review the existing drainage conditions and identify improvements required to accommodate the widening of Sixth Line. The SWM study will be completed in accordance with the applicable standards and will satisfy the requirements of the Town of Oakville and Conservation Halton.
Construction Staging	Preliminary construction staging will be developed as part of the Class EA. However, final staging plans development and coordination with utility companies will be undertaken during the detail and construction phases of the project.
Archaeological Impacts	A Stage 1 Archaeological Assessment study is being undertaken as part of the Class EA to evaluate areas of archaeological potentials within the proposed corridor. Mitigation measures alternatives will be developed in accordance with the current applicable standards and guidelines to minimize archaeological impacts.

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Summary of Studies Completed for EA Study

Archaeology

- There are 66 registered archaeological site within 1 kilometre of the study area. 12 of these sites are within 300 metres of the study area.
- Due to the proximity to water, topography and soils, the study area has the potential for archaeological remains but extensive and intensive disturbances have removed any archaeological potential from within the current right-of-way. No further work within right-of-way area is required.
- 76% of the lands adjacent to the Sixth Line right-of-way have potential for archaeological remains. Therefore, any future design changes to the road that require expansion beyond current right-of-way should be subject to a Stage 2 archaeological assessment.
- A Stage 3 investigation will be required to confirm the presence or absence of unmarked graves at the Munn's Cemetery prior to any land-disturbing activities.

Built Heritage and Cultural Landscape

A total of eight Cultural Heritage Landscapes (CHL) were identified along the study corridor. One is Historical Crossroad Settlement (CHL 1); one Funerary (CHL 2); one Religious (CHL 3); two Residentials (CHL 4 and CHL 7); two Roadscapes (CHL 5 and CHL 6); and one Agricultural: Farm Complex (CHL 8).

- Three (CHL 2, CHL 3, CHL 7) are designated under Part IV of the Ontario Heritage Act;
- Two (CHL 4, CHL 8) are listed on the Town of Oakville Register of Properties of Cultural Heritage Value or Interest (Not Designated);
- The remainder were identified through a review of historic mapping and in the course of the field assessment (CHL 1, CHL 5, and CHL 6).

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Summary of Studies Completed for EA Study (Cont'd.)

Natural Environment

- Within the study area, there are two water crossings regulated by Conservation Halton under *Ontario Regulation 162/06*. These water crossings represent intermittent and ephemeral flow patterns that flow southerly across Sixth Line towards West Morrison Creek. Neither crossings provides fish habitat.
- The study area contains Oakville-Milton Wetlands and Uplands Provincially Significant Area of Natural and Scientific Interest (ANSI) which also includes the North Oakville-Milton East Provincially Significant Wetland Complex and a significant woodlot located at the south-west of the Sixth Line/Burnhamthorpe Road intersection. This sensitive area will be protected under the planned Natural Heritage System. Further discussions will be held regarding these lands.
- The project study area provides potential habitat for 6 Species at Risk: Barn Swallow, Canada Warbler, Eastern Meadowlark, Jefferson Salamander, Milksnake and Whippoor-will.
- Vegetation consists mainly of agricultural crop and meadow communities along with isolated areas of deciduous forest. No rare plant species have been recorded in this area.

Geotechnical

- The existing pavement conditions consist of 75-175mm of asphalt on a 150-450mm granular base.
- Full reconstruction of the pavement structure along Sixth Line is recommended.

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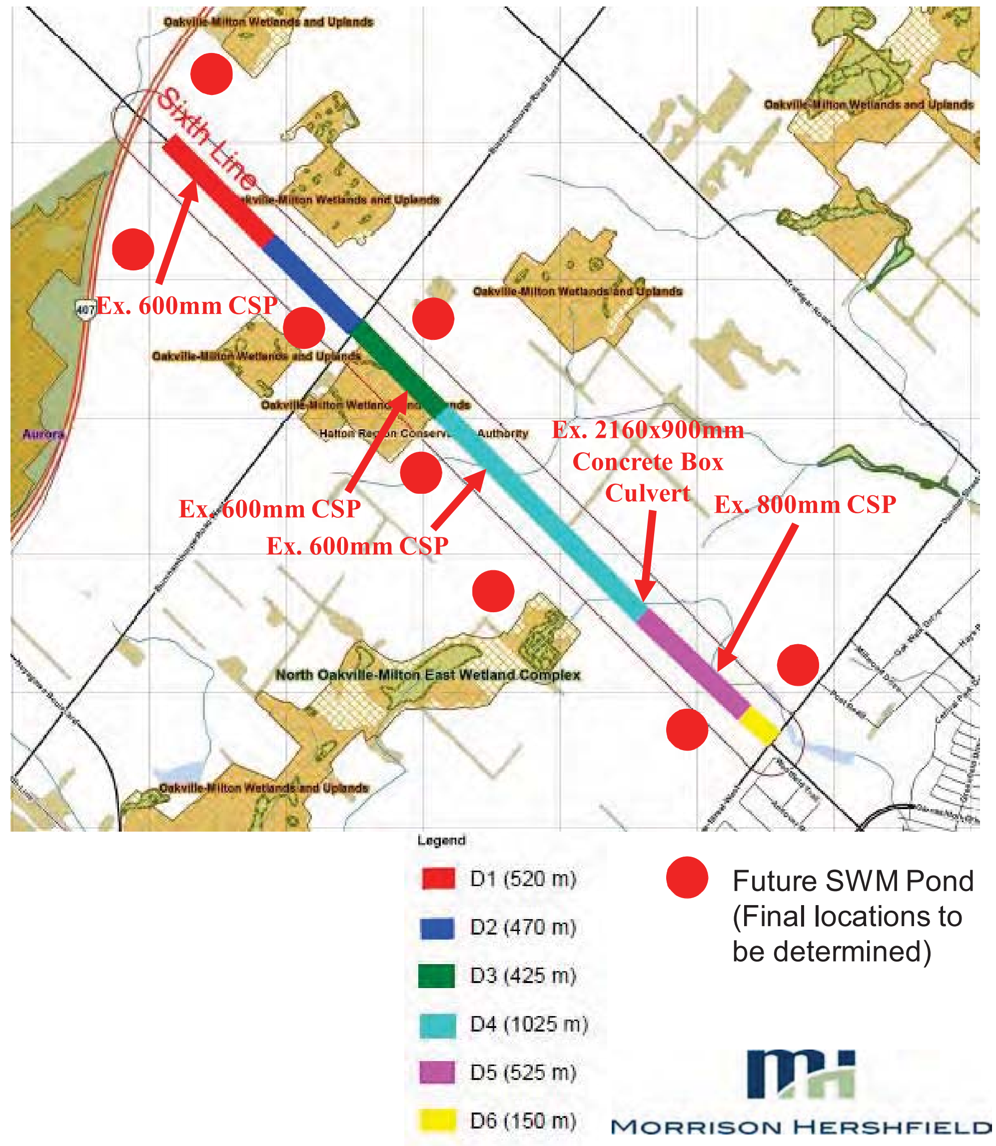
Summary of Studies Completed for EA Study (Cont'd.)

Stormwater Management & Hydraulic Analysis

- Drainage along Sixth Line is divided into 6 catchment areas.
- There are 5 existing culverts crossing Sixth Line which will be replaced or extended to accommodate the proposed road widening.
- The conveyance of surface runoff will be handled by the installation of trunk sewer along Sixth Line.
- Quality and quantity control will be handled by stormwater management ponds constructed as part of adjacent development.



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Alternative Designs for the Widening of Sixth Line from Dundas Street to Highway 407 (ETR)

The following Alternative Design concepts have been identified to address the preferred solution:

1. Do nothing.
2. Widen to four lanes along the existing centre-line.
3. Widen to four lanes along the existing centre-line and to the east along the natural heritage system.
4. Use of roundabouts at intersections.

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Alternative Design Evaluation Criteria

The following is the proposed Evaluation Criteria to assess the Alternative Design Concepts for the preferred planning solution:

Technical

- Geometry
- Safety
- Future development and traffic
- Compatibility with Active Transportation Master Plan (ATMP)
- Stormwater Management
- Utility relocation
- Transit Service

Socio Economical / Cultural Heritage / Archaeological

- Property Impact
- Compatibility with Town's North Oakville Secondary Plan / Future Land Use and Development
- Cultural Heritage Resources
- Archaeological Resources
- Access (residential, commercial, and institutional)
- Noise Impact
- Air Quality

Natural Environment

- Potential Impacts to Vegetation
- Potential Impacts to Wild life Habitats
- Potential Impacts to Watercourses
- Potential Impacts to Natural Hazards

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Assessment & Evaluation of Alternative Designs

Category	Criteria		Alternative 1 *Do Nothing* *(For Comparison Purpose Only)*		Alternative 2 *Widen About the Centre Line*		Alternative 3 *Widen About the Centre Line and To The East Along Natural Heritage System*		Alternative 4 *Use of Roundabouts at Intersections.*
Technical	Geometry	◐	No opportunities to improve road geometry.	●	High potential for road geometry improvements.	●	High potential for road geometry improvements.	●	High potential for intersection geometry improvements.
	Road Safety	○	No improvements from existing conditions.	●	High potential for road safety improvements.	●	High potential for road safety improvements.	◕	Potential for road safety improvements at intersections.
	Future development and traffic	○	Does not accommodate future development and traffic requirements.	●	Accommodates future development and traffic requirements.	●	Accommodates future development and traffic requirements.	◕	Accommodates future development and traffic requirements.
	Transit Service	○	Does not accommodate future transit service requirements.	●	Accommodates future transit requirements.	●	Accommodates future transit requirements.	◐	Does not fully accommodate future transit service requirements.
	Stormwater Management	○	No improvements from existing drainage conditions.	●	High potential for improvements to stormwater management	●	High potential for improvements to stormwater management	◐	Potential for improvements to stormwater management at intersections.
	Utility relocation	●	No utility relocations required.	◔	Major utility impacts and relocation required.	◔	Major utility impacts and relocation required.	◔	Major utility impacts and relocation required.
	Compatibility with Active Transportation Master Plan (ATMP)	○	Not compatible with ATMP	●	Compatible with ATMP	●	Compatible with ATMP	●	Compatible with ATMP
Socio Economical / Cultural Heritage / Archaeological	Property Impact	●	No property required.	◐	Property required along the east and west sides of Sixth Line.	◔	Property required along the east and west sides of Sixth Line with additional property required along the east side at the Natural Heritage System.	○	Large amount of property required at intersection compared to traffic signals.
	Compatibility with Town's North Oakville Secondary Plan/ Future Land Use and Development	○	Not compatible with North Oakville Secondary Plan and future land use.	●	Compatible with North Oakville Secondary Plan and future land use.	●	Compatible with North Oakville Secondary Plan and future land use.	●	Compatible with North Oakville Secondary Plan and future land use.
	Cultural Heritage Resources	●	No impacts to cultural heritage resources.	◐	Minor impacts to cultural heritage resources.	◐	Minor impacts to cultural heritage resources.	◔	Moderate impacts to cultural heritage resources.
	Archaeological Resources	●	No impacts to archaeological resources.	◐	Potential archaeological impacts.	◐	Potential archaeological impacts.	◐	Potential archaeological impacts.
	Access (Residential, Commercial, and Institutional)	◐	No opportunity for access improvements.	●	High potential for access improvements.	●	High potential for access improvements.	◐	No opportunity for access improvements.
	Noise Impacts	◔	Large increase in noise levels due to increase in traffic and congestion.	◐	Minimal increase in noise levels.	◐	Minimal increase in noise levels.	◐	Minimal increase in noise levels.
	Air Quality	◔	Potential decrease in air quality with increase in traffic over time.	◕	Potential improvements in air quality with increase in roadway capacity to accommodate traffic.	◕	Potential improvements in air quality with increase in roadway capacity to accommodate traffic.	●	Potential improvements in air quality with reduction of idle time at intersections.
Natural Environment	Potential Impacts to Vegetation	●	No impacts to vegetation.	◔	Moderate impacts to vegetations with potential for mitigation.	◐	Minor impacts to vegetations with potential for mitigation.	◔	Moderate impacts to vegetations with potential for mitigation.
	Potential Impacts to Wild life Habitats	●	No impacts to wild life habitats.	◔	Moderate impacts to wild life habitats with potential for mitigation.	◐	Minor impacts to wild life habitats with potential for mitigation.	◔	Moderate impacts to wild life habitats with potential for mitigation.
	Potential Impacts to Watercourses	●	No impacts to watercourses.	◔	Moderate impacts to watercourses with potential for mitigation.	◐	Minor impacts to watercourses with potential for mitigation.	◔	Moderate impacts to watercourses with potential for mitigation.
	Potential Impacts to Natural Hazards	●	No impacts to natural hazards.	◔	Moderate impacts to natural hazards with potential for mitigation.	◐	Minor impacts to natural hazards with potential for mitigation.	◔	Moderate impacts to natural hazards with potential for mitigation.
Cost	Construction Cost	●	No construction costs.	◔	High construction costs.	○	Higher construction costs due to additional required work.	○	Higher construction costs due to additional required work at intersections.
	Maintenance / Operational Cost	○	High maintenance and operational costs.	●	Low maintenance and operational costs.	●	Low maintenance and operational costs.	●	Low maintenance and operational costs.
Recommendation			**Still viable alternative;** Does not address the problem statement, but will be carried forward for comparison purposes.		**Not Carried forward;** Meets Town's North Oakville Secondary Plan and Active Transportation Master Plan (ATMP) Goals and Objectives and implements the preferred solution but impacts the Natural Heritage System located south-west of the Sixth Line/Burnhamthorpe Road intersection.		**Carried forward;** Meets Town's North Oakville Secondary Plan and Active Transportation Master Plan (ATMP) Goals and Objectives and implements the preferred solution while minimizing environmental impacts at the Natural Heritage System.		**Not Carried forward;** The property and environmental impacts required to implement roundabouts at intersections are too high when compared to the installation of traffic signals at intersections.

LEGEND: ● Most Desirable ◕ More Desirable ◐ Neutral ◔ Less Desirable ○ Least Desirable

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Preliminary Preferred Design (Alternative #3)

Proposed Plan & Profile for Sixth Line

Displayed on the Table

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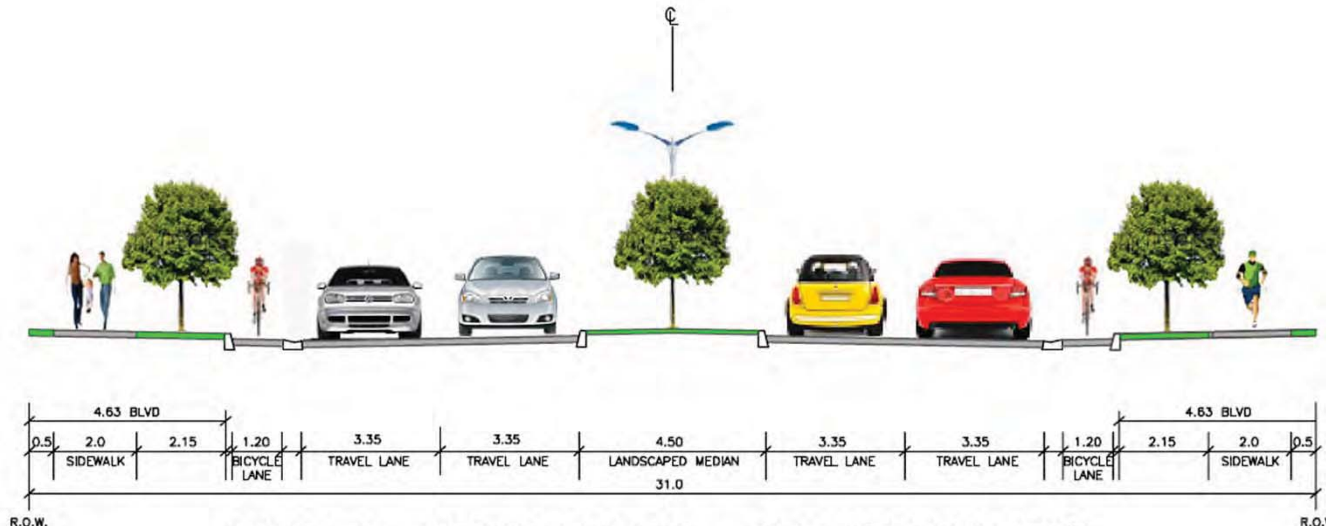
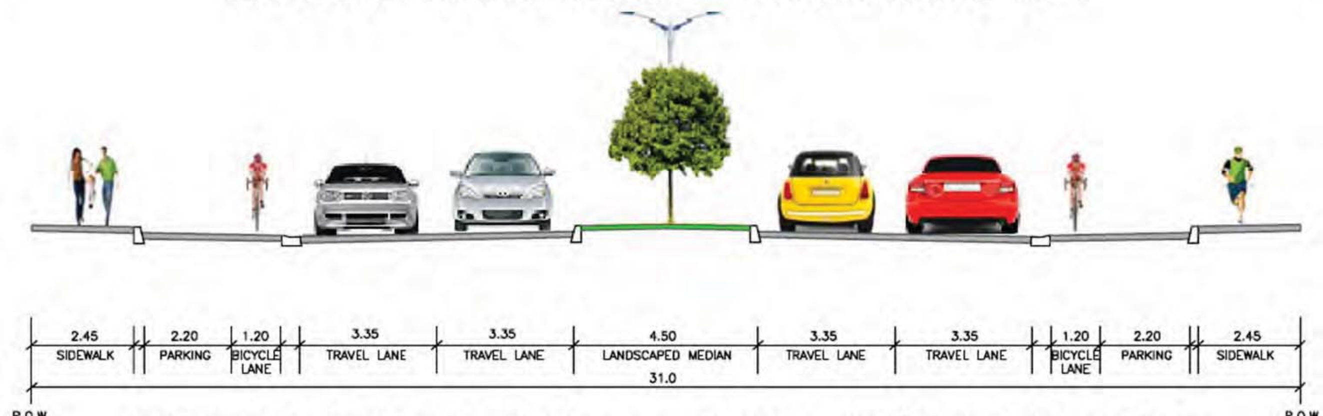
Preliminary Preferred Design (Alternative #3)

Proposed Sixth Line Typical Sections



SIXTH LINE TYPICAL SECTION – NO PARKING LAYBY'S



SIXTH LINE TYPICAL SECTION – PARKING LAYBY'S ON BOTH SIDES

OAKVILLE

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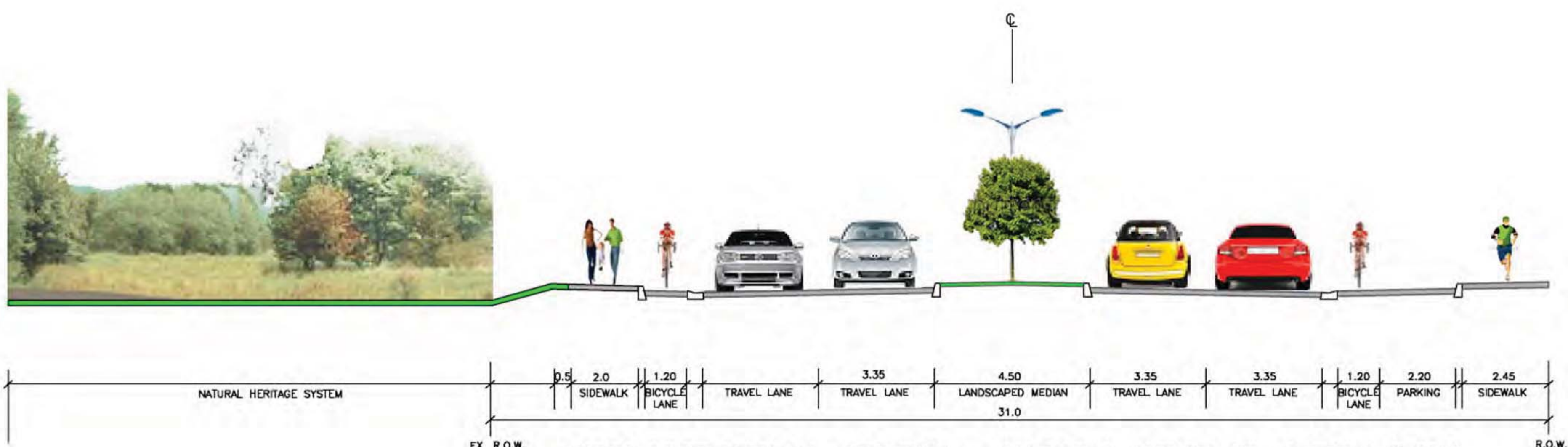
Preliminary Preferred Design (Alternative #3)

Proposed Sixth Line Typical Sections



SIXTH LINE TYPICAL SECTION – NATURAL HERITAGE SYSTEM (NHS)

OAKVILLE

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Preliminary Preferred Design (Alternative #3)

Key Features

- Sixth Line widened to 4 through lanes from Dundas Street to Highway 407 (ETR);
- Continuous left turn lane provided throughout;
- Signalization of intersections to improve traffic operations;
- 2 to 2.45m sidewalks and 1.66m on-street bike lanes to encourage alternative means of transportation;
- On-street parking layby's in front of Neighborhood Centre and Park lands;
- Continuous medians for enhanced streetscaping and landscaping features; and
- Culvert structure replacements.

Preliminary Preferred Design (Alternative #3)

Landscaping Concepts

OAKVILLE

Note:
Photographs taken from Third Line in the Town of Oakville

MORRISON HERSHFIELD

Preliminary Preferred Design (Alternative #3)

Construction Phasing

- The reconstruction of Sixth Line is currently planned to be undertaken in 3 phases:
  - Phase 1: Dundas Street to North Park Drive. (Construction Start: 2015)
  - Phase 2: North Park Drive to Burnhamthorpe Road. (Construction Start: 2020)
  - Phase 3: Burnhamthorpe Road to Highway 407 (ETR). (Construction Start: 2023)

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Next Steps…

Following this Public Information Centre, the Town of Oakville will:

- Review all comments and suggestions received from the public and agencies.
- Respond to written questions and comments, if response is requested;
- Based on input received from public agencies and other stakeholders:
  - Confirm the Preferred Design alternative
  - Refine/Finalize the preliminary design of the preferred alternative
- Prepare the Environmental Study Report (ESR); and
- File the ESR and make it available for public review and comments for a minimum 30-day public review period.

OAKVILLE

MORRISON HERSHFIELD

Your Involvement is Important

- What issues are critical to you?
- Please fill out a Comment Sheet
- Please keep in touch with us

Dale Lipnicky, C.E.T.
Town of Oakville
1225 Trafalgar Road
Oakville, ON L6H 0H3
905-845-6601 Ext. 3326
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(416) 499-3110, Ext. 1810
JGrebenc@morrisonhershfield.com

Thank you!

OAKVILLE

MORRISON HERSHFIELD

Appendix D – Completed PIC #2 Comments Sheets

OAKVILLE

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TOWN OF OAKVILLE
SIXTH LINE CLASS ENVIRONMENTAL ASSESSMENT
DUNDAS STREET TO HIGHWAY 407 (ETR)

COMMENT SHEET
PUBLIC INFORMATION CENTRE #2
WEDNESDAY, OCTOBER 2, 2013

Please provide your comments on any aspect of the study being considered and place your comment sheet in the box provided or submit prior to Friday, October 11, 2013:

Dale Lipnicky, C.E.T.
Town of Oakville
1225 Trafalgar Road
Oakville, ON L6H 0H3
Telephone: 905-845-6601, ext.3326
Fax: 905-338-4159
Email: dlipnicky@oakville.ca

John Grebenc, P. Eng.
Morrison Hershfield Limited
235 Yorkland Boulevard, Suite 600
Toronto, ON M2J 1T1
phone: 416-499-3110, ext.1810
fax: 416-499-9658
jgrebenc@morrisonhershfield.com

Comments:

[redacted]

(1) Intersection locations inconsistent with draft plan

(2) Require direct frontage as per draft plan

(3) Matching of grades to proposed development grades

Thank you

[redacted]

Thank you for your participation. Information received will be maintained on file for use during the study and will be included in the study documentation. With the exception of personal information, all comments received will become part of the public record.

Appendix A.7 – Correspondences

NAV CANADA

December 4, 2012

Your file
Sixth Line between Dundas Street to Highway 407
Our file
12-5173

Mr. Dale Lipnicky
Town of Oakville
1225 Trafalgar Road
Oakville, ON
L6H 0H3

RE: Development Proposal/Plans: Highway improvements - Oakville, ON

Mr. Lipnicky,

We have evaluated the captioned proposal and NAV CANADA has no objection to the project as submitted. Once additional details of the proposed project are available, insure that prior to any construction a Land Use Submission is filed with this Office.

In the event that you should decide not to proceed with this project, please advise us accordingly so that we may formally close the file. If you have any questions, contact the Land Use Department by telephone at 1-866-577-0247 or e-mail at landuse@navcanada.ca.

NAV CANADA's land use evaluation is valid for a period of 12 months. Our assessment is limited to the impact of the proposed physical structure on the air navigation system and installations; it neither constitutes nor replaces any approvals or permits required by Transport Canada, Industry Canada, other Federal Government departments, Provincial or Municipal land use authorities or any other agency from which approval is required. Industry Canada addresses any spectrum management issues that may arise from your proposal and consults with NAV CANADA Engineering as deemed necessary.

Yours truly,

Aleksandar Trandafilovski
for
David Legault
Manager, Data Collection
Aeronautical Information Services

cc ONTR - Ontario Region, Transport Canada
CPE8 - OAKVILLE (TRAFALGAR MEMORIAL HOSPITAL)(HELI)

Martin-Pierre Blouin

From:	Nasser Saad
Sent:	Thursday, December 06, 2012 4:21 PM
To:	Sara Fadaee; Martin-Pierre Blouin
Subject:	FW: CLASS EA Sixth Line between Dundas St to Highway 407, Oakville NEATS 34850
Attachments:	RDIMS-#6077714-v2-NWP_APP_GUIDE_EN.PDF; Application Form June 2012.pdf

For your File. No action Required yet. We will wait till we get all comments.

Thanks

Nasser N. Saad, P.Eng., P.E
Designated Consulting Engineer
Senior Transportation Manager
nsaad@morrisonhershfield.com
MORRISON HERSHFIELD
People • Culture • Capabilities
Suite 175, 1005 Skyview Drive | Burlington, ON L7P 5B1
Dir: 905-319-6668 x1101202 | Fax: 905-319-5548
morrisonhershfield.com

From: EnviroOnt [mailto:EnviroOnt@tc.gc.ca]
Sent: Thursday, December 06, 2012 4:14 PM
To: 'dlipnicky@oakvill.ca'
Cc: Nasser Saad
Subject: CLASS EA Sixth Line between Dundas St to Highway 407, Oakville NEATS 34850

Thank you for the information regarding the above referenced project. We have reviewed the information, and note the following:

Transport Canada is responsible for the administration of the *Navigable Waters Protection Act* (NWPA), which prohibits the construction or placement of any “works” in navigable waters without first obtaining approval. If any of the related project undertakings cross or affect a potentially navigable waterway, the proponent should prepare and submit an application in accordance with the requirements as outlined in the attached Application Guide and Form. Any questions about the NWPA application process should be directed to the Navigable Waters Protection Program at **(519) 383-1863** or NWPontario-PENontario@tc.gc.ca.

Please review the *Minor Works and Waters (Navigable Waters Protection Act) Order*, established to outline the specific standards and criteria under which Transport Canada considers a work as a minor and does not require an application under the NWPA. It is the responsibility of the applicant, prior to submitting an application to the Navigable Waters Protection Program for review, to assess whether their work meets the criteria, as described, and, therefore, falls within one of the excluded classes. An application will only be required if it is determined that the work cannot meet the criteria established for that particular “class” of excluded work**.**

Transport Canada is also responsible for inspecting and auditing federally regulated railway companies that are subject to the *Railway Safety Act.* Transport Canada also regulates some provincial shortlines from the Province of Ontario that are part of an Agreement between the Federal Government and the Province of

Ontario. The *Railway Safety Act*, with related regulations and rules, provides the legislative and regulatory framework for safe railway operations in Canada. The rail safety program develops, implements and promotes safety policy, regulations, standards and research, and in the case of railway grade crossings, subsidizes safety improvements. A list of all the Rail Safety legislations (the *Act*, Regulations, Rules, Guidelines, Policies and Standards) that applies to the federally regulated railways, can be found here:

http://www.tc.gc.ca/eng/railsafety/legislation.htm

The *Act* also addresses the construction and alteration of railway works, the operation and maintenance of railway equipment and certain non-railway operations that may affect the safety of federally regulated railways. If a proposed railway work is of a prescribed kind, pursuant to the *Notice of Railway Works Regulations*, the proponent shall not undertake the work unless it has first given notice of the work in accordance with the regulation. More information related to railway works is available at the following internet sites:

- *Railway Safety Act*: http://www.tc.gc.ca/acts-regulations/acts/1985s4-32/menu.htm
- *Notice of Railway Works Regulations*: http://laws.justice.gc.ca/en/SOR-91-103/
- *Standards Respecting Pipeline Crossings Under Railways*: http://www.tc.gc.ca/eng/railsafety/standards-tce10-236.htm
- *Guideline on Requesting Approval to Undertake Certain Railway Works*: http://www.tc.gc.ca/eng/railsafety/guideline-283.htm

General inquiries about the Rail Safety Program can be directed to RailSafety@tc.gc.ca or by calling 613-998-2985.

Please address future correspondence to the Environment and Engineering group to the undersigned address:

Thank you,

Environmental Coordinator, Transport Canada - Ontario Region (PHE)
4900 Yonge Street, North York, ON M2N 6A5 EnviroOnt@tc.gc.ca

GOVERNMENT SERVICES BUILDING
AND CULTURAL CENTRE

CURVE LAKE
FIRST NATION

CURVE LAKE, ONTARIO K0L 1R0

PHONE (705) 657-8045
FAX (705) 657-8708

RECEIVED
DEC 13 2012
MH LTD.

December 10, 2012

Dale Lipnicky
1225 Trafalgar Road
Oakville, Ontario L6H 0H3

Dear Dale Lipnicky,

RE: Notice of Public Information Centre #1, Sixth Line Between Dundas Street to Highway 407, Town of Oakville

We would like to acknowledge receipt of your correspondence, which we received on 11/26/2012 regarding the above noted project.

As you may be aware, the area in which your project is proposed is situated within the Traditional Territory of Curve Lake First Nation. Our First Nation's Territory is incorporated within the Williams Treaty Territory and is the subject of a claim under Canada's Specific Claims Policy. We strongly suggest that you provide Karry Sandy-Mackenzie, Williams Treaty First Nation Claims Coordinator, 8 Creswick Court, Barrie, ON L4M 2S7, with a copy of your proposal as your obligation to consult to also extend to the other First Nations of the Williams Treaty.

Although we have not conducted exhaustive research nor have we the resources to do so, Curve Lake First Nation Council is not currently aware of any issues that would cause concern with respect to our Traditional, Aboriginal and Treaty rights.

Please note that we have particular concern for the remains of our ancestors. Should excavation unearth bones, remains or other such evidence of a native burial site or any Archaeological findings, we must be notified without delay. In the case of a burial site, Council reminds you of your obligations under the *Cemeteries Act* to notify the nearest First Nation Government or other community of Aboriginal people which is willing to act as a representative and whose members have a close cultural affinity to the interred person. As I am sure you are aware, the regulations further state that the representative is needed before the remains and associated artifacts can be removed. Should such a find occur, we request that you contact our First Nation immediately. Curve Lake First Nation also has available, trained Archaeological Liaisons who are able to actively participate in the archaeological assessment process as a member of a field crew, the cost of which will be borne by the proponent.

If any new, undisclosed or unforeseen issues should arise, that has potential for anticipated negative environmental impacts or anticipated impacts on our Treaty and Aboriginal rights we require that we be notified regarding these as well.

Thank you for recognizing the importance of consultation and respecting your duty to consult obligations as determined by the Supreme Court of Canada.

Should you have further questions or if you wish to hire a liaison for a project, please feel free to contact Melissa Dokis or Krista Coppaway at 705-657-8045x222 or dutytoconsult@curvelakefn.ca.

Yours sincerely,

Phyllis Williams

Chief Phyllis Williams
Curve Lake First Nation

C.C. Nasser N. Saad Senior Project Manager, Morrison Hershfield Limited

Chippewas of RAMA
First Nation

5884 Rama Road, Suite 200
Rama, Ontario L3V 6H6
T 705.325.3611 F 705.325.0879

A Proud Progressive First Nation Community

OFFICE OF THE CHIEF

December 18, 2012

The Town of Oakville
1225 Trafalgar Road
Oakville, ON
L6H 0H3

Attention: Dale Lipnicky, Project Leader, Capital Projects

Re: Notification of Public Information Centre #1
Class Environmental Assessment Study
Sixth Line between Dundas Street to Highway 407 (ETR)

Dear Mr. Lipnicky:

As a member of the Williams Treaties First Nations, Rama First Nation acknowledges receipt of your undated letter, which was received on November 28, 2012.

A copy of your letter has been forwarded to Karry Sandy-McKenzie, Barrister & Solicitor, Coordinator for Williams Treaties First Nations for further review and response directly to you. Please direct all future correspondence and inquires, with a copy to Rama First Nation, to Ms. Sandy-McKenzie at 8 Creswick Court, Barrie, ON L4M 2J7 or her email address at k.a.sandy-mckenzie@rogers.com. Her telephone number is (705) 792-5087.

We appreciate your taking the time to share this important information with us.

Sincerely,

Sharon Stinson Henry

Chief Sharon Stinson Henry

c: Council, Rama First Nation
Jeff Hewitt, General Counsel
Karry Sandy-McKenzie, Coordinator for Williams Treaties First Nations
Chief Roland Monague, Portfolio Chief for Williams Treaties First Nations

MUNN'S
UNITED CHURCH

MUNN'S UNITED CHURCH
5 Dundas Street East, Oakville,
Ontario, Canada L6H 7C4
Tel: 905 257-8435
Fax: 905 257-8434
office@munnsunited.com
www.munnsunited.com

December 18, 2012

Mr. Nasser N. Saad
Manager, Municipal Transportation
Morrison Hershfield Limited
1005 Skyview Drive, Suite 175
Burlington, ON, L7P 5B1

Dear Mr. Saad:

Munn's United Church, 5 Dundas St E., Oakville is submitting the following comments regarding the Sixth Line Environmental Assessment PIC #1, held on December 4, 2012.

As you may be aware Munn's is currently in discussions *with Halton R*egion concerning the widening of Dundas Street immediately to the south of the church and the effect it will have on our property and enjoyment of same. We have filed an appeal to Regional Official Plan Amendment No. 38 regarding environmental assessments and right of way takings and have requested Ontario Municipal Board assisted mediation to resolve that concern. Overall, we have found the experience of working with Halton Region through the Environmental Assessment process to be challenging. As discussed with you at the first PIC, It is our intention in submitting comments to the Town of Oakville at the beginning of the project that we can have a positive working relationship and proactively addresses our concerns.

We have similar concerns regarding the Sixth Line possible widening as we do with the Region's plans.

In general, as a church, we are worried about our ability to continue to worship in our historic site in peace and quiet. This is not just a Sunday issue as the church facilities are used throughout the week by a non-profit daycare centre, by the church for fundraising events and by outside charitable groups such as Sparks and Pathfinders and Al Anon. The effect of noise and vibration from the increased and closer traffic patterns is of particular concern. Anything that can be done to minimize or ameliorate the noise and vibration will be welcome.

We are also concerned about the potential loss of property along Sixth Line. We already know we will lose property to the south along Dundas and would hate to lose even more along Sixth Line, especially after giving up land in the 1980s in exchange for permission to construct our church hall and day care centre. Loss of any parking spots because of actions by the Region or town would be a major problem as we cannot expand the parking areas to the east because of environmental constraints due to the creek and related setback requirements.

In addition, we certainly hope that the Region and Town are coordinating their plans for the intersection of Dundas and Sixth Line, especially as they relate to the daylighting triangle on the northeast corner, and for general safety matters. Safety has been a key consideration in our discussions with the Region because of the use of our facilities seven days by week. Particularly we have concerns about the lack of a traffic lane from Dundas onto Sixth Line and subsequently access into Munn's Church. The proposed plans may also impact signage for the church. For your information the Region has already developed draft plans for the entranceways into Munn's. Your study should probably review these draft plans.

The cumulative and continuing effect of construction in the surrounding vicinity is also a concern. In the last two years there have been a number of construction and utility projects – sewer and water along Dundas, hydro and gas along Sixth Line, and subdivision construction across Sixth Line and south of Dundas east of sixth Line. All of these projects have had negative effects on our operations and fundraising events.

In the last three months we have had numerous interruptions in our phone and cable services, many for multiple days in a row while the utilities involved find and repair the damage done by the various contractors working on the projects. This is a serious safety issue for us as parents and the daycare are unable to communicate during an outage, and our fire and security systems are not connected. It would be appreciated if any widening of Sixth Line be planned so that the effect on the church is minimized. Of course we are concerned that church members and staff, daycare parents and staff, and all the various groups that use the church on a daily or weekly basis be able to access the property safely and with as little inconvenience as possible, and be in a safe environment once there.

In summary, Munn's is most concerned about changes to Sixth Line that might seriously hinder the operation of the church and the other organizations using our facilities. Items of concern include but are not limited to safety, noise, vibration, accessibility and loss of land (including parking spaces).

Please do not hesitate to contact us if you have any questions or concerns with respect to our comments.

Yours very truly,

Munn's United Church

T Robinson

Ted Robinson and Norm Graham, Trustees.

CC: Oakville Councilors Jeff Knoll and Marc Grant

PROTECTING THE NATURAL ENVIRONMENT FROM LAKE TO ESCARPMENT

CONSERVATION HALTON

2596 Britannia Road West
Burlington ON L7P 0G3
905.336.1158 Fax 905.336.7014
conservationhalton.ca

January 22, 2013

BY MAIL AND EMAIL

Dale Lipnicky
Engineering and Construction, Town of Oakville
1225 Trafalgar Road
Oakville ON L6H 0H3

Dear Mr. Lipnicky:

Re: Municipal Class EA
Sixth Line Improvements, Dundas Street to Highway 407
Town of Oakville
CH File: MPR 614

Conservation Halton has received the Notice of Study Commencement and offers the following preliminary comments on the study area.

Ontario Regulation 162/06

1. The study area contains tributaries of West Morrison Creek. Conservation Halton regulates the erosion and flooding hazards and the 7.5 metre allowance associated with these tributaries. The study area also contains several units of the North Oakville-Milton East Provincially Significant Wetland Complex and the 120 metre allowance associated with these features. Ontario Regulation 162/06 requires that a Permit be obtained from Conservation Halton prior to development, interference with wetlands or alterations to shorelines and watercourses. A copy of Ontario Regulation 162/06 and the associated Policy document, Policies and Guidelines for the Administration of Ontario Regulation 162/06 and Land Use Planning Policy Document can be found at www.conservationhalton.ca. Please ensure that the EA contains sufficient information to allow Conservation Halton staff to determine whether a Permit could be issued at detailed design. The EA should identify areas where Permits pursuant to Ontario Regulation 162/06 will be required and include such Permits as future commitments in the ESR. Some details related to future Permits may not be deferred to detailed design. Please review the requirements of Policy 3.51 (Public Infrastructure – Utilities, Trails and Transportation) of Conservation Halton's *Policies and Guidelines for the Administration of Ontario Regulation 162/06 and Land Use Planning Policy Document*.

2. Please plot all areas regulated by Conservation Halton on drawings. At a minimum, the Approximate Regulation Limit (ARL) for West Morrison Creek should be based on a 7.5 metre allowance from the greater of the Regional Storm flood plain and meander belt allowance provided on Drawing 2, Lower West Morrison Creek Limit of Existing Stream Corridor, provided within the *Lower West Morrison Creek and the Timsin/Arrassa Lands EIR/FSS*. The ARL should be adjusted in the vicinity of the exiting West Morrison Creek (Reach MOC-W1) crossing of Sixth Line where the flood plain has been modified to reflect the proposed grading in this location (see Conceptual Grading Plan for Spill Containment

within EIR/FSS for this purpose). Ideally the limits of the regulated area would be further updated based on detailed topographical survey data acquired through the EA process.

3. A Data Request Form is required for all digital information requests. This form and additional information on data holdings can be found in the "GIS & Mapping" section of Conservation Halton's website: www.conservationhalton.ca. Staff notes that the following modeling is available for the study area:
   a. West Morrison Creek Hydraulic Model & Mapping prepared by Stantec Consulting for Timsin-Arrassa Subdivision Development.
   b. For areas beyond those covered by the above model/mapping, West Morrison Creek Hydraulic Model & Mapping prepared by TSH for *North Oakville Creeks Subwatershed Study.*

4. It is recommended that 'potential impacts to natural hazards' (flooding and/or erosion hazards) should be one of the evaluation criteria. At a minimum, a proposed alternative must have no negative impacts on flooding and erosion hazards in order for Conservation Halton to issue a future approval under Ontario Regulation 162/06. Opportunities to improve any deficiencies with respect to flooding and erosion should be investigated.

5. The EA should assess all flood plain impacts associated with each alternative including consideration of any change in storage, velocity and up and down stream water levels for a variety of flow conditions. This may be deferred in the Environmental Study Report to a future EIR/FSS depending on the level of "approval" desired through the study.

6. A hydrologic and/or hydraulic analysis may be required in the Environmental Study Report depending on the level of "approval" desired through the study.

7. Please consider MTO's flooding criteria, guidelines and/or the municipal engineering standards for flooding along/over roads. At a minimum, safe access & egress as defined in the MNR's 2002 *Technical Guide: River & Stream Systems – Flooding Hazard Limit*, should be provided. While not required, it is recommended that there be no overtopping of the roadway under Regional Storm conditions.

8. If a roadway is considered by the Province or local municipality to be an Emergency Route then there should be no overtopping of the road with flood waters.

9. A fluvial geomorphological assessment may be required in the Environmental Study Report depending on the level of "approval" desired through the study.

10. Please contact staff to arrange a site visit with the Ministry of Natural Resources to stake the Provincially Significant Wetlands associated with Core #7. An OLS must be present during this site visit.

11. A hydrologic evaluation should be incorporated into the EA to determine if there is an impact to the hydrological functions of the wetland as a result of the proposed works.

12. A topographic survey is required to identify the lands impacted by the flooding hazard associated with West Morrison Creek.

Natural Heritage

While Conservation Halton recognizes that Environmental Assessments are not subject to and/or limited to the policies outlined in the Provincial Policy Statement (PPS), we do believe that the PPS provides Provincial direction on how natural resources should be managed in Ontario. Furthermore, it is useful for identifying some of the key natural heritage features, water resources, and natural hazards that should be considered when evaluating any sort of development proposal. As such, some PPS related items have been outlined below, as we believe these items should be acknowledged and addressed as part of the EA study.

13. When undertaking any fieldwork and/or when making recommendations related to natural heritage and/or natural hazards, staff recommend that reference be made to the following guidelines prepared by the Ministry of Natural Resources: *Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005, 2nd Edition, 2010*; *Significant Wildlife Habitat Technical Guideline*; and, *Natural Hazards Technical Guide* and *Understanding Natural Hazards*. In addition, reference should be made to the *North Oakville Creeks Subwatershed Study*.

14. The study area may contain or pass between natural features. As per Policy 2.1.2 of the Provincial Policy Statement, the diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and groundwater features. The use of ecopassages or other measures to facilitate wildlife movement should be evaluated at both locations where linkages of the North Oakville Natural Heritage System cross Sixth Line. Barrier fencing should also be considered along the east edge of Core #7 to reduce movements of wildlife onto the road. NOCSS identifies a 100 metre wide linkage along Morrison Creek in the study area. The ultimate location of this linkage and creek block should be discussed with the adjacent landowners.

15. As noted above, the study area contains several units of the North Oakville-Milton East Provincially Significant Wetland Complex. As per Policy 2.1.3 of the Provincial Policy Statement, development and site alteration shall not be permitted in significant wetlands. Specifically, this may require that the alignment of the road be shifted east along Core #7.

16. The study area may contain the habitat of Endangered or Threatened species. As per Policy 2.1.3 of the Provincial Policy Statement, development and site alteration shall not be permitted in the habitat of Endangered/Threatened Species. The provincial *Endangered Species Act* and/or federal *Species at Risk Act* may also apply. Please contact Melinda Thompson (melinda.thompson@ontario.ca, (905) 713-7425) of Aurora District MNR for further information on *Endangered Species Act* requirements.

17. The study area contains the Oakville-Milton Wetlands and Uplands Provincially Significant Area of Natural and Scientific Interest (ANSI), Significant Woodlands and may contain significant wildlife habitat. As per Policy 2.1.4 of the Provincial Policy Statement, development and site alteration shall not be permitted in any of the above noted features unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. Specifically, this may require that the alignment of the road be shifted east along Core #7. Please contact the MNR for further information on ANSI's and the Region of Halton for further information on Significant Woodlands. The Ministry of Natural Resource's *Significant Wildlife Habitat Technical Guidelines* and the *North Oakville Creeks Subwatershed Study* can be consulted for significant wildlife habitat issues.

18. Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in Policies 2.1.3, 2.1.4 and 2.1.5 of the Provincial Policy Statement unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions. Specifically, this may require that the alignment of the road be shifted east along Core #7. The Ministry of Natural Resources' Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement 2005, Second Edition (2010) considers adjacent lands to be within 120 metres.

19. Please use Ecological Land Classification to map natural and semi-natural features to vegetation type and identify protection/mitigation measures. ELC data sheets are required with the ESR submission (please include digital species spreadsheets).

20. Please refer to Conservation Halton's *Environmental Impact Study Guidelines* for information on general study requirements, impact assessment and appropriate timing and protocols for surveys. These guidelines can be found at www.conservationhalton.ca.

21. Conservation Halton's *Landscape Guidelines* should be consulted at detailed design. These guidelines can be found at www.conservationhalton.ca.

Fish Habitat Impacts

22. Staff recommends that any watercourse crossings of Sixth Line have an open bottom design that spans three times the bankfull channel width of the watercourse, where feasible. Where existing culverts are closed bottom, we generally recommend that they are replaced with an open bottom structure that adequately conveys sediment and are large enough in size to accommodate fish passage up to and during a 25 year storm event.

Stormwater Management

23. Please discuss quality/quantity/erosion controls within the Stormwater Management Section of the Environmental Study Report. Please examine the potential to combine SWM with adjacent development. Low Impact Development measures should be utilized to the maximum extent possible.

24. As per the North Oakville Creeks Subwatershed Study, the following SWM requirements are identified:

    a. Quality requirements are Enhanced water quality controls. Please discuss the mitigation of thermal impacts.
    b. The quantity requirements are that all new paved areas meet the unit area target flow rates provided in the Flow Rates/Hydrology Mediation Item.
    c. The erosion control requirements are to be determined on a subcatchment basis based on an erosion threshold methodology. In the event that the subject lands cannot be serviced in conjunction with the adjacent development lands, as an alternative the 25 mm rainfall event should be detained and released over a 24 to 48 hour period.

25. Please identify existing vs. proposed drainage areas. Every effort should be taken to maintain existing drainage divides. Any proposed diversions must be clearly identified and the potential impacts fully assessed as part of the project's evaluation.

Other

26. Is infrastructure proposed within existing easements/r-o-w or are there additional property requirements? Please assess the impacts of utility relocation (i.e. telephone poles, union gas, etc.) on natural heritage features, natural hazard areas and fish habitat. This should not be left to detailed design as the relocation can have a significant impact on natural heritage features.

27. Please identify groundwater recharge/discharge areas and hydrological impacts. Please identify recommended mitigation measures for groundwater impacts and if appropriate, any opportunities to improve infiltration.

28. The Lower West Morrison Creek and the Timsin/Arrassa Lands EIR/FSS recommendations and findings should be incorporated into the Environmental Study Report. This report discusses specifically drainage from and stormwater management for portions of Sixth Line that are located within the EA study area.

29. Please refer to the additional details discussed at the Monday October 1, 2012 meeting.

In order to allow sufficient time to review the Draft Environmental Study Report, staff would appreciate it if a review timeline of 4 weeks could be incorporated into the project schedule. We would like to request 3 hard copies of the ESR for review.

We trust the above is of assistance. If you require additional information please contact the undersigned at extension 283.

Yours truly,

Leah Smith
Environmental Planner, MCIP, RPP
LS/

cc. (by email) Philip Kelly and Kristina Parker, Town of Oakville, Development Services

P:\Planning\DEV'T PLG FILES\ENVIRONMENTAL ASSESSMENTS\Oakville\Sixth Line - Dundas to 407\Preliminary Comments.doc

MORRISON HERSHFIELD

July 15, 2013

Conservation Halton
2596 Britannia Road West
Burlington, ON
L7P 0G3

Attention: Jane DeVito

Re: Municipal Class EA
Sixth Line Improvements, Dundas Street to Highway 407
Town of Oakville
CH File: MPR 614

Morrison Hershfield has prepared a status update on Conservation Halton's January 22, 2013 preliminary comments.

Ontario Regulation 162/06

1. The study area contains tributaries of West Morrison Creek. Conservation Halton regulates the erosion and flooding hazards and the 7.5 metre allowance associated with these tributaries. The study area also contains several units of the North Oakville-Milton East Provincially Significant Wetland Complex and the 120 metre allowance associated with these features. Ontario Regulation 162/06 requires that a Permit be obtained from Conservation Halton prior to development, interference with wetlands or alterations to shorelines and watercourses. A copy of Ontario Regulation 162/06 and the associated Policy document, Policies and Guidelines for the Administration of Ontario Regulation 162/06 and Land Use Planning Policy Document can be found at www.conservationhalton.ca. Please ensure that the EA contains sufficient information to allow Conservation Halton staff to determine whether a Permit could be issued at detailed design. The EA should identify areas where Permits pursuant to Ontario Regulation 162/06 will be required and include such Permits as future commitments in the ESR. Some details related to future Permits may not be deferred to detailed design. Please review the requirements of Policy 3.51 (Public Infrastructure – Utilities, Trails and Transportation) of Conservation Halton's *Policies and Guidelines for the Administration of Ontario Regulation 162/06 and Land Use Planning Policy Document.*

   Morrison Hershfield will identify areas where permits pursuant to Ontario Regulation 162/06 will be required and include such permits as future commitments in the ESR.

2. Please plot all areas regulated by Conservation Halton on drawings. At a minimum, the Approximate Regulation Limit (ARL) for West Morrison Creek should be based on a 7.5 metre allowance from the greater of the Regional Storm flood plain and meander belt allowance provided on Drawing 2, Lower West Morrison Creek Limit of Existing Stream Corridor, provided within the Lower West Morrison Creek and the Timsin/Arrassa Lands EIR/FSS. The ARL should be adjusted in the vicinity of the exiting West Morrison Creek (Reach MOC-W1) crossing of Sixth Line where the flood plain has been modified to reflect the proposed grading in this location

(see Conceptual Grading Plan for Spill Containment within EOR/FSS for this purpose). Ideally the limits of the regulated area would be further updated based on detailed topographical survey data acquired through the EA process.

Morrison Hershfield will plot all regulated areas on drawings and make all necessary adjustments for Conservation Halton review.

3. A Data Request Form is required for all digital information requests. This form and additional information on data holdings can be found in the "GIS & Mapping" section of Conservation Halton's website: www.conservationhalton.ca. Staff notes that the following modeling is available for the study area: a. West Morrison Creek Hydraulic Model & Mapping prepared by Stantec Consulting for Timsin-Arrassa Subdivision Development. b. For areas beyond those covered by the above model/mapping, West Morrison Creek Hydraulic Model & Mapping prepared by TSH for North Oakville Creeks Subwatershed Study.

   Morrison Hershfield did not require any information from Conservation Halton as received directly from developers.

4. It is recommended that "potential impacts to natural hazards" (flooding and/or erosion hazards) should be one of the evaluation criteria. At a minimum, a proposed alternative must have no negative impacts on flooding and erosion hazards in order for Conservation Halton to issue a future approval under Ontario Regulation 162/06. Opportunities to improve any deficiencies with respect to flooding and erosion should be investigated.

   Morrison Hershfield will include "potential impacts to natural hazards" as part of the evaluation criteria in the ESR.

5. The EA should assess all flood plain impacts associated with each alternative including consideration of any change in storage, velocity and up and down stream water levels for a variety of flow conditions. This may be deferred in the Environmental Study Report to a future EIR/FSS depending on the level of "approval" desired through this study.

   The Town of Oakville has deferred to a future EIR/FSS study.

6. A hydrologic and/or hydraulic analysis may be required in the Environmental Study Report depending on the level of "approval" desired through the study.

   The Town of Oakville has deferred to the detailed design stage.

7. Please consider MTO's flooding criteria, guidelines and/or the municipal engineering standards for flooding along/over roads. At a minimum, safe access & egress as defined in the MNR's 2002 Technical Guide: River & Stream Systems – Flooding Hazard Limit, should be provided. While not required, it is recommended that there be no overtopping of the roadway under Regional Storm conditions.
   Noted

8. If a roadway is considered by the Province or local municipality to be an Emergency Route, then there should be no overtopping of the road with flood waters.

   Noted

9. A fluvial geomorphological assessment may be required in the Environmental Study Report depending on the level of "approval" desired through the study.

   The Town of Oakville has deferred to the detailed design stage.

10. Please contact staff to arrange a site visit with the Ministry of Natural Resources to stake the Provincially Significant Wetlands associated with Core #7. An OLS must be present during this site visit.

    Morison Hershfield has contacted Conservation Halton to schedule the staking of the Core#7 wetlands. The Town of Oakville will arrange for an OLS to be present.

11. A hydrologic evaluation should be incorporated into the EA to determine if there is an impact to the hydrological functions of the wetland as a result of the proposed works.

    The Town of Oakville has deferred to the detailed design stage.

12. A topographic survey is required to identify the lands impacted by the flooding hazard associated with West Morrison Creek.

    The Town of Oakville has deferred to the detailed design stage if not undertaken by adjacent developments.

Natural Heritage

While Conservation Halton recognizes that Environmental Assessments are not subject to and/or limited to the policies outlined in the Provincial Policy Statement (PPS), we do believe that the PPS provides Provincial direction on how natural resources should be managed in Ontario. Furthermore, it is useful for identifying some of the key natural heritage features, water resources, and natural hazards that should be considered when evaluating any sort of development proposal. As such, some PPS related items have been outlined below, as we believe these items should be acknowledged and addressed as part of the EA study.

13. When undertaking any fieldwork and /or when making recommendations related to the natural heritage and/or natural hazards, staff recommend that reference be made to the following guidelines prepared by the Ministry of Natural Resources: *Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005, 2nd Edition, 2010; Significant Wildlife Habitat Technical Guideline; and, Natural Hazards Technical Guide and Understanding Natural Hazards.* In addition, reference should be made to the North Oakville Creeks Subwatershed Study.
    Noted

14. The study area may contain or pass between natural features. As per Policy 2.1.2 of the Provincial Policy Statement, the diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and groundwater features. The use of ecopassages or other measures to facilitate wildlife movement should be evaluated at both locations where linkages of the North Oakville Natural Heritage System cross Sixth Line. Barrier fencing should also be considered along the east edge of Core #7 to reduce movements of wildlife onto the road. NOCSS identifies a 100 metre wide linkage along Morrison Creek in the study area. The ultimate location of this linkage and creek block should be discussed with the adjacent landowners.

    Eco-passages were not required as part of the Sixth Line Environmental Impact Study. Potential locations for eco-passages will be documented in the ESR for further consideration.

15. As noted above, the study area contains several units of the North Oakville-Milton East Provincially Significant Wetland Complex. As per Policy 2.1.3 of the Provincial Policy Statement, development and site alteration shall not be permitted in significant wetlands. Specifically, this may require that the alignment of the road be shifted east along Core #7.

    The proposed alignment of Sixth Line has been shifted east along Core #7.

16. The study area may contain the habitat of Endangered or Threatened species. As per Policy 2.1.3 of the Provincial Policy Statement, development and site alteration shall not be permitted in the habitat of Endangered/Threatened Species. The provincial Endangered Species Act and/or federal Species at Risk Act may also apply. Please contact Melinda Thompson (Melinda.thompson@ontario.ca, 905-713-7425) of Aurora District MNR for further information on Endangered Species Act requirements.

    Morrison Hershfield will document the Endangered Species Act requirements in the ESR.

17. The study area contains the Oakville-Milton Wetlands and Uplands Provincially Significant Area of Natural and Scientific Interest (ANSI), Significant Woodlands and may contain significant wildlife habitat. As per Policy 2.1.4 of the Provincial Policy Statement, development and site alteration shall not be permitted in any of the above noted features unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. Specifically, this may require that the alignment of the road be shifted east along Core #7. Please contact the MNR for further information on ANSI's and the Region of Halton for further information of Significant Woodlands. The Ministry of Natural Resource's Significant Wildlife Habitat Technical Guidelines and the North Oakville Creeks Subwatershed Study can be consulted for significant habitat issues.

    The proposed alignment of Sixth Line has been shifted east along Core #7. The staking of Core #7 is being arranged to identify limits of the Provincially Significant Wetland Complex. ANSI's and significant woodlands have been identified in the Environmental Impact Study.

18. Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in Policies 2.1.3, 2.1.4, and 2.1.5 of the Provincial Policy Statement unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions. Specifically, this may require that the alignment of the road be shifted east along Core #7. The Ministry of Natural Resources' Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement 2005, Second Edition (2010) considers adjacent lands to be within 120 metres.

    The proposed alignment of Sixth Line has been shifted east along Core #7. Potential ramifications will be documented in the ESR and summarized in the next PIC under reports completed.

19. Please use Ecological Land Classification to map natural and semi-natural features to vegetation type and identify protection/mitigation measures. ELC data sheets are required with the ESR submission (please include digital species spreadsheets).

    ELC data sheets will be included in the ESR as part of the Environmental Impact Study.

20. Please refer to Conservation Halton's Environmental Impact Study Guidelines for information on general study requirements, impact assessment and appropriate timing and protocols for surveys. These guidelines can be found at www.conservationhalton.ca.

    Noted

21. Conservation Halton's Landscape Guidelines should be consulted at detailed design. These guidelines can be found at www.conservationhalton.ca.

    Noted

Fish Habitat Impacts

22. Staff recommends that any watercourse crossing of Sixth Line have an open bottom design that spans three times the bankfull channel width of the watercourse, where feasible. Where existing culverts are closed bottom, we generally recommend that they are replaced with an open bottom structure that adequately conveys sediment and are large enough in size to accommodate fish passage up to and during a 25 year storm event.

    Morrison Hershfield will document in the ESR to be considered as part of the detailed design works.

23. Please discuss quality/quantity/erosion controls within the Stormwater Management Section of the Environmental Study Report. Please examine the potential to combine SWM with adjacent development. Low Impact Development measures should be utilized to the maximum extent possible.
    Morrison Hershfield will document in the ESR.

24. As per the North Oakville Creeks Subwatershed Study, the following SWM requirements are identified: a. Quality requirements are Enhanced water quality controls. Please discuss the mitigation of thermal impacts. b. The quantity requirements are that all new paved areas meet the unit area target flow rates provided in the Flow Rates/Hydrology Mediation Item. c. The erosion control requirements are to be determined on a subcatchment basis based on an erosion threshold methodology. In the event that the subject lands cannot be serviced in conjunction with the adjacent development lands, as an alternative the 25mm rainfall event should be detained and released over a 24 to 48 hour period.

    Morrison Hershfield will document in the ESR.

25. Please identify existing vs proposed drainage areas. Every effort should be taken to maintain existing drainage divides. Any proposed diversions must be clearly identified and the potential impacts fully assessed as part of the project's evaluation.

    Existing and proposed drainage areas will be completed as part of adjacent draft plan applications or the detailed design for Sixth Line

<u>Other</u>

26. Is infrastructure proposed within existing easements/r-o-w or are there additional property requirements? Please assess the impacts of utility relocation (i.e. telephone poles, union gas, etc.) on natural heritage features, natural hazard areas and fish habitat. This should not be left to detailed design as the relocation can have a significant impact on natural heritage features.

    Morrison Hershfield will identify utility relocations and their impact on heritage features as part of the ESR.

27. Please identify groundwater recharge/discharge areas and hydrological impacts. Please identify recommended mitigation measures for groundwater impacts and if appropriate, any opportunities to improve infiltration.

    Works to be undertaken as part of adjacent draft plan applications

28. The Lower West Morrison Creek and the Timsin/Arrassa Lands EIR/FSS recommendations and findings should be incorporated into the Environmental Study Report. This report discusses specifically drainage from and stormwater management for portions of Sixth Line that are located within the EA study area.

    Morrison Hershfield will include as part of the ESR.

29. Please refer to the additional details discussed at the Monday, October 1, 2012 meeting.

    Already resolved, otherwise to be noted in ESR.

Ministry of Aboriginal Affairs

160 Bloor St. East, 9th Floor
Toronto, ON M7A 2E6
Tel: (416) 326-4740
Fax: (416) 325-1066
www.aboriginalaffairs.gov.on.ca

Ministère des Affaires Autochtones

160, rue Bloor Est, 9e étage
Toronto ON M7A 2E6
Tél. : (416) 326-4740
Téléc. : (416) 325-1066
www.aboriginalaffairs.gov.on.ca

Ontario

January 15, 2013

Reference: 469

Dale Lipnicky
Project Leader- Capital Projects
Town of Oakville
1225 Trafalgar Road
Oakville, Ontario
L6H 0H3

Re: Class Environmental Assessment Study
Sixth Line between Dundas Street to Highway 407 (ETR)
Town of Oakville

Dear Dale Lipnicky

Thank you for informing the Ministry of Aboriginal Affairs (MAA) of your project. Please note that MAA treats all letters, emails, general notices, etc. about a project as a request for information about which Aboriginal communities may have rights or interests in the project area.

As a member of the government review team, the Ministry of Aboriginal Affairs (MAA) identifies First Nation and Métis communities who may have the following interests in the area of your project:

- reserves;
- land claims or claims in litigation against Ontario;
- existing or asserted Aboriginal or treaty rights, such as harvesting rights; or
- an interest in the area of the project.

MAA is not the approval or regulatory authority for your project, and receives very limited information about projects in the early stages of their development. In circumstances where a Crown-approved project may negatively impact a claimed Aboriginal or treaty right, the Crown may have a duty to consult the Aboriginal community advancing the claim. The Crown often delegates procedural aspects of its duty to consult to proponents. Please note that the information in this letter should not be relied on as advice about whether the Crown owes a duty to consult in respect of your project, or what consultation may be appropriate. Should you have any questions about your consultation obligations, please contact the appropriate ministry.

You should be aware that many First Nations and/or Métis communities either have or assert rights to hunt and fish in their traditional territories. For First Nations, these territories typically include lands and waters outside of their reserves.

In some instances, project work may impact aboriginal archaeological resources. If any Aboriginal archaeological resources could be impacted by your project, you should contact your regulating or approving Ministry to inquire about whether any additional Aboriginal communities should be contacted. Aboriginal communities with an interest in archaeological resources may include communities who are not presently located in the vicinity of the proposed project.

With respect to your project, and based on the brief materials you have provided, we can advise that the project appears to be located in an area where First Nations may have existing or asserted rights or claims in Ontario's land claims process or litigation, that could be impacted by your project. Contact information is below:

Six Nations of the Grand River Territory P.O. Box 5000, 1695 Chiefswood Road OHSWEKEN, Ontario N0A 1M0	Chief William K. Montour (519) 445-2201 (Fax) 445-4208 wkm@sixnations.ca arleenmaracle@sixnations.ca
Haudenosaunee Confederacy Chiefs Council 2634 6th Line Road RR 2 Ohsweken, ON N0A 1M0	Hohahes Leroy Hill Secretary to Haudenosaunee Confederacy Chiefs Council Cell 519 717 7326 jocko@sixnationsns.com
Mississaugas of the New Credit First Nation 2789 Mississauga Rd., R.R. #6 HAGERSVILLE, Ontario N0A 1H0	Chief Bryan LaForme (905) 768-1133 (Fax) 768-1225 bryanlaforme@newcreditfirstnation.com

The information upon which the above comments are based is subject to change. First Nation or Métis communities can make claims at any time, and other developments can occur that could result in additional communities being affected by or interested in your undertaking.

Through Aboriginal Affairs and Northern Development (AANDC), the Government of Canada sometimes receives claims that Ontario does not receive, or with which Ontario does not become involved. AANDC's Consultation and Accommodation Unit (CAU) established a "single window" to respond to requests for baseline information held by AANDC on established or potential Aboriginal Treaty and rights. To request information from the Ontario Subject Matter Expert send an email to: UCA-CAU@aadnc-aandc.gc.ca

Additional details about your project or changes to it that suggest impacts beyond what you have provided to date may necessitate further consideration of which Aboriginal communities may be affected by or interested in your undertaking. If you think that further consideration may be required, please bring your inquiry to whatever government body oversees the regulatory process for your project. MAA does not wish to be kept informed of the progress of the project; please be sure to remove MAA from the mailing list.

Yours truly,

Wendy Cornet
Manager, Consultation Unit
Aboriginal Relations and Ministry Partnerships Division

Martin-Pierre Blouin

From:	John Grebenc
Sent:	Wednesday, December 18, 2013 1:45 PM
To:	Martin-Pierre Blouin; Dale Lipnicky
Cc:	Paul Allen
Subject:	FW: Sixth Line Environmental Assessment Dundas Street to Highway 407 ETR Oakville
Follow Up Flag:	Follow up
Flag Status:	Flagged

Dale, fyi below.

Martin, can you take them of the list, when you have time when I'm in can you log on to their site, so we can see what they have and we can use this as a future tool.

John J. Grebenc, P. Eng.
Vice President, Municipal Transportation
jgrebenc@morrisonhershfield.com

MORRISON HERSHFIELD
People • Culture • Capabilities

Suite 600, 235 Yorkland Blvd. | Toronto, ON M2J 1T1
Dir: 416 499 3181 x1011810 | Fax: 416 499 9658
morrisonhershfield.com

From: CAU-UCA [mailto:CAU-UCA@aadnc-aandc.gc.ca]
Sent: Wednesday, December 18, 2013 1:10 PM
Subject: Sixth Line Environmental Assessment Dundas Street to Highway 407 ETR Oakville

Hello Project Leadership,

I am writing on behalf of the Consultation Information Service (CIS) of Aboriginal Affairs and Northern Development Canada (AANDC). As a rule, AANDC officials do not participate in environmental assessments that pertain to projects off-reserve, nor does the department track how other parties carry out their EAs. Therefore, in future **please omit AANDC officials from your public information notification for projects that do not intersect with reserve land.** This information has been relayed to the Ministry of Environment of Ontario; their contact list will be updated. If you are not requesting Aboriginal consultation information please remove us from your notification mailing list.

If you are contacting AANDC to request Aboriginal consultation information (community information, claims and assertions), this is to let you know that AANDC has now launched the Aboriginal and Treaty Rights Information System (ATRIS). This Web-based system uses a mapping interface to provide information to federal officials and other interested parties on the location and nature of established and potential Aboriginal and Treaty rights. With ATRIS bringing together information regarding Aboriginal groups such as their exact location, their established rights (through treaties and other agreements) and their asserted rights through claim processes and also enabling users to relate many types of AANDC corporate data within a geographical and consultation context, ATRIS has become the main platform for Canada to disseminate its real or constructive knowledge of Aboriginal and treaty rights in Canada.

Due to the recent public availability of ATRIS, the role of CIS is currently in transition. That is, the focus of the CIS is shifting away from its former practice of providing written responses to written requests for information on established or potential Aboriginal and treaty rights to managing and supplementing the content in ATRIS. Previously, we prepared these responses by drawing on ATRIS. Now that ATRIS is widely available, we are sending those making requests for Aboriginal consultation information to ATRIS so they can locate the information directly. By focusing our attention on building up and improving the content of ATRIS, the CIS will be able to provide consistent and comprehensive information more efficiently.

To begin research in ATRIS, requesters from outside of the federal government can go directly to http://sidait-atris.aadnc-aandc.gc.ca/atris_online/. At the ATRIS "Help" button, there are answers to frequently asked questions, a glossary, and instructions on how to navigate the system.

Please keep in mind that some of the information provided by ATRIS will be contextual. Depending on your project, information that comes up in a search may or may not pertain to Aboriginal or treaty rights in your particular project area. In most cases, therefore, the Aboriginal communities identified by ATRIS are best placed to explain their traditional use of land, their practices, or their claims that may fall under section 35 of the *Constitution Act, 1982*.

If, after conducting your research, you have specific questions on how to use ATRIS, we will endeavor to assist you if you contact the CIS through the e-mail address: UCA-CAU@aadnc-aandc.gc.ca. In such instances, to facilitate a more timely response, please use the following in the subject line of your e-mail: **"Consultation information – [a short name for your Project] – [Location of your project]."**

Thank you for your understanding and cooperation,
Consultation and Accommodation Unit, AANDC, HQ

DAVID FAYE
& Associates Inc.
Land
Management
Group

December 2, 2013

Town of Oakville
Engineering and Construction Department
1225 Trafalgar Road
Oakville, Ontario
L6H 0H3

Attention: Dale Lipnicky, C.E.T.

Re: Sixth Line EA Study

Dear Sir:

We represent Star Oak Developments Limited ("Star Oak") which owns land to the north-east and also to the south-west of the Burnhamthorpe Road/Sixth Line intersection within the Sixth Line EA Study Area. On behalf of our client, we attended the Sixth Line EA PIC #2 hosted by the Town of Oakville in October, 2013, and also reviewed the related information posted on the Town of Oakville website.

We have the following comments and questions for your consideration:

1. Sixth Line is classified as a Minor Arterial/Transit Corridor which will have Secondary Transit Corridor Service according to Figure NOE 4 of the North Oakville East Secondary Plan ("NOESP").

   Table 2 of Section 7.7.2 of the NOESP provides that the ROW width for a Minor Arterial/ Transit Corridor "shall be kept to a minimum, but typically will not exceed a maximum of 26 metres, except at approaches to major intersections where medians and or turn lanes are required."

   The proposed increase in the Sixth Line ROW width to 31 metres from Dundas Street to Highway 407 is not consistent with Council policy contained in the NOESP.

2. It is proposed to divert Sixth Line easterly in the vicinity of the Natural Heritage System on the west side of Sixth Line to minimize environmental impacts. In the matrix "Assessment & Evaluation of Alternative Designs," presented at the Sixth Line EA PIC #2, we note that Alternative 2 (Widen About the Centre Line) is considered to have moderate impacts on the NHS area, whereas Alternative 3 (Widen about the Centre Line and to the East Along the Natural Heritage System) is considered to have minor impacts.

   We note also that Alternative 3 is considered to have higher construction costs than Alternative 2 due to the ROW shift to the east. More information on the environmental impacts, acceptable mitigation measures, and construction costs of Alternative 2 versus Alternative 3 is required. It is entirely possible that Alternative 2 represents a more appropriate solution than Alternative 3.

P.O. Box 52147, 338 Lakeshore Road East, Oakville, Ontario L6J 7N5
Cell (905) 467-4250 • Office (905) 825-3582 • Fax (905) 825-9124 • davidfaye.associates@gmail.com

3. Without the benefit of an ACAD drawing file, we have estimated that the road widening along the east side of Sixth Line north of Burnhamthorpe Road may be as high as 12 metres in the vicinity of Street 3 on the Star Oak draft plan of subdivision (24T-13002/1215). This magnitude of widening will have unacceptable negative impacts on the proposed Star Oak residential development.

   The evaluation of Alternative 3 needs to include these impacts on the Star Oak plan of subdivision.

4. We understand that the Region of Halton has scheduled the concurrent construction of various sections of the New North Oakville Transportation Corridor ("NNOTC") culminating in the expected completion of the new roadway from Ninth Line through to Neyagawa Boulevard by 2017/2018.

   The Town of Oakville's schedule to widen and reconstruct Sixth Line envisions a start on construction of Phase 1 from Dundas Street to North Park Drive in 2015, Phase 2 from North Park Drive to Burnhamthorpe Road in 2020, and Phase 3 from Burnhamthorpe Road to Highway 407 in 2023, some 5 years after the NNOTC has been opened to traffic.

   The NNOTC traverses the employment lands of the Star Oak draft plan of subdivision. Infrastructure investment by Star Oak will be required to transform the greenfield employment lands into serviced employment blocks. Successful marketing of these employment lands requires an investment by the Town of Oakville in an improved Sixth Line in a time frame more closely coordinated with the Region of Halton's construction of the NNOTC. We suggest that the Town's Sixth Line reconstruction schedule be reconsidered.

5. The Region of Halton has proposed a roundabout at the future intersection of the NNOTC and Sixth Line. We met recently with Region staff concerning this proposal and have requested more information regarding the land requirements for this roundabout versus a signalized intersection. We have not yet received this information.

   Without the benefit of an ACAD drawing file, we estimate the ROW width of the NNOTC in the vicinity of Blocks 152 and 153 on the Star Oak draft plan exceeds 60 metres. In addition, the roundabout requires excessive widening on the east side of Sixth Line both north and south of the proposed Sixth Line/NNOTC intersection.

   This magnitude of road widening to accommodate a roundabout is not consistent with secondary plan policies, will contribute to an undesirable loss of employment land, and needs to be reconsidered by both the Region of Halton and the Town of Oakville.

We thank you for the opportunity to comment on the Sixth Line EA Study. We look forward to your response to the points we have raised in this letter.

Yours truly,
David Faye & Associates Inc.

David Faye

David Faye, MCIP, RPP

Cc. Silvio Guglietti
Jim Kennedy
Joseph Choi

OAKVILLE

David Faye & Associates Inc.
338 Lakeshore Road East
P.O. Box 52147
Oakville, ON
L6J 7N5

April 11, 2014

Attention: Mr. David Faye

Re: Sixth Line Environmental Assessment
Dundas Street to Highway 407 ETR

Thank you for your letter of December 2, 2013 regarding our Environmental Assessment for Sixth Line from Dundas Street to Highway 407 ETR. In response to your concerns, please find below our comments.

1. The character of Sixth Line will not vary significantly from the intended parameters identified within the North Oakville East Secondary Plan. Neighbourhood Centre's will continue to be planned for both the east and west sides of Sixth Line along with a Neighbourhood Activity Node south of Burnhamthorpe Road. Parking lay-by's will be permitted where deemed appropriate through the development process and to encourage alternative modes of transportation, on-road cycling lanes and oversized sidewalks will be provided on both sides of Sixth Line.

   The recommended cross-sections for Sixth Line were developed not only to accommodate future 2031 traffic volumes, but boulevard and lane widths were also reduced in an effort to minimize the land impacts on the adjacent landowners.

2. Following discussions with Conservation Halton staff, and in an effort to minimize the impact the new roadway would have on the Natural Heritage System lands south of Burnhamthorpe Road, it was determined that Sixth Line would be shifted easterly across the frontage of the NHS lands between Street "C" and Burnhamthorpe Road.

3. Upon request, the Town of Oakville reviewed the proposed alignment of Sixth Line in the area of the Star Oak lands which are located north and south of the existing Burnhamthorpe Road intersection with Sixth Line.

   As a result of this further review, a modification to the alignment has taken place north of Burnhamthorpe Road which will result in the approximate 12 metre widening on the east side of Sixth Line being reduce to approximately 6.0 metres across the Star Oak lands.

4. As you have indicated, Phase 1 is currently proceeding in 2015 as planned. However, recognizing that development is advancing quickly along the Sixth Line corridor, staff will review the need to advance future phases through our annual review of our 10 Year Capital Budget Forecast.

5. The proposed roundabout at the Sixth Line/NNOTC intersection is an initiative being brought forward by the Region of Halton. Concerns regarding its proposed design and resulting land requirements are to be addressed by Regional staff.

Thank You,

Dale Lipnicky, C.E.T.
Project Leader – Capital Projects

MATSON, McCONNELL LTD.
LAND MANAGEMENT GROUP

December 9, 2013

Town of Oakville
Engineering and Construction Department
1225 Trafalgar Road
Oakville, ON
L6J 5A6

Attention: Dale Lipnicky

Dear Dale,

Re: Sixth Line
Environment Assessment, PIC #2
Town of Oakville

We represent Timsin Holding Corp ("Timsin"), the owner of lands along the west side of Sixth Line, north of Dundas Street.

The Timsin lands are comprised of two phases. The first phase was registered as Plan 20M-1114 in August 2012, and is generally located at the northwest intersection of Sixth Line and Dundas Street. The Phase 2 lands are located immediately north of the registered Phase 1 lands, and are located along the west side of Sixth Line, within the Sixth Line EA Study Area.

On behalf of our client, we have the following comments for your consideration:

1. Sixth Line is classified as a Minor Arterial/Transit Corridor with Secondary Transit Corridor Service proposed according to Figure NOE 4 of the North Oakville East Secondary Plan ("NOESP").

   Table 2 of Section 7.7.2 of the NOESP provides that the ROW width for a Minor Arterial/Transit Corridor" shall be kept to a minimum, but typically will not exceed a maximum of 26 metres, except at approaches to major intersections where medians and or turn lanes are required."

   The proposed increase in ROW width to 31 metres from Dundas Street to Highway 407 does not comply with Council policy contained in the NOESP and would create a major roadway which would be out of context with its intended function and character.

2. During the in-depth negotiations and processing of the Secondary Plan and Master Plan, the intention was for Sixth Line to be an active street with direct access to residential units with the ability to contain lay-by lanes similar to the west side of Proudfoot Trail opposite the park, south of Dundas. It appears from the proposed sections for Sixth Line that the preferred option has no lay-by lanes, or any potential to add lay-by's. This is not consistent with the Secondary Plan negotiations and settlement between the Town and North Oakville landowners.

3. The location of the NHS Linkage on the west side of Sixth Line was specifically designed to allow a cul-de-sac road with lotting on both sides, together with a single tier of lots fronting onto Sixth Line with a lay-by lane (see attached Draft Plan showing the future lotting pattern). This configuration would not be possible with a widened Sixth Line Road Right of Way.

Based on the above, we believe the preferred option for Sixth Line is inconsistent with the North Oakville East Secondary plan and inconsistent with the town-landowner Settlement. As such, we urge you to consider a solution which achieves a Sixth Line configuration which meets the intent and policy of the plan. We look forward to your review of our comments, and we would be pleased to discuss these further with you at your convenience.

Yours very truly,
MATSON, McCONNELL LTD.

Christopher S. Matson, B.E.S., MCIP

(chris/2013/trinison/29nov.oakville)

Encl.

cc: Gabe Charles
Michael Telawski

OAKVILLE

Matson, McConnell Ltd.
2430A Bloor Street West
Toronto, ON
M6S 1P9

April 11, 2014

Attention: Mr. Christopher Matson

Re: Sixth Line Environmental Assessment
Dundas Street to Highway 407 ETR

Thank you for your letter of December 9, 2013 regarding the current undertaking of the Environmental Assessment for Sixth Line from Dundas Street north to Highway 407 ETR.

Please find your comments and our response to your questions and/or concerns below (your comments in italics).

1. *On behalf of our client, we have the following comments for your consideration:*

   Sixth Line is classified as a Minor Arterial/Transit Corridor with Secondary Transit Corridor Service proposed according to Figure NOE 4 of the North Oakville East Secondary Plan ("NOESP").

   Table 2 of Section 7.7.2 of the NOESP provides that the ROW width for a Minor Arterial/Transit Corridor "shall be kept to a minimum, but typically will not exceed a maximum of 26 metre, except at approaches to major intersections where medians and or turn lanes are requires."

   The proposed increase in ROW width to 31 metres from Dundas Street to Highway 407 does not comply with Council policy contained in the NOESP and would create a major roadway which would be out of context with its intended function and character.

The character of Sixth Line will not vary significantly from the original guidelines developed within the North Oakville East Secondary Plan. Sixth Line will continue to have Neighbourhood Centre Area's along with a Neighbourhood Activity Node south of Burnhamthorpe Road. Parking lay-by's will be permitted where deemed appropriate. Sidewalks will be provided on both sides of Sixth Line along with multi-use pathways where possible. Every effort has been made to minimize the right-of-way width to reduce the impact on adjacent landowners while at the same time, accommodate future 2031 traffic volumes in the area.

2. *During the in-depth negotiations and processing of the Secondary Plan and Master Plan, the intention was for Sixth Line to be an active street with direct access to residential units with the ability to contain lay-by lanes similar to the west side of Proudfoot Train opposite the park, south of Dundas Street. It appears from the proposed sections for Sixth Line that the preferred option has no lay-by lanes, or any potential for add lay-by's. This is not consistent with the Secondary Plan negotiations and settlement between the Town and North Oakville landowners.*

Please be advised that the ESR for Sixth Line will not preclude the potential for lay-by parking on Sixth Line, south of Burnhamthorpe Road. The appropriateness of lay-by lanes and the associated parking will be determined through the development process by our Planning and Development Engineering Departments. The final ESR will not illustrate lay-by parking on the plan view, however, typical sections will show its potential and the report itself will indicated that lay-by parking will be considered.

3. *The location of the NHS Linkage on the west side of Sixth Line was specifically designed to allow a cud-de-sac road with lotting on both sides, together with a single tier of lots fronting onto Sixth Line with a lay-by lane (see attached Draft Plan showing the future lotting pattern). This configuration would not be possible with a widened Sixth Line road Right-of-Way.*

Sixth Line has been designated a Minor Collector north of Dundas Street which requires it to accommodate pedestrians, cyclists, vehicular traffic and transit within this corridor. As lands are developed along the Sixth Line corridor, area developers are also increasing the number of mid-block intersections to provide access to their lands. As the number of intersections increase and the spacing between them decreases, sufficient taper lengths are not available to reduce the 31 metre right-of-way to the originally intended 26 metres.

Yours Truly,

Dale Lipnicky, C.E.T.
Project Leader – Capital Projects

urbantech
west

January 27, 2014 **Project:** 11-350

Mr. Dale Lipnicky, C.E.T
Town of Oakville
1225 Trafalgar Road
Oakville, Ontario
L6H 0H3

Re: Class Environmental Assessment Study
Sixth Line form Dundas Street to Highway 407 (ETR)

Dear Sir,

We are the Consulting Engineers working with Sixth Line Corporation (Subject lands), owner of lands located on the northeast corner of 6th Line and Dundas Street in the Town of Oakville, Halton Region.

The Subject lands are currently proceeding through the Draft Plan process as a Plan of Subdivision under file 24T-12009 and a rezoning application under file Z.1315.02. In support of the above Draft Plan a supporting Environmental Implementation Report – Functional Servicing Study (EIR/FSS) was prepared in accordance with the requirements of the Town of Oakville Official Plan amendment 272 (OPA 272) and submitted to the Town of Oakville for review and approval in November 2012.

In harmony with the above, The Town of Oakville introduced a Class Environmental Assessment (EA) Study for the Sixth Line right-of-way (ROW) from Dundas Street to Highway 407 (ETR) with the following objectives:

- Complete the Municipal Class EA process with participation from the public and affected parties;
- Provide satisfactory consideration to a reasonable range of alternatives;
- Consider the effects on all aspects of the environment and systematic evaluation of alternatives; and
- Develop preliminary preferred design(s) of recommended alternative.

The EA findings and recommendations may influence the subject lands fronting along the 6th Line.

Urbantech West, A Division of Leighton-Zec West Ltd.
2030 Bristol Circle Suite 201 Oakville, Ontario L6H 0H2
TEL: 905.829.8818
www.urbantech.com

To date, the Town has hosted two Public Information Centers which we (Urbantech West) have attended on behalf of 6th Line Corporation. We have reviewed the Town's EA findings to date and have had continuous constructive dialogue with the Town throughout the EA process.

As discussed at a recent meeting with Urbantech Consulting and Town staff (January 21, 2014), the upcoming submission of the Sixth Line EIR/FSS will address the outstanding Sixth Line widening requirements with respect to development of the Sixth Line Corporation lands.

In particular, the following two items were discussed at the meeting:

- Implementation of the 31.0m wide Sixth Line ROW section abutting the NHS and the subject lands and;
- Provision of alternative stormwater management solutions for the Sixth Line ROW.

Proposed 31.0m Sixth Line ROW Section

The Town's Official Plan – Liveable Oakville (2009) (OP) identifies Sixth Line as a Minor Arterial Road with a designated ultimate ROW width of 26m. Notwithstanding this designation, the OP does contain provision that the width designated in the current OP may be subject to change based on the outcome of future EA's.

Sixth Line Corporation commenced preparation of their planning process and Draft Plan based on the origiinal ROW width of 20m along its 6th line ROW frontage and accommodated a 3.0m road widening along its entire 6th Line frontage to accommodate the ultimate ROW width. The Draft Plan formed the base for the EIR/FSS.

Subsequently, the Town advanced the EA which the findings of amongst others, is the widening of 6th line to 31.0m from the originally anticipated 26.0m. This requirement will result in an additional 2.5m widening dedication along the subject lands frontage significantly affecting the Draft Plan layout.

The Town's second PIC recommended three (3) urban cross sections (see attached) for a 31.0m ROW where it:

1. Provides no parking layby's on Sixth Line
2. Provides parking layby's on both sides of Sixth Line
3. Provides a typical section where the ROW abuts the Natural Heritage System (NHS)

A significant feature of the subject lands Draft Plan is the realignment of the Lower West Morrison Creek. The existing creek flows from the northwest to the southeast side of the 6th Line ROW then crosses into the subject lands just to the south of the future North Park Blvd. ROW. The creek then meanders through the subject lands and discharges to an existing culvert at Dundas Street.

The North Oakville Creeks Subwatershed Study (NOCSS) designated the Lower West Morrison Creek and its regulated floodplain to be reconstructed and realigned utilizing natural channel design principals.

Through development of the Draft Plan, it is proposed to reconstruct and realign the Lower West Morrison Creek in a 100m wide NHS corridor directly abutting the 6th Line ROW up to where the creek crosses over to the west side 6th Sixth Line.

The Town's EA 31.0m urban cross section, where it abuts the NHS depicts a 29.1m wide section to facilitate the safe movement of vehicular and pedestrian traffic. The additional 1.90m of the ROW depicts transitional grading into the NHS (as per the attached section).

Sixth Line Corporation agrees with the proposed widening and seeks confirmation that this 31.0m section will be implemented as part of the proposed widening works. In order to achieve both the 31.0m ROW width and the 100m wide West Morrison Creek NHS corridor mandated by the NOCSS, an overlap of the NHS and Sixth Line boulevard of 2.5m will occur. Sixth Line Corporation respectfully requests the Town to confirm the overlap is acceptable as the NHS overlap into the ROW can be easily accommodated for with transitional boulevard grading which conforms to Town standards (i.e., will not exceed 2% max slope). Please refer to **Figure 1** for a typical cross-section proposed by Sixth Line Corporation.

This accommodation will permit the orderly development of the subject lands as planned for through the original iteration of the Draft Plan by providing suitable lot depths between Sixth Line and the proposed school/park campus located to the east and will not affect the functionality of the ultimate cross section of the 6th line as recommended through the EA process.

The remainder of the subject lands frontage along the 6th Line ROW frontage will accommodate the 31.0m ROW width requirement.

At this time we respectfully request that the Town review the alternative provided with respect to the ultimate Sixth Line ROW section and NHS corridor width. Sixth Line Corporation is eager to finalize their Draft Plan and this information is critical to establishing the development limits.

Alternative Stormwater Management Solutions for Sixth Line

The current Sixth Line EA documents (see attached) have identified the ultimate drainage boundaries for the ROW. The attached PIC figure illustrates the proposed drainage boundaries. However, to date no stormwater management details have been provided by the Town.

Sixth Line Corporation offers the following SWM design suggestions for the ROW as shown on **Figure 6.2b**:

- Pond 22A in the subject lands will accommodate the ultimate drainage of the Sixth Line ROW (3.95 ha / approximately 1,275m) north of the West Morrison Creek crossing. We note that the length and area of Sixth Line ROW we propose to accommodate in Pond 22A is greater than what the Town's EA drainage plan prescribes.
- Due to grading constraints the remaining portion of the Sixth Line Drainage Area south of the West Morrison Creek channel crossing cannot be physically connected to Pond

22A. Pond 22A cannot be over-controlled for this remaining portion as it is now accommodating more area north of the crossing than was estimated in the EA document. Therefore, it is proposed to either:

a. Accommodate the drainage area of Sixth Line south of the channel crossing in Pond 22 located west of Sixth Line combined with the future developments on the west side of Sixth Line (for which drainage has already been accounted for.) This is subject to confirmation of Pond 22 capacity to manage the additional ROW drainage.
b. The Town provide SWM within the ROW for this drainage area prior to discharging to the West Morrison Creek downstream or,
c. The Town treat and direct the Sixth Line drainage to the existing online pond located south of Dundas Street, subject to confirmation of hydrologic capacity and performance.

Urbantech West will continue coordinating with the Town through their EA process and the Sixth Line Corporation EIR/FSS to finalize the preferred SWM solution for the Sixth Line ROW.

Regards,
Urbantech West

Paul Brown
Senior Associate

cc:

Attachments:

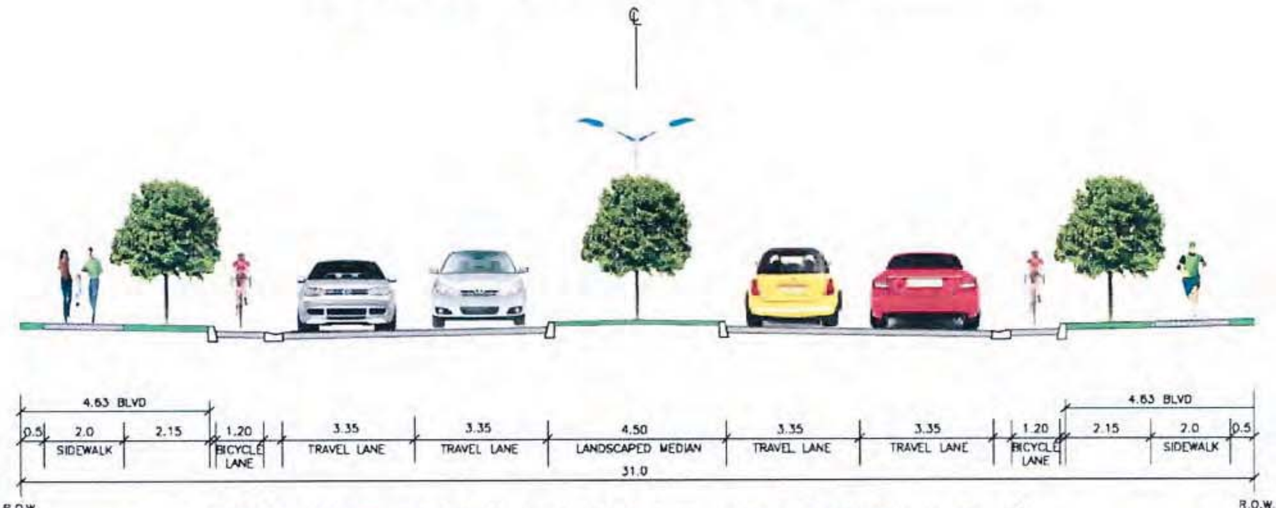
Town of Oakville Sixth Line EA – 31m ROW cross-sections

Figure 1 – Typical 100m NHS corridor abutting ultimate ROW
Figure 2 – Reduced (97.5m) NHS corridor abutting ultimate ROW

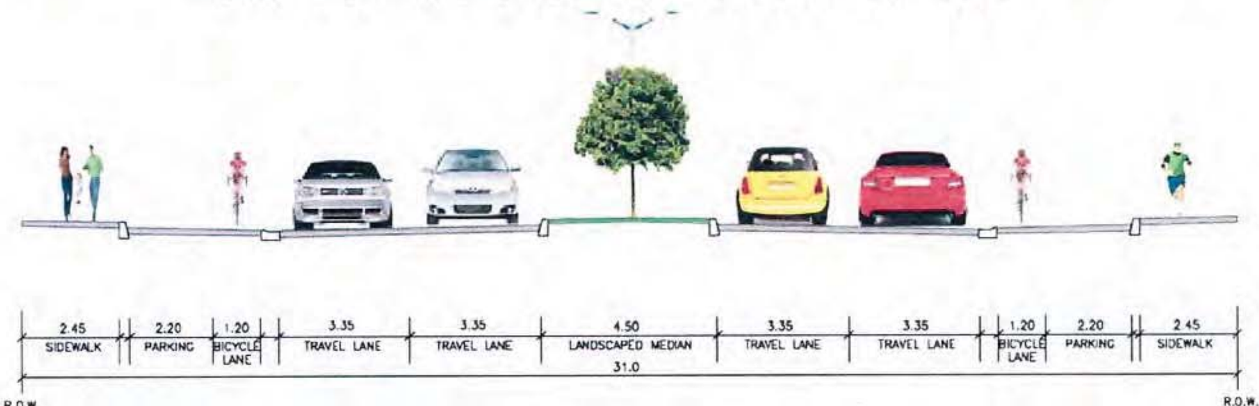
Town of Oakville Sixth Line EA – Proposed Storm Drainage Plan
Figure 6.2B – External Post-Development Storm Drainage Plan

Preliminary Preferred Design (Alternative #3)

Proposed Sixth Line Typical Sections



SIXTH LINE TYPICAL SECTION – NO PARKING LAYBY'S



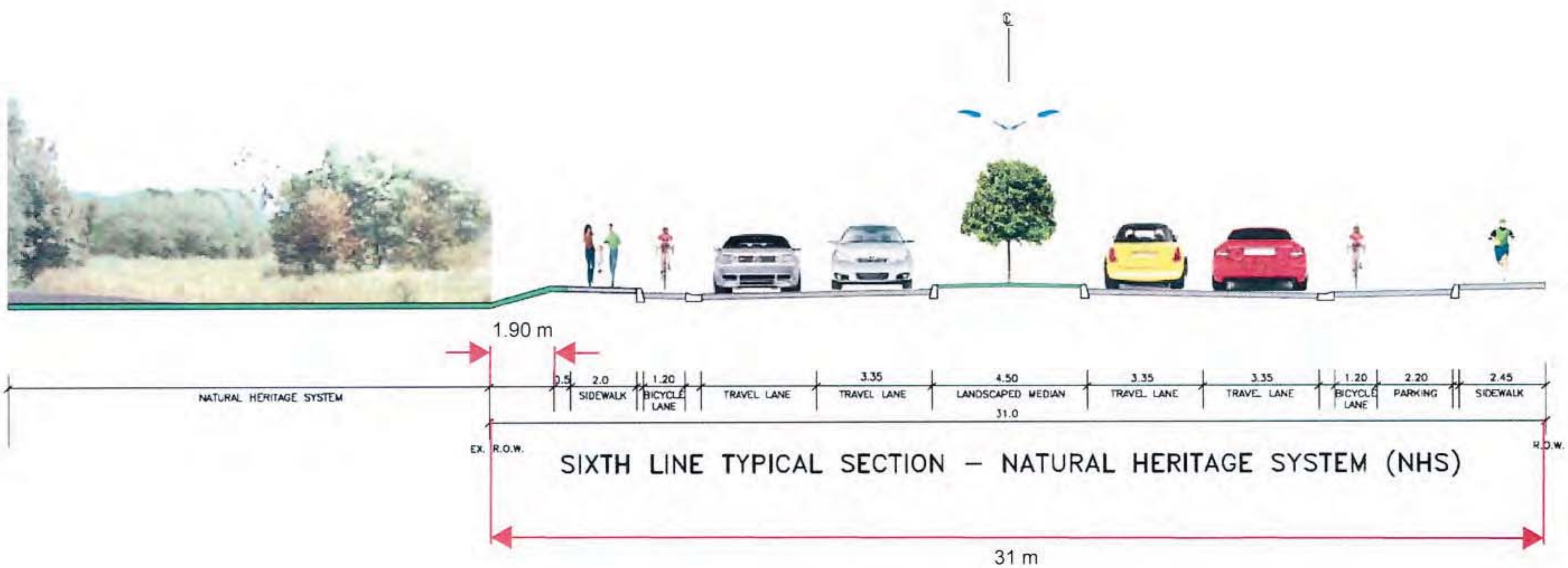
SIXTH LINE TYPICAL SECTION – PARKING LAYBY'S ON BOTH SIDES

OAKVILLE

MORRISON HERSHFIELD

Preliminary Preferred Design (Alternative #3)

Proposed Sixth Line Typical Sections



OAKVILLE

MORRISON HERSHFIELD

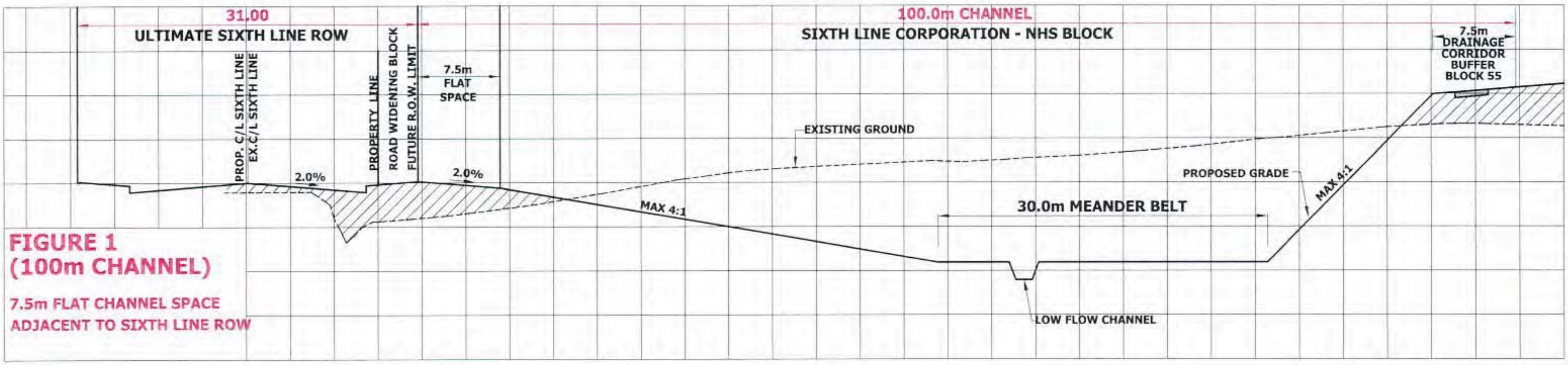


FIGURE 1
(100m CHANNEL)

7.5m FLAT CHANNEL SPACE
ADJACENT TO SIXTH LINE ROW

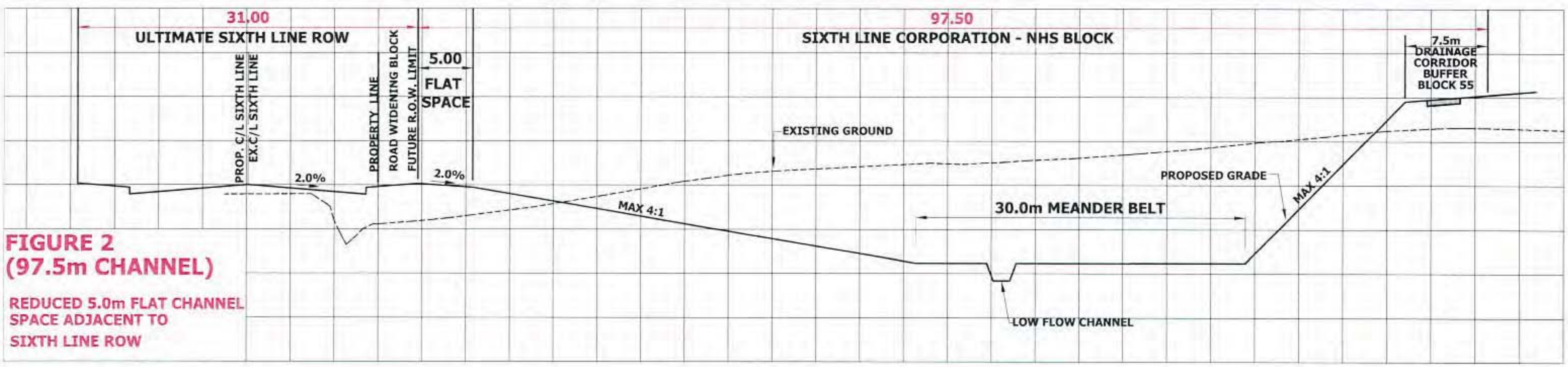


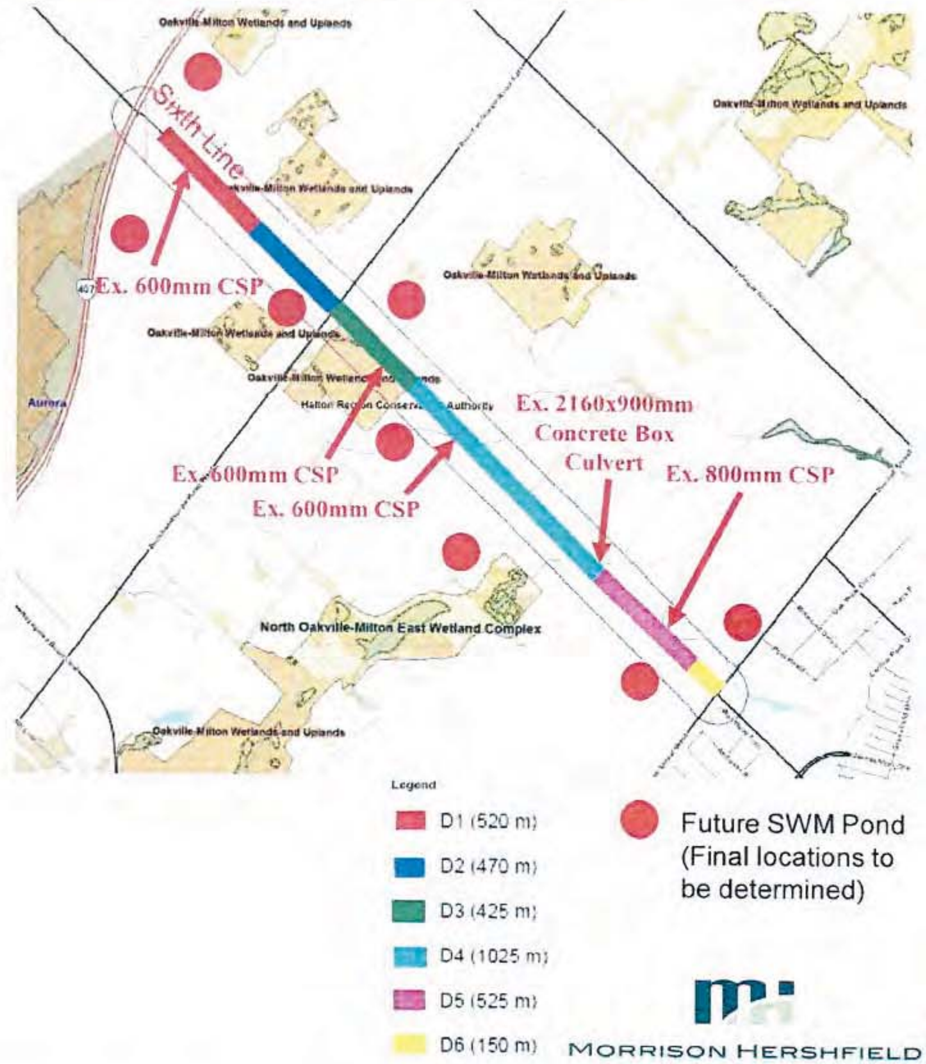
FIGURE 2
(97.5m CHANNEL)

REDUCED 5.0m FLAT CHANNEL SPACE ADJACENT TO SIXTH LINE ROW

Summary of Studies Completed for EA Study (Cont'd.)

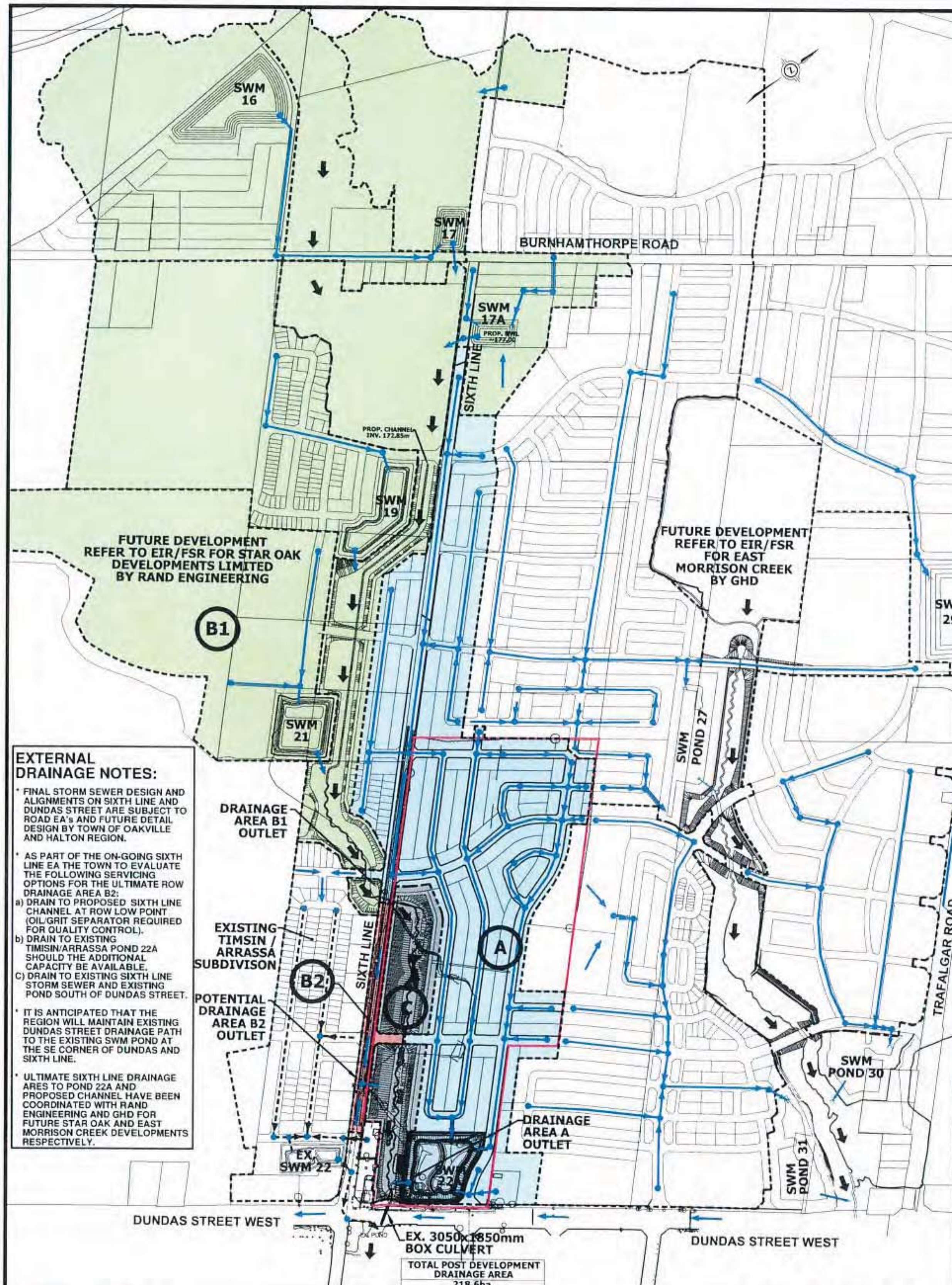
Stormwater Management & Hydraulic Analysis

- Drainage along Sixth Line is divided into 6 catchment areas.
- There are 5 existing culverts crossing Sixth Line which will be replaced or extended to accommodate the proposed road widening.
- The conveyance of surface runoff will be handled by the installation of trunk sewer along Sixth Line.
- Quality and quantity control will be handled by stormwater management ponds constructed as part of adjacent development.



OAKVILLE

MORRISON HERSHFIELD



EXTERNAL DRAINAGE NOTES:

* FINAL STORM SEWER DESIGN AND ALIGNMENTS ON SIXTH LINE AND DUNDAS STREET ARE SUBJECT TO ROAD EA's AND FUTURE DETAIL DESIGN BY TOWN OF OAKVILLE AND HALTON REGION.
* AS PART OF THE ON-GOING SIXTH LINE EA THE TOWN TO EVALUATE THE FOLLOWING SERVICING OPTIONS FOR THE ULTIMATE ROW DRAINAGE AREA B2:
  a) DRAIN TO PROPOSED SIXTH LINE CHANNEL AT ROW LOW POINT (OIL/GRIT SEPARATOR REQUIRED FOR QUALITY CONTROL).
  b) DRAIN TO EXISTING TIMISIN/ARRASSA POND 22A SHOULD THE ADDITIONAL CAPACITY BE AVAILABLE.
  C) DRAIN TO EXISTING SIXTH LINE STORM SEWER AND EXISTING POND SOUTH OF DUNDAS STREET.
* IT IS ANTICIPATED THAT THE REGION WILL MAINTAIN EXISTING DUNDAS STREET DRAINAGE PATH TO THE EXISTING SWM POND AT THE SE CORNER OF DUNDAS AND SIXTH LINE.
* ULTIMATE SIXTH LINE DRAINAGE ARES TO POND 22A AND PROPOSED CHANNEL HAVE BEEN COORDINATED WITH RAND ENGINEERING AND GHD FOR FUTURE STAR OAK AND EAST MORRISON CREEK DEVELOPMENTS RESPECTIVELY.

Freeman Planning Solutions Inc.
Urbantech Consulting
Golder Associates Ltd.
GHD
Genivar

LEGEND:

- FSS Study Area
- Post Development Drainage Boundary
- Minor System Flow Direction
- Existing Minor System Flow Direction
- Overland Flow Direction

45.3ha	Post Development Drainage Area (A) Contributing to Pond 22A
164.7ha	Controlled Post Development Drainage Area B1 Contributing to Sixth Line Channel
1.8ha	Uncontrolled Post Development Drainage Area B2 (Municipal ROW) Contributing to Sixth Line Channel
6.8ha	Uncontrolled Post Development Drainage Area C (Open Space-Channel Block)

ENVIRONMENTAL IMPLEMENTATION REPORT AND FUNCTIONAL SERVICING STUDY SECOND SUBMISSION

SIXTH LINE CORPORATION
NORTH OAKVILLE

Figure 6.2B

External Post Development Storm Drainage Plan

DATE: November 2013
SCALE: 1:8,000

OAKVILLE

Urbantech West
2030 Bristol Circle
Suite 201
Oakville, ON
L6H 0H2

April 11, 2014

Attention: Mr. Paul Brown

Re: Sixth Line Environmental Assessment
Dundas Street to Highway 407 ETR

Thank you for your letter of January 27, 2014 regarding our Environmental Assessment for Sixth Line from Dundas Street to Highway 407 ETR.

Please be advised that your comment will form part of the ESR (Environmental Study Report) for Sixth Line, Dundas Street to Highway 407 (ETR).

Thank You,

Dale Lipnicky, C.E.T.
Project Leader – Capital Projects

North Oakville Community Builders Inc.

March 27, 2014

Dale Lipnicky, CET
Town of Oakville
Engineering and Construction Department
1225 Trafalgar Road
Oakville, ON
L6H 0H3

Sent Via Email & Regular Mail

Dear Mr. Lipnicky:

Re: Sixth Line EA

The North Oakville Community Builders Inc. (NOCBI) landowners' group is made up of various participating landowners within the North Oakville East Secondary Plan (NOESP). We are writing to you with respect to the Environmental Assessment Study (EA) the Town is of Oakville undertaking for Sixth Line. Our group has reviewed all of the pertinent information on the Town's website, attended the various Public Information Centre's (PIC), and has the following comments:

1. Sixth Line is classified as a Minor Arterial / Transit Corridor in the NOESP and is planned to have Secondary Transit Service. Furthermore, Table 2 of Section 7.7.2 of the NOESP requires that the right-of-way (ROW) width for Minor Arterial / Transit Corridor's "shall be kept to a minimum, but typically will not exceed a maximum of 26 metres, except at approaches to major intersections where medians and turning lanes are require."

   Given this, it is clear that the proposed ROW increase to 31 metres in the EA for Sixth Line from Dundas Street to Highway 407 is inconsistent with the NOESP.

2. In order to minimize environmental impacts, the EA is proposing to divert Sixth Line easterly in the vicinity of the Natural Heritage System (NHS). We note that Alternative 2 in the matrix *Assessment & Evaluation of Alternative Designs* (which was presented at PIC # 2) is considered to have moderate impacts on the NHS and lower construction costs, while Alternative 3 is considered to have minor impacts on the NHS and higher construction costs.

   We suggest that more information on the environmental impacts, mitigation measures and construction costs between Alternative 2 and 3 is required to accurately analyze and recommend an appropriate solution. Alternative 2 may in fact be the most appropriate choice.

3. We have estimated that the road widening proposed east of Sixth Line and north of Burnhamthorpe Road in the vicinity of Street 3 will require additional lands, thus negatively affecting Star Oak draft plan of subdivision (24T-13002/2015) which is a

participating member of NOCBI. Given this, we suggest that the evaluation criteria of Alternative 3 should include the cost of the loss of development lands from Star Oak.

4. The location of the NHS linkage on the west side of Sixth Line was designed to allow a cul-de-sac road with double sided lotting, together with a single tier of lots fronting onto Sixth Line with a lay-by lane, all within the Timsin Holding Corp's Phase 2 lands.

   The proposed Sixth Line widening in the EA would not provide for this configuration and we recommend it be re-considered by the Town.

5. The Region of Halton has scheduled the construction of the New North Oakville Transportation Corridor (NNOTC), with expected completion from Ninth Line through to Neyagawa Boulevard by 2017/2018. Furthermore, the Town of Oakville has scheduled to widen and reconstruct Sixth Line in the following phases: 1) Dundas Street to North Park Drive by 2015; 2) North Park Drive to Burnhamthorpe Road by 2020; and 3) Burnhamthorpe Road to Highway 407 by 2023.

   Both Star Oak and the Region of Halton will be investing significant infrastructure to service the employment lands within Star Oak, which are adjacent to Highway 407. Successful marketing and development of these lands requires an improved Sixth Line by the Town. As such, we respectfully suggest the Town accelerate its construction schedule of Sixth Line to more closely reflect the Region's and Star Oak's timeline.

6. The Region of Halton has proposed a round-a-bout at the future intersection of the NNOTC and Sixth Line. We estimate the land requirements for this round-a-bout is larger than a typical intersection and will negatively affect the size of employment lands in the vicinity of Blocks 152 and 153.

   We submit that the land requirements to facilitate this round-a-bout are not consistent with NOESP policies and will result in an undesirable loss of employment land. We recommend the Town, in consultation with the Region of Halton, reconsider this round-a-bout location (recognizing this is a Regional jurisdiction issue). Furthermore, we note that no analysis of the functional operational impacts of a two lane round-a-bout in an employment area has been completed, particularly given the estimated future amount of truck traffic.

We thank you for the opportunity to comment on the EA. Should you have any questions or comments, please contact the undersigned at (905) 660-7667 or templart@deltaurban.com.

Yours truly,

North Oakville Community Builders Inc.

Templar Tsang-Trinaistich, MCIP, RPP
Group Manager

C.C. Gabe Charles, Town of Oakville
Joseph Choi, Region of Halton
Melissa Green-Battiston, Region of Halton
Andrew Gorman, Region of Halton
NOCBI

8800 Dufferin Street, Suite 104
Vaughan, ON L4K 0C5
Tel: 905 – 660 – 7667 / Fax: 905 – 660 – 7076
Email: templart@deltaurban.com

OAKVILLE

North Oakville Community Builders Inc.
8800 Dufferin Street
Suite 104
Vaughan, ON
L4K 0C5

April 11, 2014

Attention: Templar Tsang-Trinaistich

Re: Sixth Line Environmental Assessment
Dundas Street to Highway 407 ETR

Thank you for your letter of March 27, 2014 regarding our Environmental Assessment for Sixth Line from Dundas Street to Highway 407 ETR. In response to your concerns, please find below our comments corresponding to your original letter.

1. The character of Sixth Line will not vary significantly from the intended parameters identified within the North Oakville East Secondary Plan. Neighbourhood Centre's will continue to be planned for both the east and west sides of Sixth Line along with a Neighbourhood Activity Node south of Burnhamthorpe Road. Parking lay-by's will be permitted where deemed appropriate through the development process and to encourage alternative modes of transportation, on-road cycling lanes and oversized sidewalks will be provided on both sides of Sixth Line.

   The recommended cross-sections for Sixth Line were developed not only to accommodate future 2031 traffic volumes, but boulevard and lane widths were also reduced in an effort to minimize the land impacts on the adjacent landowners.

2. Following discussions with Conservation Halton staff, and in an effort to minimize the impact the new roadway would have on the Natural Heritage System lands south of Burnhamthorpe Road, it was determined that Sixth Line would be shifted easterly across the frontage of the NHS lands between Street "C" and Burnhamthorpe Road.

3. Upon request, the Town of Oakville reviewed the proposed alignment of Sixth Line in the area of the Star Oak lands which are located north and south of the existing Burnhamthorpe Road intersection with Sixth Line.

   As a result of this further review, a modification to the alignment has taken place north of Burnhamthorpe Road which will result in the approximate 12 metre widening on the east side of Sixth Line being reduce to approximately 6.0 metres across the Star Oak lands.

4. Sixth Line has been designated a Minor Collector north of Dundas Street which requires it to accommodate pedestrians, cyclists, vehicular traffic and transit within this corridor. As lands are developed along the Sixth Line corridor, area developers are also increasing the number of mid- block intersections to provide access to their lands. As the number of intersections increase and the spacing between them decreases, taper lengths are not available to reduce the 31 metre right-of-way to the originally intended 26 metres.

5. As you have indicated, Phase 1 is currently proceeding in 2015 as planned. However, recognizing that development is advancing quickly along the Sixth Line corridor, staff will review the need to advance future phases through our annual review of our 10 Year Capital Budget Forecast.

6. The proposed roundabout at the Sixth Line/NNOTC intersection is an initiative being brought forward by the Region of Halton. Concerns regarding its proposed design and resulting land requirements are to be addressed by Regional staff.

Thank You,

Dale Lipnicky, C.E.T.
Project Leader – Capital Projects

Appendix A.8 – Agency Meeting Minutes

MINUTES

Storm Water Management Meeting

Project:	**Class Environmental EA (Schedule "C") – Sixth Line from Dundas Street to Hwy 407 (ETR)**
RFP No.:	**PROP-30-2011**
MH Project No.:	**1124037.00**
Place:	**Town of Oakville, Oakville Room**
Date:	**Monday October 01, 2012**
Time:	**1:00 p.m. – 3:00 p.m.**

Present:

Dale Lipnicky	Town of Oakville (Town)
Paul Allen	Town of Oakville
Kristina Parker	Town of Oakville
Rita Juliao	Town of Oakville
Leah Smith	Conservation Halton (CH)
Janette Brenner	Conservation Halton
Peter C Wong	Morrison Hershfield Limited (MH)
Sara Fadaee	Morrison Hershfield Limited
Karen Edgington	Morrison Hershfield Limited
Rebecca Swabey	Morrison Hershfield Limited

ITEM	MINUTES	ACTION BY
1.	**Purpose**	
	• The intent of this meeting was to have MH provide basic information on the beginnings of their storm water review and to meet with the Halton conservation and find out what SWM requirements and issues that we are going to expect for this study.	
2.	**Discussions**	
	• MH presented two preliminary drawings showing the location of watercourses, and future pond locations (base on the New North Oakville Transportation Corridor EA) for the discussion purpose.	
	• MH presented information about the four existing culverts in the study area and their respective drainage areas and flow.	
	• CH discussed the need for a more detailed survey of Morrison Creek.	
	• It was discussed that the Town's Survey Staff will be undertaking a detailed survey of Sixth Line, this information will be passed on to MH upon completion	Town
	• Spill information was discussed, MH can obtain information regarding the south lands by reviewing the Timsin EIR	MH

• Town mentioned that Timsin will not be taking storm water from the south end of Sixth Line as detailed in their report. in addition they inquired MH to identify the locations where the drainage can go in the future.	MH
• Town indicated to remain the lead on future pond locations. They advised MH that all future pond locations identified on the map are not going to be built and MH will need to update map based on more recent information.	MH
• MH confirmed that the final report is due May or June and a draft will be submitted approximately one month beforehand. MH is to submit 3 hard copies of all reports.	MH
• MH indicated that the first PIC will not focus on SWM and that the pertenant drainage study will be consolidated in Phase 3 of the study before confirmation of the preferred alternative.	MH
• Town advised that Stantec is undertaking the SWM study from Ninth Line to Trafalgar Road and Corresponding information may be used for the Sixth Line Study	Town/ MH
• CH / Town expressed that their interest is to keep the East and West Morrison Creek in the existing subwatersheds.	
• MH indicated its readiness to get stormwater into the ponds and design the low points now.	MH
• Town inquired MH to layer future cross streets on map to get a sense of what can be done with grading.	MH
• Town staff advised that the actual detailed design and widening of Sixth Line would be undertaken in conjunction with adjacent development and therefore additional details/coordination of the roadway as it relates to adjacent development could be refined through the North Oakville EIR/FSS process. It was discussed that the ESR could provide general guidance and identify those areas/requirements that would be refined through the EIR/FSS process. It was discussed that the ESR could list a hierarchy of SWM options (i.e. use SWM ponds directly if possible, if not pay for over-control within SWM ponds, if not use on-site/ROW storage). Town indicated that the EA should be framed in terms of which issues are still out there and what can be resolved now. Town also mentioned that the EA should establish the process for how things should be laid out. Town inquired MH to write a report and in the future an addendum can be added to the report, if necessary.	MH
• CH/ Town was concerned about the Morrison Creek realignment since the details of the creek realignment have not been finalized yet. also It was mentioned that whether the creek is lowered or raised would be a significant factor to the SWM for the area.	
• Town inquired MH to start with the preliminary work that Timsin sent out.	MH
• CH recommended that a Technical Advisory Group meeting to be arranged prior to going to the first PIC to allow for further agency	Town/ MH

input. The Town is to organize this meeting.

- Town recommended a meeting should be held with all affected developer's engineering consultants ASAP to review and determine individual SWM plans . The Town is to organize this meeting. Town/ MH
- Krpan development on the east isde of Sixth Line north of Dundas Street is where a SWP is to be located which we may be able to take advantage of to accommodate Sixth Line storm water. Information on this pond is to be obtained.
- With regards to the Core Area #7, because of setback requirements, CH feels the widening of Sixth Line will likely have to occur on the east side. Therefore, from Burnhamthorpe Road south, the existing alignment may need to be shifted easterly. Town/ MH

Minutes prepared by Sara Fadaee. Please advise of any comments within five days of receipt.

MINUTES

SIXTH LINE EA

COORDINATION MEETING WITH CONSERVATION HALTON

Project: EA – Sixth Line from Dundas to Hwy 407

Project No.: 1124037

Place: Conservation Halton Office, 2596 Britannia Road West

Date: October 28, 2013

Time: 9:30 am – 11:30 am

Present: Kristina Parker, Town of Oakville
Jane DeVito, Conservation Halton
Samantha Mason, Conservation Halton
Dale Lipnicky, Town of Oakville, Engineering
Paul Allen, Town of Oakville, Engineering
Rita Juliao, Town of Oakville, Development Engineering
Lesley Matich, Conservation Halton, Ecology
Janette Brenner, Conservation Halton
John Grebenc, Morrison Hershfield (MH)
Rebecca Swabey, Morrison Hershfield (MH)

\\TOR01FP\DATA1\SHARED\PROJ\1124037\MEETING\DRAINAGE MEETING AT CONSERVATION HALTON - OCTOBER 28 2013\MINUTES - SIXTH LINE EA DRAINAGE COORDINATION MEETING.DOCX

ITEM	MINUTES	

1. Introductions
2. Project Introduction – Dale Lipnicky
3. Project and Drainage Report Overview – Morrison Hershfield

- Drainage Report strategy is based on hierarchy of options for water quality and water quantity control. Preferred option is using adjacent developers SWM ponds for water quality and quantity targets. This was discussed in Oct 2 PIC.
- A more general EA for Sixth Line is the approach preferred by CH
- MH can add an executive summary to Drainage Report to summarize the strategy
- Oct 2 PIC went well, now MH is working on finalizing drainage and ESR to file ESR to be able to start design soon
- Town preference is to wait until all inputs from developers EIR/FSS is received, then proceed with Sixth Line

4. Draft Plan Co-ordination, controls on Sixth Line Corp. SWM Pond – Kristina Parker

West Morrison Creek Channel Works and Culvert Crossing:

- Depends on cost allocation moving things forward
- Rand With Star Oaks: Through their analysis they realized they have to go quite far up to tie the proposed channel into the existing.
- The culvert replacement and lowering will be left to when development work proceeds. The proposal is a temporary crossing in the meantime. The Town does not have a submission from Sixth Line Corp. proposing the temporary crossing. Sixth Line Corp. does not want to build the culvert. There is some discussion about the temporary channel in the Sixth Line EIR/FSS.
- The Town is currently reviewing Star Oaks and tying into channel on west side
- It could be 2020 before the crossing is done
- Any widening works north of North Park Drive will require channel works to be done. Widening south of this point can be done in the meantime. The preference from the Town is wait to do works north of North Park Drive until EIR/FSS finalized
- Town brought to the attention that there is a significant drainage area exchange proposed

SWM Pond at the South End of Sixth Line:

- There is one section of Sixth Line at the south end (north of Kaiting Trail) within the West Morrison Creek subwatershed that cannot be brought into the SWM pond. The proposal is to over control for this section in pond. CH prefers this option.

General Comments on the Drainage Report:

- MH to write an exec summary that outlines modifications that may be required to Sixth Line drainage strategy as developers proceed

5. Conservation Halton Comments (October 25, 2013 from Jane DeVito)

The responses to Conservation Halton's comments that were discussed in the meeting are shown in *italic text.*

1.0 Aquatic Ecology Comments

CA/Halton MOU

1.1 Section 2.4 Water Quality This section includes the following statement: "The NOCSS recommendations for water quality control aim to offer controls that will prevent further nutrient enrichment of streams, protect streams, and preserve overall water quality through management of phosphorous, suspended solids, chloride, dissolved oxygen and temperature.

Considering the 80% removal of TSS guideline for enhanced treatment of stormwater as outlined in the 2003 MOE stormwater Guidelines Manual aims for a 20% degradation in post construction water quality. Are there further actions above conventional stormwater management practices that may be required to achieve the NOCSS recommendations regarding water quality?

As per the mediation agreement, MOE enhanced level is required for water quality control.

1.2 Section 3.5.7 Hydraulic Analysis

A fluvial geomorphological assessment by a qualified licensed professional with demonstrated expertise in natural channel design is requested to verify that the culvert design has adequately allowed for natural channel migration, fish/terrestrial passage, and sediment transport and minimizes the risk to infrastructure. The study is to include, but not limited to;

- Channel migration, widening, potential downcutting/scour based on historical observations or acceptable modelling;
- Potential changes in channel alignment and bank erosion in upstream and downstream reaches;
- Appropriate bankfull flows, water depth and water velocities. These parameters should be the same through the crossing as in upstream and downstream natural areas;
- Natural bottom substrate matching upstream and downstream substrates (with due consideration given to the impacts of lack of vegetative control within the crossing); and
- Bedload conveyance, ice jams and woody debris accumulation. "It is also recommended that the new culvert proposed at the culvert # 4 location include an open bottom design to allow for groundwater surface water interactions to occur and to prevent the formation of barriers to fish passage from occurring in the long term.

It is noted that communication and co-ordination between the Town of Oakville and the proponents of the Sixth Line EIR-FSS will be required to ensure that the sizing and location of this culvert is appropriately coordinated with the size and location of the ultimate/final realigned section of West Morrison Creek on the Sixth Line EIR-FSS lands.

CH: A fluvial geomorphological assessment must be done to determine culvert design. The main discussion is surrounding who will be responsible for this assessment. If Sixth Line widening precedes development of adjacent land then the Sixth Line design should cover the fluvial geomorphological assessment. If land development is before widening than the fluvial geomorphological assessment can be covered in EIR/FSS.

The Town and MH agree that the preference is to widen following development of adjacent land. MH and the Town discussed the possibility of widening from Dundas to just south of North Park Drive, stopping where future channel work would begin.

2.0 <u>General Comments</u>

2.1 It is suggested that targets for the infiltration of stormwater within the road right of way in the study area be discussed in the report.

The challenges for infiltration with in the ROW were discussed:

- *Narrow ROW leaves little room for infiltration/ LID*

- *Current design includes landscaped medians at centerline (high point in cross section) which precludes drainage from paved areas*

Potential opportunities for infiltration/ LID:

- *Landscaped areas*
- *Parking areas*

MH can outline potential areas/ opportunities for infiltration/LID in Drainage Report for the EA. Any further work required can be completed at the design stage.

2.2 It is suggested that Low Impact Development measures be considered as part of the EA to address water quantity and quality control as well as erosion control.

Same comment as 2.1 above.

2.3 **Section 3.1.1** Munn's Creek The second sentence in the second paragraph of this section appears to be an incomplete sentence. It is suggested that this sentence be revisited.

MH to correct this sentence.

2.4 **Section 3.1.2 Sixteen Mile Creek:** Sixteen Mile Creek generally flows from the northwest to the south east within the NOCSS study area. Please provide this clarification regarding this in the document – which currently indicates the water is flowing in the opposite direction.

This is a typo. MH to correct.

3.0 <u>Previous Aquatic Ecology Comments</u>

Please note that the previous comments from Aquatic Ecology staff do not appear to have been addressed in the current submission. Staff look forward to these comments being addressed in future submissions:

Comments from Samantha Mason to Leah Smith dated January 11, 2013 based on the review of EA Sixth Line, Town of Oakville, MPR 614 Notice of Study Commencement

3.1 The North Oakville Creeks Subwatershed Study Management Report indicates on Figure 6.3.16 "Management Strategy for the Natural Heritage System" that a core area is to be established set back from Sixth Line to the west side of the road between Burnamthorpe Road West and Dundas Street.

- *Boundaries for Core Area 7 as set in 2008 have already take into account the required buffer.*
- *Preferred widening of Sixth Line is to the east.*

3.2 Table 6.3.13: "North Oakville Subwatershed Study Management Elements" indicates in Row # 2 under the "Targets" column that linkages should be 100 m wide.

- *Linkage outside of ROW and will be addressed by land developers*

3.3 It is understood through personal communication with Brenda Axon that the watercourse, West Morrison Creek is to be realigned away from the road within the designated core area. It is recommended that where the watercourse and the core meet Sixth Line that the watercourse crossing structure have an open bottom design and that it spans three times the bankfull channel width of the watercourse.

- *Open bottom culvert is proposed, MH to add this recommendation to Drainage Report*
- *Size to be confirmed through fluvial geomorphologic as described in comment 1.2*

3.4 In general, it is recommended that watercourse crossing structures be replaced rather than extended with open bottom structures that adequately convey sediment, and are large enough in size to accommodate fish passage up to and during a 25 year storm event.

MH confirms that recommendations have been made to replace both culverts rather than extend them.

3.5 Stormwater management for all new paved surfaces should be subjected to level 1 enhanced level of treatment. Opportunities for management of stormwater from newly paved surfaces using low impact development techniques should be explored where feasible.

Previously discussed in comment 2.1.

3.6 Stormwater management approaches for newly paved surfaces need to address thermal warming of stormwater as appropriate (e.g. stormwater entering warm water watercourses should meet warm water thermal targets).

- *MH to discuss opportunities in Drainage Report (places for potential infiltration and LID)*
- *As noted previously, space for infiltration/ LID is constrained by narrow ROW.*

4.0 Memo Dated April 26, 2013

Memo addressed to Leah Smith dated April 26, 2013 RE: Sixth Line Improvements, Dundas Street to Hwy. 407, Class EA.

4.1 A fluvial geomorphological assessment will be required to be completed for inclusion in the environmental study report because parameters assessed in this report will be used to determine the size of the span of replaced culvert(s).

Previously discussed under comment 1.2

4.2 Please indicate as to whether there may be opportunities to infiltrate stormwater into LID structures such as bioswales with underground connections to other SWM treatment measures or storm sewers.

Previously discussed under comment 2.1

5.0 Engineering Comments

5.1 **Section 2.4, Water Quality**: As per the Mediation Items, in order to meet total phosphorus loading requirements, NOCSS requires that Enhanced Water Quality treatment be provided for all watercourses or it must be demonstrated that there will be no net increase in phosphorus loadings.

This comment is regarding wording in the Drainage Report in Section 2.4. MH to ensure that wording is consistent with NOCSS Mediation Items.

5.2 **Section 2.5, Water Quantity:** NOCSS established unit area target flow rates that are to be utilized to determine stormwater management controls in order to demonstrate that post-development conditions meet pre-development conditions.

CH emphasised that all development north of Dundas must meet NOCSS unit area target flow rates established in NOCSS. MH to ensure recommendations in the Drainage Report are as per NOCSS unit area target flow rates.

5.3 **Missing Section, Erosion Control:** NOCSS requires that it be ensured that receiving channels will not experience any higher than normal rates of erosion. As per the Mediation Items, this requires determination of an erosion threshold flow rate for the most sensitive reach and then maintenance of the existing duration and frequency of exceedance of this flow rate under post-development conditions based on continuous modelling.

- *MH to add this criteria to the Drainage Report and outline how this will be addressed*
- *How this comment is addressed goes back to the fluvial geomorphological assessment (see comment 1.2)*

5.4 **Section 3.1.4, West Morrison Creek:** It is our expectation that future realignments of West Morrison Creek will impact Sixth Line at more locations then just Culvert MW-S2, since the existing creek runs along Sixth Line at several locations. There is also a major spill overtop and along Sixth Line north of the point where the creek first becomes adjacent to Sixth Line (just south of Core 7). It is also anticipated that the watercourse will be lowered in conjunction with the realignments which has implications at Culvert MW-S2 (Culvert 2) and elsewhere.

This comment is related to phasing (when the widening will be completed relative to adjacent developments). MH can describe these circumstances in Drainage Report. If widening follows developers, than this can be addressed in the EIR/FSS.

5.5 **Section 3.2, Topographic Depressions/Hydrologic Features A and B:** A Hydrologic Feature A is located along West Morrison Creek on the east side of Sixth Line, which may extend into the existing and future road ROW. We note that this feature is proposed to be replicated in conjunction with the pending creek realignment on the Sixth Line Corporation lands.

MH is to identify this existing hydraulic Feature A in report at south end. CH believes it may encroach on the Sixth Line ROW.

5.6 **Section 3.4, Water Quality:** Redside Dace are not present in West Morrison Creek, however, NOCSS does recommend Enhanced level of SWM protection for all watercourses, including West Morrison Creek, in an effort to control phosphorus loadings.

CH clarified this comment; this is a correction to the text in the Drainage Report. Redside Dace are not present in West Morrison Creek but the subwatershed still requires enhanced level SWM protection. MH to revise wording in Drainage Report.

5.7 **Section 3.5, Water Quantity:** As noted above, NOCSS established unit area target flow rates that are to be utilized to establish existing and stormwater management target flow rates. Regional storm controls are required for North Oakville unless it is demonstrated through detailed analysis that there are no risks associated with not providing Regional Storm controls.

NOCSS unit flow rates are discussed under comment 5.2. MH to ensure regional controls are described in Drainage Report if they haven't already been included.

5.8 **Section 3.5.7, Hydraulic Analysis:**

- To ensure consistency between the Sixth Line EA project and the adjacent developments, flow rates from NOCSS, as updated by the two existing EIR/FSS, should be utilized. We recommend that you coordinate with hydraulic modeling and mapping done for both the Timsin-Arrassa and Sixth Line Corporation subdivisions, though we note that we have not yet formally approved the existing conditions model/mapping for Sixth Line Corporation.

- NOCSS unit flow rates are discussed under comment 5.2
- Developers drainage areas still changing (flow rates can potentially 20%+/-)
- CH is expecting other EIR/FSS coming in soon (could take 4- 8 weeks to review)
- MH to check against what info we have, and recommend verifying in detailed design when more information from developers has been formally approved

- Considering the intensification of development in the subject area, and the nature of Sixth Line as a major throughway, it is recommended that flood free access during the greater of the 100 year and Regional Storm event be provided for all crossings, particularly at the regulated Culvert 2 (MW-S2).

- *CH recommends flood free access for all crossings*
- *At regulated crossings no overtopping is permitted*
- *At other crossings, overtopping is the Town's decision but CH recommends flood free access*
- *MH to check wording in Drainage Report to ensure it is consistent with the above discussion*

- In principle, we have no objections to the general findings/recommendations of Rand Engineering for Culvert 2 (Appendix E). Without all supporting documentation however we cannot provide comment on the suitability of the specific lowering and culvert proposed. We are satisfied that this can be addressed through the development's EIR/FSS as long as Sixth Line is not widened prior to completion of the study. If it becomes essential for Sixth Line to be widened prior to submission of the full supporting documentation through the EIR/FSS, this information will have to be provided at the detailed design stage of the road project. As such, the final culvert size is subject to change.

As discussed previously under comment 1.2.

- Flood conditions along Sixth Line should be discussed within the study and not just considered at the crossings. For example, floodplain mapping completed by Stantec Consulting as part of the Lower West Morrison EIR/FSS in support of the Timsin-Arrassa subdivision indicated a significant spill from West Morrison Creek along Sixth Line at the point where West Morrison Creek first reaches Sixth Line (i.e. north of Culvert #3, south of Core 7). The level of detail required within the ESR will be dependent on whether or not any portion of Sixth Line will be widened prior to addressing all of the creek realignments and flood plain alterations through their respective EIR/FSS and completion of their construction.

As previously discussed under comments 1.2 and 5.4

5.9 Missing Section, Erosion: Erosion controls were not discussed

MH to add section on erosion controls for SWM.

5.10 Missing Section, Infiltration: Infiltration was not discussed.

Previously discussed under comment 2.1

5.11 Section 4, Drainage Design:

- Conservation Halton staff are supportive of the use of adjacent SWM facilities for stormwater management. It is our understanding that Sixth Line will only be expanded in conjunction with adjacent development and as such, it can be ensured that these facilities will be in place and functional before the respective road widening (i.e. no interim conditions are being proposed whereby Sixth Line is constructed prior to adjacent development). This understanding should be confirmed.

MH to confirm this understanding in the EA.

- It is recommended that the Town consider the implementation of appropriate LID measures within the Sixth Line ROW.

Previously discussed under comment 2.1

- As noted above, Regional Storm controls are required within NOCSS, which can be provided through the adjacent SWM facilities in most situations.

Stronger wording required, MH to ensure Drainage Report recommends Regional storm controls for SWM facilities as described in NOCSS. Previously discussed under comment 5.7.

- As noted above, NOCSS unit area target flow rates should be utilized to determine SWM storage requirements.

As discussed previously under comment 5.7

- While staff agree that the increase in flows from Catchment D6 are relatively minor, we recommend that water quality treatment be provided to treat not just the new impervious area but to provide treatment of areas currently receiving no quality control. With respect to quantity controls, we defer to Town of Oakville Development Engineering Review group.

CH recommends enhanced level protection for catchment D6. This is the catchment at the south end of Sixth Line near Dundas. CH suggests that this can be achieved through the use of oil grit separators. MH to review this suggestion with the Town.

5.12 **Section 5, Phasing:** Staff concur that Phase 1 of the Sixth Line construction (Dundas to Burnhamthorpe) should wait until the creek realignment has occurred within the Sixth Line Corporation. The timing of the Phase 1 works relative to the creek realignment and/or other floodplain alterations on the west side of Sixth Line should also be considered in this section. Due to flooding overtop of Sixth Line within this upper portion of the Phase 1 works, these works may need to proceed prior to the adjacent development on the west side being completed, and therefore potential interim flood plain alteration works must be addressed within the ESR. Timing of the road widening relative to completion of developer SWM facilities should also be included within this section.

Noted.

5.13 **Section 6, Conclusion:** This section should be updated in conjunction with revisions to the above noted Sections.

MH to updated based on revisions noted above.

6.0 <u>Terrestrial Ecology</u>

General:

6.1 When preparing the ESR, staff recommend that all efforts be made to ensure minimal impact on the adjacent Natural Heritage System (NHS) and associated Provincially Significant Wetland (PSW) 15, referred to as “wetland MAM2-2” within the Drainage Report. We recommend that all efforts be made to widen the road to the east of the Right of Way, thereby limiting the encroachment into the sensitive surrounding NHS.

- *Noted. MH has shown widening the road to the east of the ROW as to not encroach on the sensitive surroundings.*
- *It was recommended that the boundaries of the wetland should be field proofed in detailed design*

- *CH recommends that the footprint of Sixth Line should be minimized next to Core Area 7. For example, consider in design eliminating boulevard and possibly keeping sidewalk on one side only.*

6.2 Based on the limited information provided in the report, the potential hydrologic impacts of the project on Wetland MAM2-2 within Core 7 are not fully understood. We are appreciative of the proposal to minimize development within the road ROW, however, we request that greater analysis/discussion of the potential hydrologic impacts be provided within the report to determine if specific mitigation measures at this location will be warranted to ensure that there will be no negative impacts on this wetland. *This is taken from Janette's memo as I am in agreement with her thoughts.*

- *CH: All flow into the wetland must be sustained. MH to include some discussion of how this can be addressed.*

Draft Drainage Report:

6.3 **Section 2.2 Topographic Depressions/Hydrologic Features A and B Targets:** A discussion should be provided to address the presence of a PSW within the study area. It should be noted that the wetland located within Core 7 is a PSW and as per Ontario Regulation 162/06, no impacts to the hydrologic function of this wetland should be proposed from these works.

- *MH to recognize that wetland MAM2-2 is a PWS in the Drainage Report. See discussion under comment 6.2.*

6.4 **Section 3.2 Topographic Depressions/Hydrologic Features A and B:** As raised above, "wetland MAM2-2" is a PSW. Please refer to the above comment for further direction on this feature.

As discussed under comment 6.2 and 6.3.

6.5 **Section 3.5.7 Hydraulic Analysis:** When Culvert 4 is designed, please ensure that impacts to the PSW be assessed and mitigation measures developed as required. This may be impacts to the hydrologic function as well as the vegetation due to the installation of a larger culvert in this area. At detailed design, staff will be looking for a reduced grading footprint in this location so as to limit any impact on the PSW.

- *MH to update the discussion in the Drainage Report to recognize the impacts/ considerations required when working next to a sensitive area*

Discussion

It was recommended that the boundaries of the wetland should be field proofed in detailed design. CH recommends that the footprint of Sixth Line should be minimized next to Core Area 7. For example, consider in design eliminating boulevard and possibly keeping sidewalk on one side only.

Dist: Participants

MINUTES

Technical Advisory Committee Meeting #1

Project:	**Class Environmental Assessment Study (Schedule "C") – Sixth Line from Dundas Street to Hwy 407 (ETR)**
RFP No.:	**PROP-30-2011**
MH Project No.:	**1124037.00**
Place:	**Engineering Boardroom, Oakville Town Hall, 1225 Trafalgar Road, L6H 0H3**
Date:	**Monday, September 16th, 2013**
Time:	**2:00 pm – 4:00 pm**

Present:

Dale Lipnicky	Town of Oakville (Town)
Paul Allen	Town of Oakville
Faye Wang	Union Gas (Union)
Amanda McQuay	Bell Canada (Bell)
Angela Fedorenko	Cogeco Cable (Cogeco)
Samantha Gillespie	Cogeco Cable
Martin-Pierre Blouin	Morrison Hershfield Limited (MH)

ITEM **MINUTES** **ACTION BY**

1. **Project Overview**

a) The Town is currently undertaking an EA for the widening of Sixth Line from 2 lanes to 4 lanes.

b) The construction is currently planned to be undertaken in 3 phases:
- Phase 1: Dundas Street to North Park Drive (Construction Start: 2015)
- Phase 2: North Park Drive to Burnhamthorpe Road (Construction Start: 2020)
- Phase 3: Burnhamthorpe Road to Highway 407 (ETR) (Construction Start: 2023)

c) The construction of Phase 1 is the priority. The timing of the other phases will be dependent on the development of the area,

2. **Sixth Line Preliminary Design – Plan and Profile Drawing**

a) The proposed design maintains the existing centerline alignment up to the Natural Heritage System (NHS) at which point the alignment is shifted towards the east to eliminate any property impacts along the west side. Further north, the alignment shifts back to the existing centerline.

b) Bike paths have been provided throughout the project area along both sides of Sixth Line. The bike paths will be separated from the travel lanes through the use of a mountable curb.

c) On-street parking lay-bys have been provided in front of the future Neighborhood Centre and Community Park lands. Development of the parking lay-bys starts at 30m from all intersections to enable transit stops.

d) Continuous landscaped medians have been proposed throughout the project area. Property access requirements will be reviewed during the development application process.

e) Areas with parking layby's will have a total hard surface within the right-of-way.

f) The use of Silva Cells within tree pits will be examined by the Town during detailed design.

3. **Design Discussion**

a) Cogeco owns underground fibre-optic ducts along the west side of Sixth Line from Dundas Street to Sixteen Mile Drive.

b) Union owns a 150mm gas main that runs on the east side of the road from south of Dundas Street to slightly north of the property for #3043 Sixth Line. A 100mm gas main along the north side of Kaitting Trail crosses Sixth Line to connect to the main line.

c) Growth in north Oakville will require a large gas pipeline to be installed in the future.

d) Bell owns underground ducts and aerial lines running along both sides of Sixth Line north of Dundas Street. The east side of the road is primarily aerial. Fibre-optic cables are also located on both sides of Sixth Line.

e) Bell is planning on burying the aerial lines. Cogeco is also trying to avoid being installed on hydro poles.

f) Cogeco owns underground fibre-optic ducts along the west side of Sixth Line from Dundas Street to Sixteen Mile Drive to service the Timsin development.

g) The Town will investigate the use of a common trench for the utilities.

h) Cogeco will require an 8 week window for the splicing of its fibre-optic cables.

i) Bell has no objections to the 2015 schedule.

j) Union may need to install gas for the Sixth Line Corporation development to the east of Sixth Line in 2015.

k) Cogeco and Bell can provide mark-up drawings for the project area. Bell/Cogeco

l) Union provided MH with its existing pipeline information.

m) The Town will provide more information in 2014 during detailed design. Town

n) The Town will inform the utilities about the Phase 2 budget in April 2014 so they can update their schedules. Town

4. **Next Meeting**

A utilities coordination meeting with Oakville Hydro has been scheduled for Monday, September 30th 2013. All

Minutes prepared by Martin-Pierre Blouin. Please advise of any comments within five days of receipt.

MINUTES

MORRISON HERSHFIELD

Hydro Coordination Meeting #1

Project:	**Class Environmental Assessment Study (Schedule "C") – Sixth Line from Dundas Street to Hwy 407 (ETR)**
RFP No.:	**PROP-30-2011**
MH Project No.:	**1124037.00**
Place:	**Engineering Boardroom, Oakville Town Hall, 1225 Trafalgar Road, L6H 0H3**
Date:	**Monday, September 30th, 2013**
Time:	**2:00 pm – 4:00 pm**
Present:	

Dale Lipnicky	Town of Oakville (Town)
Daniel Steele	Oakville Hydro (Hydro)
J. Foreshew	Oakville Hydro
Martin-Pierre Blouin	Morrison Hershfield Limited (MH)

ITEM **MINUTES** **ACTION BY**

1. **Project Overview**

a) The Town is currently undertaking an EA for the widening of Sixth Line from 2 lanes to 4 lanes.

b) The construction is currently planned to be undertaken in 3 phases:

- Phase 1: Dundas Street to North Park Drive (Construction Start: 2015)
- Phase 2: North Park Drive to Burnhamthorpe Road (Construction Start: 2020)
- Phase 3: Burnhamthorpe Road to Highway 407 (ETR) (Construction Start: 2023)

c) Phase 2 may be initiated earlier based on local development.

d) The hydro poles along Sixth Line will require relocation to accommodate the proposed widening.

2. **Sixth Line Preliminary Design – Plan and Profile Drawing**

a) Sixth Line will have an ultimate right-of-way of 31.0m

b) The proposed design maintains the existing centerline alignment up to the Natural Heritage System (NHS) at which point the alignment is shifted towards the east to eliminate any property impacts along the west side. Further north, the alignment shifts back to the existing centerline.

c) Bike paths have been provided throughout the project area along both sides of Sixth Line. The bike paths will be separated from the travel lanes through the use of a mountable curb.

d) On-street parking lay-bys have been provided in front of the future Neighborhood Centre and Community Park lands. Development of the parking lay-bys starts at 30m from all intersections to enable transit stops.

e) Continuous landscaped medians have been proposed throughout the project area. Property access requirements will be reviewed during the development application process.

3. **Design Discussion**

a) Due to the large amount of hard surface area proposed in the preliminary design, the Town has considered relocating the hydro underground and asked the input from Oakville Hydro.

b) Oakville Hydro has indicated that going underground is not recommended due to technical and cost implications. If the Town wishes to go underground, the cost will be borne by the Town.

c) If poles are to be relocated, they will be placed within the boulevards. The parking layby locations may need to be adjusted to allow for boulevard bump-outs to install the poles.

d) Due to recent work done to the hydro poles along Sixth Line, the Town will be responsible for the relocation costs.

4. **Next Meeting**

TBD — All

Minutes prepared by Martin-Pierre Blouin. Please advise of any comments within five days of receipt.

Appendix B – Traffic Reports

Appendix B.1 – Traffic Impact Study Report
Appendix B.2 – Existing (2012) AM and PM Peak Hours - HCM Report
Appendix B.3 – Traffic Signals Justification - Future (2021)
Appendix B.4 – Future (2021) AM and PM Peak Hours - HCM Report
Appendix B.5 – Traffic Signals Justification - Future (2031)
Appendix B.6 – Future (2031) AM and PM Peak Hours - HCM Report
Appendix B.7 – Future (2031) Roundabout Screening Analysis
Appendix B.8 – Future (2031) SIDRA Analysis

Appendix B.1 – Traffic Impact Study Report

TOWN OF OAKVILLE

SIXTH LINE FROM DUNDAS STREET

TO HIGHWAY 407 ETR

CLASS ENVIRONMENTAL ASSESSMENT STUDY

TOWN OF OAKVILLE PROJECT NO. EA-067-11

TRAFFIC IMPACT STUDY

MORRISON HERSHFIELD LIMITED
235 YORKLAND BOULEVARD, SUITE 600
TORONTO, ONTARIO, M2J 1T1
TEL: (416) 499-3110
FAX: (416) 499-9658

AUGUST 2012

MORRISON HERSHFIELD

Table of Contents

1.0 Introduction

The Town of Oakville (The Town) is undertaking a Class Environmental Assessment Study to address current and future transportation needs on Sixth Line from Dundas Street to Highway 407. This study is in response to the anticipated development detailed in the approved North Oakville Master Plan. In May, 2012, Morrison Hershfield Limited was retained by The Town to undertake this study.

This study examines the current and future traffic conditions and assesses the need and justification for improvements for Sixth Line from Dundas Street to Highway 407.

This report summarizes the results of the traffic operations analysis for existing and future conditions.

1.1 Study Area

The study area on Sixth Line is from Dundas Street to Highway 407. Sixth Line is a north-south roadway and within the study area, is generally a flat and straight two-lane rural road with limited development of individual homes. The roadway is narrow with limited shoulder width. Sixth Line has a posted speed limit of 60 km/hr from just north of Dundas Street to just south of Burnhamthorpe Road, where it then changes to 80 km/hr to the north. The study area is shown on Figure 1.

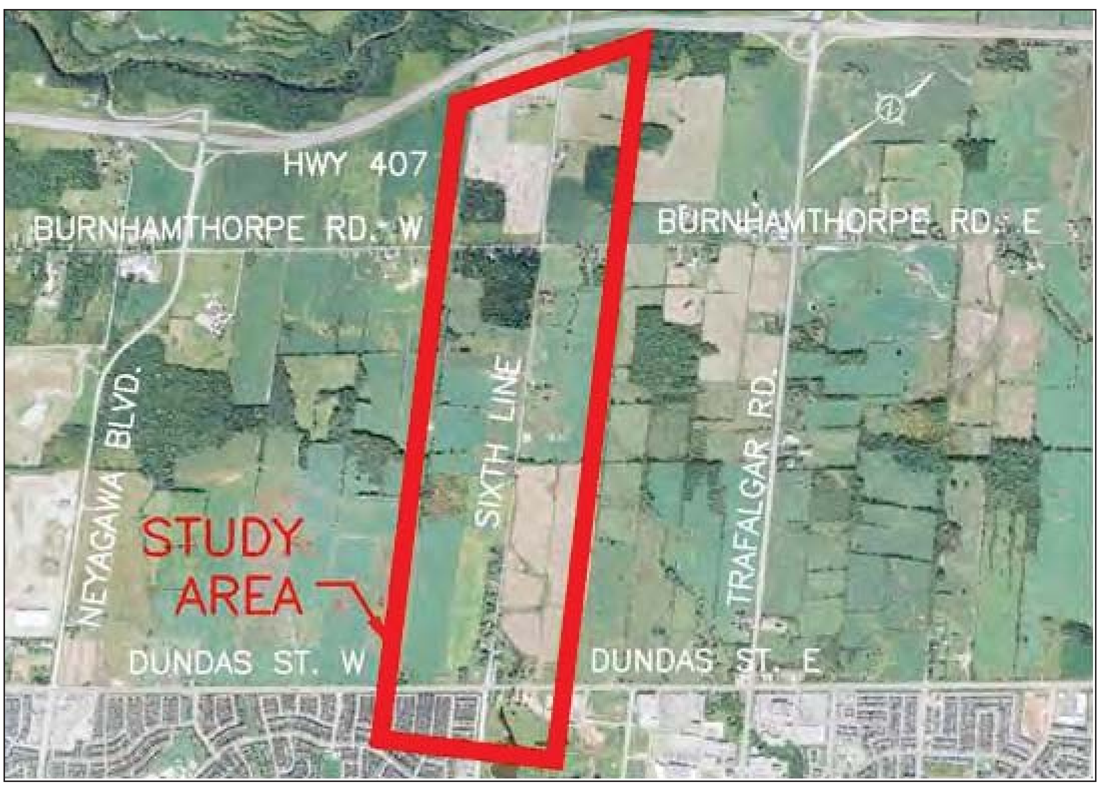


Figure 1: Study Area

Currently, Sixth Line intersects at Dundas Street and Burnhamthorpe Road, which operate under the jurisdiction of Halton Region. The intersection at Dundas Street is operating under traffic signal condition. The intersection of Sixth Line and Burnhamthorpe Road is operating under unsignalized traffic control with a flashing all-way stop condition. It is important to note that Sixth Line has been identified as "Avenue/Transit Corridor" in the approved North Oakville East Secondary Plan.

Intersection turning movement counts were provided by the Halton Region. Automated Traffic Recorder (ATR) counts for the mainline on Sixth Line were provided by the Town of Oakville. All counts were conducted in 2011. They are contained in Appendix A. One discrepancy was found for the morning peak hour at Sixth Line and Dundas Street intersection. The eastbound through movement was found to be low, possibly due to construction in the vicinity of the intersection. Through conversations with Halton Region, it was determined that1,700 vehicles would be more appropriate for analysis purposes.

A two percent annual growth rate was applied to the existing background traffic to reflect future conditions. This value was determined by Halton Region.

The methods and tools used to analyze level of service, capacity and the operation of the roadways and intersections in the study area are described in this section. These procedures follow generally accepted traffic and safety engineering principles and requirements.

1.2 Analysis Methodology

Level of Service

Level of service analyses for both signalized and unsignalized intersections and roadway segments were based on the methodologies and procedures of the Highway Capacity Manual (HCM), as published by the US Transportation Research Board (TRB 2000). This methodology is embedded in analytical software used, including Synchro/Sim Traffic and HCS 2000. Measures of effectiveness (MOE's) provided by these software includes:

- Intersection capacity on an overall basis and for individual movements;
- Volume-to-capacity (v/c) ratio for individual movements, each approach and the overall intersection; and
- Level of service (LOS) for the movements at the intersection, including the movements experiencing the greatest delay (critical movements).

Generally, for two-lane rural highway intersections, on an overall intersection basis, an LOS of C or better is deemed to be a good LOS. Operation of an LOS of D, while still satisfactory, exhibits delays that are noticed by drivers. Individual turning movements are generally acceptable at an LOS of E (at capacity). Further more detailed definitions on LOS are included in Appendix A.

Level of service and volume-to-capacity ratio are essentially measuring the same thing; driver delay. Level of service definitions and calculation results are reported in the main body of this report. Detailed information on volume-to-capacity ratio results is provided in the appendices.

LOS for both signalized and unsignalized intersections is related to the intersection delay and is a quantitative measure of the ability of the intersection (or movement) to be accommodated. LOS definitions used in the HCM analysis are summarized in Table 1-1.

Table 1-1: Level of Service Definitions

Level of Service (LOS)	Signalized Intersection Control Delay per Vehicle (s/veh)	Unsignalized Intersection Control Delay per Vehicle (s/veh)
A (FREE FLOW)	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E (CAPACITY)	> 55 and ≤ 80	> 35 and ≤ 50
F (FORCED FLOW)	> 80	> 50

Methodology

Level of service and capacity calculations were carried out for the morning and afternoon peak hours for:

- Existing (2012) traffic levels;
- Future (2021) traffic levels with projected background traffic growth including traffic from the proposed new developments; and
- Ultimate (2031) traffic levels with projected background traffic growth including traffic from the proposed new developments.

2.0 Existing Conditions

2.1 Existing Traffic Volumes

Roadway Segment Operations

Existing morning and afternoon peak hour total traffic volumes were used for analysis of the existing roadway segments. Each of these areas has been analyzed using the HCM analysis software (HCS 2000) to determine LOS. Traffic volumes and locations of the analysis are shown in Figure 2.

LOS analysis has considered operations for two distinct areas:

- Roadway segment (mid-block) areas of Sixth Line where operations are comparable to two-lane highway operations; and
- Operations of the existing intersections, either unsignalized or signalized.

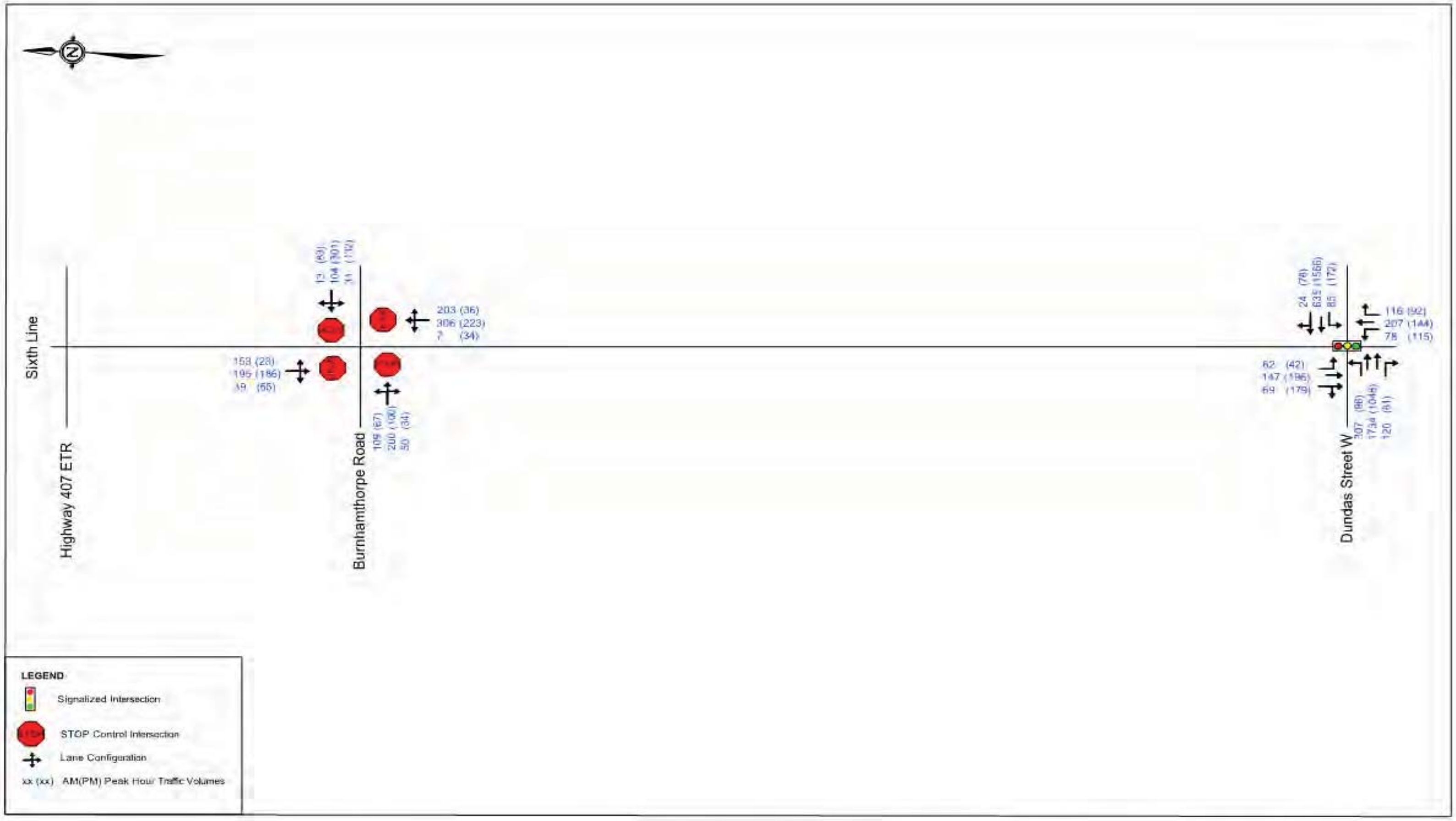
Table 2-1 summarizes the results of this analysis. Worksheets for the analysis are contained in Appendix B.

Table 2-1: Two-Lane Highway Segment LOS Analysis – Existing 2012 Traffic Volumes

Segment	Section Description	Approx. Length (m)	AM Peak Hour				PM Peak Hour			
			Average Travel Speed (km/h)	Percent Time-Spent-Following (%)	Volume (vph)	LOS	Average Travel Speed (km/h)	Percent Time-Spent-Following (%)	Volume (vph)	LOS
1	Dundas St to Burnhamthorpe Rd	2.2	59.1	63.9	837	C	60.5	59.7	733	C
2	Burnhamthorpe Rd to Hwy 407	1.1	59.7	62.4	815	C	62.0	55.6	637	C

Notes: %-Spent-Following – Percent of time spent behind another vehicle without a passing opportunity due to opposing traffic volumes
LOS – Level of Service

All roadway segments are currently operating at an LOS of C, a satisfactory level for both AM and PM Peak Hour traffic volumes with average travel speed estimated to be approximately 60 km/h for all segments.



Sixth Line Class EA
(Dundas Street to Highway 407 ETR)

Existing (2012) Peak Hour Traffic Volumes

MORRISON HERSHFIELD

Figure 2

Intersection Operations

There are two intersections on Sixth Line within the study area: one at Dundas Street and the second at Burnhamthorpe Road. Intersection analysis was completed based on peak hour traffic volumes, which is a conservative method to analyze intersection operations. Table 2-2 summarizes the signalized intersection LOS analysis results for Sixth Line and Dundas Street intersection. Table 2-3 summarizes the unsignalized intersection results for Sixth Line and Burnhamthorpe Road intersection. Worksheets for the analyses are contained in Appendix C.

Table 2-2: Signalized Intersection LOS Analysis – Existing 2012 Traffic Volumes

Intersection	Movement	AM Peak Hour				PM Peak Hour			
		V/C	LOS	Total Delay (Sec/Veh)	Queue Length 95th (m)	V/C	LOS	Total Delay (Sec/Veh)	Queue Length 95th (m)
Sixth Line at Dundas Street	EBL	0.80	C	32.7	101.9	0.64	C	33.2	31.9
	EBT	0.92	C	25.2	222.3	0.48	A	9.8	82.8
	EBR	0.13	A	2.4	7.6	0.08	A	1.8	5.5
	WBL	0.44	B	13.8	14.4	0.83	D	52.4	83.2
	WBTR	0.32	A	5.7	35.0	0.94	C	33.3	265.8
	NBL	0.40	C	33.2	23.9	0.62	D	47.7	37.8
	NBT	0.57	C	34.5	51.6	0.33	D	35.8	54.5
	NBR	0.29	A	8.5	13.8	0.21	A	7.9	12.8
	SBL	0.48	D	37.2	25.5	0.26	D	44.7	19.6
	SBTR	0.31	B	18.8	19.7	0.68	D	38.0	48.1
	OVERALL	**0.92**	**C**	**21.3**	**-**	**0.94**	**C**	**27.5**	**-**

Notes: v/c – Volume-to-capacity ratio
LOS – Level of Service

The intersection of Sixth Line at Dundas Street is currently operating at an acceptable LOS of C during peak AM and PM total existing traffic conditions with the WBTR movement operating with the highest v/c ratio during the PM peak hour. The approach delay for this movement is 33.3 sec/veh.

Table 2-3: Unsignalized Intersection LOS Analysis – Existing 2012 Traffic Volumes

Intersection	Movement	AM Peak Hour		PM Peak Hour	
		Approach Delays (Sec/Veh)	LOS	Approach Delays (Sec/Veh)	LOS
Sixth Line at Burnhamthorpe Road	EBLTR	42.0	E	17.3	C
	WBLTR	17.9	C	86.1	F
	NBLTR	118.5	F	23.5	C
	SBLTR	50.4	F	21.2	C
	Overall	**69.8**	**E**	**47.4**	**B**

Notes: LOS – Level of Service

The intersection of Sixth Line at Burnhamthorpe Road is currently operating at an overall LOS of E and B during the AM and PM peak hours, respectively. The NB and SB movements fail during the morning peak hour. The movement with the highest approach delay for this intersection is for the NB traffic during the morning peak hour.

3.0 Future Conditions

3.1 Forecasting Approach and Assumptions

For the purpose of this study, a 2021 and 2031 planning horizon was used consistent with other area studies such as the Town of Oakville's Emme model. Numerous discussions were held with the Town of Oakville and Halton Region regarding current proposed new development, anticipated future development, expected background traffic growth, and other related traffic matters. The following assumptions have been used for the purpose of the traffic analysis:

- A two percent annual growth rate was applied for Sixth Line and Dundas Street. This value was confirmed by Halton Region.
- Existing analysis to include the following developments:
  - Timsin;
  - Lower 4th Mattamy; and
  - Cityzen (Townhomes on Sixth Line south of Dundas and Apartment buildings on Dundas east of Sixth).
- Future 2031 horizon analysis to include the following developments:
  - Petcor Mattamy;
  - Argo;
  - Star Oak (2 locations: North of Burnhamthorpe and South of Burnhamthorpe);

  - Docasa; and
  - 6^{th} Line Corporation.
- Future 2021 horizon analysis to include all proposed new development for existing conditions. In addition, it was assumed that approximately 50% of future 2031 new developments would be completed by 2021.
- All development information obtained from the Town of Oakville.
- It was assumed that the existing development (Timsin, Lower 4^{th} Mattamy and Cityzen) would take approximately two years for completion. An interim condition was analyzed for a 2015 year horizon to account for these developments.
- Trip generation calculated based on ITE Trip Generation 7^{th} Ed Manual.
- Single Dwelling Units assumed for those developments without detailed information.
- Additional parks, schools and small commercial plazas were not included in the trip generation due to lack of detailed information. Also, the trips generated by these developments will be low and consist mainly of internal traffic.
- It is the Town's goal to provide employment for residents of the Town. Review of the existing traffic distribution on Sixth Line indicate approximately 50-60% of residents are travelling out of the Town. For the future horizons, it was assumed that 70% of residents living within the vicinity of the site will travel southbound on Sixth Line. This includes employment within the Town and use of the QEW. The remaining 30% will travel northbound to use the New North Oakville Corridor and Highway 407.

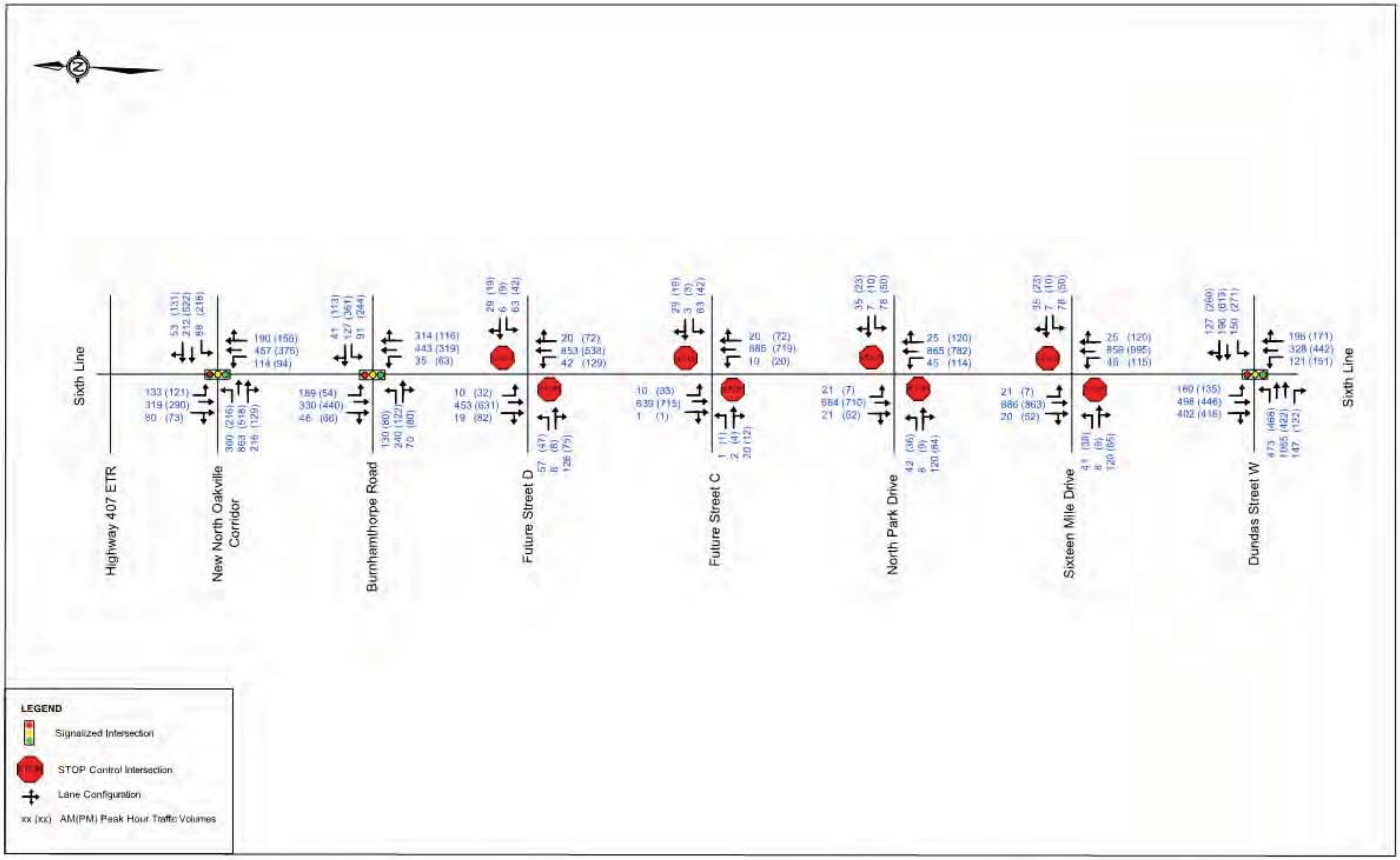
In March 2010, Halton Region completed the New North Oakville Transportation Corridor (NNOTC) and Crossing of Sixteen Mike Creek Class EA Study, where the need for a new major transportation corridor was identified. The findings of this study recommended the NNOTC to be located between Burnhamthorpe Road and Highway 407 ETR within the study area. Construction was anticipated to begin in 2012. In addition, based on the North Oakville Master Plan, Secondary Plans and other traffic related studies in the area that have been submitted to the Town, it is anticipated that four new east-west connecting roadways will be provided between Dundas Street and Burnhamthorpe Road by 2021, creating four new intersections on Sixth Line. These new roadways will provide a connection for the new proposed development on the east and west side of Sixth Line as well as completing the road network for the North Oakville Master Plan. A rough outline of the location of the new roadways and development is contained in Appendix D.

3.2 Future 2021 Traffic Conditions

Roadway Segment Operations

As in the existing traffic conditions, segments of Sixth Line between Dundas Street and Highway 407 were analyzed for future 2021 traffic conditions under the do-nothing scenario. As discussed in the earlier section, a growth factor was applied to the background traffic to account for the 2021 traffic conditions. Total traffic volumes are shown in Figure 3. In addition, further analysis was completed under a widening option. Table 3-1 summarizes the results of this analysis. Worksheets for the analyses are contained in Appendix E.

Analysis based on the do-nothing scenario indicates poor LOS for all roadway segments with failing LOS for the section from Dundas Street to Sixteen Mile Drive for the PM peak hour. Alternatively, analysis based on widening Sixth Line to four lanes would project all roadway segments to operate at an LOS of B or better. It is forecasted that the PM peak hour conditions represent the worst-case scenario. Figure 6 is a summary of the segment LOS analysis under the do-nothing scenario. Figure 8 is a summary of the widening Sixth Line to four lanes scenario.



Sixth Line Class EA
(Dundas Street to Highway 407 ETR)

Future (2021) Peak Hour Traffic Volumes

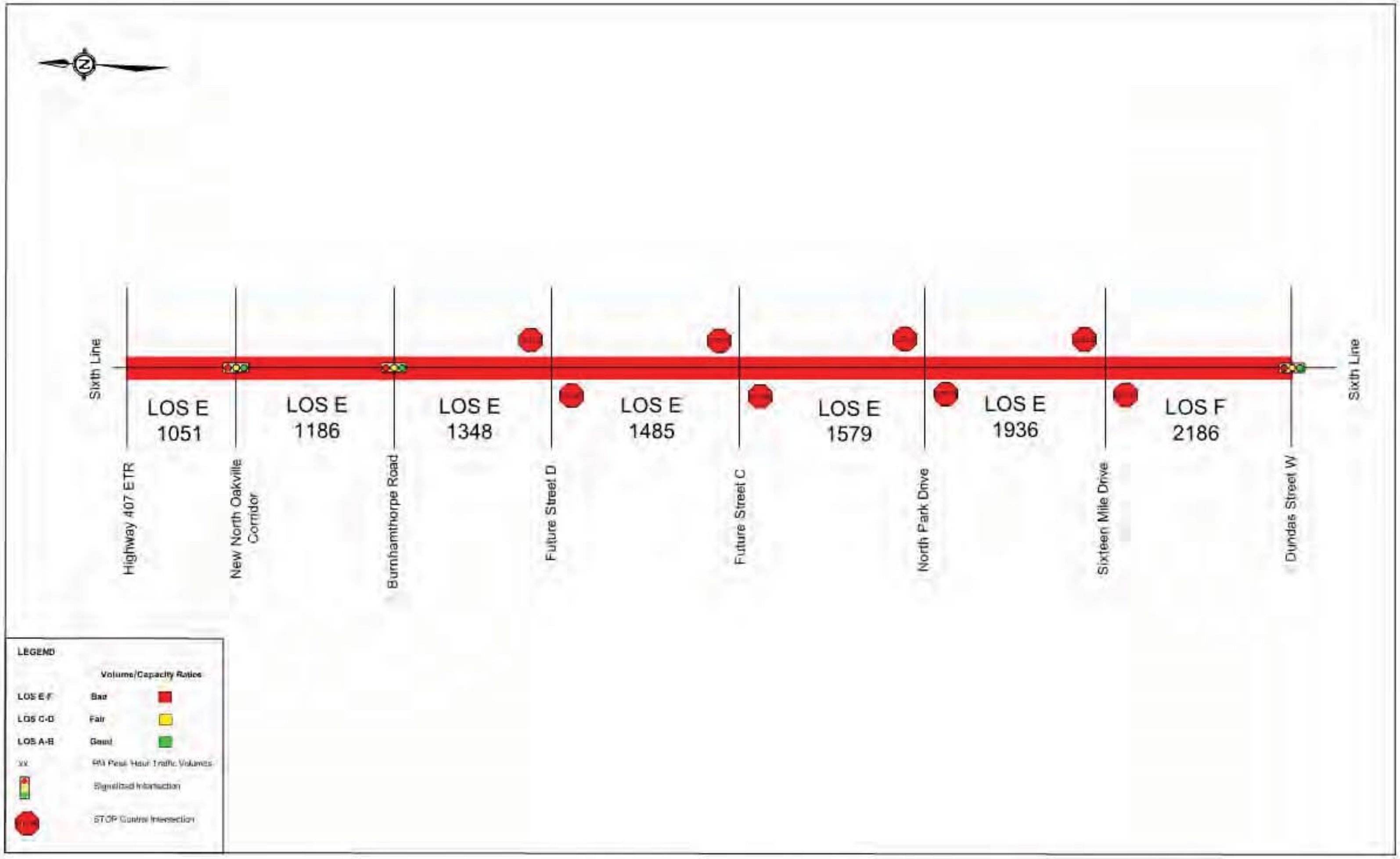
MORRISON HERSHFIELD

Figure 3

Table 3-1: Two-Lane Highway Segment LOS Analysis – Future 2021 Traffic Volumes

Segment	Section Description	Approx. Length (m)	AM Peak Hour					PM Peak Hour				
			Average Travel Speed (km/h)	Percent Time-Spent-Following (%)	Volume (vph)	LOS	LOS With Widening	Average Travel Speed (km/h)	Percent Time-Spent-Following (%)	Volume (vph)	LOS	LOS With Widening
1	Dundas St to Sixteen Mile Dr	400	23.2	92.1	2008	E	B	20.5	94.2	2186	F	B
2	Sixteen Mile Dr to North Park Dr	300	25.7	89.8	1842	E	B	24.3	91.1	1936	E	B
3	North Park Dr to Future St C	500	28.7	86.6	1641	E	B	29.6	85.9	1579	E	A
4	Future St C to Future St D	500	29.8	85.8	1563	E	B	31.0	84.7	1485	E	A
5	Future St D to Burnhamthorpe Rd	500	32.0	83.8	1419	E	B	33.0	82.6	1348	E	A
6	Burnhamthorpe Rd to NNOC	500	33.4	82.2	1326	E	A	35.5	79.4	1186	E	A
7	NNOC to Hwy 407	600	35.2	79.8	1204	E	A	37.5	76.7	1051	E	A

Notes: %-Time-Spent-Following – Percent of time spent behind another vehicle without a passing opportunity due to opposing traffic volumes
LOS – Level of Service
NNOC – New North Oakville Corridor

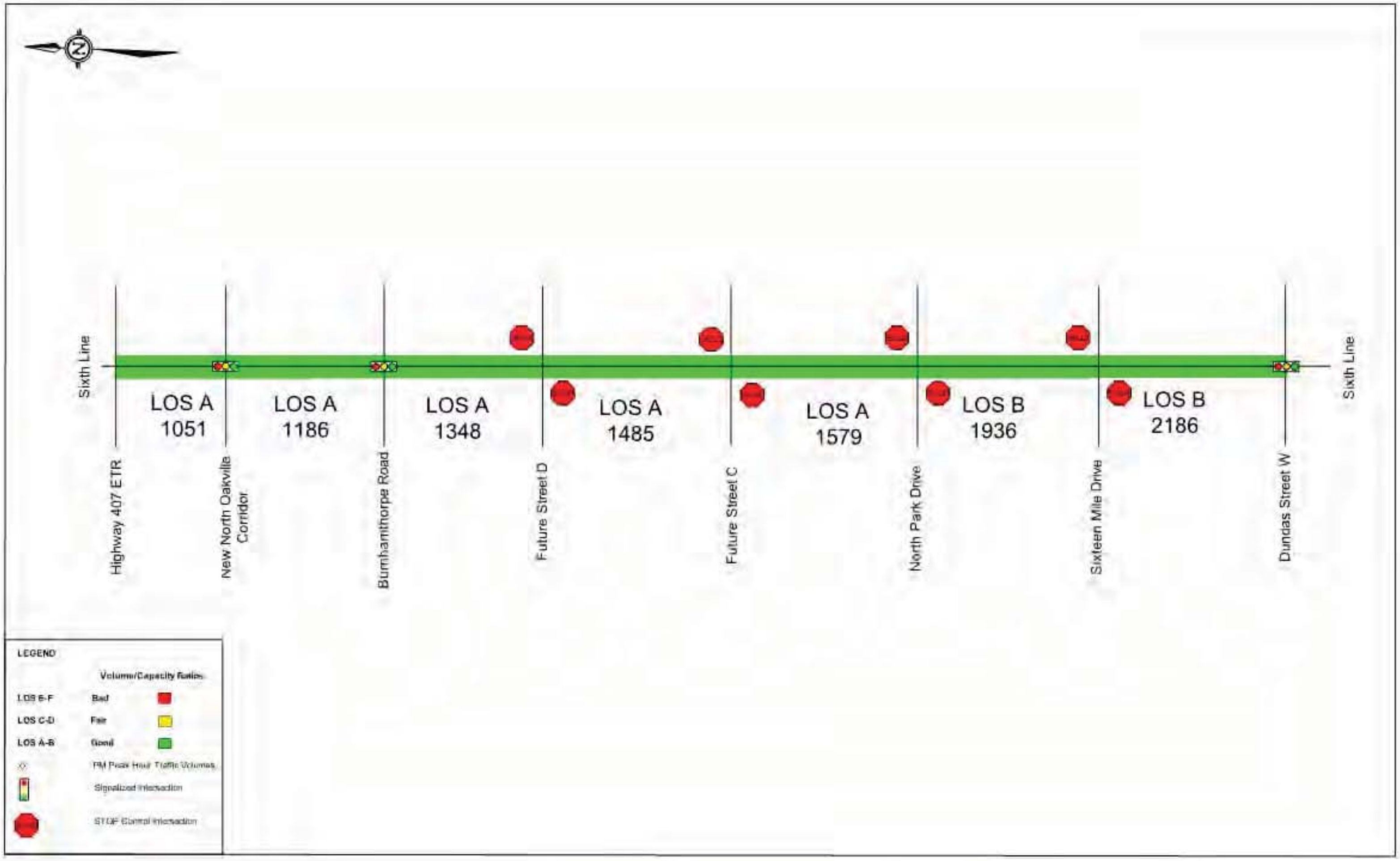


Sixth Line Class EA
(Dundas Street to Highway 407 ETR)

Future (2021) PM Peak Hour Mainline Analysis
Do Nothing Scenario

MORRISON HERSHFIELD

Figure 6



Sixth Line Class EA
(Dundas Street to Highway 407 ETR)

Future (2021) PM Peak Hour Mainline Analysis
with Improvements (Widening to Four Lanes)

MORRISON HERSHFIELD

Figure 8

Intersection Operations

For analysis of the future 2021 traffic condition, the New North Oakville Corridor (NNOC) was assumed to operate under traffic signals conditions and the new four intersections between Dundas Street and Burnhamthorpe Road to operate under unsignalized traffic control with a STOP condition on the minor roadways. Table 3-2 summarizes the signalized intersection LOS analysis results for the 2021planning horizon. Table 3-3 summarizes the unsignalized intersection results for the 2021 planning horizon. Worksheets for the analyses are contained in Appendix F. In addition, signal warrant analysis was completed for all new intersections. Although the analysis does not justify installation of traffic signals, Traffic Impact Studies submitted to the Town for Timsin and Lower 4th Mattamy Developments indicate that a traffic signal will be installed for Sixteen Mile Drive and North Park Drive. Similarly, Future Street C and D are expected to operate under traffic signals for future conditions. The following section summarizes the intersection operations analysis based on widening Sixth Line to four lanes.

Table 3-2: Signalized Intersection LOS Analysis – Future 2021 Traffic Volumes

Intersection	Movement	AM Peak Hour				PM Peak Hour			
		V/C	LOS	Total Delay (Sec/Veh)	Queue Length 95th (m)	V/C	LOS	Total Delay (Sec/Veh)	Queue Length 95th (m)
Sixth Line at New North Oakville Corridor	EBL	0.65	B	19.3	76.6	0.63	C	20.6	49.6
	EBTR	0.60	B	12.6	83.9	0.35	A	8.0	38.3
	WBL	0.59	C	33.2	34.5	0.66	C	22.2	51.9
	WBTR	0.15	A	7.6	16.3	0.36	A	8.0	38.6
	NBL	0.39	C	21.6	27.0	0.33	C	20.6	24.2
	NBTR	0.54	B	16.6	52.0	0.48	B	15.5	45.0
	SBL	0.71	D	41.9	40.0	0.59	C	31.8	34.7
	SBTR	0.36	B	15.3	32.6	0.35	B	15.1	32.1
	OVERALL	**0.71**	**B**	**16.3**	**-**	**0.66**	**B**	**13.8**	**-**
Sixth Line at Burnhamthorpe Road	EBL	0.40	C	21.3	32.9	0.31	B	12.7	11.7
	EBTR	0.57	C	20.9	65.9	0.28	A	7.8	17.4
	WBL	0.43	C	24.8	26.3	0.58	B	16.8	31.5
	WBTR	0.31	B	16.3	34.7	0.65	B	15.4	51.3
	NBL	0.07	A	7.2	6.3	0.20	B	13.3	12.8
	NBTR	0.40	A	4.8	27.0	0.29	A	9.5	24.7
	SBL	0.62	B	19.8	40.9	0.15	B	12.6	11.0
	SBTR	0.21	A	6.6	19.8	0.35	B	11.1	31.9
	OVERALL	**0.62**	**B**	**11.8**	**-**	**0.65**	**B**	**12.3**	**-**
Sixth Line at Dundas Street	EBL	0.81	C	27.3	96.2	0.98	E	64.0	141.2
	EBT	0.80	C	28.8	11.3	0.33	C	23.8	44.8

Intersection	Movement	AM Peak Hour				PM Peak Hour			
		V/C	LOS	Total Delay (Sec/Veh)	Queue Length 95th (m)	V/C	LOS	Total Delay (Sec/Veh)	Queue Length 95th (m)
	EBR	0.21	A	4.1	10.9	0.18	A	4.9	11.5
	WBL	0.70	D	35.5	38.8	0.57	B	18.0	42.9
	WBTR	0.33	B	15.7	24.5	0.96	D	54.6	127.1
	NBL	0.66	D	37.0	28.4	0.82	E	58.2	47.4
	NBTR	0.54	C	21.5	44.2	0.66	C	33.4	69.7
	SBL	0.66	C	32.4	38.4	0.65	D	39.2	35.2
	SBTR	0.81	C	27.7	82.5	0.87	D	36.6	91.6
	OVERALL	**0.81**	**C**	**26.0**	**-**	**0.98**	**D**	**40.7**	**-**

Notes: v/c – Volume-to-capacity ratio
LOS – Level of Service

All signalized intersections are forecasted to operate at an LOS of D of better on an overall basis during peak AM and PM total traffic conditions. The EBL and NBL movements at the intersection of Sixth Line and Dundas Street are projected to be operating at the lowest LOS. Although these movements are at capacity, they are still functional.

Table 3-3: Unsignalized Intersection LOS Analysis – Future 2021 Traffic Volumes

Intersection	Movement	AM Peak Hour		PM Peak Hour	
		Approach Delays (Sec/Veh)	LOS	Approach Delays (Sec/Veh)	LOS
Sixth Line at Future Street D	EBL	21.2	E	41.6	F
	EBTR	21.2	B	41.6	C
	WBL	91.3	F	65.1	F
	WBTR	91.3	C	65.1	D
	NBL	0.4	A	1.7	A
	NBTR	0.4	A	1.7	A
	SBL	0.2	A	0.4	A
	SBTR	0.2	A	0.4	A
	Overall	**8.0**	**A**	**6.8**	**A**
Sixth Line at Future Street C	EBL	14.4	D	20.9	E

Intersection	Movement	AM Peak Hour		PM Peak Hour	
		Approach Delays (Sec/Veh)	LOS	Approach Delays (Sec/Veh)	LOS
	EBTR	14.4	B	20.9	C
	WBL	54.8	F	40.8	F
	WBTR	54.8	C	40.8	C
	NBL	0.1	A	0.2	A
	NBTR	0.1	A	0.2	A
	SBL	0.2	A	0.4	A
	SBTR	0.2	A	0.4	A
	Overall	**3.4**	**A**	**2.1**	**A**
Sixth Line at North Park Drive	EBL	30.5	F	43.6	F
	EBTR	30.5	C	43.6	C
	WBL	241.5	F	166.5	F
	WBTR	241.5	C	166.5	D
	NBL	0.4	A	1.1	B
	NBTR	0.4	A	1.1	B
	SBL	0.3	A	0.1	A
	SBTR	0.3	A	0.1	A
	Overall	**17.8**	**A**	**10.3**	**A**
Sixth Line at Sixteen Mile Drive	EBL	45.9	F	122.7	F
	EBTR	45.9	C	122.7	E
	WBL	352.0	F	540.1	F
	WBTR	352.0	C	540.1	F
	NBL	0.5	B	1.0	B
	NBTR	0.5	B	1.0	B
	SBL	0.2	A	0.1	B
	SBTR	0.2	A	0.1	B
	Overall	**23.8**	**A**	**26.3**	**A**

Notes: LOS – Level of Service

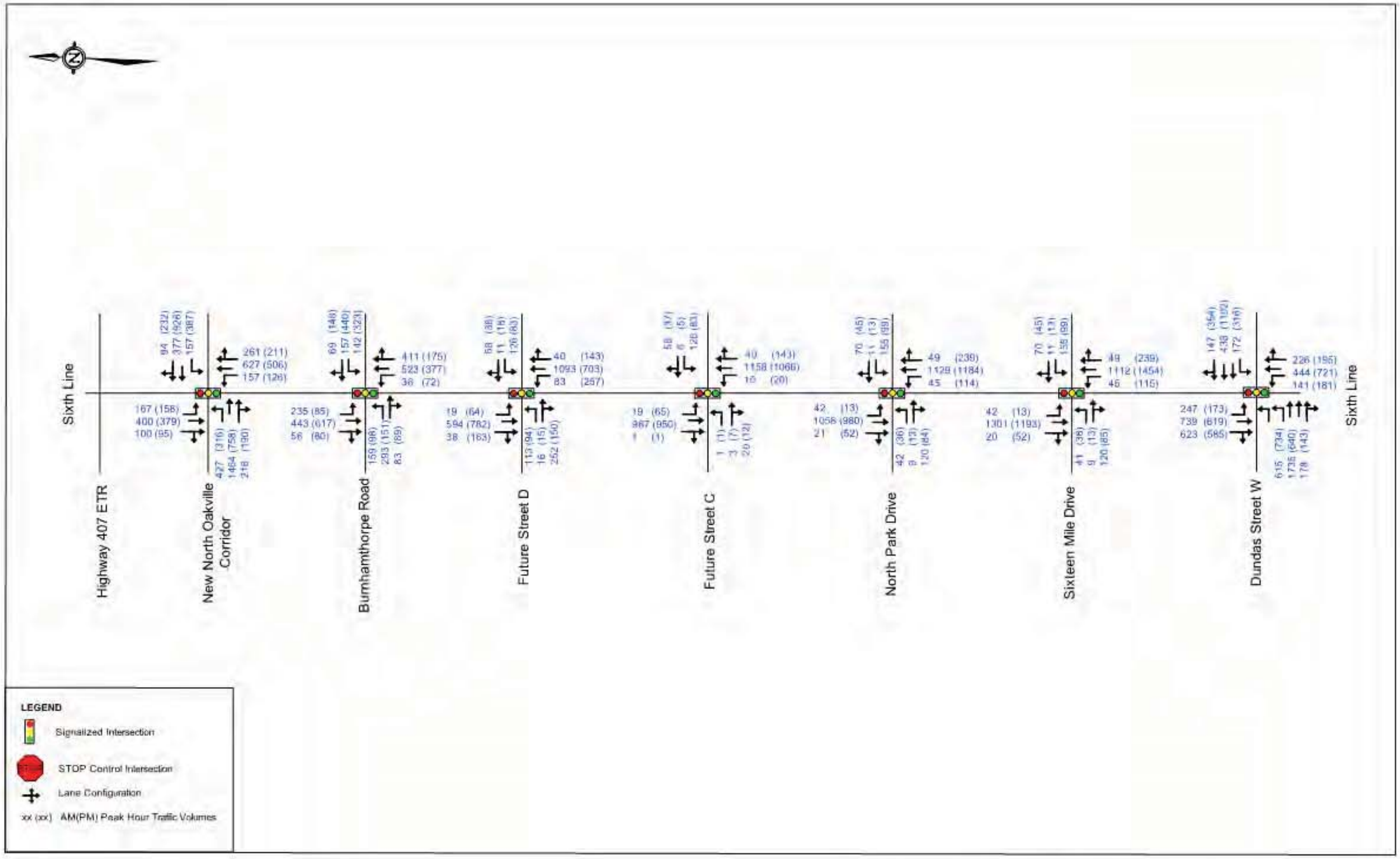
All unsignalized intersections are forecasted to be operating at an overall LOS of A during the AM and PM peak hours. Several movements on the minor roads are expected to experience long delays. High level of delay is not uncommon for minor side streets with a STOP condition and is generally considered acceptable, particularly with low traffic volumes on the minor approaches. As previously noted, it is anticipated that all four unsignalized intersections will operate under traffic signal controls. This will significantly improve the operations for these movements.

3.3 Future 2031 Traffic Conditions

Roadway Segment Operations

As in the future 2021 traffic conditions, segments of Sixth Line between Dundas Street and Highway 407 were analyzed for future 2031 traffic conditions under the do-nothing scenario. As discussed in the earlier section, a growth factor was applied to the background traffic to account for the 2031 traffic conditions. Total traffic volumes are shown in Figure 4. In addition, further analysis was completed under a widening option. Table 3-4 summarizes the results of this analysis. Worksheets for the analyses are contained in Appendix G.

Analysis based on the do-nothing scenario indicates poor LOS for all roadway segments with failing LOS for the sections from Dundas Street to Future Street D for the AM and PM peak hour. Alternatively, analysis based on widening Sixth Line to four lanes would project all roadway segments to operate at an LOS of C or better. As in the future 2021 traffic conditions, it is forecasted that the PM peak hour conditions represent the worst-case scenario. Figure 7 is a summary of the segment LOS analysis under the do-nothing scenario. Figure 9 is a summary of the widening Sixth Line to four lanes scenario.



Sixth Line Class EA
(Dundas Street to Highway 407 ETR)

Future (2031) Peak Hour Traffic Volumes

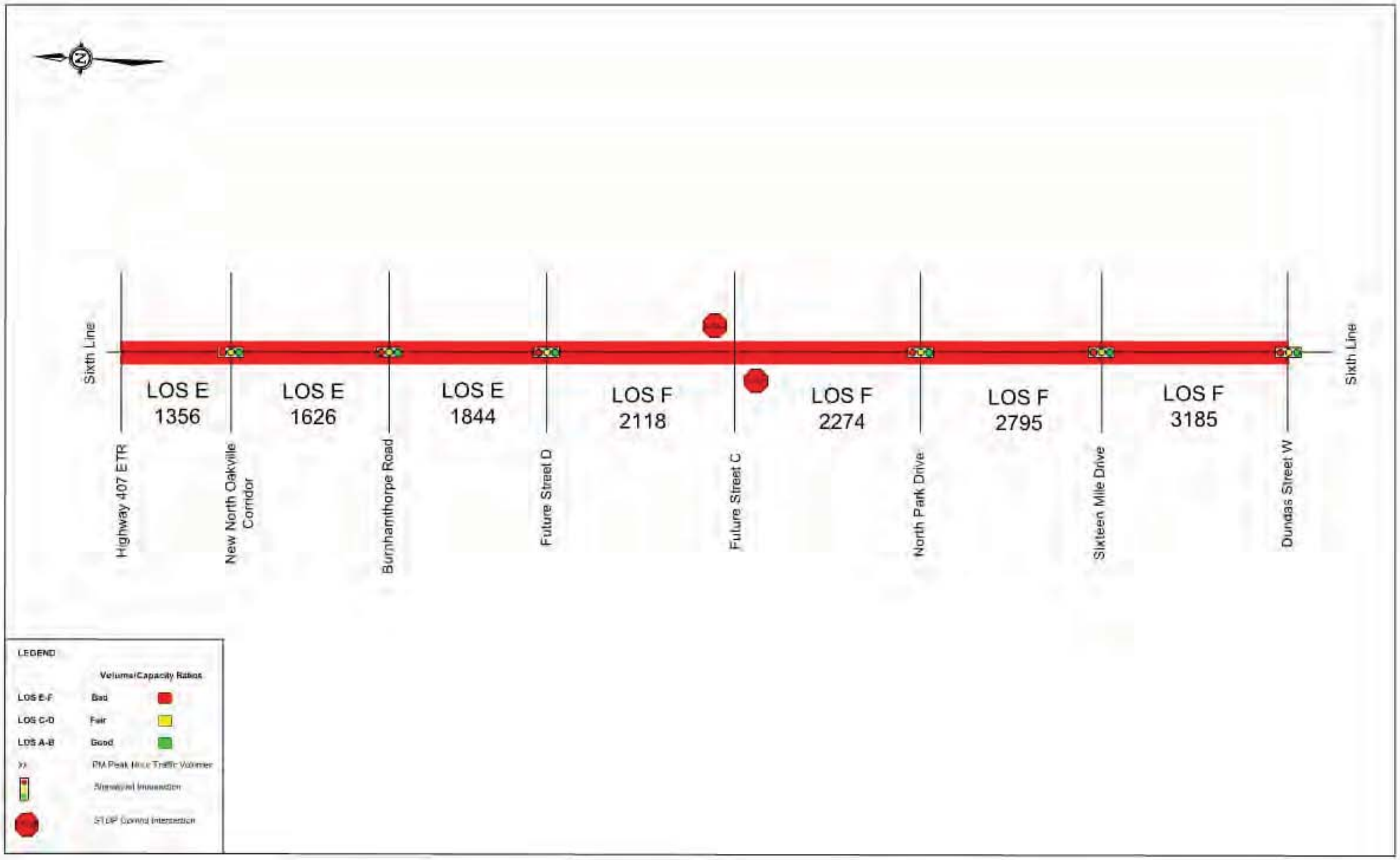
MORRISON HERSHFIELD

Figure 4

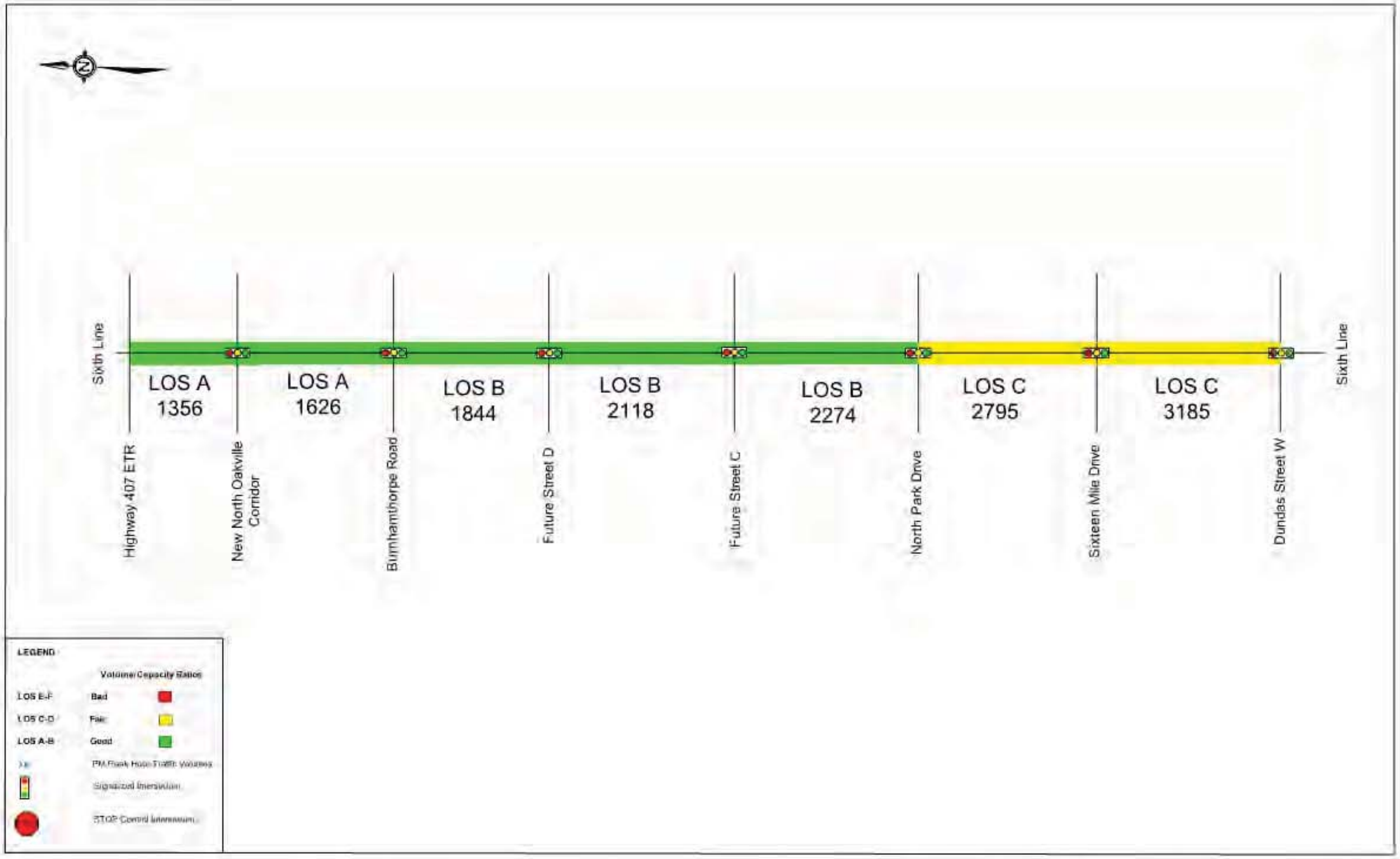
Table 3-4: Two-Lane Highway Segment LOS Analysis – Future 2031 Traffic Volumes

Segment	Section Description	Approx. Length (m)	AM Peak Hour					PM Peak Hour				
			Average Travel Speed (km/h)	Percent Time-Spent-Following (%)	Volume (vph)	LOS	LOS With Widening	Average Travel Speed (km/h)	Percent Time-Spent-Following (%)	Volume (vph)	LOS	LOS With Widening
1	Dundas St to Sixteen Mile Dr	400	11.1	99.0	2815	F	C	5.6	100.7	3185	F	C
2	Sixteen Mile Dr to North Park Dr	300	14.5	97.6	2586	F	C	11.4	98.9	2795	F	C
3	North Park Dr to Future St C	500	18.4	95.6	2329	F	B	19.2	95.0	2274	F	B
4	Future St C to Future St D	500	20.3	94.3	2202	F	B	21.5	93.4	2118	F	B
5	Future St D to Burnhamthorpe Rd	500	24.6	90.8	1915	E	B	25.6	89.8	1844	E	B
6	Burnhamthorpe Rd to NNOC	500	26.6	88.8	1779	E	B	28.9	86.5	1626	E	A
7	NNOC to Hwy 407	600	30.2	85.4	1536	E	B	32.9	82.7	1356	E	A

Notes: %-Spent-Following – Percent of time spent behind another vehicle without a passing opportunity due to opposing traffic volumes
LOS – Level of Service



Sixth Line Class EA (Dundas Street to Highway 407 ETR)	Future (2031) PM Peak Hour Mainline Analysis Do Nothing Scenario	MORRISON HERSHFIELD	Figure 7



Sixth Line Class EA
(Dundas Street to Highway 407 ETR)

Future (2031) PM Peak Hour Mainline Analysis
with Improvements (Widening to Four Lanes)

MORRISON HERSHFIELD

Figure 9

Intersection Operations

Under the future 2031 traffic conditions, all unsignalized intersections are expected to experience long queues. Therefore, all new intersections were analyzed based on signalized intersections. Table 3-5 summarizes the signalized intersection LOS analysis results for the 2031planning horizon. Worksheets for the analyses are contained in Appendix H. In addition, signal warrant analysis was completed for all new intersections. Although the analysis does not justify installation of traffic signals, the projected long queues for the unsignalized intersections justify the need for traffic signal controls. The following section summarizes the intersection operations analysis based on widening Sixth Line to four lanes.

Table 3-5: Signalized Intersection LOS Analysis – Future 2031 Traffic Volumes

Intersection	Movement	AM Peak Hour				PM Peak Hour			
		V/C	LOS	Total Delay (Sec/Veh)	Queue Length 95th (m)	V/C	LOS	Total Delay (Sec/Veh)	Queue Length 95th (m)
Sixth Line at New North Oakville Corridor	EBL	0.80	C	27.3	83.2	0.88	D	49.2	90.7
	EBTR	1.02	E	59.0	267.6	0.92	D	45.7	129.4
	WBL	0.92	E	77.0	67.6	0.92	D	52.6	111.7
	WBTR	0.41	C	31.4	64.5	0.98	D	51.7	160.0
	NBL	0.58	D	36.9	42.2	0.55	D	38.9	37.9
	NBTR	0.98	E	67.2	149.4	0.78	D	35.1	77.8
	SBL	0.86	E	66.2	62.8	0.79	D	49.7	41.7
	SBTR	0.56	D	38.8	69.5	0.39	C	20.4	42.3
	OVERALL	**1.02**	**D**	**52.6**	-	**0.98**	**D**	**43.6**	-
Sixth Line at Burnhamthorpe Road	EBL	0.53	C	27.8	38.0	0.41	B	16.6	20.7
	EBTR	0.68	C	27.2	75.8	0.30	A	8.5	28.6
	WBL	0.74	D	46.3	41.3	0.72	C	22.6	63.0
	WBTR	0.40	B	19.4	41.6	0.73	B	17.8	94.2
	NBL	0.12	C	20.7	11.6	0.36	C	23.4	22.5
	NBTR	0.71	B	19.5	82.5	0.39	B	13.0	44.8
	SBL	0.63	C	21.3	46.0	0.33	C	20.7	24.1
	SBTR	0.26	A	8.6	32.1	0.51	B	16.5	67.1
	OVERALL	**0.74**	**C**	**20.7**	-	**0.73**	**B**	**16.4**	-
Sixth Line at Future Street D	EBL	0.37	C	25.8	25.4	0.41	C	32.9	25.4
	EBTR	0.49	A	8.3	20.5	0.41	A	9.3	16.3
	WBL	0.59	D	35.6	30.9	0.44	D	35.0	23.4
	WBTR	0.16	A	8.5	9.4	0.17	B	14.0	10.9
	NBL	0.20	A	7.7	12.8	0.79	C	29.7	78.6
	NBTR	0.50	A	7.9	67.0	0.34	A	4.4	32.8

Intersection	Movement	AM Peak Hour				PM Peak Hour			
		V/C	LOS	Total Delay (Sec/Veh)	Queue Length 95th (m)	V/C	LOS	Total Delay (Sec/Veh)	Queue Length 95th (m)
	SBL	0.10	A	8.1	4.4	0.17	A	5.4	8.1
	SBTR	0.29	A	6.2	32.4	0.39	A	4.8	38.6
	OVERALL	**0.59**	**A**	**9.8**	**-**	**0.79**	**A**	**9.8**	**-**
Sixth Line at Future Street C	EBL	0.00	C	21.0	1.3	0.00	B	17.0	1.1
	EBTR	0.07	B	11.7	5.3	0.05	B	11.8	5.1
	WBL	0.51	C	31.8	29.1	0.30	B	18.7	18.8
	WBTR	0.19	B	10.3	9.8	0.12	A	8.6	7.2
	NBL	0.03	A	4.7	2.0	0.07	A	4.9	2.7
	NBTR	0.46	A	5.5	55.3	0.51	A	6.0	44.4
	SBL	0.10	A	6.1	3.5	0.35	B	11.5	10.7
	SBTR	0.38	A	5.0	42.1	0.41	A	5.3	32.8
	OVERALL	**0.51**	**A**	**6.9**	**-**	**0.51**	**A**	**6.4**	**-**
Sixth Line at North Park Drive	EBL	0.15	C	22.9	11.8	0.17	C	27.4	11.9
	EBTR	0.33	B	13.9	18.9	0.29	B	10.2	12.8
	WBL	0.59	C	34.1	35.4	0.47	C	34.9	26.2
	WBTR	0.21	B	10.9	12.1	0.19	B	12.3	10.4
	NBL	0.21	A	8.9	8.7	0.38	A	9.4	19.0
	NBTR	0.50	A	7.2	64.4	0.54	A	5.6	68.2
	SBL	0.24	B	10.4	9.1	0.09	A	5.6	2.6
	SBTR	0.47	A	7.0	58.1	0.40	A	4.6	43.4
	OVERALL	**0.59**	**A**	**9.4**	**-**	**0.54**	**A**	**6.9**	**-**
Sixth Line at Sixteen Mile Drive	EBL	0.15	C	24.1	12.1	0.18	C	29.0	12.7
	EBTR	0.35	B	18.8	23.2	0.30	B	11.7	14.0
	WBL	0.61	D	36.3	37.2	0.49	D	37.0	27.3
	WBTR	0.21	A	8.9	10.7	0.20	B	13.3	11.0
	NBL	0.32	B	13.8	11.6	0.51	B	16.2	36.6
	NBTR	0.48	A	7.1	64.4	0.63	A	6.7	95.8
	SBL	0.21	A	9.1	8.5	0.12	A	7.4	3.1
	SBTR	0.57	A	8.1	80.8	0.48	A	5.1	57.7
	OVERALL	**0.61**	**A**	**10.0**	**-**	**0.63**	**A**	**7.8**	**-**
Sixth Line at Dundas Street	EBL	0.88	E	59.1	96.7	1.02	E	73.7	124.5
	EBTR	1.05	E	72.0	205.7	0.52	C	35.0	76.1
	WBL	0.89	E	69.9	64.4	0.81	D	40.0	78.6
	WBTR	0.52	C	33.7	50.6	1.06	E	78.3	186.3
	NBL	0.86	E	66.5	52.9	1.02	F	104.5	78.8

Intersection	Movement	AM Peak Hour				PM Peak Hour			
		V/C	LOS	Total Delay (Sec/Veh)	Queue Length 95th (m)	V/C	LOS	Total Delay (Sec/Veh)	Queue Length 95th (m)
	NBTR	0.65	D	35.5	82.3	0.87	D	50.3	137.0
	SBL	0.78	D	39.4	66.1	0.88	E	69.0	68.2
	SBTR	1.05	E	69.6	201.5	1.04	E	73.8	192.0
	OVERALL	**1.05**	**E**	**60.1**	**-**	**1.06**	**E**	**65.1**	**-**

Notes: v/c – Volume-to-capacity ratio
LOS – Level of Service

All signalized intersections are forecasted to operate at an LOS of E or better on an overall basis during the AM and PM total traffic conditions. As in the future 2021 conditions analysis, several movements at the intersection of Sixth line at Dundas Street are project to be operating at the lowest LOS. Although these movements are at capacity, they are still functional. Modifications to the signal timing and the anticipated improvements to Dundas Street, such as providing BRT lanes, will improve the operations at this intersection.

4.0 Conclusions

4.1 Key Findings

Based on the traffic engineering analyses, the following key findings have been reached:

1. Finding – All roadway segments are currently operating at an LOS of C, a satisfactory level for both AM and PM Peak Hour traffic volumes with average travel speed estimated to be approximately 60 km/h for all segments.

2. The intersection of Sixth Line at Dundas Street is currently operating at an acceptable LOS of C during peak AM and PM total existing traffic conditions with the WBTR movement operating with the highest v/c ratio during the PM peak hour. The approach delay for this movement is 33.3 sec/veh.

3. The intersection of Sixth Line at Burnhamthorpe Road is currently operating at an overall LOS of E and B during the AM and PM peak hours, respectively. The NB and SB movements fail during the morning peak hour. The movement with the highest approach delay for this intersection is for the NB traffic during the morning peak hour.

4. It is anticipated that the New North Oakville Transportation Corridor (NNOTC) will begin construction in 2012. In addition, based on the North Oakville Master Plan, Secondary Plans and

other traffic related studies in the area that have been submitted to the Town, it is anticipated that four new east-west connecting roadways will be provided between Dundas Street and Burnhamthorpe Road by 2021, creating four new intersections on Sixth Line. These new roadways will provide a connection for the new proposed development on the east and west side of Sixth Line as well as completing the road network for the North Oakville Master Plan.

5. Analysis based on the do-nothing scenario indicates poor LOS for all roadway segments with failing LOS for the section from Dundas Street to Sixteen Mile Drive for the future 2021 PM peak hour traffic condition. Alternatively, analysis based on widening Sixth Line to four lanes would project all roadway segments to operate at an LOS of B or better. Similarly, analysis based on widening Sixth Line to four lanes would project all roadway segments to operate at an LOS of C or better for the future 2031 traffic conditions.

6. It is anticipated that all four future intersections between Dundas Street and Burnhamthorpe Road will operate under traffic signal controls. All intersections are forecasted to operate satisfactorily with several movements on the minor streets operating at a low LOS. Although these movements are at capacity, they are still functional.

4.2 Recommended Improvements

Based on our analysis, this study concludes that the projected traffic generated by the new future developments and background growth can be accommodated by widening Sixth Line from Dundas Street to Highway 407. Furthermore, improvements for the anticipated new intersections along Sixth Line from Dundas Street to Burnhamthorpe Road should be further reviewed in detail once all new development information is available and finalized. Intersection traffic controls such as roundabouts should be considered when determining final alternative solution.

Appendix A
LOS and Capacity Definitions

CAPACITY

Capacity = 1,700 pc/h for each direction, and 3,200 for both directions combined

The capacity of a two-lane highway is 1,700 pc/h for each direction of travel. The capacity is nearly independent of the directional distribution of traffic on the facility, except that for extended lengths of two-lane highway, the capacity will not exceed 3,200 pc/h for both directions of travel combined. For short lengths of two-lane highway—such as tunnels or bridges—a capacity of 3,200 to 3,400 pc/h for both directions of travel combined may be attained but cannot be expected for an extended length.

LEVELS OF SERVICE

For definitions of the service measures for two-lane highways, percent time-spent-following, and average travel speed, see Chapter 12, "Highway Concepts"

The service measures for a two-lane highway are defined in Chapter 12, "Highway Concepts." On Class I highways, efficient mobility is paramount, and LOS is defined in terms of both percent time-spent-following and average travel speed. On Class II highways, mobility is less critical, and LOS is defined only in terms of percent time-spent-following, without consideration of average travel speed. Drivers will tolerate higher levels of percent time-spent-following on a Class II facility than on a Class I facility, because Class II facilities usually serve shorter trips and different trip purposes.

For definitions of Class I and II highways, also see Chapter 12

LOS criteria for two-lane highways in Classes I and II are presented in Exhibits 20-2, 20-3, and 20-4. Exhibit 20-2 reflects the maximum values of percent time-spent-following and average travel speed for each LOS for Class I highways. A segment of a Class I highway must meet the criteria for both the percent time-spent-following and the average travel speed shown in Exhibit 20-2 to be classified in any particular LOS. Exhibit 20-3 illustrates the LOS criteria for Class I highways. For example, a Class I two-lane highway with percent time-spent-following equal to 45 percent and an average travel speed of 65 km/h would be classified as LOS D based on Exhibit 20-2. However, a Class II highway with the same conditions would be classified as LOS B based on Exhibit 20-4. The difference between these LOS assessments represents the difference in motorist expectations for Class I and II facilities.

The LOS criteria in Exhibits 20-2 through 20-4 apply to all types of two-lane highways, including extended two-way segments, extended directional segments, specific upgrades, and specific downgrades.

TWO-WAY SEGMENTS

The two-way segment methodology estimates measures of traffic operation along a section of highway, based on terrain, geometric design, and traffic conditions. Terrain is classified as level or rolling, as described below. Mountainous terrain is addressed in the operational analysis of specific upgrades and downgrades, presented below. This methodology typically is applied to highway sections of at least 3.0 km.

Traffic data needed to apply the two-way segment methodology include the two-way hourly volume, a peak-hour factor (PHF), and the directional distribution of traffic flow. The PHF may be computed from field data, or appropriate default values may be selected from the tabulated values presented in Chapter 12. Traffic data also include the proportion of trucks and recreational vehicles (RVs) in the traffic stream. The operational analysis of extended two-way segments for a two-lane highway involves several steps, described in the following sections.

EXHIBIT 20-2. LOS CRITERIA FOR TWO-LANE HIGHWAYS IN CLASS I

LOS	Percent Time-Spent-Following	Average Travel Speed (km/h)
A	≤ 35	> 90
B	> 35–50	> 80–90
C	> 50–65	> 70–80
D	> 65–80	> 60–70
E	> 80	≤ 60

Note:
LOS F applies whenever the flow rate exceeds the segment capacity.

EXHIBIT 20-3. LOS CRITERIA (GRAPHICAL) FOR TWO-LANE HIGHWAYS IN CLASS I

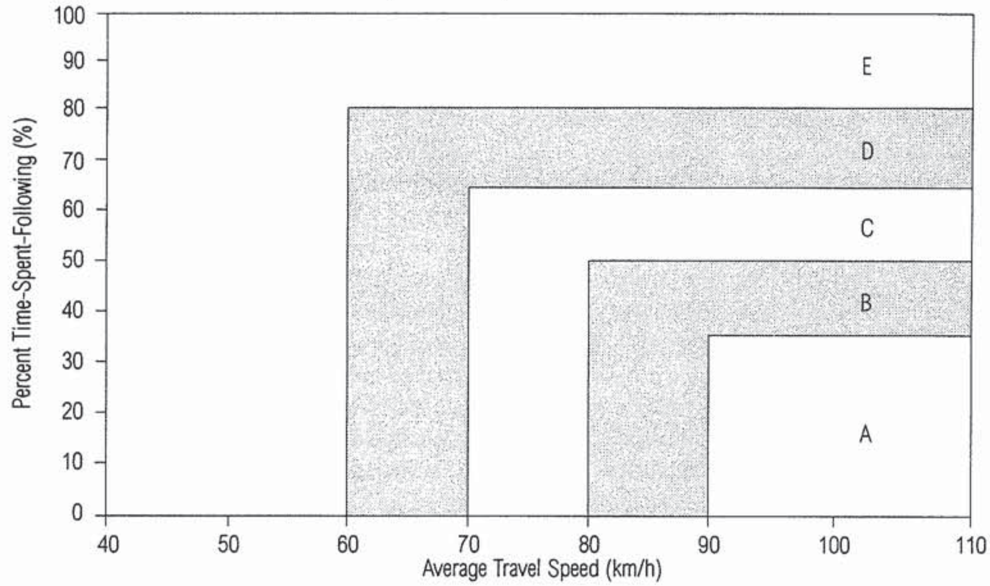


EXHIBIT 20-4. LOS CRITERIA FOR TWO-LANE HIGHWAYS IN CLASS II

LOS	Percent Time-Spent-Following
A	≤ 40
B	> 40–55
C	> 55–70
D	> 70–85
E	> 85

Note:
LOS F applies whenever the flow rate exceeds the segment capacity.

Determining Free-Flow Speed

Free-flow speed occurs at two-way flows of 200 pc/h or less

A key step in the assessment of the LOS of a two-lane highway is to determine the free-flow speed (FFS). The FFS is measured using the mean speed of traffic under low flow conditions (up to two-way flows of 200 pc/h). If field measurements must be made with two-way flow rates of more than 200 pc/h, a volume adjustment must be made in determining FFS. This volume adjustment is discussed below.

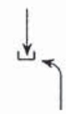
Two general methods can be used to determine the FFS for a two-lane highway: field measurement and estimation with the guidelines provided in this chapter. The field-measurement procedure assists in gathering these data directly or incorporating the measurements into a speed monitoring program. However, field measurements are not necessary for an operational analysis—the FFS can be estimated from field data and user knowledge of conditions on the highway.

Field Measurement

The FFS of a highway can be determined directly from a speed study conducted in the field. No adjustments are made to the field-measured data. The speed study should be conducted at a representative location within the highway segment being evaluated; for example, a site on a short upgrade should not be selected within a segment that is generally level. Any speed measurement technique acceptable for other types of traffic engineering speed studies may be used. The field study should be conducted in periods of low traffic flow (up to a two-way flow of 200 pc/h) and should measure the speeds of all vehicles or of a systematic sampling (e.g., of every 10th vehicle). A representative

Permitted turning movement

Protected turning movement



A permitted turning movement is made through a conflicting pedestrian or bicycle flow or opposing vehicle flow. Thus, a left-turn movement concurrent with the opposing through movement is considered to be permitted, as is a right-turn movement concurrent with pedestrian crossings in a conflicting crosswalk. Protected turns are those made without these conflicts, such as turns made during an exclusive left-turn phase or a right-turn phase during which conflicting pedestrian movements are prohibited. Permitted turns experience the friction of selecting and passing through gaps in a conflicting vehicle or pedestrian flow. Thus, a single permitted turn often consumes more of the available green time than a single protected turn. Either permitted or protected turning phases may be more efficient in a given situation, depending on the turning and opposing volumes, intersection geometry, and other factors.

Turning movements that are not opposed do not receive a dedicated left-turn phase (i.e., a green arrow), but because of the nature of the intersection, they are never in conflict with through traffic. This condition occurs on one-way streets, at T-intersections, and with signal phasing plans that provide complete separation between all movements in opposite directions (i.e., split-phase operation). Such movements must be treated differently in some cases because they can be accommodated in shared lanes without impeding the through traffic. Left turns that are not opposed at any time should be distinguished from those that may be unopposed during part of the signal cycle and opposed during another part. Left turns that are opposed during any part of the sequence will impede through traffic in shared lanes.

SATURATION FLOW RATE

Saturation flow rate is a basic parameter used to derive capacity. It is defined in Exhibits 10-8 and 10-9. It is essentially determined on the basis of the minimum headway that the lane group can sustain across the stop line as the vehicles depart the intersection. Saturation flow rate is computed for each of the lane groups established for the analysis. A saturation flow rate for prevailing conditions can be determined directly from field measurement and can be used as the rate for the site without adjustment. If a default value is selected for base saturation flow rate, it must be adjusted for a variety of factors that reflect geometric, traffic, and environmental conditions specific to the site under study.

SIGNALIZED INTERSECTION CAPACITY

Lane group capacity defined

Capacity at intersections is defined for each lane group. The lane group capacity is the maximum hourly rate at which vehicles can reasonably be expected to pass through the intersection under prevailing traffic, roadway, and signalization conditions. The flow rate is generally measured or projected for a 15-min period, and capacity is stated in vehicles per hour (veh/h).

Traffic conditions include volumes on each approach, the distribution of vehicles by movement (left, through, and right), the vehicle type distribution within each movement, the location and use of bus stops within the intersection area, pedestrian crossing flows, and parking movements on approaches to the intersection. Roadway conditions include the basic geometrics of the intersection, including the number and width of lanes, grades, and lane use allocations (including parking lanes). Signalization conditions include a full definition of the signal phasing, timing, and type of control, and an evaluation of signal progression for each lane group. The analysis of capacity at signalized intersections (Chapter 16) focuses on the computation of saturation flow rates, capacities, v/c ratios, and level of service for lane groups.

LEVEL OF SERVICE

Control delay is the service measure that defines LOS

Level of service for signalized intersections is defined in terms of control delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions: in the absence of traffic control, geometric delay, any incidents, and any other vehicles. Specifically, LOS criteria for traffic signals are stated in terms of the average control delay per vehicle, typically for a 15-min analysis period. Delay is a complex measure and depends on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group.

The critical v/c ratio is an approximate indicator of the overall sufficiency of an intersection. The critical v/c ratio depends on the conflicting critical lane flow rates and the signal phasing. The computation of the critical v/c ratio is described in detail in Appendix A and in Chapter 16.

Back of queue defined

The average back of queue is another performance measure that is used to analyze a signalized intersection. The back of queue is the number of vehicles that are queued depending on arrival patterns of vehicles and vehicles that do not clear the intersection during a given green phase. The computation of average back of queue is explained in Appendix G of Chapter 16.

Levels of service are defined to represent reasonable ranges in control delay.

LOS A describes operations with low control delay, up to 10 s/veh. This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.

LOS B describes operations with control delay greater than 10 and up to 20 s/veh. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.

Cycle failure occurs when a given green phase does not serve queued vehicles, and overflows occur

LOS C describes operations with control delay greater than 20 and up to 35 s/veh. These higher delays may result from only fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles, and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

LOS D describes operations with control delay greater than 35 and up to 55 s/veh. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LOS E describes operations with control delay greater than 55 and up to 80 s/veh. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.

LOS F describes operations with control delay in excess of 80 s/veh. This level, considered unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

Delays in the range of LOS F (unacceptable) can occur while the v/c ratio is below 1.0. Very high delays can occur at such v/c ratios when some combination of the following conditions exists: the cycle length is long, the lane group in question is disadvantaged by the signal timing (has a long red time), and the signal progression for the subject movements is poor. The reverse is also possible (for a limited duration): a saturated lane group (i.e., v/c ratio greater than 1.0) may have low delays if the cycle length is short or the signal progression is favorable, or both.

Thus, the designation LOS F does not automatically imply that the intersection, approach, or lane group is over capacity, nor does an LOS better than E automatically imply that unused capacity is available.

I. INTRODUCTION

SCOPE OF THE METHODOLOGY

This chapter contains a methodology for analyzing the capacity and level of service (LOS) of signalized intersections. The analysis must consider a wide variety of prevailing conditions, including the amount and distribution of traffic movements, traffic composition, geometric characteristics, and details of intersection signalization. The methodology focuses on the determination of LOS for known or projected conditions.

Background and underlying concepts for this chapter are in Chapter 10

The methodology addresses the capacity, LOS, and other performance measures for lane groups and intersection approaches and the LOS for the intersection as a whole. Capacity is evaluated in terms of the ratio of demand flow rate to capacity (v/c ratio), whereas LOS is evaluated on the basis of control delay per vehicle (in seconds per vehicle). Control delay is the portion of the total delay attributed to traffic signal operation for signalized intersections. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Appendix A presents a method for observing intersection control delay in the field. Exhibit 10-9 provides definitions of the basic terms used in this chapter.

Each lane group is analyzed separately. Equations in this chapter use the subscript i to indicate each lane group. The capacity of the intersection as a whole is not addressed because both the design and the signalization of intersections focus on the accommodation of traffic movement on approaches to the intersection.

A lane group is indicated in formulas by the subscript i

The capacity analysis methodology for signalized intersections is based on known or projected signalization plans. Two procedures are available to assist the analyst in establishing signalization plans. The first is the quick estimation method, which produces estimates of the cycle length and green times that can be considered to constitute a reasonable and effective signal timing plan. The quick estimation method requires minimal field data and relies instead on default values for the required traffic and control parameters. It is described and documented in Chapter 10.

See Chapter 10 for description of quick estimation method

A more detailed procedure is provided in Appendix B of this chapter for estimating the timing plan at both pretimed and traffic-actuated signals. The procedure for pretimed signals provides the basis for the design of signal timing plans that equalize the degree of saturation on the critical approaches for each phase of the signal sequence. This procedure does not, however, provide for optimal operation.

The methodology in this chapter is based in part on the results of a National Cooperative Highway Research Program (NCHRP) study (*1*, *2*). Critical movement capacity analysis techniques have been developed in the United States (*3–5*), Australia (*6*), Great Britain (*7*), and Sweden (*8*). Background for delay estimation procedures was developed in Great Britain (*7*), Australia (*9, 10*), and the United States (*11*). Updates to the original methodology were developed subsequently (*12–24*).

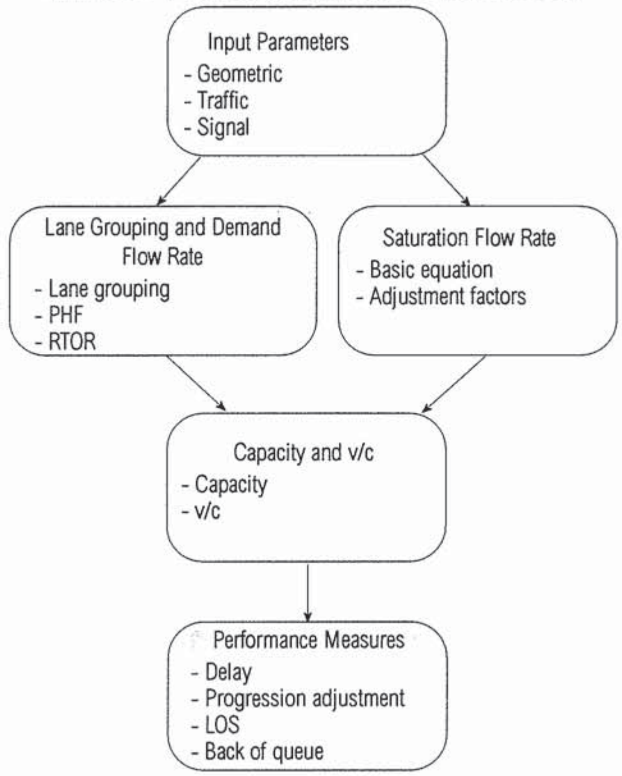
LIMITATIONS TO THE METHODOLOGY

The methodology does not take into account the potential impact of downstream congestion on intersection operation. Nor does the methodology detect and adjust for the impacts of turn-pocket overflows on through traffic and intersection operation.

II. METHODOLOGY

Exhibit 16-1 shows the input and the basic computation order for the method. The primary output of the method is level of service (LOS). This methodology covers a wide range of operational configurations, including combinations of phase plans, lane utilization, and left-turn treatment alternatives. It is important to note that some of these configurations may be considered unacceptable by some operating agencies from a traffic safety point of view. The safety aspect of signalized intersections cannot be ignored, and the provision in this chapter of a capacity and LOS analysis methodology for a specific operational configuration does not imply an endorsement of the suitability for application of such a configuration.

EXHIBIT 16-1. SIGNALIZED INTERSECTION METHODOLOGY



LOS

The average control delay per vehicle is estimated for each lane group and aggregated for each approach and for the intersection as a whole. LOS is directly related to the control delay value. The criteria are listed in Exhibit 16-2.

LOS criteria

EXHIBIT 16-2. LOS CRITERIA FOR SIGNALIZED INTERSECTIONS

LOS	Control Delay per Vehicle (s/veh)
A	≤ 10
B	> 10–20
C	> 20–35
D	> 35–55
E	> 55–80
F	> 80

PREFACE

OVERVIEW

Background and concepts for TWSC intersections are in Chapter 10

The procedures in this chapter can be used to analyze the capacity and level of service, lane requirements, and effects of traffic and design features of two-way stop-controlled (TWSC) and all-way stop-controlled (AWSC) intersections. In addition, a procedure for estimating capacity of roundabouts is presented.

Each type of unsignalized intersection (TWSC, AWSC, and roundabout) is addressed in a separate part of this chapter. TWSC intersections are covered in Part A, AWSC intersections are covered in Part B, and information on roundabouts is provided in Part C. References for all parts are found in Part D. Example problems that demonstrate the calculations and results achieved by applying the procedures are also found in Part D.

LIMITATIONS OF THE METHODOLOGY

This chapter does not include a detailed method for estimating delay for yield sign–controlled intersections. However, with appropriate changes in the values of key parameters, the analyst could apply the TWSC method to yield-controlled intersections.

All of the methods are for steady-state conditions (i.e., the demand and capacity conditions are constant during the analysis period); the methods are not designed to evaluate how fast or how often the facility transitions from one demand/capacity state to another. Analysts interested in that kind of information should consider applying simulation models.

PART A. TWO-WAY STOP-CONTROLLED INTERSECTIONS

I. INTRODUCTION - PART A

In this section a methodology for analyzing capacity and level of service of two-way stop-controlled (TWSC) intersections is presented.

II. METHODOLOGY - PART A

Both theoretical and empirical approaches have been used to arrive at a methodology

Capacity analysis at TWSC intersections depends on a clear description and understanding of the interaction of drivers on the minor or stop-controlled approach with drivers on the major street. Both gap acceptance and empirical models have been developed to describe this interaction. Procedures described in this chapter rely on a gap acceptance model developed and refined in Germany (*1*). The concepts from this model are described in Chapter 10. Exhibit 17-1 illustrates input to and the basic computation order of the method described in this chapter.

LEVEL-OF-SERVICE CRITERIA

LOS is not defined for the overall intersection

Level of service (LOS) for a TWSC intersection is determined by the computed or measured control delay and is defined for each minor movement. LOS is not defined for the intersection as a whole. LOS criteria are given in Exhibit 17-2.

EXHIBIT 17-1. TWSC UNSIGNALIZED INTERSECTION METHODOLOGY

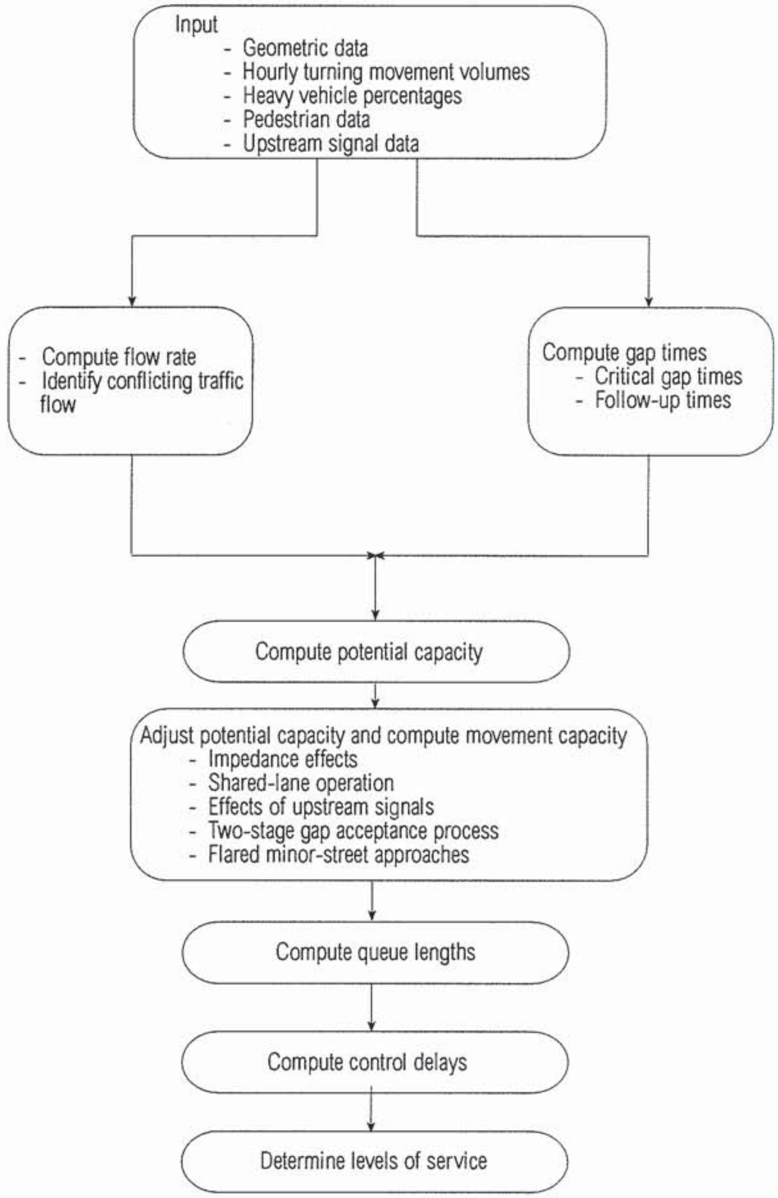


EXHIBIT 17-2. LEVEL-OF-SERVICE CRITERIA FOR TWSC INTERSECTIONS

Level of Service	Average Control Delay (s/veh)
A	0–10
B	> 10–15
C	> 15–25
D	> 25–35
E	> 35–50
F	> 50

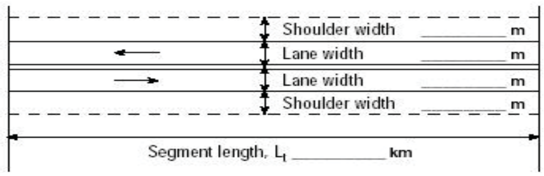
Appendix B
2012 Mainline Worksheets

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		**Site Information**	
Analyst	*MKV*	Highway	*Sixth Line*
Agency or Company	*MHL*	From/To	*Dundas to Burnhamthorpe*
Date Performed	*7/15/12*	Jurisdiction	*Oakville*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*2012*

Project Description: *Sixth Line EA*

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*837* veh/h
Directional split	*60 / 40*
Peak-hour factor, PHF	*0.90*
No-passing zone	*15*
% Trucks and Buses , P_T	*10* %
% Recreational vehicles, P_R	*4*%
Access points/ *km*	*10*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1023*
v_p * highest directional split proportion[2] (pc/h)	*614*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*km/h*	Base free-flow speed, $BFFS_{FM}$	*90.0 km/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*10.0 km/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*km/h*	Adj. for access points, f_A (Exhibit 20-6)	*6.7 km/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*73.3 km/h*

Adj. for no-passing zones, f_{np} (*km/h*) (Exhibit 20-11)	*1.4*
Average travel speed, ATS (*km/h*) ATS=FFS-0.00776v_p-f_{np}	*59.1*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1023*
v_p * highest directional split proportion[2] (pc/h)	*614*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*59.3*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*4.6*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*63.9*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*C*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.32*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *km*)= 0.25L_t(V/PHF)	*488*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *km*)=V*L_t	*1758*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*8.3*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split Vp>= 1,700 pc/h, terminated anlysis-the LOS is F.

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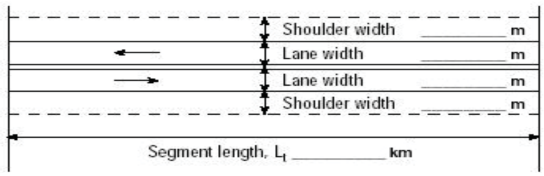
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*MKV*	Highway	*Sixth Line*
Agency or Company	*MHL*	From/To	*Burnhamthorpe to Hwy 407*
Date Performed	*7/15/12*	Jurisdiction	*Oakville*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*2012*

Project Description: *Sixth Line EA*

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*815* veh/h
Directional split	*60 / 40*
Peak-hour factor, PHF	*0.92*
No-passing zone	*15*
% Trucks and Buses , P_T	*10* %
% Recreational vehicles, P_R	*4%*
Access points/ *km*	*10*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*974*
v_p * highest directional split proportion[2] (pc/h)	*584*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*km/h*	Base free-flow speed, $BFFS_{FM}$	*90.0* *km/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*10.0* *km/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*km/h*	Adj. for access points, f_A (Exhibit 20-6)	*6.7* *km/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*73.3* *km/h*

Adj. for no-passing zones, f_{np} (*km/h*) (Exhibit 20-11)	*1.4*
Average travel speed, ATS (*km/h*) ATS=FFS-0.00776v_p-f_{np}	*59.7*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*974*
v_p * highest directional split proportion[2] (pc/h)	*584*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*57.5*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*4.9*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*62.4*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*C*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.30*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *km*)= 0.25L_t(V/PHF)	*244*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *km*)=V*L_t	*897*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*4.1*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split Vp>= 1,700 pc/h, terminated anlysis-the LOS is F.

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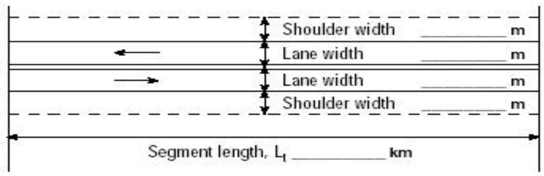
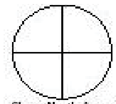
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*MKV*	Highway	*Sixth Line*
Agency or Company	*MHL*	From/To	*Dundas to Burnhamthorpe*
Date Performed	*7/15/12*	Jurisdiction	*Oakville*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2012*

Project Description: *Sixth Line EA*

Input Data





☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*733* veh/h
Directional split	*60 / 40*
Peak-hour factor, PHF	*0.90*
No-passing zone	*15*
% Trucks and Buses , P_T	*10 %*
% Recreational vehicles, P_R	*4%*
Access points/ *km*	*10*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*896*
v_p * highest directional split proportion[2] (pc/h)	*538*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*km/h*	Base free-flow speed, $BFFS_{FM}$	*90.0 km/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*10.0 km/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*km/h*	Adj. for access points, f_A (Exhibit 20-6)	*6.7 km/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*73.3 km/h*

Adj. for no-passing zones, f_{np} (*km/h*) (Exhibit 20-11)	*1.6*
Average travel speed, ATS (*km/h*) ATS=FFS-0.00776v_p-f_{np}	*60.5*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*896*
v_p * highest directional split proportion[2] (pc/h)	*538*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*54.5*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*5.2*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*59.7*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*C*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.28*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *km*)= 0.25L_t(V/PHF)	*428*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *km*)=V*L_t	*1539*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*7.1*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split Vp>= 1,700 pc/h, terminated anlysis-the LOS is F.

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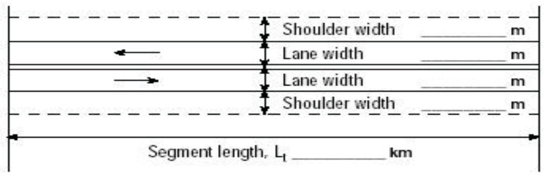
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		**Site Information**	
Analyst	*MKV*	Highway	*Sixth Line*
Agency or Company	*MHL*	From/To	*Burnhamthorpe to Hwy 407*
Date Performed	*7/15/12*	Jurisdiction	*Oakville*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2012*

Project Description: *Sixth Line EA*

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*637* veh/h
Directional split	*60 / 40*
Peak-hour factor, PHF	*0.90*
No-passing zone	*15*
% Trucks and Buses , P_T	*10* %
% Recreational vehicles, P_R	*4%*
Access points/ *km*	*10*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*779*
v_p * highest directional split proportion[2] (pc/h)	*467*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*km/h*	Base free-flow speed, $BFFS_{FM}$	*90.0 km/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*10.0 km/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*km/h*	Adj. for access points, f_A (Exhibit 20-6)	*6.7 km/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*73.3 km/h*

Adj. for no-passing zones, f_{np} (*km/h*) (Exhibit 20-11)	*1.6*
Average travel speed, ATS (*km/h*) ATS=FFS-0.00776v_p-f_{np}	*62.0*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*779*
v_p * highest directional split proportion[2] (pc/h)	*467*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*49.6*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*6.0*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*55.6*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*C*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.24*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *km*)= 0.25L_t(V/PHF)	*195*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *km*)=V*L_t	*701*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*3.1*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split Vp>= 1,700 pc/h, terminated anlysis-the LOS is F.

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Appendix C
2012 Intersection Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	109	200	50	31	104	13	7	306	203	153	195	39
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	118	217	54	34	113	14	8	333	221	166	212	42

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	390	161	561	421
Volume Left (vph)	118	34	8	166
Volume Right (vph)	54	14	221	42
Hadj (s)	0.02	0.04	-0.21	0.10
Departure Headway (s)	7.9	9.0	7.4	7.8
Degree Utilization, x	0.85	0.40	1.16	0.91
Capacity (veh/h)	447	363	486	449
Control Delay (s)	42.0	17.9	118.5	50.4
Approach Delay (s)	42.0	17.9	118.5	50.4
Approach LOS	E	C	F	F

Intersection Summary			
Delay	69.8		
HCM Level of Service	F		
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		

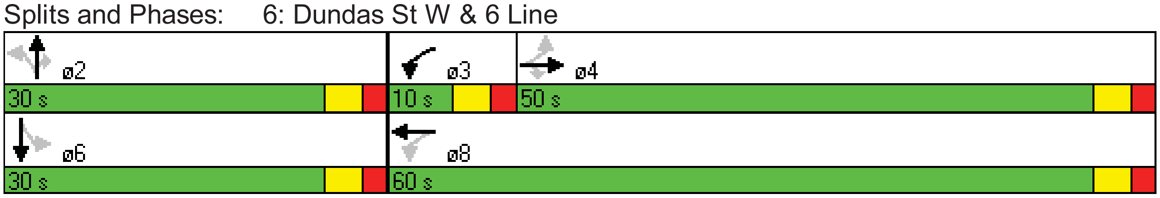
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	160.0		115.0	155.0		0.0	125.0		0.0	75.0		65.0
Storage Lanes	1		1	1		0	1		1	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1	6.1	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95
Frt			0.850		0.995				0.850		0.952	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	3476	1601	1674	3223	0	1674	1902	1633	1722	3428	0
Flt Permitted	0.379			0.080			0.589			0.496		
Satd. Flow (perm)	707	3476	1601	141	3223	0	1038	1902	1633	899	3428	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			130		8				115		75	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		533.1			698.8			321.3			77.1	
Travel Time (s)		24.0			31.4			19.3			4.6	
Volume (vph)	307	1734	120	85	635	24	78	207	116	82	147	69
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	2%	9%	13%	4%	9%	1%	0%	6%	2%	0%
Adj. Flow (vph)	334	1885	130	92	690	26	85	225	126	89	160	75
Lane Group Flow (vph)	334	1885	130	92	716	0	85	225	126	89	235	0
Turn Type	Perm		Perm	pm+pt			Perm		Perm	Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phases	4	4	4	3	8		2	2	2	6	6	
Minimum Initial (s)	20.0	20.0	20.0	5.0	20.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	30.0	30.0	30.0	10.0	30.0		30.0	30.0	30.0	30.0	30.0	
Total Split (s)	50.0	50.0	50.0	10.0	60.0	0.0	30.0	30.0	30.0	30.0	30.0	0.0
Total Split (%)	55.6%	55.6%	55.6%	11.1%	66.7%	0.0%	33.3%	33.3%	33.3%	33.3%	33.3%	0.0%
Maximum Green (s)	45.0	45.0	45.0	5.0	55.0		25.0	25.0	25.0	25.0	25.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min	Min	Min	Min	
Walk Time (s)	15.0	15.0	15.0		15.0		15.0	15.0	15.0	15.0	15.0	
Flash Dont Walk (s)	10.0	10.0	10.0		10.0		10.0	10.0	10.0	10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0		0		0	0	0	0	0	
Act Effct Green (s)	46.4	46.4	46.4	54.0	54.1		16.2	16.2	16.2	16.2	16.2	
Actuated g/C Ratio	0.59	0.59	0.59	0.67	0.69		0.21	0.21	0.21	0.21	0.21	
v/c Ratio	0.80	0.92	0.13	0.44	0.32		0.40	0.57	0.29	0.48	0.31	
Control Delay	32.7	25.2	2.4	13.8	5.7		33.2	34.5	8.5	37.2	18.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	32.7	25.2	2.4	13.8	5.7		33.2	34.5	8.5	37.2	18.8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	C	A	B	A		C	C	A	D	B	
Approach Delay		25.0			6.6			26.7			23.8	
Approach LOS		C			A			C			C	
Queue Length 50th (m)	36.8	126.0	0.0	3.6	17.6		11.4	31.2	1.4	12.1	10.8	
Queue Length 95th (m)	#101.9	#222.3	7.6	14.4	35.0		23.9	51.6	13.8	25.5	19.7	
Internal Link Dist (m)		509.1			674.8			297.3			53.1	
Turn Bay Length (m)	160.0		115.0	155.0			125.0			75.0		
Base Capacity (vph)	419	2059	1001	209	2253		307	563	565	266	1068	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.80	0.92	0.13	0.44	0.32		0.28	0.40	0.22	0.33	0.22	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 78.4
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 21.3 Intersection LOS: C
Intersection Capacity Utilization 85.2% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dundas St W & 6 Line



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	67	100	34	132	301	83	34	223	36	23	186	55
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	73	109	37	143	327	90	37	242	39	25	202	60

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	218	561	318	287
Volume Left (vph)	73	143	37	25
Volume Right (vph)	37	90	39	60
Hadj (s)	0.00	0.00	-0.02	0.00
Departure Headway (s)	7.7	6.9	7.4	7.5
Degree Utilization, x	0.47	1.07	0.66	0.60
Capacity (veh/h)	425	513	465	449
Control Delay (s)	17.3	86.1	23.5	21.2
Approach Delay (s)	17.3	86.1	23.5	21.2
Approach LOS	C	F	C	C

Intersection Summary			
Delay	47.4		
HCM Level of Service	E		
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		

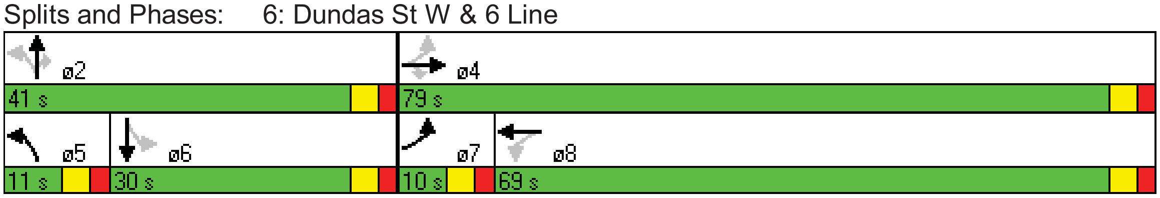
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	160.0		115.0	155.0		0.0	125.0		0.0	75.0		65.0
Storage Lanes	1		1	1		0	1		1	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1	6.1	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95
Frt			0.850		0.993				0.850		0.928	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	3476	1601	1674	3220	0	1674	1902	1633	1722	3352	0
Flt Permitted	0.058			0.217			0.295			0.657		
Satd. Flow (perm)	108	3476	1601	382	3220	0	520	1902	1633	1191	3352	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			88		6				97		112	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		533.1			698.8			321.3			77.1	
Travel Time (s)		24.0			31.4			19.3			4.6	
Volume (vph)	96	1048	81	172	1566	78	115	144	92	42	196	179
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	2%	9%	13%	4%	9%	1%	0%	6%	2%	0%
Adj. Flow (vph)	104	1139	88	187	1702	85	125	157	100	46	213	195
Lane Group Flow (vph)	104	1139	88	187	1787	0	125	157	100	46	408	0
Turn Type	pm+pt		Perm	Perm			pm+pt		Perm	Perm		
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phases	7	4	4	8	8		5	2	2	6	6	
Minimum Initial (s)	5.0	20.0	20.0	20.0	20.0		5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	10.0	30.0	30.0	30.0	30.0		10.0	30.0	30.0	30.0	30.0	
Total Split (s)	10.0	79.0	79.0	69.0	69.0	0.0	11.0	41.0	41.0	30.0	30.0	0.0
Total Split (%)	8.3%	65.8%	65.8%	57.5%	57.5%	0.0%	9.2%	34.2%	34.2%	25.0%	25.0%	0.0%
Maximum Green (s)	5.0	74.0	74.0	64.0	64.0		6.0	36.0	36.0	25.0	25.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min	Min	Min	Min	
Walk Time (s)		15.0	15.0	15.0	15.0			15.0	15.0	15.0	15.0	
Flash Dont Walk (s)		10.0	10.0	10.0	10.0			10.0	10.0	10.0	10.0	
Pedestrian Calls (#/hr)		0	0	0	0			0	0	0	0	
Act Effct Green (s)	75.1	75.1	75.1	65.1	65.1		27.6	27.6	27.6	16.6	16.6	
Actuated g/C Ratio	0.68	0.68	0.68	0.59	0.59		0.25	0.25	0.25	0.15	0.15	
v/c Ratio	0.64	0.48	0.08	0.83	0.94		0.62	0.33	0.21	0.26	0.68	
Control Delay	33.2	9.8	1.8	52.4	33.3		47.7	35.8	7.9	44.7	38.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	33.2	9.8	1.8	52.4	33.3		47.7	35.8	7.9	44.7	38.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	A	A	D	C		D	D	A	D	D	
Approach Delay		11.1			35.1			32.4			38.7	
Approach LOS		B			D			C			D	
Queue Length 50th (m)	6.8	55.2	0.0	30.4	174.7		22.0	27.8	0.5	8.9	32.1	
Queue Length 95th (m)	#31.9	82.8	5.5	#83.2	#265.8		37.8	45.5	12.8	19.6	48.1	
Internal Link Dist (m)		509.1			674.8			297.3			53.1	
Turn Bay Length (m)	160.0		115.0	155.0			125.0			75.0		
Base Capacity (vph)	163	2358	1114	225	1895		203	586	571	258	814	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.64	0.48	0.08	0.83	0.94		0.62	0.27	0.18	0.18	0.50	

Intersection Summary

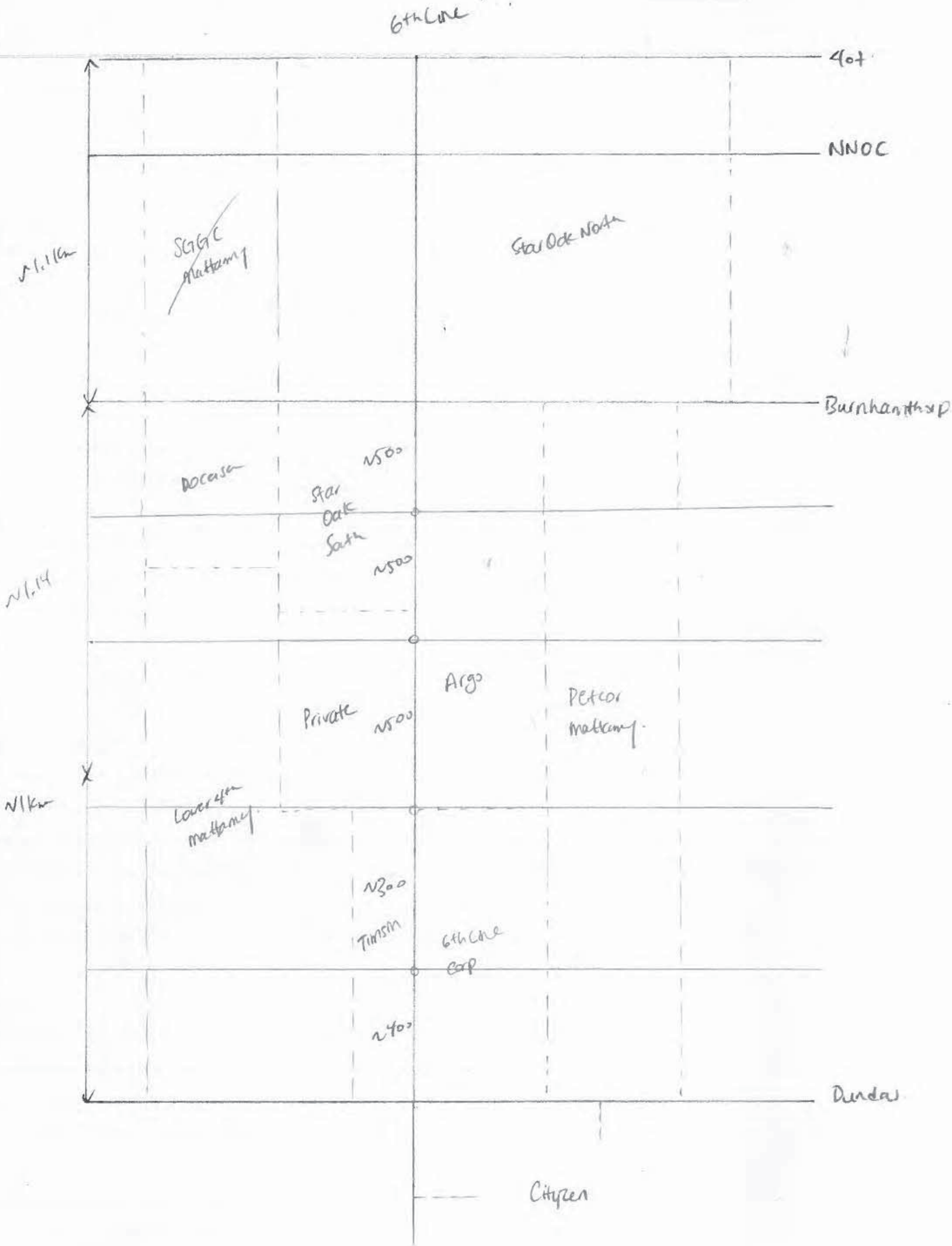
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 110.7
Natural Cycle: 120
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 27.5 Intersection LOS: C
Intersection Capacity Utilization 82.0% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dundas St W & 6 Line



Appendix D
Outline of New Development Locations

Rough outline of Future Revel



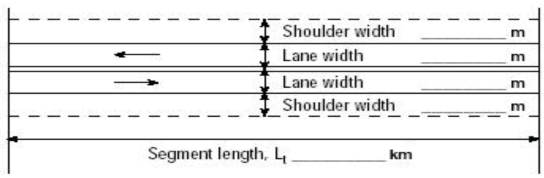
Appendix E
2021 Mainline Worksheets

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		***Site Information***	
Analyst	*MKV*	Highway	*Sixth Line*
Agency or Company	*MHL*	From/To	*Dundas to Sixteen Mile*
Date Performed	*07/15/12*	Jurisdiction	*Oakville*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*2021 Do Nothing*

Project Description: *Sixth Line EA*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*2008* veh/h
Directional split	*70 / 30*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*10* %
% Recreational vehicles, P_R	*4%*
Access points/ *km*	*10*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*2401*
v_p * highest directional split proportion[2] (pc/h)	*1681*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*km/h*	Base free-flow speed, $BFFS_{FM}$	*70.0 km/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*10.0 km/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*km/h*	Adj. for access points, f_A (Exhibit 20-6)	*2.0 km/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*58.0 km/h*

Adj. for no-passing zones, f_{np} (*km/h*) (Exhibit 20-11)	*4.8*
Average travel speed, ATS (*km/h*) ATS=FFS-0.00776v_p-f_{np}	*23.2*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*2401*
v_p * highest directional split proportion[2] (pc/h)	*1681*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*87.9*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*4.2*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*92.1*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.75*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *km*)= 0.25L_t(V/PHF)	*218*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *km*)=V*L_t	*803*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*9.4*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split Vp>= 1,700 pc/h, terminated anlysis-the LOS is F.

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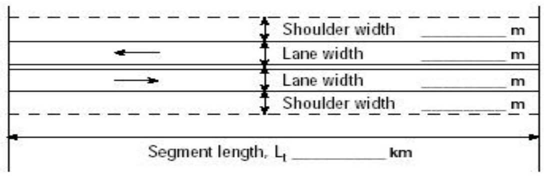
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*MKV*	Highway	*Sixth Line*
Agency or Company	*MHL*	From/To	*Sixteen Mile to North Park*
Date Performed	*07/15/12*	Jurisdiction	*Oakville*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*2021 Do Nothing*

Project Description: *Sixth Line EA*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*1842* veh/h
Directional split	*70 / 30*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*10* %
% Recreational vehicles, P_R	*4%*
Access points/ *km*	*10*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*2202*
v_p * highest directional split proportion[2] (pc/h)	*1541*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*km/h*	Base free-flow speed, $BFFS_{FM}$	*70.0 km/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*10.0 km/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*km/h*	Adj. for access points, f_A (Exhibit 20-6)	*2.0 km/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*58.0 km/h*

Adj. for no-passing zones, f_{np} (*km/h*) (Exhibit 20-11)	*4.8*
Average travel speed, ATS (*km/h*) ATS=FFS-0.00776v_p-f_{np}	*25.7*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*2202*
v_p * highest directional split proportion[2] (pc/h)	*1541*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*85.6*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*4.2*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*89.8*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.69*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *km*)= 0.25L_t(V/PHF)	*150*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *km*)=V*L_t	*553*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*5.8*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split Vp>= 1,700 pc/h, terminated anlysis-the LOS is F.

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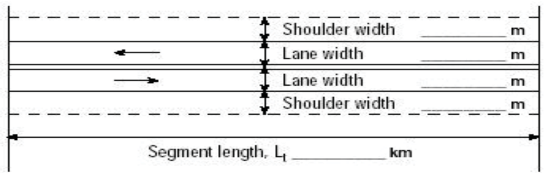
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		***Site Information***	
Analyst	*MKV*	Highway	*Sixth Line*
Agency or Company	*MHL*	From/To	*North Park to Future St C*
Date Performed	*07/15/12*	Jurisdiction	*Oakville*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*2021 Do Nothing*

Project Description: *Sixth Line EA*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*1641* veh/h
Directional split	*70 / 30*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*10* %
% Recreational vehicles, P_R	*4%*
Access points/ *km*	*10*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1962*
v_p * highest directional split proportion[2] (pc/h)	*1373*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*km/h*	Base free-flow speed, $BFFS_{FM}$	*70.0 km/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*10.0 km/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*km/h*	Adj. for access points, f_A (Exhibit 20-6)	*2.0 km/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*58.0 km/h*

Adj. for no-passing zones, f_{np} (*km/h*) (Exhibit 20-11)	*4.8*
Average travel speed, ATS (*km/h*) ATS=FFS-0.00776v_p-f_{np}	*28.7*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1962*
v_p * highest directional split proportion[2] (pc/h)	*1373*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*82.2*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*4.5*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*86.6*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.61*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *km*)= 0.25L_t(V/PHF)	*223*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *km*)=V*L_t	*821*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*7.8*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split Vp>= 1,700 pc/h, terminated anlysis-the LOS is F.

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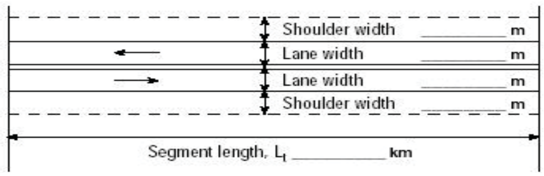
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*MKV*	Highway	*Sixth Line*
Agency or Company	*MHL*	From/To	*Future St C to Future St D*
Date Performed	*07/15/12*	Jurisdiction	*Oakville*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*2021 Do Nothing*

Project Description: *Sixth Line EA*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*1563* veh/h
Directional split	*70 / 30*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*10* %
% Recreational vehicles, P_R	*4%*
Access points/ *km*	*10*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1869*
v_p * highest directional split proportion[2] (pc/h)	*1308*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*km/h*	Base free-flow speed, $BFFS_{FM}$	*70.0 km/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*10.0 km/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*km/h*	Adj. for access points, f_A (Exhibit 20-6)	*2.0 km/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*58.0 km/h*

Adj. for no-passing zones, f_{np} (*km/h*) (Exhibit 20-11)	*4.8*
Average travel speed, ATS (*km/h*) ATS=FFS-0.00776v_p-f_{np}	*29.8*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1869*
v_p * highest directional split proportion[2] (pc/h)	*1308*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*80.7*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*5.1*
Percent time-spent-following, PTSF(%)=BPTSF+f $_{d/np}$	*85.8*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.58*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *km*)= 0.25L_t(V/PHF)	*212*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *km*)=V*L_t	*782*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*7.1*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split Vp>= 1,700 pc/h, terminated anlysis-the LOS is F.

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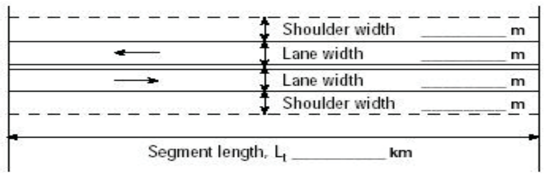
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*MKV*	Highway	*Sixth Line*
Agency or Company	*MHL*	From/To	*Future St D to Burnhamthorpe*
Date Performed	*07/15/12*	Jurisdiction	*Oakville*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*2021 Do Nothing*

Project Description: *Sixth Line EA*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*1419* veh/h
Directional split	*70 / 30*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*10* %
% Recreational vehicles, P_R	*4%*
Access points/ *km*	*10*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1697*
v_p * highest directional split proportion[2] (pc/h)	*1188*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*km/h*	Base free-flow speed, $BFFS_{FM}$	*70.0 km/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*10.0 km/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*km/h*	Adj. for access points, f_A (Exhibit 20-6)	*2.0 km/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*58.0 km/h*

Adj. for no-passing zones, f_{np} (*km/h*) (Exhibit 20-11)	*4.8*
Average travel speed, ATS (*km/h*) ATS=FFS-0.00776v_p-f_{np}	*32.0*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1697*
v_p * highest directional split proportion[2] (pc/h)	*1188*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*77.5*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*6.3*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*83.8*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.53*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *km*)= 0.25L_t(V/PHF)	*193*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *km*)=V*L_t	*710*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*6.0*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split Vp>= 1,700 pc/h, terminated anlysis-the LOS is F.

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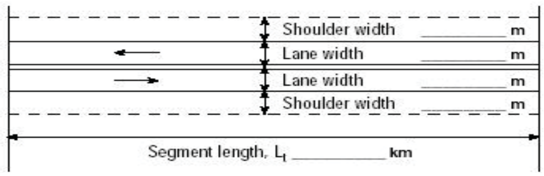
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*MKV*	Highway	*Sixth Line*
Agency or Company	*MHL*	From/To	*Burnhamthorpe to NNOC*
Date Performed	*07/15/12*	Jurisdiction	*Oakville*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*2021 Do Nothing*

Project Description: *Sixth Line EA*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*1326* veh/h
Directional split	*70 / 30*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*10 %*
% Recreational vehicles, P_R	*4%*
Access points/ *km*	*10*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1585*
v_p * highest directional split proportion[2] (pc/h)	*1110*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*km/h*	Base free-flow speed, $BFFS_{FM}$	*70.0 km/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*10.0 km/h*
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*km/h*	Adj. for access points, f_A (Exhibit 20-6)	*2.0 km/h*
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	*58.0 km/h*

Adj. for no-passing zones, f_{np} (*km/h*) (Exhibit 20-11)	*4.8*
Average travel speed, ATS (*km/h*) $ATS=FFS-0.00776v_p-f_{np}$	*33.4*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1585*
v_p * highest directional split proportion[2] (pc/h)	*1110*
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	*75.2*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*7.0*
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{d/np}$	*82.2*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, $v/c=V_p/3,200$	*0.50*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *km*)= $0.25L_t(V/PHF)$	*180*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *km*)=$V*L_t$	*663*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*5.4*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split Vp>= 1,700 pc/h, terminated anlysis-the LOS is F.

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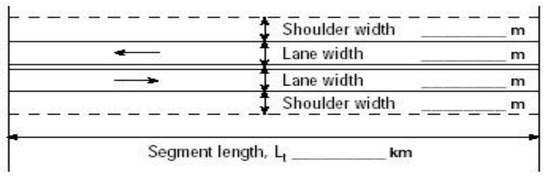
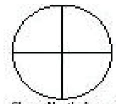
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*MKV*	Highway	*Sixth Line*
Agency or Company	*MHL*	From/To	*NNOC to Hwy 407*
Date Performed	*07/15/12*	Jurisdiction	*Oakville*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*2021 Do Nothing*

Project Description: *Sixth Line EA*

Input Data





☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*1204* veh/h
Directional split	*70 / 30*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*10* %
% Recreational vehicles, P_R	*4*%
Access points/ *km*	*10*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1440*
v_p * highest directional split proportion[2] (pc/h)	*1008*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*km/h*	Base free-flow speed, $BFFS_{FM}$	*70.0 km/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*10.0 km/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*km/h*	Adj. for access points, f_A (Exhibit 20-6)	*2.0 km/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*58.0 km/h*

Adj. for no-passing zones, f_{np} (*km/h*) (Exhibit 20-11)	*4.8*
Average travel speed, ATS (*km/h*) ATS=FFS-0.00776v_p-f_{np}	*35.2*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1440*
v_p * highest directional split proportion[2] (pc/h)	*1008*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*71.8*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*8.0*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*79.8*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.45*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *km*)= 0.25L_t(V/PHF)	*196*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *km*)=V*L_t	*722*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*5.6*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split Vp>= 1,700 pc/h, terminated anlysis-the LOS is F.

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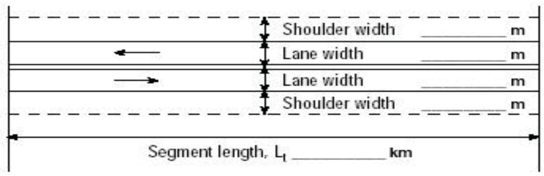
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*MKV*	Highway	*Sixth Line*
Agency or Company	*MHL*	From/To	*Dundas to Sixteen Mile*
Date Performed	*07/15/12*	Jurisdiction	*Oakville*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2021 Do Nothing*

Project Description: *Sixth Line EA*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*2186* veh/h
Directional split	*70 / 30*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*10* %
% Recreational vehicles, P_R	*4%*
Access points/ *km*	*10*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*2614*
v_p * highest directional split proportion[2] (pc/h)	*1830*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*km/h*	Base free-flow speed, $BFFS_{FM}$	*70.0 km/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*10.0 km/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*km/h*	Adj. for access points, f_A (Exhibit 20-6)	*2.0 km/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*58.0 km/h*

Adj. for no-passing zones, f_{np} (*km/h*) (Exhibit 20-11)	*4.8*
Average travel speed, ATS (*km/h*) ATS=FFS-0.00776v_p-f_{np}	*20.5*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*2614*
v_p * highest directional split proportion[2] (pc/h)	*1830*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*90.0*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*4.2*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*94.2*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*F*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.82*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *km*)= 0.25L_t(V/PHF)	*238*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *km*)=V*L_t	*874*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*11.6*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split Vp>= 1,700 pc/h, terminated anlysis-the LOS is F.

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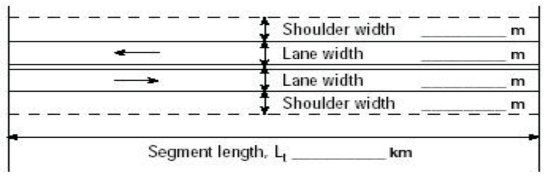
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*MKV*	Highway	*Sixth Line*
Agency or Company	*MHL*	From/To	*Sixteen Mile to North Park*
Date Performed	*07/15/12*	Jurisdiction	*Oakville*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2021 Do Nothing*

Project Description: *Sixth Line EA*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*1936* veh/h
Directional split	*70 / 30*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*10 %*
% Recreational vehicles, P_R	*4%*
Access points/ *km*	*10*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*2315*
v_p * highest directional split proportion[2] (pc/h)	*1621*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*km/h*	Base free-flow speed, $BFFS_{FM}$	*70.0 km/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*10.0 km/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*km/h*	Adj. for access points, f_A (Exhibit 20-6)	*2.0 km/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*58.0 km/h*

Adj. for no-passing zones, f_{np} (*km/h*) (Exhibit 20-11)	*4.8*
Average travel speed, ATS (*km/h*) ATS=FFS-0.00776v_p-f_{np}	*24.3*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*2315*
v_p * highest directional split proportion[2] (pc/h)	*1621*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*86.9*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*4.2*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*91.1*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.72*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *km*)= 0.25L_t(V/PHF)	*158*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *km*)=V*L_t	*581*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*6.5*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split Vp>= 1,700 pc/h, terminated anlysis-the LOS is F.

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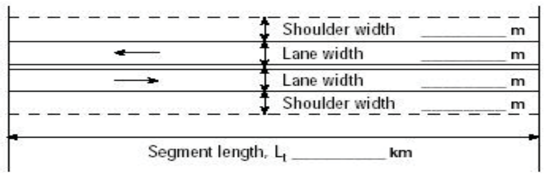
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		**Site Information**	
Analyst	*MKV*	Highway	*Sixth Line*
Agency or Company	*MHL*	From/To	*North Park to Future St C*
Date Performed	*07/15/12*	Jurisdiction	*Oakville*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2021 Do Nothing*

Project Description: *Sixth Line EA*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*1579* veh/h
Directional split	*70 / 30*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*10* %
% Recreational vehicles, P_R	*4%*
Access points/ *km*	*10*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1888*
v_p * highest directional split proportion[2] (pc/h)	*1322*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*km/h*	Base free-flow speed, $BFFS_{FM}$	*70.0 km/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*10.0 km/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*km/h*	Adj. for access points, f_A (Exhibit 20-6)	*2.0 km/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*58.0 km/h*

Adj. for no-passing zones, f_{np} (*km/h*) (Exhibit 20-11)	*4.8*
Average travel speed, ATS (*km/h*) ATS=FFS-0.00776v_p-f_{np}	*29.6*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1888*
v_p * highest directional split proportion[2] (pc/h)	*1322*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*81.0*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*5.0*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*85.9*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.59*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *km*)= 0.25L_t(V/PHF)	*215*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *km*)=V*L_t	*790*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*7.3*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split Vp>= 1,700 pc/h, terminated anlysis-the LOS is F.

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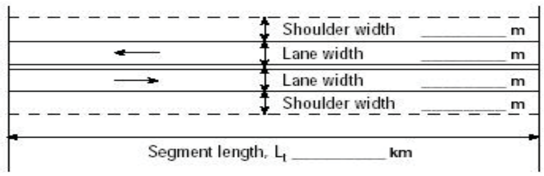
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*MKV*	Highway	*Sixth Line*
Agency or Company	*MHL*	From/To	*Future St C to Future St D*
Date Performed	*07/15/12*	Jurisdiction	*Oakville*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2021 Do Nothing*

Project Description: *Sixth Line EA*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*1485* veh/h
Directional split	*70 / 30*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*10 %*
% Recreational vehicles, P_R	*4%*
Access points/ *km*	*10*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1776*
v_p * highest directional split proportion[2] (pc/h)	*1243*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*km/h*	Base free-flow speed, $BFFS_{FM}$	*70.0 km/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*10.0 km/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*km/h*	Adj. for access points, f_A (Exhibit 20-6)	*2.0 km/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*58.0 km/h*

Adj. for no-passing zones, f_{np} (*km/h*) (Exhibit 20-11)	*4.8*
Average travel speed, ATS (*km/h*) ATS=FFS-0.00776v_p-f_{np}	*31.0*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1776*
v_p * highest directional split proportion[2] (pc/h)	*1243*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*79.0*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*5.7*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*84.7*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.56*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *km*)= 0.25L_t(V/PHF)	*202*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *km*)=V*L_t	*743*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*6.5*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split Vp>= 1,700 pc/h, terminated anlysis-the LOS is F.

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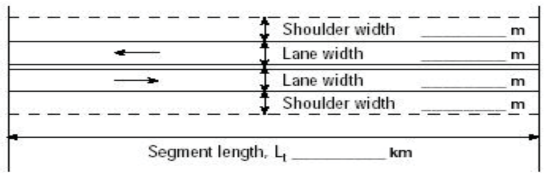
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*MKV*	Highway	*Sixth Line*
Agency or Company	*MHL*	From/To	*Future St D to Burnhamthorpe*
Date Performed	*07/15/12*	Jurisdiction	*Oakville*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2021 Do Nothing*

Project Description: *Sixth Line EA*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*1348* veh/h
Directional split	*70 / 30*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*10* %
% Recreational vehicles, P_R	*4%*
Access points/ *km*	*10*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1612*
v_p * highest directional split proportion[2] (pc/h)	*1128*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*km/h*	Base free-flow speed, $BFFS_{FM}$	*70.0 km/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*10.0 km/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*km/h*	Adj. for access points, f_A (Exhibit 20-6)	*2.0 km/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*58.0 km/h*

Adj. for no-passing zones, f_{np} (*km/h*) (Exhibit 20-11)	*4.8*
Average travel speed, ATS (*km/h*) ATS=FFS-0.00776v_p-f_{np}	*33.0*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1612*
v_p * highest directional split proportion[2] (pc/h)	*1128*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*75.8*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*6.9*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*82.6*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.50*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *km*)= 0.25L_t(V/PHF)	*183*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *km*)=V*L_t	*674*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*5.5*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split Vp>= 1,700 pc/h, terminated anlysis-the LOS is F.

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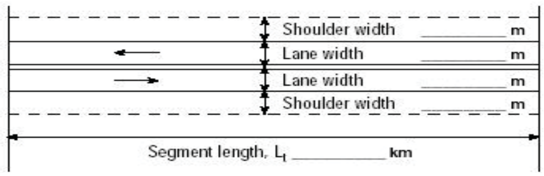
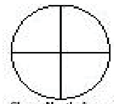
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*MKV*	Highway	*Sixth Line*
Agency or Company	*MHL*	From/To	*Burnhamthorpe to NNOC*
Date Performed	*07/15/12*	Jurisdiction	*Oakville*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2021 Do Nothing*

Project Description: *Sixth Line EA*

Input Data





Show North Arrow

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*1186* veh/h
Directional split	*70 / 30*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*10 %*
% Recreational vehicles, P_R	*4%*
Access points/ *km*	*10*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1418*
v_p * highest directional split proportion[2] (pc/h)	*993*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*km/h*	Base free-flow speed, $BFFS_{FM}$	*70.0 km/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*10.0 km/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*km/h*	Adj. for access points, f_A (Exhibit 20-6)	*2.0 km/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*58.0 km/h*

Adj. for no-passing zones, f_{np} (*km/h*) (Exhibit 20-11)	*4.8*
Average travel speed, ATS (*km/h*) ATS=FFS-0.00776v_p-f_{np}	*35.5*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1418*
v_p * highest directional split proportion[2] (pc/h)	*993*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*71.2*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*8.2*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*79.4*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.44*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *km*)= 0.25L_t(V/PHF)	*161*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *km*)=V*L_t	*593*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*4.5*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split Vp>= 1,700 pc/h, terminated anlysis-the LOS is F.

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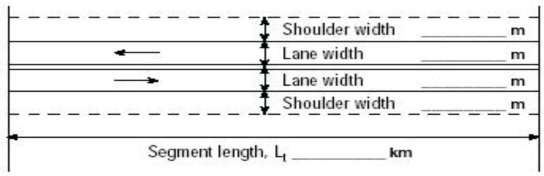
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*MKV*	Highway	*Sixth Line*
Agency or Company	*MHL*	From/To	*NNOC to Hwy 407*
Date Performed	*07/15/12*	Jurisdiction	*Oakville*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2021 Do Nothing*

Project Description: *Sixth Line EA*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*1051* veh/h
Directional split	*70 / 30*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*10* %
% Recreational vehicles, P_R	*4%*
Access points/ *km*	*10*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1257*
v_p * highest directional split proportion[2] (pc/h)	*880*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*km/h*	Base free-flow speed, $BFFS_{FM}$	*70.0 km/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*10.0 km/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*km/h*	Adj. for access points, f_A (Exhibit 20-6)	*2.0 km/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*58.0 km/h*

Adj. for no-passing zones, f_{np} (*km/h*) (Exhibit 20-11)	*4.8*
Average travel speed, ATS (*km/h*) ATS=FFS-0.00776v_p-f_{np}	*37.5*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*2.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.909*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1257*
v_p * highest directional split proportion[2] (pc/h)	*880*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*66.9*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*9.8*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*76.7*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.39*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *km*)= 0.25L_t(V/PHF)	*171*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *km*)=V*L_t	*631*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*4.6*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split Vp>= 1,700 pc/h, terminated anlysis-the LOS is F.

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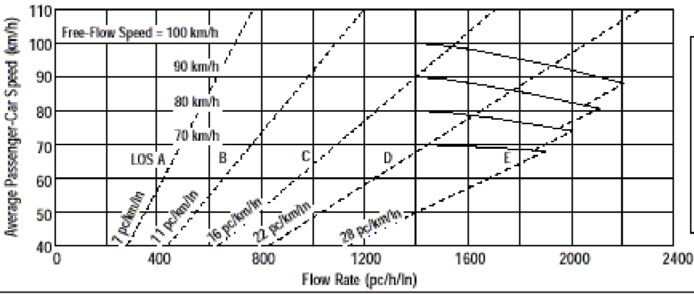
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Dundas to Sixteen Mile
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	928	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	533
Speed, S (km/h)	70.7
D (pc/km/ln)	7.5
LOS	B

Design

Design (N)

Required Number of Lanes, N
Flow Rate, v_p (pc/h)
Max Service Flow Rate (pc/h/ln)
Design LOS

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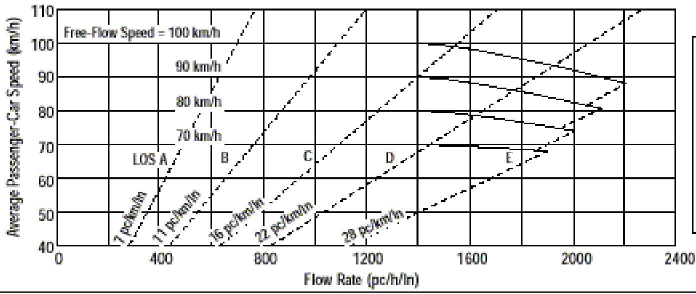
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Dundas to Sixteen Mile
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1080	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	620
Speed, S (km/h)	70.7
D (pc/km/ln)	8.8
LOS	B

Design

Design (N)

Required Number of Lanes, N
Flow Rate, v_p (pc/h)
Max Service Flow Rate (pc/h/ln)
Design LOS

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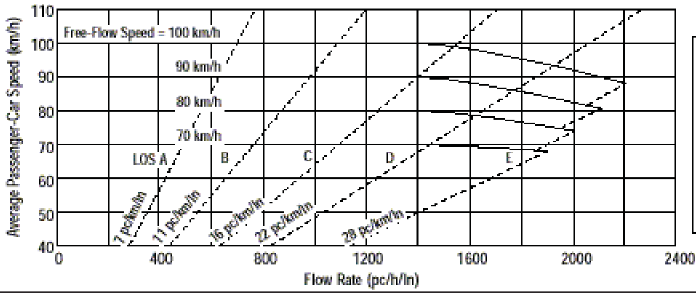
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Sixteen Mile to North Park
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	935	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	537
Speed, S (km/h)	70.7
D (pc/km/ln)	7.6
LOS	B

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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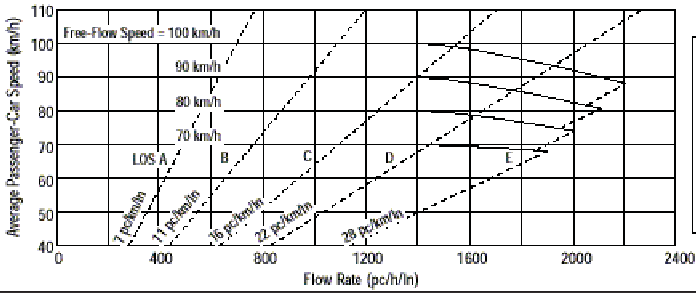
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Sixteen Mile to North Park
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	907	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	521
Speed, S (km/h)	70.7
D (pc/km/ln)	7.4
LOS	B

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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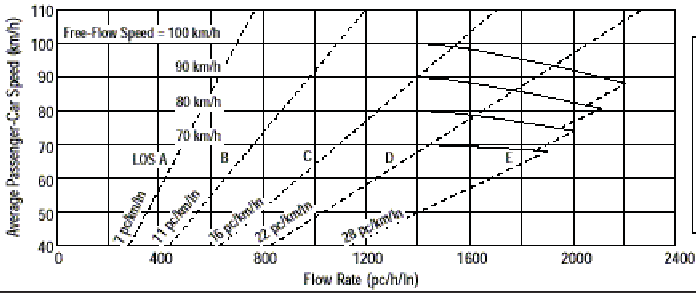
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	North Park to Future St C
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	915	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	526
Speed, S (km/h)	70.7
D (pc/km/ln)	7.4
LOS	B

Design

Design (N)

Required Number of Lanes, N
Flow Rate, v_p (pc/h)
Max Service Flow Rate (pc/h/ln)
Design LOS

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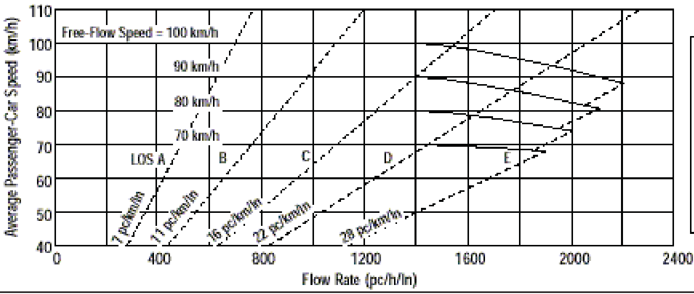
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	North Park to Future St C
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	726	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	417
Speed, S (km/h)	70.7
D (pc/km/ln)	5.9
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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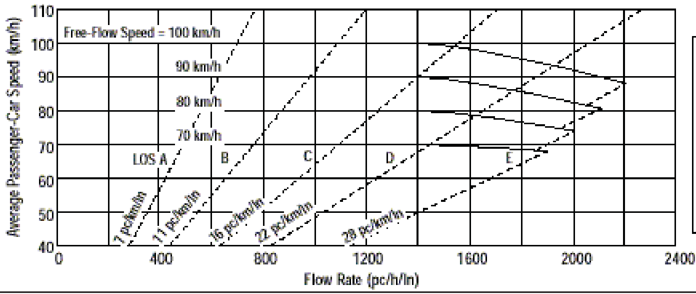
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Future St C to Future St D
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	914	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	525
Speed, S (km/h)	70.7
D (pc/km/ln)	7.4
LOS	B

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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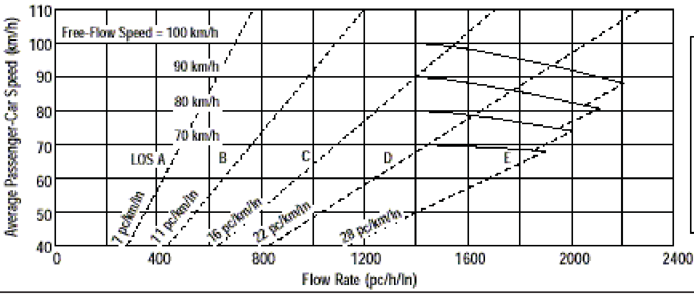
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Future St C to Future St D
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	649	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	373
Speed, S (km/h)	70.7
D (pc/km/ln)	5.3
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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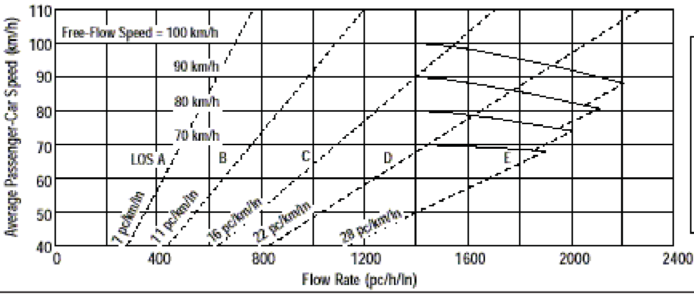
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Future St D to Burnhamthorpe
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	938	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	539
Speed, S (km/h)	70.7
D (pc/km/ln)	7.6
LOS	B

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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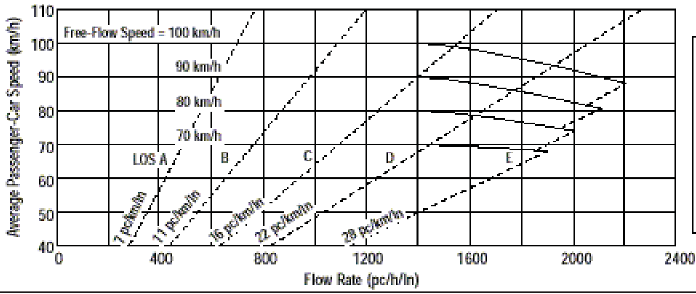
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Future St D to Burnhamthorpe
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	481	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	276
Speed, S (km/h)	70.7
D (pc/km/ln)	3.9
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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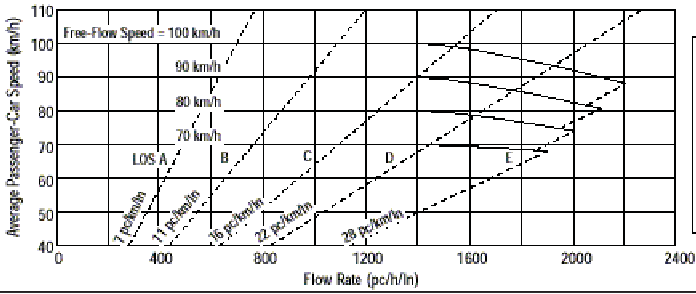
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Burnhamthorpe to NNOC
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	761	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	437
Speed, S (km/h)	70.7
D (pc/km/ln)	6.2
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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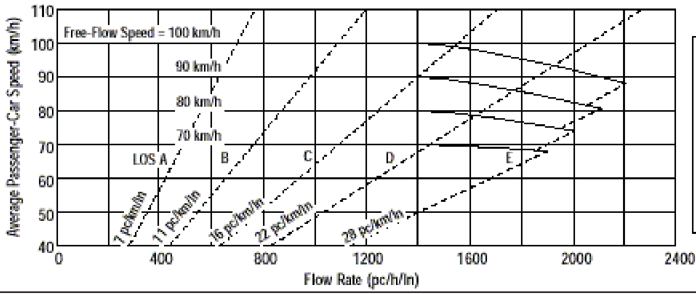
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Burnhamthorpe to NNOC
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	565	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	324
Speed, S (km/h)	70.7
D (pc/km/ln)	4.6
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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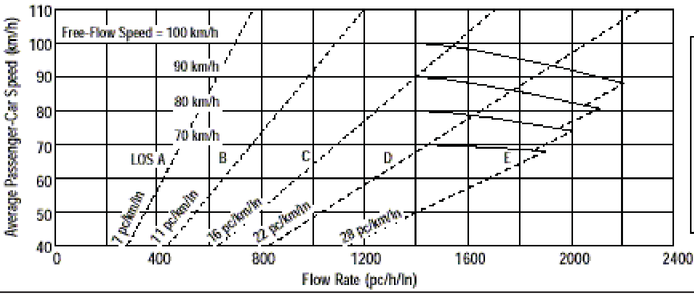
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	NNOC to Hwy 407
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	673	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	386
Speed, S (km/h)	70.7
D (pc/km/ln)	5.5
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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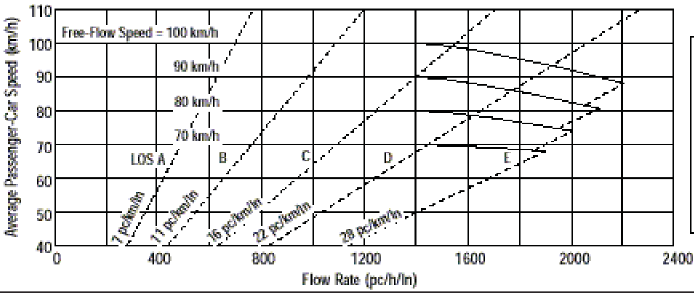
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	NNOC to Hwy 407
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	531	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	305
Speed, S (km/h)	70.7
D (pc/km/ln)	4.3
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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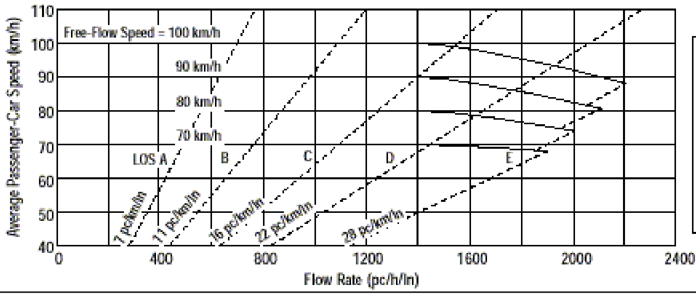
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Dundas to Sixteen Mile
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1189	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	683
Speed, S (km/h)	70.7
D (pc/km/ln)	9.7
LOS	B

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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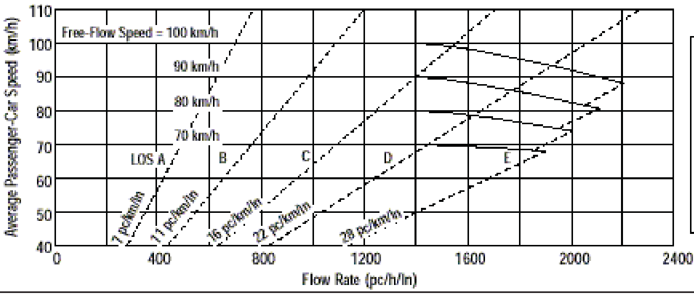
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Dundas to Sixteen Mile
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	997	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	573
Speed, S (km/h)	70.7
D (pc/km/ln)	8.1
LOS	B

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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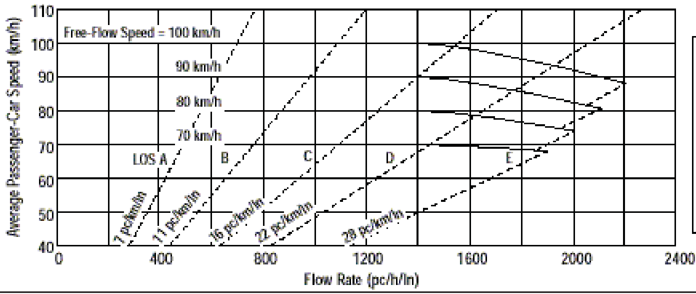
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Sixteen Mile to North Park
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1015	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	583
Speed, S (km/h)	70.7
D (pc/km/ln)	8.2
LOS	B

Design

Design (N)

Required Number of Lanes, N
Flow Rate, v_p (pc/h)
Max Service Flow Rate (pc/h/ln)
Design LOS

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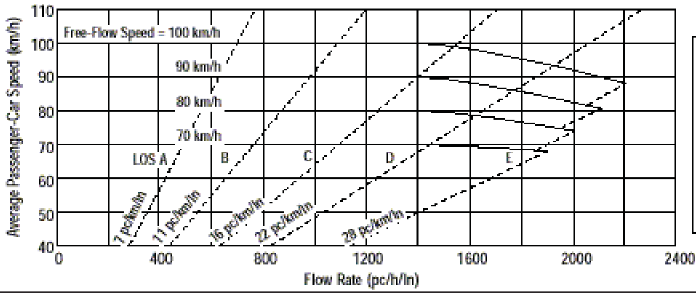
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Sixteen Mile to North Park
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	921	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	529
Speed, S (km/h)	70.7
D (pc/km/ln)	7.5
LOS	B

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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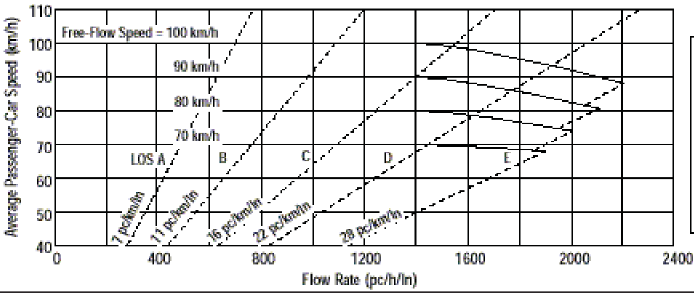
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	North Park to Future St C
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	811	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	466
Speed, S (km/h)	70.7
D (pc/km/ln)	6.6
LOS	A

Design

Design (N)

Required Number of Lanes, N
Flow Rate, v_p (pc/h)
Max Service Flow Rate (pc/h/ln)
Design LOS

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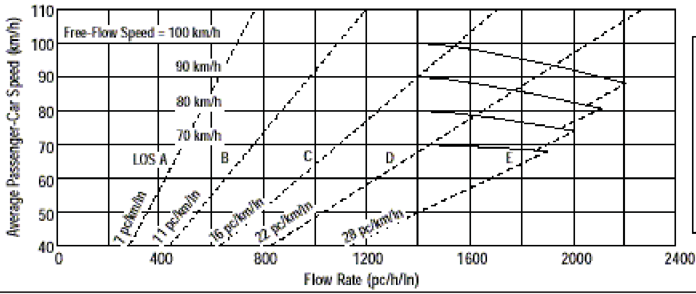
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	North Park to Future St C
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	768	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	441
Speed, S (km/h)	70.7
D (pc/km/ln)	6.2
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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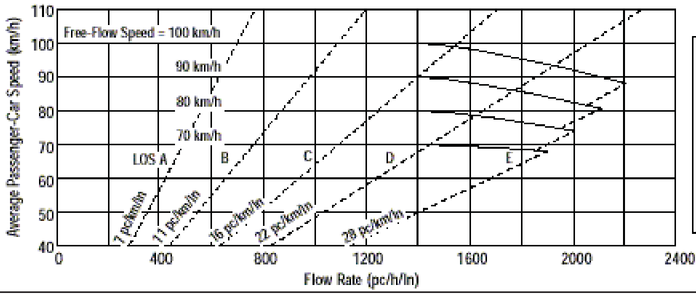
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Future St C to Future St D
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	738	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	424
Speed, S (km/h)	70.7
D (pc/km/ln)	6.0
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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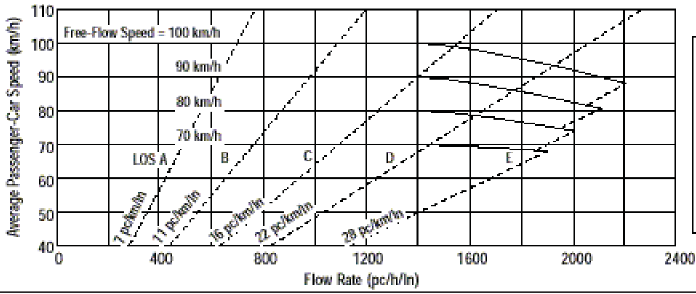
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Future St C to Future St D
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	747	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	429
Speed, S (km/h)	70.7
D (pc/km/ln)	6.1
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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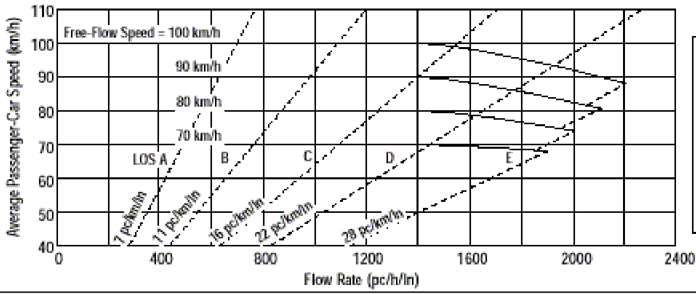
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Future St D to Burnhamthorpe
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	604	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	347
Speed, S (km/h)	70.7
D (pc/km/ln)	4.9
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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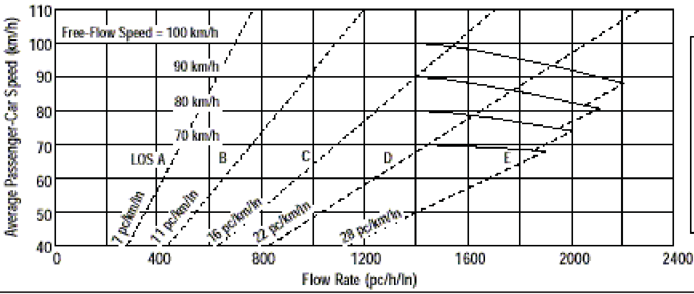
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Future St D to Burnhamthorpe
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	744	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	427
Speed, S (km/h)	70.7
D (pc/km/ln)	6.0
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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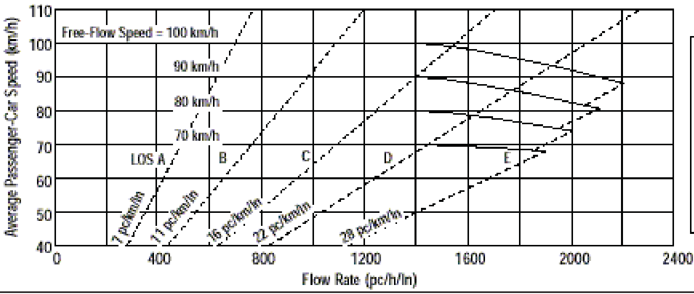
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Burnhamthorpe to NNOC
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	626	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	359
Speed, S (km/h)	70.7
D (pc/km/ln)	5.1
LOS	A

Design

Design (N)

Required Number of Lanes, N
Flow Rate, v_p (pc/h)
Max Service Flow Rate (pc/h/ln)
Design LOS

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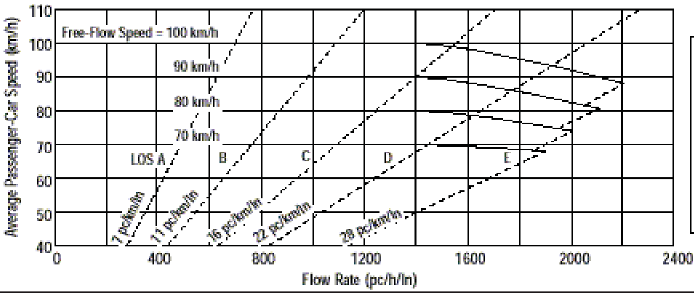
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	Burnhamthorpe to NNOC
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	560	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	321
Speed, S (km/h)	70.7
D (pc/km/ln)	4.5
LOS	A

Design

Design (N)

Required Number of Lanes, N

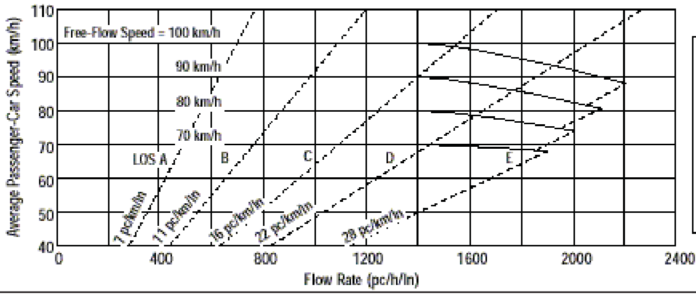
Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

 HCS+™ Version 5.2 Generated: 8/14/12 4:20 PM

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	NNOC to Hwy 407
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	567	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	326
Speed, S (km/h)	70.7
D (pc/km/ln)	4.6
LOS	A

Design

Design (N)

Required Number of Lanes, N

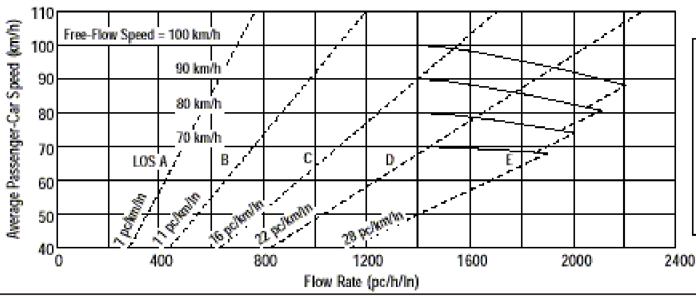
Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

 HCS+™ Version 5.2 Generated: 8/14/12 4:20 PM

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Oper. (LOS)	FFS, N, v_p	LOS, S, D
Des. (N)	FFS, LOS, v_p	N, S, D
Des. (v_p)	FFS, LOS, N	v_p, S, D
Plan. (LOS)	FFS, N, AADT	LOS, S, D
Plan. (N)	FFS, LOS, AADT	N, S, D
Plan. (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKV
Agency or Company	MHL
Date Performed	7/16/12
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Sixth Line
From/To	NNOC to Hwy 407
Jurisdiction	Town of Oakville
Analysis Year	2021

Project Description Sixth Line EA

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	484	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	10
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	4
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (km)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.945

Speed Inputs

Lane Width, LW (m)	3.6
Total Lateral Clearance, LC (m)	3.6
Access Points, A (A/km)	10
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	80.0

Calc Speed Adj and FFS

f_{LW} (km/h)	0.0
f_{LC} (km/h)	0.0
f_A (km/h)	6.7
f_M (km/h)	2.6
FFS (km/h)	70.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	278
Speed, S (km/h)	70.7
D (pc/km/ln)	3.9
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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Appendix F
2021 Intersection Worksheets

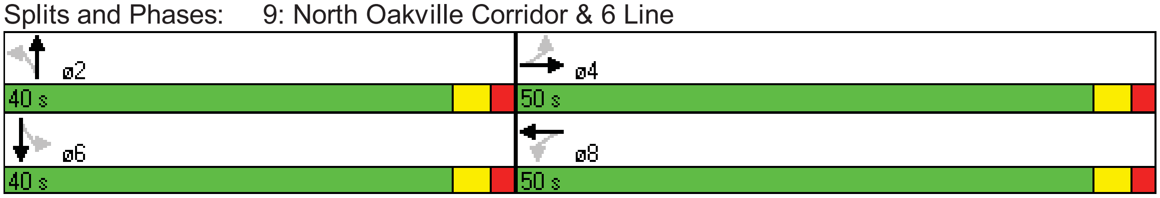
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	75.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.970			0.970			0.956			0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	3471	0	1706	3485	0	1825	3431	0	1789	3328	0
Flt Permitted	0.585			0.164			0.465			0.302		
Satd. Flow (perm)	1091	3471	0	294	3485	0	893	3431	0	569	3328	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50			50			85			41	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		584.6			658.3			612.3			725.4	
Travel Time (s)		26.3			29.6			27.6			32.6	
Volume (vph)	360	863	216	88	212	53	114	457	190	133	319	80
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	2%	2%	7%	2%	0%	0%	2%	1%	2%	6%	8%
Adj. Flow (vph)	367	881	220	90	216	54	116	466	194	136	326	82
Lane Group Flow (vph)	367	1101	0	90	270	0	116	660	0	136	408	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phases	4	4		8	8		2	2		6	6	
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		30.0	30.0		30.0	30.0	
Total Split (s)	50.0	50.0	0.0	50.0	50.0	0.0	40.0	40.0	0.0	40.0	40.0	0.0
Total Split (%)	55.6%	55.6%	0.0%	55.6%	55.6%	0.0%	44.4%	44.4%	0.0%	44.4%	44.4%	0.0%
Maximum Green (s)	45.0	45.0		45.0	45.0		35.0	35.0		35.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	32.3	32.3		32.3	32.3		21.0	21.0		21.0	21.0	
Actuated g/C Ratio	0.52	0.52		0.52	0.52		0.34	0.34		0.34	0.34	
v/c Ratio	0.65	0.60		0.59	0.15		0.39	0.54		0.71	0.36	
Control Delay	19.3	12.6		33.2	7.6		21.6	16.6		41.9	15.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	19.3	12.6		33.2	7.6		21.6	16.6		41.9	15.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	B	B		C	A		C	B		D	B	
Approach Delay		14.2			14.0			17.4			21.9	
Approach LOS		B			B			B			C	
Queue Length 50th (m)	25.1	36.2		5.9	5.6		8.8	24.1		11.8	14.3	
Queue Length 95th (m)	76.6	83.9		#34.5	16.3		27.0	52.0		#40.4	32.6	
Internal Link Dist (m)		560.6			634.3			588.3			701.4	
Turn Bay Length (m)							75.0					
Base Capacity (vph)	673	2159		181	2167		430	1695		274	1623	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.55	0.51		0.50	0.12		0.27	0.39		0.50	0.25	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 62.3
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 16.3 Intersection LOS: B
Intersection Capacity Utilization 87.8% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: North Oakville Corridor & 6 Line

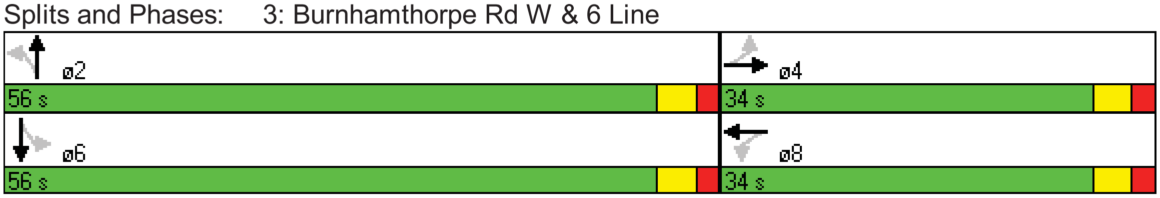


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	75.0		0.0	75.0		0.0	75.0		0.0	75.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.966			0.963			0.938			0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	1819	0	1706	1822	0	1825	3370	0	1789	3374	0
Flt Permitted	0.598			0.402			0.516			0.310		
Satd. Flow (perm)	1115	1819	0	722	1822	0	991	3370	0	584	3374	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			19			320			29	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		567.6			690.8			451.7			612.3	
Travel Time (s)		34.1			41.4			20.3			27.6	
Volume (vph)	130	240	70	91	127	41	35	443	314	189	330	46
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	2%	2%	7%	2%	0%	0%	2%	1%	2%	6%	8%
Adj. Flow (vph)	133	245	71	93	130	42	36	452	320	193	337	47
Lane Group Flow (vph)	133	316	0	93	172	0	36	772	0	193	384	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phases	4	4		8	8		2	2		6	6	
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		31.0	31.0		31.0	31.0	
Total Split (s)	34.0	34.0	0.0	34.0	34.0	0.0	56.0	56.0	0.0	56.0	56.0	0.0
Total Split (%)	37.8%	37.8%	0.0%	37.8%	37.8%	0.0%	62.2%	62.2%	0.0%	62.2%	62.2%	0.0%
Maximum Green (s)	29.0	29.0		29.0	29.0		51.0	51.0		51.0	51.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0		15.0	15.0		15.0	15.0		15.0	15.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	16.0	16.0		16.0	16.0		28.6	28.6		28.6	28.6	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.54	0.54		0.54	0.54	
v/c Ratio	0.40	0.57		0.43	0.31		0.07	0.40		0.62	0.21	
Control Delay	21.3	20.9		24.8	16.3		7.2	4.8		19.8	6.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.3	20.9		24.8	16.3		7.2	4.8		19.8	6.6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	C		C	B		A	A		B	A	
Approach Delay		21.0			19.3			4.9			11.0	
Approach LOS		C			B			A			B	
Queue Length 50th (m)	7.4	17.4		5.2	8.1		1.2	8.6		9.1	6.5	
Queue Length 95th (m)	32.9	65.9		26.3	34.7		6.3	27.0		40.9	19.8	
Internal Link Dist (m)		543.6			666.8			427.7			588.3	
Turn Bay Length (m)	75.0			75.0			75.0			75.0		
Base Capacity (vph)	512	845		332	848		680	2413		401	2324	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.26	0.37		0.28	0.20		0.05	0.32		0.48	0.17	

Intersection Summary	
Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 53.4	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 11.8	Intersection LOS: B
Intersection Capacity Utilization 77.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: Burnhamthorpe Rd W & 6 Line



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	57	8	126	63	6	29	42	853	20	10	453	19
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	58	8	129	64	6	30	43	870	20	10	462	19
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1046	1469	241	1351	1468	445	482			891		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1046	1469	241	1351	1468	445	482			891		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	64	93	83	22	95	95	96			99		
cM capacity (veh/h)	160	120	760	82	120	560	1077			757		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	58	137	64	36	43	580	311	10	308	173
Volume Left	58	0	64	0	43	0	0	10	0	0
Volume Right	0	129	0	30	0	0	20	0	0	19
cSH	160	576	82	344	1077	1700	1700	757	1700	1700
Volume to Capacity	0.36	0.24	0.78	0.10	0.04	0.34	0.18	0.01	0.18	0.10
Queue Length 95th (m)	11.7	7.0	29.7	2.6	0.9	0.0	0.0	0.3	0.0	0.0
Control Delay (s)	39.9	13.2	132.8	16.7	8.5	0.0	0.0	9.8	0.0	0.0
Lane LOS	E	B	F	C	A			A		
Approach Delay (s)	21.2		91.3		0.4			0.2		
Approach LOS	C		F							

Intersection Summary			
Average Delay	8.0		
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	2	20	63	3	29	10	885	20	10	639	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	1	2	20	64	3	30	10	903	20	10	652	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1176	1617	327	1302	1607	462	653			923		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1176	1617	327	1302	1607	462	653			923		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	98	97	42	97	95	99			99		
cM capacity (veh/h)	133	100	669	111	101	547	930			735		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	1	22	64	33	10	602	321	10	435	218
Volume Left	1	0	64	0	10	0	0	10	0	0
Volume Right	0	20	0	30	0	0	20	0	0	1
cSH	133	441	111	387	930	1700	1700	735	1700	1700
Volume to Capacity	0.01	0.05	0.58	0.08	0.01	0.35	0.19	0.01	0.26	0.13
Queue Length 95th (m)	0.2	1.2	21.3	2.1	0.3	0.0	0.0	0.3	0.0	0.0
Control Delay (s)	32.3	13.6	74.9	15.1	8.9	0.0	0.0	10.0	0.0	0.0
Lane LOS	D	B	F	C	A			A		
Approach Delay (s)	14.4		54.8		0.1			0.2		
Approach LOS	B		F							

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	41	8	120	78	7	35	45	859	25	21	866	20
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	42	8	122	80	7	36	46	877	26	21	884	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)								399				
pX, platoon unblocked												
vC, conflicting volume	1506	1931	452	1592	1928	451	904			902		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1506	1931	452	1592	1928	451	904			902		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	37	86	78	0	88	94	94			97		
cM capacity (veh/h)	66	60	555	47	60	556	748			749		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	42	131	80	43	46	584	318	21	589	315
Volume Left	42	0	80	0	46	0	0	21	0	0
Volume Right	0	122	0	36	0	0	26	0	0	20
cSH	66	365	47	234	748	1700	1700	749	1700	1700
Volume to Capacity	0.63	0.36	1.70	0.18	0.06	0.34	0.19	0.03	0.35	0.19
Queue Length 95th (m)	20.7	12.0	59.9	5.0	1.5	0.0	0.0	0.7	0.0	0.0
Control Delay (s)	126.0	20.2	528.7	23.8	10.1	0.0	0.0	9.9	0.0	0.0
Lane LOS	F	C	F	C	B			A		
Approach Delay (s)	45.9		352.0		0.5			0.2		
Approach LOS	E		F							

Intersection Summary			
Average Delay	23.8		
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	42	8	120	78	7	35	45	865	25	21	684	21
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	43	8	122	80	7	36	46	883	26	21	698	21
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1324	1752	360	1506	1749	454	719			908		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1324	1752	360	1506	1749	454	719			908		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	54	90	81	0	91	94	95			97		
cM capacity (veh/h)	93	78	637	58	78	553	878			745		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	43	131	80	43	46	588	320	21	465	254
Volume Left	43	0	80	0	46	0	0	21	0	0
Volume Right	0	122	0	36	0	0	26	0	0	21
cSH	93	440	58	275	878	1700	1700	745	1700	1700
Volume to Capacity	0.46	0.30	1.37	0.16	0.05	0.35	0.19	0.03	0.27	0.15
Queue Length 95th (m)	14.8	9.3	52.9	4.1	1.3	0.0	0.0	0.7	0.0	0.0
Control Delay (s)	73.0	16.6	360.5	20.5	9.3	0.0	0.0	10.0	0.0	0.0
Lane LOS	F	C	F	C	A			A		
Approach Delay (s)	30.5		241.5		0.4			0.3		
Approach LOS	D		F							

Intersection Summary			
Average Delay	17.8		
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		

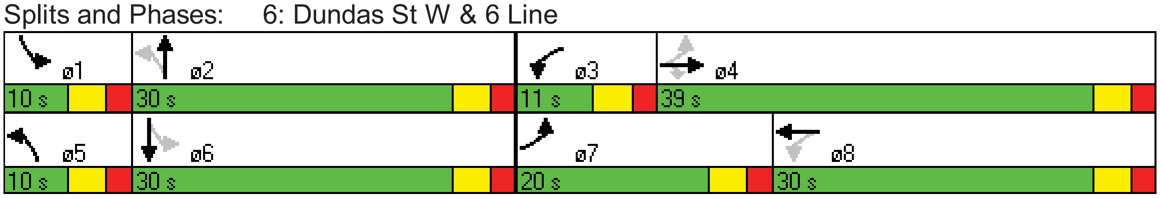
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	130.0		115.0	155.0		0.0	125.0		0.0	75.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.941			0.944			0.933	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	3476	1601	1674	3138	0	1674	3424	0	1722	3368	0
Flt Permitted	0.427			0.154			0.154			0.316		
Satd. Flow (perm)	796	3476	1601	271	3138	0	271	3424	0	573	3368	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			150		130			137			228	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		533.1			698.8			321.3			398.8	
Travel Time (s)		24.0			31.4			19.3			23.9	
Volume (vph)	473	1065	147	150	196	127	121	328	196	180	498	402
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	5%	2%	9%	13%	4%	9%	1%	0%	6%	2%	0%
Adj. Flow (vph)	483	1087	150	153	200	130	123	335	200	184	508	410
Lane Group Flow (vph)	483	1087	150	153	330	0	123	535	0	184	918	0
Turn Type	pm+pt		Perm	pm+pt			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phases	7	4	4	3	8		5	2		1	6	
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	10.0	30.0	30.0	10.0	30.0		10.0	30.0		10.0	30.0	
Total Split (s)	20.0	39.0	39.0	11.0	30.0	0.0	10.0	30.0	0.0	10.0	30.0	0.0
Total Split (%)	22.2%	43.3%	43.3%	12.2%	33.3%	0.0%	11.1%	33.3%	0.0%	11.1%	33.3%	0.0%
Maximum Green (s)	15.0	34.0	34.0	6.0	25.0		5.0	25.0		5.0	25.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		15.0	15.0		15.0			15.0			15.0	
Flash Dont Walk (s)		10.0	10.0		10.0			10.0			10.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	44.1	33.0	33.0	31.4	24.3		28.2	22.1		29.1	24.5	
Actuated g/C Ratio	0.52	0.39	0.39	0.37	0.29		0.33	0.26		0.34	0.29	
v/c Ratio	0.81	0.80	0.21	0.70	0.33		0.66	0.54		0.66	0.81	
Control Delay	27.3	28.8	4.1	35.5	15.7		37.0	21.5		32.4	27.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.3	28.8	4.1	35.5	15.7		37.0	21.5		32.4	27.7	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	C	A	D	B		D	C		C	C	
Approach Delay		26.2			21.9			24.4			28.5	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	53.4	86.1	0.0	13.5	13.7		13.4	29.3		20.9	59.1	
Queue Length 95th (m)	#96.2	111.3	10.9	#38.8	24.5		#28.4	44.2		#38.4	82.5	
Internal Link Dist (m)		509.1			674.8			297.3			374.8	
Turn Bay Length (m)	130.0		115.0	155.0			125.0			75.0		
Base Capacity (vph)	600	1414	740	218	1043		186	1110		280	1184	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.81	0.77	0.20	0.70	0.32		0.66	0.48		0.66	0.78	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 84.4
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 26.0 Intersection LOS: C
Intersection Capacity Utilization 89.6% ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dundas St W & 6 Line



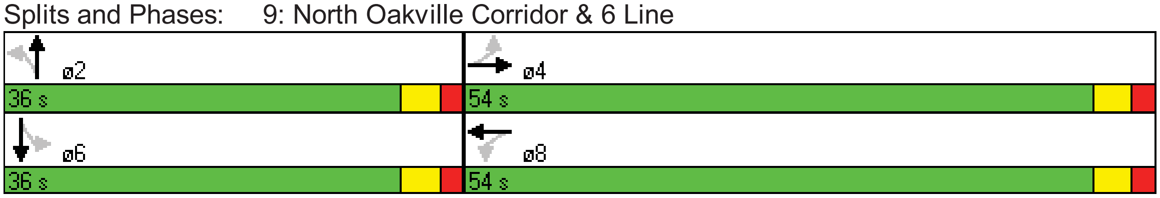
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	75.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.970			0.970			0.956			0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	3471	0	1706	3485	0	1825	3431	0	1789	3328	0
Flt Permitted	0.353			0.356			0.481			0.353		
Satd. Flow (perm)	658	3471	0	639	3485	0	924	3431	0	665	3328	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		55			56			78			38	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		584.6			658.3			612.3			725.4	
Travel Time (s)		26.3			29.6			27.6			32.6	
Volume (vph)	216	518	129	218	522	131	94	375	156	121	290	73
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	2%	2%	7%	2%	0%	0%	2%	1%	2%	6%	8%
Adj. Flow (vph)	220	529	132	222	533	134	96	383	159	123	296	74
Lane Group Flow (vph)	220	661	0	222	667	0	96	542	0	123	370	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phases	4	4		8	8		2	2		6	6	
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		30.0	30.0		30.0	30.0	
Total Split (s)	54.0	54.0	0.0	54.0	54.0	0.0	36.0	36.0	0.0	36.0	36.0	0.0
Total Split (%)	60.0%	60.0%	0.0%	60.0%	60.0%	0.0%	40.0%	40.0%	0.0%	40.0%	40.0%	0.0%
Maximum Green (s)	49.0	49.0		49.0	49.0		31.0	31.0		31.0	31.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	15.0	15.0		15.0	15.0		15.0	15.0		15.0	15.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	29.8	29.8		29.8	29.8		17.6	17.6		17.6	17.6	
Actuated g/C Ratio	0.53	0.53		0.53	0.53		0.31	0.31		0.31	0.31	
v/c Ratio	0.63	0.35		0.66	0.36		0.33	0.48		0.59	0.35	
Control Delay	20.6	8.0		22.2	8.0		20.6	15.5		31.8	15.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	20.6	8.0		22.2	8.0		20.6	15.5		31.8	15.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	A		C	A		C	B		C	B	
Approach Delay		11.2			11.5			16.3			19.3	
Approach LOS		B			B			B			B	
Queue Length 50th (m)	11.3	13.2		11.7	13.4		5.5	14.4		7.7	9.8	
Queue Length 95th (m)	49.6	38.3		51.9	38.6		24.2	45.0		34.7	32.1	
Internal Link Dist (m)		560.6			634.3			588.3			701.4	
Turn Bay Length (m)							75.0					
Base Capacity (vph)	437	2322		424	2332		433	1647		311	1578	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.50	0.28		0.52	0.29		0.22	0.33		0.40	0.23	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 56.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 13.8 Intersection LOS: B
Intersection Capacity Utilization 72.3% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 9: North Oakville Corridor & 6 Line

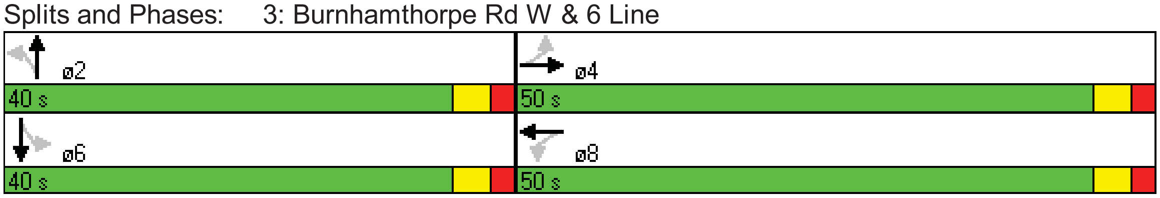


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	75.0		0.0	75.0		0.0	75.0		0.0	75.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.940			0.964			0.960			0.981	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	1770	0	1706	1824	0	1825	3444	0	1789	3370	0
Flt Permitted	0.359			0.606			0.390			0.439		
Satd. Flow (perm)	670	1770	0	1088	1824	0	749	3444	0	827	3370	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		54			26			68			22	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		567.6			690.8			451.7			612.3	
Travel Time (s)		34.1			41.4			20.3			27.6	
Volume (vph)	80	122	80	244	361	113	63	319	116	54	440	66
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	2%	2%	7%	2%	0%	0%	2%	1%	2%	6%	8%
Adj. Flow (vph)	82	124	82	249	368	115	64	326	118	55	449	67
Lane Group Flow (vph)	82	206	0	249	483	0	64	444	0	55	516	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phases	4	4		8	8		2	2		6	6	
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		30.0	30.0		30.0	30.0	
Total Split (s)	50.0	50.0	0.0	50.0	50.0	0.0	40.0	40.0	0.0	40.0	40.0	0.0
Total Split (%)	55.6%	55.6%	0.0%	55.6%	55.6%	0.0%	44.4%	44.4%	0.0%	44.4%	44.4%	0.0%
Maximum Green (s)	45.0	45.0		45.0	45.0		35.0	35.0		35.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0		15.0	15.0		15.0	15.0		15.0	15.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	19.5	19.5		19.5	19.5		21.4	21.4		21.4	21.4	
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.44	0.44		0.44	0.44	
v/c Ratio	0.31	0.28		0.58	0.65		0.20	0.29		0.15	0.35	
Control Delay	12.7	7.8		16.8	15.4		13.3	9.5		12.6	11.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	12.7	7.8		16.8	15.4		13.3	9.5		12.6	11.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	B	A		B	B		B	A		B	B	
Approach Delay		9.2			15.8			10.0			11.3	
Approach LOS		A			B			B			B	
Queue Length 50th (m)	4.6	8.1		15.7	29.8		3.2	10.1		2.7	13.8	
Queue Length 95th (m)	11.7	17.4		31.5	51.3		12.8	24.7		11.0	31.9	
Internal Link Dist (m)		543.6			666.8			427.7			588.3	
Turn Bay Length (m)	75.0			75.0			75.0			75.0		
Base Capacity (vph)	411	1106		667	1129		426	1988		470	1926	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.20	0.19		0.37	0.43		0.15	0.22		0.12	0.27	

Intersection Summary	
Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 49	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 12.3	Intersection LOS: B
Intersection Capacity Utilization 80.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: Burnhamthorpe Rd W & 6 Line



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	47	8	75	42	9	19	129	538	72	32	631	82
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	48	8	77	43	9	19	132	549	73	33	644	84
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1313	1637	364	1317	1642	311	728			622		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1313	1637	364	1317	1642	311	728			622		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	46	90	88	47	89	97	85			97		
cM capacity (veh/h)	89	82	633	81	81	685	872			954		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	48	85	43	29	132	366	256	33	429	298
Volume Left	48	0	43	0	132	0	0	33	0	0
Volume Right	0	77	0	19	0	0	73	0	0	84
cSH	89	384	81	202	872	1700	1700	954	1700	1700
Volume to Capacity	0.54	0.22	0.53	0.14	0.15	0.22	0.15	0.03	0.25	0.18
Queue Length 95th (m)	18.2	6.3	17.4	3.7	4.0	0.0	0.0	0.8	0.0	0.0
Control Delay (s)	85.0	17.0	91.4	25.7	9.9	0.0	0.0	8.9	0.0	0.0
Lane LOS	F	C	F	D	A			A		
Approach Delay (s)	41.6		65.1		1.7			0.4		
Approach LOS	E		F							

Intersection Summary			
Average Delay	6.8		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	4	12	42	3	19	20	719	72	33	715	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	1	4	12	43	3	19	20	734	73	34	730	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1226	1645	365	1258	1609	404	731			807		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1226	1645	365	1258	1609	404	731			807		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	96	98	63	97	97	98			96		
cM capacity (veh/h)	121	92	632	115	97	596	869			814		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	1	16	43	22	20	489	318	34	486	244
Volume Left	1	0	43	0	20	0	0	34	0	0
Volume Right	0	12	0	19	0	0	73	0	0	1
cSH	121	256	115	351	869	1700	1700	814	1700	1700
Volume to Capacity	0.01	0.06	0.37	0.06	0.02	0.29	0.19	0.04	0.29	0.14
Queue Length 95th (m)	0.2	1.5	11.6	1.6	0.5	0.0	0.0	1.0	0.0	0.0
Control Delay (s)	35.0	20.0	53.8	16.0	9.2	0.0	0.0	9.6	0.0	0.0
Lane LOS	E	C	F	C	A			A		
Approach Delay (s)	20.9		40.8		0.2			0.4		
Approach LOS	C		E							

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	38	9	85	50	10	23	115	995	120	7	863	52
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	39	9	87	51	10	23	117	1015	122	7	881	53
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)								399				
pX, platoon unblocked	0.94	0.94		0.94	0.94	0.94				0.94		
vC, conflicting volume	1692	2294	467	1857	2259	569	934			1138		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1674	2311	467	1849	2274	484	934			1087		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	69	84	0	67	95	84			99		
cM capacity (veh/h)	37	29	543	24	31	499	729			602		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	39	96	51	34	117	677	461	7	587	347
Volume Left	39	0	51	0	117	0	0	7	0	0
Volume Right	0	87	0	23	0	0	122	0	0	53
cSH	37	203	24	90	729	1700	1700	602	1700	1700
Volume to Capacity	1.06	0.47	2.10	0.38	0.16	0.40	0.27	0.01	0.35	0.20
Queue Length 95th (m)	30.0	17.4	48.3	11.3	4.3	0.0	0.0	0.3	0.0	0.0
Control Delay (s)	333.2	37.7	852.0	67.6	10.9	0.0	0.0	11.1	0.0	0.0
Lane LOS	F	E	F	F	B			B		
Approach Delay (s)	122.7		540.1		1.0			0.1		
Approach LOS	F		F							

Intersection Summary			
Average Delay	26.3		
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	36	9	84	50	10	23	114	782	120	7	710	52
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	37	9	86	51	10	23	116	798	122	7	724	53
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1426	1918	389	1559	1884	460	778			920		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1426	1918	389	1559	1884	460	778			920		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	48	84	86	0	83	96	86			99		
cM capacity (veh/h)	71	57	610	51	60	548	835			737		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	37	95	51	34	116	532	388	7	483	295
Volume Left	37	0	51	0	116	0	0	7	0	0
Volume Right	0	86	0	23	0	0	122	0	0	53
cSH	71	314	51	158	835	1700	1700	737	1700	1700
Volume to Capacity	0.52	0.30	1.00	0.21	0.14	0.31	0.23	0.01	0.28	0.17
Queue Length 95th (m)	16.3	9.4	33.3	5.9	3.7	0.0	0.0	0.2	0.0	0.0
Control Delay (s)	101.1	21.4	254.0	34.0	10.0	0.0	0.0	9.9	0.0	0.0
Lane LOS	F	C	F	D	B			A		
Approach Delay (s)	43.6		166.5		1.1			0.1		
Approach LOS	E		F							

Intersection Summary			
Average Delay	10.3		
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	130.0		115.0	155.0		0.0	125.0		0.0	75.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.953			0.958			0.928	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	3476	1601	1674	3157	0	1674	3472	0	1722	3353	0
Flt Permitted	0.125			0.501			0.148			0.234		
Satd. Flow (perm)	233	3476	1601	883	3157	0	261	3472	0	424	3353	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			124		74			55			227	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		533.1			698.8			321.3			398.8	
Travel Time (s)		24.0			31.4			19.3			23.9	
Volume (vph)	468	422	122	271	613	280	151	442	171	135	446	416
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	5%	2%	9%	13%	4%	9%	1%	0%	6%	2%	0%
Adj. Flow (vph)	478	431	124	277	626	286	154	451	174	138	455	424
Lane Group Flow (vph)	478	431	124	277	912	0	154	625	0	138	879	0
Turn Type	pm+pt		Perm	pm+pt			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phases	7	4	4	3	8		5	2		1	6	
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	10.0	30.0	30.0	10.0	32.0		10.0	30.0		10.0	30.0	
Total Split (s)	27.0	39.0	39.0	20.0	32.0	0.0	11.0	31.0	0.0	10.0	30.0	0.0
Total Split (%)	27.0%	39.0%	39.0%	20.0%	32.0%	0.0%	11.0%	31.0%	0.0%	10.0%	30.0%	0.0%
Maximum Green (s)	22.0	34.0	34.0	15.0	27.0		6.0	26.0		5.0	25.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		15.0	15.0		15.0			15.0			15.0	
Flash Dont Walk (s)		10.0	10.0		10.0			10.0			10.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	55.0	36.9	36.9	42.2	28.0		32.8	25.8		30.8	24.8	
Actuated g/C Ratio	0.56	0.37	0.37	0.43	0.28		0.33	0.26		0.31	0.25	
v/c Ratio	0.98	0.33	0.18	0.57	0.96		0.82	0.66		0.65	0.87	
Control Delay	64.0	23.8	4.9	18.0	54.6		58.2	33.4		39.2	36.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	64.0	23.8	4.9	18.0	54.6		58.2	33.4		39.2	36.6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	C	A	B	D		E	C		D	D	
Approach Delay		40.2			46.0			38.3			37.0	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	76.6	32.0	0.0	27.3	85.7		20.4	51.3		18.0	64.7	
Queue Length 95th (m)	#141.2	44.8	11.5	42.9	#127.1		#47.4	69.7		#35.2	#91.6	
Internal Link Dist (m)		509.1			674.8			297.3			374.8	
Turn Bay Length (m)	130.0		115.0	155.0			125.0			75.0		
Base Capacity (vph)	488	1298	676	512	948		187	978		211	1040	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.98	0.33	0.18	0.54	0.96		0.82	0.64		0.65	0.85	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 98.8
Natural Cycle: 95
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 40.7 Intersection LOS: D
Intersection Capacity Utilization 99.2% ICU Level of Service F
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dundas St W & 6 Line