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Ontario
MINISTRY OF
TRANSPORTATION

Design and Construction Report

New Highway 5 and Highway 6 Interchange and Associated Municipal Roads

G.W.P. 2112-05-00

December 2025

DESIGN AND CONSTRUCTION REPORT

HIGHWAY 5 AND HIGHWAY 6 INTERCHANGE AND ASSOCIATED MUNICIPAL ROADS

DETAIL DESIGN AND CLASS ENVIRONMENTAL ASSESSMENT STUDY
G.W.P. 2112-05-00

Prepared by:

S Kang

Sowel Kang
Consultant Senior Environmental Planner
LGL Limited

Richard Morales, P. Eng.
Consultant Project Manager
Arcadis

Reviewed by:

Margaret Dale for

Chris Barber
Senior Environmental Planner
Ministry of Transportation

Trish English, P. Eng.
Senior Project Engineer
Ministry of Transportation

Approved by:

Linda Fischer
Head, Environmental Delivery
Ministry of Transportation

Rina Kulathinal

Rina Kulathinal, P. Eng.
Manager, Engineering Program Delivery
Ministry of Transportation

PUBLIC RECORD

This Design and Construction Report (DCR) has been prepared under the Ministry of Transportation's *Class Environmental Assessment (EA) for Provincial Transportation Facilities* (2000) for a Group 'B' project, in compliance with the requirements of the Ontario *Environmental Assessment Act*. This DCR presents a summary of the Detail Design study and environmental assessment process undertaken for this project, existing conditions, and the mitigation measures developed to address environmental concerns.

The Ministry of Transportation (MTO) completed a Preliminary Design Study and environmental assessment process including the completion of a Transportation Environmental Study Report (TESR) in April 2003 and obtained the appropriate environmental approvals at that time. The TESR identified the need for a new interchange to replace the existing at-grade intersection of Highway 5 and Highway 6, to accommodate future traffic demands. A TESR Addendum was completed in December 2013 to document updates to the Preliminary Design including associated municipal roads.

This DCR is available for a 35-day comment period from December 18, 2025 to January 23, 2026 on the project website at: https://hwy5andhwy6interchange.ca/documents/.

Interested persons are encouraged to review the DCR and provide comments to the following Project Team members by January 23, 2026:

Richard Morales
Consultant Project Manager
Arcadis
100 – 175 Galaxy Blvd.
Toronto, ON M9W 0C9
tel: 416-679-1930
e-mail:
info@hwy5andhwy6interchange.ca

Trish English
Senior Project Engineer
Ministry of Transportation
Project Delivery Office
159 Sir William Hearst Avenue, 4th Floor
Toronto, ON M3M 0B7
tel: 365-889-3948
e-mail: info@hwy5andhwy6interchange.ca

In addition, a request may be made to the Ministry of the Environment, Conservation and Parks for an order requiring a higher level of study (i.e., requiring a comprehensive EA approval before being able to proceed), or that conditions be imposed (e.g., require further studies), only on the grounds that the requested order may prevent, mitigate or remedy adverse impacts on constitutionally protected Aboriginal and treaty rights. Requests on other grounds will not be considered. Requests should include the requester contact information and full name for the Ministry.

Requests should specify what kind of order is being requested (request for additional conditions or a request for a comprehensive environmental assessment), how an order may prevent, mitigate, or remedy those potential adverse impacts, and any information in support of the statements in this request. This will ensure that the Ministry is able to efficiently review the request. The request should be sent in writing or by email to the Ministry of Transportation Project Manager listed above and to:

Minister of the Environment, Conservation and Parks
Ministry of the Environment, Conservation and Parks
777 Bay Street, 5th Floor
Toronto, ON M7A 2J3
email: minister.mecp@ontario.ca

and

Director, Environmental Assessment Branch
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, ON M4V 1P5
email: EABDirector@ontario.ca

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.

If you have any accessibility requirements in order to participate in this project, please contact one of the Project Team members listed above.

Cette publication hautement spécialisée Design and Construction Report, Highway 5 and Highway 6 Interchange and Associated Municipal Roads – Detail Design and Class Environmental Assessment Study n'est disponible qu'en anglais conformément au Règlement 671/92, selon lequel il n'est pas obligatoire de la traduire en vertu de la Loi sur les services en français. Pour obtenir des renseignements en français, veuillez communiquer avec Nathalie Dube au ministère des Transports au 613-544-2200 x4049 ou par courriel à nathalie.dube@ontario.ca.

Executive Summary

The Ontario Ministry of Transportation (MTO) has completed the Detail Design for the Highway 5 (Dundas Street) and Highway 6 Interchange and Associated Municipal Roads Project located in the Cities of Hamilton and Burlington. The project extends along Highway 6 from 4th Concession West southwards to Highway 6 and Highway 403 Interchange, and along Highway 5/Dundas Street from west of Highway 6 (Coreslab Drive) to east of Highway 6 (Clappison Avenue).

This Design and Construction Report (DCR) has been prepared in accordance with the requirements of a Group 'B' project under the MTO *Class Environmental Assessment for Provincial Transportation Facilities* (amended 2000). It documents the finalized design, environmental assessment, consultation and construction approach for the project.

The project involves replacing the existing at-grade intersection of Highway 5 and Highway 6 with a new Parclo A-4 interchange to improve safety, traffic operations and connectivity along this critical provincial corridor. Major proposed works include construction of a new underpass bridge carrying Highway 5 over Highway 6, widening of both highways within the project limits, median division with a tall wall on Highway 6 and cross fall revisions for improved drainage. Additional works comprise modifications to Borer's Creek culverts, stormwater management improvements, installation of full illumination and new traffic signals, and provisions for future widening of Highway 6 to six lanes and three eastbound lanes on Highway 5.

Utility relocations will be carried out in advance of the interchange and municipal road construction to minimize disruption and ensure coordination among stakeholders. This project includes installation of underground ducts for Alectra, and relocation of municipal water and sanitary infrastructure, along with construction and re-construction of new and existing municipal roads in the vicinity of the new interchange. The relocation of Alectra, Bell, Rogers, Cogeco and Enbridge assets are in advance of this contract.

Active transportation features will be provided through Multi-Use Paths (MUPs) on both sides of Highway 5 and Dundas Street East between Clappison Avenue and Innovation Drive, and on-road bicycle lanes between Innovation Drive and Coreslab Drive. A commuter parking lot will be constructed in the northeast quadrant of the interchange to support regional travel demand.

Controlled access designation on Highway 6 will be extended from the south project limits to north of the new interchange. Existing accesses within the limits of the ramp speed change lanes south of the interchange will be closed, while the section north of the interchange to Parkside Drive will remain special controlled access, with right-in or right-out movements only.

Throughout the Detail Design process, consultation was undertaken with agencies, Indigenous communities, municipalities and the public to inform design decisions and address feedback. Environmental impacts were assessed, and mitigation measures have been developed in accordance with the MTO Class EA process.

The Project will significantly improve traffic safety, operational efficiency, and accessibility while accommodating future growth in the Cities of Hamilton and Burlington. This DCR

presents the final design, environmental considerations, and implementation approach for the project in fulfillment of the Class EA requirements.

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1. SUMMARY DESCRIPTION OF THE UNDERTAKING

1.1. Introduction to the Project & Purpose of this Report

The Ontario Ministry of Transportation (MTO) has completed the Detail Design for the future Highway 5 and Highway 6 Interchange and Associated Municipal Roads in the Cities of Hamilton and Burlington **(Figure 1)**. The project location is along Highway 6 from 4th Concession West southwards to the Highway 6 and Highway 403 interchange, and along Highway 5/Dundas Street from west of Highway 6 (Coreslab Drive) to east of Highway 6 (Clappison Avenue).

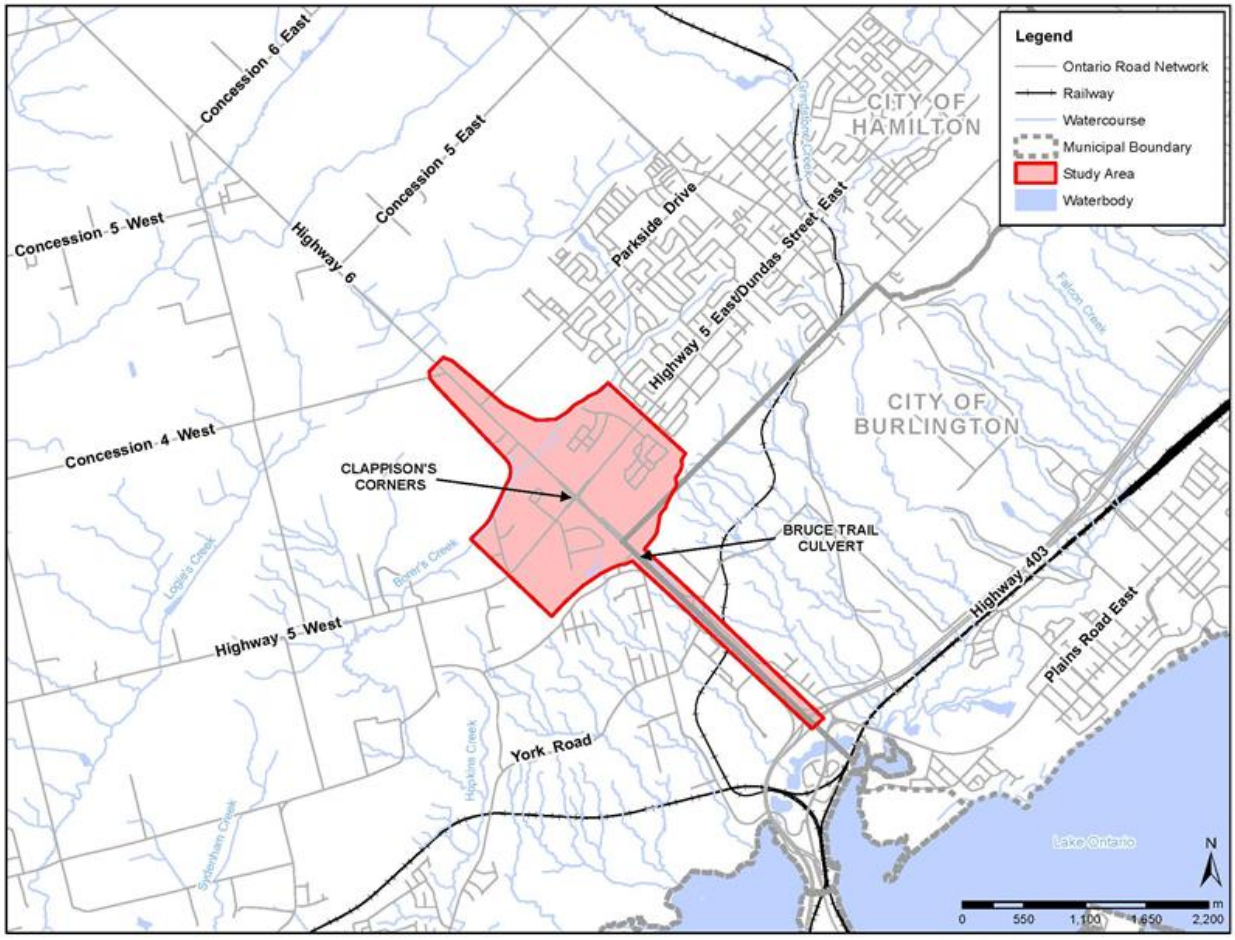

Figure 1. Project Area

The purpose of detail design is to develop the preliminary design identified in the 2013 Transportation Environmental Study Report (TESR) Addendum to the design implementation level of detail and prepare construction documentation. Environmental permits and approvals are secured during detail design and environmental mitigation is incorporated into the project. The detail design study is documented in this Design and Construction Report (DCR).

The purpose of this DCR is to document detail design and provide contract-specific design and construction information. The DCR includes a description of the project and

commitments for environmental protection and monitoring at a greater level of detail than available during preparation of the TESR.

This DCR provides the following information:

- Summary of consultation with external agencies, the public, and Indigenous Communities during detail design;
- Environmental issues and commitments;
- Details on how commitments to future work have been addressed during detail design and how they will be addressed during construction; and,
- Monitoring during construction.

1.2. General Description of the Undertaking

The proposed works at the existing Highway 5 and Highway 6 intersection include the following:

- New parclo A-4 interchange at the Highway 5 and Highway 6 intersection;
- A new underpass bridge structure providing a grade separated crossing of Highway 5 over Highway 6;
- Borer's Creek culvert extension at Highway 6 and retaining walls;
- Widening of Highway 5 and Highway 6 within the project limits;
- Provisions for future additional southbound lane on Highway 6;
- Relocation of sanitary sewer and watermain, as required within the project limits;
- Construction of Municipal roads in the vicinity of the proposed new Highway 5 and Highway 6 Interchange;
- Installation of full illumination within the project limits;
- Installation of traffic signals at ramp terminal intersections and municipal intersections;
- Drainage improvements and storm water management ponds;
- Commuter parking lot in the northeast quadrant of the interchange;
- Multi-Use-Paths (MUPs) on both sides of Dundas Street East and Highway 5 between Clappison Avenue and Innovation Drive;
- Bicycle lanes on Highway 5 between Innovation Drive and Coreslab Drive; and
- Pavement rehabilitation of Highway 6 from Bruce Trail Culvert southwards to the north limit of Highway 403/Highway 6 interchange, including Highway 6/York Road interchange.

The new underpass structure and ramp alignments have been designed with provision for future widening of Highway 6 to six lanes. The structure also includes provision for three eastbound lanes on Highway 5.

Controlled access designation on Highway 6 will be extended from the south project limits to north of the interchange. Existing access located within the limits of the speed change lanes on the south of interchange will be closed.

Highway 6 will remain special controlled access from the north end of the ramp speed change lanes to north of Parkside Drive, with existing access to or from Highway 6 via right-in or right-out only movements.

Utility relocations to be completed in advance of construction of the interchange and associated municipal roads.

2. ENVIRONMENTAL ASSESSMENT PROCESS

2.1. Ontario Environmental Assessment Act

The Ontario *Environmental Assessment Act* (EAA) governs the conduct of Planning, Preliminary Design and Detail Design studies in the province of Ontario. The Ministry of Transportation's *Class Environmental Assessment for Provincial Transportation Facilities* (MTO Class EA) was approved under the EAA in 1999 and amended in 2000. The MTO Class EA defines projects and activities in groups and the environmental assessment process to be followed for each group. Provided the environmental assessment process is followed, projects and activities included under the MTO Class EA do not require formal review or approval under the EAA. There is an opportunity at any time during the MTO Class EA process for interested persons to provide comments and review issues.

This project is being completed in accordance with the MTO Class EA process for Group 'B' projects. Group 'B' projects include major improvements to existing transportation facilities. The Class EA process for Group "B" projects is presented in **Figure 2.**

The DCR is prepared in compliance with the requirements of the MTO Class EA, which has been accepted and approved under the Ontario EAA. The DCR documents the environmentally significant aspects of detail design for projects that fall within the definition of Group "B" projects in the MTO Class EA.

2.2. MTO Class Environmental Assessment Group 'B' Requirements

Arcadis and LGL, on behalf of the MTO, have completed a Detail Design and DCR for the future Highway 5 and Highway 6 Interchange and Associated Municipal Roads in the Cities of Hamilton and Burlington. This DCR documents the results of the study conducted in accordance with the requirements of a Group 'B' project under the MTO Class EA.

2.2.1. Preliminary Design - Transportation Environmental Study Report (2003)

In April 2003, MTO completed a Preliminary Design and Environmental Assessment Study that was documented in a TESR for improvements to Highway 6, from south of Highway 5 to 5th Concession East, in the City of Hamilton. The TESR identified the need for a new interchange to replace the existing at-grade intersection of Highway 5 and Highway 6 to accommodate future traffic demands. It was classified as a Group 'B' project because it involves a major improvement to an existing transportation facility, namely the Highway 5 and Highway 6 intersection.

CLASS ENVIRONMENTAL ASSESSMENT PROCESS

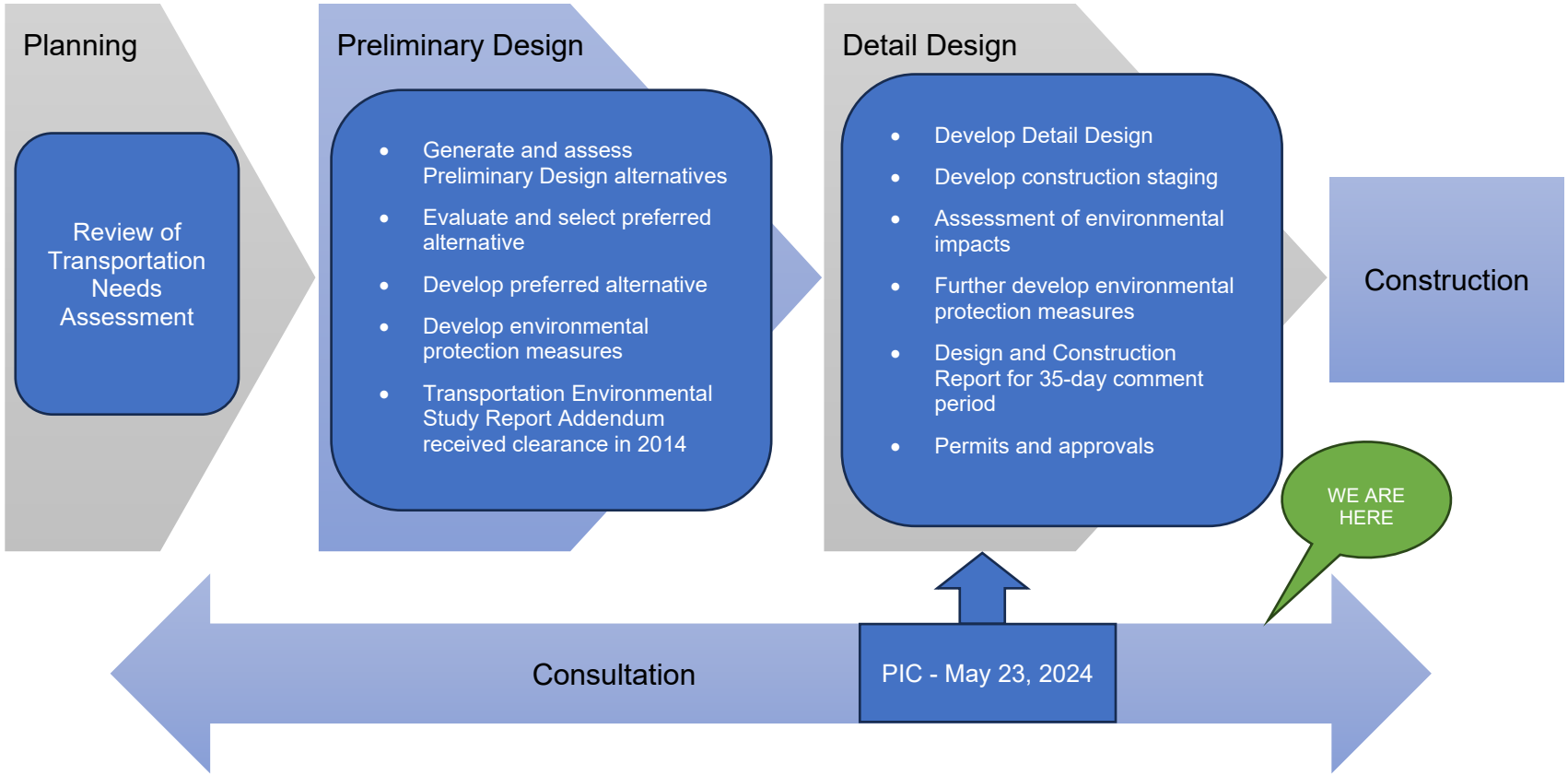

Figure 2. Class Environmental Assessment Process For Group "B" Projects

The 2003 TESR outlined the Preliminary Design components associated with the new interchange at Highway 5 and Highway 6. However, no environmental approvals were obtained for the associated municipal roads and commuter parking lot. The TESR was made available in 2003 for a 30-day public review period, and it received environmental clearance. The 2003 TESR is available on the project website at: https://hwy5andhwy6interchange.ca/documents/.

2.2.2. Preliminary Design - Transportation Environmental Study Report Addendum (2013)

In accordance with the Class Environmental Assessment for Provincial Transportation Facilities (MTO 2000), an Addendum to the original 2003 TESR was prepared since it was necessary to make significant changes to design concepts and project commitments documented in the original 2003 TESR. In addition, a review of the original 2003 TESR was required since the project documented in the 2003 TESR did not proceed to construction within five years of issuing the Notice of Submission of the 2003 TESR. In 2011, a review was initiated and as a result, a TESR Addendum was prepared and released for a 45-day public review period in December 2013. This TESR Addendum focused on the changes to the 2003 TESR and preliminary design scope of work that was documented within it.

The 2013 TESR Addendum received environmental clearance in 2014 and is available on the project website at: https://hwy5andhwy6interchange.ca/documents/.

2.2.2.1. Part II Order Requests

On January 16 and 24, 2014, MECP received two Part II Order Requests. The January 16, Part II Order Requester raised concerns to changes to local access on Woodsworth and Garwood Avenues; proximity to property frontage; noise mitigation; access for school buses; and snow clearing activities.

The January 24, 2014 Part II Order Requester raised concerns on the project's impacts to wildlife habitat; lack of consideration of other transportation solutions; impacts of the increased traffic levels to local air quality and health of local residents; impacts of runoff to Borer's Creek, the aquatic ecosystems and climate change.

MTO addressed/responded to the concerns raised submitted in the two Part II Order Request. The two Part II Order Requests were denied by the Minister of MECP on October 10, 2014; and the Project was allowed to proceed.

2.2.3. Design and Construction Report (2020) - Street C in Southeast Quadrant of Proposed Highway 5 and 6 Interchange

In accordance with the Class Environmental Assessment for Provincial Transportation Facilities (MTO, 2000), a Design and Construction Report was prepared and placed on the public record in 2020 documenting the detail design for the municipal road identified as Street C (Leavitt Boulevard) in the TESR Addendum (2013), located in the southeast quadrant of the proposed Highway 5 and Highway 6 interchange. The Design and Construction Report concluded that no significant changes in conditions within the project area, government policies, engineering standards or technologies for mitigation were

identified during the five-year review of the TESR Addendum (2013). Therefore, another TESR addendum covering this area was not required.

The following are the adjustments to Street C (Leavitt Boulevard) that were made during the Detail Design:

- Alignment of the east to west road in front of a future 4-story building was shifted from a right angle with the north-south segment to be on a slight skew. This alignment shift also provides for a larger radius at the intersection of the north-south and east-west road segments;
- Adjusted geometry of entrance into the property to be occupied by Wescam/L3;
- Shift of Street C alignment by 3.5m to the east adjacent to Liburdi property;
- Shift of the entrance to Liburdi Property from the northeast corner of their property to the southeast corner of the property to accommodate grading; and
- Installation of a temporary cul-de-sac to allow snow equipment turn around.

Construction of Street C (Leavitt Boulevard) in the southeast quadrant of the proposed Highway 5 and Highway 6 interchange has been completed.

2.2.4. Design and Construction Report (2022) - 43 Highway 5 West, Part of Lot 24, Concession 3, Flamborough, ON

In accordance with the Class Environmental Assessment for Provincial Transportation Facilities (MTO, 2000), a Design and Construction Report was prepared and placed on the public record in 2022 documenting the detail design for the road network in the northwest quadrant of the proposed Highway 5 and Highway 6 interchange.

The proponent received approval of the Draft Plan of Subdivision from the City of Hamilton for the proposed development site at 43 Highway 5 West. In order to achieve the conditions outlined in the approval of the Draft Plan of Subdivision, minor adjustments to the placement and location of the municipal road network were required in the northwest quadrant of the newly proposed interchange compared to what was documented in the TESR Addendum (2013). The Design and Construction Report concluded that no significant changes in conditions within the project area, government policies, engineering standards or technologies for mitigation were identified during the five-year review of the TESR Addendum (2013). Therefore, another TESR addendum covering this area was not required.

The following are the adjustments proposed:

- Refinement to the alignment of Street ‘A’, now known as Dobbin Drive;
- An extension of Street B1, now known as Solar Drive, easterly from its current terminus; and
- Provision of a future street connection to the east providing access to adjacent properties.

Portions of the municipal road network in the northwest quadrant of the proposed interchange have been constructed by others. MTO will construct the remaining portion of the road network as part of the construction contract for the new interchange.

2.3. The Impact Assessment Act

In August 2019, the *Canadian Environmental Assessment Act* (2012) was replaced by the *Impact Assessment Act* (IAA), which applies to major projects and projects carried out on federal lands or outside of Canada. Under the IAA, only those projects designated by the Physical Activities Regulations or designated by the Minister of the Environment and Climate Change on a discretionary basis may be subject to federal environmental assessment.

The Highway 5 and Highway 6 Interchange and Associated Municipal Roads Project does not meet the criteria within the Physical Activities Regulations and therefore assessment of the project under the *Impact Assessment Act* is not required.

3. CONSULTATION

A Consultation Plan was prepared to guide consultation with external agencies, stakeholder groups and the public during the detail design phase of the project. The purpose of consultation has been to provide project information, solicit public feedback and identify and address issues associated with the detail design, potential environmental and property impacts and proposed mitigation measures. This consultation has been conducted in accordance with the requirements of a Group 'B' project under the MTO Class EA. The Notice of Study Commencement for the detail design phase of the project was issued to the public in January 2011 and this milestone is summarized in the 2013 TESR Addendum.

Key components of the consultation plan to date have included:

- Notifications in local newspapers;
- Correspondence with external agencies;
- Correspondence and meetings with the City of Hamilton;
- Correspondence with the public and property owners;
- Public Information Centre (PIC); and
- Submission of the DCR for public review.

3.1. Notifications in Local Newspapers

3.1.1. Notice of Project Update

The Notice of Project Update was published in the *Hamilton Spectator, Flamborough Review* and *Ancaster/Dundas Star News* on April 27, 2023. This notice briefly described the project, the Class EA process, project website address, and how comments or questions can be sent to the Project Team, including MTO. A copy of this notice is presented in **Appendix A**.

3.1.2. Notice of Public Information Centre

The Notice of Public Information Centre was published in the *Hamilton Spectator* on May 16, 2024 and online in the *Flamborough Review* (flamboroughreview.ca) and the *Ancaster/Dundas Star News* (thespec.com) from May 16, 2024 to May 30, 2024. The notice briefly described the project, provided information about the location, date and time of the PIC and how comments or questions can be sent to the Project Team. A copy of this notice is presented in **Appendix A**.

3.1.3. Notice of Completion

The Notice of Completion was published in the *Hamilton Spectator* on December 18, 2025 and online in the *Flamborough Review* (flamboroughreview.ca) and the *Ancaster/Dundas Star News* (thespec.com) from December 18, 2025 to January 1, 2026. The notice presents a brief description of the project, provides direction on how to access the DCR for review (via the project website) and how to submit any comments to the Project Team. A copy of this notice is presented in **Appendix A**.

3.2. Public Consultation/Engagement during the Detail Design Phase

3.2.1. Notification

In addition to the publishing the Notice of Project Update and Notice of Public Information Centre in local newspapers as summarized in Section 3.1, copies of each of these two notices were distributed via Canada Post neighbourhood mail drop services. The delivery area covered an approximately 1km radius from the Highway 5 and Highway 6 intersection which consisted of approximately 4,500 copies of the notice for each project milestone.

A copy of each of the notices were mailed to property owners whose property will be directly impacted by the project. Property owners whose properties are required for the implementation of the project, either fully or partially, have also been contacted by MTO throughout detail design.

Members of the public who have requested to be added to the contact list so they receive project updates have been added and have been sent the notices that are issued at project milestones (e.g., Notice of Public Information Centre and Notice of Completion).

The Notice of Completion was also distributed in the same manner as was done for the Notice of Public Information Centre.

3.2.2. Project Website

A website was developed for the project (www.hwy5andhwy6interchange.ca) as a tool to engage the public, agencies and Indigenous Communities with an interest in the project. The website presents information regarding the study, Class EA process, schedule, contact information for the Project Team, consultation activities, frequently asked questions and study documents (e.g., 2003 TESR and 2013 TESR Addendum).

3.2.3. Public Information Centre (PIC)

A PIC was held on May 23, 2024 from 4:00 P.M. to 8:00 P.M. at Harry Howell Arena, 27 Highway 5 West, Flamborough, ON. A total of 121 people signed in at the attendance register, which included twelve representatives from the City of Hamilton and one from the local Member of the Provincial Parliament (MPP) office. **Table 1** presents a summary of comments received.

Table 1. Summary of Comments Received from the Public and Responses Provided by the Project Team

Comments	Responses
Highway 5 should have stayed level and Highway 6 should have gone under Highway 5, and that would have taken some of the steepness out of the Clappison Cut. Highway 5 should be widened farther west.	The Highway 5 and Highway 6 interchange design has been developed to meet the requirements of an Environmental Assessment that delineate the limits of works and their impact to adjacent properties. Various design options were analyzed, and the results of consultations concluded the current design was the preferred option. Please see the Transportation Environmental Study Report and Transportation Environmental Study Report Addendum available on the project's website for details of the evaluation of design alternatives at: https://hwy5andhwy6interchange.ca/documents.
Concerns regarding having Waterdown Road and Highway 6 under construction at the same time.	Construction works will not fully close Highway 5 and Highway 6 lanes. Although traffic delays are anticipated, a construction staging plan has been developed to allow vehicular movement in every direction. Construction is anticipated to start in 2026, however, utility works will continue throughout 2025. The construction works at Waterdown Road in the City of Burlington, are anticipated to end in 2026. Please see the City's website for further information at https://www.burlington.ca/en/news/current-city-projects-and-construction/waterdown-road-widening-and-reconstruction-craven-avenue-to-mountain-brow-road.aspx

Comments	Responses
Concerns about having new median islands on Highway 5 from Leavitt Boulevard to Highway 6, which will remove all vehicular left-turns impacting access to our property.	The median, which is raised, will be provided to improve the traffic operations and safety. Access to your property will be right-in and right-out only. Traffic signals will be installed at the Dundas Street and Leavitt Boulevard intersection as well as at the South-East/West ramp and the commuter parking lot intersection to allow vehicles to safely change directions. Drawings were attached.
Converting the traffic lights on Highway 5 to roundabouts may be useful in improving traffic flow.	The Highway 5 and Highway 6 interchange design has been developed to meet the requirements of an Environmental Assessment that delineate the limits of works and their impact to adjacent properties. Various design options were analyzed, and the results of consultations concluded the current design was the preferred option. Please see the Transportation Environmental Study Report and Transportation Environmental Study Report Addendum available on the project's website for details of the evaluation of design alternatives at: https://hwy5andhwy6interchange.ca/documents. Roundabouts are not being considered in this design due to the large volume of vehicles going through the area. The capacity of a roundabout is generally driven by the amount of conflicting traffic (vehicle travelling along the circulatory roadway). Therefore, the size of the roundabout required to accommodate the large volume of traffic at the intersection is not feasible in this area.

Comments	Responses
There is traffic back up on northbound lanes of Highway 6 that want to turn left on Highway 5. Can there be signs indicating lanes for left turns and right turns to prevent backups on the other lanes? Can the posted maximum speed limit be changed to 100km/hr on Highway 6? There are heavy trucks travelling north on Highway 6 at very slow speeds - Can the York Street northbound on-ramp become the eventual off-ramp lane? Are there any plans for a signalized left-turn lane at Rock Chapel Road onto Highway 5?	Once the Highway 5 and Highway 6 interchange is completed, access to Highway 5 from northbound Highway 6 via left and right turns will be achieved using the S-E/W ramp. Please see slide 9 of the PIC Display panels available at https://hwy5andhwy6interchange.ca/public-involvement. Pavement markings and traffic signs will clearly guide vehicle drivers. The Highway 6 overall posted speed limit is a maximum of 80km/h. To maintain consistency, the posted speed limit will remain at a maximum of 80 km/h. Changing this speed limit would affect the overall geometric design of the project. The reconstruction of the Highway 6 and York Road interchange is not within the scope of the project. A separate project covers the reconstruction of this interchange and is known as “Highway 403 and Highway 6 Interchange Improvements”. The ministry completed this preliminary design study in July 2023. The Transportation and Environmental Study Report that covers the reconstruction of the interchange at Highway 6 and York Road is available upon request. This project does not include the intersection of Highway 5 and Rock Chapel Road. The MTO has no current plans to signalize this intersection.

Comments	Responses
Request for noise barriers along Highway 6	For the dwellings on Old Guelph Road backing towards Highway 6 (southbound), an approximately 4.0 m high sound barrier for a length of approximately ± 500 metres will be constructed as part of the widening of the adjacent portion of Highway 6 (refer to attached figure). However, although a sound barrier is proposed at this location, it is not planned for construction until the third southbound lane on Highway 6 is constructed, and the timing for this is currently unknown. This is because widening of the highway platform is necessary to position the sound barrier in the highway right-of-way. The sound barrier height and length will be further determined based on site conditions and road traffic volumes at the time the sound barrier is proposed to be constructed. Construction of the third southbound lane is not expected to take place until or after it is warranted by traffic volumes.
If there is a barrier north of Parkside Road, it will cause problems for wider farm equipment. Concerns regarding traffic delays and safety impacts during construction. There are too many traffic lights. Keeping Highway 5 at ground level would be better.	We can confirm that there is no median barrier proposed north of the Parkside Drive intersection. Construction works will not fully close Highway 5 and Highway 6 lanes. Although traffic delays are anticipated, a construction staging plan has been developed to allow vehicular movement in every direction. The proposed design was developed with considerations for traffic signals, lane management, and location of the

Comments	Responses
	interchange to address weather conditions and reduce potential gridlocks. The Highway 5 and Highway 6 interchange design has been developed to meet the requirements of an Environmental Assessment that delineate the limits of works and their impact to adjacent properties. Various design options were analyzed, and the results of consultations concluded the current design was the preferred option. Please see the Transportation Environmental Study Report and Transportation Environmental Study Report Addendum available on the project's website for details of the evaluation of design alternatives at: https://hwy5andhwy6interchange.ca/documents.
Concerns that notification of the PIC was not received by residents of Garwood Avenue and Woodworth Avenue. Concerned that the decision to go ahead with the proposed plans has been made and are final. Doesn't recall any meetings held about this project since 2013.	We are sorry that notifications of the Public Information Centre were not successfully delivered to your street. The notifications were distributed using Canada Post neighbourhood mail delivery service and we determined that the delivery routes did include Garwood Avenue and Woodsworth Avenue. Please also note that the notification was published in the local newspapers. Moving forward we will be sending future notifications directly to your mailing address and email address. A Public Information Centre was held on June 19, 2012 to present the preferred preliminary design and notification to the public was made for a 30-day review and comment period of

Comments	Responses
	the TESR Addendum Report in December 2013. The TESR Addendum that documents the evaluation process leading to the selection of the preferred preliminary design is available on the project website: https://hwy5andhwy6interchange.ca/documents/ The Public Information Centre held on May 23, 2024 was a Project Update to inform the public that detail design is being completed following the approved planning process for Group "B" projects under the MTO Class Environmental Assessment for Provincial Transportation Facilities (2000). The proposed design meets the requirements of the MTO and City of Hamilton. The project is currently in the detail design phase which builds upon the approved preliminary design documented in the TESR Addendum. The proposed design has been updated to reflect a number of improvements including construction staging, illumination updates to LED and pavement rehabilitation of Highway 6 from Bruce Trail Culvert southwards to the north limit of Highway 403/Highway 6 interchange, including Highway 6/York Road interchange.
Consideration should be given to connecting proposed Clugston Avenue to the proposed cul-de-sac at Parkside Drive or to proposed Sureres Drive.	The location of municipal roads was already assessed during the preliminary design phase. Any additional municipal roads would require a separate environmental assessment and is not included in the proposed Highway 5 and Highway 6 Interchange project.

Comments	Responses
Concerns about excessive speeds on Highway 6 approaching the interchange for those entering the highway from Woodworth Avenue and increase of noise. Concerns regarding stormwater management issues at Highway 6 and Garwood Avenue and surrounding area. Concerns regarding storm sewer connections on Garwood Avenue and Woodworth Avenue. There is currently no pedestrian access shown on the plans on the east and west sides of Highway 6 from Parkside Drive to the interchange and beyond. What is the plan for stop signals at the junction of Highway 5 and Highway 6? Why is there a new road bulb directly adjacent to #17 and #20 Garwood? Is there further development proposed for this area?	The proposed Highway 6 and Woodworth Avenue intersection layout implements right-in and right-out tapers (70 meters approximately) that allows vehicles to reduce entrance speed and facilitates acceleration when exiting at this location. The existing Highway 6 overall posted speed limit is a maximum of 80km/h. To maintain consistency, the posted speed limit will remain at a maximum of 80 km/h. Changing this speed limit would affect the overall geometric design of the project. A Noise Impact Assessment was completed during the preliminary design phase of the project. Even though sound exposures above 65 dBA are predicted in the outdoor living areas within the Garwood/Woodsworth development along Highway 6 north of Highway 5, noise mitigation was not recommended because noise barriers within MTO right-of-way could not meet the policy requirement that they provide at least 5 dBA of noise reduction. Therefore, noise barriers are not proposed in this project. The proposed Highway 6 west ditch grading allows for improved conveyance of runoff flow towards Borer's Creek. Grass cutting within the MTO right-of-way is a maintenance item that will be part of operations. Garwood Avenue is an existing road that has been owned, operated and maintained by the City of Hamilton for a long time. The City is aware of these conditions. The proposed ditch along Clugston Avenue will improve runoff flow compared to the existing conditions.

Comments	Responses
	Connections to municipal sewer services would require a major extension as services do not exist on Highway 6 at this time. Municipal sewer services are under the jurisdiction of the City of Hamilton. The proposed Multi-Use Path (MUP) will allow pedestrian access along Highway 5. Highway 6 will be a Controlled-Access Highway and pedestrians will be prohibited from using this section of Highway 6. All municipal intersections along the proposed highways will follow the latest accessibility requirements for pedestrian safety. The City received a Formal Consultation application in 2023 for development on the adjacent lands. Based on the application, an Official Plan Amendment and associated review would be required prior to any development advancing.
Safety concerns of turning south off of Woodsworth Avenue onto Highway 6. This intersection is difficult to navigate and to make a safe turn to go southbound from Garwood Avenue and Woodsworth Avenue onto Highway 6 as passenger vehicles and large transport trucks drive this route at a very high rate of speed. The purpose of this project, MTO acquiring properties off Highway 6, and making Garwood Avenue a dead end,	To enhance access for residents, a cul-de-sac, or road bulb, is proposed on the west side of Highway 6 opposite Parkside Drive. This design will enable Highway 6 northbound traffic, including Emergency Responders, to safely make a left turn into the cul-de-sac and then exit with a right turn to travel southbound on Highway 6. This arrangement seeks to minimize disruption to resident access while adhering to safety standards.

Comments	Responses
is to reduce the number of roadways and driveways entering onto Highway 6. The proposed plan simply diverts this traffic up towards Woodsworth Avenue rather than bringing it to Parkside or Sureres Drive. The current plan will create more traffic turning onto Highway 6 from Woodsworth Avenue whereas adjoining Woodsworth to Parkside would reduce the intersections in the area and vehicles turning onto Highway 6 as intended by this project. Furthermore, the proposed plan will increase the speed along Highway 6 making this turn more difficult from Woodsworth Avenue and surely result in accidents in the area. With a background in public safety and traffic enforcement, I find this concerning to the residents that need to make this drive and turn on a daily basis. I have personally witnessed countless collisions on Highway 6 near our residence between Parkside Drive and Highway 5.	Additionally, the existing traffic signal at the Parkside Drive intersection will be replaced with a new signal to facilitate safer left turns for motorists. Advance signage will also be installed to alert drivers of the traffic signal and improve overall traffic flow and safety in the area.
Why is there a new road bulb on the west side of Highway 6 opposite to Parkside Drive?	The additional access with the cul-de-sac, or road bulb, on the west side of Highway 6 opposite of Parkside Drive will allow the Highway 6 northbound vehicle traffic, including Emergency Responders, to make a left turn into the cul-de-sac, and then a right turn exit to drive southbound on Highway 6.

Comments	Responses
If you make Highway 5 and Highway 6 bigger, there will be more car accidents.	The proposed Highway 5 and Highway 6 Interchange project will improve safety by providing a new grade separated interchange with ramps in and out of Highway 5. The new design also introduces a multi-use path (MUP) along Highway 5 in the vicinity of the new interchange for pedestrians and cyclists, further improving on the existing conditions. For further project details, please see the display panels presented at the May 23, 2024 Public Information Centre at: https://hwy5andhwy6interchange.ca/documents
Will the MTO be installing a fence or wall between the property and the cul-de-sac for privacy and to reduce the glare of headlights which will shine on our home/bedrooms during the night? and reduce the noise?	The volume of traffic using the turnaround bulb (cul-de-sac) on the west side of Highway 6 at Parkside Drive is anticipated to be low and therefore fence installation is not warranted at this location.
Safety concerns entering Highway 6 from York Road – current sight lines are horrible due to elevation and municipal road alignment increasing risk of collision. The current traffic lights at Highway 5 and Highway 6 intersection create gaps/opportunities for drivers to safely enter Highway 6 from York Road. Are there any plans to alert drivers in the York Road area that Highway 6 traffic is crawling or to meter the York Road ramps to keep local traffic from compounding issues on Highway 6? Are there any plans to further modify the on-ramps form Highway 6 to Highway 403? Merging traffic could be instructed how to merge more	The proposed Highway 5 and Highway 6 interchange project introduces a new grade separation that will allow for a better level of service at this location. The proposed design was developed with considerations for traffic signals, lane management, and location of the interchange to reduce potential gridlocks. The Highway 5 and Highway 6 interchange design has been developed to meet the requirements of an Environmental Assessment that delineate the limits of works and their impact to adjacent properties. Various design options were analyzed, and the results of consultations concluded the current design was the preferred option. Please see the Transportation Environmental Study Report

Comments	Responses
effectively into the fast lane taking advantage of the extended ramp as opposed to slowing to crawl/stopping at the beginning of the ramp to merge onto Hwy 403 as soon as possible. The ramp from Hwy 6 to Hwy 403 could ultimately be redesigned/rebuilt so that traffic enters from the slow lane instead of the fast lane.	and Transportation Environmental Study Report Addendum available on the project's website for details of the evaluation of design alternatives at: https://hwy5andhwy6interchange.ca/documents. Construction works will not fully close Highway 5 and Highway 6 lanes. Although traffic delays are anticipated, a construction staging plan has been developed to allow vehicular movement in every direction. With regards to the Highway 403 issues, future improvements on Highway 6, south of the Bruce Trail culvert have been evaluated by a separate Preliminary Design and Class Environmental Assessment Study. This study is known as "Highway 403 and Highway 6 Interchange Improvements". The ministry completed this study in July 2023. The Transportation and Environmental Study Report for this project is available upon request. Numerous meetings and coordination with the City of Hamilton regarding municipal roads for the Highway 5 and Highway 6 Interchange Project were held during the preliminary design phase completed in 2013 and during the current detail design phase.

Comments	Responses
I like the idea of a commuter parking lot. A GO Bus line is needed on Highway 6 between Guelph and Hamilton.	The property for the commuter parking lot has been acquired to allow for a future GO bus turn around. The GO bus turn around will be adjacent to the commuter parking lot.
Please confirm that access to the Wendy's and Tim Horton's will be provided and maintained throughout the construction period.	Please note that access to this commercial area will be maintained during and post construction. A commercial access road is proposed to be constructed as part of this project. For further details please see the project website at https://hwy5andhwy6interchange.ca/public-involvement/
Please complete the new entrance to Harry Howell Arena. Close North Wentworth Drive, you are about 100’ away.	The new entrance to Harry Howell Arena will be provided from Solar Drive, and North Wentworth Drive will be closed. For further details please see the project website at https://hwy5andhwy6interchange.ca/public-involvement/
Please confirm that my property will not be impacted.	The construction staging plan has been developed to ensure access to your property is maintained during construction. In the ultimate condition, there will be right-in and right-out access and no left turn movement will be available for your property. Traffic signals will be installed at the Dundas Street and Leavitt Boulevard intersection as well as at the South-East/West ramp and the commuter parking lot intersection to allow vehicles to safely change directions. Drawings were attached. No property acquisition is required at this location. However, some minor grading on your property during construction would allow the Ministry to provide a driveway that will be less steep than if the driveway work stays within

Comments	Responses
	the new Right of Way. A Permission to Enter and Construct (PTEC) drawing and letter will be forwarded to you for your review and signature prior to the commencement of construction.
Concerns regarding the following issues of development as we are one of a small group of homeowners on Mountain Brow Road: Design of the ingress/egress for Mountain Brow Road access, given that the road will likely be closed from Highway 6 when the work commences (currently our only road access) Tall wall location and noise control to ensure noise volume is minimized to the east side of Highway 6 prior to Highway 5 The effect of potential increase of illumination.	We offer the following responses to your comments: An improved municipal road will be connected to Levitt Boulevard, and access to Highway 6 will be closed. The ministry will stage the construction in such a way to guarantee continuous access to all residences on Mountain Brow Road either from the existing connection at Highway 6 or from the future connection at Leavitt Boulevard. Please see slide 10 and 13 of the display panels presented at the May 23rd Public Information Centre at: hwy5andhwy6interchange.ca/documents; Commercial traffic to Liburdi Engineering will access Liburdi Engineering from the driveway at the south end of Leavitt Boulevard. Traffic on Mountain Brow Road will be for employee / personal vehicles. A Noise Impact Assessment was completed during the preliminary design phase of the project which concluded that noise mitigation is not warranted along the east side of Highway 6 within the project limits. In order to maintain traffic safety there may be an increase in illumination within the interchange area including ramps where high mast poles (tall poles) will be utilized. The illumination is designed to minimize impacts to adjacent properties through luminaire selection and the use of optical shielding. The lighting has been designed to minimize light trespass beyond the limits of the MTO property. New conventional street lighting poles will be installed along Mountain Brow Road.

Comments	Responses
Will the lighting at the new interchange be of the high mast variety? I would like to see a style that does not add to the light pollution.	There will be a few high mast poles within the loop ramps, but the majority along the main line will be of conventional style. The lighting design has been developed to minimize light trespass and reduce light spill beyond the MTO property limits.
The proposed changes provide a lack of access to residents in this neighbourhood. There are multiple options to resolve this issue including continuing roads from Sureres Drive to connect to Garwood Avenue or adjoining Parkside Drive down to Woodsworth Avenue. The current plan appears to be an incredibly short-sighted fix to the solution of putting in a turning bulb at Parkside Drive and limits the ways in which these residents can both access and leave their property. This can negatively affect property value for the residents of this area and bring forward a claim for restitution.	The proposed Highway 6 and Woodsworth Avenue intersection layout implements right-in and right-out tapers that allows motorists to reduce entrance speed (approximately 70 metres) and facilitates acceleration when exiting this location. The existing Highway 6 posted speed limit is a maximum of 80km/h and will remain unchanged to maintain consistency and improve driver expectations in the area.
Can you advise or at least provide an approximate date when the construction in this area will be starting?	Construction is anticipated to start in 2026, however, utility works will continue throughout 2025.
There is a 6" watermain crossing Highway 6 from the east side of Highway 6 into our property. It could be dry or filled with water. It extended a significant distance into the parcel. It was installed as the watermain up Highway 6 was installed. I recall it was installed in the 1980's. Please send me copies of the drilling reports.	As part of our field investigations, we have confirmed the presence of a watermain crossing Highway 6 that currently provides a service connection to your property. As part of the planned changes for the Highway 5 and Highway 6 interchange project, this watermain will be decommissioned and no longer used.

Comments	Responses
	In the future, your property will be connected to a new watermain from the north end of the new road, now called Sureres Drive (formerly referred to as Street B2 in the project plans). Regarding the drilling reports you mentioned, the Ministry of Transportation (MTO) does not have copies of these documents. You may wish to contact the City of Hamilton's Water Department to request this information. Please note that the City recently experienced a cybersecurity issue, which has made it difficult for the Project Team to obtain certain records.
Concerns about access to residences by residents on Mountain Brow Road.	An improved municipal road will be connected to Levitt Boulevard, and Mountain Brow Road access to Highway 6 will be closed. The ministry will stage the construction in such a way to guarantee continuous access to all residences on Mountain Brow Road either from the existing connection at Highway 6 or from the future connection at Leavitt Boulevard. Please see slide 10 and 13 of the display panels presented at the May 23rd Public Information Centre at: https://hwy5andhwy6interchange.ca/documents; Commercial traffic to Liburdi Engineering will access Liburdi Engineering from the driveway at the south end of Leavitt Boulevard. Traffic on Mountain Brow Road will be for employee / personal vehicles.

Comments	Responses
Inquiry on installation of streetlights at the Sports Yard at 63 Highway 5.	Thank you for your inquiry regarding the installation of streetlights at the Sports Yard at 63 Highway 5. In case you aren't already aware, we'd like to take this opportunity to let you know about the new interchange that the Ministry of Transportation (MTO) will be constructing at the intersection of Highway 5 and Highway 6. MTO has retained IBI Group/Arcadis to complete a Detail Design and Class Environmental Assessment Study for the new interchange and associated municipal roads, as well as a new commuter parking lot in the vicinity of the interchange. The purpose of these improvements is to enhance traffic flow and address future capacity issues within the study area. More details about the proposed design are available on the project website: https://hwy5andhwy6interchange.ca/ . Construction is currently scheduled to begin in 2026. As part of the upcoming new interchange construction contract, pole mounted illumination will be installed on both sides of Highway 5 near the Sports Yard, including illumination near the entrance to the facility. The drawing at this link https://hwy5andhwy6interchange.ca/wp-content/uploads/2024/05/Highway-5-and-Highway-6-Interchange-Public-Information-Centre-Display-Panels-AODA-compliant-May-23-2024-3.pdf gives a general idea of where the new illumination will be located after construction is complete. We'd also like to take this opportunity to inform you that the temporary signals at the Highway 5 and Dobbin Drive

Comments	Responses
	intersection will become permanent signals as part of the interchange contract. Furthermore, Highway 5 will be increased to 2 lanes in each direction from west of the Dobbin Dr. intersection, through the interchange and further to the east. The additional eastbound lanes begin near the entrance to the Sports Yard and will provide the ability for vehicles to go around those waiting to make a left turn at this location. The new illumination, roadway widening, and gaps in traffic flow provided by the permanent signals at the Highway 5 and Dobbin Dr. intersection should improve visibility and safety at the access to the Sports Yard facility.
Resident on Mountain Brow Road concerned that entrance to Mountain Brow Road from Highway 6 will be closed before access from Leavitt Boulevard is opened during construction.	MTO has assured that access to properties on Mountain Brow Road will be provided throughout the construction of the interchange.
Questions regarding access from Leavitt Boulevard by a resident on Mountain Brow Road, road maintenance, use of road by commercial vehicles, parking, dumping and security concerns.	Currently, the Highway 5&6 Interchange project is scheduled to begin construction in 2026 with work on connecting Leavitt Blvd. to Mountain Brow Rd. scheduled for the first year of construction. You can find general information about the project at the project website: https://hwy5andhwy6interchange.ca/ and details about the staging at this link https://hwy5andhwy6interchange.ca/wp-content/uploads/2024/05/Highway-5-and-Highway-6-Interchange-Public-Information-Centre-Display-Panels-AODA-compliant-May-23-2024-3.pdf. - see Panel 22 for the timing of the work on Leavitt Blvd. and Mountain Brow Rd. Once you

Comments	Responses
	zoom in, this same panel also shows the entrances that will be maintained along Mountain Brow Rd. Although MTO's contractor will reconstruct a portion of Mountain Brow Rd. as a part of the Highway 5&6 interchange project, it will remain a municipal road and your concerns and questions about: The current quality of the road Who will maintain the road Will commercial vehicles be allowed End of Road and No Parking signs and Dumping issues would be addressed by either the City of Hamilton or the City of Burlington. I will forward your concerns on to the City of Hamilton Project Manager for this project and ask for the best contact to help with your concerns.
Concerns about economic loss from existing commercial properties due to the construction of the new interchange and proposed permanent closure of the access from Highway 6	While there have been no direct conversations about the entrance to the commercial property during detail design prior to your letter, Public Notices providing a Project Update on the Detail Design assignment for the Highway 5&6 intersection project were published in three local papers on April 27, 2023. A public website for the project, https://hwy5andhwy6interchange.ca/ , has been available since April 20, 2023, allowing stakeholders to submit comments and questions at any time. In addition to the newspaper advertisements, the property falls within the area

Comments	Responses
	covered by Canada Post's Neighbourhood Mail distribution for the Notice of Public Information Centre (PIC) that was held in May 2024. In the Fall of 2024, our detail design consultant, Arcadis, contacted the consultants and property management of the property, to discuss access for borehole drilling that was required for foundations work for the relocation of utilities. The project was described along with the request for access to the parking lot for the drilling of one borehole. Neither contacts provided a definitive response to the initial request nor to subsequent follow-ups. The planned borehole location was moved outside of the commercial property so that progress would not be held up due to lack of permission to enter. Attached is a draft drawing from the current detail design package that shows what the intended entrance to the property will look like. Below is an overview of the interchange to give an idea of how the property will now have access from all four quadrants of the interchange (instead of only two as under existing conditions) as well as a signalized intersection leading directly to the property. The new interchange will provide easier and more straightforward access to the property than exists today. Currently, the only direct access to the property is from southbound Highway 6, with Highway 5 eastbound traffic also having access through the gas station property or by turning south onto Highway 6. Any vehicles not travelling in those directions will need to find a location to turn around which can be both time-consuming and inconvenient at such a busy intersection. The new interchange will provide easier access for traffic moving in any direction on both highways.

Comments	Responses
	The entrance will require a small amount of work to be done on the property and that can be seen in the attached drawing in the orange hatched area. The third attachment is a standard Permission to Enter and Construct (PTEC) form that MTO uses to request permission to complete entrance work on an owner's property that is required as a result of a capital construction project. Please review the above and attached drawings as well as the attached PTEC form and let me know if you have any questions. If the PTEC form is not completed and permission is not granted to do the entrance work, MTO's construction will stop at the property line and any work within the property to connect with the new municipal road will have to be completed by property owner. We have also attached the portions of the "Highway 5 and Highway 6 Interchange, Municipal Road and Commuter Parking Lot Evaluation of Alternatives, IBI Group, September 2012" you requested that are related to this particular municipal road. Currently, MTO anticipates starting construction of the new Highway 5 and Highway 6 interchange in 2026 with the completion of the new municipal roadways in the first year of construction. Environmental fieldwork and utility relocations will continue throughout 2025 and into early 2026. In regard to your notification to bring a claim in accordance with the Expropriations Act, we acknowledge receipt of your letter and have provided same to the ministry's Property Section. Please feel free to contact me if you have further questions.

3.3. Indigenous Communities Consultation

Indigenous Communities contacted by the Project Team include:

- Mississaugas of the Credit First Nation (MCFN);
- Six Nations of the Grand River First Nation Elected Council (SNGREC); and
- Haudenosaunee Development Institute / Haudenosaunee Confederacy Chiefs Council (HDI).

The Project Team sent the following project notifications to the Indigenous Communities:

- Notice of Project Update letter sent in April and May 2023;
- Notice of Public Information Centre letter sent in May 2024;
- Project update e-mail sent on October 16, 2024; and
- Notice of Completion letter sent in December 2025.

Indigenous communities were invited to a one-hour session prior to the start of the PIC held on May 23, 2024 to provide members of the communities to discuss the project and ask questions to the Project Team.

3.3.1. Summary of Comments Received

SNGREC and MCFN requested to review draft environmental and archaeological documents prepared for this project. SNGREC provided comments on the environmental documents on July 25, 2025. Both SNGREC's comments and MTO's responses are included in **Appendix C**.

MCFN comments were received on October 22, 2025. Both MCFN comments and MTO's responses are included in **Appendix C**.

No comments were received to date from HDI.

The Indigenous Communities listed above were invited to participate in the archaeological assessment field investigations for this project. Community Field Liaisons from all three Indigenous Communities participated in the archaeological field investigations.

3.4. External Agencies, Stakeholder and Municipal Consultation

The following regulatory agencies and local governments were contacted during detail design:

- Ministry of the Environment, Conservation and Parks;
- Ministry of Municipal Affairs and Housing;
- Ministry of Citizenship and Multiculturalism;
- Ministry of Agriculture, Food and Agribusiness;
- Ministry of Natural Resources;
- Metrolinx;

- Conservation Halton;
- Hamilton Conservation Authority;
- Niagara Escarpment Commission;
- Halton Region;
- City of Hamilton;
- City of Burlington;
- Hamilton Paramedic Service;
- Hamilton Fire Department;
- Halton Region Paramedic Services;
- Burlington Fire Department;
- Halton Regional Police Service;
- Hamilton Police Service;
- Ontario Provincial Police – Burlington Detachment;
- School Boards and school transportation services;
- Burlington Transit;
- Hamilton Street Railway;
- Royal Botanical Gardens;
- Trail clubs (Toronto Bruce Trail Club and Iroquoia Bruce Trail Club).

Members of the Provincial Parliament (MPPs) for Flamborough-Glanbrook and Burlington were also contacted during detail design.

The Project Team sent the following project notifications to external agencies and MPPs:

- Notice of Project Update letter sent in April 2023;
- Notice of Public Information Centre letter sent in May 2024; and
- Notice of Completion letter sent in December 2025.

External agencies were invited to a one-hour session from 3:00pm to 4:00 pm prior to the start of the PIC held on May 23, 2024 to provide additional time to discuss the project and ask questions to the Project Team.

Numerous meetings with the City of Hamilton and other agencies have been held to discuss the technical aspects of the proposed design throughout the project's progress.

Utility companies were contacted, and numerous meetings were held throughout detail design to discuss impacts to utility facilities and utility relocation requirements.

3.4.1. Summary of Comments Received

Niagara Escarpment Commission (NEC) noted that the southern limits of the project area are located within the Niagara Escarpment Plan area and although a permit is not required to be obtained by the Ministry of Transportation, the NEC pointed out the relevant policies of the Niagara Escarpment Plan (Part 2.12) that apply. The relevant policies list a number of design considerations to minimize negative impacts on the Escarpment.

In response to comments received from the Ministry of Citizenship and Multiculturalism (MCM), MTO provided MCM with archaeological and cultural heritage reports documenting the findings of the field investigations.

4. MAJOR FEATURES OF THE PROPOSED WORK

The purpose of this section is to provide a summary of the major features of the Detail Design and construction staging. Emphasis on the environmental protection/mitigation and environmental monitoring are integral components of Detail Design, which are incorporated into the Contract Documents that the Contractor is required to follow. Drawings of the Detail Design are included in **Appendix B**. Finalization of the contract drawings and documentation will proceed after this report is finalized. There is a possibility that design plans (in **Appendix B**) may be updated to reflect minor design modifications or refinements that may occur as part of the standard progression of detail design development. However, the modifications are not anticipated to adversely affect the general intent of the EA commitments made herewith.

The proposed work also incorporated a commitment from MTO to the January 16, 2014, Part II Order Requester by providing a 'turning bulb' immediately north of Woodsworth and Garwood Avenues which would allow traffic going northbound on Highway 6 to make a left turn at Parkside Drive; then perform a 180-degree turn within their turning bulb, turn right to go southbound on Highway 6, and then turn right onto Woodworth Avenue. This would allow the residents on Woodworth Avenue to access their properties.

The project is divided into two major parts: the new interchange, municipal roads (Mountain Brow Road, Commercial Drive, Innovation Drive, Solar Drive extension, Sureres Drive, Clugston Avenue, Parkside Drive, Parkside Bulb) and resurfacing of Highway 6 from the southern limit of the new interchange to the northern limits of the Highway 6 and Highway 403 interchange as shown in **Figure 3**.

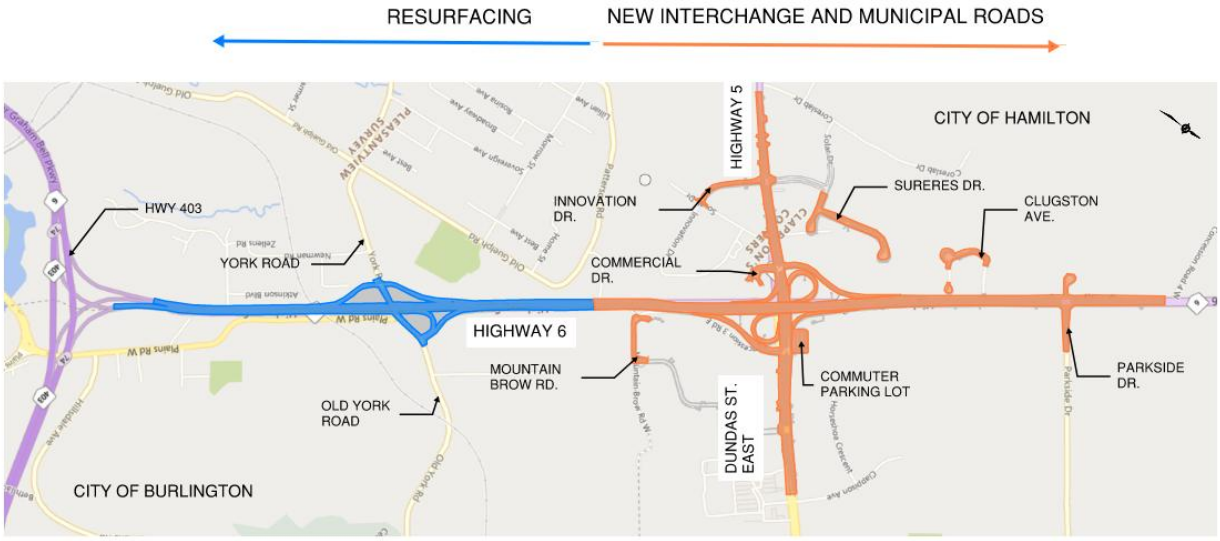

Figure 3. Proposed Works

4.1. Highway 5 and Highway 6 New Interchange

The existing signalized intersection at Highway 5 and Highway 6 will be replaced with a full-movement Parclo A4 interchange as shown in **Figure 4**. It includes the following improvements:

- Enhanced through traffic flow on Highway 5 (Eastbound and Westbound)
- Enhanced through traffic flow on Highway 6 (Northbound and Southbound)
- New West to South (W-S) and East to South (E-S) ramps providing access to Highway 6 Southbound from Highway 5 and Dundas Street East
- New West to North (W-N) and East to North (E-N) ramps providing access to Highway 6 Northbound from Highway 5 and Dundas Street East
- New North-East/West (N-E/W) ramp providing access to Highway 5/Dundas Street (Eastbound and Westbound) from Highway 6 Southbound
- New South-East/West (S-E/W) ramp providing access to Highway 5/Dundas Street East (eastbound and westbound) from Highway 6 Northbound

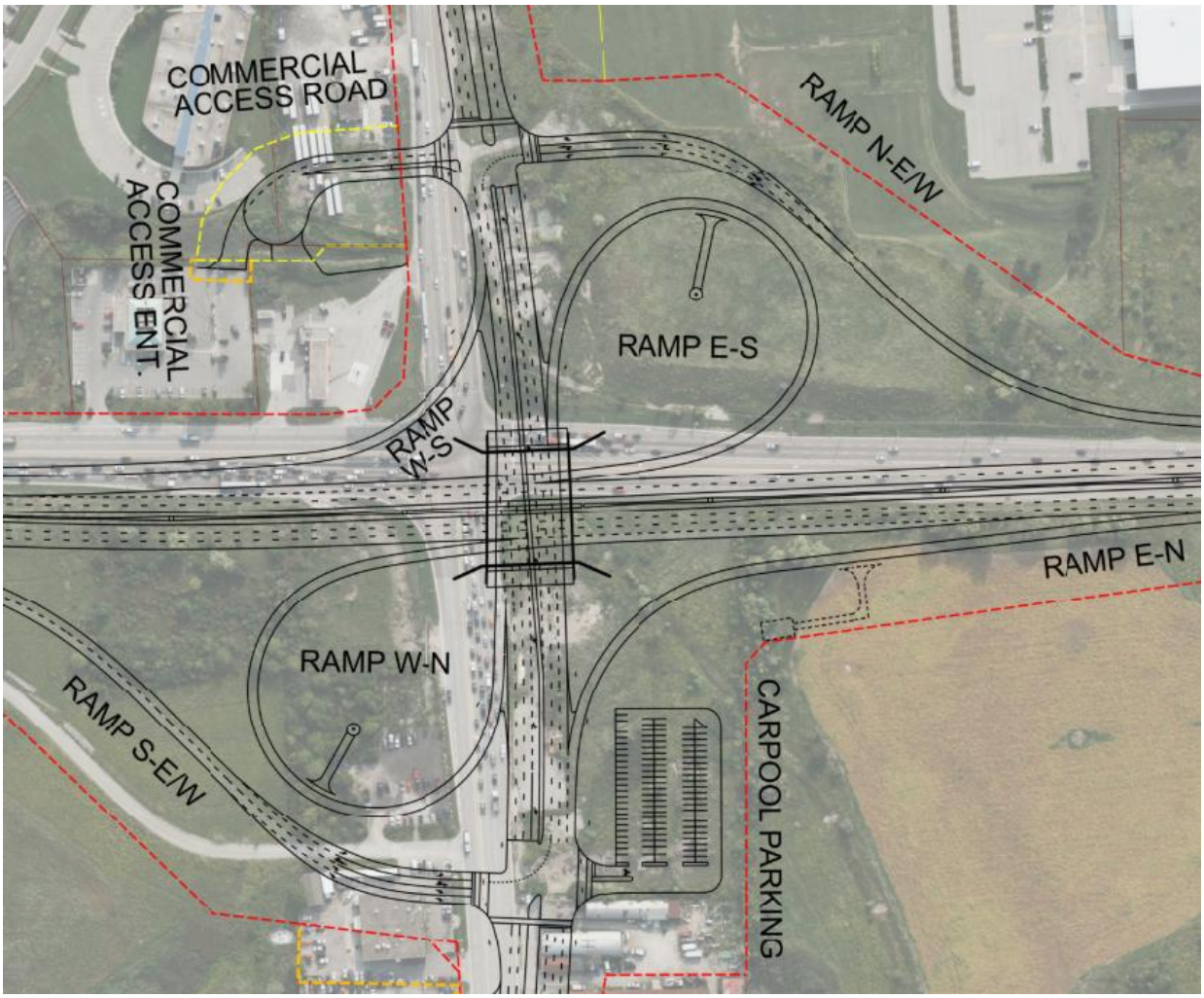

Figure 4. Highway 5 and Highway 6 Interchange Ramps

4.1.1. Highway 6

The proposed design of Highway 6 is divided into two parts, i.e., New Construction and Resurfacing works respectively.

Part 1: New Construction (Interchange)

As shown in **Figure 5** and **Figure 6**, Highway 6 extends approximately 1 km south of the existing Highway 5 to approximately 0.5 km north of Parkside Drive, and it has been designed for design speed of 100 km/h (posted speed of 80 km/h).

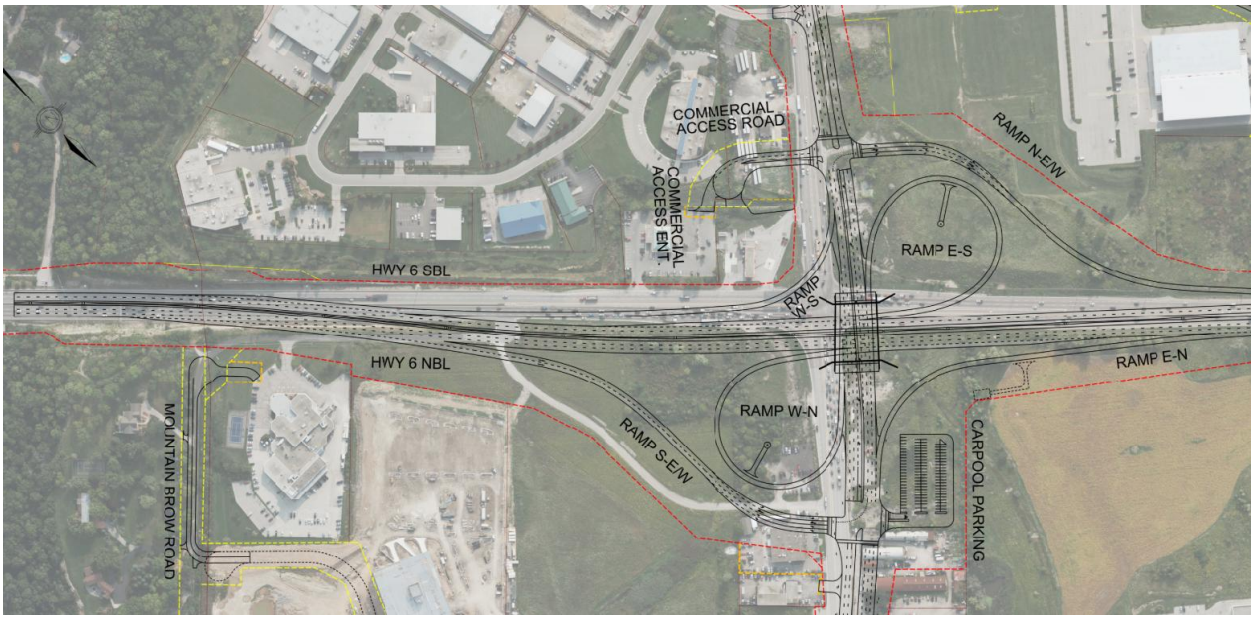

Figure 5. Highway 6 - New Construction in the Southern Limits of the Study Area

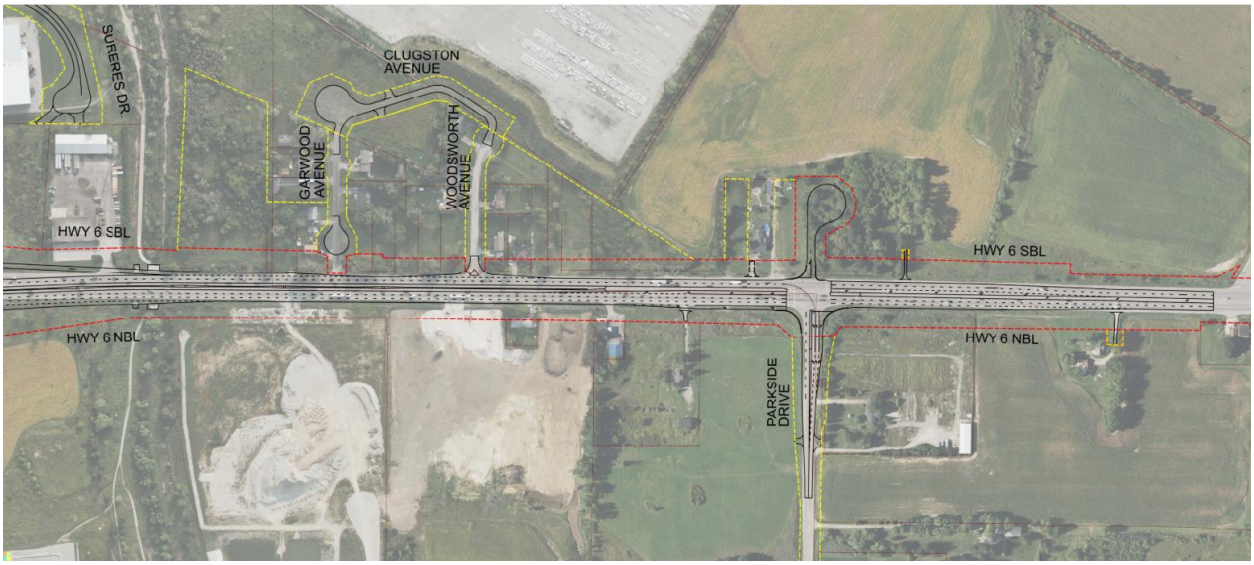

Figure 6. Highway 6 - New Construction in the Northern Limits of the Study Area

The Northbound Lane (NBL) includes continuous three-lane traffic between the southern project limit to north of the Parkside Drive intersection, then transitions back to the existing two-lane traffic. An additional lane which serves as Speed Change Lane (SCL) has been introduced for Ramps S-E/W, W-N and E-N as shown in **Figure 4** and **Figure 5**.

The Southbound Lane (SBL) includes continuous two-lane traffic between the northern and southern limits of the project. An additional SCL has also been introduced for Ramps N-E/W, E-S and W-S ramps as shown in **Figure 4** and **Figure 5**.

To accommodate a future third SBL, a widened granular shoulder will be constructed to support future expansion and protection of this additional lane. Approximately 84m of modified toe walls have also been introduced between the W-S ramp and SBL of Highway 6 to support the protection of this additional lane in future.

The following figures, **Figures 7 to 12**, provide graphic interpretations of six typical cross-sections at Highway 6.

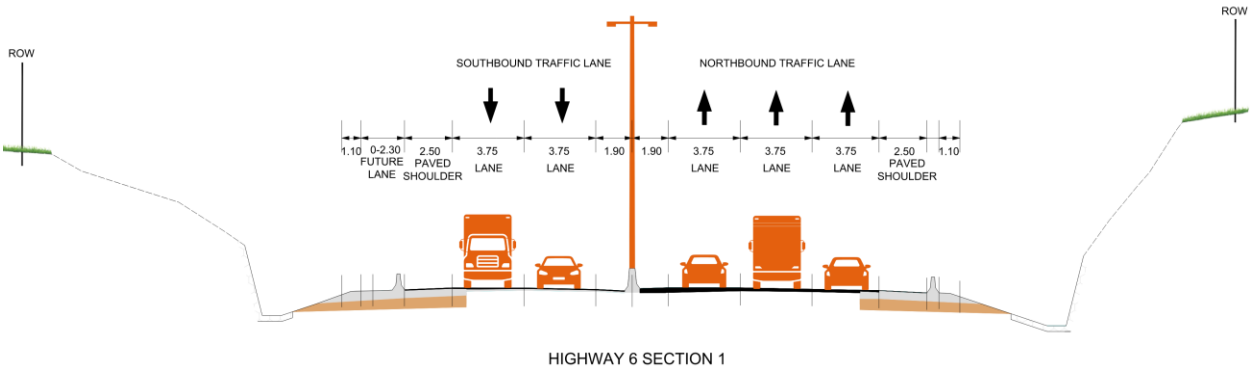

Figure 7. Highway 6 Typical Rock Cut Widening – From Southern Limits of the Interchange to South of Mountain Brow Road

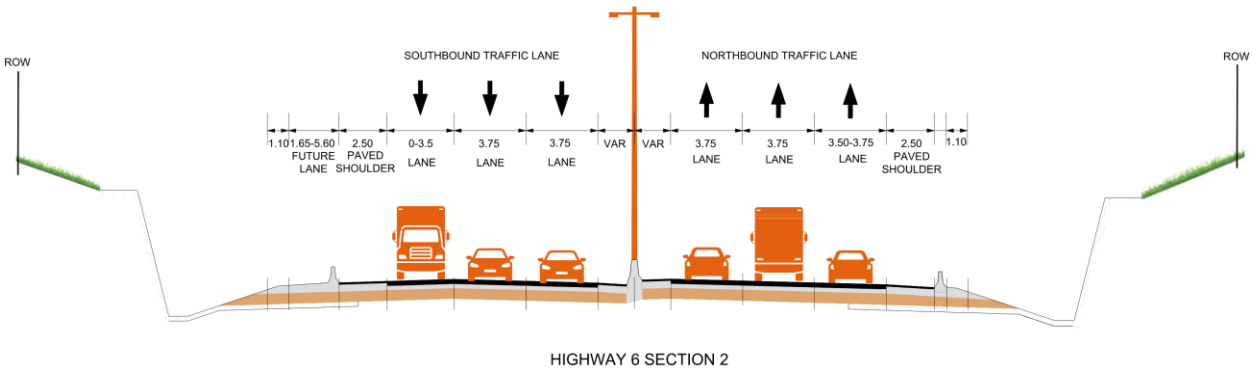

Figure 8. Highway 6 Typical Rock Cut Full Construction – From South of Mountain Brow Road to North of Mountain Brow Road

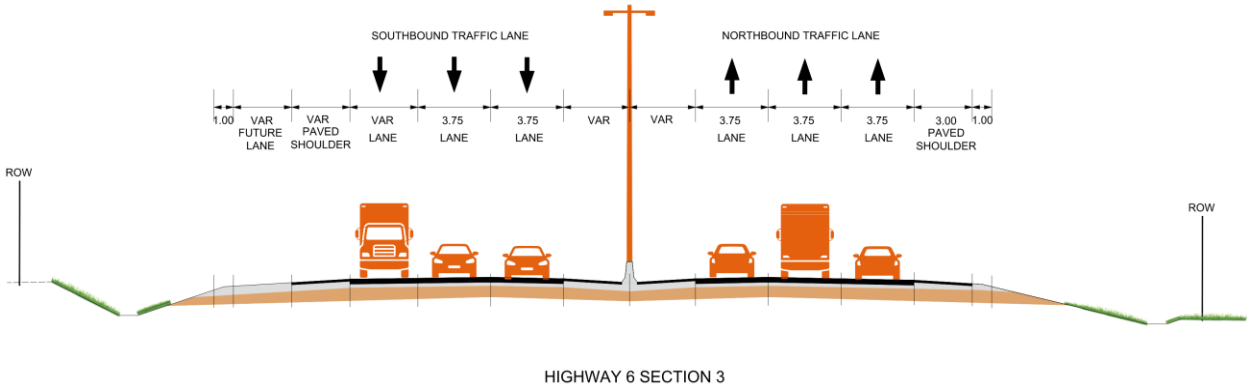

Figure 9. Highway 6 Full Construction – From North of Mountain Brow Road to the South of the Interchange

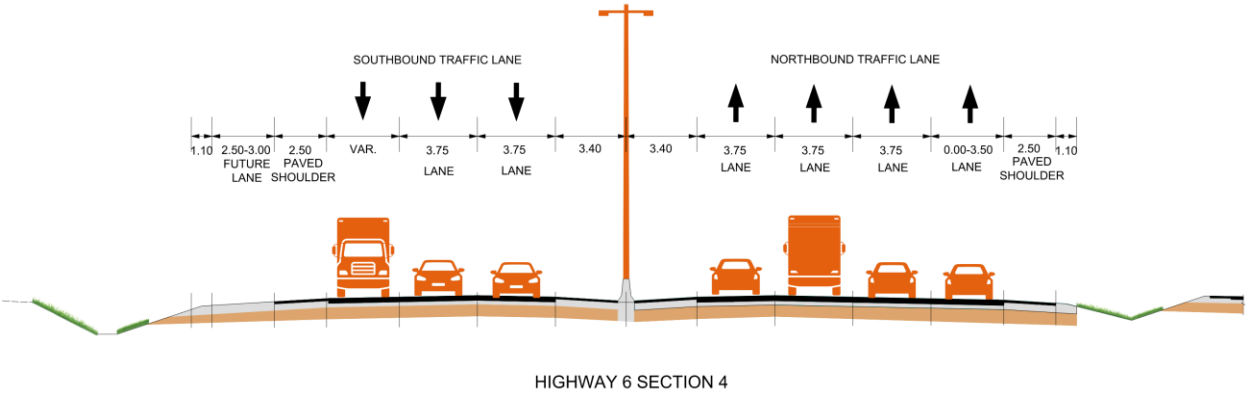

Figure 10. Highway 6 Full Construction – Within the Interchange

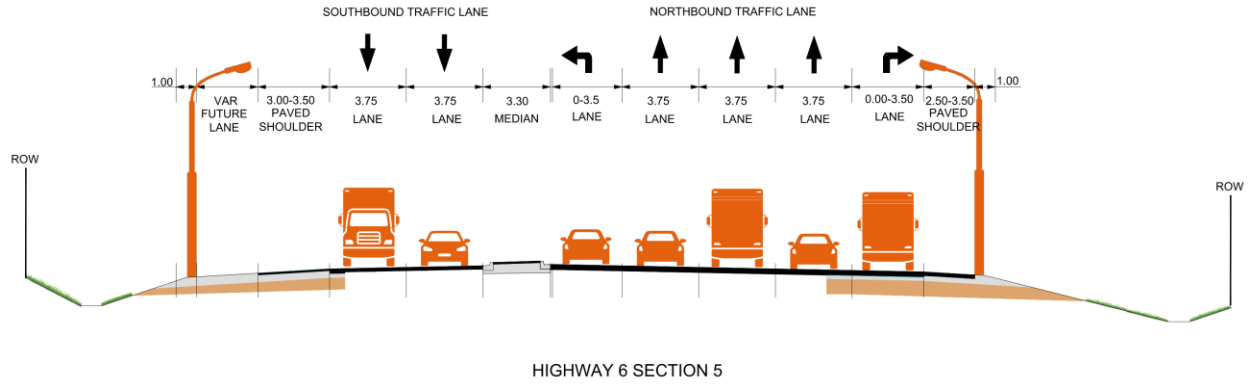

Figure 11. Highway 6 Widening – From North of Woodsworth Avenue to North of Parkside Drive

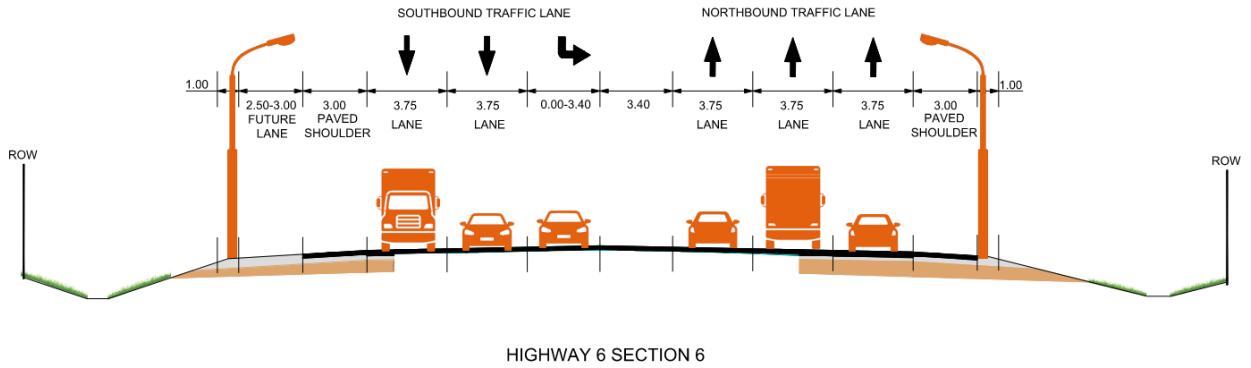

Figure 12. Highway 6 Widening – From North of Parkside Drive to the Northern Limits of the Interchange

Part 2: Resurfacing

As shown in **Figure 13**, an approximate 1.7 km of resurfacing works is proposed along Highway 6 between the southern limit of this project to the northern limit of Highway 403 interchange, including the Highway 6 / York Road interchange.

The 100mm of existing asphalt traffic lanes will be milled and repaved with 60 mm of SP 19.0 base course and 40 mm of SP 12.5 FC2 asphalt surface course.

The existing paved shoulders will be milled and repaved with 40 mm of SP 12.5 FC2 asphalt.

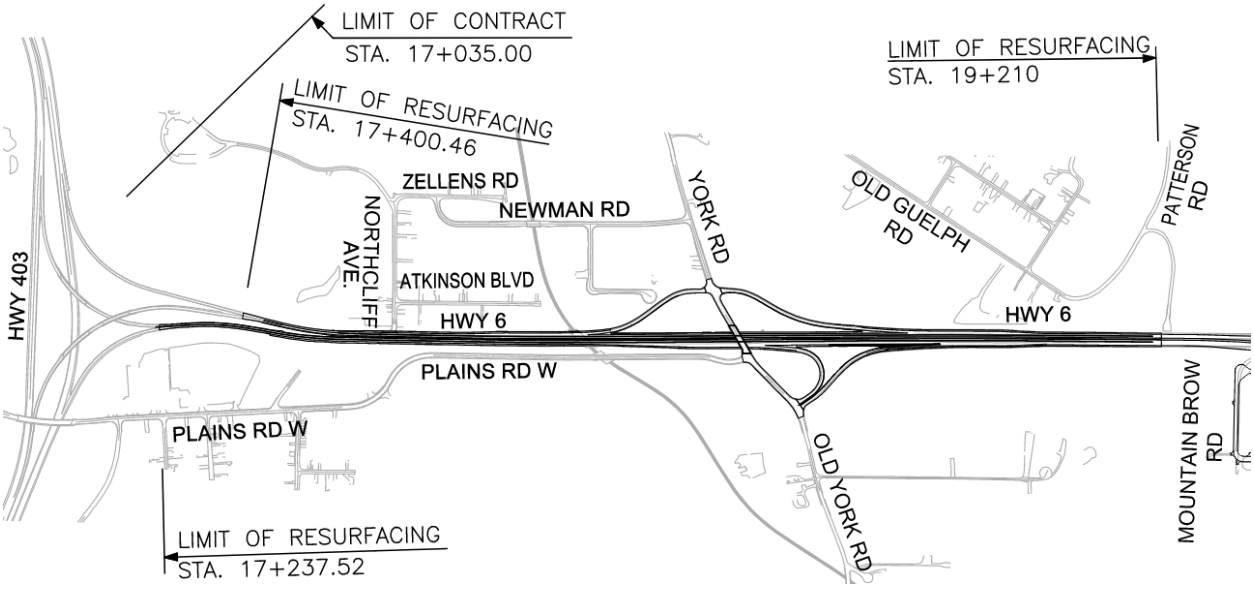

Figure 13. Highway 6 - Resurfacing Works

4.1.2. Highway 5

The Highway 5 corridor extends from east of the Coreslab Drive intersection to west of the Clappison Avenue intersection, covering a total length of approximately 1.7 km, as shown in **Figure 14** and **Figure 15**. It has been designed for design speed of 80 km/h (posted speed of 60 km/h).

The Eastbound Lane (EBL) begins as a single lane at the west project limit, transitioning to two-through lanes and one left-turn lane approaching the Innovation Drive intersection. The two-through lanes continue with additional SCLs for the W-S and W-N ramps approaching the interchange. The three-through lanes configuration starts at the new Highway 5 and Highway 6 interchange through to Leavitt Boulevard intersection and ties into the existing at the east project limit.

The Westbound Lane (WBL) begins as three-through lanes at the east project limit. The three-through lane configuration continues past the Leavitt Boulevard intersection with additional SCLs for the E-S and E-N ramps. It then transitions to two-through lanes across the interchange plus a left-turn lane to Commercial Access Road and left-turn lane to Innovation Drive. The two through lanes continue past the Innovation Drive intersection, then transition to one through lane to tie-in to the existing at the west project limit.

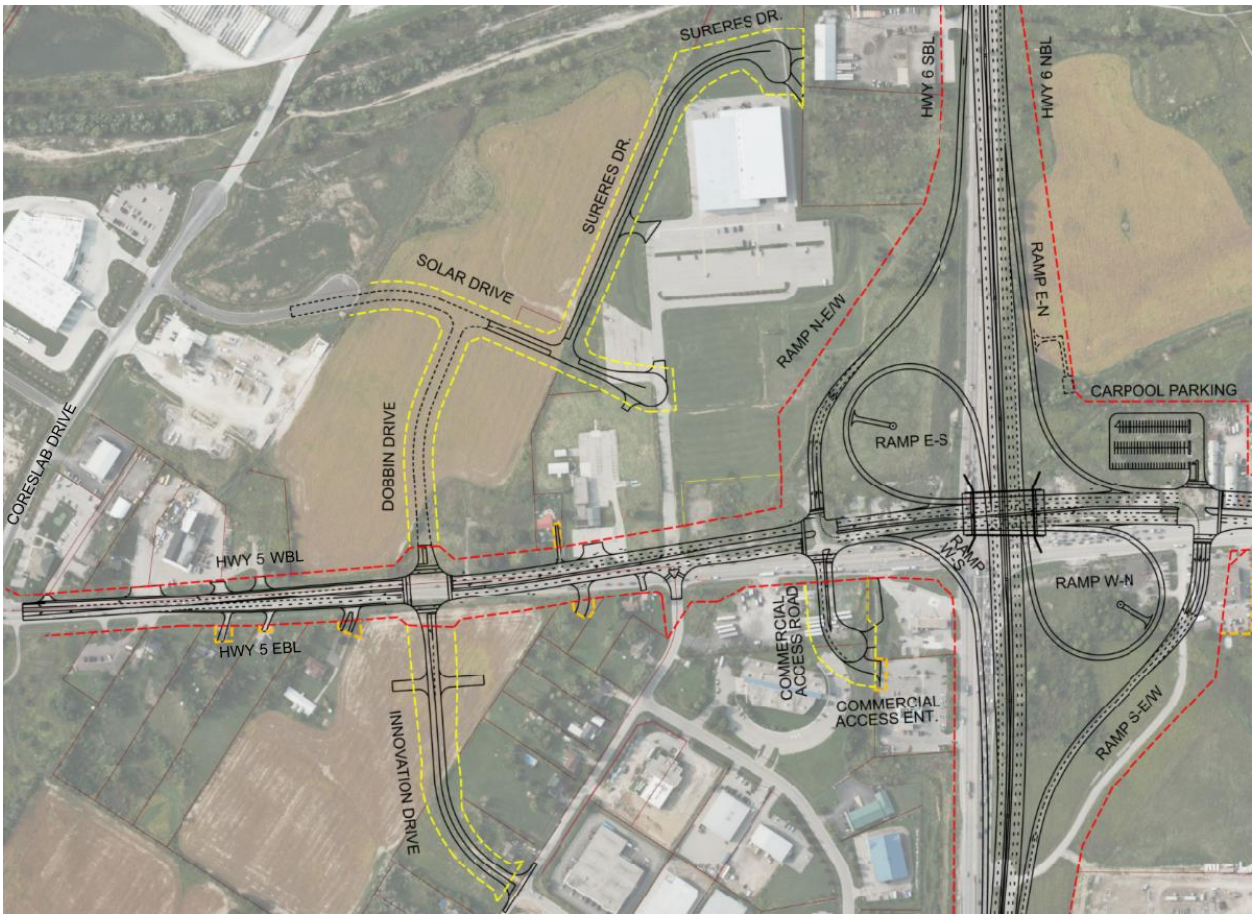

Figure 14. Highway 5 – New Construction West of the New Interchange

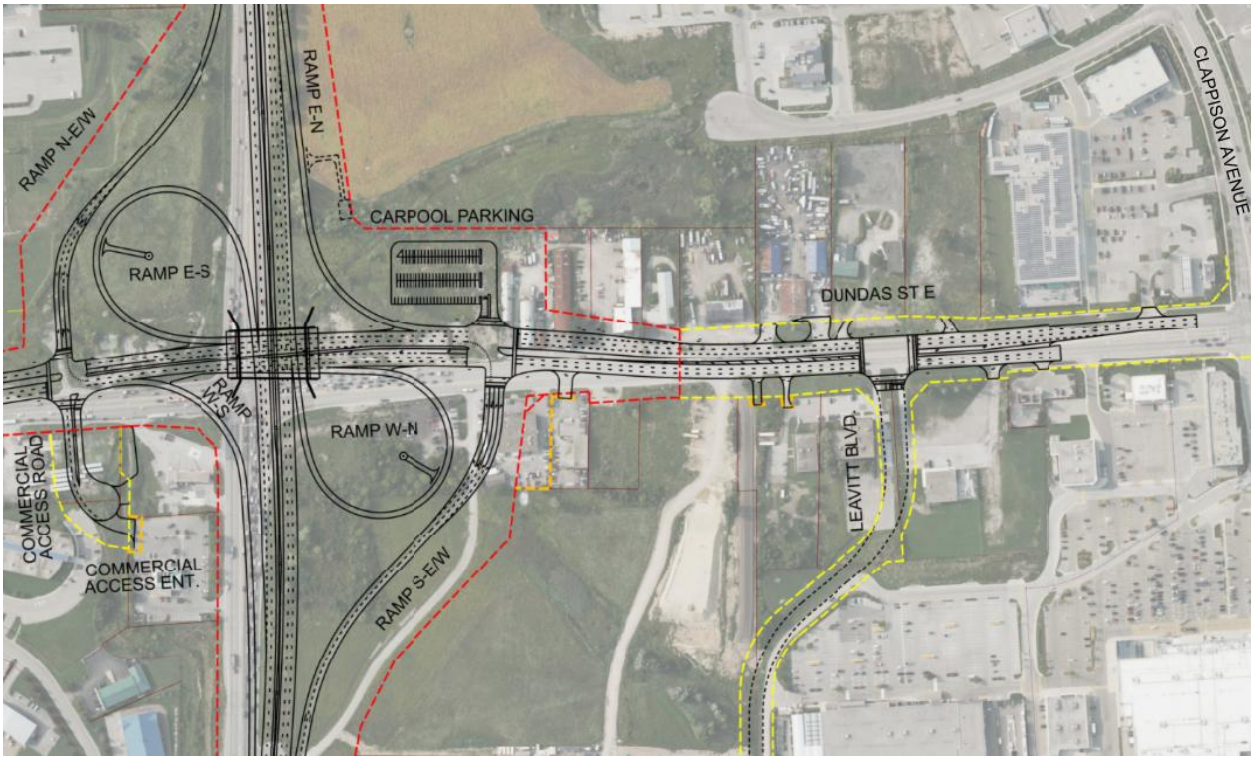

Figure 15. Highway 5 / Dundas St. East – New Construction East of the New Interchange

The following figures, Figures 16 to 17, provide graphic interpretations of two typical cross-sections at Highway 5.

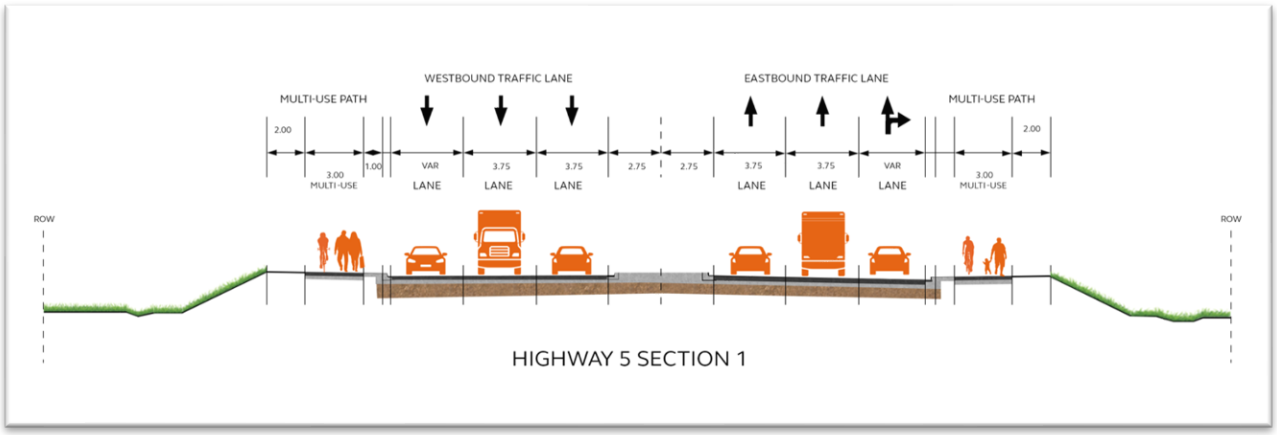

Figure 16. Highway 5 – Urban Full Construction Typical Section – Within Bridge Approach

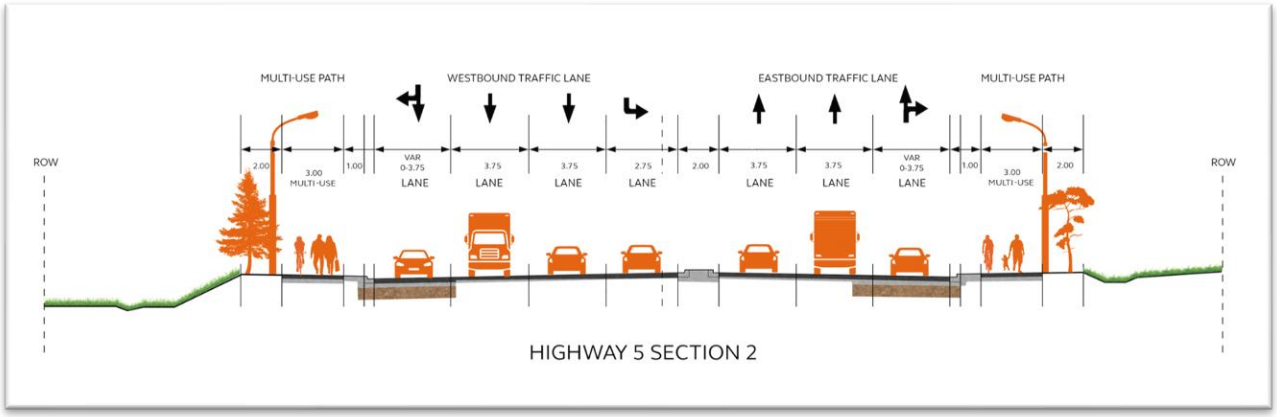

Figure 17. Highway 5 – Urban Widening Typical Section – Beyond Bridge Approach

4.2. Bridge Structure

The proposed interchange structures will consist of two separate bridges (North and South Decks) carrying Highway 5 over Highway 6, with dimensions as shown in **Table 2**. The North Deck (ND) will carry the westbound Highway 5 lanes and the South Deck (SD) will carry the eastbound Highway 5 lanes. Each deck will accommodate three traffic lanes, one SCL, a raised median, and a sidewalk (multi-use path) with parapet walls and railing (see **Figure 18**).

Table 2. Bridge Dimensions

	North Deck	**South Deck**
Length	2 x 28.5 m (span), 58.5 m (total)	2 x 28.5 m (span), 58.5 m (total)
Width at the West Abutment	21.7 m	16.6 m
Width at the Pier	20.6 m	19.0 m
Width at the East Abutment	19.5 m	21.7 m

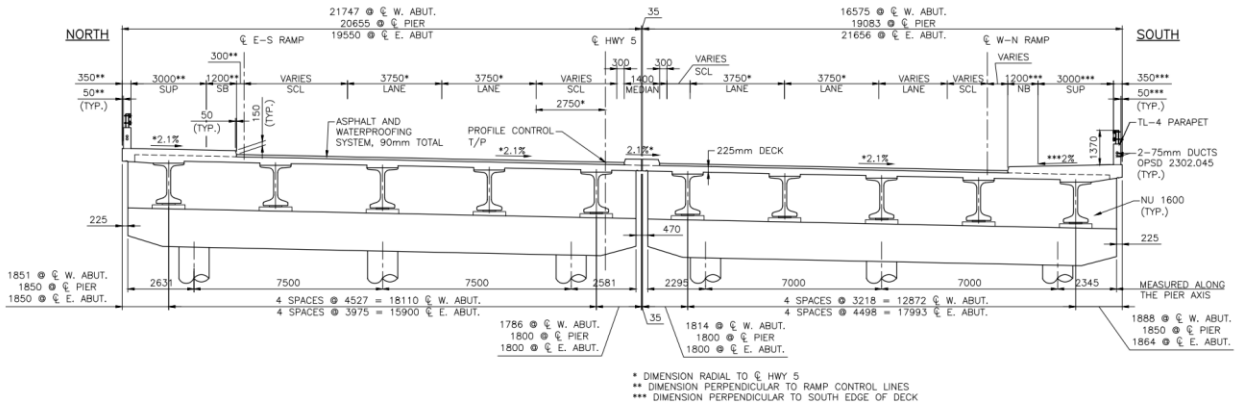

Figure 18. Typical Cross-section of the Highway 5 over Highway 6 Bridge

Each bridge will consist of a two-span continuous cast in place concrete deck slab composite with longitudinal precast concrete girders (Type NU1600). The deck structures will be integral with the abutments and central piers.

Figure 19 and **Figure 20** show the bridge south elevation with the Highway 6 Stage 1 and Stage 2 road layout respectively. The north deck and the south deck will be separated by a joint with a proprietary seal system within the raised median.

Each integral abutment stem will be supported on piles driven to bedrock, with the piers supported on spread footings.

A Reinforced Soil Slope (RSS) false abutment will be included in front of the integral abutment stems to retain the approach embankment earthworks. RSS walls will return at approximately 60 degrees at each abutment corner to retain the roadway earthworks. A barrier system will be provided in front of the RSS wall at each abutment as per MTO Standards.

A central pier, integral with the superstructure, will comprise of a Reinforced Concrete (RC) pier cap, supported by circular RC columns supported on an RC pad foundation. The pier supporting the north deck is independent of that supporting the south deck. Concrete barriers will be provided in front of the piers on either side.

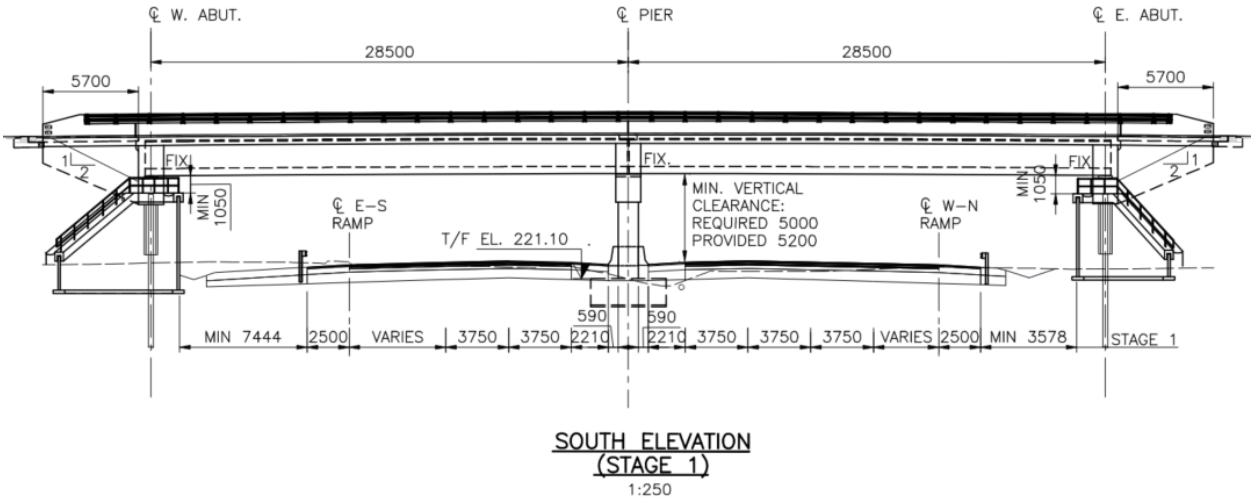

Figure 19. Stage 1 South Elevation of the Highway 5 over Highway 6 Bridge

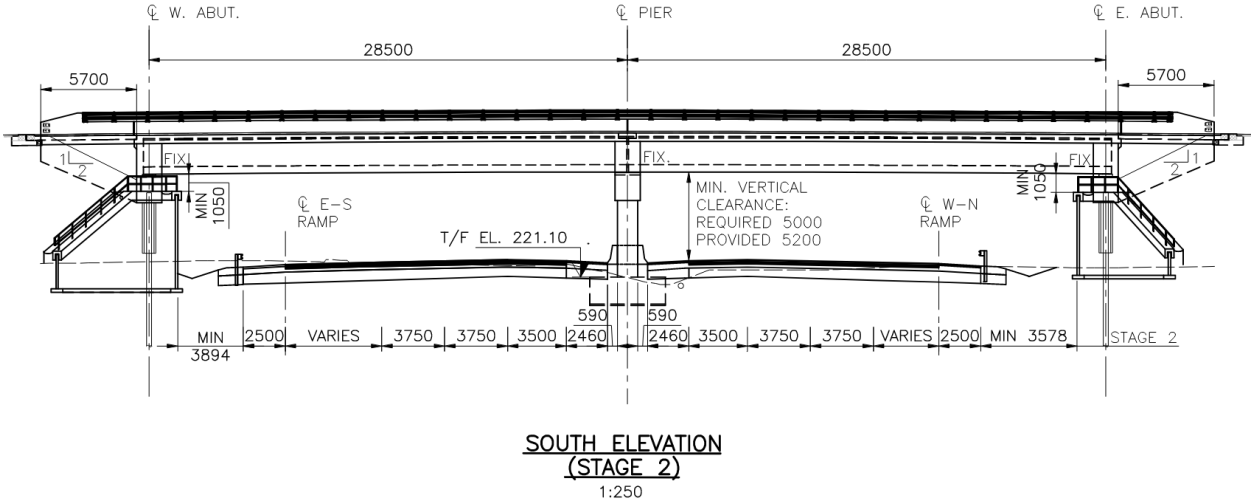

Figure 20. Stage 2 South Elevation of the Highway 5 over Highway 6 Bridge

4.3. Municipal Roads

The following new roads and modifications to existing roads will be implemented as part of this project:

- Clugston Avenue: A new two-lane rural roadway (3.35m x 2) will be constructed to connect Garwood Avenue and Woodsworth Avenue. A cul-de-sac will be provided at the southwest corner of the road to accommodate turnaround movements. It will provide a new traffic connection following the closure of the Garwood Avenue intersection at Highway 6.

- Parkside Drive: At the east leg of the intersection, five lanes will be constructed, including:
  - Two eastbound receiving lanes (3.75 m each)
  - Three westbound departure lanes: a left-turn lane (3.5 m), a through lane (3.75 m), and a right-turn lane (3.5 m)

  The new road section will transition and tie into the existing two-lane configuration.
- Parkside Bulb: A turnaround bulb will be constructed on the opposite side of Parkside Drive to allow property owners on the west side of Highway 6 to safely perform a northbound left turn into the bulb and then a right turn onto southbound Highway 6.
- Commercial Access: A new urban section roadway will be constructed with three lanes, consisting of:
  - Two southbound traffic lanes (3.5 m each)
  - One northbound traffic lane (5.0 m)

  A channelized island will be introduced at the intersection to prohibit northbound through movements and left turns, improving traffic safety and flow.
- Mountain Brow Road: A new two-lane road (4.0 m x 2) will be constructed to replace the existing Mountain Brow Road. A cul-de-sac will be constructed at the eastern end of the road, adjacent to Highway 6. Access to residential and business properties will be maintained via Dundas Street East through Leavitt Boulevard.
- Innovation Drive: The existing two-lane roadway (5.5 m x 2) will be extended from South Drive to Highway 5. At the Highway 5 intersection, the road will transition to three lanes, including:
  - Two departure lanes (3.5 m and 3.75 m)
  - One receiving lane (3.75m)

  The Innovation Drive extension will improve local traffic flow and connectivity.
- Solar Drive: The existing two-lane roadway (4.63 m x 2) will be extended eastward towards North Wentworth Drive, which will be closed. A significant portion of Solar Drive has already been constructed by others. As a result, only the extension will be constructed by MTO. The Solar Drive extension will improve local traffic flow and connectivity.
- Sureres Drive: A new two-lane roadway (4.63 m x 2) will be constructed to connect the new Solar Drive to the Harry Howell Twin-Pad Arena. This new road will provide enhanced access to the Arena’s parking lot as well as other properties within this vicinity.

4.4. Driveway and Access

The existing Petro-Canada gas station entrances, one on Highway 5 and two on Highway 6, as well as the Wendy's entrance on Highway 6, will be closed to accommodate the construction of the W-S ramp. New access points will be provided via the Commercial Access Road, offering direct connectivity to Highway 5.

The existing entrance to Trans East Trailers on Highway 5 will be closed. A new access will be constructed, connecting to the newly extended Solar Drive.

The existing Mountain Brow Road will be closed at Highway 6 to allow for the construction of the S-E/W ramp. Mountain Brow Road will be reconstructed to connect with Leavitt Boulevard, providing access to Highway 5. Additionally, the reconstructed Mountain Brow Road cul-de-sac will provide a new access to connect with the property of Liburdi Engineering Limited.

North Wentworth Drive will be closed at Highway 5. Traffic will be rerouted using the new Sureres Drive and extended Solar Drive to access Highway 5, ensuring continued local connectivity.

The existing Garwood Avenue intersection at Highway 6 will be closed. A new connection via Clugston Avenue will link Woodsworth Avenue to Highway 6, maintaining access for this area.

Other driveways and accesses will be reconstructed to accommodate the new construction.

4.5. Illumination

The existing conventional lighting along Highway 6 will be replaced with new median mounted conventional LED lighting and High Mast LED lighting within the interchange. Conventional LED lighting will be installed along the new ramps. North of Woodsworth Avenue to the north project limits, LED luminaires will be installed on hydro poles along the east side of Highway 6 due to clearance constraints for standalone lighting. New LED underpass lighting will be included on the new underpass structure for Highway 5 over Highway 6. The existing lighting on Highway 5 within the project limits will be replaced with new conventional LED lighting conforming to MTO and City of Hamilton's standards. Municipal lighting will be installed/upgraded on Innovation Drive, Woodsworth Avenue, Garwood Avenue, Solar Drive, Sureres Drive, Mountain Brow Road and the new commercial access road to City of Hamilton's standards.

LED luminaires with directional optics will be used to prevent light spillage onto adjacent properties from the high mast lighting.

4.6. Traffic Signals

New traffic signals will be installed at the following locations (shown in red on **Figure 21**):

- Highway 5 at N-E/W Ramp and Commercial Access Road
- Highway 5 at S-E/W Ramp and Carpool Lot Access

There will be modifications of the existing traffic signals at the following locations (shown in blue on **Figure 21**):

- Highway 5 and Dobbin Drive/Innovation Drive
- Highway 5 and Leavitt Boulevard
- Highway 6 and Parkside Drive

The traffic signals at the following intersections (shown in green on **Figure 21**) will include pedestrian crosswalks and bicycle cross rides. They will be compliant as per the *Accessibility for Ontarians with Disabilities Act* (AODA) and include bicycle signals.

- Highway 5 at N-E/W Ramp and Commercial Access Road
- Highway 5 at S-E/W Ramp and Carpool Lot Access
- Highway 5 and Dobbin Drive/Innovation Drive
- Highway 5 and Leavitt Boulevard

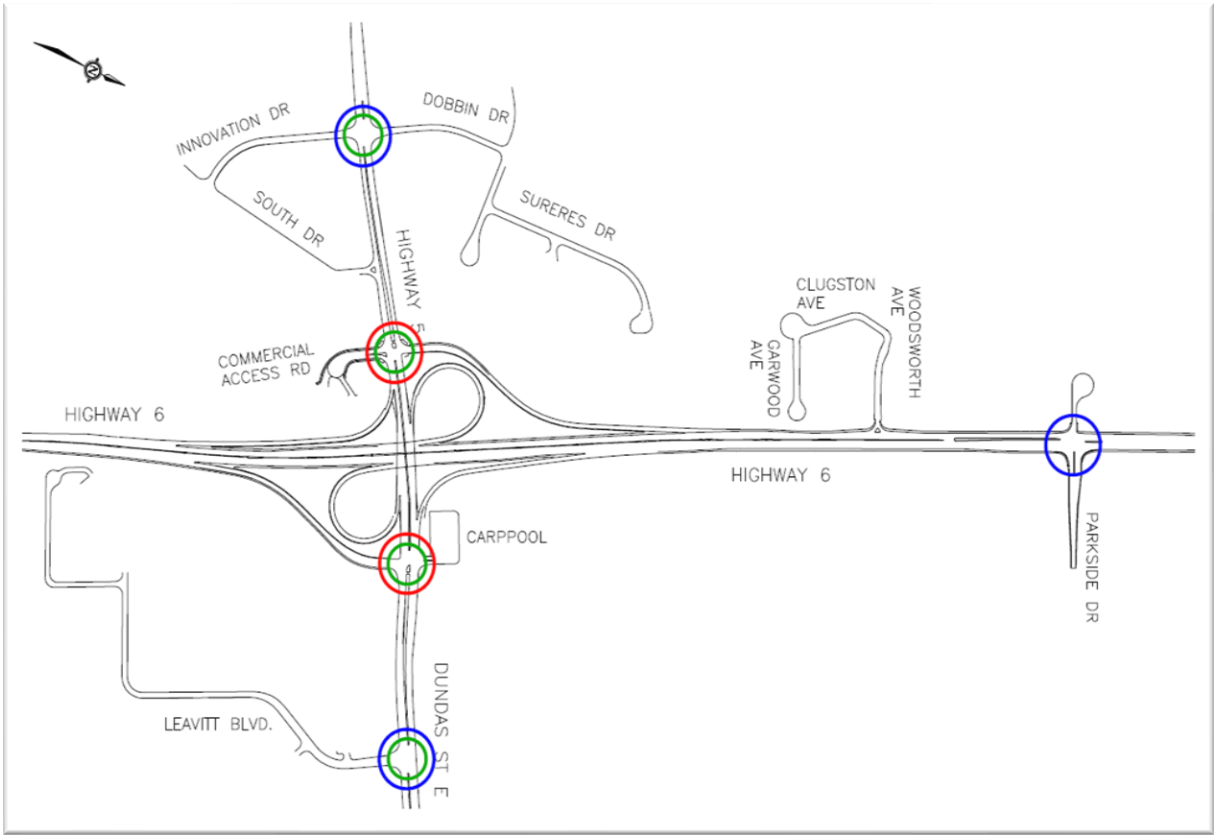

Figure 21. New Traffic Signals and Modifications of Existing Traffic Signals

4.7. Active Transportation, Transit and Commuter Parking Lot

The interchange will accommodate active transportation users (cyclists and pedestrians) with a 3.0m wide multi-use path (MUP) on both sides of Highway 5 / Dundas Street East and access to the new commuter parking lot. The MUP will connect to sidewalks and existing or planned cycling facilities within the City of Hamilton, in accordance and compatible with the City's long terms plans. The MUP will include signalized crossings at ramp intersections. The interchange includes features and geometries to support the safe movement of pedestrians and cyclists, and 1.5 m wide sidewalks will be introduced along Innovation Drive, Commercial Access Road, Solar Drive and Sureres Drive.

A commuter parking lot will be constructed in the northeast quadrant of the new interchange. The commuter parking lot at the Highway 5/6 Interchange was identified as necessary based on the MTO Central Region Carpool Lots Opportunity Study (2007) and regional transit planning for Hamilton and GO Transit. Positioned in the northeast quadrant of the interchange, it provides high visibility and accessibility, making it an optimal location. The lot aims to reduce congestion by encouraging carpooling and future transit use, serving both north-south Highway 6 and east-west Highway 5/Dundas Street East commuters. It will be built on surplus MTO property, which minimizes additional land acquisition costs while allowing space for future expansion. The project aligns with Hamilton's long-term transportation strategy, enhancing regional connectivity and sustainable travel options.

4.8. Culvert Extension at Borer's Creek

The Highway 6 crossing of Borer's Creek is located north of Highway 5 where the existing highway has five lanes: two northbound, two southbound and a centre turning lane. The proposed design will include five traffic lanes (three northbound and two southbound), two speed change lanes (one northbound and one southbound) and a paved median with a barrier wall. Due to the widening of Highway 6, the existing twin culvert and single culvert will be extended with cast in place retaining walls in between. The twin culvert will be extended on the west side with a new headwall installed over the existing culvert on the east side, and the single culvert will be extended on the east and west sides.

4.9. Drainage Improvements

Drainage improvements are included to accommodate the new Highway 5 and Highway 6 interchange. The following presents a summary of the drainage improvements.

- Rebuild the crossfall of Highway 6 between Highway 5 and Parkside Drive such that the inside lanes and median shoulders drain towards the median barrier.
- Install a new closed drainage system. A storm sewer will be provided on Highway 6 under the median barrier from the south limits northerly to Parkside Drive. The inside lanes and shoulders will drain into the storm sewer while the outside lanes will drain into the newly constructed ditches.

- Existing culverts at Grindstone Creek Tributary crossings will be replaced as follows:
    - Installation of four new culverts (1A, 1, 2 and 2A) to provide sufficient hydraulic capacity; and
    - Removal of two existing culverts (1 and 2).
- Swales will be installed before storm sewer outfalls to Borer's Creek and Grindstone Creek Tributary to provide runoff water quality control.
- Drainage for the municipal roads in the vicinity of the proposed new Highway 5 and Highway 6 Interchange will be included. Municipal roads will largely be drained by roadside ditches and culverts.
- Drainage of the new commuter parking lot in the northeast quadrant of the interchange includes curb outlets and new ditches which will convey the run-off to the adjacent culvert.

The existing Stormwater Management (SWM) Pond located behind Technology Park will continue to provide quality and quantity controls to runoff water resulting from the interchange area.

4.10. Utility Relocation

Utility companies including Enbridge Inc., Alectra Inc., Bell Canada Enterprises Inc., Cogeco Connexion, and Rogers Communications Inc. were contacted, and numerous regular meetings were held to discuss the proposed works and impacts to their infrastructure. Relocation requirements were confirmed during the Detail Design. Relocation coordination and plans along with mitigation measures have been developed and relocation of utilities is being completed by the utility companies in advance of MTO's construction contract.

In addition, underground ducts will be installed by MTO's construction contractor on behalf of Alecta in several locations as a part of the interchange contract.

As part of MTO's construction contract, the existing City of Hamilton's watermain network within the interchange area will be modified by relocating a majority of the assets outside of the future highway travel lanes. The relocated watermain along Highway 5 and north of Highway 6 will be upsized to 500 mm. New watermain is also proposed within the future Innovation Drive.

The existing City of Hamilton's 675 mm sanitary sewers located under Highway 6 will be relocated to the west of the future W-S and E-S ramps, and the existing 450 mm sanitary sewers will be relocated north of the future carpool parking lot as part of MTO's construction contract.

4.11. Property Requirements

Partial and full property requirements were identified to accommodate the new interchange construction, and MTO has proceeded with the property acquisition process in accordance with MTO policy.

4.12. Construction Staging

Construction of the Highway 5 and 6 Interchange will be completed in a series of stages to maintain traffic flow and ensure safety throughout the project. Traffic will remain on Highway 5 and Highway 6 during construction, with temporary adjustments, lane shifts and traffic control measures implemented as needed.

Table 3 summarizes the major activities for each construction stage. Actual sequencing may be adjusted during construction based on field conditions, weather, and coordination with utilities.

Table 3. Construction Staging

Stages	Proposed Works
Pre-Stage 1	Preparatory work is carried out to support future stages, including: • Removals and site clearing; • Installation of temporary traffic signals; • Early utility relocation work; and • Initial roadway adjustments to support future traffic shifts.

Stage 1A	• Construction focuses on new and modified municipal roads near the interchange area, including:
	  ○ Innovation Drive;
	  ○ Commercial Drive;
	  ○ Solar Drive extension;
	  ○ Sureres Drive;
	  ○ Clugston Avenue;
	  ○ Mountain Brow Road
	  ○ Modifications at Parkside Drive; and
	  ○ The Parkside Bulb.
	• Local widening on Highway 5 and removal of existing local median barrier wall on Highway 6.
	• Local widening on Highway 5 / Innovation Drive intersection.
	• Activation of temporary signals at key intersections.

Stage 1B	• Completion of local widening on Highway 5, including temporary widening at Innovation Drive. • Completion of Solar Drive cul-de-sac.

	• Remaining roadway adjustments required to prepare for major construction activities in future stages.
Stage 2A	• Widening of Parkside Drive (North side) and removal of medians at the Parkside Drive intersection. • Widening of Dundas Street near Leavitt Boulevard. • Partial construction of Dundas Street grade raise / ramp E-N approach. • Construction of Highway 5 westbound lanes from Ramp N-E/W towards Coreslab Drive. • Early grading and earthworks for future ramp alignments.
Stage 2B	• Reconstruction of the Dundas Street East / Leavitt Boulevard intersection and removal of temporary widenings. • Installation of temporary signals at the Highway 5 / Highway 6 intersection. • Completion of roadway adjustments needed for major interchange work.
Stage 2C	• Activation of temporary signals at the Highway 5 / Highway 6 intersection. • Implementation of temporary traffic control on Highway 6 to enable widening and structure work. • Work required to transition the project into winter configuration. • Removal of median islands on Highway 6 and Highway 5 / Dundas Street East. • Extension of the Borer's Creek culvert (east side). • Construction of the Grindstone Creek Tributary box culvert at Ramp E-N. • Widening of Highway 6 from the Ramp E-N bullnose to north of Parkside Drive, including shoulder strengthening. • Widening of the south side of Parkside Drive. • Construction of Ramp E-N and the commuter/carpool parking lot in the northeast quadrant. • Realignment of Highway 6 from the south limit to the S-E/W ramp bullnose. • Construction of Ramp S-E/W from the ramp bullnose to south of Dundas Street East, including temporary ramp connections.
Stage 3A	• Removal of remaining Highway 6 intersection islands. • Construction of the east segment of the new Grindstone Creek Tributary box culvert at Highway 6. • Temporary extension of the existing Highway 6 Grindstone Creek culvert. • Construction of the Highway 5 underpass pier, east abutment, and north-side RSS wall.

	• Realignment of Highway 6 between the S-E/W and E-N ramp bullnoses. • Construction of Ramp N-E/W and components of the Dundas Street grade raise / approach. • Partial construction of Ramp W-N. • Traffic control adjustments in preparation for winter configuration.
Stage 3B	• West extension of the Borer's Creek culvert. • Construction of the north section of the Grindstone Creek culvert under Highway 5. • Temporary extension of the existing Highway 5 Grindstone Creek culvert. • Construction of Highway 5 approaches and Ramp E-S. • Removal of Highway 6 median south of Highway 5. • Construction of a temporary W-S connection. • Progression of structural and roadway works required for subsequent stages.
Stage 4	• Construction of the second segment of the Highway 6 Grindstone Creek culvert. • Completion of the middle portion of Highway 6 road works. • Continued completion of intersecting road connections as staging allows.
Stage 5	• Construction of the west abutment and a portion of the Highway 5 underpass deck. • Construction of the west segment of the Highway 6 Grindstone Creek box culvert. • Removal of the existing Highway 6 Grindstone Creek culvert. • Construction of the Highway 5 / Dundas Street approach embankments. • Transition of Highway 6 traffic into its winter configuration as needed for structural works. • Completion of remaining deck. • Completion of Ramp E-S tie-ins. • Temporary signals at N-E/W ramp terminals. • Partial construction of Commercial Access Road and culvert. • Construction of Highway 6 median barriers within project limits. • Progression of driveway and access works as required.
Stage 6	• Completion of Ramp W-N and S-E/W ramp connections. • Construction of Highway 5 underpass east abutment and south-side RSS wall. • Activation of temporary traffic signals at N-E/W ramp terminal. • Installation of permanent traffic signals at S-E/W ramp.

Stage 7A	• Completion of the Commercial Access Road. • Removal of the temporary S-E ramp connection. • Completion of the Highway 5 box culvert and abandonment of the existing cross-culvert. • Completion of Highway 5 embankments. • Widening of South Drive intersection and adjacent Highway 5 sections. • Completion of remaining Highway 5 / Highway 6 intersection construction. • Completion of west-side abutment works and south-side RSS wall. • Activation of traffic signals at S-E/W ramp terminal.
Stage 7B	• Construction of Ramp W-S and Highway 6 median. • Milling and paving of Highway 6 (between Highway 403 and Sta. 19+210) and York Road. • Installation of pavement markings on Highway 6 and York Road.
Stage 7C	• Completion of median islands at Leavitt Boulevard, Parkside Drive, and other municipal intersections. • Completion of Highway 5 median construction. • Removal and reinstatement of temporary widened areas. • Final milling and paving on Highway 5 and Highway 6. • Completion of pavement markings. • Opening of the interchange and roadways in their final configuration.

5. TRANSPORTATION ENVIRONMENTAL STUDY REPORT FIVE YEAR REVIEW

The MTO Class EA document states that a review of a TESR/TESR Addendum must be carried out if a project has not been constructed within five years of the Notice of Submission for the TESR/TESR Addendum. The five-year review considers any changes since the submission of the TESR/TESR Addendum. The changes can include new conditions in the project area, government policies, engineering standards or technologies for mitigation. In 2025, a review of the 2003 TESR and 2013 TESR Addendum was conducted. Some minor modifications have been made to the preliminary design of this project documented in the TESR and TESR Addendum. No significant changes were identified and therefore, an additional TESR Addendum is not required. These modifications are summarized in **Table 4.**

Table 4. Comparison of the Project between Preliminary Design and Detail Design

Preliminary Design TESR Addendum - 2013	Detail Design DCR - 2025	Modifications
Widening of Highway 5 and Highway 6	Widening of Highway 5 and Highway 6	• No change on Highway 5 • Preliminary design of a future third Highway 6 southbound lane through the project limits was included in the 2013 TESR Addendum and received environmental assessment (EA) approval. It was intended that design, construction and implementation of the third southbound lane would occur together. However, MTO has confirmed that advanced construction works for the additional Highway 6 southbound lane will be completed as part of the currently proposed construction contract. Highway 6 will be widened for future protection, with grading and ditching completed in advance, and the granular paved shoulder width will be widened to accommodate this future expansion. The final completion of and timing for opening the third southbound lane to traffic is still to be determined at this time. • Based on updated traffic projections, these advance construction works will reduce the need for extensive future construction, minimizing long-term disruptions, traffic delays, and environmental impacts while ensuring the corridor remains adaptable to projected growth and infrastructure demands. By proactively widening the granular shoulder, this modification ensures that when the third lane is required, the transition will be more seamless, cost-effective, and less disruptive to existing traffic flow.

Preliminary Design TESR Addendum - 2013	Detail Design DCR - 2025	Modifications
Provision of 1.5m wide sidewalks on both sides of Dundas Street East and on Highway 5 just west of Highway 6 within the interchange limits.	Construction of Multi-Use-Paths (MUPs) on both the north side and south side of Dundas Street East and Highway 5 within the project limits (from Innovation Dr. intersection to west of Clappison Ave. Intersection).	• Sidewalks have been replaced with a 3.0m wide MUP on both sides of Dundas Street East and Highway 5, from Innovation Dr. to west of Clappison Ave. • No sidewalk or MUP west of Innovation Dr. • The interchange will now provide enhanced accessibility for active transportation users (cyclists and pedestrians), aligning with the City of Hamilton's long-term infrastructure plans. The MUPs will improve connectivity to existing and planned cycling and pedestrian routes, ensuring a safer and more integrated network.
Provision of on-road bike lanes on Dundas Street East and on Highway 5 just west of Highway 6 within the interchange limits.	Construction of on-road bike lanes on both the north side and south side of Highway 5 west of Highway 6 (from east of Coreslab Dr. intersection to Innovation Dr. intersection) and construction of MUPs on both the north side and south side of Dundas Street East and Highway 5 within the project limits (from Innovation Dr. intersection to west of Clappison Ave. intersection).	• The previously planned on-road bike lanes have been replaced with 3.0m wide MUPs from Innovation Dr. to west of Clappison Ave. • Where MUPs are implemented will enhance safety and usability by separating cyclists from vehicular traffic, creating a more inclusive transportation network that supports the growing demand for cycling infrastructure. The change also ensures alignment with regional cycling strategies, making the corridor more accessible to a broader range of users.

Preliminary Design TESR Addendum - 2013	Detail Design DCR - 2025	Modifications
	Pavement rehabilitation of Highway 6 from Bruce Trail Culvert southwards to the north limit of Highway 403/Highway 6 interchange.	• Pavement rehabilitation added to the project scope. • Considered a minor adjustment as it only involves pavement rehabilitation and only the highway pavement will be impacted. This will ensure roadway longevity, improve driving conditions, and prevent further deterioration, ultimately reducing the need for more extensive repairs in the near future.

6. EXISTING ENVIRONMENTAL CONDITIONS

6.1. Fish and Fish Habitat

The locations of the watercourses/drainage features in the study area are shown in **Appendix D.** One watercourse constituting direct fish habitat is located within the study area (Borer's Creek). Note that there are several other drainage features located both above and below the Niagara Escarpment, but that none of these constitutes direct fish habitat. They were referred to as Watercourse 2, Watercourse 3, Watercourse 4, and Watercourse 5 in preliminary design (and currently in **Appendix D**). Watercourses 2, 3, and 5 were dry during all site visits, except for some permanent, isolated (behind rock check dams) pools in Watercourse 2 in the northeast quadrant of the intersection. In addition, there are permanent ponds within an old quarry at the edge of the Escarpment that drain into Watercourse 3. Watercourse 4 was flowing during both 2023 site visits, but it is unclear where the water originates as it is discharged out of a pipe situated along the steep slope paralleling the east road slope of Highway 6. It likely has a large storm water component as evidence of high flows (erosion, flattened vegetation) was observed. This feature is a series of steps lined with armourstone with a very steep gradient. All these drainage features eventually drain into indirect and direct fish habitat, but within the project area, they are all considered not fish habitat. There is no possibility of fish passage up the Escarpment in any of these features within the study area as gradients are too steep. In addition, there will be no effects from the project on Watercourses 3 and 5. Because of the lack of fish habitat (and of effects for Watercourses 3 and 5), these drainage features are not discussed in detail within this report. Mitigation to protect their water quality and to maintain their conveyance to downstream habitats is included.

Borer's Creek crosses under Highway 6 approximately 520 m northwest of the Highway 5/6 intersection through a two-cell concrete box culvert flowing from east to west. The northern cell (open bottom) conveys the entire watercourse during low flow conditions while the south cell receives water only during flood events and functions mainly as a paved path for pedestrians and cyclists. Substrates are coarse through the culvert (boulder, cobble, gravel, sand) and the wetted width is wall to wall (i.e., there are no banks). Water depth through the culvert is approximately 30 cm and morphology is run. There is a short (10 m), shallow riffle downstream of the culvert. There is also a single cell, open bottomed concrete culvert located approximately 15 m to the south of the watercourse crossing. This culvert is situated at a higher elevation than the two-cell culvert that conveys Borer's Creek flows. As such, it likely only conveys flows during high flood events or was created for terrestrial passage only. It should be noted that no evidence of flows through this culvert were observed during the site investigations indicating that it likely does not receive any flows and, therefore, is not considered fish habitat.

Fish sampling was not completed during this study. Visual observations of fish were made at Borer's Creek and many leuciscids were observed. Fathead Minnow (Pimephales promelas) was the only one of these identified to species. Northern Pike (Esox lucius) were observed in the pools during the April 12, 2023, site visit indicating that they use Borer's Creek for spawning. The individuals seen were within the pools and potentially use the fringing vegetation (cattails and grasses) for spawning. Please note that the

upstream pool is located approximately 65 m from the upstream end of the Highway 6 culvert and the downstream pool is located approximately 60 m downstream of the downstream end of the Highway 6 culvert. Historical data indicate that both a warmwater and a coolwater fish community are supported in Borer's Creek in the vicinity of the Highway 6 crossing. No aquatic species at risk have been identified in Borer's Creek.

6.2. Terrestrial Ecosystems

6.2.1. Vegetation and Vegetation Communities

There are no Provincially Significant Wetlands (PSWs) within the project area, however portions of the Cootes Paradise PSW and RBG Hendrie Valley-Lambs Hollow PSW complex are located on the south side of Highway 403 adjacent to the project area. Additionally, portions of the Logies Creek Parkside Drive PSW complex are located north of the project area.

Two Areas of Natural and Scientific Interest (ANSI) are located within the study area in the vicinity of the Highway 5 and Highway 6 intersection but not within the project area. The Clappison Escarpment Woods Life Science ANSI is located on the east side of Highway 6 and south of Highway 5 and the King City Quarry Earth Science ANSI is located in proximity of the Clappison Escarpment Woods ANSI, south of Highway 5 and east of Highway 6.

Vegetation communities within the project area consist of a mixture of cultural, forest and wetland communities. Portions of the project area associated with the Highway 5 and Highway 6 intersection have largely been cleared of naturalized vegetation and consists of cultural vegetation community types, agricultural, commercial and residential land uses. To the southeast of the intersection there are a few large stormwater management ponds associated with a former quarry. Naturalized vegetation is primarily located south of the Highway 5 and Highway 6 intersection where large expanses of deciduous forest habitat extend to the east and west along the Niagara Escarpment and beyond the project area.

The majority of vegetation communities associated with the Highway 5 and Highway 6 intersection are generally anthropogenic in origin. South of Highway 5 the project area is connected to naturalized areas along the Niagara Escarpment that contain higher quality vegetation communities. The Ecological Land Classification community types within the project area are identified in **Appendix E.**

A total of five plant species of risk were identified as having occurred within the study area on the Ministry of Natural Resources (MNR), Natural Heritage Information Centre (NHIC). None of the plant species at risk listed were encountered during field investigations except a butternut (*Junglans cinerea)*. A single butternut was identified on the east side of Highway 6 and south of Highway 5. Butternuts are regulated as endangered under the Ontario *Endangered Species Act* and receive 50m of habitat protection.

6.2.2. Wildlife and Wildlife Habitat

Wildlife and wildlife habitat was found to be distributed across the entire project area; natural heritage features were generally restricted to several areas associated with the

Niagara Escarpment. Borer's Creek and two other small drainage features comprise aquatic habitats for wildlife species within the project area. Aquatic habitats within the project area are considered to be low to moderate quality for wildlife species. Riparian habitats and old field habitats provide the most conducive natural heritage features for wildlife. Agricultural lands found within the project area provide habitat for a limited number of wildlife species. Habitats in the project area are largely fragmented from the surrounding natural areas by the presence of roads and development. The wildlife species present are predominantly considered urban or tolerant of human presence and disturbance.

The southern portion of the project area south of the top of the escarpment along Highway 6 contained mainly disturbed areas within the road right-of-way. These areas are bordered by forest along the slope and wetlands at the bottom of the slope. The steep road slopes and tall chain-link fencing keeps wildlife from interacting with vehicles on the roadway.

Based on field observations, 41 species of wildlife could be verified in the project area and most of these recordings came from mammalian signs or identification (through calls and sightings) of bird species. However, by comparing the natural heritage features found in the project area with secondary source information that describes wildlife previously recorded within this region, there is potential for a total of 65 wildlife species.

A total of 29 species of birds were observed in the project area during field investigations. Based on the habitat types present in the project area and secondary source information, an additional 19 species of birds are likely to inhabit the project area.

Five mammal species were directly observed or confirmed during field investigations in the project area based on evidence from signs such as tracks, scats, and runways. Based on the habitat types present and secondary source information, five additional species are likely to inhabit the project area. The mammal species documented represent an assemblage that readily utilizes human-influenced landscapes. No significant wildlife movement corridors were identified within the project area.

Seven herpetofauna species including: Green Frog (*Lithobates clamitans*), Leopard Frog (*Lithobates pipiens*), American Toad (*Anaxyrus americanus*), Spring Peeper (*Pseudacris crucifer*), Dekay's Brownsnake (*Storeria dekayi*), Eastern Gartersnake (*Thamnophis sirtalis*), and Midland Painted Turtle (*Chrysemys picta*) were observed in the project area during field investigations. Based on the habitats present these species are not expected to be distributed throughout the study area, but relatively confined to suitable habitats such as the ponds associated with the rehabilitated quarry or along Borer's Creek and associated riparian lands. Riparian vegetation provides habitat for terrestrial snake species, such as the Eastern Gartersnake. The presence of several individuals of both Dekay's Brownsnake and Eastern Gartersnake at the edge of the Escarpment south of Highway 5 during a warm, early spring day (April 12, 2023) indicates that this area is likely used for hibernation and that these snakes had recently emerged.

6.2.3. Species at Risk

Evaluation of the study area revealed habitat suitable for several species at risk, including Eastern Meadowlark (*Sturnella magna*), and Bobolink (*Dolichonyx oryzivorus*); therefore,

special focus was placed during the surveying of areas where these species could likely occur. This included the screening of features such as old fields and agricultural lands. No Bobolink or Eastern Meadowlark were observed during field investigations.

Three species at risk birds were observed within the study area: Barn Swallow (*Hirundo rustica)*, Chimney Swift (*Chaetura pelagica)*, and Eastern Wood-pewee (*Contopus virens*). Barn Swallow were documented within the project area and were primarily seen foraging above open areas such as manicured lawn, cultural meadows, marshes, and agricultural fields. They were also often in the company of other Swallow species such as Northern Rough-winged Swallow (Stelgidopteryx serripennis). In addition, a single Barn Swallow nest was observed prior to the breeding season within the south cell of the Borer's Creek culvert in both 2010-2011 and 2023. Note that neither the *Endangered Species Act* (ESA) nor *Species At Risk Act* (SARA.) apply to Barn Swallow for protection due to the status as Special Concern (Ontario) and the fact that the project is a provincial undertaking and does not fall within federal jurisdiction under which SARA would apply. This species is, however, protected under the *Migratory Birds Convention Act* (MBCA).

A single pair of Chimney Swift were noted above the ponds southeast of the Highway 5 and Highway 6 intersection and appeared to be passing overhead and did not seem to be actively using the area for breeding as there is a lack of suitable breeding requirements in the location where they were documented. Chimney Swift is regulated as Threatened under the ESA and SARA.

Eastern Wood-pewee was observed within the forest along the top of the Niagara Escarpment. This species is listed as Special Concern both provincially and federally but is not regulated. It is a forest species, typically associated with forest openings, clearings, or edges.

One federally listed Species at Risk turtle, Midland Painted Turtle, was observed in the ponds to the southeast of the Highways 5 and Highway 6 intersection. This species is listed as Special Concern federally but is considered not at risk by Ontario. Several individuals were observed basking within the pond on April 12, 2023.

6.3. Groundwater

Part of the project area is located on the Niagara Escarpment. Overburden within the project area is comprised primarily of glacial till called the Halton Till. The topography consists of relatively flat terrain which slopes downward south of the existing intersection along Highway 6 down the Niagara Escarpment. Borer's Creek flows across the Highway 6 alignment approximately 500 m north of Highway 5. Four un-named streams rise on the slope of the Niagara Escarpment in the southeast and southwest quadrant of the project area. Borer's Creek drains southward towards Lake Ontario. No other groundwater related features have been identified in the project area.

Groundwater level measurements were collected from monitoring wells. Samples were analyzed for various metals, inorganics and general chemistry.

6.4. Land Use and Socio-Economic Environment

During the Detail Design phase of this project, further refinements to the preliminary design were made for the new Highway 5 and Highway 6 interchange, commuter parking lot in the northeast quadrant of the new interchange and new municipal roads as described in Section 4.

6.4.1. Planned Land Uses

According to the **City of Hamilton's *Urban Hamilton Official* Plan (2011),** the entire project area falls within its Urban Boundary and according to its Schedule E-1, the majority of the project area falls within the "Business Park" land use designation except for the lands surrounding Borer's Creek, which is designated as "Open Space". A small portion of the study area north of Borer's Creek on the west side of Highway 6 is designated as "Rural Area".

Greenbelt Plan (2017) – lands on the north side of Highway 5 and within the southern portion of the project area are within the Greenbelt Plan Area under the 'Protected Countryside' designation. Any development within the "Protected Countryside" designated areas are subject to infrastructure policies of the Greenbelt Plan. As required in Section 4.2.1 of the Greenbelt Plan, this project meets the objective of serving "the significant growth and economic development expected in southern Ontario beyond the Greenbelt by providing for the appropriate infrastructure connections among urban centres and between these centres and Ontario's borders". Efforts have been made to limit environmental impacts associated with the proposed works within the Greenbelt Plan. Please see **Appendix E.**

Niagara Escarpment Plan (NEP) (2017) – the project area, on the south side of Highway 5, to the east and west of Highway 6, is within the Niagara Escarpment Plan area (see **Figure 22**). The pink area in **Figure 22** is designated as "Urban Area", the orange area is designated as "Escarpment Protection Area", the green area is designated as "Escarpment Natural Area" and the yellow area is designated as "Escarpment Rural Area". The footprint of the proposed works such as the new interchange and municipal roads north of Mountain Brow Road are located within the "Urban Area" of the plan. The extension of Innovation Drive from South Drive to Highway 5 is within the "Escarpment Protection Area" of the plan.

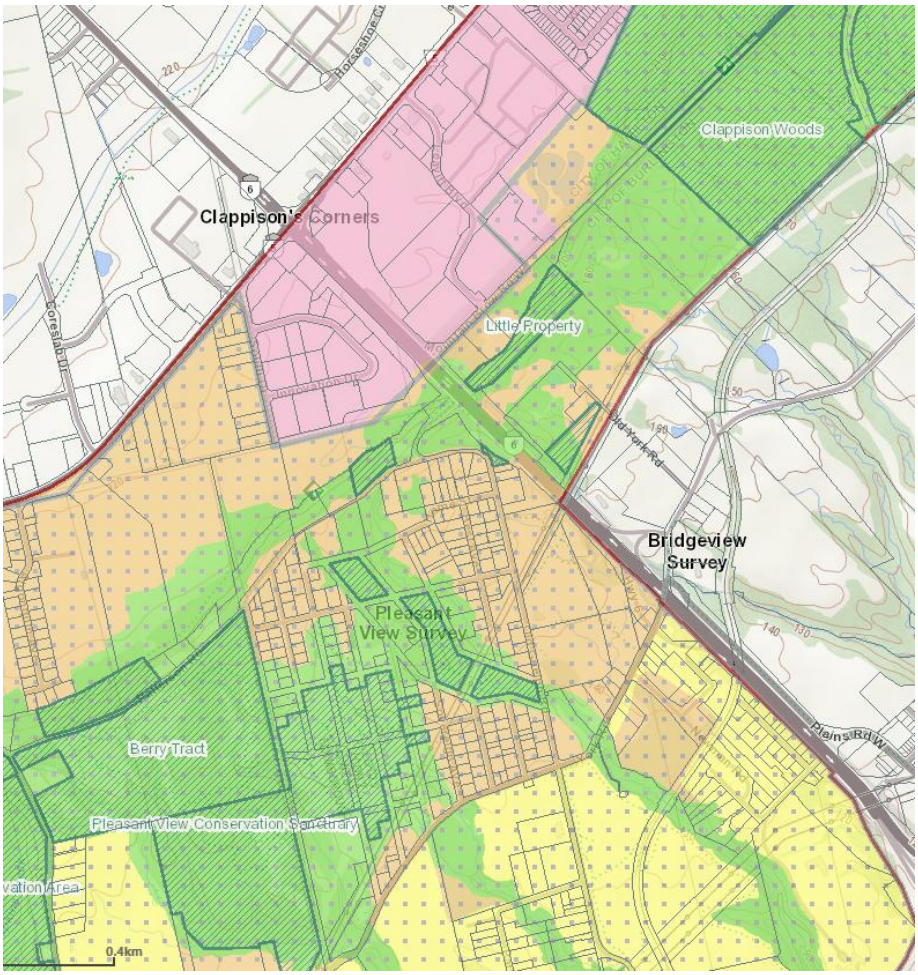

Figure 22. Niagara Escarpment Plan Area within the Project Area.

6.4.2. Existing Land Uses

The intersection of Highway 5 and Highway 6 is located within the Flamborough Business Park, and therefore contains a number of industrial and commercial business land uses.

Residences are located in small clusters within the project area. West of the intersection, residences are located in close proximity to business/industrial land uses. For example, the west side of South Drive is lined with single family residential dwellings while the east side of South Drive consists of industrial facilities. Further west of South Drive, residences are located directly adjacent to Highway 5 on the south side.

North of the intersection, a number of residential dwellings are located adjacent to Highway 6 especially on the west side on Woodsworth and Garwood Avenues. East of the intersection consists of commercial and industrial businesses until the Clappison Corners Plaza at Clappison Avenue after which there are a series of residential subdivisions.

There are three homes on Mountain Brow Road in the City of Burlington close to the Niagara Escarpment.

Businesses within the study area are concentrated in a number of clusters. A number of businesses that are low to medium rise and are accessed directly from the highway are located along Highway 5 East and cater to the industrial sector, providing motor vehicle repairs and equipment, garden supplies, antiques, fleet management services and other related services.

There are two recreational trails within the project limits. A trail is found along Borer's Creek providing a west-east trail connection under Highway 6 through a concrete culvert. The Bruce Trail is located along the Niagara Escarpment crossing Highway 6 (south of Highway 5) through a concrete box culvert accessible by stairs on either side. This crossing connects pedestrian trails across the brow of the escarpment.

6.5. Archaeological Resources

A Stage 1 Archaeological Assessment that was conducted in 2012 determined that portions of the project area are heavily disturbed, and other portions have archaeological potential requiring a Stage 2 Archaeological Assessment. Stage 2 Archaeological Assessment was conducted in 2014, and 2023 through 2025. Community Field Liaisons from three Indigenous Communities participated in the archaeological field investigations. As a result, two archaeological sites within the project area were identified requiring Stage 3 Archaeological Assessment, which was completed in fall 2025. The Stage 3 Archaeological Assessment has identified no further assessment is required; and the areas are free of concern with respect to the archaeological sites. No additional construction monitoring is recommended for these sites once the Stage 3 Archaeological Assessment report has been entered into the Register.

6.6. Built Heritage Resources and Cultural Heritage Landscapes

A Cultural Heritage Resource Assessment Report Addendum (CHRAR Addendum 2024) was prepared to document the result of the assessment of any changes that have occurred since the 2013 TESR Addendum. It concluded that direct adverse impacts to one potential built heritage resource property (578 Highway 6) through the removal of the residence will occur and recommended that a Cultural Heritage Evaluation Report (CHER) be prepared. The CHER has concluded that the property does not meet the criteria outlined in Ontario Regulation 9/06 under the *Ontario Heritage Act* and does not retain cultural heritage value or interest at the local level. The CHER has also indicated that the property does not meet the criteria outlined in Ontario Regulation 10/06 and does not retain cultural heritage value or interest at the provincial level. Therefore, this property is not identified as a Provincial Heritage Property or a Provincial Heritage Property of Provincial Significance. No further study is required.

6.7. Property Waste and Contamination

An Assessment of Past Uses (APU) was conducted to support the excess soil characterization program. The APU concluded that a Sampling and Analysis Plan (SAP) followed by the preparation of a Soil Characterization Report (SCR) is necessary to meet the requirements of O. Reg. 406/19 – On-Site and Excess Soil Management.

A SAP was prepared to identify locations where soil is to be excavated, as defined by the Area of Potential Environmental Concern, that will be subject to sampling and analysis based on the APU. It includes conducting representative and appropriate level of sampling and analysis (where excess soil is anticipated) in order to determine the concentration of contaminants (if any) to identify which soils may be reused within the project area or may be directed off-site to: a reuse site, Class 2 or Class 1 Soil Management Facility, and/or waste disposal facility. Lastly, the SAP provides an indication of the general soil and geological conditions expected during excavation activities within the project area.

Several Phase 1 Environmental Site Assessments were undertaken on properties acquired for the new interchange.

A Soil Characterization Report will be prepared for this project which will provide a summary of the results of the excess soil characterization program. The laboratory results will be incorporated into the contract package for excess soil to be disposed/re-used, as appropriate.

In addition to the Soil Characterization Report, a Due Diligence Report will be prepared which will provide a summary of the results of the investigation of acquisition properties of concern.

7. IMPACT ASSESSMENT AND MITIGATION MEASURES

7.1. Fish and Fish Habitat

7.1.1. Impacts

Due to the widening of Highway 6 necessary to accomplish the interchange construction, an extension of the Borer's Creek two cell concrete open bottom culvert (Site No. 36-430/C0) is necessary. The scope of work includes an extension of the downstream (west) side for both the pedestrian path (south) cell and the northern cell which conveys base flows. The extension varies from 2.775 metres at the south wall of the south cell to 2.958 metres at the north wall of the north cell. In addition, there is a 4.6 metre east, and a 5.2 metre west extension of the culvert (Site No. 36-302/C0) located to the south which is outside of fish habitat. Concrete in existing culvert barrels is to be locally removed and repaired. The actual locations and extent of repairs will be determined by the contract administrator during the layout of the repair work. New cast-in-place headwalls and retaining walls completed with inspector guards will also be constructed at both the upstream (east) and downstream (west) ends of both culverts that run parallel to Highway 6 and in between the two structures to avoid the need for additional infilling within the Borer's Creek valley due to road widening. Work at the twin-cell culvert will be completed in-the-dry within the appropriate in-water works timing window and the water flow will be maintained during construction.

The Borer’s Creek culvert work and work on the adjacent Highway 6 has the potential to suspend soil particles, resulting in the impairment of surface water quality during construction. An increase in runoff may promote erosion downstream thus impairing water quality with sediments. Water quality treatment must be provided to maintain the existing quality of surface water within the project limits.

Works proposed for the Borer’s Creek culvert extension will involve a small change to the permanent in-water footprint. The new culvert will be 2.958 metres longer than the existing culvert (14.79m2) resulting in a small permanent spatial impact to the channel downstream of the crossing. Impacts will occur to the riparian areas at the downstream end of the culvert, but these areas will be restored/re-vegetated using a native seed mix. It is anticipated that due to the nature of the works proposed combined with the Moderate scale of fish and fish habitat sensitivity at the watercourse crossing, there is a Low Risk of causing the death of fish or a harmful alteration, disruption, or destruction (HADD) of fish habitat with the proposed works, if the mitigation and protection measures outlined below are followed.

The crossings of Watercourse 2 (Grindstone Creek Culvert in **Appendix D**) will be removed and reconstructed to accommodate the interchange. The current culverts 1 and 2 (Highway 6 and Highway 5 crossings, respectively) will be removed. New culverts (four) will be installed to ensure that the flow direction will remain unchanged. These are culvert 1A (E-N ramp), new culvert 1 (Highway 6 and E-S ramp), new culvert 2 (E-S ramp, Highway 5, W-S ramp), and culvert 2A (new commercial access road to service station and Tim Horton’s). Note that Watercourse 2 within the project area is not fish habitat, however standard mitigation outlined below shall be applied during construction.

The rehabilitation (resurfacing) of Highway 6 from the Bruce Trail crossing south to the north limit of Highway 403/Highway 6 interchange, including Highway 6/York Road interchange, will be completed. Watercourse 4 parallels this section of Highway 6 and crosses the roadways at/near the York Road interchange. Although this watercourse does not constitute fish habitat within the project area, standard mitigation outlined below and associated with the Routine MTO Works shall be applied during construction.

No modifications to any other watercourses shown in **Appendix D** are proposed however standard mitigation measures as outlined below (e.g., Erosion and Sediment Control (ESC) measures, flow maintenance) should be employed for all watercourses within the project area during construction to assure that no downstream impacts (e.g., sedimentation, flow regime changes) result from this project.

7.1.2. Mitigation Measures

The erosion and sediment control measures and mitigation measures to protect surface water noted below and in Section 7.2, 7.3, 7.10 and 7.11 will reduce impacts to fish habitat and surface water.

Timing Windows / Working In-the-Dry

The following mitigation measures will be implemented:

- All construction works and access shall be confined to the minimum area necessary to perform the works;
- In-water work will be permitted in Borer's Creek from July 1 to March 15. Construction at Borer's Creek will be completed in the-the-dry.
- In-water construction / demolition will commence only when all materials required for construction are at hand to minimize the duration of in-water work; and
- Construction at the Borer's Creek culvert will be staged to minimize the duration of in-water work.

Riparian Vegetation

Efforts to maintain riparian vegetation to the extent possible will help to stabilize the watercourse banks, provide shading/cover for the watercourses, filter contaminants, and help maintain wildlife habitat and aesthetics. Riparian vegetation is anticipated to be impacted at this crossing however a landscape planting plan will be implemented to help restore the site.

7.2. Terrestrial Ecosystems

7.2.1. Vegetation and Vegetation Communities

7.2.1.1. Impacts

No disturbance/impacts to the ANSIs or PSWs within and beyond the project area are anticipated as a result of the proposed works. All of the vegetation communities identified within the project area are considered to be widespread and common in Ontario and secure globally.

A single butternut tree was located within the project area. This tree is located on the east side of Highway 6, all proposed works are outside of the 50 m butternut habitat protection zone and as such, no additional requirements under the *Endangered Species Act* are required for the butternut. In addition, no plant species that are provincially ranked as “critically imperilled” to “vulnerable” (S1 to S3) were observed within the project area. As a result, there will be no impacts on rare, threatened or endangered vegetation and vegetation communities. Several locally rare plant species were identified within the project area, however, the majority of these are located in vegetation communities outside of the limit of disturbance.

New Highway 5 and Highway 6 Interchange

Vegetation removals will be required to accommodate the proposed interchange. The proposed Highway 5 and Highway 6 interchange will result in the removal of approximately 9.64 ha of naturalized and/or anthropogenic lands. The largest impact will occur to lands that have been anthropogenically influenced including cultural vegetation communities and hedgerows. A total of 9.27 ha of anthropogenically influenced lands will be removed as a result of the proposed works. In addition, a total of 0.35 ha and 0.02 ha of wetland and forest communities, respectively, will be removed.

A total of three cultural vegetation community types will be impacted as a result of the proposed works including Dry-Moist Old Field Meadow (C.U.M.1-1), Mineral Cultural Thicket (C.U.T.1), and Mineral Cultural Woodland (C.U.W.1). The largest impact will occur to the cultural meadow communities with a total removal of 7.27 ha. Approximately 0.10 ha and 1.90 ha of cultural thicket and cultural woodland, respectively, will be removed as a result of the proposed works. In general, impacts to the cultural vegetation communities will include the removal of communities that are already in a disturbed state as a result of the existing land use practices within the project area.

Overall, impacts resulting in the loss of vegetation within these cultural communities is considered to be minor. Cultural vegetation communities typically persist in areas that are regularly disturbed, and as a result, generally contain a high proportion of invasive and non-native plant species that are tolerant of these conditions. It is expected that plant species displaced and/or disturbed within the cultural communities due to the interchange construction will re-colonize available lands adjacent to the new right-of-way post-construction.

A total of 0.35 ha of wetland vegetation communities will be removed as a result of the proposed works including impacts to shallow marsh and meadow marsh communities. Impacts to the wetland communities will generally result in the removal of a narrow portion along the edge of the communities, it is anticipated that these wetlands will continue to persist post-construction.

A total of 0.02 ha of deciduous forest will be removed as a result of the proposed works. Impacts to the deciduous forest community include the removal of a narrow swath adjacent to the Highway 6 right-of-way which is area already in a disturbed state as a result of the adjacent roadside land uses.

A total of 0.01 ha of hedgerows will be removed as a result of the proposed works. The overall significance of the impacts to these lands is considered low.

Highway 6 Pavement Rehabilitation

The proposed pavement rehabilitation works along Highway 6 from Bruce Trail Culvert southwards to the north limit of Highway 403/Highway 6 interchange will not result in the displacement and, or disturbance to vegetation communities. All works associated with the proposed improvements to this portion of Highway 6 will occur within the existing pavement. Consequently, no vegetation will be removed as a result of the proposed works.

7.2.1.2. Mitigation Measures

At a minimum, the following protection/mitigation measures will be implemented during construction to ensure the protection of vegetation and vegetation communities to the extent possible:

- Erosion control fencing shall be installed along the limit of disturbance associated with the proposed works where required. These measures should be in place prior to the start of construction;
- The contractor shall ensure that soil migration from the construction area is prevented and that exposed soils are stabilized as soon as is possible;
- Vegetation cover will be used to protect any exposed surfaces in accordance with OPSS 803 (Construction Specification for Vegetative Cover);
- Old field seed mix and mulching or erosion control blanket (in accordance with NSSP – Erosion Control Blanket) will be placed in areas of soil disturbance to provide adequate slope protection and long-term slope stabilization. In addition, at the edges of wetland areas, Southern Ontario Native Grass and Forb Mix see will be applied as per OPSS 803 (Construction Specification for Vegetative Cover);
- Topsoil from stockpiles will be available in accordance with OPSS 802 (Construction Specification for Topsoil;
- Tree protection will be in accordance with OPSS 801 (Construction Specification for the Protection of Trees) and NSSP (Environmental Constraint – Tree Protection). OPSS 801 describes protective measures required to safeguard trees from construction operations, equipment and vehicles where such trees are not designated for removal under the contract, and also covers the installation of protective barriers. Prior to construction, trees to be protected will be clearly identified in the field by the Contractor and a protective barrier will be installed. The NSSP requires that all trees not designated for removal should be protected as per OPSS 801. Repairing or replacing trees/shrubs identified to remain, which become damaged by construction activities, will be undertaken in accordance with the OPSS 801; and,
- Restoration of disturbed areas shall use seed mix and woody species plantings similar to the character of the surrounding area.

In addition, SP199F12 (Environmentally Sensitive Areas) will be included in the contract package to identify those areas that are sensitive where no entry or construction activities will be permitted (beyond the areas required for construction).

A Landscaping Plan has been developed to guide the planting of vegetation within the new interchange and is available in **Appendix B**.

Invasive Species Management

European Reed (*Phargmites australis* ssp. *australis*) is a non-native and invasive plant species and was identified within the wetland communities in the project area. During construction, efforts will be made to limit the spread of European Reed. The removal of European Reed shall be in accordance with the specifications outlined in the contract documents which includes methods for the proper management, removal and disposal of invasive vegetation.

7.2.2. Wildlife and Wildlife Habitat

7.2.2.1. Impacts

Wildlife present within/adjacent to the project area may experience some level of disturbance resulting from the removal of vegetation. However, since the project area has been subject to extensive disturbance from existing anthropogenic influences/the existing highway infrastructure, and the extent of disturbance to areas of wildlife habitat is limited in duration and extent, the effects of the proposed works on wildlife and wildlife habitat is not likely to be significant. Interior forest specialist species will not be impacted. The majority of species residing in habitats within or directly adjacent to the ROW, are tolerant of human disturbances/anthropogenic influences. Standard environmental protection/mitigation measures and MTO provisions will be included in the contract documents to ensure the protection of wildlife habitat located within the project area. Additional protection/mitigation measures have also been included to address the potential presence of wildlife Species at Risk and their habitat within the study area.

No significant wildlife movement or passage corridors were documented in the project area. The potential for wildlife passage under existing culverts in the project area will remain unchanged. Construction duration and disturbance in the vicinity of culverts within the project area should be minimized to the extent possible. Fragmentation of wildlife habitat and impacts on wildlife passage through the project area are not anticipated to be significant. Increased exposure of wildlife to vehicle conflicts is considered minor due to new structures (bridges/underpasses) and the maintenance of existing crossings (e.g., Borer's Creek).

To comply with the requirements of the MBCA, it is recommended that disturbance, clearing or disruption of vegetation where birds may be nesting be completed outside the window of April 1 to August 31 to avoid the breeding bird season for most of the bird species protected under the Act. In the event that these activities must be undertaken from April 1 to August 31, a nest screening survey must be conducted by a qualified avian biologist prior to vegetation removals. Four wildlife species at risk were confirmed within the study area during field investigations.

Species at Risk

Four wildlife species at risk were confirmed within the study area during field investigations. The likelihood of the project having a negative effect on species at risk is

low as encroachment into suitable habitats will be minimal, with potential impacts occurring along habitat edges. Species listed as ‘Endangered’ or ‘Threatened’ on the Species at Risk in Ontario (SARO) list are protected/regulated under the Ontario ESA Specifically, Section 9(1) of the Ontario ESA prohibits a person from ‘killing, harming, capturing or taking’ a member of a species listed as ‘Endangered’, ‘Threatened’ or ‘Extirpated’ on the SARO list. The following sections provide a brief review of each species’ status, the results of field surveys carried out, and the potential impacts to those species at risk within the vicinity of the project area.

Chimney Swift - This species is listed as ‘Threatened’ both provincially and federally. As such, it is protected under both the Ontario ESA and Canada SARA. The Chimney Swift is an aerial insectivore that feeds by catching insects while flying. It nests typically in old chimneys of human structures. No nesting habitat for this species was observed during field investigations. It is, therefore, unlikely that any adverse effects on this species will result from this project.

Barn Swallow - Barn Swallow is listed as ‘Special Concern’ under the Ontario ESA and, as such, is not afforded habitat protection, and is also listed as ‘Threatened’ on Schedule 1 of the Canada SARA. Several individuals were observed foraging over the project area and a nest was observed in the Borer’s Creek culvert. This nest, and the nesting birds, are protected under the MBCA and, therefore, should not be disturbed during the breeding season (April 1 through August 31. No permitting under the ESA is required.

Eastern Wood-pewee - The Eastern Wood Pewee is listed as ‘Special Concern’ both provincially and federally; however, this species in not regulated and consequently does not receive habitat protection under either the Ontario ESA or the Canada SARA. Eastern Wood Pewee is a forest species, typically associated with forest openings, clearing or edges. As noted above, Eastern Wood Pewee were identified in wooded habitats along the forested slopes of the Niagara Escarpment in the vicinity of the quarry ponds and storm water management facility to the east and west of the Highway 6 corridor, respectively, during wildlife surveys. No adverse effects are predicted in these areas and no permitting is required.

Midland Painted Turtle - Midland Painted Turtle is listed as ‘Special Concern’ under the Canada SARA and is not listed under the Ontario ESA. It is therefore not afforded habitat protection under either Act. Several Midland Painted Turtles were encountered during field investigations in 2023 in the quarry ponds to the southeast of the intersection. There is no other potential suitable habitat for Midland Painted Turtles in the project area (swamp/marsh/open aquatic habitat), so it is likely that this species is found only in the location in which it was observed. Therefore, no adverse effects are expected to occur to this species or its habitat as works are not planned at the location they were observed.

7.2.2.2. Mitigation Measures

The requirements of the ESA will be met for all Species at Risk (those species listed as ‘Endangered’ or ‘Threatened’ on the SARO list) potentially impacted by the proposed works. Section 9(1) of the ESA prohibits a person from killing, harming, harassing, capturing, or taking a member of a species listed as ‘Endangered’, ‘Threatened’ or ‘Extirpated’ on the SARO list. Section 10(1) of the ESA prohibits the damage or destruction of habitat of a species listed as ‘Endangered’ or ‘Threatened’ on the SARO

list. At a minimum, the following environmental protection/mitigation measures shall be implemented to ensure the protection of Species at Risk and wildlife/wildlife habitat in general:

- Most bird species and their nests are protected under the MBCA and any disturbance to trees, shrubs or other naturalized vegetation should be undertaken outside the breeding bird period (April 1 to August 31) or under the direction of a biologist or other qualified person(s) who will assess areas for the presence/absence of nests prior to vegetation disturbance. A Non-Standard Special Provision (NSSP) (Migratory Bird Protection – General) will be included in the contract package to ensure all activities associated with the proposed works are in compliance with the MBCA;
- An NSSP (Operational Constraint – Protection of Species at Risk) shall be included in the contract package to describe the conditions that apply to Species at Risk and to ensure education/training for the Contractor and other personnel on-site, and direction on encounters with Species at Risk during construction; and
- Provisions shall be included in the contract package, such as NSSP (Prevention of Wildlife Harassment), to ensure that the Contractor does not harm, harass or kill any wildlife species encountered during construction and to ensure that the Contractor remains vigilant and alert to wildlife species on the ground and advances equipment at a slow pace to permit any wildlife species to leave the area in order to avoid trampling. The Contractor will be instructed not to handle any wildlife species encountered during construction. Should any species at risk or their habitat be encountered during construction, the MECP must be contacted immediately, and operations must be modified to avoid any negative impacts to Species at Risk or their habitat until further discussions with MECP can occur regarding opportunities for mitigation. If possible, pictures of the Species at Risk and coordinates for the location where it was observed should be provided to MECP.

7.3. Erosion and Sediment Control

Standard erosion and sedimentation control (ESC) measures must be implemented during construction within the project limits in accordance with Ontario Provincial Standard Specifications (OPSS) 804 (Construction Specification for Temporary Erosion Control) and 805 (Construction Specification for Temporary Sediment Control) to cover the installation, maintenance, monitoring and removal of the temporary erosion and sediment control measures and the removal of sediment accumulated by the control measures.

The following temporary erosion and sedimentation control measures shall be implemented:

- The extent and duration that soils are exposed to the elements will be kept to the minimum area and time necessary to perform the work;
- Areas of watercourse and riparian disturbances will be minimized, and existing riparian vegetation will be retained, where feasible;

- Monitoring and maintenance of erosion and sedimentation control measures shall take place during construction to ensure their effectiveness; and,
- Dewatering (where required) shall have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to watercourses.

These environmental protection measures will be implemented prior to construction commencement / any soil disturbance and will remain in place until construction is complete, and soils have been re-stabilized. This will greatly reduce the potential for soil erosion and impairment of surface water quality and fish habitat.

The following standard and special provisions related to erosion and sedimentation control will be included in the contract package which correspond with the above recommended mitigation measures. Specifications can change over time, the most recent and stringent shall apply:

- OPSS 180 (General Specification for the Management of Excess Materials) for material generated during maintenance of sediment control measures to be taken off-site for disposal;
- OPSS 182 (General Specification for Environmental Protection for Construction in and Around Waterbodies and on Waterbody Banks) for the environmental protection requirements and mitigation measures that apply to construction involving work in and around waterbodies and on waterbody banks;
- OPSS 802 (Construction Specification for Topsoil) for ensuring a fertile medium for seeding and planting;
- OPSS 803 (Construction Specification for Vegetative Cover) for stabilizing disturbed areas through seeding;
- OPSS 804 (Construction Specification for Temporary Erosion Control) for stabilizing disturbed areas to prevent erosion;
- OPSS 805 (Construction Specification for Temporary Sediment Control) for the prevention of sediment input into watercourses from construction activities;
- Special Provision (SP) 805F01 to specify the type of temporary sediment control measures to be installed (e.g., straw bale flow checks, rock flow checks and light duty silt fence) and the timing constraints for the installation (prior to soils disturbance) and removal (once the site is deemed stable) of the control measures; and
- Non-Standard Special Provision (NSSP) (Operational Constraint – Erosion and Sedimentation Control – General) for the time interval between the commencement and completion of any work that disturbs earth surfaces, requirements for a stand-by supply of light duty silt fence barrier, ensuring that run-off from construction materials and any stockpiles shall be contained and discharged to prevent entry of sediment to watercourses, and to address if dewatering is required (and where culverts are cleaned by hydraulic means) effluent shall be discharged to prevent the entry of sediment to watercourses.

7.4. Surface Water

There is the potential for contamination of surface water from sources other than sediment (i.e. spills or other materials / equipment). Best management / construction practices and control of all construction operations shall be implemented during construction to reduce the potential for spills or other materials/equipment from entering all watercourses within the project area. Mitigation measures include the following:

- Storage, stockpiling and staging areas shall be delineated prior to construction and inspected in accordance with the current MTO *Construction Administration and Inspection Specifications;*
- In accordance with OPSS 182 (General Specification for Environmental Protection for Construction in and Around Waterbodies and on Waterbody Banks), construction material, excess material, construction debris, and empty containers shall be stored away from watercourses and watercourse banks to prevent their entry into the watercourses;
- In accordance with OPSS 182 (General Specification for Environmental Protection for Construction in and Around Waterbodies and on Waterbody Banks), equipment refueling, maintenance and washing activities shall be conducted at a pre-determined site located at an adequate distance (minimum 30 m) from the watercourses and watercourse banks located within the project area to prevent the entry of petroleum, oil or lubricants (POL) or other deleterious substances (including any debris, waste, rubble or concrete material) to the watercourses within the project area, or their release to the environment. Any material which inadvertently enters the watercourses shall be removed by the Contractor in a manner satisfactory to the Contract Administrator; and,
- All spills that could potentially cause damage to the environment shall be reported to the Spills Action Centre of the Ministry of the Environment Conservation and Parks (MECP). In the event of a spill, containment and clean-up shall be completed quickly and effectively. In addition, an NSSP (Operational Constraint – Environmental - Spill Prevention and Response Contingency Plan) shall be included in the contract package regarding the preparation of a Spill Prevention and Response Contingency Plan, including that appropriate contingency materials to absorb or contain any petroleum products/spills that may be accidentally discharged will be always on site.
- Fallen debris from works on culverts will be collected, removed, and be prevented from entering the watercourse.

These recommended environmental protection and mitigation measures will greatly reduce the potential for surface water contamination from spills of petroleum, oil, and lubricants, and from other materials/equipment from entering the watercourses within the project area and provide a contingency in the event of an unforeseen event.

7.5. Groundwater

7.5.1. Impacts

The hydrogeological study conducted for this project estimated that temporary dewatering in excess of 400 m^3/day is expected. As a result, this project will be registered on the Environmental Activity and Sector Registry (EASR) with the Ministry of the Environment, Conservation and Parks.

Dewatering activities have the potential to cause localized drawdown of the groundwater table that can influence groundwater flow contributions to nearby watercourses or wetlands (e.g., Borer's Creek). Dewatering activities also have the potential to influence the water quality conditions.

7.5.2. Mitigation Measures

All water takings will be treated and discharged to lands in the immediate vicinity of withdrawals. This will result in fluctuations to flows or water levels that will be localized and in short duration with no significant net impacts. In order to prevent impacts to water quality at nearby watercourses, pumped water will be directed to vegetated areas (or other ESC measures) at least 30 metres from watercourses.

The results of the groundwater quality sampling program suggest that pumped water from the project area is expected to meet the Provincial Water Quality Objectives (PWQO) with sediment removal treatment.

A monitoring program will be implemented to monitor the groundwater discharge rate, to confirm that groundwater discharged meets the PWQO guidelines, and to respond to any changing conditions, such as discharge water quality non-compliance and spills.

7.6. Land Use and Socio-Economic Environment

7.6.1. Provincial Land Uses

7.6.1.1. Impacts

In general, the new interchange, municipal roads and commuter parking lot are compatible with the permitted land uses. The new interchange within the designated land use area "Business Park" will be compatible with the permitted land uses. The municipal road network will provide access to businesses and residences within the project area.

The Niagara Escarpment Commission has stated that proposed developments by the Crown, including MTO, are not required to obtain a permit under the *Niagara Escarpment Planning and Development Act.* Although a permit is not required, policies of the Niagara Escarpment Plan still apply. Part 2.12 of the Niagara Escarpment Plan (NEP) has the objective to design and locate infrastructure so that the least possible impact occurs on the escarpment's environment. A commitment was made during the preliminary design that considerations to the design as per the NEP will be made.

Part 2.12 of the NEP states that infrastructure shall be sited and designed to minimize the negative impact on the Escarpment environment. Examples of such siting and design considerations include, but are not limited to the following:

- blasting, grading and tree removal should be minimized where possible through realignment and utilization of devices, such as curbs and gutters, retaining walls and tree wells;
- finished slopes should have grades no steeper than 50 per cent (1:2 slope) and be planted; large cuts should be terraced to minimize surface erosion and slope failure;
- site rehabilitation should use native species of vegetation and protect and enhance the natural environment;
- a development setback from the Escarpment brow shall be established by the implementing authority to minimize visual impacts; and
- visual impacts from infrastructure should be minimized by siting, structural design, colouration and landscape planting and/or vegetation screening.

7.6.1.2. Mitigation Measures

In response to the above, the detail design ensured that the alignment of Highway 6 will be shifted approximately 20 metres to the east to minimize impacts on the Niagara Escarpment area, minimizing grading and tree removal. Proposed slopes are 3:1 with some flat bottom ditches that allow for infiltration to mitigate water quality. No rock blasting is planned on Highway 6. Site rehabilitation will be implemented as per provincial standard specifications and as per the landscape planting plan which includes the use of native species vegetation. The development setback from the escarpment brow has been maintained and visual impacts will be minimized by structural design and landscape planting plans.

7.6.2. Existing Land Uses

7.6.2.1. Impacts

Displacement

Businesses and residences will be displaced by the proposed interchange construction. In addition, some properties will be impacted by widening at the property frontage. These impacts were unavoidable, given the constraints at the existing intersection of Highway 5 and Highway 6. Plans and strategies were developed to minimize impacts to residences and businesses, to the extent possible. During the detail design, MTO has proceeded with the property acquisition processes, as needed, in accordance with MTO policy.

Changes in Access to Properties

The implementation of the project will affect access to driveways and roads in close proximity to the interchange, including the Garwood Avenue, Woodworth Avenue, Mountain Brow Road, North Wentworth Drive and South Drive intersections. To mitigate for this impact, a municipal road network that provides alternative access to existing businesses and residences was developed. A series of alternative municipal roads were identified and evaluated based on a range of considerations, as previously reported in the TESR Addendum.

Garwood Avenue and Woodworth Avenue will be linked by a new municipal road, Clugston Avenue. A cul-de-sac will be constructed on the west side of Highway 6, opposite Parkside Drive. This design will enable Highway 6 northbound traffic, including

Emergency Responders, to safely make a left turn into the cul-de-sac and then exit with a right turn to travel southbound on Highway 6. This arrangement seeks to minimize disruption to resident access while adhering to safety standards.

The design of Sureres Drive, in the northwest quadrant of the proposed interchange, provides access to multiple properties in the area. It improves connectivity to the Harry Howell Arena allowing additional access through Sureres Drive.

The Solar Drive extension enhances connectivity by providing an additional access point to the Harry Howell Arena, improving traffic flow. Additionally, a new driveway will be introduced to access the commercial property at Highway 5 via Solar Drive. It will facilitate efficient vehicle movement within the local road network. North Wentworth Drive will be closed.

A road to connect the commercial area from Highway 5, in the southwest quadrant of the interchange, will be constructed. Existing Innovation Drive will be extended from South Drive to Highway 5.

There are three homes on Mountain Brow Road in the City of Burlington close to the Niagara Escarpment. These residential properties and the adjacent business will be accessed from Dundas Street East through Leavitt Boulevard since the existing Highway 6 northbound right-in/right-out access to Mountain Brow Road will be closed as part of the interchange construction and a cul-de-sac will be added at the end of Mountain Brow Road.

7.6.2.2. Mitigation Measures

A construction staging plan **(Section 4.12)** has been developed to minimize traffic delays to residents, businesses and facility operators and their visitors during construction. Signage and temporary traffic signals will be used to maintain traffic flow. Alternate access to residences, businesses and community and recreational facilities will be provided to maintain access/egress. It is anticipated that emergency vehicle access and school bus routes will be maintained at all times throughout construction.

7.7. Noise

7.7.1. Impacts

When construction is occurring in relatively close proximity to a noise sensitive area, noise impacts are expected as the sound level from construction will be above the ambient and will be clearly audible.

7.7.2. Mitigation Measures

To mitigate the construction noise impacts, the following mitigation measures will be implemented during construction, as required:

- Equipment will be maintained in an operating condition that prevents unnecessary noise, including but not limited to non-defective muffler systems, properly secured components, and the lubrication of moving parts;

- Idling of equipment will be restricted to the minimum necessary to perform the specified work;
- Restrict construction activities that generate a lot of noise to daytime hours on weekdays (e.g. pile driving, other activities, etc.); and,
- The Contractor will be required to be available to address any concerns that may arise with respect to noise during construction. Noise complaints during construction will be investigated according to the provisions of the MTO Environmental Guide for Noise (February 2022). Any initial complaint from the public requires verification by MTO that the general noise control measures agreed to are in effect. If not, MTO will advise the Contractor of any problems, and enforce its contract.

7.8. Air Quality

7.8.1. Impacts

The proposed Highway 5/6 Interchange has the potential to affect the air quality in the study area during the construction phase. As with any construction site, these emissions will be of relatively short duration and are unlikely to have any long-lasting effect on the surrounding area.

7.8.2. Mitigations Measures

Dust impacts will be mitigated through the use of proper controls, such as:

- Periodic watering of unpaved (non-vegetated) areas;
- Periodic watering of material stockpiles;
- Limiting the speed of construction vehicular travel;
- Use of water sprays during the loading, unloading of materials; and
- Sweeping and/or water flushing of the entrances to the construction zones.

These types of controls will help in minimizing the impacts on the environment during the construction phase.

7.9. Archaeological Resources

A Stage 2 Archaeological Assessment was conducted on the remaining areas where previously permission to enter private property was not obtained during the preliminary design and the areas were identified as having the potential for archaeological value in previous studies. The Stage 2 Archaeological Assessment concluded that a Stage 3 Archaeological Assessment was required for two sites. A Stage 3 Archaeological Assessment was completed and identified no further assessment is required; and the areas are free of concern with respect to the archaeological sites. No additional construction monitoring is recommended for these sites once the Stage 3 Archaeological Assessment report has been entered into the Register. Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and

therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the *Ontario Heritage Act*.

The *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 requires that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Public and Business Services Delivery.

7.10. Built Heritage Resources and Cultural Heritage Landscapes

7.10.1. Impacts

The CHRAR Addendum (ASI, 2024) identified indirect impacts to five properties: 88 Highway 5, 95 Highway 5, 626 Highway 6, 25 Parkside Drive and 586 Highway 6. Portions of all these properties are located within the 25-metre buffer zone. The proposed construction works are not anticipated to result in direct adverse impacts to the identified heritage attributes to these properties.

Construction activities within the proposed highway right-of-way may result in limited and temporary impacts to the five properties through disruption at the above noted properties. The construction activities may result in construction-related vibration impacts given identified heritage attributes at each property are located within the vibration zone of influence (area within the 50-metre buffer of construction-related activities).

7.10.2. Mitigations Measures

The following mitigation measures to address indirect impacts will be implemented:

- Construction activities and staging will be planned and undertaken to avoid unintended adverse impacts to the properties. Avoidance measures will include erecting temporary fencing, establishing buffer zones to avoid the identified heritage attributes.

7.11. Property Waste and Contamination

MTO anticipates that excess soil generated within the project area which is deemed suitable for reuse will be managed as follows:

- Used within the Highway 5 and Highway 6 interchange contract limits as needed. If deemed suitable for reuse, it will be moved to an adjacent MTO site for future reuse by MTO. These activities will be undertaken in accordance with O. Reg. 406/19 – On-Site and Excess Soil Management and OPSS 180 – General Specification for the Management of Excess Materials;
- If deemed unsuitable for reuse on MTO projects, excess soils will be managed in accordance with O. Reg. 406/19 and OPSS 180;

- If excess materials are contaminated, then they will be disposed offsite in accordance with O.Reg. 406/19, O.Reg. 347 and OPSS 180; and
- Additional environmental due diligence services such as the Designated Substance Survey (DSS) is being completed. The DSS includes collecting on-site samples, testing and analysis of collected samples, and preparation of report for submission to the Ministry.

7.12. Illumination

The proposed lighting plan will be installed as described in **Section 4.5**, conforming to MTO and City of Hamilton standards.

7.13. Traffic Safety

New traffic signals will be installed as described in **Section 4.64.6** to ensure the safe movement of traffic. A construction staging plan will be implemented during construction to ensure that impacts to traffic and adjacent properties are minimized, and construction is carried out safely (**Section 4.124.12**).

8. Summary of Environmental Concerns and Commitments

The environmental protection/mitigation measures identified in the DCR have been incorporated into the contract package to address potential environmental effects resulting from this project. Areas of environmental sensitivity or concerns, the sources of those concerns, and the mitigation measures associated with the undertaking are described in **Table 5.**

Table 5. Summary of Environmental Concerns and Commitments

ID	Issues/Concerns/ Potential Effects	Concerned Agencies	Mitigation/Protection/Commitments/Monitoring Requirements
1	Erosion and Sedimentation Potential for sediment transport from construction site to the receiving watercourse could have an impact on water quality and fish and fish habitat.	Ministry of the Environment, Conservation and Parks Ministry of Natural Resources Fisheries and Oceans Canada	The following standard and special provisions related to erosion and sedimentation control will be included in the contract package. Specifications can change over time, the most recent and stringent shall apply: OPSS 180 (General Specification for the Management of Excess Materials) for material generated during maintenance of sediment control measures to be taken off-site for disposal; OPSS 182 (General Specification for Environmental Protection for Construction in and Around Waterbodies and on Waterbody Banks) for the environmental protection requirements and mitigation measures that apply to construction involving work in and around waterbodies and on waterbody banks; OPSS 802 (Construction Specification for Topsoil) for ensuring a fertile medium for seeding and planting; OPSS 803 (Construction Specification for Vegetative Cover) for stabilizing disturbed areas through seeding; OPSS 804 (Construction Specification for Temporary Erosion Control) for stabilizing disturbed areas to prevent erosion; OPSS 805 (Construction Specification for Temporary Sediment Control) for the prevention of sediment input into watercourses from construction activities; Special Provision (SP) 805F01 to specify the type of temporary sediment control measures to be installed (e.g., straw bale flow checks, rock flow checks and light duty silt fence) and the timing constraints for

ID	Issues/Concerns/ Potential Effects	Concerned Agencies	Mitigation/Protection/Commitments/Monitoring Requirements
			the installation (prior to soils disturbance) and removal (once the site is deemed stable) of the control measures; Non-Standard Special Provision (NSSP) (Operational Constraint – Erosion and Sedimentation Control – General) for the time interval between the commencement and completion of any work that disturbs earth surfaces, cover requirements for a stand-by supply of light duty silt fence barrier, ensure that run-off from construction materials and any stockpiles shall be contained and discharged to prevent entry of sediment to watercourses, and to address if dewatering is required (and where culverts are cleaned by hydraulic means) effluent shall be discharged to prevent the entry of sediment to watercourses.
2	Surface Water Potential for the contamination of surface water from sources other than sediment (i.e. spills or other materials / equipment).	Project Team Ministry of the Environment, Conservation and Parks Ministry of Natural Resources	Mitigation measures include the following: Storage, stockpiling and staging areas shall be delineated prior to construction and inspected in accordance with the current MTO *Construction Administration and Inspection Specifications;* In accordance with OPSS 182 (General Specification for Environmental Protection for Construction in and Around Waterbodies and on Waterbody Banks), construction material, excess material, construction debris, and empty containers shall be stored away from watercourses and watercourse banks to prevent their entry into the watercourses; In accordance with OPSS 182 (General Specification for Environmental Protection for Construction in and Around Waterbodies and on Waterbody Banks), equipment refueling, maintenance and washing activities shall be conducted at a pre-determined site located at an adequate distance (minimum 30 m) from the watercourses and watercourse banks located within the project area to prevent the entry of

ID	Issues/Concerns/ Potential Effects	Concerned Agencies	Mitigation/Protection/Commitments/Monitoring Requirements
			petroleum, oil or lubricants (POL) or other deleterious substances (including any debris, waste, rubble or concrete material) to the watercourses within the project area, or their release to the environment. Any material which inadvertently enters the watercourses shall be removed by the Contractor in a manner satisfactory to the Contract Administrator; and, All spills that could potentially cause damage to the environment shall be reported to the Spills Action Centre of the Ministry of the Environment Conservation and Parks (MECP). In the event of a spill, containment and clean-up shall be completed quickly and effectively. In addition, an NSSP (Operational Constraint – Environmental - Spill Prevention and Response Contingency Plan) shall be included in the contract package regarding the preparation of a Spill Prevention and Response Contingency Plan, including that appropriate contingency materials to absorb or contain any petroleum products/spills that may be accidentally discharged will be always on site. Fallen debris from works on culverts will be collected, removed, and be prevented from entering the watercourse.
3	Groundwater Resources Potential for impacts to the hydrogeological conditions/groundwater features	Project Team Ministry of the Environment, Conservation and Parks	The hydrogeological study conducted for this project estimated that temporary dewatering in excess of 400 m^3/day is expected. Therefore, this project will be registered on the Environmental Activity and Sector Registry (EASR) with the Ministry of the Environment, Conservation and Parks. A Permit to take Water (PTTW) is not required. A monitoring program will be implemented to monitor the groundwater discharge rate, to confirm that groundwater discharged meets the PWQO

ID	Issues/Concerns/ Potential Effects	Concerned Agencies	Mitigation/Protection/Commitments/Monitoring Requirements
	(including the groundwater table, discharge functions to the surface water features and groundwater recharge) in the vicinity of the Project Team.		guidelines, and to respond to any changing conditions, such as discharge water quality non-compliance and spills.
4	Fish and Fish Habitat Potential for impacts to fish and fish habitat at Borer's Creek	Project Team Ministry of the Environment, Conservation and Parks Ministry of Natural Resources Fisheries and Oceans Canada	See ID 1 and 2 above. Timing Windows / Working in-the-Dry – the following mitigation measures will be implemented: • All construction works and access shall be confined to the minimum area necessary to perform the works; • In-water work will be permitted in Borer's Creek from July 1 to March 15. Construction at Borer's Creek will be completed in the-the-dry. • In-water construction / demolition will commence only when all materials required for construction are at hand to minimize the duration of in-water work; and • Construction at the culvert will be staged to minimize the duration of in-water work. Efforts to maintain riparian vegetation to the extent possible will help to stabilize the watercourse banks, provide shading/cover for the watercourses, filter contaminants, and help maintain wildlife habitat and

ID	Issues/Concerns/ Potential Effects	Concerned Agencies	Mitigation/Protection/Commitments/Monitoring Requirements
			aesthetics. Riparian vegetation is anticipated to be impacted at this crossing however a landscape planting plan will be implemented to help restore the site.
5	Vegetation and Vegetation Communities Potential for the removal of/disturbance to vegetation and vegetation communities, edge effects and damage to vegetation by heavy equipment.	Project Team Ministry of the Environment, Conservation and Parks Ministry of Natural Resources Niagara Escarpment Commission	The following protection/mitigation measures will be implemented during construction to ensure the protection of vegetation and vegetation communities to the extent possible: • Erosion control fencing shall be installed along the full length of the limit of disturbance associated with the proposed works. These measures should be in place prior to the start of construction; • The contractor shall ensure that soil migration from the construction area is prevented and that exposed soils are stabilized as soon as is possible; • Vegetation cover will be used to protect any exposed surfaces in accordance with OPSS 803 (Construction Specification for Vegetative Cover); • Old field seed mix and mulching or erosion control blanket (in accordance with NSSP – Erosion Control Blanket) will be placed in areas of soil disturbance to provide adequate slope protection and long-term slope stabilization. In addition, at the edges of wetland areas, Southern Ontario Native Grass and Forb Mix see will be applied as per OPSS 803 (Construction Specification for Vegetative Cover); • Topsoil from stockpiles will be available in accordance with OPSS 802 (Construction Specification for Topsoil);

ID	Issues/Concerns/ Potential Effects	Concerned Agencies	Mitigation/Protection/Commitments/Monitoring Requirements
			• Tree protection will be in accordance with OPSS 801 (Construction Specification for the Protection of Trees) and NSSP (Environmental Constraint – Tree Protection). OPSS 801 describes protective measures required to safeguard trees from construction operations, equipment and vehicles where such trees are not designated for removal under the contract, and also covers the installation of protective barriers. Prior to construction, trees to be protected will be clearly identified in the field by the Contractor and a protective barrier will be installed. The NSSP requires that all trees not designated for removal should be protected as per OPSS 801. Repairing or replacing trees/shrubs identified to remain, which become damaged by construction activities, will be undertaken in accordance with OPSS 801; and • Restoration of disturbed areas shall use native species for seed mix and woody species plantings similar to the character of the surrounding area. Species used for restoration should be native and non-invasive. In addition, SP199F12 (Environmentally Sensitive Areas) will be included in the contract package to identify those areas with sensitive vegetation where no entry or construction activities will be permitted (beyond the areas required for immediate vegetation removal). A Landscaping Plan has been developed to guide the planting of vegetation within the new interchange. During construction, efforts will be made to limit the spread of European Reed. The removal of European Reed shall be in accordance with the specifications outlined in the contract documents which includes methods for the proper management, removal and disposal of invasive vegetation.

ID	Issues/Concerns/ Potential Effects	Concerned Agencies	Mitigation/Protection/Commitments/Monitoring Requirements
6	Wildlife and Wildlife Habitat Potential for the displacement of/disturbance to wildlife and wildlife habitat. Potential for the displacement of/disturbance to migratory birds. Potential for displacement of/disturbance to wildlife species at risk and their habitat.	Project Team Ministry of the Environment, Conservation and Parks Ministry of Natural Resources	The following environmental protection/mitigation measures shall be implemented to ensure the protection of Species at Risk: • SP 199F12 (Environmentally Sensitive Areas) will be included in the contract package to identify Species at Risk habitat (if confirmed present) and other sensitive wildlife habitat to ensure that these more sensitive features are avoided and to prohibit entry onto or use of these areas by the Contractor; • Most bird species and their nests are protected under the MBCA and any disturbance to trees, shrubs or other naturalized vegetation should be undertaken outside the breeding bird period (April 1 to August 31) or under the direction of a biologist or other qualified person(s) who will assess areas for the presence/absence of nests prior to vegetation disturbance. A Non-Standard Special Provision (NSSP) (Migratory Bird Protection – General) will be included in the contract package to ensure all activities associated with the proposed works are in compliance with the MBCA; • An NSSP (Operational Constraint – Protection of Species at Risk shall be included in the contract package to describe the conditions that apply to all Species at Risk and to ensure education/training for the Contractor and other personnel on-site, and direction on encounters with Species at Risk during construction; and • Provisions shall be included in the contract package, such as NSSP (Prevention of Wildlife Harassment), to ensure that the Contractor does not harm, harass or kill any wildlife species encountered during construction and to ensure that the Contractor remains vigilant and alert to wildlife species on the

ID	Issues/Concerns/ Potential Effects	Concerned Agencies	Mitigation/Protection/Commitments/Monitoring Requirements
			ground and advances equipment at a slow pace to permit any wildlife species to leave the area in order to avoid trampling. The Contractor will be instructed not to handle any wildlife species encountered during construction. Prior to on-site activities/construction, should any species at risk or their habitat be potentially impacted, must be contacted immediately, and operations must be modified to avoid any negative impacts to Species at Risk or their habitat until further discussions with MECP. can occur regarding opportunities for mitigation. If any Species at Risk are found, the MECP office should be contacted. If possible, pictures of the Species at Risk and coordinates for the location where it was observed should be provided to MECP.
7	Land Use and Socio-Economic Environment Potential impacts to access for property owners/tenants, residents, municipal service providers (including emergency service and transportation service providers) during construction.	Project Team Ministry of the Environment, Conservation and Parks Municipalities Residents/ Businesses	Construction activities will be implemented to the extent possible to minimize impacts to local residents and businesses and traffic: Construction will be staged to minimize traffic delays to residents, businesses and facility operators and their visitors. Signage and temporary traffic signals will be used to maintain traffic flow. It is anticipated that emergency vehicle access and school bus routes will be maintained at all times throughout construction. Alternate access to residences, businesses and community and recreational facilities will be provided to maintain access/egress. To mitigate the construction noise impacts, the following mitigation measures will be implemented during construction, as required:

ID	Issues/Concerns/ Potential Effects	Concerned Agencies	Mitigation/Protection/Commitments/Monitoring Requirements
	Potential for traffic delays during construction. Concerns for increased noise levels during construction impacting residents in close proximity.		• Equipment will be maintained in an operating condition that prevents unnecessary noise, including but not limited to non-defective muffler systems, properly secured components, and the lubrication of moving parts; • Idling of equipment will be restricted to the minimum necessary to perform the specified work; • Restrict construction activities that generate a lot of noise to daytime hours on weekdays (e.g. pile driving, other activities, etc.); and, • The Contractor will be required to be available to address any concerns that may arise with respect to noise during construction. Noise complaints during construction will be investigated according to the provisions of the MTO Environmental Guide for Noise (February 2022). Any initial complaint from the public requires verification by MTO that the general noise control measures agreed to are in effect. If not, MTO will advise the Contractor of any problems, and enforce its contract.
8	Air Quality Potential impacts to air quality during construction.	Project Team Ministry of the Environment, Conservation and Parks Residents/ Businesses	Dust impacts will be mitigated through the use of proper controls, such as: • Periodic watering of unpaved (non-vegetated) areas; • Periodic watering of material stockpiles; • Limiting the speed of construction vehicular travel; • Use of water sprays during the loading, unloading of materials; and

ID	Issues/Concerns/ Potential Effects	Concerned Agencies	Mitigation/Protection/Commitments/Monitoring Requirements
			• Sweeping and/or water flushing of the entrances to the construction zones.
9	Archaeology	Project Team Ministry of Citizenship and Multiculturalism	Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the *Ontario Heritage Act*. The *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 requires that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Public and Business Services Delivery.
10	Built Heritage Resources and Cultural Heritage Landscapes	Project Team Ministry of Citizenship and Multiculturalism	The following mitigation measures for indirect impacts to potential heritage properties will be implemented: Construction activities and staging will be planned and undertaken to avoid unintended adverse impacts to the properties. Avoidance

ID	Issues/Concerns/ Potential Effects	Concerned Agencies	Mitigation/Protection/Commitments/Monitoring Requirements
	Indirect impacts and vibration to five properties during construction.	Property owners	measures will include erecting temporary fencing, establishing buffer zones to avoid the identified heritage attributes.
11	Property and Waste Contamination Potential to impact areas of potential environmental concern related to property waste and contamination. Management of excess soil and materials including contaminated soils/materials.	Project Team Ministry of the Environment Conservation and Parks	MTO anticipates that excess soil generated within the project area which is deemed suitable for reuse will be managed as follows: • Used within the Highway 5 and Highway 6 interchange contract limits as needed. If deemed suitable for reuse, it will be moved to an adjacent MTO site for future reuse by MTO. These activities will be undertaken in accordance with O. Reg. 406/19 – On-Site and Excess Soil Management and OPSS 180 – General Specification for the Management of Excess Materials; • If deemed unsuitable for reuse on MTO projects, excess soils will be managed in accordance with O. Reg. 406/19 and OPSS 180; • If excess materials are contaminated, then they will be disposed offsite in accordance with O.Reg. 406/19, O.Reg. 347 and OPSS 180; and • Additional environmental due diligence services such as the Designated Substance Survey (DSS) is being completed. The DSS includes collecting on-site samples, testing and analysis of collected samples, and preparation of report for submission to the Ministry.
12	Illumination	Project Team	The existing conventional lighting along Highway 6 will be replaced with new median mounted conventional LED lighting and High Mast LED lighting within the interchange. Conventional LED lighting will be

ID	Issues/Concerns/ Potential Effects	Concerned Agencies	Mitigation/Protection/Commitments/Monitoring Requirements
		Residents	installed along the new ramps. North of Woodsworth Avenue to the north project limits, LED luminaires will be installed on hydro poles along the east side of Highway 6 due to clearance constraints for standalone lighting. New LED underpass lighting will be included on the new Highway 5 Underpass. New LED underpass lighting will be included on the new Highway 5 underpass. The existing lighting on Highway 5 within the project limits will be replaced with new conventional LED lighting conforming to MTO and City of Hamilton's standards. Municipal lighting will be installed/upgraded on Innovation Drive, Woodsworth Avenue, Garwood Avenue, Solar Drive, Sureres Drive, Mountain Brow Road and the new commercial access road to City of Hamilton's standards. LED luminaires with directional optics will be used to prevent light spillage onto adjacent properties from the high mast lighting.

9. MONITORING

The construction phase is the implementation of the project. During construction, the Ministry of Transportation or Contract Administrator will ensure that the implementation of the mitigation measures and key design features are consistent with the construction contract.

Inspection by Construction Administration staff will occur during construction to make certain that all environmental mitigation and design measures are properly installed and maintained, and additional measures are provided as required for any unanticipated issues that may develop during construction.

10. REFERENCES

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11. APPENDICES

Appendix A - Notifications in Local Newspapers

Appendix B - Recommended Design Drawings

Appendix C - Relevant Correspondence

Appendix D - Fish and Fish Habitat Existing Conditions

Appendix E - Terrestrial Ecosystem Existing Conditions