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Regional Municipality of Niagara

**Municipal Class Environmental
Assessment for Regional Road 43
(Bridge Street) and Adjacent Municipal
Roadways**

**Schedule C Environmental Study
Report**



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Municipal Class Environmental Assessment for Regional Road 43 (Bridge Street) and Adjacent Municipal Roadways

Schedule C Environmental Study Report



R.J. Burnside & Associates Limited

**November 2022
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Record of Revisions

Revision	Date	Description
0	May 17, 2022	Draft Submission of Phase EA Report to Regional Municipality of Niagara
1	September 8, 2022	Draft Submission of Phase EA Report to Review Agencies
2	November 10, 2022	Draft Submission of Pre-final EA Report to Regional Municipality of Niagara
3	November 17, 2022	Submission of final EA Report to Regional Municipality of Niagara

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Executive Summary

The Regional Municipality of Niagara (herein referred to as 'Niagara Region') has undertaken a Schedule C Municipal Class Environmental Assessment (MCEA) Study for improvements to Regional Road 43 (Bridge Street) between Victoria Avenue and River Road (also referred to as Niagara Parkway) and portions of adjacent City of Niagara Falls Roads: Erie Avenue, Zimmerman Avenue and Park Street. The study was carried out as a Schedule C project in accordance with the Municipal Class EA process (October 2000, amended in 2007, 2011, and 2015), as approved under the Ontario Environmental Assessment Act.

This study builds on the recommendations from the approved 2017 Niagara Region Transportation Master Plan (TMP) and the Niagara Falls Transit Station Secondary Plan. R.J. Burnside & Associates Limited (herein referred to as Burnside) is facilitating the MCEA Study for Bridge Street and Adjacent Roads on behalf of the Region.

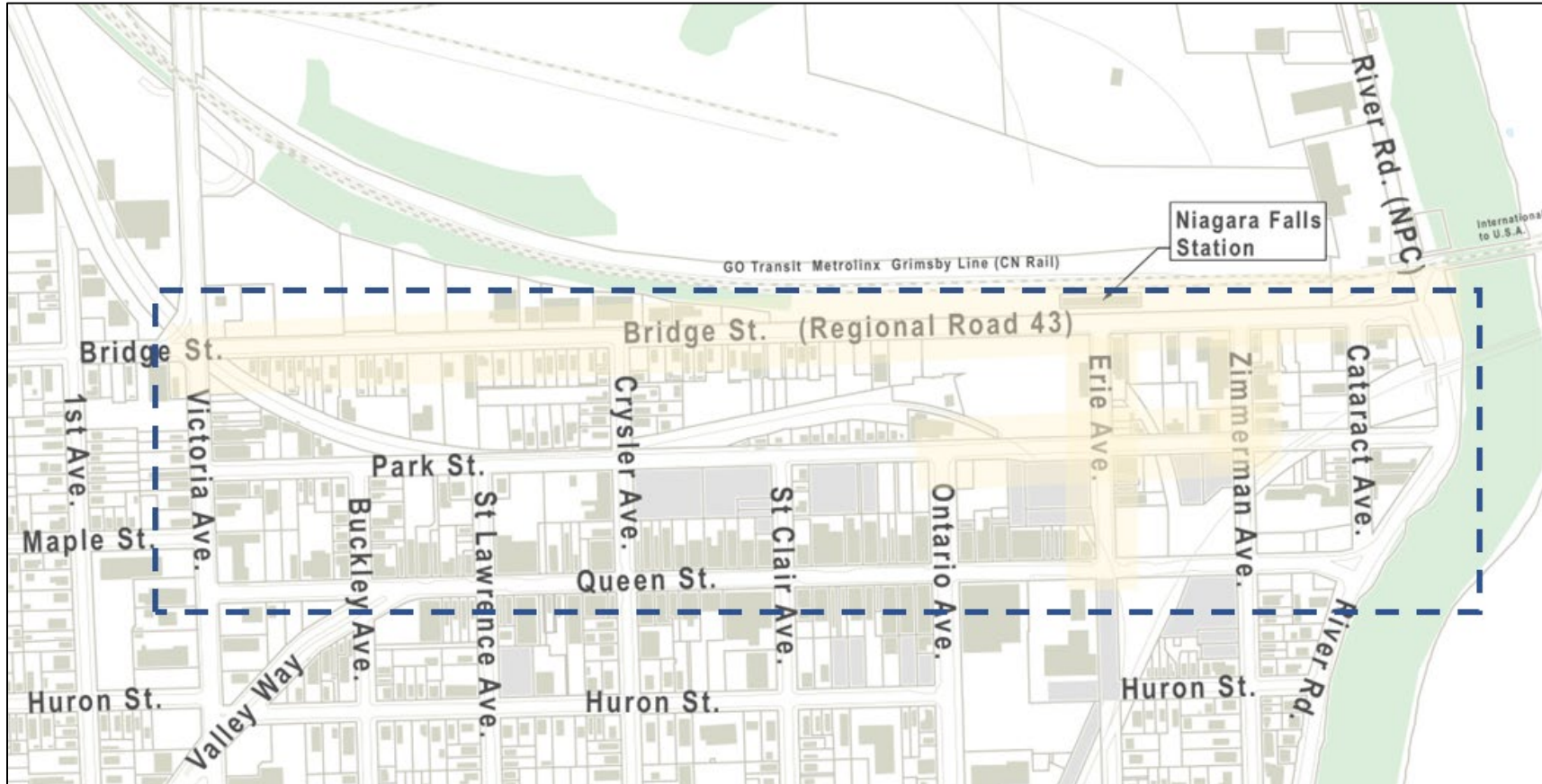
The Study Area is bounded by Regional Road 43 (Bridge Street) in the north, River Road in the east, Queen Street on the south, and Victoria Avenue. It includes Bridge Street from east of Victoria Avenue to River Road and adjacent City of Niagara Falls streets Erie Avenue, Zimmerman Avenue and Park Street in the west illustrated in Figure ES 1.

The purpose of the Project is to identify road and active transportation improvements, mitigate any environmental impacts and prepare a conceptual design and cost estimate.

The MCEA Study will provide a preliminary assessment of the key transportation related issues, including a review of all relevant background reports / studies and existing traffic data. This Environmental Study Report (ESR) summarizes the Schedule C MCEA process the project has followed and confirms the improvements required within the Study Area.

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Figure ES 1: Study Area



ES 1.0 Existing Conditions

Bridge Street is a two-lane major east / west roadway that extends from Regional Road 102 (Stanley Avenue) to River Road in the City of Niagara Falls. It has an approximate ROW width of 18 m and a regulatory speed limit of 50 km/h. Currently, parking is permitted on the south side of Bridge Street on the western half of the Study Area and on the north side of Bridge Street east of the Niagara Falls VIA Rail / GO Transit Station.

The Niagara Falls VIA Rail / GO Transit Station is situated on the north side of Bridge Street at the Erie Avenue intersection. On the north side of Bridge Street, from east of Victoria Avenue to Niagara Falls VIA Rail / GO Transit Station site, there are 6 commercial buildings providing industrial and highway commercial employment uses. On the south side of Bridge Street from Victoria Avenue to east of Chrysler Avenue properties include 1, 2 and some 3 story buildings that have primarily residential uses; east of Erie Avenue on south side of Bridge Street there 6 commercial buildings including a hotel, office buildings and restaurants.

The adjacent local City of Niagara Falls roads contribute to the accessibility of the Niagara Falls VIA Rail / GO Transit Station. Erie Avenue is a local north/south two-lane road with a regulatory speed limit of 50 km / h. Park Street is a two-lane local east / west roadway with a speed limit of 50 km / h. Zimmerman Avenue is a two-lane local north / south roadway that extends from Regional Road 43 (Bridget Street) to River Road with a speed limit of 50 km / h.

Sidewalks are not provided on the north side of Bridge Street west of the Niagara Falls VIA Rail Station. There is also sidewalk discontinuity on Park Street and Zimmerman Avenue due to the presence of the bus terminal and overhead bridge. The Olympic Torch Trail on Erie Avenue south of Queen Street is the only cycling facility separated from vehicular traffic within the Study Area.

ES 2.0 Public and Stakeholder Consultation

Comprehensive consultation was a key component of this MCEA Study. The consultation was effective, in that the process was highly visible and maximized opportunities for the public, government agencies, and Indigenous Communities to participate, in a constructive manner with a process that was open, traceable, rational, and highly defensible.

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The key features of the consultation process included:

The **identification** of key Stakeholders, agencies and other interested or potentially affected parties that would need to be consulted during the Class EA Study. These contacts comprised the Project Contact List, which was used to maintain contact information for interested stakeholders throughout the process and summarize comments received about the project and responses.

The key Stakeholders agencies and other interested or potentially affected parties of the study were **notified** results at key points of the Class EA process.

Engaging key Stakeholders, agencies and other interested or potentially affected parties at key points of the Class EA process to gather input and help inform key decision making.

Responding to inquiries or comments in an efficient and timely manner.

A number of consultation activities were undertaken for this project including:

- Development of a stakeholder contact list, including provincial ministries / agencies, the Niagara Peninsula Conservation Authority, Niagara Parks Commission, Niagara Bridge Authority, various departments of Niagara Region, and City of Niagara Falls;
- Confirmation of project interest with identified Indigenous Communities;
- Development of a project page on the Niagara Region website <https://www.niagararegion.ca/projects/bridge-street-ea> which was updated throughout the Study;
- Distribution of project notices, including publishing in the local newspapers and mailings / emails;
- Holding three virtual Public Information Centres (PICs);
- Online comment sheets hosted on the Region's website;
- Additional meetings with key stakeholders, including affected property owners;
- Communication with Indigenous Communities; and
- Public release of the Environmental Study Report (ESR).

Comments received from various interested persons throughout the study were considered in the decision-making process and are summarized in this ESR.

The first virtual PIC was held on August 18, 2020. It informed the public of the project, previous studies, and relevant policies, provided the problem and opportunity statement and described the existing transportation system, key issues, and studies to be completed.

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The second virtual PIC was held July 21, 2021 and informed the public of the project progress. It provided a summary of supporting studies on socio-economic planning, financial considerations, transportation needs and opportunities, and identification and evaluation of alternative solutions for Bridge Street and municipal roads.

The third virtual PIC was held February 2, 2022 and presented the preliminary preferred design. It included a summary of supporting studies on socio-economic planning, financial considerations, transportation needs and opportunities, alternative solutions, and evaluation of design alternatives for Bridge Street and municipal roads.

Consultation activities undertaken as part of this study is further detailed in Chapter 3.

ES 3.0 Problem and Opportunities

This Class Environmental Assessment addressed the following Problem / Opportunity Statement:

- Improvements are required to the transportation infrastructure to support anticipated increased service levels at the Niagara Falls GO Transit Station, as previously approved in the *2011 Niagara Rail Service Expansions – Environmental Review Study*.
- A Schedule C Municipal Class Environmental Assessment (MCEA) is being undertaken to identify alternate solutions and designs to support detailed design and construction of suitable infrastructure.
- Niagara Region and the City of Niagara Falls are working collaboratively to plan, design and construct the enabling infrastructure.
- The improvement to the transportation infrastructure in the area of the Niagara Falls VIA Rail / GO Transit Station provides the opportunity to:
 - Facilitate access to the Niagara Falls VIA Rail / GO Transit Station for all travel modes (i.e., cars, buses, cycling, pedestrian), including improvement of the connectivity and integration with the City's downtown core and with existing and planned transportation networks / facilities;
 - Implement the goals and policies of the Region's Transportation Master Plan, the City's Downtown Node and Transit Station Secondary Plan, and the City's Niagara Falls GO Station Precinct Plan, improving the safety and connectivity of all travel modes;
 - Incorporate complete streets design guidelines and current urban design guidelines into public realm improvements along or adjacent to Bridge Street, Erie Avenue, Park Street and Zimmerman Avenue; and
 - Establish a municipally owned and operated parking facility at the southwest corner of Bridge Street and Erie Street.

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The design of this project will also strive to implement the design vision of the Niagara Falls GO Station Secondary plan with respect to an enhanced public realm. The streetscape and placemaking elements will contribute to the station area as a gateway into both the City and the Region. The emphasis on streetscaping will ensure that the implementation of the council endorsed secondary plan is realized.

ES 4.0 Alternative Solutions

ES 4.1 Niagara Falls VIA Rail / GO Transit Station and Bus Operations Impacts on Alternatives

The design of the Niagara Falls VIA Rail / GO Transit Station site is not formally part of the Bridge Street MCEA and will be a separate planning and design process. Options for the Niagara Falls VIA Rail / GO Transit Station design, however, were developed with the understanding that the vehicular and bicycle lanes proposed may be impacted by on-street bus bays.

In support of the MCEA for Regional Road 43 (Bridge Street), Burnside developed alternative concepts to provide an alternative to the on-street bus bays initially proposed in the Precinct Area Plan.

The concept has been developed to allow the preferred Bridge Street configuration, including the use of the existing VIA station parking area west of the station building to construct off-street bus loops for GO Transit, City of Niagara Falls Transit and, if possible, Charter buses. Vacant land east of the Niagara Falls VIA Rail / GO Transit Station was used to develop a concept to relocate up to three WEGO buses from on-street bays to an off-street bus loop.

ES 4.2 Solution Time Horizons

The Bridge Street corridor and surrounding area will be changing with redevelopment. The Downtown Niagara Falls Transit Station Secondary plan will allow for the redevelopment of the area from single family residential uses to high density mixed use.

The 'Interim' time horizon, which extends from the date of construction to the time when significant development and / or property acquisition occurs, which could be 10 or 20 years maybe longer. The 'Ultimate' time horizon will be implemented when there is sufficient redevelopment and / or additional property to expand the features within the corridor. The development of solutions and designs were considered for both the Interim and Ultimate time horizons, but the strategies were coordinated. The ultimate solution will be reassessed at detail design based on future development conditions.

ES 4.3 Bridge Street Alternative Solutions

The following are alternative solutions for Bridge Street to address the needs and opportunities along Bridge Street:

- Alternative 0 – Do Nothing: maintain existing lane configuration without active transportation improvements, but introduce streetscape improvements;
- Alternative 1 – One-way Bicycle Facility (Bike Lanes or Cycle-Track): provide a dedicated one-way bicycle facility on both sides of the roadway with sidewalk improvements and streetscape features consistent with the Region Streetscape Guidelines;
- Alternative 2 – North-side two-way Bicycle Facility (Cycle-Track or Multiuse Path): provide north-side bicycle facility with sidewalk improvements and introduce streetscape features consistent with the Region Streetscape Guidelines; or
- Alternative 3 – South-side two-way Bicycle Facility (Cycle-Track or Multiuse Path): provide south-side bicycle facility with sidewalk improvements and introduce streetscape features consistent with the Region Streetscape Guidelines.

For Bridge Street Alternative 1 (one-way bicycle facility) provides the best option based on the evaluation; it provides the highest level of transportation service and safety and the least potential for impacts adjacent properties.

ES 4.4 Erie Avenue / Park Street / Zimmerman Avenue Alternative Solutions

Three city streets can provide an extension of improvements associated with Bridge Street. The following are alternative solutions for Erie Avenue, Park Street and Zimmerman Avenue to address the needs and opportunities of the municipal streets. The alternative solutions for Erie Avenue considered include:

- Alternative 0 – Do Nothing: maintain existing lane configuration without active transportation improvements, but introduce streetscape improvements;
- Alternative 1 – One-way Bicycle Facility: provide a dedicated one-way bicycle facility on both sides of the roadway with sidewalk improvements and streetscape features consistent with the Region Streetscape Guidelines;
- Alternative 2 – West or North-side two-way Bicycle Facility: provide north-side bicycle facility with sidewalk improvements and introduce streetscape features consistent with the Region Streetscape Guidelines;
- Alternative 3 – East or South-side two-way Bicycle Facility: provide south-side bicycle facility with sidewalk improvements and introduce streetscape features consistent with the Region Streetscape Guidelines; or

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- Alternative 4 – Woonerf: changing the nature of the roadway to a Woonerf type of street accommodating all modes of travel and street elements at lower speeds.

The preferred solution for Erie Avenue is Alternative 2, a two-way cycling facility on the west side of the roadway. The evaluation of the preferred solution for Erie Avenue reflects the constraints in the corridor and opportunities beyond the study area. The benefits of this alternative are the opportunity to utilize the City of Niagara Falls property on the west side of Erie Avenue from Park Street to Bridge Street and the opportunity to connect to a two-way multiuse pathway on Erie Avenue south of Queen Street.

The alternative solutions for Park Street and Zimmerman Avenue considered include:

- Alternative 0 – Do Nothing: maintain existing lane configuration without active transportation improvements, but introduce streetscape improvements;
- Alternative 1 – One-way Bicycle Facility: provide a dedicated one-way bicycle facility on both sides of the roadway with sidewalk improvements and streetscape features;
- Alternative 2 – West or North-side streetscape features;
- Alternative 3 – East or South-side streetscape features; or
- Alternative 4 – Woonerf: changing the nature of the roadway to a Woonerf type of street accommodating all modes of travel and street elements at lower speeds.

The evaluation of the preferred solution for Zimmerman Avenue and Park Street was undertaken in recognition of the lack of designated or identified cycling facilities and existing and proposed land uses. Alternative 2 which includes streetscape improvements on the north side of Park Street and the west side of Zimmerman.

ES 5.0 Evaluation of Alternative Designs and the Preferred Design

ES 5.1 Identification of Alternative Design Concepts

Alternative Designs were developed for preferred active transportation facility type solutions considering a range of factors, including: the identified problems and opportunities, baseline conditions in the Study Area, design issues and constraints associated with the preferred alternative solution, and public and stakeholder feedback received during the consultation process.

Alternative Designs were developed for each of the following project components: Bridge Street (west section and east section) and Erie Avenue (north of Park Street, south of Park Street). Cycling facilities were not included in the preferred solution for Zimmerman Avenue or Park Street, hence design alternatives were not presented.

ES 5.1.1 Alternative Bridge Street Design Concepts

The preferred alternative solution for Bridge Street was Alternative 1 (One-way Bicycle Facility, Bike Lanes or Cycle-Track) on both sides of the roadway with sidewalk improvements and streetscape features consistent with the Region Streetscape Guidelines. Alternative cycling design treatments considered for the preferred solution on Bridge Street include buffered bike lanes and one-way cycle tracks. Design practices of these facilities are documented in publication entitled Ontario Traffic Manual Book 18 Cycling facilities.

- Alternative A is an on-street bicycle lane in each direction with a marked buffer separation from vehicle traffic.
- Alternative B is a cycle-track is elevated from the vehicular lanes and adjacent to the sidewalk. Best practices include a buffer between the cycle track a both the vehicle lanes and sidewalk.

The design solutions include a “boulevard” area identified in green. On the north side of Bridge Street, this boulevard area is proposed as a hard surface in the interim, such that existing businesses can continue to access parking spaces and maneuver on site. On the south side, the boulevard area allows for planting areas and / or hard surface subject to the needs of individual property driveways.

ES 5.1.2 Alternative Erie Avenue Design Concepts

The preferred solution for Erie Avenue is Alternative 2, a two-way cycling facility on the west side of the roadway. Alternative cycling design treatments considered for the preferred solution on Erie Avenue include buffered two-way cycle tracks and multi-use path. Design practices of these facilities are documented in publication entitled Ontario Traffic Manual Book 18 Cycling facilities.

- Alternative C is a multiuse trail accommodating cyclists and pedestrians as a shared facility; or
- Alternative D is a cycle-track is elevated from the vehicular lanes and adjacent to the sidewalk. Best practices include a buffer between the cycle track a both the vehicle lanes and sidewalk.

The design solutions include a “boulevard” area identified in green. This boulevard area allows for planting areas and/or hard surface subject to the needs of individual property driveways.

ES 6.0 Evaluation of Alternative Design Concepts

The study area along Bridge Street has varying roadway environments. The development of solutions and designs were considered for both the west section (from east of Victoria Avenue roundabout to the west end of the Niagara Falls VIA Rail / GO Transit Station) and east section (from west end of the Niagara Falls VIA Rail / GO Transit Station to River Road).

ES 6.1 Bridge Street West Section

The preferred design of the preferred solution (One-way Bicycle Facility) for the West Section of Bridge Street in the interim time horizon is the introduction of on-street bike lanes. The merits of bike lanes include:

- Low cost to implement and low cost to convert the roadway to accommodate a future centre turn lane by shifting cycling facilities to the boulevard in the longer term.
- Improved cycling safety and continuity of route.

It is noted that the introduction of bike lanes would remove on-street parking, but it is recognized that the options with one way or two-way cycle tracks would either require the removal of on-street parking or it would impact properties by requiring additional road ROW in the short term. The design of the West Section of Bridge Street is illustrated in Figure ES 2.1 to 2.3

The preferred design for the West Section of Bridge Street in the ultimate time horizon (when significant redevelopment is occurring) is the introduction of one-way boulevard cycle tracks. The merits of one-way boulevard cycle tracks include:

- A higher level of cyclist safety and continuity of the cyclist route.
- Allows the roadway to accommodate a centre turn lane in the future when traffic levels are much higher.

ES 6.2 Bridge Street East Section

The preferred design of the preferred solution (One-way Bicycle Facility) for the East Section of Bridge Street is the introduction of one-way boulevard cycle tracks for both the interim and ultimate time horizon. The merits of one-way boulevard cycle tracks include:

- A higher level of cyclist safety and continuity of the cyclist route.
- Allows the roadway to accommodate left turn lanes.

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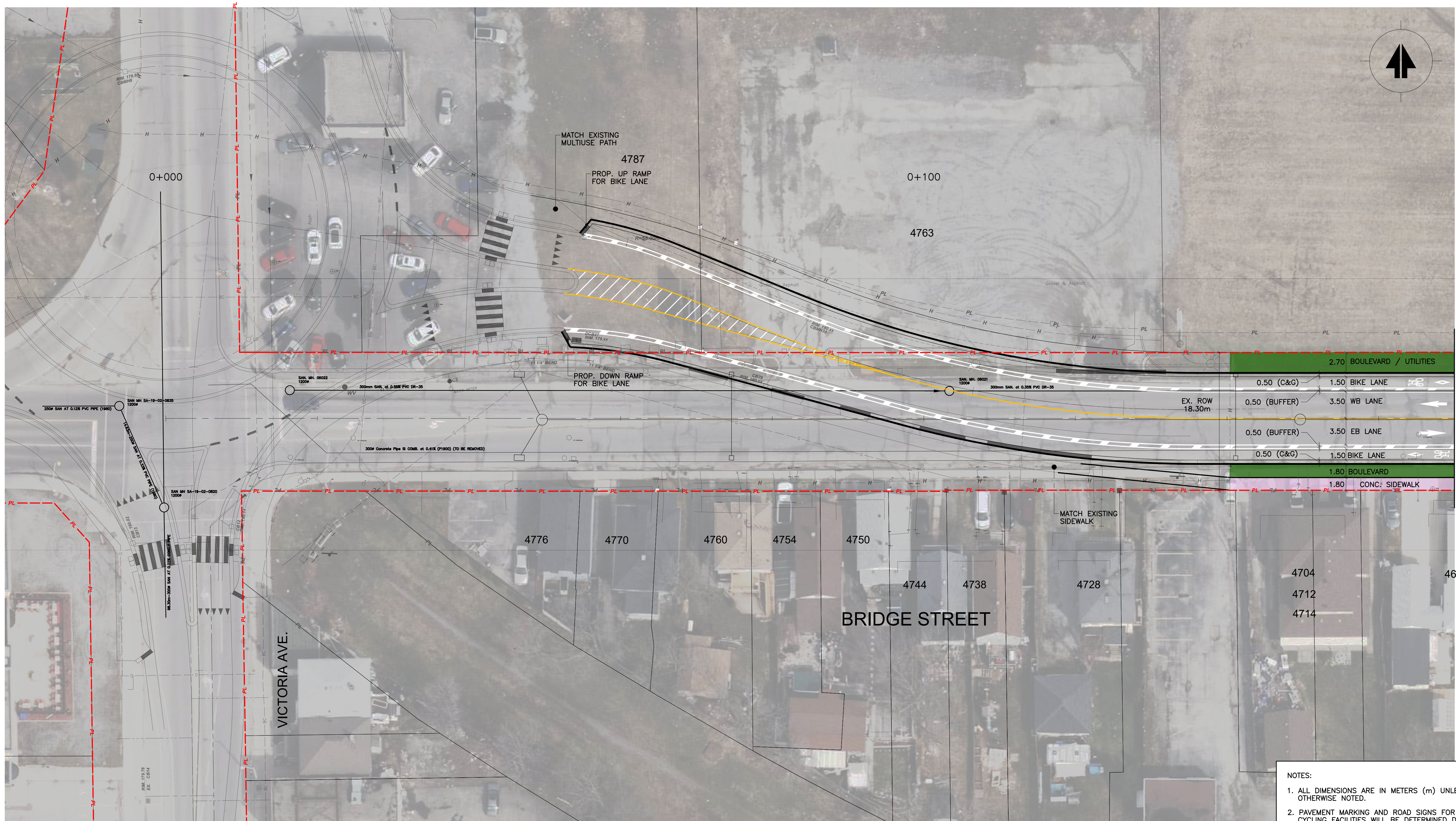
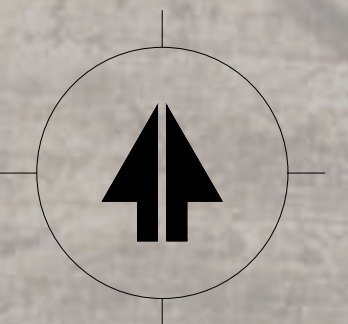
The design of the East Section of Bridge Street is illustrated in Figures ES 2.4 to ES 2.6.

ES 6.3 Erie Avenue / Park Street / Zimmerman Avenue

The preferred design for Erie Avenue is a multiuse path that connects the Torch Trail to the Niagara Falls VIA Rail / GO Transit Station on the west side of Erie Avenue. A multiuse path requires less width than separate cycle track and sidewalk facilities, which will allow for streetscape features on both sides of Erie Avenue.

Between Park Street and Bridge Street the City of Niagara Falls has property on the west side of the roadway. The City has indicated that the multi-use path could be provided on the City lands outside the road right-of-way, which would allow for a market zone on the east side of that portion of the street to complement the future commercial land uses. The Design of Erie Avenue, Park Street and Zimmerman Avenue is illustrated in Figures ES 3.1 to 3.3.

The full evaluation of the design concepts can be found in Chapter 7.



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	MULTI-USE PATHWAY		PRIVATE CARRIER
	BOULEVARD / UTILITIES		WEGO BUS
	CITY BUS		EX. PROPERTY LINE

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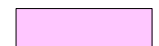


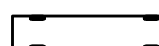




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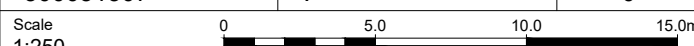
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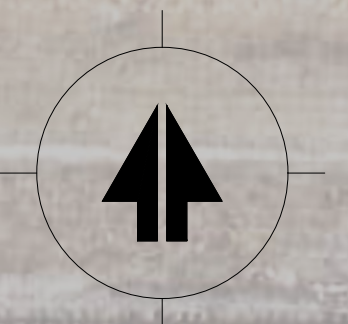
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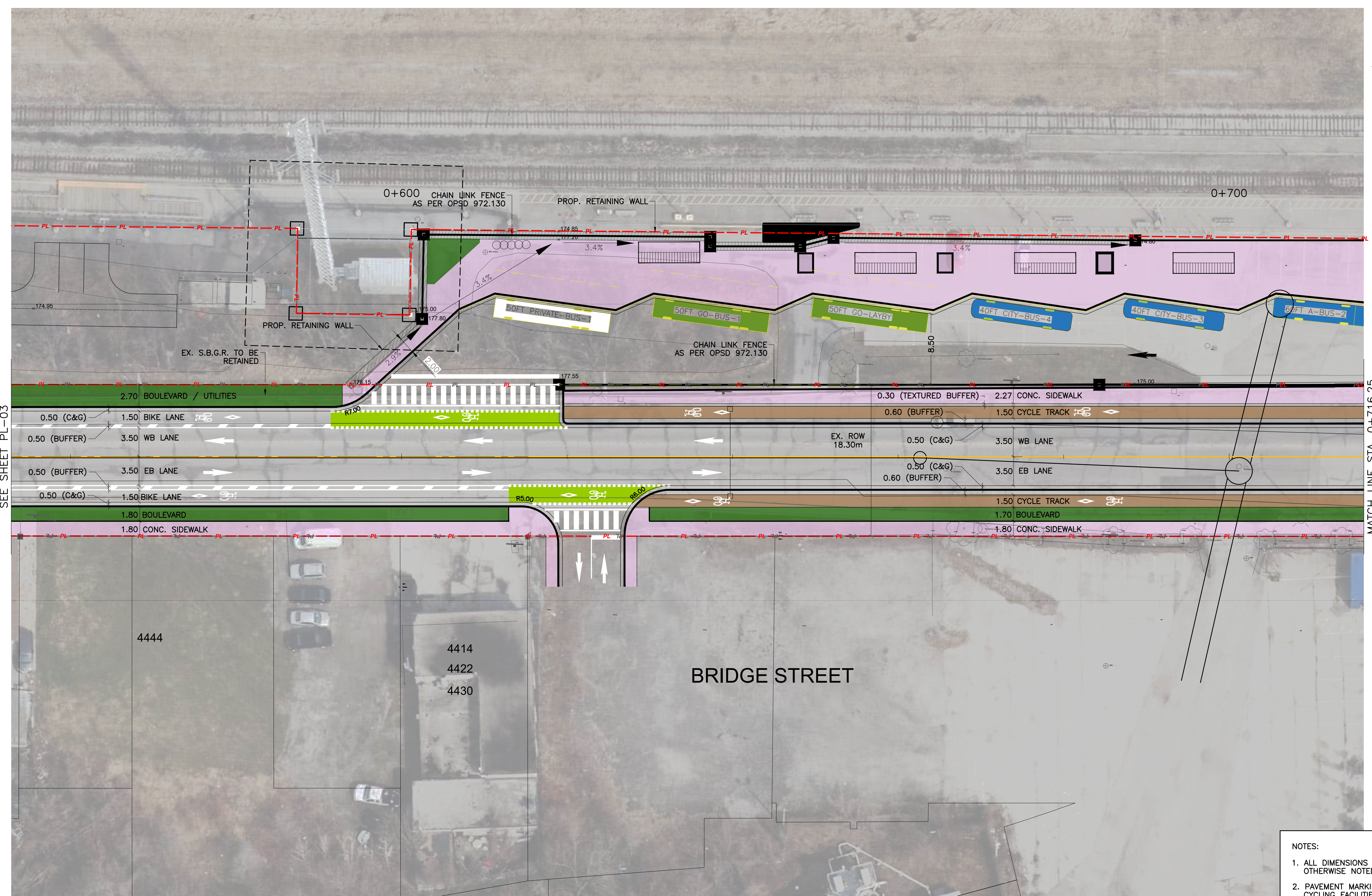
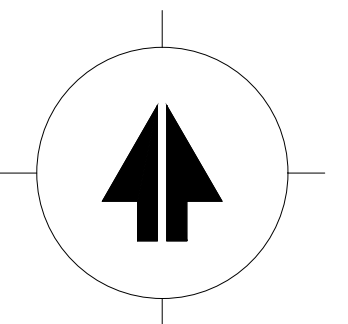
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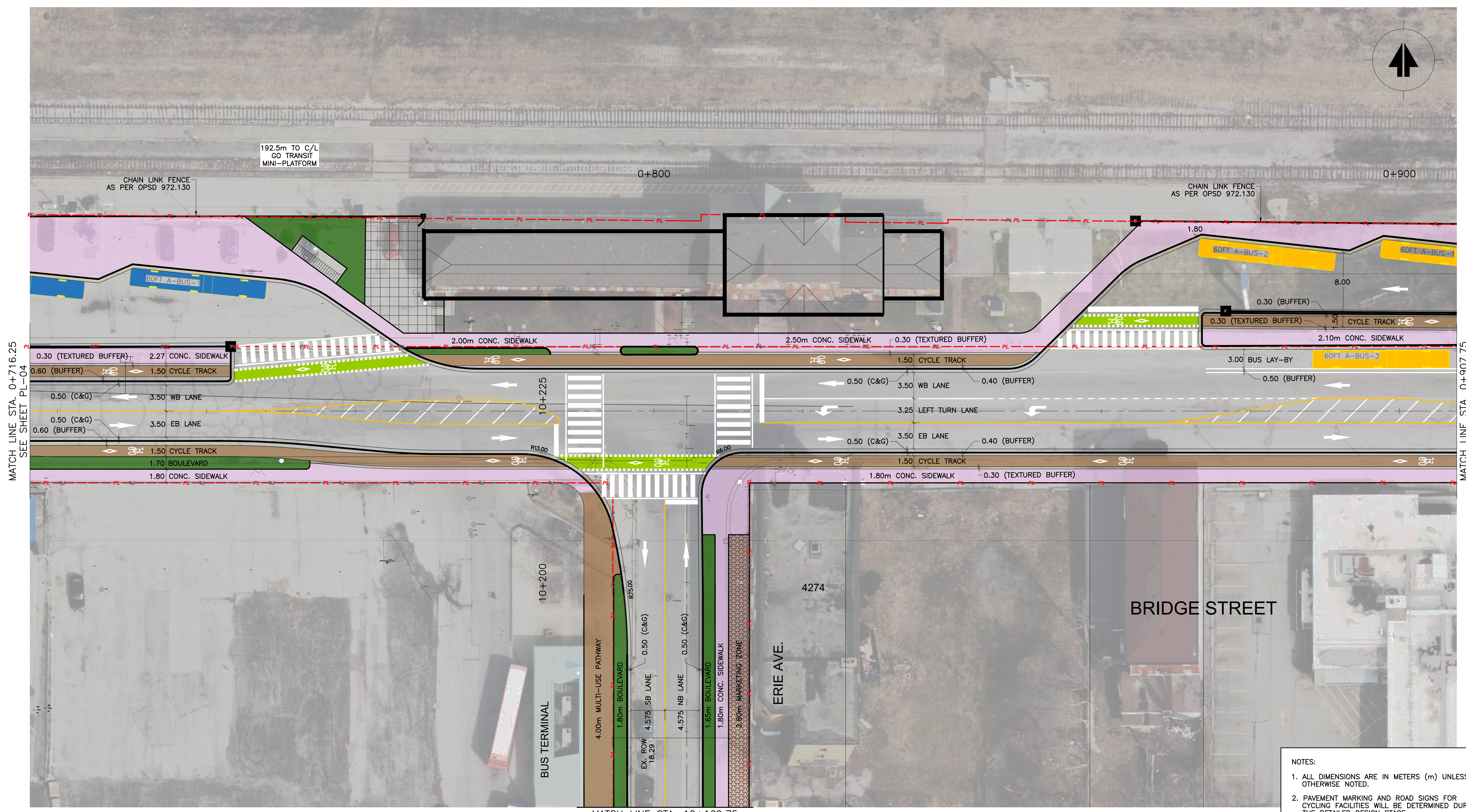
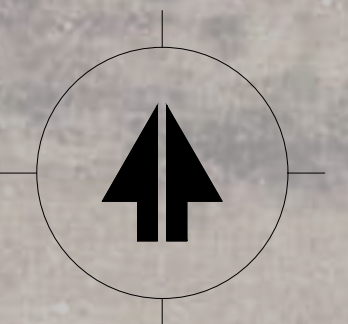
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	MULTI-USE PATHWAY		PRIVATE CARRIER
	BOULEVARD / UTILITIES		WEGO BUS
	CITY BUS		EX. PROPERTY LINE

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Client:
NIAGARA REGION
1815 Sir Isaac Brock Way,
Thorold, ON

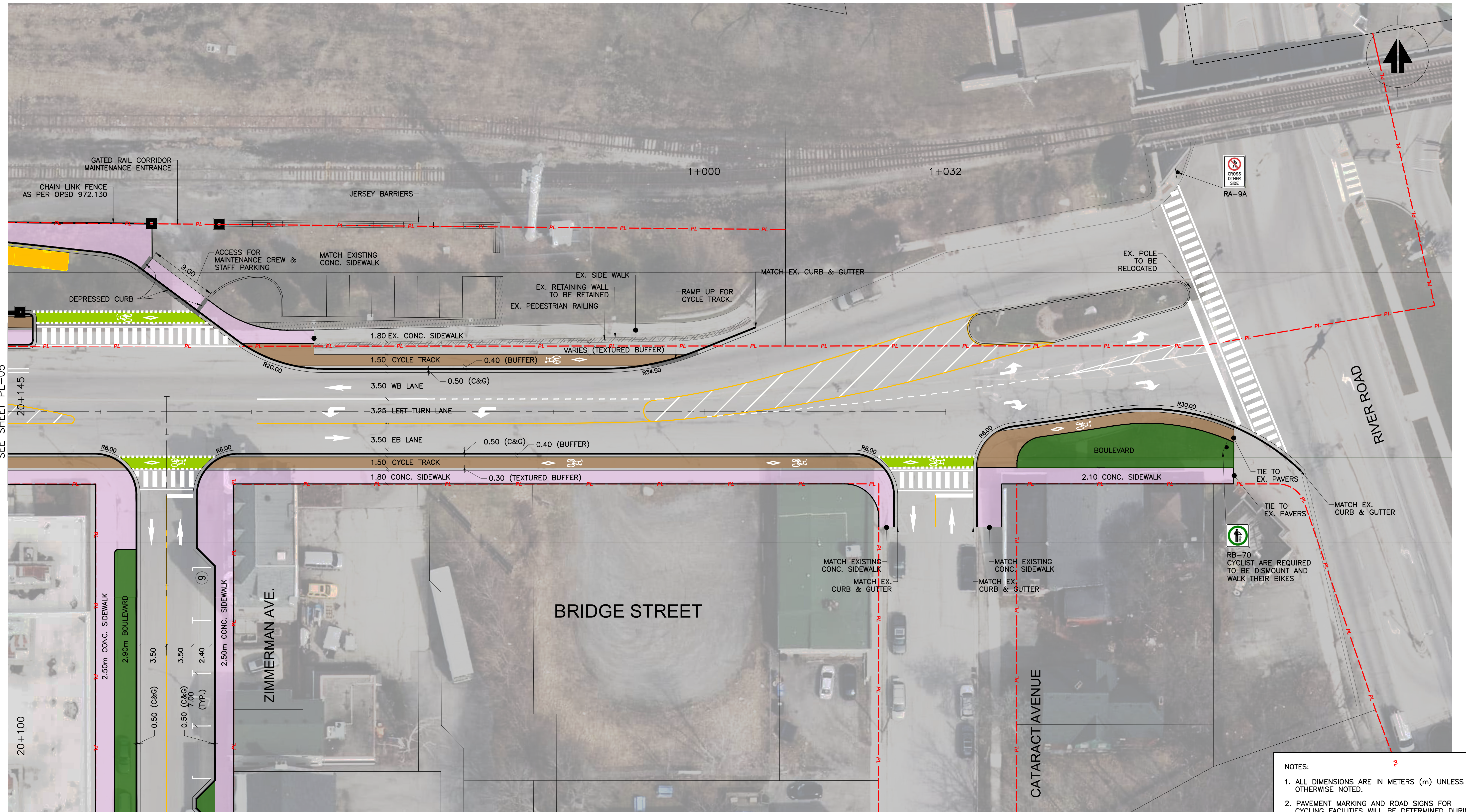
**BRIDGE STREET AND ADJACENT ROADS
EA ASSESSMENT**

BRIDGE STREET / ERIE AVENUE
PREFERRED DESIGN ALTERNATIVE - INTERIM
STA. 0+716.25 TO STA. 0+907.75 / STA. 10+169.75 TO STA. 10+225.00

Drawn	Checked	Designed	Checked	Date	Revision No.
M.A.	A.I.	A.I.	R.A.	22/03/30	0
Project No.	Contract No.	Revision No.			
300051307		0			

Scale: 1:250

ES-2.5



MATCH LINE STA. 0+907.75
SEE SHEET PL-05

MATCH LINE STA. 20+089.75
SEE SHEET PL-09

- NOTES:
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EA ASSESSMENT
 BRIDGE STREET / ZIMMERMAN AVENUE
 PREFERRED DESIGN ALTERNATIVE - INTERIM
 STA. 0+907.75 TO STA. 1+032.00 / STA. 20+089.75 TO STA. 20+145.00

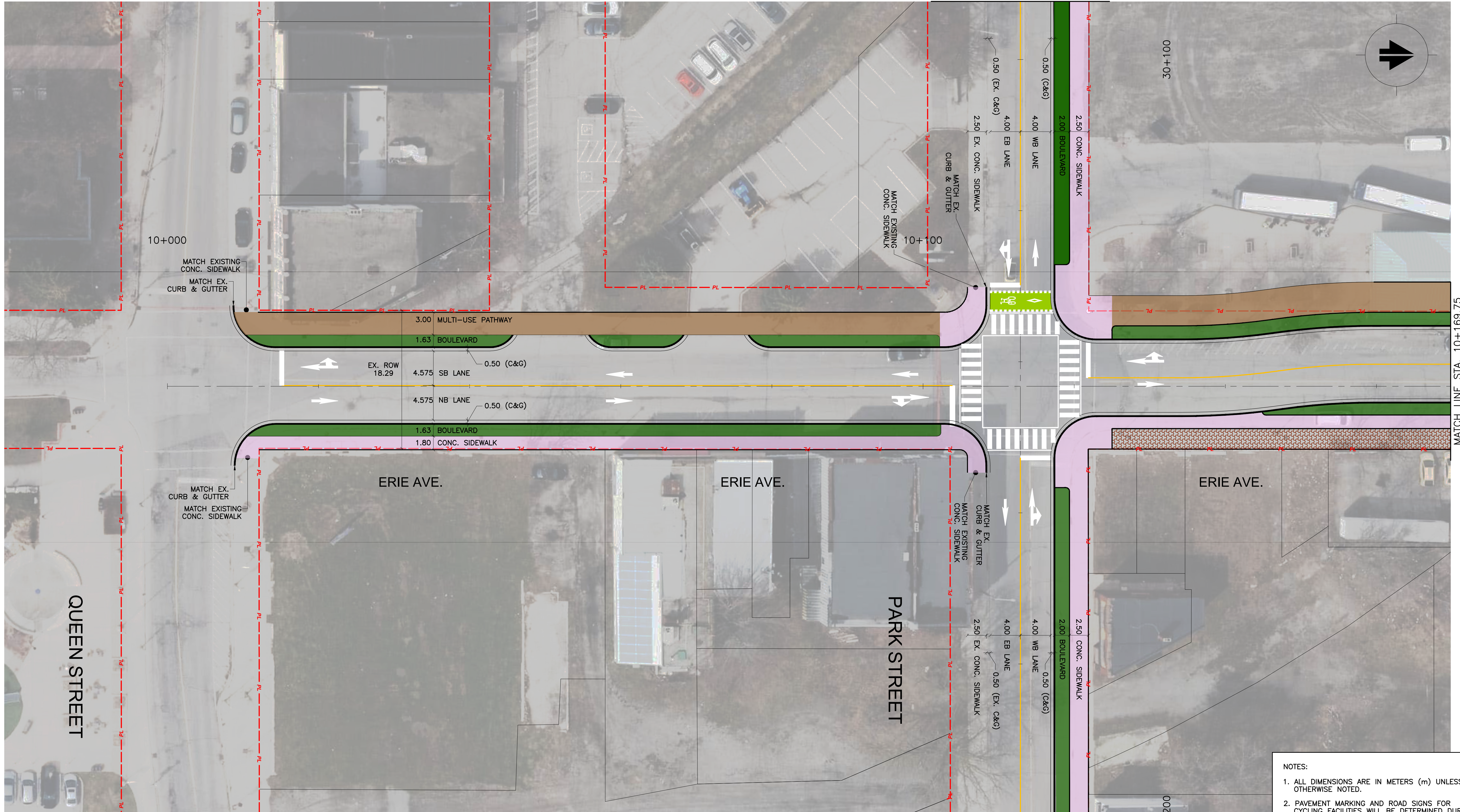
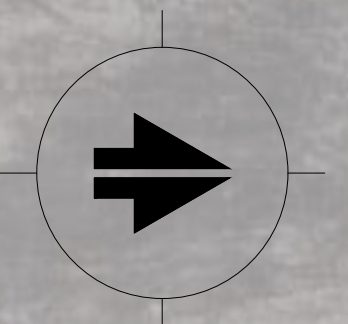
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Project No.	Contract No.	Revision No.			
300051307		0			

Scale
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ES-2.6

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SEE SHEET PL-08



MATCH LINE STA. 30+199.75
SEE SHEET PL-09

MATCH LINE STA. 10+169.75
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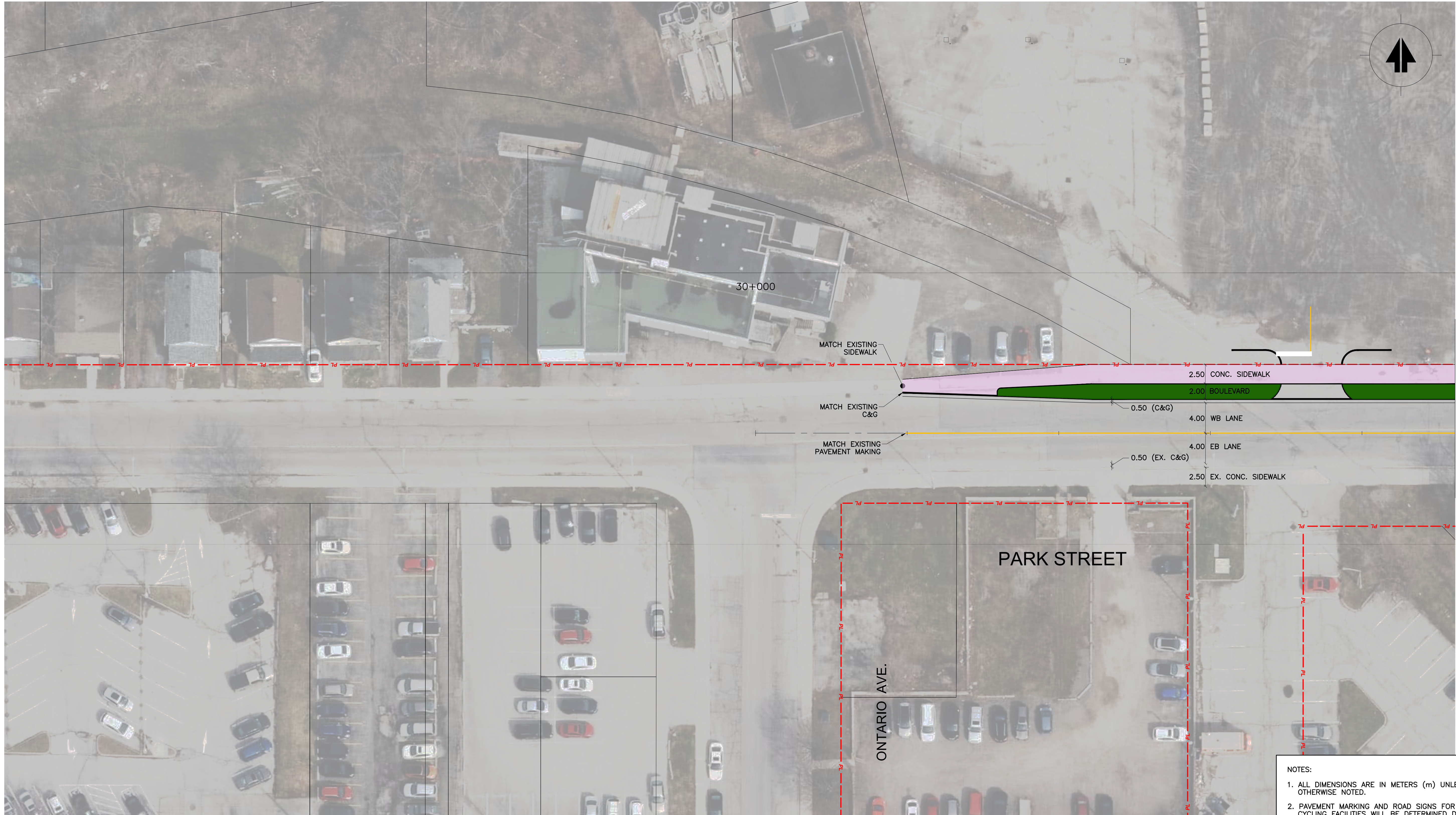
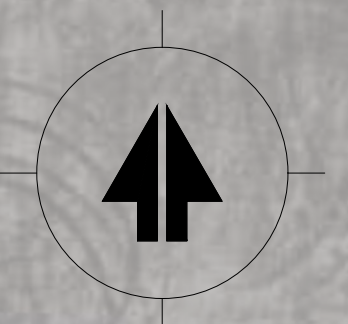
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Drawing Title
BRIDGE STREET AND ADJACENT ROADS
EA ASSESSMENT
BRIDGE STREET / ERI AVENUE / PARK STREET
PREFERRED DESIGN ALTERNATIVE - INTERIM
STA. 10+000.00 TO STA. 10+169.75 / STA. 30+199.75 TO STA. 30+092.25

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Project No.	Contract No.	Revision No.			
300051307		0			
Scale	0 5.0 10.0 15.0m				
1:250					

ES-3.1



MATCH LINE STA. 30+092.25
SEE SHEET PL-07

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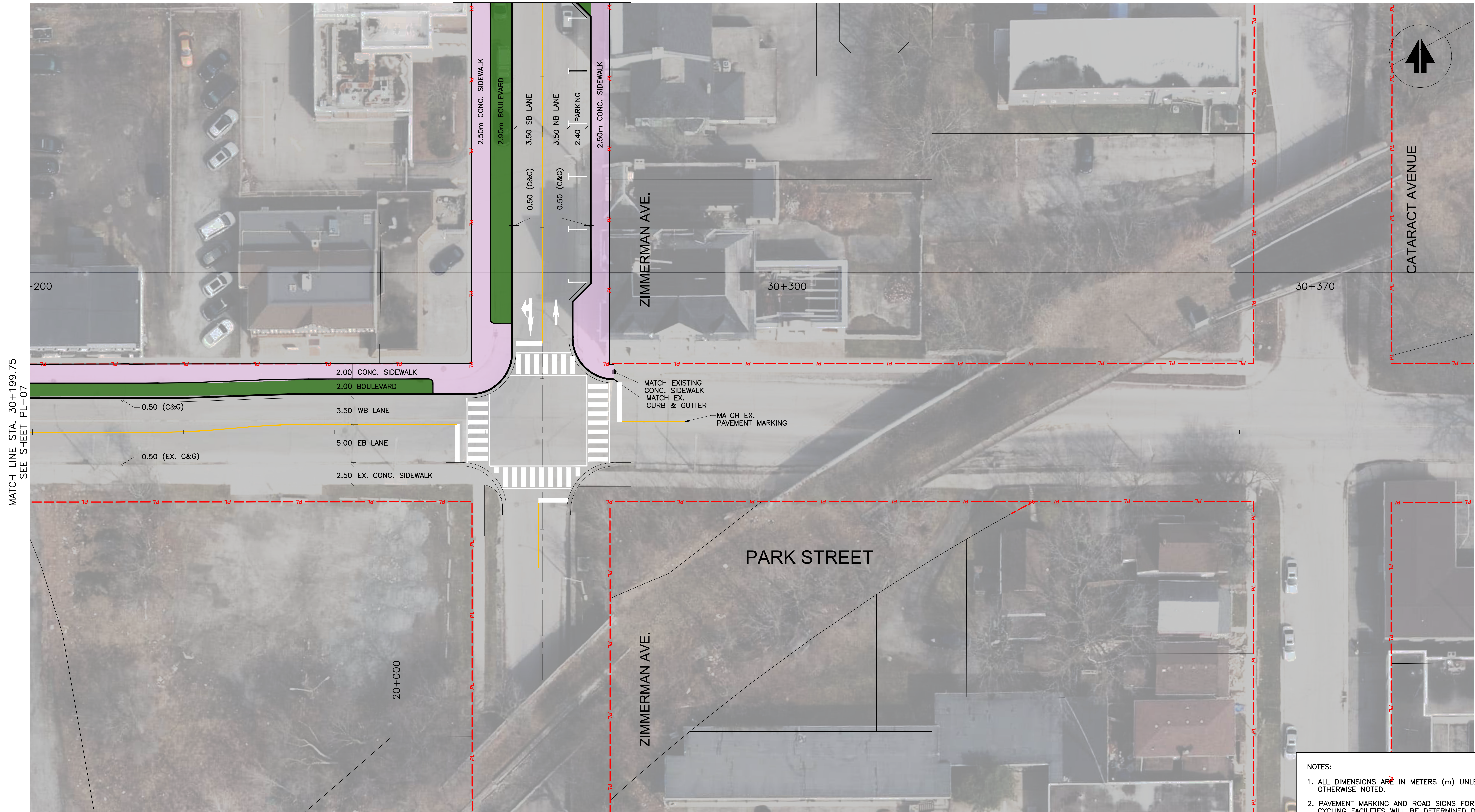
PARK STREET
PREFERRED DESIGN ALTERNATIVE - INTERIM
STA. 30+000.00 TO STA. 30+092.25

Drawn	Checked	Designed	Checked	Date	Revision No.
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ES-3.2

MATCH LINE STA. 20+089.75
SEE SHEET PL-06



MATCH LINE STA. 30+199.75
SEE SHEET PL-07

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PARK STREET / ZIMMERMAN AVENUE
PREFERRED DESIGN ALTERNATIVE - INTERIM
STA. 30+199.75 TO STA. 30+370.00 / STA. 20+000.00 TO STA. 20+089.75

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ES-3.3

ES 7.0 Design Considerations – Phase 3 Technical Studies

ES 7.1 Stormwater Management Assessment

Road improvements are not expected to result in a significant increased impervious area within the ROW, thereby resulting in a similar rate of storm runoff as in the existing condition. Peak flow analysis will be completed during the design stage to confirm post-improvement rates to not significantly exceed existing rates.

Conveyance of right of way runoff and external areas draining to the ROW via existing storm sewers appear sufficient for the 1:5-year storm runoff and will be confirmed during the detail design stage. It is anticipated the existing storm sewers will be maintained to provide conveyance of the improved road runoff. Runoff from storms exceeding the existing storm sewer capacity storm can continue to be conveyed overland within the ROW to the east, as in the existing condition.

Similarly, road improvements are not expected to have a negative impact on existing stormwater runoff quality. Quality controls are not proposed as overall travelled impervious areas are not to be increased from the existing condition. Appendix C summarizes the Stormwater Management Assessment.

ES 7.2 Low Impact Development (LID) Assessment Feasibility

The Study Area includes highly urbanized roadway environments, with constrained rights of way. The best opportunities for low impact development (LID) design elements include permeable pavement in boulevard areas and all of the proposed planting areas could include LID features (e.g. trenches). Permeable pavers may be feasible for the parking stalls on Zimmerman Avenue, the parking stalls north of Bridge Street east of the Niagara Falls VIA Rail / GO Transit Station and on the east boulevard of Erie Avenue. As the detailed design process progresses, LID and permeable pavement features will be considered.

ES 7.3 Property Requirements

All proposed, new facilities along Bridge Street, Park Street, Erie Avenue and Zimmerman Avenue can be constructed within existing property limits and City and Region lands. The 3 three properties that have stairs or porches that encroach into or are immediately adjacent to the road right that have of way may require some modification.

ES 7.4 Natural Heritage Impacts

Impacts to natural heritage features and functions are expected to be minimal due to the limited representation of naturalized vegetation features. The primary impacts of the Interim design are impacts or removal to 12 street trees on the south side of Bridge Street to accommodate sidewalks; mitigation will include protection and replacement as per Region policy. Tree removals will not occur along Erie Avenue, Cataract Avenue, or Zimmerman Avenue. The landscape concept has identified the potential for planting up to 165 trees within the boulevard area and station area.

ES 8.0 Impacts and Mitigation

ES 8.1 Design Impacts and Mitigation

For the interim solution there are no significant impacts to property, natural or cultural heritage resources. Impacts will be limited to:

- Three homes that have ramps, steps or porches that encroach onto Regional road ROW will require modifications by the home owner;
- Some trees or other plantings within the road right of way will require relocation or replacement;
- Curb-cuts for driveways to commercial businesses on the north side of Bridge Street will maintain access to garage doors and parking, but will be focused to one or two access points per property if possible to limit the number of conflict points with the bike lane;
- On-street parking on Bridge Street will no longer be permitted; and
- Minor grading on adjacent properties may be required.

For the Ultimate solution (and again this is some time into the future), 2.5 m of property will be required on both sides of Bridge Street for properties west of the Niagara Falls VIA Rail / GO Transit Station; if the ultimate solution proceeds before the redevelopment of specific properties, then

- There will be up to seven homes directly impacted; and
- Parking and site circulation will be impacted for any existing businesses on the north side of Bridge Street that have not redeveloped at the time of the ultimate solution.

Niagara Region will not implement the ultimate solution until redevelopment has begun on impacted properties or the required property has been acquired by Niagara Region.

The City of Niagara Falls has committed to undertake a parking study that will include analysis of needs and future parking supply within the Study Area.

ES 8.2 Mitigation and Monitoring

The potential environmental impacts associated with construction, operation and maintenance of the proposed road improvements within the Study Area have been identified and are summarized in Table ES 1. Proposed measures to mitigate these impacts and monitoring activities to ensure that the mitigation measures are implemented effectively are also provided in Table ES 1. All mitigation measures and monitoring activities shall be reviewed during the detailed design phase of the project.

Table ES 1: Mitigation and Monitoring Plan

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Transportation and Built Environments	Human Health and Safety	Potential safety hazard from construction activities, heavy equipment and increased construction traffic.	<p>Construction Mitigation</p> <p>The contractor shall develop a Health and Safety Plan (HASP) and have it reviewed and approved by the Region prior to implementing. The HASP shall follow the <i>Occupational Health and Safety Act, 1990</i> and regulatory requirements.</p>	N/A	No net effects anticipated.
Transportation and Built Environments	Transportation Infrastructure	Potential safety hazard from construction activities, heavy equipment and increased construction traffic.	<p>General Mitigation</p> <p>Operation of construction related vehicles will be done in accordance with all appropriate safety policies and procedures, and based on Canadian Standards (Transport Canada, etc.).</p> <p>Construction Mitigation</p> <p>All contractors will be required to complete and follow appropriate construction site training and adhere to appropriate road safety regulations during construction.</p> <p>Work shall be done in such a manner as to minimize disruption to the adjacent residential and commercial neighbourhood. Noise and dust emissions shall be controlled. Contract specifications shall ensure that all equipment and vehicles are compliant with noise and air emission standards for applicable equipment.</p>	An environmental monitor shall regularly inspect construction work areas to ensure that noise control measures and dust suppression measures are being adequately applied. If noise control measures and dust suppression measures are not functioning properly, alternative measures shall be implemented immediately and prioritized above other construction activities.	No net effects anticipated.
Transportation and Built Environments	Transportation Infrastructure	Temporary traffic flow / access disruptions.	<p>Construction Mitigation</p> <p>Contractor will be required to develop and implement a traffic management plan in coordination with Niagara Region and City of Niagara Falls. Adequate signage to give advance notice of disruptions and detours is to be provided by the contractor.</p>	N/A	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Physical Environment	Surface Water	Potential for erosion and sedimentation impacts.	<p>General Mitigation</p> <p>The Region is required to comply with the <i>Ontario Water Resources Act, 1990, c. O.40</i> with respect to the quality of water discharging into natural receivers. The footprint of disturbed areas shall be minimized to the extent possible. For example, vegetated buffers shall be left in place adjacent to natural vegetation features (forested areas) to the maximum extent possible.</p> <p>A Soil Management Plan (SMP) will be prepared by a Qualified Professional (QP) as defined in Ontario Regulation 160/06 for managing soil materials on-Site (includes excavation, location of stockpiles, reuse and off-Site disposal).</p> <p>All disturbed areas of the construction Site will be stabilized and re-vegetated as soon as conditions allow.</p> <p>Wet weather restrictions shall be applied during Site preparation and excavation.</p>	A qualified person shall regularly monitor construction activities	No net effects anticipated.

Municipal Class Environmental Assessment for Regional Road 43 (Bridge Street) and Adjacent Municipal Roadways
November 2022

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Physical Environment	Surface and Ground Water	Potential for localized surface water or groundwater impacts as a result of spills, discharge or dumping of materials, fluids and other wastes during construction of proposed road extension and associated surface water facilities (e.g., swales).	<p>Construction Mitigation</p> <p>Refueling and maintenance of construction equipment should occur within designated areas only. Any hazardous materials used for construction will be handled in accordance to appropriate regulations.</p> <p>A Construction Emergency Response and Communications Plan shall be developed and followed throughout the construction phase (including spill response plans). The Contractor shall develop spill prevention and contingency plans for the construction and general Site preparation for proposed road improvements. Personnel shall be trained in how to apply the plans and the plans shall be reviewed to strengthen their effectiveness and continuous improvement. Spills or depositions into watercourses shall be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. A hydrocarbon spill response kit will be on-Site at all times during the work. Spills will be reported to the Ontario Spills Action Centre at 1-800-268-6060.</p>	A qualified person shall regularly monitor construction.	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Physical Environment	Surface and Groundwater (Headwater feature)	Change in water balance to seasonally flooded or wet habitat within natural vegetation communities affecting groundwater recharge functions.	<p>General Mitigation</p> <p>Incorporation, where feasible, Low Impact Development (LID) to preserve local predevelopment water balance as they reduce runoff volume through the processes of infiltration and evapotranspiration and improve stormwater quality through to direct surface water flow to planting areas and permeable treatments in parking areas.</p>	Monitoring of vegetation communities for changes in plant species composition and soil moisture regime.	No net effects anticipated
Natural Environment	Vegetation	<p>Direct effects of construction activities will include the limited clearing and loss of both herbaceous and woody vegetation.</p> <p>Indirect effects include the increase to edge habitats, which includes a number of potential effects, such as wind throw and sunscald, introduction of invasive plant and wildlife species which may outcompete or predate native species, change in soil moisture regime and water availability to plants and plant communities, increases in light penetration (pollution) and noise, soil compaction, equipment and pedestrian "traffic", equipment laydown and spills.</p>	<p>General Mitigation</p> <p>Plant species loss should be minimized, where possible, and compensatory planting plans established in areas of the Study Area when no clearing activities are proposed. Potential for establishing pollinator species of plants should also be included when establishing a formal planting plan.</p> <p>The inclusion of bio swales, infiltration galleries or other features to promote localized surface water infiltration to maintain the existing water balance should be included as part of the detailed design and landscape plan for the road extension.</p> <p>Construction Mitigation</p> <p>Construction hoarding should be installed prior to commencement of construction activities to prevent pedestrian access, prevent the unnecessary encroachment / disturbance by humans and machinery into vegetation communities and to prevent wildlife from entering the construction areas. Hoarding should be installed and inspected prior to any land disturbance. Hoarding should be installed at the dripline of any trees to be preserved.</p> <p>Construction activity should be outside of the dripline of any trees that are to remain.</p>	<p>Fencing shall be inspected regularly to ensure damage is repaired in a timely manner and that additional risk to wildlife is minimized.</p> <p>Hoarding Site visit required.</p>	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Natural Environment	Trees	Potential impacts to trees adjacent to road extension construction area.	<p>General Mitigation</p> <p>Clearly quantify the extent of loss of trees due to the planned Bridge Street and adjacent municipal streets construction. Tree loss will be replaced at a ratio of 10 new trees for each tree lost. Tree locations will be identified through a planting plan in the boulevard areas in the detail design process.</p> <p>Construction Mitigation</p> <p>Clearly delineate the extent of vegetation removal for the vegetation clearing and grubbing contractor. All vegetation must be cut in a way that it stays within the work zone.</p>	<p>Inspection of tree protection measures by the site supervisor or qualified person. All damaged, sagging or deficient measures must be fixed immediately.</p> <p>An arborist shall review all trees adjacent to the work zone and prior to opening the road for use by the general public. Branches and trunks damaged during the construction period that may cause damage or injury must be mitigated.</p>	

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Natural Environment	Wildlife and Wildlife Habitat (General) – Breeding Birds	Potential for disturbance or destruction of migratory breeding birds and their habitat (prohibitions under the <i>Migratory Bird Convention Act, 1994</i>).	<p>General Mitigation</p> <p>To reduce the risk of contravening the <i>Migratory Bird Convention Act, 1994</i>, timing constraints shall be applied to avoid any limited vegetation clearing (including grubbing) and/or structure works (construction, maintenance) during the breeding bird period – broadly from April 1st to August 31st for most species (regardless of the calendar year).</p> <p>Active nests (nests with eggs or young birds) of protected migratory birds, including SAR protected under the <i>Endangered Species Act (ESA), 2007</i>, cannot be destroyed at any time of the year. The destruction of inactive nests for some species may also be prohibited.</p> <p>Construction Mitigation</p> <p>If a nesting migratory bird (or SAR protected under <i>ESA, 2007</i>) is identified within or adjacent to the construction Site (or during operations and maintenance activities) and the activities are such that continuing works in that area would result in a contravention of the <i>Migratory Birds Convention Act, 1994</i> or <i>ESA, 2007</i>, all activities will stop and the Contract Administrator (with assistance from an Avian Biologist) shall discuss mitigation measures with the Region. Should SAR be identified, all activities will stop and MNDMNRFF will be contacted immediately to ensure compliance with the ESA. The Contract Administrator shall instruct the Contractor on how to proceed based on the mitigation measures established through discussions with the Region, the MNDMNRFF and/or Environment Canada.</p>	<p>An Avian Biologist may be required on-Site as needed should a nesting migratory bird (or SAR protected under <i>ESA, 2007</i>) be identified within or adjacent to the construction Site.</p> <p>The Avian Biologist may be required to confirm the presence and identification of an active nest and/or breeding bird prior to contacting MNDMNRFF for further advice.</p>	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Natural Environment	Wildlife and Wildlife Habitat (General)	Temporary displacement of, and disturbance to, wildlife and wildlife habitat during the construction phase (i.e., vegetation removals, noise, light trespass). Development in these habitats may limit wildlife movement and reduce useable habitat. Wildlife habitat may be removed as a result of the proposed activities.	Construction Mitigation In the event that an animal is encountered during construction and does not move from the construction zone, the Contract Administrator will be notified. If the construction activities are such that continuing construction in the area would result in harm to wildlife, construction activities in that location will temporarily stop and the MNDMNRF shall be contacted for direction. Avoid vegetation clearing during sensitive times of the year for local wildlife, such as spring and early summer (when many animals bear their young or migrate between wintering and summer habitats).	Fencing shall be inspected regularly to ensure damage is repaired in a timely manner and that additional risk to wildlife is minimized.	No net effects anticipated.
Natural Environment	Fish Habitat	Potential indirect impacts to downstream fish habitat from water quality and quantity impairments (sediment loading; fuels and lubricants from machinery) as a result of construction works (earthworks-based activities).	General Mitigation Compliance with the <i>Ontario Water Resources Act, 1990</i> shall be maintained with respect to the quality of water discharging into natural receivers.	A qualified person shall regularly monitor construction activities.	No net effects anticipated
Cultural Environment	Archaeology	Based on the results of the Stage 1 Archaeological Assessment, the project impact area with the footprint of the preferred alternative being within the already disturbed area, does not retain archaeological potential; however, no archaeological assessment, no matter how thorough or carefully completed, can necessarily predict, account for, or identify every form of isolated or deep buried archaeological deposit. Therefore, it is possible that archaeological remains may be found during construction.	Should previously undocumented archaeological resources be discovered by the Contractor during subsequent construction activities, the alteration of the site shall be ceased immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the Ontario Heritage Act. The consultant archaeologist, approval authority and the Heritage Planning Unit of the Ministry of Citizenship and Multiculturalism will immediately be notified by the Contractor.	N/A	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Cultural Environment	Built Heritage Resources and Cultural Heritage Landscapes	<p>Based on the Cultural Heritage Report results:</p> <ul style="list-style-type: none"> Indirect impacts to identified BHRs and CHLs within 50 m of the proposed limits of impact are possible due to construction activities which may result in limited and temporary adverse vibration impacts to 15 known and potential BHRs and CHLs 	<ul style="list-style-type: none"> The Region shall consult with heritage planning staff at the City of Niagara Falls to determine if HIAs are required for: 4238-4240 Bridge Street West (BHR 3); 4190 Bridge Street (BHR 5); 4177 Park Street (BHR 6); 4600—4610 Erie Avenue (BHR 7); 4624 Erie Avenue (BHR 8); 4454, 4450, and 4462 Bridge Street (within CHL 1) and 4299 Queen Street (within CHL 2). If determined to be required by City staff, these HIAs should be undertaken by a qualified person as early as possible in the detailed design phase and be developed in consultation with, and submitted for review to, MCM and the municipal heritage planner and/or municipal heritage committee and Indigenous communities, as appropriate. To ensure that identified BHRs and CHLs are not adversely impacted during construction, baseline vibration monitoring should be undertaken in advance of construction. Should this advance monitoring assessment conclude that any features on these properties be subject to vibration impacts: <ol style="list-style-type: none"> Construction activities should be planned to avoid adverse vibration impacts; and where potential adverse vibration impacts cannot be avoided A qualified engineer should include these properties in the condition assessment of structures within the vibration zone of influence for this project. Further, the Contractor must make a commitment to repair any damages caused by vibrations. 	N/A	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Noise and Air Quality	Noise	Potential for noise through the use of large equipment for construction of the proposed road extension.	<p>General Mitigation</p> <p>A complaint response protocol for nuisance impacts including construction noise shall be prepared during the detailed design phase of the project and implemented prior to construction.</p> <p>Construction Mitigation</p> <p>Noise control measures shall be implemented where required during the construction phase, such as restricted hours of operation and the use of appropriate machinery and mufflers. The noise produced by the equipment can be limited through proper equipment maintenance.</p> <p>All construction activities shall conform to the criteria set out in NPC-115 of 83 dB. All construction activities shall conform to the City of Niagara Fall Noise By-law (https://niagarafalls.ca/pdf/by-laws/noise_by-law.pdf).</p> <p>The construction contractor will be required to develop a Construction Management Plan (CMP) that specifically addresses noise controls, mitigation to be implemented and frequency of equipment inspection.</p>	An environmental monitor shall regularly monitor construction noise to ensure that noise control measures are being adequately applied and confirm the requirements outlined in the CMP are being followed. If noise control measures are not functioning properly, alternative measures shall be implemented immediately and prioritized above other construction activities.	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Noise and Air Quality	Air Quality	Potential air quality impacts during construction.	<p>General Mitigation</p> <p>A complaint response protocol for nuisance impacts including dust emissions will be prepared during the detailed design phase of the project and implemented prior to construction.</p> <p>Construction Mitigation</p> <p>During construction, the following mitigation measures shall be used:</p> <ul style="list-style-type: none"> • The road shall be graded as required to remove potholes, ruts, and ripples in the road surface. Efforts to prevent contamination of the road surface, such as spilling sands, silts, and clays, will also help to minimize dust. • Considerations shall be given to using of chemical suppressants to reduce dust, use of wind barriers and limiting exposed areas which may be a source of dust and equipment washing. • If appropriate equipment is available, the roadway should be sprayed with water as required to minimize dust generation prior to paving. <p>The construction contractor will be required to develop a Construction Management Plan (CMP) that specifically addresses dust controls, and contingency plans to mitigate dust when it occurs.</p>	An environmental monitor shall regularly inspect construction work areas to ensure that dust suppression measures are being adequately applied and confirm the requirements outlined in the CMP are being followed. If dust suppression measures are not functioning properly, alternative measures shall be implemented immediately and prioritized above other construction activities.	No net effects anticipated.

ES 9.0 Climate Change

The provision of improvements to make walking and cycling more viable alternative travel modes through this project is expected to result in a reduction in vehicle traffic. The provision of improved sidewalk and dedicated cycling facilities will allow active transportation to be a more viable mode of travel and shift auto use to more sustainable modes of travel. Additionally, the provision of improvements will facilitate access to the rail station, in anticipation of increased transit service levels in the future, which will contribute to carbon emissions reduction from facilitating modal shifts to transit.

The Project is not anticipated to generate additional pavement area, as existing roadway space will be repurposed for active transportation infrastructure. As a result of the recommended solution and design, it is anticipated that Greenhouse Gas (GHG) emissions will be reduced, contributing to a reduction in climate change effects.

Existing vegetation will be retained to the extent practicable. Removals will be kept to a minimum to limit direct effects to vegetation communities and vascular flora, as well as indirect effects (e.g., soil compaction and changes to topography and drainage). Disturbed areas will be re-stabilized, incorporating revegetation using non-invasive, preferably native plantings and/or seed mix appropriate to the site conditions and adjacent vegetation communities. Seed mixes will be used in conjunction with an appropriate non-invasive cover crop as appropriate.

ES 10.0 Notice of Study Completion

The Environmental Study Report (ESR) for this study is available for a 45-calendar day public review period during which comments / concerns can be submitted. The review period was announced with the publishing of the Notice of Study Completion. As detailed in the notice, interested persons may provide written comments to the project team by January 13, 2023. Further details on providing comments / concerns or requests for further study are included in Section 1.4.

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Municipal Class Environmental Assessment for Regional Road 43 (Bridge Street) and Adjacent Municipal Roadways
November 2022

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Appendix J Preliminary Cost Estimate

***If technical reports are required in an alternative format for accessibility needs,
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Municipal Class Environmental Assessment for Regional Road 43 (Bridge Street) and Adjacent Municipal Roadways
November 2022

Disclaimer

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1.0 Introduction

The Regional Municipality of Niagara (herein referred to as 'Niagara Region') has undertaken a Schedule C Municipal Class Environmental Assessment (MCEA) Study for improvements to Regional Road 43 (Bridge Street) between Victoria Avenue and River Road (also referred to as Niagara Parkway) and portions of adjacent City of Niagara Falls Roads: Erie Avenue, Zimmerman Avenue and Park Street. This study builds on the recommendations from the approved 2017 Niagara Region Transportation Master Plan (TMP) and the Niagara Falls Transit Station Secondary Plan.

R.J. Burnside & Associates Limited (herein referred to as Burnside) is facilitating the MCEA Study for Bridge Street and Adjacent Roads on behalf of the Region.

The study was carried out as a Schedule C project in accordance with the Municipal Class EA process (October 2000, amended in 2007, 2011, and 2015), as approved under the Ontario Environmental Assessment Act. The MCEA Study follows a comprehensive planning and design process to ensure protection of the environment, facilitate a proactive and meaningful consultation with broad range of stakeholders, determine a solution that minimizes disruption to the existing residents and businesses and lastly, produce a comprehensive documentation that meets all the requirements of the MCEA process.

1.1 Study Area

The Study Area is bounded by Regional Road 43 (Bridge Street) in the north, River Road in the east, Queen Street on the south, and Victoria Avenue in the west.

The analysis focuses on existing and future traffic operations at the following road segments:

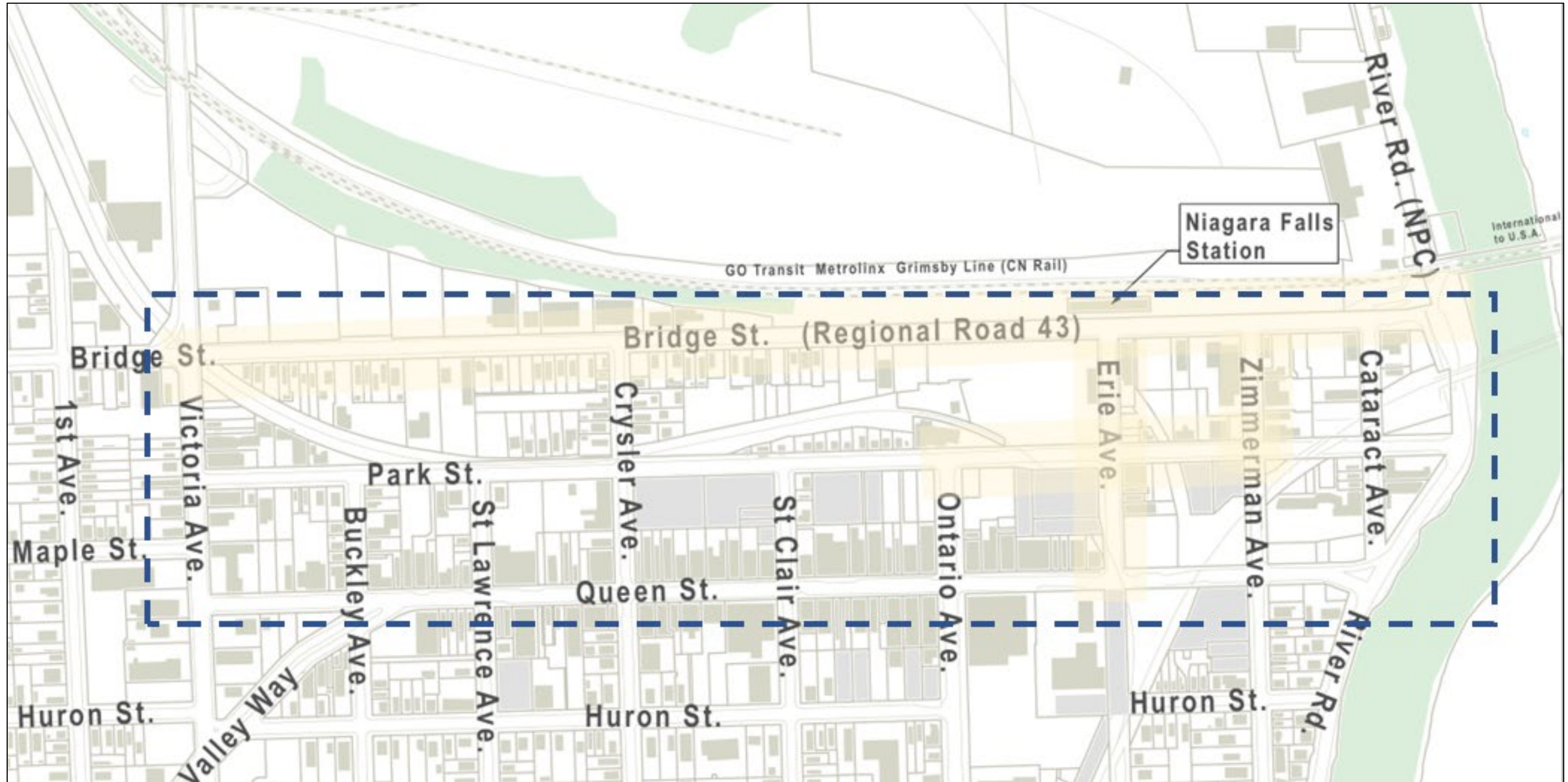
- Regional Road 43 (Bridge Street) between Victoria Avenue and River Road;
- Erie Avenue between Regional Road 43 (Bridge Street) and Queen Street;
- Park Street between Ontario Avenue and Zimmerman Avenue; and
- Zimmerman Avenue between Regional Road 43 (Bridge Street) and Park Street.

The Study Area and project limits are illustrated in Figure 1.1

It is noted that the Victoria Avenue and Bridge Street intersection has been planned and designed through another MCEA for the extension of Regional Road 57 (Thorold Stone Road). The design and construction of the Victoria Avenue and Bridge Street intersection as a roundabout is complete, hence analysis of the intersection is beyond the scope of this study. The Bridge Street and River Road intersection was not initially within the scope of the study, however this intersection is under the jurisdiction of the

Niagara Parks Commission and based on their input, specific design considerations for the intersection were incorporated within the recommendations.

Figure 1.1: Study Area



1.2 Site Context

Land use within the Study Area consists primarily of residential with some commercial and parking uses. The analysis assesses the transportation demand implications of the future redevelopment of the area based on the Official Plan Amendment No.125 (OPA 125) Niagara Falls Transit Station Secondary Plan.

The Study Area is also adjacent to the International Crossing to the U.S.A., situated just east of the intersection of Bridge Street and River Road / Niagara Pkwy. As a result, the broader Study Area experiences considerable tourist traffic. Tourist traffic has been incorporated as part of the traffic growth incorporated in the Niagara Region transportation forecasting model.

Transit facilities in the area include:

- The Niagara Falls VIA Rail / GO Transit Station, providing passenger rail service via GO Transit and VIA / Amtrak; and
- The Niagara Falls Transit Terminal, providing service via Niagara Falls Transit, WEGO, GO Transit, and private commercial carriers.

The analysis also incorporates the anticipated increase in travel demand and operational needs of the planned enhancement of service to the Niagara Falls VIA Rail / GO Transit Station as outlined in the Metrolinx 2019 Niagara Falls Rail Service Extension Initial Business Case and the Niagara Falls GO Transit Station Secondary Plan.

1.3 Purpose of the Project and the Environmental Study Report

Bridge Street is a two-lane east-west arterial road that provides access to existing residential, and employment uses, and the Niagara Falls VIA Rail / GO Transit Station. The Study Area extends along Bridge Street from east of Victoria Avenue to River Road and includes adjacent City of Niagara Falls streets Erie Avenue, Zimmerman Avenue and Park Street.

The purpose of the Project is to identify road and active transportation improvements, mitigate any environmental impacts and prepare a conceptual design and cost estimate.

The MCEA Study will provide a preliminary assessment of the key transportation related issues, including a review of all relevant background reports/studies and existing traffic data. This Environmental Study Report (ESR) summarizes the Schedule C MCEA process the project has followed and confirms the improvements required within the Study Area.

1.4 Study Process

1.4.1 The Municipal Class Environmental Assessment

The planning of public sector projects or activities that have the potential for environmental effect is subject to an MCEA as required by *Ontario's Environmental Assessment Act, R.S.O. 1990* and requires the proponent to complete an EA.

The MCEA process was developed by the Municipal Engineers Association, in consultation with the Ministry of the Environment, Conservation and Parks (MECP), as an alternative method to Individual Environmental Assessments for recurring municipal projects that were similar in nature, usually limited in scale and with a predictable range of environmental impacts, which were responsive to mitigating measures. The MCEA solicits input from regulatory agencies, the municipality, Indigenous communities, and the public at the local level. This process leads to an evaluation of the alternatives in view of the significance of the environmental effects, including the technical, natural, social / cultural and economic impact of a project, and the choice of effective mitigation measures.

There are four categories of assessment within the MCEA process that are dependent on the complexity and potential for environmental impact.

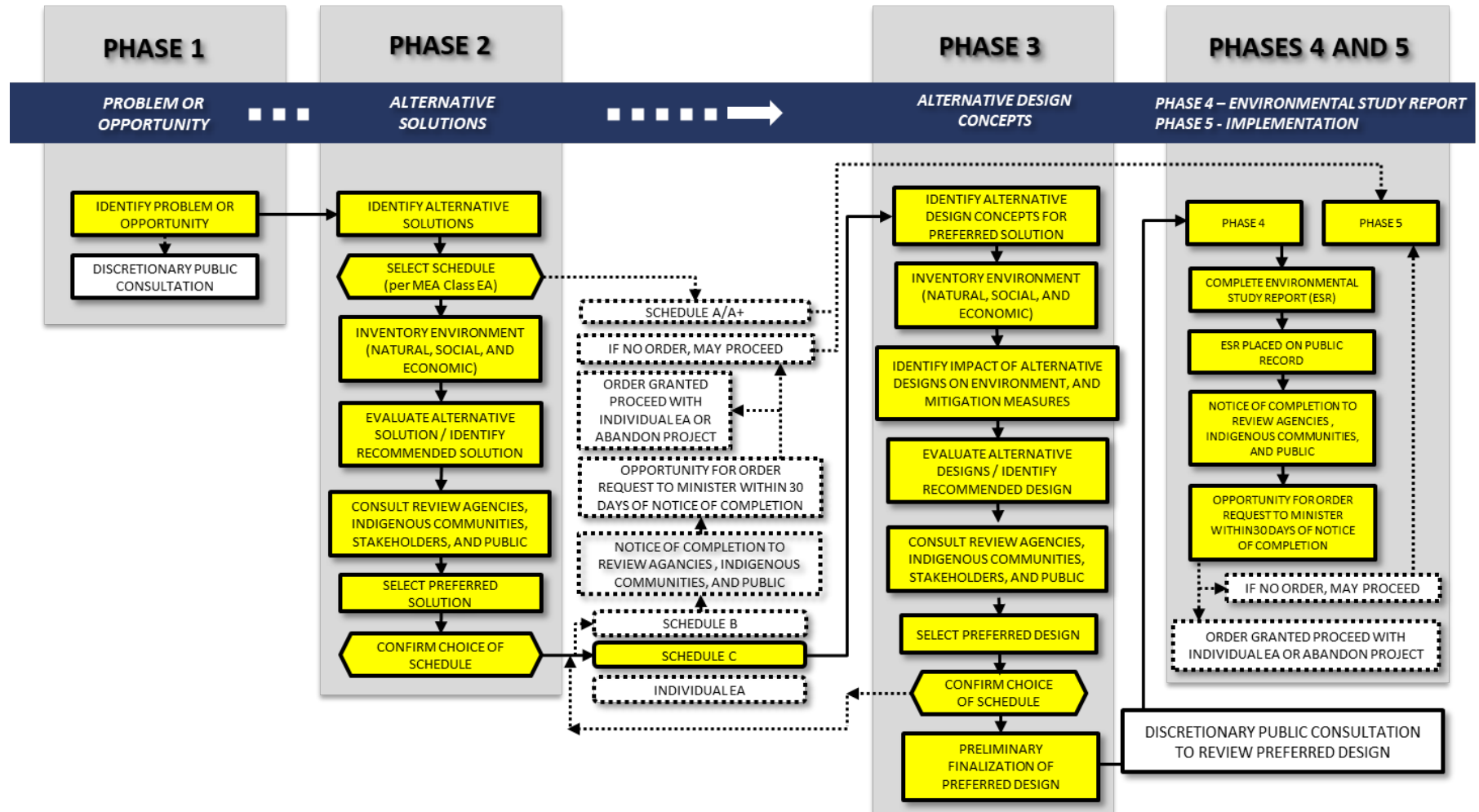
- **Schedule A** - Projects are limited in scale, have minimal adverse environmental impact and require no public notification or documentation.
- **Schedule A⁺** - Projects are limited in scale, have minimal adverse environmental impact and require no documentation. The public is to be advised prior to implementation.
- **Schedule B** - Projects have the potential for some adverse environmental impacts. The proponent is required to undertake a screening process, involving mandatory contact with the directly affected public and regulatory agencies, to ensure that they are aware of the Project and that their concerns are addressed. Schedule B Projects require that a Project File Report be prepared and made available for public review. Proponents undertaking Schedule B Projects are required to complete Phase 1, 2 and 5 of the MCEA Process.
- **Schedule C** - Projects have the potential for significant environmental impacts and must proceed under the full planning and documentation procedures of the MCEA document. Schedule C projects require that an ESR be prepared and filed on the public record for review by the public and regulatory agencies. Proponents undertaking Schedule C Projects are required to complete Phase 1 through 5 of the MCEA Process.

The Municipal Class EA process includes five (5) phases. Schedule 'C' projects require that all five phases be conducted. Phases 1, 2, 3, and 4 are part of this study; the fifth phase will be initiated following completion of this study. The five phases are summarized as follows:

- **Phase 1** - Identify the problem (deficiency) or opportunity;
- **Phase 2** - Identify and evaluate alternative solutions to address the problem or opportunity by taking into consideration the existing environment and establish the preferred solution taking into account the public and review agency input. At this point, determine the appropriate schedule for the undertaking and document decisions in a Project File for Schedule B projects, or proceed through the following phases for Schedule C projects;
- **Phase 3** - Identify and evaluate alternative design concepts for the preferred solution, based upon the existing environment, public and review agency input, anticipated environmental effects and methods of minimizing negative effects and maximizing positive effects;
- **Phase 4** - Document, complete and file Environmental Study Report (ESR) for public review. The ESR is a summary of the rationale, and the planning, design and consultation process of the project as established through the above phases; and
- **Phase 5** - Complete contract drawings and documents and proceed to construction and operation monitor construction for adherence to environmental provisions and commitments. Where special conditions dictate, also monitor the operation of the completed facilities.

The phases of the MCEA are illustrated in Figure 1.2.

Figure 1.2: Municipal Class Environmental Assessment Process Flow Chart



1.4.2 Class Environmental Assessment Section 16(6) Order (Former Part II Order)

Section 16 Order requests were previously known as Part II Order requests. The Minister of the Environment, Conservation and Parks (MECP) has the authority and discretion to make an Order under Section 16 of the *Environmental Assessment Act*. A Section 16 Order may require that the proponent of a project going through an MCEA process:

1. Submit an application for approval of the project before they proceed. This is generally referred to as an Individual Environmental Assessment.
2. Meet further conditions in addition to the conditions in the Class EA. This could include conditions for: Further study, Monitoring or Consultation

The minister can also refer a matter in relation to a Section 16(6) Order request to mediation.

A Section 16(6) Order can be requested if:

- You have outstanding concerns that a project going through a Class EA process may have a potential adverse impact on constitutionally protected Aboriginal and treaty rights.
- You believe that an Order may prevent, mitigate, or remedy this impact.

Prior to requesting a Section 16(6) Order, the proponent should first try to resolve any concerns directly through the Class EA process. The minister must consider the factors set out in section 16(5) of the *Environmental Assessment Act*. If a Section 16 Order request is made, the project proponent cannot proceed with the project until the minister makes a decision on the request. If the minister makes a Section 16 Order, the proponent may only proceed with the project if they follow the conditions in the Order.

Timing for an Order Request

At the conclusion of a project the proponent must post a Notice of Completion or a Notice of Addendum, allowing for a 30-day public comment period for the project. During the comment period the proponent cannot proceed with the project until at least 30 days after the end of the public comment period. During the public comment period, anyone can: Review the documentation, submit any comments or concerns to the proponent and Request a Section 16(6) Order.

To request a Section 16 Order for a project, on the grounds that an Order may prevent, mitigate or remedy potential adverse impacts on constitutionally protected, Aboriginal and treaty rights, a concerned party must make the request before the public comment period is complete.

How to make a request

To submit a Section 16(6) Order request, the following information must be provided:

- Name, address and email address;
- Project name;
- Proponent name;
- What kind of Order is being requested i.e., a request for additional conditions or a request for an individual environmental assessment;
- Details about the concerns about potential adverse impacts on constitutionally protected Aboriginal or treaty rights and how the proposed Order may prevent, mitigate or remedy the identified adverse impacts;
- Whether the concerned party belongs to, represents or has spoken with an Indigenous community whose constitutionally protected Aboriginal or treaty rights may be adversely impacted by the proposed project;
- Whether the concerned party has raised their concerns with the proponent, the proponent's response (if any) and why the concerns could not be resolved with the proponent; and
- Any other information to support the request.

Section 16 Order requests are made to the Minister of Environment, Conservation and Parks and the Director of Environmental Assessment Branch. The request may be submitted by mail, email, fax or hand delivered to the Minister:

Ministry of the Environment, Conservation and Parks

777 Bay Street, 5th Floor
Toronto ON M7A 2J3
Minister.mecp@ontario.ca

Director

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

A copy of the written request should also be sent to the proponent of the project (in this case, Niagara Region). There is no appeal of the minister's decision with respect to a Section 16 Order. If the request for a Section 16(6) Order is denied by the minister, the proponent can proceed with the project. If the minister makes an Order, the proponent may only proceed with the project if they follow the conditions in the Order.

The above discussion is intended as an overview of the process only. For more information and specific instruction, please visit:

<https://www.ontario.ca/page/class-environmental-assessments-section-16-order>

1.4.3 Modernizing the Environmental Assessment Process

The government of Ontario has recognized the need to update the MCEA process and for transportation projects in particular is moving away from a cost-based requirement to a risk-based determination of project Schedules. They are looking at removing some low-risk projects, consider moving medium-risk projects to low-risk and some high-risk projects to medium-risk projects, as well as elevating some projects due to their sensitivity given their potential impacts on adjacent properties. Table 1.1 summarizes project descriptions and classification using the current MEA / MCEA document.

1.4.4 Canadian Environmental Assessment Act

Under the *Canadian Environmental Assessment Act, 2012* (CEAA 2012), a federal environmental assessment study may be required to comply with the physical activities that constitute a "designated project", under the project list identified in the Regulations Amending the Regulations Designating Physical Activities, 2013. This project list ensures that federal environmental assessments are focused on the major projects with the greatest potential for significant adverse environmental impacts to matters of federal jurisdiction. The Bridge Street and Adjacent Roads MCEA Study does not constitute a "designated project" and therefore does not require an environmental assessment under the CEAA 2012. However, the MECP may order an assessment for any project not included in the project list, where there may be adverse environmental effects related to federal jurisdiction.

1.4.5 Environmental Assessment Approach

Given the range of alternative solutions and design costs considered at the outset of the study, Niagara Region has provided the highest level of investigation and consultation through a Schedule C Class Environmental Assessment.

Municipal Class Environmental Assessment for Regional Road 43 (Bridge Street) and Adjacent Municipal Roadways
November 2022

Table 1.1: MEA / MCEA Project Descriptions and Classifications

Description of Project	Cost Limit for Project Approved Under Schedule			
	A	A+	B	C
3. Construction or removal of sidewalks or multi-purpose paths or cycling facilities within existing or protected rights-of-way	NL			
12. a) Construction of localized operational improvements at specific locations		NL		
19. Reconstruction where the reconstructed road or other linear paved facilities (e.g., HOV lanes) will be for the same purpose, use, capacity and at the same location (e.g., addition or reduction of cycling lanes/facilities or parking lanes, provided no change in the number of motor vehicle lanes)		NL		
20. Reconstruction or widening where the reconstructed road or other linear paved facilities (e.g., HOV lanes will not be for the same purpose, use, capacity or at the same location (e.g., additional motor vehicle lanes, continuous centre turn lane)			<2.4 M	>2.4 M
22. Redesignation of a Linear Paved Facility through signage or pavement marking modifications (i.e., not requiring physical construction beyond localized operational improvements described in activity No.12 above): <ul style="list-style-type: none"> • Addition or removal of parking or turning lane markings on an existing roadway • Conversion of one-way or two-way streets • Redesignation of existing General-Purpose Lane (GPL) or on-street parking to High Occupancy Vehicle (HOV) or cycling lanes/facilities; vice versa: • Addition or removal of cycling lanes/facilities <p>New Construction or removal of sidewalks, multi-purpose paths or cycling facilities including water crossings outside existing right-of-way</p>		NL		

Note: NL means no limit to cost

2.0 Federal, Provincial, Regional, and Local Planning Context

2.1 Federal Planning Context

2.1.1 Fisheries Act

Under the federal *Fisheries Act*, it is prohibited to cause Harmful Alteration, Disruption or Destruction (HADD) of fish habitat, as well as the death of fish by means other than fishing. As defined in subsection 2(1) of the *Fisheries Act*, fish habitat is inclusive of all waters frequented by fish and any other areas upon which fish depend directly or indirectly to carry out life processes. These areas can include, but are not restricted to, spawning grounds and nursery, rearing, food supply, and migration areas.

The Act is administered by Fisheries and Oceans Canada (DFO) and provisions apply to all fish and fish habitat within Canada. Proponents are responsible for planning and implementing works, undertakings or activities in a manner that avoids harmful impacts, specifically the death of fish and HADD. Where proponents believe their work will result in harmful impacts to fish and/or fish habitat, proponents shall work with DFO to assess the risk of their proposed work resulting in the death of fish or HADD of fish habitat and provide guidance on how to comply with the *Fisheries Act*.

Fish habitat is present within the Study Area. Consultation with DFO was completed by Beacon Environmental through the Natural Environment Report. Should project activities occur below the highwater mark of any of the identified watercourses or headwater drainage features, an assessment of potential impacts to fish and fish habitat will be completed and submitted to DFO for project review. If DFO determines death of a fish and/or HADD of fish habitat cannot be avoided with appropriate protection and mitigation measures, a letter of approval or authorization form from DFO may be required.

2.1.2 Migratory Birds Convention Act

The federal *Migratory Birds Convention Act* protects nests, eggs, and young of bird species from harassment, harm, or destruction. While the Act does not require any permits or approvals, proponents must comply with the Act or face a fine.

Vegetation and tree removal is anticipated due to the nature of the project. To reduce the risk of contravening the *Migratory Bird Convention Act, 1994*, timing constraints shall be applied to avoid any limited vegetation clearing (including grubbing) and / or structure works (construction, maintenance) during the breeding bird period - broadly from April 1 to August 31 for most species (regardless of the calendar year). In addition to avoidance of timing windows, mitigation measures will also be implemented.

2.2 Provincial Planning Context

2.2.1 Provincial Policy Statement

The 2020 Provincial Policy Statement (PPS) is the complimentary policy document to the *Planning Act*, 1990, issued under Section 3 of the *Planning Act*.

The PPS states that municipal projects should be directed to existing settlement areas, create stronger and improved communities, and have little to no impact on the natural features of the area. In general projects should have consideration for future needs to ensure the benefits of the project are far-reaching. Section 1.6 of the PPS contains specific guidance on Infrastructure and Public Service Facilities:

“1.6.1 Infrastructure and public service facilities shall be provided in an efficient and cost-effective manner that prepares for the impacts of a changing climate while accommodating projected needs.

Planning for infrastructure and public service facilities shall be coordinated and integrated with land use planning and growth management so that they are:

- a) financially viable over their life cycle, which may be demonstrated through asset management planning;*
- b) available to meet current and projected needs.*

1.6.3 Before consideration is given to developing new infrastructure and public service facilities:

- a) the use of existing infrastructure and public service facilities should be optimized;*
- b) opportunities for adaptive re-use should be considered, wherever feasible.*

1.6.4 Infrastructure and public service facilities should be strategically located to support the effective and efficient delivery of emergency management services, and to ensure the protection of public health and safety in accordance with the policies in Section 3.0: Protecting Public Health and Safety.”

As such, improvements made to public infrastructure, including the potential improvements will be developed in a manner consistent with the PPS.

2.2.2 A Place to Grow: Growth Plan for the Greater Golden Horseshoe

The 2020 Growth Plan for the Greater Golden Horseshoe is a Provincial Plan that directs how regional growth in the Greater Golden Horseshoe (GGH) is to be managed up to 2041. The plan carries policies forward from the PPS, working to reduce development sprawl and providing direction in where intensification should take place. Section 3.2.2 of the Growth Plan outlines the general provisions of Transportation for the GGH. According to this policy, the transportation system within the GGH will be planned and managed to:

- Provide connectivity among transportation modes for moving people and moving goods; and
- Offer a balance of transportation choices that reduces reliance upon the automobile and promotes transit and active transportation.

Section 4 of the Growth Plan details the protection of natural features within the GGH. Within the Natural Heritage System (NHS):

iii. the removal of other natural features, not identified as key natural heritage features and key hydrologic features is avoided, where possible. Such features should be incorporated into the planning and design of the proposed use wherever possible.

Climate change is also addressed in Section 4 of the Growth Plan. According to the growth plan, municipalities are encouraged to:

- a) “develop strategies to reduce greenhouse gas emissions and improve resilience through the identification of vulnerabilities to climate change, land use planning, planning for infrastructure including transit and energy, green infrastructure, and low impact development, and the conservation objectives in policy 4.2.9.1.”

2.2.3 Greenbelt Plan

The Greenbelt Plan consists of policies and schedules aimed to permanently protect the agricultural land base and the ecological, hydrological features, areas, and functions within the Greenbelt, which is in Ontario’s Greater Golden Horseshoe region. The vision for these areas is a broad band of permanently protected land which:

- Protects against the loss and fragmentation of the agricultural land base and supports agriculture as the predominant land use.
- Gives permanent protection to the natural heritage and water resource systems that sustain ecological and human health and that form the environmental framework around which major urbanization in south-central Ontario will be organized.

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- Provides for a diverse range of economic and social activities associated with rural communities, agriculture, tourism, recreation, and resource uses.
- Builds resilience to and mitigates climate change.

The Study Area is outside the protected areas as illustrated in Figure 2.1.

Figure 2.1: Greenbelt Plan Areas



Source: <https://www.greenbelt.ca/maps>

2.2.4 Endangered Species Act

Implemented by MECP, the *Endangered Species Act* (ESA) protects species that are listed as endangered, threatened, or special concern at the provincial level. However, the Act only regulates the protection of species and the habitat of species that are listed as endangered or threatened. Species listed as special concern are captured by the PPS and policies related to Significant Wildlife Habitat (SWH).

2.2.5 Metrolinx Studies and Policies

GO Transit's Niagara Rail Service Expansion Environmental Study Report (April 2011) examined potential locations for GO Transit Stations across Niagara, identifying the Niagara Falls VIA Rail / GO Transit Station on Bridge Street as a recommended location. The EA was completed in accordance with GO Transit's Class EA document, dated December 2003 (as amended August 2005). The approval of the 2011 ESR created the impetus for the Region to undertake the development of the Niagara Falls GO Transit Station Secondary Plan (2018) as part of the Niagara GO Hub and Transit Stations Study (NGHTSS) defining design within the GO station area.

In 2019 Metrolinx completed the Niagara Falls Rail Service Extension Initial Business Case (IBC), examining options for the advancement of additional rail service on the Lakeshore West line to Niagara Falls. The IBC recommended 'Option 2' for the future service to Niagara Falls, comprised of 11 total trains per day to Niagara Falls VIA Rail/GO Station (4 on-peak / 7 off-peak trips). The IBC anticipated a significant level of ridership – with 181,000 total annual boardings projected at Niagara Falls VIA Rail / GO station by 2031.

2.3 Regional Planning Context

2.3.1 Niagara Region Official Plan (2014)

The Regional Official Plan (ROP), titled 'Imagine Niagara' (approved in 2014), establishes the policy framework for managing growth, protecting resources, and providing direction on land use decisions in the Region to 2031. The ROP outlines objectives for a healthy Region, implemented through the policies of the Plan. The objectives are focused on the long-term prosperity and social well-being of the Region to maintain strong, sustainable and resilient communities, a clean and healthy environment and a strong economy.

Section 9 (Transportation) of the Official Plan outlines a number of objectives and relevant policies that were taken into consideration through the Study, including the following objectives identified in Section 9.A:

- To promote and support safe, convenient, efficient, aesthetic and economical transportation systems for all modes of transport for the movement of people and goods;
- To provide an arterial road system which, in conjunction with the Provincial and local road systems, will give convenient access throughout all parts of the Region and to adjacent areas; and
- To ensure that transportation infrastructure contributes to the development of vibrant communities; recognizes the historical context within which it is developed and enhances the public realm by designing pleasing streetscapes and supporting active transportation.

Section 9.A of the ROP includes the following relevant transportation-related policies that were taken into consideration throughout this Study:

- Official Plan Policy 9.A.15, which states: “The Region may acquire at its own expense road allowance widenings where such widenings exceed those specified in the Table titled “Road Allowance Widths” without an amendment to this Plan.” Bridge Street within the Study Area is designated as having an ultimate right of way of 23.2 m.
- Official Plan Policy 9.A.31, which states: “A key design objective for Regional Roads is to develop context sensitive solutions that balance safety, visual amenity, pedestrianism and the ability to move large volumes of traffic. The balancing of these issues may include permitting or removing on-street parking, allowing, or limiting access to adjacent properties, and modifying the pavement width or other measures to facilitate traffic flow or calming while contributing to a positive appearance, sense of place, and community interaction. The Region will implement the approved “Model Urban Design Guidelines” or its successor to facilitate this balance of both traffic flow and community environments. Design guidelines shall also be prepared for Regional Roads in non-urban areas.”
- Official Plan Policy 9.A.37, which states: “In order to reduce the impact of the removal of on-street parking on Regional Roads and to ensure that an adequate supply of parking is available where needed, local municipalities will be encouraged to make suitable provisions in their zoning by-laws and to develop and implement comprehensive off-street parking programs.”

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Section 9.B of the ROP includes the following relevant transportation-related policies that were taken into consideration throughout this Study:

- The Region will ensure that corridors are identified and protected to meet current and projected needs for various modes of travel including active transportation;
- Planning for transportation systems and facilities should be sensitive to community values and the physical setting, embodying the principles of context sensitive design;
- An Environmental Assessment for a transportation project should include consideration of:
 - The opportunity to improve the living environment of existing residents adjacent to the street and within the adjacent neighbourhood;
 - The opportunity to improve the pedestrian environment for both residents and visitors;
 - The opportunity to provide for or improve other modes of transportation including transit and cycling; and
 - The opportunity to improve the safety, efficiency and pleasure of road users including drivers and their passengers, pedestrians and cyclist.
- The Region and local municipalities shall develop policies to promote vibrant and walkable streets and bridges, consistent with the Region's Model Urban Design Guidelines on Regional and local roads, respectively.

Sections 9.A and 9.B of the ROP includes transit-related policies given the location and significance of the Niagara Falls VIA / GO Transit Station:

- Objective 9.A.3 Support a connected and convenient public transit network throughout the region;
- Policy 9.B.3 The Niagara Region, in consultation with local municipalities, will work with the Federal government, the Province, Metrolinx, and other stakeholders to improve linkages between the Niagara Regional Transit System and GO Transit; and
- Policy 9.B.7 The Niagara Region will work with the Niagara Parks Commission to improve linkages between the Niagara Region's transportation system and the Niagara Park Commission's transportation system.

Section 9.C of the ROP includes the following relevant Regional Road-specific policies that were taken into consideration throughout this Study these include providing access that is aligned with existing and future land uses and development patterns, a focus on safety, efficiency, system continuity, character of the existing community, and efforts to mitigate the impacts of improvements and reconstruction resulting from road widenings. Urban design and opportunities to improve the public realm through the design of stormwater management facilities and streetscaping were also considered per the policies in this section of the ROP. Policy 9.C.1 highlights the importance of transit as a

priority: “Public transit will be a priority for transportation infrastructure planning and major transportation investments” Policy 9.C.12 b) explicitly supports “the implementation of active transportation friendly facilities”.

Section 9.F of the ROP includes a number of relevant active transportation policies that were also taken into consideration, particularly to align with the goal of completing the Bike Network and providing safe, attractive, and integrated cycling facilities to cater to users of all abilities.

The Region has until July 1, 2022, to complete their Municipal Comprehensive Review and Growth Plan conformity exercise which includes allocating provincial growth forecasts of approximately 674,000 people and 272,000 jobs to the Region by 2051. The Region is expecting to complete their Regional OP adoption by Council in the first half of 2022.

2.3.2 Niagara Region Transportation Master Plan (2017)

The Region’s Transportation Master Plan (TMP), How We Go (approved July 2017), sets out a strategic vision for transportation in the Niagara Region to 2041, and illustrates how effective transportation can enhance the quality of life for residents. As Section 6.0 of the TMP states, “The transportation network should promote healthy communities where all residents, regardless of age or ability, enjoy a high quality of life. Residents will have a wide range of options available to them for getting around and meeting their daily needs including accessing goods, services, employment and recreation by alternate travel modes (i.e., walking, cycling, public transit and the automobile).” Overall, the TMP establishes a long-term transportation vision to ensure that future transportation needs are addressed through development of pedestrian and cycling facilities, rapid- and conventional transit, and the integration of roads and highways within the regional transportation network.

The goals of the TMP include, in summary:

- Integrate transportation and land use;
- Support economic development;
- Enhance multi-modal connectivity;
- Improve options for sustainable modes of transportation;
- Maintain and improve efficiency of the goods movement network;
- Promote the development of healthy communities; and
- Develop a realistic yet innovative blueprint for implementation.

The TMP also outlines challenges and opportunities for improvement for the Region's transportation network. With 352 km of cycling lanes, the TMP indicates that there are many gaps and discontinuities within the active transportation network, recommending a need for increased connectivity in cycling infrastructure.

The following are recommended strategies from the TMP that are relevant to this project:

- Plan and design all Regional Road projects identified in the Road Capital Plan, including repaving, using a Complete Streets approach, designing roads to be universally accessible, safe and comfortable for all users;
- Invest in active transportation facilities and supporting infrastructure to promote active lifestyles and healthy communities;
- Strengthen core transit services and provide transit connections to all of its local municipalities through a combination of fixed-route and demand-responsive transit, using existing and emerging technologies to improve efficiency and cost-effectiveness, to support growing demand for inter-municipal travel and inter-regional transit services; and
- Accommodate future growth in travel through strategic network capacity increases and address operational improvements at key constraints. It is recommended that the Region continue to advocate for highway capacity improvements to address inter-regional and international trade and tourism-related demands, including a new trade corridor connecting Niagara to Hamilton and the international border.

Section 6 of the plan includes recommended actions related to transit, including to continue "to support the expansion of GO Transit passenger rail service to Niagara Region, and the development / redevelopment of rail stations to serve as major transit station areas, to support needs of communities along the corridor, and to commuters and tourists moving in both directions between Niagara Region and the GTHA".

The integration of the strategies of the TMP as policies within the ROP helps the Region plan effectively for future growth, while also supporting progress towards its other goals such as reductions in greenhouse gas emissions, improving social equity, and promoting healthier lifestyles. These policies can be directly implemented through the Bridge Street and Adjacent Road project. This Class EA documents the support of the TMP that are of relevance to the project, including the Strategic Cycling Network and the Complete Streets Design Guidelines.

2.3.3 Niagara Region Strategic Cycling Network

One of the supporting elements of the Region's TMP (2017) is the Strategic Cycling Network (SCN) that identifies the key corridors across the Region to be improved with cycling infrastructure in order to provide a more complete network of cycling lanes in key areas. The ROP was updated to integrate the SCN into Schedule E2 (September 2017) of the ROP, with Bridge Street being part of the network.

2.3.4 Niagara Region Complete Streets Design Guidelines

The Niagara Region Complete Streets Design Guidelines were developed to support the Region's TMP (2017). This document provides guidance on the aspirational vision for Regional Roads, with the intent noted in Section 1.2 of the Guidelines being to create "a coordinated family of complete streets" across the Region. As all roads in the Region are designated as Arterials under the ROP, the guidelines set forth design criteria with a hierarchy of typologies that takes into account the form, function, and surrounding environment of the roads. The typologies include: 1. Main Street; 2. Urban General (Narrow); 3. Urban General (Wide); 4. Transitioning; 5. Hamlet; and 6. Rural.

The typical planned Right-of-Way for each of these Complete Street Typologies forms the basis for the streetscape elements that are recommended. The Guidelines present demonstrations and typical cross sections for each of the typologies.

The roads in the Study Area which are proposed to be improved were compared against the typologies in the Guidelines and identified as Urban General (Narrow). However, it should be noted that special consideration was given to the uniqueness of Bridge Street given the presence of the Niagara Falls VIA Rail/GO Transit Station.

2.3.5 Complete Street Guideline Update (Ongoing)

The ongoing Complete Streets Design Manual (CSDM) is a design directive for Complete Streets on the Regional Roadway Network. It provides Regional staff and practitioners guidance on how to design, implement, and maintain Complete Streets. Design practice included in the CSDM is based off best practices and updated standards included in the Transportation Association of Canada Geometric Design Guidelines for Canadian Roads and Ontario Traffic Manual.

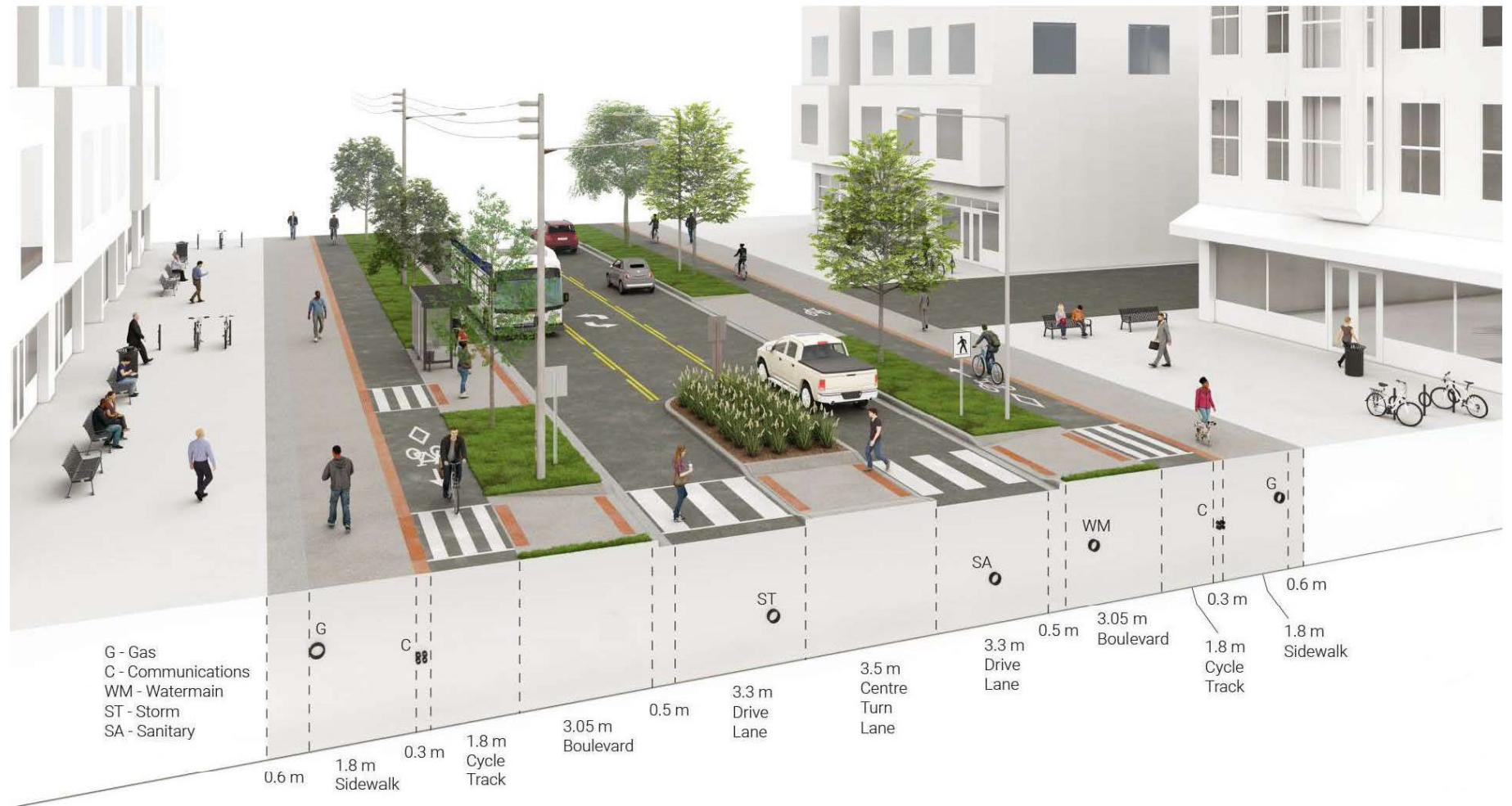
Regional Road Typologies provide a Complete Streets classification system for roads in the Region with context sensitive planning and design direction. Typologies act as an additional layer to the functional roadway classification system. The typologies reflect aspirational visions for Regional Roads and planned rights-of-way. Each typology reflects common operational characteristics, land use, built form and urban design

attributes. The typologies included in the CSDM build off the foundational typologies included in the Niagara TMP – Complete Streets Guidelines.

The six original road typologies developed as part of the 2017 TMP were reviewed and refined through the development of the CSDM to five broad typologies and four subtypologies. Typologies were refined based on principles and values of complete streets, vision zero and other emerging planning and design principles. Regional roads are classified into Main Street, Urban General, Thoroughfare, Rural Scenic and Hamlet typologies. Urban General roads are further classified under Narrow and Wide subtypologies based on right-of-way width. Roads classified as Thoroughfares are further classified into Urban or Rural based on land use designations.

As noted in Section 2.3.4, it was determined that Bridge Street falls under the Urban General Narrow Typology (UGNT) (Figure 2.2) Urban streets traditionally found within the region's most dense, mixed-use urban centres, such as St. Catharines and Niagara Falls. These streets may be within existing and future built-up areas that reflect balanced mobility and place-making priorities. These streets often serve commercial retail and service businesses, connect residential neighbourhoods within communities and carry large volumes of all modes.

Figure 2.2: Cross Section for Urban General Narrow Typology



2.4 Local Planning Context

2.4.1 City of Niagara Falls Official Plan

The City of Niagara Falls Official Plan sets out land use policies that guide future development and manage growth. Part 5 (Secondary Plans) of the City Official Plan includes a vision and planning framework to guide future transit-supportive development and redevelopment in the area around the Transit Station.

Niagara Falls Official Plan Part 5 policy 3.12.1 states “As properties within the Transit Station Secondary Plan Area redevelop, it will be increasingly important to improve the public realm for pedestrians, cyclists and transit users.

Policy 3.12.2 states that “Within the Transit Station Secondary Plan Area, the boulevard width should reflect the character and function of the street. Where insufficient space exists within the right-of-way to achieve the minimum recommended boulevard width, a combination of measures should be explored including setting buildings back at-grade and reduced lane widths. Boulevards typically consist of:

- Patio and Marketing Zone (Transition Zone);
- Pedestrian Through Zone (Sidewalk);
- Planting and Furnishing Zone and Edge Zone; and
- Cycle Tracks or Multi-Use Paths may also be part of the boulevard.

Policy 3.12.2.1 b) states “Along Bridge Street as redevelopment occurs, it is recommended that buildings be setback to accommodate minimum 4.4 metre boulevard width to improve pedestrian mobility and accommodate street trees, bicycle parking, landscaping, street furniture, etc. Further, it is recommended that dedicated bicycle lanes be provided along Bridge Street connecting to bicycle lanes along Victoria Avenue and River Road to more safely accommodate active transportation to the Niagara Falls VIA Rail/GO Transit Station.

Policy 3.12.2.1 c) provides proposed configuration for Bridge Street: “Redevelopment of Bridge Street is proposed to be accommodated within a planned 23.2 m right-of way. The previous general boulevard recommendations apply to Bridge Street and specific design recommendations include:

- i. A minimum pedestrian clearway / sidewalk of 2.5 m.
- ii. Textured edges and sound assisted crosswalks to assist the visually impaired.
- iii. High quality treatments, such as a decorative band, for the pedestrian clearway. The pedestrian clearway should be coordinated with the design

- of feature paving across boulevards, intersections, crosswalks and driveways.
- iv. Feature paving used to delineate areas of pedestrian priority.
 - v. The Planting and Furnishing Zone plus Edge Zone with a width of 1.9 m.
 - vi. On-street parking 2.5 m in width and provided on both sides of the street.
 - vii. On-street cycling lanes on both sides of the street with minimum widths of 1.2 m.
 - viii. One 3.3 m wide travel lane in each direction.”

This study assessed the merits of this proposed configuration within the context of a Class EA, assessing the operational, socio-economic, natural environment and cost implications. This study also considered the current best practices in transportation design.

2.4.2 Downtown Niagara Falls GO Transit Station Secondary Plan

The Study Area falls within the Official Plan Amendment No.125 (OPA 125) Niagara Falls Transit Station Secondary Plan. The Secondary Plan provides the vision and planning framework that will guide future transit-oriented development and redevelopment in the Niagara Falls VIA Rail / GO Transit Station Area.

The Secondary Plan states that “the design of the station area will be planned to address the following elements:

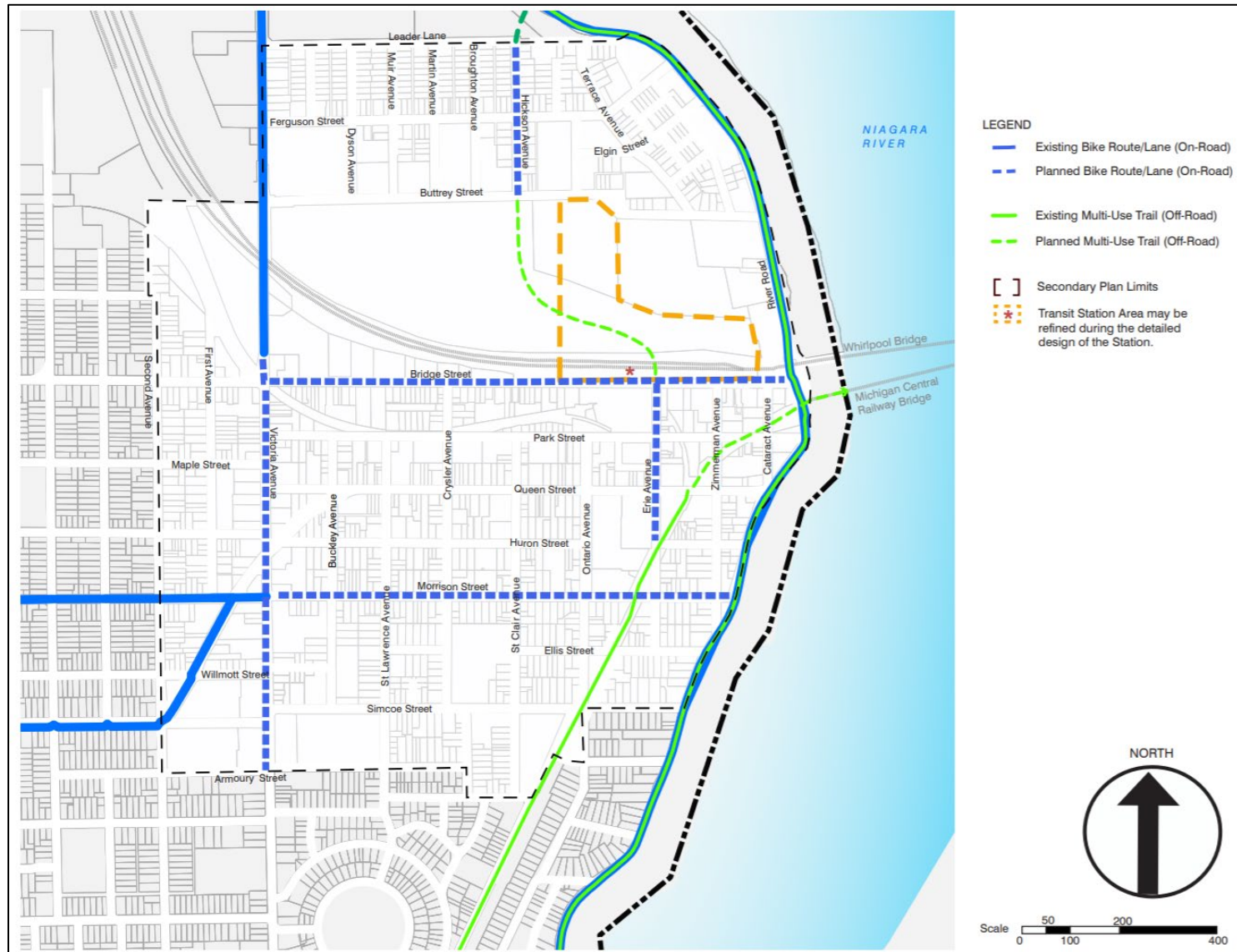
- Improved access to the station area for pedestrians, cyclists, transit users, kiss and ride and carpool users;
- A sufficient supply of parking for commuters;
- Pedestrian-scaled lighting and other safety features to promote and support active transportation at any time of day or night;
- Wayfinding solutions;
- Opportunities to preserve, restore and maintain the heritage aspects of the train station building and to re-purpose the building for a multi-modal transit station; and
- Opportunities for universal access and incorporation of sustainable design measures”.

The planned Active Transportation Network is depicted on in Figure 2.3. The network is planned to improve connectivity for pedestrians and cyclists within the Secondary Plan Area and to surrounding areas.

The plan includes strategy for parking, including the following “Through the development approvals process, the City will consider alternative parking requirements for mixed use and high-density developments including shared parking standards. Such requests will be supported by a Parking Demand Analysis completed to the satisfaction of the City”.

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Figure 2.3: Planned Active Transportation Network (Schedule 6)



3.0 Public and Stakeholder Consultation

Comprehensive consultation was a key component of this MCEA Study. An effective consultation process was followed. The process was highly visible and maximized opportunities for the public, government agencies, and Indigenous communities to participate, in a constructive manner with a process that was open, traceable, rational, and highly defensible (Appendix A).

The key features of the consultation process included:

- The **identification** of key Stakeholders, agencies and other interested or potentially affected parties that would need to be consulted during the Class EA Study. These contacts comprised the Project Contact List, which was used to maintain contact information for interested stakeholders throughout the process and summarize comments received about the project and responses.
- The key Stakeholders agencies and other interested or potentially affected parties of the study were **Notified** results at key points of the Class EA process.
- **Engaging** key Stakeholders, agencies and other interested or potentially affected parties at key points of the Class EA process to gather input and help inform key decision making.
- **Responding** to inquiries or comments in an efficient and timely manner.

Since the project took place during the COVID-19 pandemic, and emergency orders prohibiting public gatherings were in place, the Region made significant efforts to notify all interested parties in a variety of ways (newspaper ads, emails, mail-outs, bulletin board notices, study web page, etc.) and provided a number of consultation opportunities (virtual public information centres, virtual meetings, phone calls, etc.).

3.1 Project Contact List

A Project Contact List was developed as a mailing list to distribute project Notices. The Project Contact List consisted of technical and provincial agencies, local interest groups, businesses, and Indigenous Communities that may have an interest in the project, as well as local residents within the vicinity of the Study Area. Throughout the MCEA process, the Project Contact List was used to maintain contact information for interested stakeholders, as well as to summarize comments received about the project and responses. The comments received throughout the MCEA were considered in the evaluation of the alternatives. A copy of the Project Contact List is provided in Appendix A.

3.2 Notification

Notices were either mailed or emailed to all contacts on the Project Contact List. Contacts were sent of the Notice of Commencement (NOCm) and Notice of Public Information Centre (PIC) #1, PIC #2, PIC #3, and the Notice of Study Completion (NOCp). A copy of the Notices is provided in Appendix A. Additional methods of notification are described below. **Newspaper Advertisements** – Members of the public were made aware of the study through a notification in the local newspapers (Niagara Falls Review and / or Niagara This Week) and were invited to contact the project team to join the project mailing list. Members of the general public requesting to be on the mailing list received direct notification of subsequent study milestones.

Project Specific Website (<https://www.niagararegion.ca/projects/bridge-street-ea/default.aspx>) – A dedicated project webpage was established through the Region of Niagara’s website at the outset of the study. Project updates, notices, information, and opportunities to provide comment were uploaded to the website as the study progressed.

Table 3.1: Project Notifications

Notice	Notification & Date	Purpose
Notice of Commencement and PIC #1	Notice Date: August 5, 2020 Notices were either mailed or emailed to all contacts on the Project Contact List	To notify agencies, public, indigenous communities and all other stakeholders that the study has initiated and invite them to participate in PIC#1 and provide comments and feedback. A summary of the study area, purpose of the study and what was presented at the PIC#1 was provided.
Notice of PIC #2	Notice Date: July 5, 2021 Notices were either mailed or emailed to all contacts on the Project Contact List	To invite agencies, public, indigenous communities and all other stakeholders to participate in PIC#1 and provide comments and feedback. A summary of what was presented at the PIC#2 was provided.

Notice	Notification & Date	Purpose
Notice of PIC #3	Notice Date: January 17, 2022 Notices were either mailed or emailed to all contacts on the Project Contact List	To invite agencies, public, indigenous communities and all other stakeholders to participate in PIC#1 and provide comments and feedback. A summary of what was presented at the PIC#3 was provided.
Notice of Study Completion	Notice Date: November 21, 2022 Notices were either mailed or emailed to all contacts on the Project Contact List	To notify agencies, public, indigenous communities and all other stakeholders that the study is complete and a 45-day public review has started.

3.3 Consultation Activities

A list of relevant technical agencies was assembled at the beginning of the study. External ‘agencies’ (including regulator / review agencies, utilities and emergency service providers) were first notified of the study via email informing them of the commencement of the study and soliciting their comments. A copy of the stakeholder list is provided in Appendix A1. The following list provides the agencies, utilities, and other stakeholders that were consulted throughout the study:

3.3.1 Provincial Agencies

The following provincial agencies were contacted regarding comment on the project:

- Ministry of the Environment, Conservation and Parks (MECP)
- Ministry of Municipal Affairs, Central Municipal Service Office
- Ministry of Municipal Affairs and Housing - Ontario Growth Secretariat
- Ministry of Northern Development, Mines, Natural Resources and Forestry, Southern Region
- Ministry of Transportation, Central Region
- Ministry of Citizenship and Multiculturalism (MCM, former Ministry of Heritage, Sport, Tourism and Culture Industries [MHSTCI])
- Niagara Peninsula Conservation Authority (NPCA)

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The MECP responded to the NOCm / PIC #1 as well as the request to confirm the list of Indigenous Communities on the Project Contact List. The Indigenous Communities recommendation to consult included: the Metis Nations of Ontario (MNO), Six Nations of the Grand River, Mississaugas of the Credit (MCFN), and Haudenosaunee Confederacy (HDI).

MCM noted that the ministries interests relate to archaeological resources, built heritage resources, and cultural heritage landscapes Burnside responded that Archaeological Services Inc. (ASI) will be completing a Stage 1 Archaeological Assessment and Cultural Heritage Resources Assessment (CHRA), and results will be document in the EA Report. It was also noted that the Stage 1 AA Report will be submitted to ministry, by ASI once completed, and a copy of CHRA Report will be sent to MCM prior to issuing the NOCp.

On 8th September 2022, a draft copy of the Environmental Study Report (including the main report and appendices) was sent MECP, MCM (former MHSTCI), NPCA, and the City of Niagara Falls for their review ahead of filing the document for 45-day public review, followed by follow up emails. Comments were received from MECP and MCM and revisions were made the draft ESR accordingly. The City of Niagara Falls confirmed that their staff have reviewed the ESR and they do not have any comments.

3.3.2 Niagara Parks Commission Meetings

The Niagara Parks Commission (the Commission) is an Operational Enterprise Agency of the MHSTCI (Now MCM) with a mission to protect the natural and cultural heritage along the Niagara River. The Niagara Parks Commission has jurisdiction over River Road (also known as Niagara Parkway), which intersects with Bridge Street at the eastern end of the Study Area. Niagara Parks Commission is also a transit partner in the delivery of WEGO transit service. A meeting was held with the Niagara Parks Commission on January 26, 2022. On March 8, 2022, the Commission provided comments on the preliminary preferred design related to the Bridge Street / River Road intersection. A response was provided to the Commission on March 8, 2022, that addressed their comments. A copy of correspondence is provided in Appendix A.

3.3.3 Municipalities

Municipalities as follows were contacted regarding comment on the project:

- City of Niagara Falls Municipal Heritage Committee
- Niagara Falls Bridge Commission
- City of Niagara Falls
- City of Niagara Falls Mayors Office and Council members

3.3.4 Other Agencies

Additional agencies as follows were contacted regarding comment on the project:

- Niagara Falls Downtown Business Improvement Area (BIA)
- Waterfront Trail Metrolinx Trail-to-GO
- District School Board of Niagara
- Niagara Catholic District School Board (NCDSB)
- Bousfields Inc

Emergency services contacted included:

- Local Paramedic Service
- Niagara Regional Police Service
- Niagara Falls Fire Department

Utilities contacted included:

- Bell Canada
- Enbridge Gas Distribution Inc.
- Enbridge Pipeline Inc.
- Niagara Peninsula Energy Inc.
- Rogers Communications
- Zayo
- Niagara Regional Broadband Network (NRBN)
- Trans-Northern Pipelines Inc. (TNPI)

The Trans-Northern Pipelines Inc. (TNPI) noted that there were no facilities close to Study Area, but if ground disturbance is within the pipeline right of way of TNPI, a Permit will be required.

Zayo noted that that they have an existing plant in the area indicated in the submission and requested to maintain standard clearances and there will be no objection. In follow-up to that correspondence Burnside noted that the preferred design concepts had been identified and provided a link to the preliminary design drawings (including role plans and plates).

3.3.5 Indigenous Communities

Individual letters and all notices were sent by email to Indigenous Communities. MECP has developed guidance on the steps to rights-based consultation with Indigenous Communities. Indigenous Communities with a potential interest in the project were identified through direction provided by the MECP (correspondence: Barbara Slattery,

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Regional Environmental Planner, MECP, dated August 10, 2020). A copy of correspondence is provided in Appendix A. Correspondence was sent to Metis Nation of Ontario (MNO), Six Nations of the Grand River, Mississaugas of the Credit First Nations (MCFN), Haudenosaunee Confederacy (HDI).

Follow-up phone calls were made to identified Indigenous communities to:

- Confirm receipt of Notice;
- Confirm the Community's preferred methods to communicate project information email;
- Ensure the appropriate contact has been identified;
- Ensure the Community is aware of the project and the opportunity to participate; and
- Determine the Community's type of interest in the project and further engagement.

A summary of communication with identified Indigenous communities was maintained by Burnside on the Project Contact List. Comments received are noted below.

Indigenous Community	Key Comments Received	Response and Action
Mississaugas of the Credit First Nation	Information was requested on any archaeological work be shared and to send all reports for review prior to approval	As requested, a draft copy of the Stage 1 Archaeological Assessment Report and draft copy of Natural Heritage Memorandum was sent to the community for review, noting that the Stage 2 Archaeological field work recommended in the report would be completed upon completion of EA at the detailed design stage of the project

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Indigenous Community	Key Comments Received	Response and Action
Six Nations of the Grand River	<p>Robbin Vanstone noted that it is difficult to comment without a full understanding of the project and that the provincial process does not fully address indigenous interests.</p> <p>R. Vanstone noted that trees represent habitat and requested a tree count of impacted trees and number of trees added; community requires a 10:1 replacement ratio (i.e., replacing 10 trees for every one lost).</p>	<p>R. Bacquie provided a project description and indicate that the existing south side sidewalk is proposed to be shifted south to accommodate a boulevard planting area and the shift may impact some existing street trees, and that a natural heritage study undertaken September 2020, found that impacts to natural heritage features and functions are expected to be minimal.</p> <p>The Natural Heritage assessment identified 12 impacted trees directly related to the road design. Preliminary landscape concepts indicate that up to 168 trees could be added through the study area.</p>
Métis Nation of Ontario	No comments received.	N/A

Indigenous Community	Key Comments Received	Response and Action
Haudenosaunee Confederacy	<p>I was noted that the Community holds rights over that area of land contemplated and can advise that the project will impair infringe and otherwise impair HDI rights and interests. It was also noted that to date there had been no engagement that would uphold the Honour of the Crown or the MCEA process, in particular the process for identifying the problem or opportunity (Phase 1) with its associated consultation.</p> <p>I was requested to meet with the project team to “determine how and when Niagara Region will be discharging the obligations set out in the MCEA process as well as 1.2.2 of the Provincial Policy Statement”</p>	<p>The Region responded with an attached tracking log of engagement with the HDI (email and phone calls) dating back to August 5, 2021.</p> <p>The Region noted that while the HDI has not previously raised issues with respect to this project, staff would be happy to discuss any specific concerns about potential project impacts, and if the HDI has concerns about the current scope of the Study, it was requested that a Community member provide the particulars of any additional information that HDI would like to see included in the Study. The Region offered that if any other staff have any questions for them to contact Maged Elmadhoon.</p>

Mississaugas of the Credit First Nation

MCFN was sent all notices throughout the EA process.

At the onset of the project correspondence with Fawn Sault noted that the notice sent could not be located. It was also requested information on any archaeological work be shared and to send all reports for review prior to approval. Burnside resent the Notice of Study Commencement / PIC #1 and noted that the project will complete a Stage 1 Archaeological Assessment and a Built Heritage and Cultural Landscape Assessment which will become part of the ESR. Later correspondence, noted that F. Sault had

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moved to a new role for MCFN Council, and it was requested that all Archaeological inquiries to be sent to Adam.LaForme@mncfn.ca and any consultation inquires to MCFN.Consultation@mncfn.ca or DOCA.Admin@mncfn.ca. As requested, a draft copy of the Stage 1 Archaeological Assessment Report and draft copy of Natural Heritage Memorandum was sent to the community for review, noting that the Stage 2 Archaeological field work recommended in the report would be completed upon completion of EA at the detailed design stage of the project.

On 8th September 2022, a draft copy of the Environmental Study Report (including the main report and appendices) was sent to the community for review ahead of filing the document for 45-day public review, followed by a follow up email. The community responded on 29 September 2022 that MCFN DOCA has no comments or concerns at this time regarding the project.

Six Nations of the Grand River

Six Nations of the Grand River was sent all notices throughout the EA process.

Ray Bacquie (Burnside) and Robbin Vanstone discussed several matters regarding the project by phone. R. Vanstone noted that it was difficult to comment without a full understanding of the project and that the provincial process does not fully address indigenous interests. R. Bacquie provided a project description and indicated that the existing south side sidewalk is proposed to be shifted south to accommodate a boulevard planting area and the shift may impact some existing street trees, and that a natural heritage study undertaken September 2020, found that impacts to natural heritage features and functions are expected to be minimal. R. Vanstone noted that trees represent habitat and requested a tree count of impacted trees and number of trees added; community requires a 10:1 replacement ratio (i.e., replacing 10 trees for every one lost). R. Bacquie, noted that the report will be documenting the number of trees impacted and the number of recommended replacement trees.

On 8th September 2022, a draft copy of the Environmental Study Report (including the main report and appendices) was sent to the community for review ahead of filing the document for 45-day public review, followed by a follow up email. An Email was received from the community on 11 October 2022, that R. Vanstone (the original community contact is no longer with the community. The draft ESR was therefore re-submitted to the new provided contact person, Lonny Bomberry, Director of Lands and Resources. A follow up call was made to the community and it was confirmed that the community has reviewed the report and has no comments. **Métis Nation of Ontario – Six Nations of the Grand River** was sent all notices throughout the EA process. No comments were received.

On 8th September 2022, a draft copy of the Environmental Study Report (including the main report and appendices) was sent to Métis Nation of Ontario for review ahead of filing the document for 45-day public review, followed by a follow up email. A follow up call was made to the community and it was confirmed that the community has reviewed the report and has no comments.

Haudenosaunee Confederacy

As noted above the Haudenosaunee Confederacy (HIS) was sent all notices throughout the EA process.

The community was initially contacted in August 2020 to seek input and to determine if the community may hold an interest in this Study. A Notice of Study Commencement and invitation to Public Information Centre (PIC) #1 was included. On July 6, 2021 a Notice of PIC #2 was sent to the community to further inform and engage. January 17, 2022 the community was invited to participate in the third PIC #3, with attached Notice of PIC #3.

Upon receipt of the Notice of PIC #3 sent on January 17, 2022, Aaron Detlor, responded to the Region. It was noted that the Community holds rights over that area of land contemplated and can advise that the project will impair infringe and otherwise impair HDI rights and interests. A. Detlor also noted that to date there had been no engagement that would uphold the Honour of the Crown or the MCEA process, in particular the process for identifying the problem or opportunity (Phase 1) with its associated consultation. It was requested that the staff have reference to the MCEA Companion Guide and in particular the Preliminary Assessment Checklist. He requested to meet with the project team to “determine how and when Niagara Region will be discharging the obligations set out in the MCEA process as well as 1.2.2 of the Provincial Policy Statement”.

The Region responded with an attached tracking log of engagement with the HDI (email and phone calls) dating back to August 5, 2021 and requested that if staff have missed anyone or are contacting the wrong community member to inform staff in order to update the Project Contact List. The Region noted that while the HDI has not previously raised issues with respect to this project, staff would be happy to discuss any specific concerns about potential project impacts, and if the HDI has concerns about the current scope of the Study, it was requested that a Community member provide the particulars of any additional information that HDI would like to see included in the Study. The Region offered that if A. Detlor or any other staff have any questions for them to contact Maged Elmadhoon.

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On 8th September 2022, a draft copy of the Environmental Study Report (including the main report and appendices) was sent to HDI for review ahead of filing the document for 45-day public review, followed by a follow up email. A follow up call was made to the community and a voice message was left. No responses or comments were received on the draft ESR.

3.3.6 Public Information Centres

During the MCEA process there were three Public Information Centre (PIC) conducted. All PICs were hosted in a virtual environment to limit social interactions to reduce community spread of the COVID-19 virus. Visualization techniques (AODA compliant) were employed including a video-recorded presentation of display materials and illustration of project conditions using maps, tables, photos, etc.

A digital copy of the presentation material with recorded commentary was made available on the Region website, posted to the Special Projects page for the public to view or download anytime during the comment period. An online Comment Form was made available requesting the public's comments, questions, or suggestions for consideration within the Study Area.

Following each PIC, the comments received during the 30-day comment period were logged in the Project Contact List and summarized in a PIC Summary Report. Where necessary, responses to questions or comments were provided by the method in which received or summarized and addressed via the PIC Summary Report. The PIC Summary Reports were then posted to the project specific website. Details of the PICs, along with the comments received, are provided in the PIC Summary Reports available in Appendix A.

Public Information Centre #1 Summary

The first PIC was held virtually starting August 18, 2020 to September 15, 2020. The presentation and engagement material including a comment form were made available at niagararegion.ca/projects. The purpose of the PIC was to inform the public of the project, previous studies, and relevant policies, provided the problem and opportunity statement and described the existing transportation system, key issues, and studies to be completed.

Six written comments were received during the comment period for PIC #1. The comments received during the PIC # 1 came mostly in the form of questions. Fully detailed comments and responses can be found in the PIC #1 Summary Report, Appendix A. In summary questions ranged from requesting more information about the project, asking which properties would be bought or expropriated and a request to

discuss the project. There was a concerned about proposed roundabout at Bridge Street and Victoria Avenue, and the ability for transport trucks to get around roundabout as well as accidents. Also requested that Region not design for large plants in the centre of the roundabout since they obstruct ability to see cars coming from other direction. A request was made that buses need to use Bridge Street then Parkway because buses on local streets are holding up traffic and having to make too many turns. One resident inquired whether the study implies that Metrolinx will be expanding GO train service to Niagara Falls by 2023 as planned; what might the nature of the impact be for homes on private property on Bridge Street, Erie Avenue, Park Street and Zimmerman Avenue; at this point, would the existing parking lots on Park Street be maintained; any plans to use the land southwest of Queen Street and Zimmerman Avenue as a parking lot for the GO station; as for the space where the current bus terminal sits southwest of Erie Avenue and Bridge Street, would it be entirely given over to parking; Is it correct that the north part of Huron west of Zimmerman Avenue may be re-zoned for mixed use and our side remain low-density residential? If so, what implications might that have for us; more generally, what impact might this project have on our small street.

Also it was noted in the comments that the future transportation route should take into consideration the traffic flow, both in direction and volume on River Road. Making Queen Street a one-way street, flowing up Queen Street from River Road, should be given serious consideration. A return road to allow traffic to flow down from Victoria Avenue to River Road would alleviate congregation.

Fully detailed comments and responses can be found in the PIC #1 Summary Report, Appendix A.

Public Information Centre #2 Summary

The second PIC was held on Wednesday, July 21, 2021 at 6:00 P.M. The online presentation was followed by a question-and-answer session. A digital copy of the presentation material was made available on the Region website, posted to the Niagara Region Projects page for the public to view or download anytime during the comment period (July 21 to August 6, 2021). The purpose of the PIC was to inform the public of the projects progress, a summary of supporting studies on socio-economic planning, financial considerations, transportation needs and opportunities, alternative solutions and preliminary evaluation for Bridge Street and municipal roads.

No written comments were received during the comment period for PIC #2. The comments received during the PIC # 2 came mostly in the form of questions. In summary comments, statements and questions ranged from; provide flexibility for each

option to coincide with the Study Area buildout, better opportunity for MUP, clarify parking on Bridge Street, how was transit Secondary Plan considered, confirm property acquisition, consider roundabout and intersection treatments, concern with inaccurate delineation of heritage properties and areas of Archaeological potential, encroachment of road allowance into property, coordination with other projects, and financing of improvements.

Fully detailed comments and responses can be found in the PIC #2 Summary Report, Appendix A.

Public Information Centre #3 Summary

The third PIC was held on Wednesday, February 2, 2022 at 6:00 P.M. The online presentation was followed by a question-and-answer session. A digital copy of the presentation material was made available on the Region website, posted to the Niagara Region Projects page for the public to view or download anytime during the comment period (February 2 to 18, 2022). The purpose of the PIC was to provide public with, a summary of supporting studies on socio-economic planning, financial considerations, transportation needs and opportunities, alternative solutions and preliminary evaluation for Bridge Street and municipal roads.

One written comment was received during the comment period for PIC #3. The comments received during the PIC # 3 came mostly in the form of questions. In summary comments, statements, and questions ranged from; concern regarding the narrowing of Park Street on the north side to west of Erie Avenue, will south side parking remain; how will the needs of all the road users desiring parking on Bridge Street be appropriately accommodated should all the on-street parking be removed; are there anticipated changes to bus routes in the area, whether busses will continue along a somewhat narrower Park Street, but also whether there will be higher anticipated bus traffic along Bridge Street and whether there are anticipated noise / other implications; a request for supporting studies (including parking studies) and full size maps; question whether if the ultimate solution is approved would the property owners now be in a situation where proposed development of their site would impose the site plan condition that the portion of the front yard would have to be granted to the Region?

Fully detailed comments and responses can be found in the PIC #3 Summary Report, Appendix A.

3.3.7 Property Owner Meetings

In addition to the PICs, invitation letters were mailed to property owners that would be directly impacted along Bridge Street and hand delivered to residents for homes on Bridge Street offering one-on-one stakeholder meetings. Letters were mailed to property owners November 18, 2021 and hand-delivered to residents November 17, 2021.

Eleven meetings were scheduled, and ten property owners attended one-on-one meetings that provided a description and identified property impacts of the preliminary preferred design of the planned solution and the proposed ultimate solution. Much of the impacts related to property owner or tenant use of Niagara Region road right-of-way along the frontage of their property for informal parking. A Summary of these meetings and the discussions occurred is provided in Appendix A6.

4.0 Existing Conditions

This Chapter provides a description of baseline conditions for the identified Study Area. The baseline conditions were considered in the development of alternatives and assessment of effects as described further in this ESR. A full transportation assessment is provided in Appendix B.

4.1 Existing Transportation Infrastructure and Services

4.1.1 Existing Road Network

Bridge Street is a major east/west roadway that extends from Regional Road 102 (Stanley Avenue) to River Road in the City of Niagara Falls. It is a two-lane road with a concrete sidewalk on the south side and on the north side east of the existing rail station. It has an approximate ROW width of 18 m and a regulatory speed limit of 50 km/h.

Erie Avenue is a local north/south two-lane road with concrete sidewalks on the east and west sides; it has a regulatory speed limit of 50 km/h.

Park Street is a two-lane local east / west roadway with concrete sidewalks on the north and south sides of the road, except east of Cataract Avenue and the frontage of 2781 Park Street along the north side: the regulatory speed limit of 50 km/h.

Zimmerman Avenue is a two-lane local north / south roadway that extends from Regional Road 43 (Bridget Street) to River Road. There are concrete sidewalks on the east and west sides of the road, except between Park Street and Queen Street on the east side. It has a regulatory speed limit of 50 km/h.

Most Street intersections are two-way or all-way stop controlled. The intersection of Bridge Street with Victoria Avenue was converted from a signalized intersection to a roundabout operation. The existing road network and traffic control is illustrated in Figure 4.2

4.1.2 Existing Parking Supply and Regulations

Currently, parking is permitted on the south side of Bridge Street on the western half of the Study Area and on the north side of Bridge Street east of the Niagara Falls VIA Rail / GO Transit Station. Parking is also permitted on Zimmerman Avenue and portions of Park Street. Parking lots and on-street parking are provided within the Study Area as shown in Figure 4.2. For residential properties and commercial properties at the western portion of the corridor, parking activity has been observed on driveways within the road right-of-way.

Figure 4.1: Existing Road Network and Traffic Control

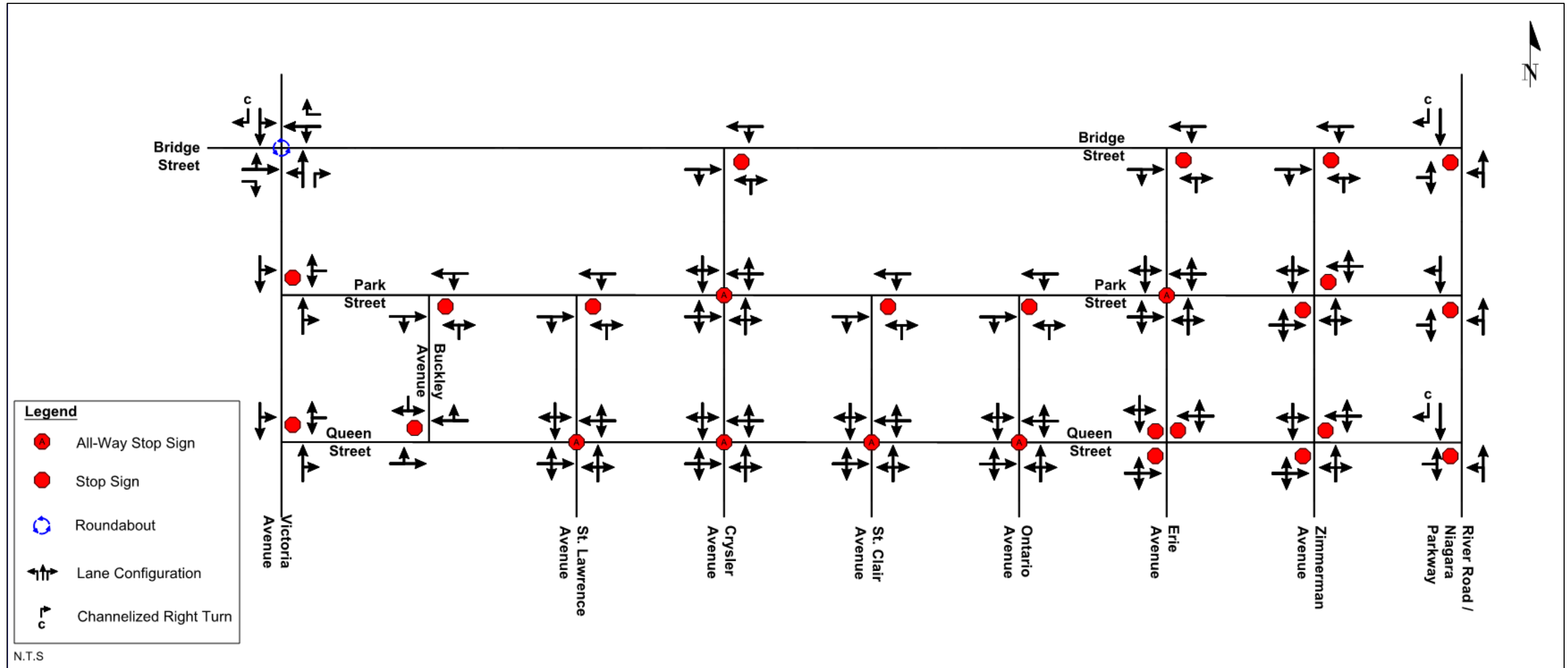
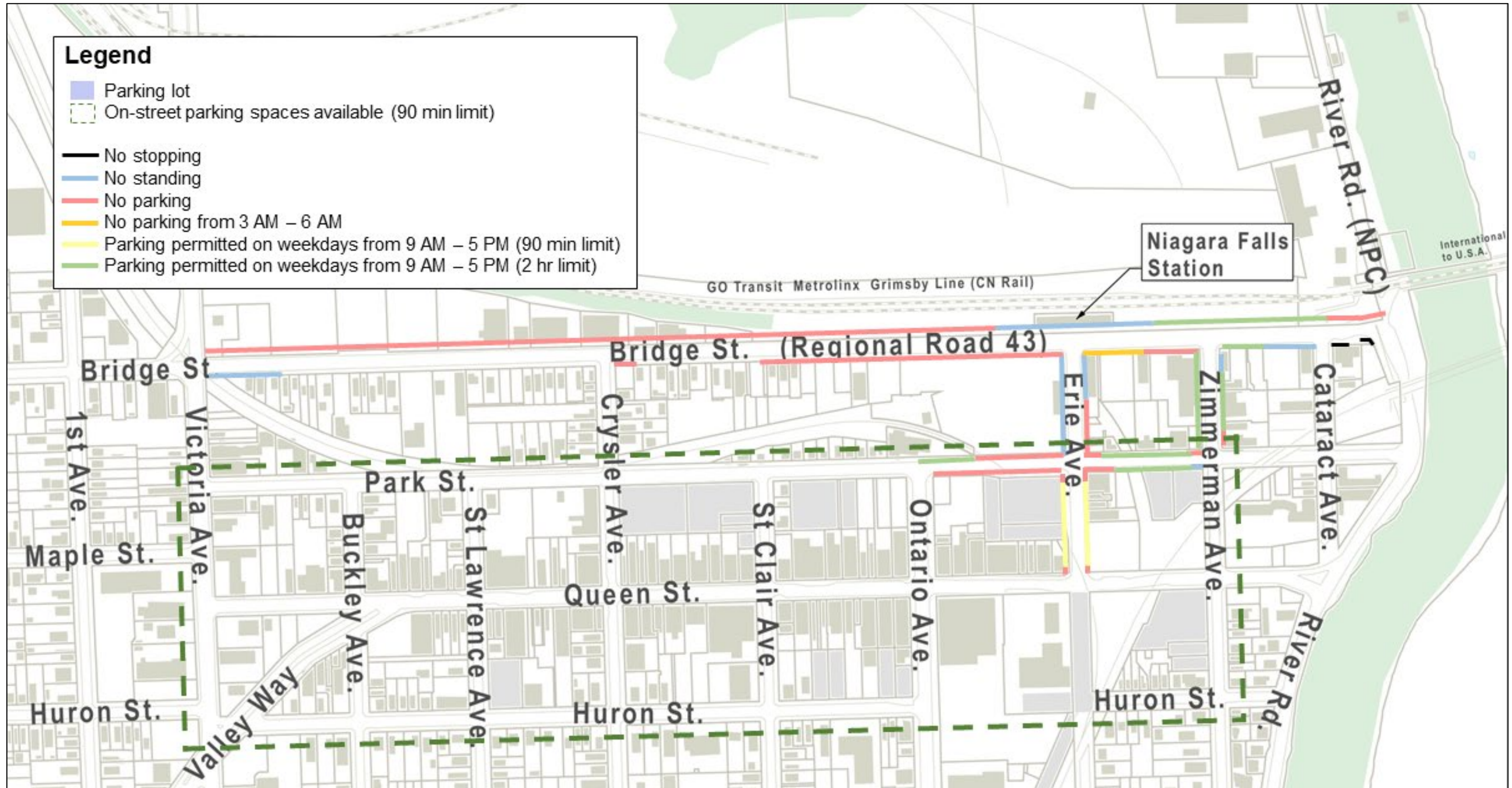


Figure 4.2: Parking Lots and Restrictions along Study Road Segments



4.1.3 Existing Active Transportation Infrastructure

The existing active transportation network is shown in Figure 4.3. Sidewalks are missing on the north side of Bridge Street west of the parking lot of the Niagara Falls VIA Rail Station. There is also sidewalk discontinuity on Park Street and Zimmerman Avenue due to the presence of the bus terminal and overhead bridge. The Olympic Torch Trail on Erie Avenue south of Queen Street is the only cycling facility separated from vehicular traffic within the Study Area.

The existing control methods and pedestrian crossing measures for study intersections are summarized in Table 4.1 based on Google Street View as well as site visit observations. As shown in Table 4.1, crosswalks are missing at most intersections, even those with transit stops nearby.

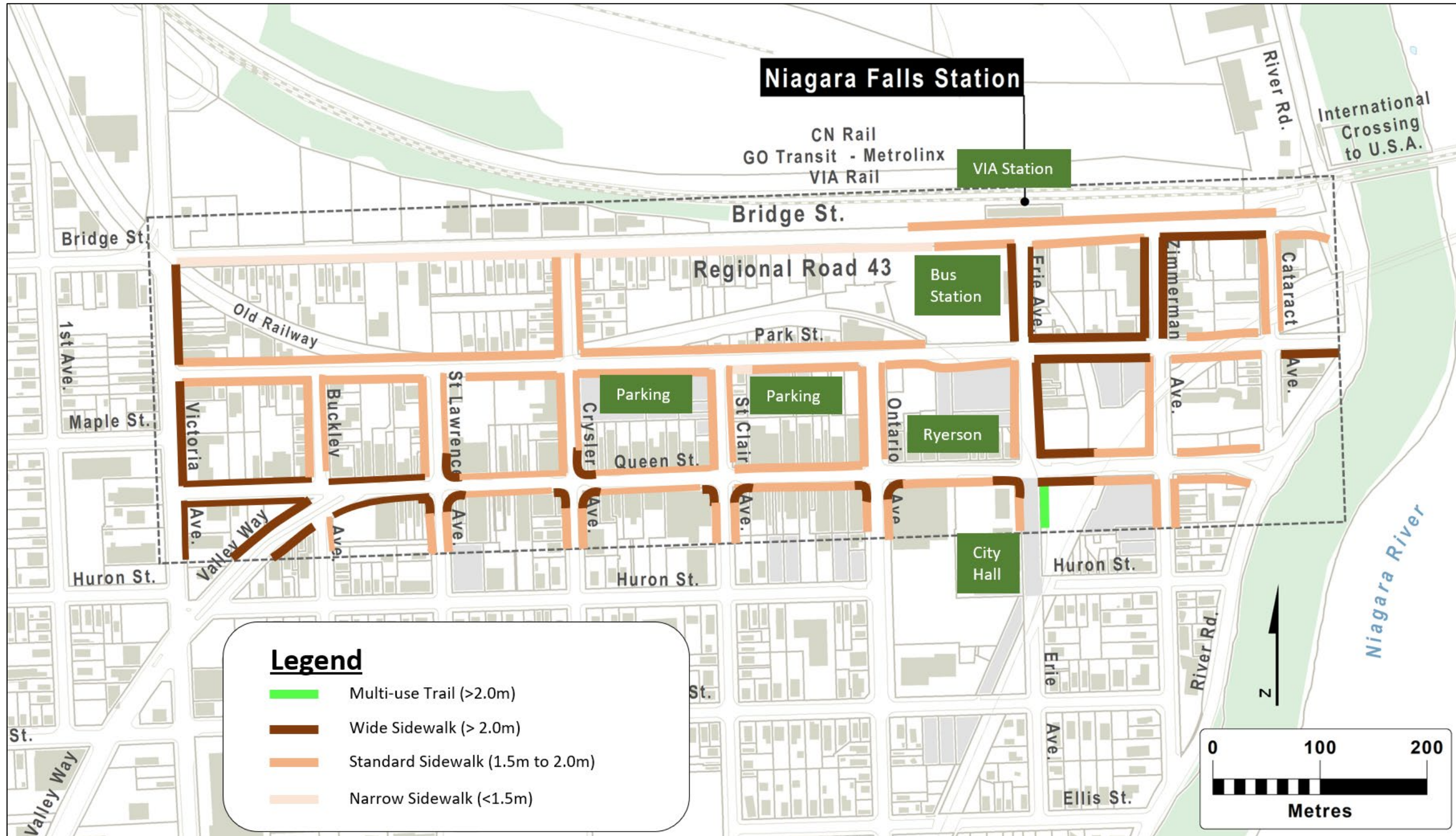
Table 4.1: Existing Control Methods and Pedestrian Crossing Measures

Intersection	Traffic Control	Crosswalk	Nearby Transit Stop
Bridge St. & River Rd.	Stop control for Bridge St.	No crosswalks	Bus stop on Bridge St.
Bridge St. & Zimmerman Ave.	Stop control for Zimmerman Ave.	No crosswalks	No transit stops
Bridge St. & Erie Ave.	Stop control for Erie Ave.	No crosswalks	Bus stop, terminal and GO Station at Erie Ave.
Bridge St. & Chrysler Ave.	Stop control for Chrysler Ave.	No crosswalks	No transit stops
Park St. & River Rd.	Stop control for Park St.	No crosswalks	No transit stops
Park St. & Zimmerman Ave.	Stop control for Park St.	No crosswalks	No transit stops
Park St. & Erie Ave.	Stop control for Park St.	Crosswalk for all legs	Bus stop on Erie Ave.
Park St. & Ontario Ave.	Stop control for Ontario Ave.	No crosswalks	No transit stops
Queen St & River Rd.	Stop control for Queen St.	Crosswalk crossing Queen St.	No transit stops
Queen St. & Zimmerman Ave.	Stop control for Zimmerman Ave.	Crosswalk for all legs	No transit stops

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Intersection	Traffic Control	Crosswalk	Nearby Transit Stop
Queen St. & Erie Ave.	All-way stop control	Crosswalk for all legs	Bus stop on Queen St.
Queen St. & Ontario Ave.	All-way stop control	Crosswalk for all legs	Bus stop on Queen St.

Figure 4.3: Existing Active Transportation Network



Walkability is a measure of the level of integration of pedestrian facilities and municipal infrastructure, based on design elements and characteristics of the road environment that influence the ease in which pedestrians can move through the network, conveniently, enjoyably, and safely. Images in Figure 4.4 represent the existing pedestrian environment. Table 4.2 summarizes characteristics that negatively affect walkability on Bridge Street.

Table 4.2: Existing Conditions Affecting Walkability

Roadway Element	Roadway Characteristics
Sidewalk	Narrow 1.2 m south side, adjacent to traffic and discontinuous north side
Crossing Locations	No controlled crossings between Victoria Avenue and Bridge Street
Accessibility	Lack of AODA accessible crossing design elements
Utility Location	Light poles obstruct the sidewalk east and just west of Erie Avenue
Illumination	North side street illumination: no pedestrian scale lights west of Erie Avenue
Streetscape	No seating, gateways or plantings separating vehicles from pedestrians

Figure 4.4: Bridge Street Pedestrian Environment

Bridge Street north side at Niagara Falls VIA Rail/GO Transit Station looking eastbound



Bridge Street east of Erie south side looking eastbound



Bridge Street west of Erie north side looking eastbound



Bridge Street west of Erie south side looking eastbound



Bridge Street east of Victoria north side looking eastbound



Bridge Street east of Victoria south side looking eastbound



4.1.4 Existing Transit Services

Both inter-regional and local transit currently services the Study Area, as shown in Figure 4.5. Transit facilities in the area include:

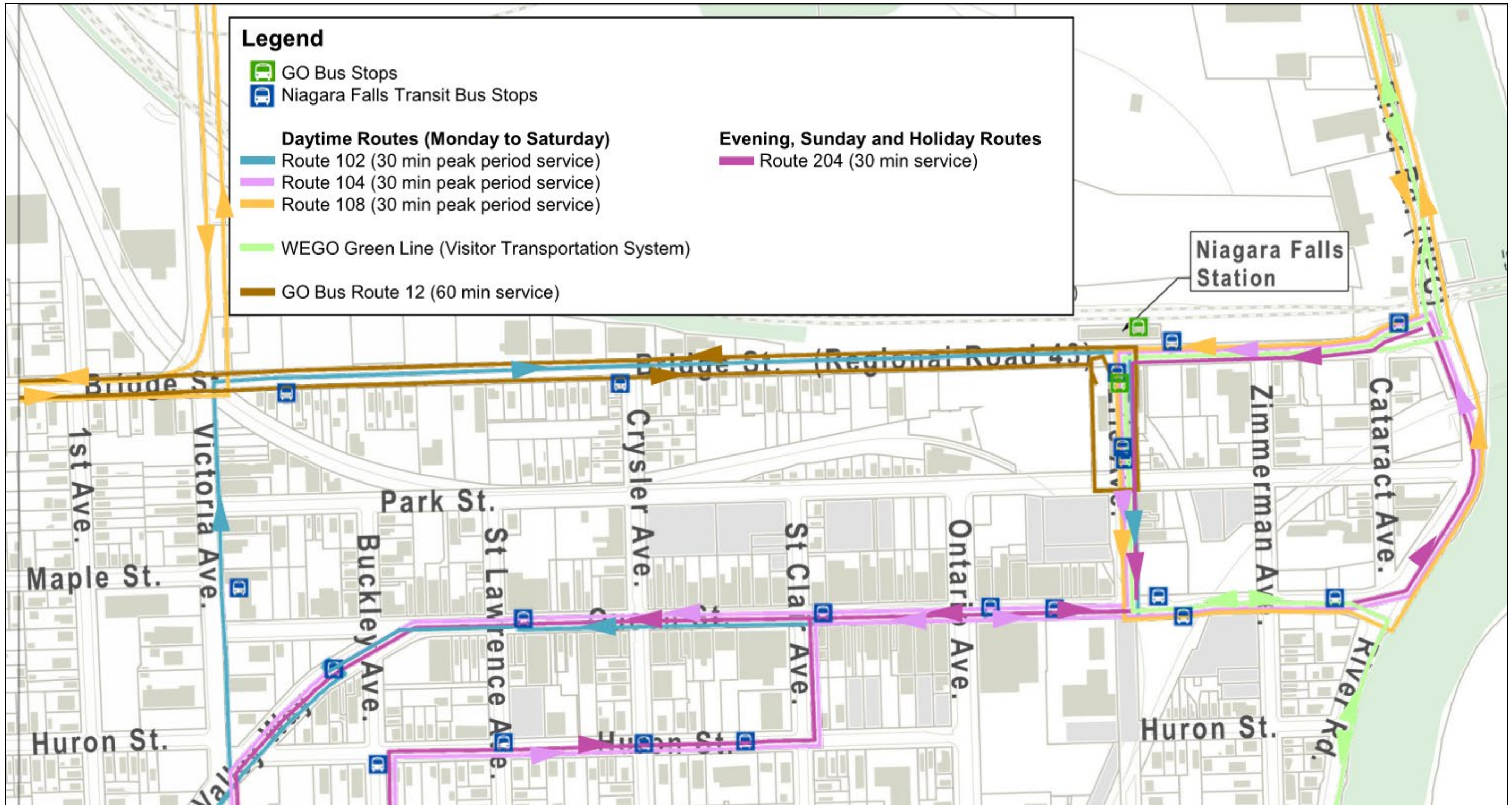
- The Niagara Falls VIA Rail/GO Transit Station – located on the north side of Bridge Street (Regional Road 43) opposite Erie Avenue and providing passenger rail service via GO Transit and VIA/Amtrak.
- The Niagara Falls Transit Terminal – located on the west side of Erie Avenue between Bridge Street and Park Street, providing service via Niagara Falls Transit, WEGO, GO Transit, and private commercial carriers.
- Local transit stops on Bridge Street, Erie Avenue, Park Street, Queen Street, Huron Street, Victoria Ave and other local roads within the study area.

Inter-regional transit is provided by GO Transit with connections between the Niagara Falls VIA Rail/GO Transit Station and Toronto Union Station via the Lakeshore West GO Train line and Bus Route 12. Private commercial carriers offer service to the Toronto Union Station Bus Terminal and several points in Canada and the U.S.A. VIA/Amtrak provide passenger rail service between Toronto Union Station and the U.S.A.

Local travel within the Study Area is serviced by Niagara Falls Transit and WEGO. Niagara Falls Transit routes service roads within the City of Niagara Falls. WEGO offers connections between major tourist attractions and hotels within the City of Niagara Falls and Niagara Parks.

All bus stops for local transit are within a 450 m walking distance (which is approximately 5 min of walk time) to residential areas

Figure 4.5: Transit Service within the Study Area



4.2 Drainage and Stormwater Management Conditions

Along Bridge Street the ground elevations range from 182 masl at Victoria Street down to 171 masl at River Road. Over the Study Area road length of 1 km, this results in a gentle slope of 1% from Victoria Avenue to River Road and the Niagara River in the east.

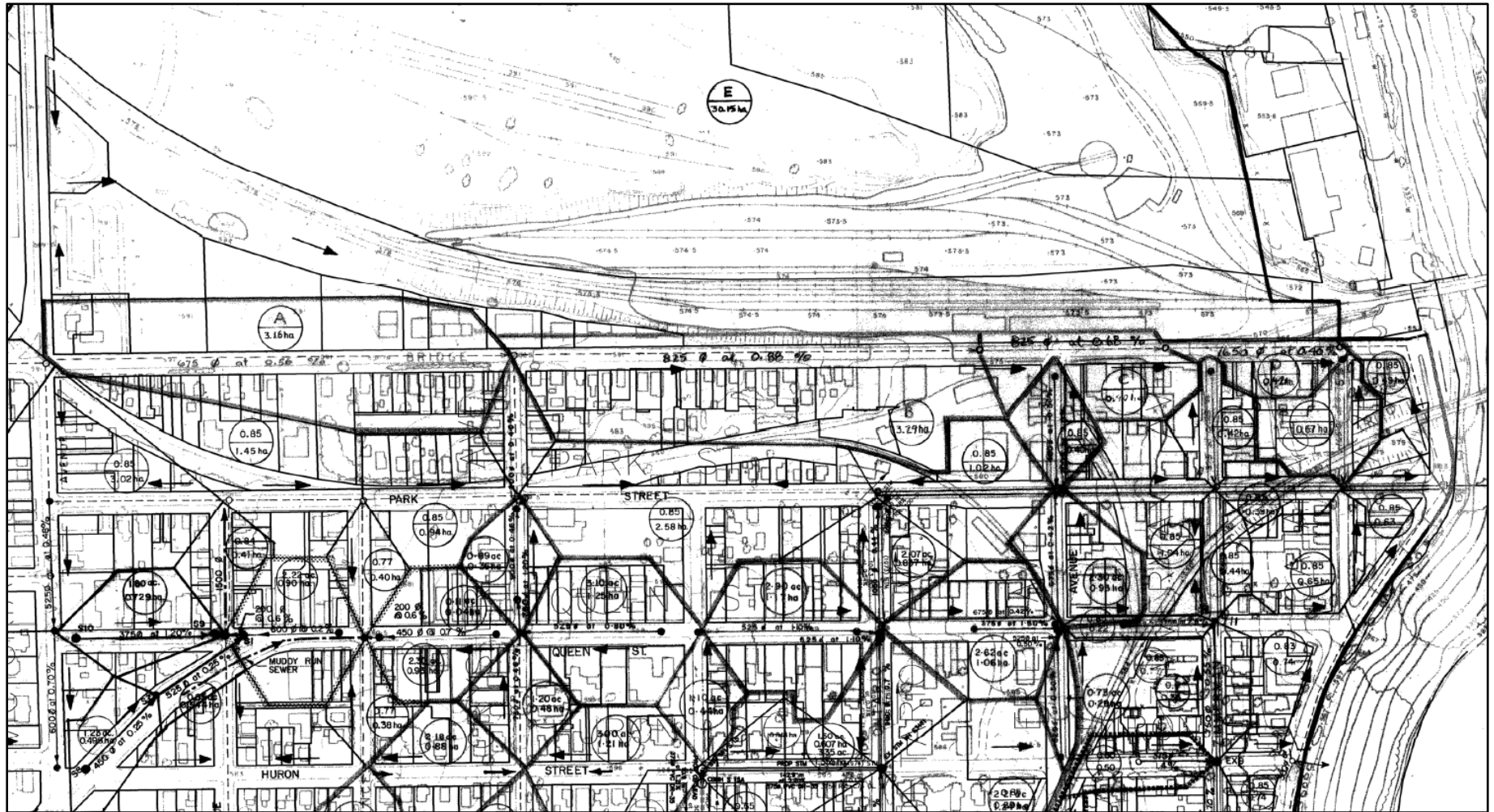
The Study Area is located in the Niagara River watershed within the jurisdiction of the Niagara Peninsula Conservation Authority (NPCA). The road is located outside of NPCA regulated area. This segment of Bridge Street does not include any watercourse crossings or culverts.

Bridge Street between Victoria Avenue and River Road consists of approximately 1.8 ha of ROW area, with approximately 6.6 ha of directly contributing external area, which includes existing commercial and residential runoff, see Figure 4.6 prepared for the City of Niagara Falls. Most of the area directly north of Bridge Street drains north to the existing rail line, which ultimately discharges to the existing Bridge Street sewer east of Zimmerman Avenue. Contributing drainage areas will be confirmed as part of the design stage.

Conveyance of ROW runoff and external areas draining to the ROW is currently via existing storm sewers. The existing sewers appear to have been sized for the 1:5-year storm runoff. Runoff from storms exceeding the existing storm sewer capacity storm will be conveyed overland within the ROW to the east, as in the existing condition.

A summary of the stormwater management conditions, and drainage is provided in Appendix C.

Figure 4.6: Storm Drainage Area Plan – Downtown



4.3 Land Use and Socio-Economic Environment

A land use assessment was undertaken to identify the existing residential, employment and institutional uses that may be affected by the project. The current land use within the Study Area is illustrated in Figure 4.7.

Bridge Street – South Side

On the south side of Bridge Street from Victoria Avenue to approximately 235 m east of Chrysler Avenue and on Park Street, there are 20 properties. These properties include 1, 2 and some 3 story buildings that have primarily residential uses shown in purple with some employment (highway commercial) uses shown in red.

There are 4 properties that have stairs or porches that encroach into or are immediately adjacent to the road right that have of way. An estimated 8 properties are parking in areas that encroach into the road right-of-way.

On the south side of Bridge Street immediately west of Erie Avenue is the existing bus terminal and parking lot shown in orange. East of Erie Avenue on south side of Bridge Street there 6 commercial buildings including a hotel, office buildings and restaurants.

Bridge Street – North Side

On the north side of Bridge Street from east of Victoria Avenue to approximately 130 m east of Chrysler Avenue there are 6 commercial buildings providing industrial and highway commercial employment uses (shown in red). These properties have continuous access across their frontage and most operate with parking that encroaches into the road ROW.

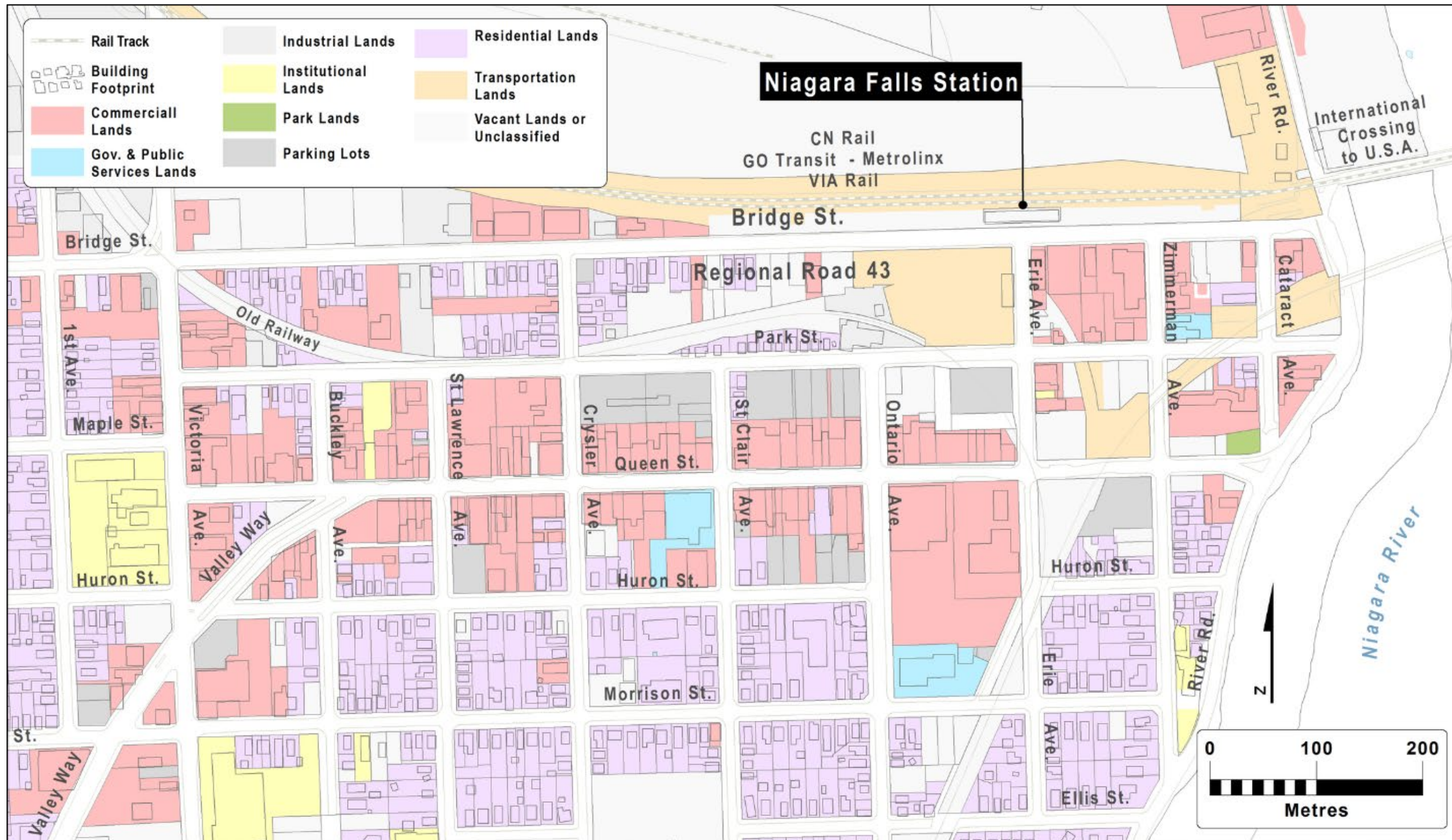
The Niagara Falls VIA Rail / GO Transit Station is situated on the north side of Bridge Street at Erie Avenue. The Niagara Falls VIA Rail/GO Transit Station site extends from approximately 150 m west of Erie Avenue to approximately 80 m east of Erie Avenue. West of the Niagara Falls VIA Rail / GO Transit Station, there is a cell tower 200 m east of Chrysler Avenue; vehicular maintenance access is provided via the existing Niagara Falls VIA Rail / GO Transit Station parking lot to the east.

Municipal Streets

Erie Avenue has commercial uses fronting on the east side shown in red. On the west side of Erie Avenue is the bus terminal building and lands shown in orange, a private commercial parking lot and commercial buildings that front onto Queen Street.

Zimmerman Avenue north of Park Street has commercial, institutional and government office building frontage shown in red and blue. Buildings are low and mid-rise 1 to 3 storeys with some on-site parking. Park Street between Ontario Avenue and Zimmerman Avenue have low rise commercial buildings and parking lot frontage. Some properties have on-site parking.

Figure 4.7: Existing Land Uses



4.4 Natural Environment

4.4.1 Methodology

The following records and databases were reviewed to document existing ecological conditions:

- Aerial imagery (2019).
- Natural Heritage Information Centre (NHIC) mapping (2021).
- NDMNDMNR Land Information Ontario (LIO) database.
- Atlas of Breeding Birds of Ontario (2001-2005).
- Ontario Reptile and Amphibian Atlas.
- NPCA's Regulation 155/06 Mapping.
- The Regional Municipality of Niagara Official Plan (2014 Consolidation), Schedule C.
- Regional Municipality of Niagara Official Plan (2014 Consolidation).
- Official Plan for the City of Niagara Falls (April 2019), Schedules A and A1.

Field investigations were conducted on September 14, 2020, to assess the conditions with respect to terrestrial habitat. Fieldwork completed included:

- Modified Ecological Land Classification (ELC) in accordance with the *Ecosites of Ontario Operational Draft* (Banton et al. 2009).
- Visual searches for potential Species at Risk (SAR) habitats.
- Incidental observations of flora and fauna.

It should be noted that the focus of the ecological investigations was targeted towards any potential natural heritage features located west of the Niagara Parkway. Ecological investigations did not include the Niagara Gorge or Niagara River.

4.4.2 Municipal and Regional Natural Heritage Policy Areas

Based on Schedule C of the Niagara Region Official Plan (OP) and Schedule A1 of the City of Niagara Falls OP, the wooded feature located outside of the project area just east of Victoria Avenue and north of Bridge Street is designated as a significant woodland (Figure 1 Enclosed). Significant woodlands are classified as an Environmental Conservation Area (ECA). Although the ECA falls within the Study Area, the project will not impact this feature.

An Environmental Protection Area (EPA), a provincial Life Science Area of Natural Scientific Interest (ANSI) found in association with the Niagara River east of the Niagara Parkway is also present in the Study Area. Although the EPA is located within 50 m of the project limits, the feature will not be impacted by construction activities.

4.4.3 Vegetation Communities

A summary of ecosites present is found in Table 4.3. A map illustrating the locations of all vegetation communities is included in Figure 4.8.

Table 4.3: ELC Communities

ELC Community	Community Description
<p>CVC_1 - Business Sector</p> <p>Inclusions: TG-B (Treed Group)</p>	<p>This ecosite represents the area north of Bridge Street and east of Erie Avenue and Zimmerman Avenue.</p> <p>Boulevard plantings are present throughout this site. Species present include Thornless honey-locust (<i>Gledistia triacanthos 'inermis'</i>) and White Cedar (<i>Thuja occidentalis</i>). Manitoba Maples (<i>Acer negundo</i>) have also become established within the boulevard plantings.</p> <p>Treed areas are also present within unmaintained parking lots. Species present in these areas include Black Walnut (<i>Juglans nigra</i>), Norway Maple (<i>Acer platanoides</i>), Manitoba Maple, Virginia Creeper (<i>Parthenocissus quinquefolia</i>), Goldenrod (<i>Solidago sp.</i>), and Wild Carrot (<i>Daucus carota</i>).</p> <p>A tree group inclusion (TG-B) is associated with the commercial space adjacent to a former rail corridor located between Cataract Avenue and the Niagara Parkway. Norway Maple and Black Walnut are codominant canopy species in this area. Green Ash regeneration and Manitoba Maple are also present within the understory with Red Raspberry (<i>Rubus idaeus</i>). Goldenrod and Reed Canary Grass (<i>Phalaris arundinacea</i>) are the dominant groundcover species. The trees within this inclusion have declining health, with some trees having cavities that may provide habitat to wildlife species.</p>

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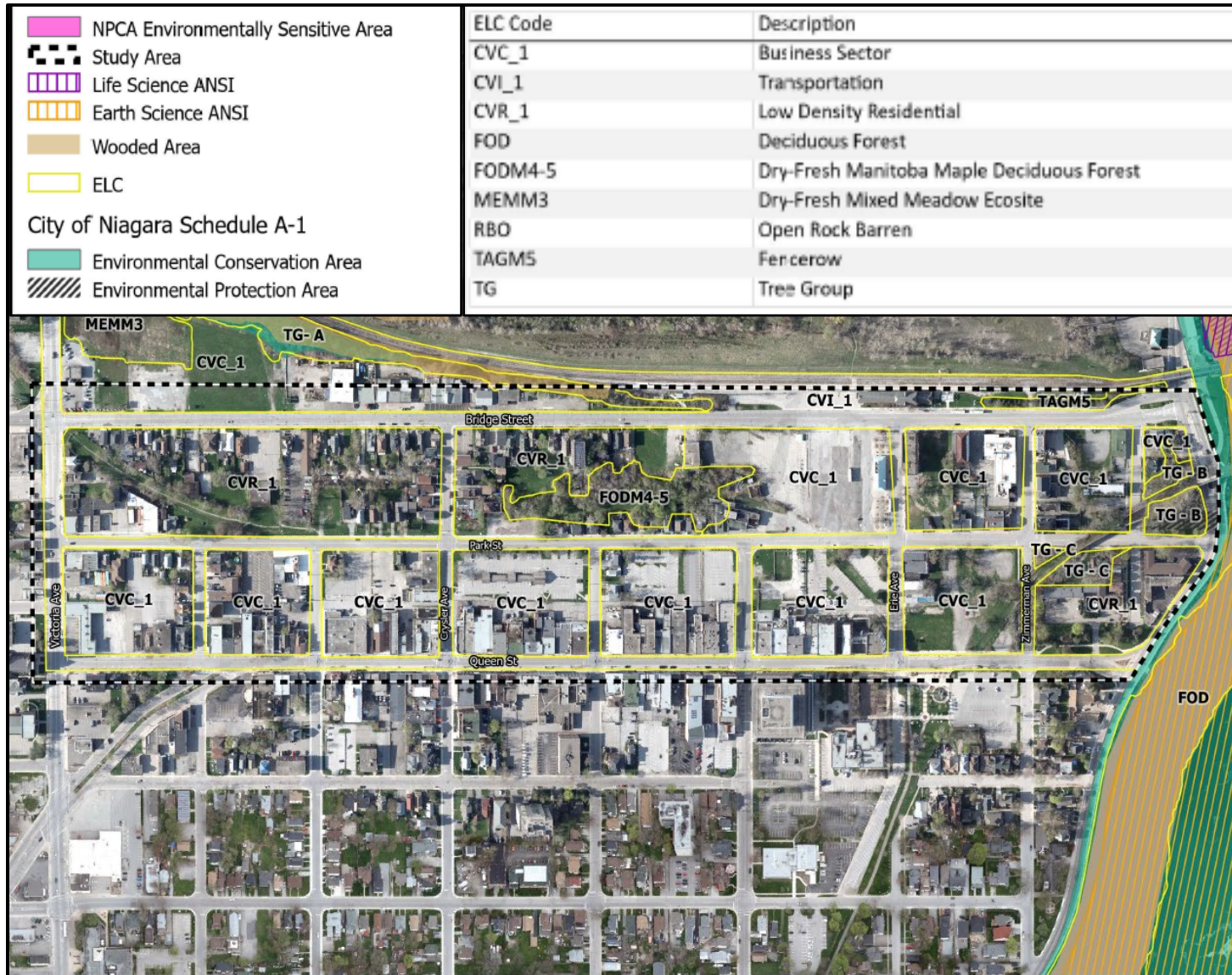
ELC Community	Community Description
<p>CVR_1 Low Density Residential</p> <p>Inclusion: TG-C (Treed Group)</p>	<p>This ecosite represents the area south of Bridge Street. A small green space with a gravel path bisects the residential area at the corner of Bridge Street and Victoria Avenue. This green space consists of Littleleaf Linden (<i>Tilia cordata</i>; dominant), Norway Maple, Black Walnut, and Manitoba Maple. Ornamental shrubs, Virginia Creeper, Wild Grape (<i>Vitis riparia</i>), and European Buckthorn (<i>Rhamnus cathartica</i>) are present in the understory and manicured turfgrass is the primary groundcover species. A tree group inclusion (TG-C) is associated with the residential area east of Zimmerman Avenue and south of Park Street. Species in this area include Manitoba Maple, Littleleaf Linden (<i>Tilia cordata</i>), Norway Maple, Horse-Chestnut (<i>Aesculus hippocastanum</i>), and Wild Grape.</p>
<p>CVI_1 – Transportation</p> <p>Inclusions:</p> <p>TAGM5 - Fencerow</p>	<p>This ecosite represents the roads and GO Transit stations and the rail corridors.</p> <p>A fencerow consisting of various native species including Sugar Maple (<i>Acer saccharum</i>), White Spruce (<i>Picea glauca</i>), Eastern White Cedar, White Oak (<i>Quercus alba</i>), and non-native Norway Maple is present east of the station. All trees within this area are widely spaced with manicured turfgrass beneath. Shrubs or native understory species are not present.</p> <p>Street trees are also present along the roadways of the Study Area including Thornless honey-locust and Tree-of-Heaven (<i>Ailanthus altissima</i>).</p>

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ELC Community	Community Description
TG – A – Tree Group	<p>This ecosite represents the Woodland located south of the CN / GO Transit rail corridor immediately east of Victoria Avenue and north of Bridge Street.</p> <p>This area consists of early successional tree species such as Black Walnut (dominant) and Manitoba Maple (subdominant) within the canopy and Green Ash (<i>Fraxinus pennsylvanica</i>) within the shrub layer. Non-native species including Common Apple (<i>Malus domestica</i>) and European Buckthorn are present within the understory with native Staghorn Sumac (<i>Rhus typhina</i>).</p>
FODM4-5 - Dry - Fresh Manitoba Maple Deciduous Forest Type	<p>This ecosite represents the wooded area associated with the residential / commercial areas between Chrysler Avenue and Erie Avenue.</p> <p>This canopy is moderately dense (>60% cover) and consists of Manitoba Maple (dominant), Black Walnut (subdominant), White Willow (<i>Salix alba</i>), and Norway Maple. Shrub / vine species consists of common tolerant species such as Wild Grape and Virginia Creeper. The understory consists of native and non-native species commonly associated with disturbed areas including turfgrass, Goldenrod (<i>Solidago sp.</i>), Burdock (<i>Arctium sp.</i>), and Garlic Mustard (<i>Alliaria petiolata</i>).</p> <p>Portions of this ecosite are subject to mowing. Residential waste occurs throughout this ecosite.</p>
MEMM3 - Fresh - Moist Mixed Meadow Ecosite	<p>This ecosite represents the grass area located south of the TG-A ecosite.</p> <p>This area consists of mixed grass species and broadleaf forb species.</p> <p>This ecosite is managed by mowing.</p>
FOD – Deciduous Forest	<p>This ecosite is located outside of the Study Area and is associated with the Niagara Gorge. The ELC classification for this ecosite was provided by the NPCA's Watershed Explorer.</p>

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Figure 4.8: Natural Heritage Features



4.4.4 Incidental Wildlife

No incidental wildlife observations were made during field studies. Several trees within the old parking lot at the corner of Zimmerman Avenue and Park Street possess cavities that could be utilized by wildlife species including SAR bats. These cavity-bearing trees will not be impacted by the proposed road improvements.

It is anticipated that urban tolerant mammals such as Raccoon (*Procyon lotor*), Grey Squirrel (*Sciurus carolinensis*) and Virginia opossum (*Didelphis virginiana*) use the site for foraging and habitat.

4.4.5 Migratory Birds

A review of the Ontario Breeding Bird Atlas (OBBA) identified records of 91 bird species in the vicinity of the Study Area (OBBA, 2005). Most of the birds listed are classified as migratory birds under the *Migratory Birds Act Convention* (MBCA). A full list of species recorded in the area is provided in Appendix D.

4.4.6 Provincial Endangered and Threatened Species

Several databases, species range maps, and background documents were reviewed to determine if any SAR have been recorded or are likely to be present in the Study Area.

Species-specific searches were not conducted. Instead, confirmation of ELC communities within the Study Area during site investigations assisted in screening for the potential habitat of SAR.

A full list of rare species documented in the desktop review in the Study Area and its vicinity is provided in Appendix D Attachment B. No endangered or threatened species were observed. All areas that may contain habitat of Threatened or Endangered species are assumed to be located within the Niagara Gorge and Niagara River due to the highly impacted / altered nature of the natural heritage features located within the Study Area.

One Red Mulberry (*Morus rubra*) tree was reported during the 2016 City of Niagara Falls tree inventory. Since the tree is a landscape tree associated with a residential area, this classification is likely an error. Red Mulberry are found in moist, forested habitats such as the ravines of the Niagara Escarpment and bottomlands. It is more likely that this tree is a White Mulberry (*Morus alba*) or a Red Mulberry hybrid. White Mulberry are often used as ornamental trees.

4.4.7 Areas of Natural Scientific Interest (ANSI)

Two ANSIs occur within the vicinity of the project limits, specifically a Life Sciences Provincially significant ANSI, the Niagara Gorge, and an Earth Sciences Provincially Significant ANSI, the Niagara River Bedrock Gorge. Both are found in association with the Niagara River located east of the Niagara Parkway and will not be impacted by the proposed project.

4.4.8 Significant Wildlife Habitat

A desktop analysis was conducted to identify significant wildlife habitat (SWH) features within the project limits. A table summarizing the location of SWH features is provided in Appendix D Attachment C. No confirmed SWH features occur within the project limits. All candidate SWH features are assumed to occur within the ECA or EPA features outside of the project limits and will not be impacted directly by the proposed project.

4.5 Source Water Protection

The Study Area falls under the Niagara Peninsula Source Protection Area.

4.5.1 Vulnerable Areas

Wellhead Protection Areas

Wellhead Protection Area (WHPA) is an area related to a wellhead and within which it is desirable to regulate or monitor drinking water threats. WHPAs are delineated for threats to quality and quantity.

No WHPAs were identified in the Study Area.

Intake Protection Zones

An Intake Protection Zone is an area related to a surface water intake and within which it is desirable to regulate or monitor drinking water threats. These areas are either set distances, delineated based on the time it would take to respond to a spill, or based on the catchment area of the intake.

No Intake Protection Zones were identified in the Study Area.

Issue Contributing Areas

An Issue Contributing Area (ICA) is an area within a vulnerable area where presently occurring human activities or conditions resulting from past human activities have or are likely to contribute to the elevated concentration of particular substances in the drinking water source. Issues refer to pathogens and chemically specific substances which commonly include chloride, sodium, and nitrate. If an Issue is identified for a well, then all prescribed drinking water threat activities related to that particular substance within the ICA are significant drinking water threats, regardless of vulnerability scoring.

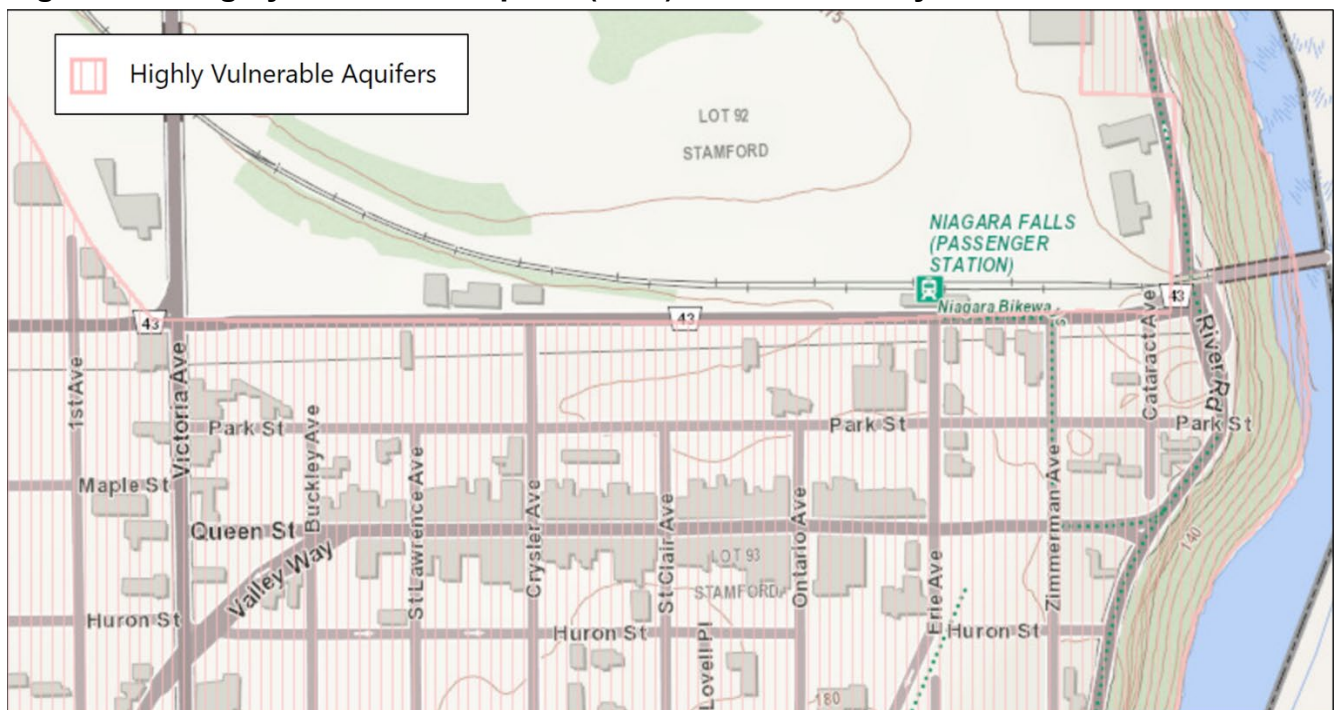
No ICAs were identified in the Study Area.

Highly Vulnerable Aquifers

A Highly Vulnerable Aquifer (HVA) is an aquifer on which external sources have or are likely to have a significant adverse effect and includes the land above the aquifer. An aquifer can be considered highly vulnerable based on several factors, including how deep it is underground, what sort of soil or rock is covering it and the characteristics of the soil or rock surrounding it. The faster water can flow through the ground to an aquifer, the more vulnerable it is to contamination.

The HVAs within the Study Area are illustrated in Figure 4.9. The area including and south of Bridge Street is located within an HVA.

Figure 4.9: Highly Vulnerable Aquifer (HVA) within the Study Area



Significant Groundwater Recharge Areas

A Significant Groundwater Recharge Area (SGRA) is a recharge area that helps maintain the water level in an aquifer that supplies a community with drinking water. Recharge areas often have loose or permeable soil such as sand or gravel, which allows the water to seep easily into the ground. Areas with shallow fractured bedrock are also often recharge areas.

No SGRAs were identified in the Study Area.

4.6 Archaeology

A Stage 1 Archeological Assessment was completed by ASI, a copy of which is provided in Appendix E of this report. The Stage 1 background study determined that no previously registered archaeological sites are located within 1 km of the Study Area. The property inspection determined that parts of the Study Area exhibit archaeological potential and will require Stage 2 Assessment, prior to any proposed construction activities.

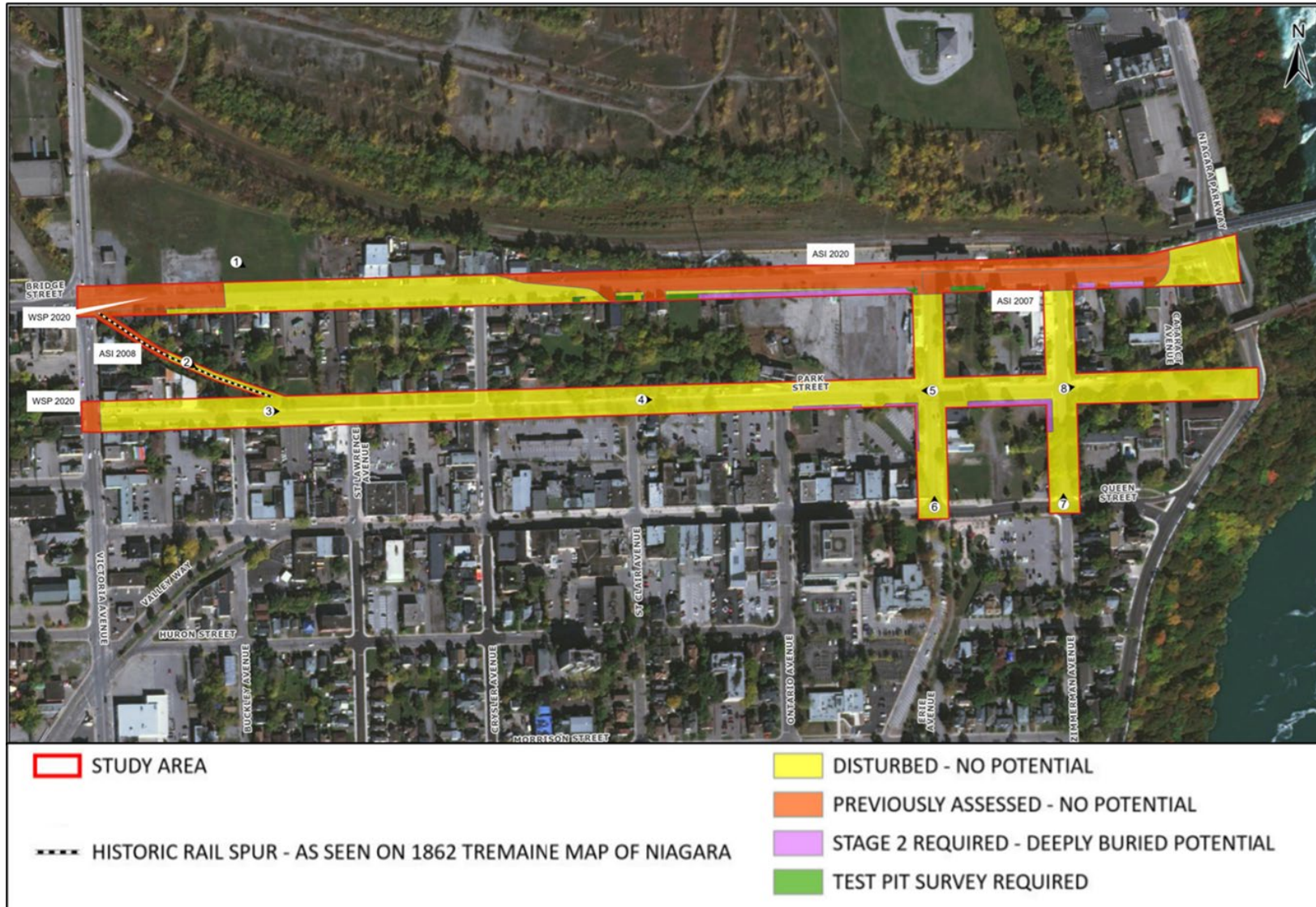
Part of the Study Area was previously assessed by ASI and was determined to retain archaeological potential for deeply buried features (2007: P057-317-2006). In parts of the Study Area that are currently open lots or parking areas, the report states that these lots may have deeply buried potential for the remains of nineteenth-century structures associated with the historic Town of Clifton.

Stage 2 Archaeological Assessment is recommended that will involve heavy machinery to remove the parking lot surface and excavate trenches as per Section 2.1.7 of the S & Gs. The field investigation should be preceded by a detailed land use history of these blocks to determine the extent of nineteenth century settlement in the area and the location of structures of potential heritage value within the Study Area (Figure 4.10) (areas highlighted in purple).

Part of the Study Area has been previously assessed and does not require further archaeological assessments (areas highlighted in red).

The remainder of the Study Area has been subjected to deep soil disturbance events, including construction of the road ROWs, sidewalk placement, and placement of underground services. According to the S & G Section 1.3.2 these areas do not retain archaeological potential or require further survey (Figure 4.10) (areas highlighted in yellow).

Figure 4.10: Stage 1 Archaeological Assessment – Archaeological Potential in the Study Area



4.7 Built Heritage and Cultural Heritage Landscapes

A Cultural Heritage Assessment was completed by ASI, a copy of which is provided in Appendix F of this report. The Study Area is associated with the historic Town of Clifton. Parts of the Study Area that are currently open lots or parking areas, may have deeply buried potential for the remains of nineteenth-century structures associated with the historic Town of Clifton.

Based on the results of the background research and field review, 29 features of known or potential cultural heritage value or interest were identified within the overall Study Area. Based on the type of resources, their physical location, architectural style and / or function, some of these individual resources were combined into a larger Cultural Heritage Landscape (CHL), resulting in a total of 24 known and potential Built Heritage Resources (BHRs) and CHLs. These resources include nine known BHRs, 10 potential BHRs, and five potential CHLs. A unique identifier has been assigned to each resource (either as a CHL or BHR #), which includes the following:

Designated/Listed BHRs

- One train station (BHR 1)
- Seven commercial and / or public buildings (BHRs 5, 6, 7, 8, 9, 10, 11)
- One residential building (BHRs 3)

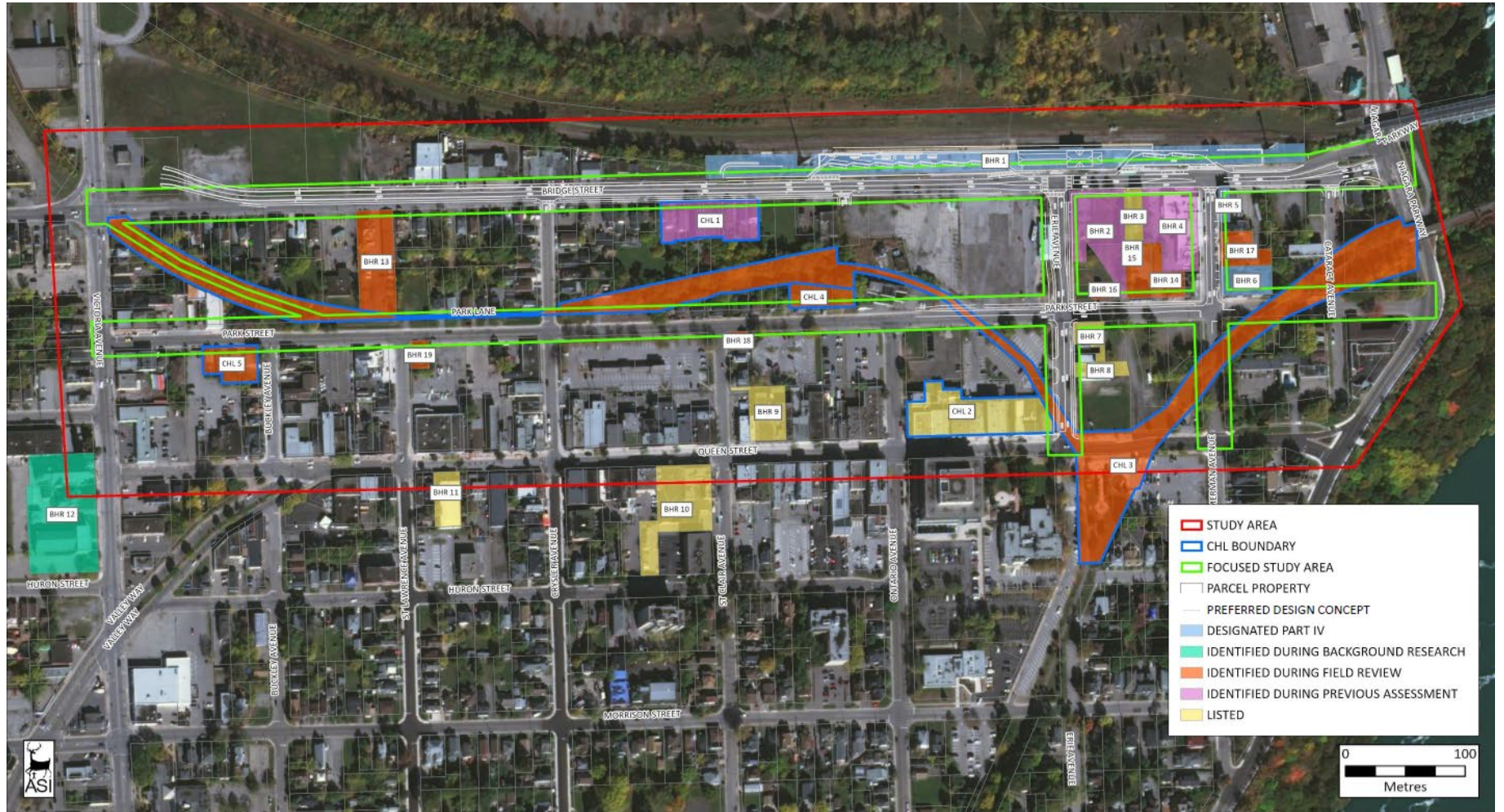
Potential BHRs

- Four commercial and/or public buildings (BHRs 2, 14, 15, and 17)
- One educational building (BHR 4)
- One religious building (BHR 12)
- Three residential buildings (BHRs 13, 18, and 19)
- One building of an unknown use (BHR 16)

Potential CHLs

- Three residential streetscapes (CHLs 1, 4, and 5)
- One commercial streetscape (CHL 2)
- One recreational trail (CHL 3)

Figure 4.11: Built Heritage Resources and Cultural Heritage Landscapes



5.0 Transportation and Streetscape Needs and Opportunities

Transportation needs and opportunities were assessed for road capacity and operations, road safety needs, transit operations requirements, pedestrian and cyclist needs and opportunities and parking conditions. Streetscape needs and opportunities are integrated with transportation needs through the Region's complete street approach. The following sections summarize the findings, a full assessment of transportation analysis in the area is provided in Appendix B.

5.1 Road Level of Service Needs and Opportunities

5.1.1 Existing Traffic Level of Service

Site observations were undertaken within the study on weekday and weekend periods on Sunday, July 19, 2020, Saturday November 2, 2020 and Friday November 12, 2021; weekday AM and PM periods were observed to be the peak demand periods.

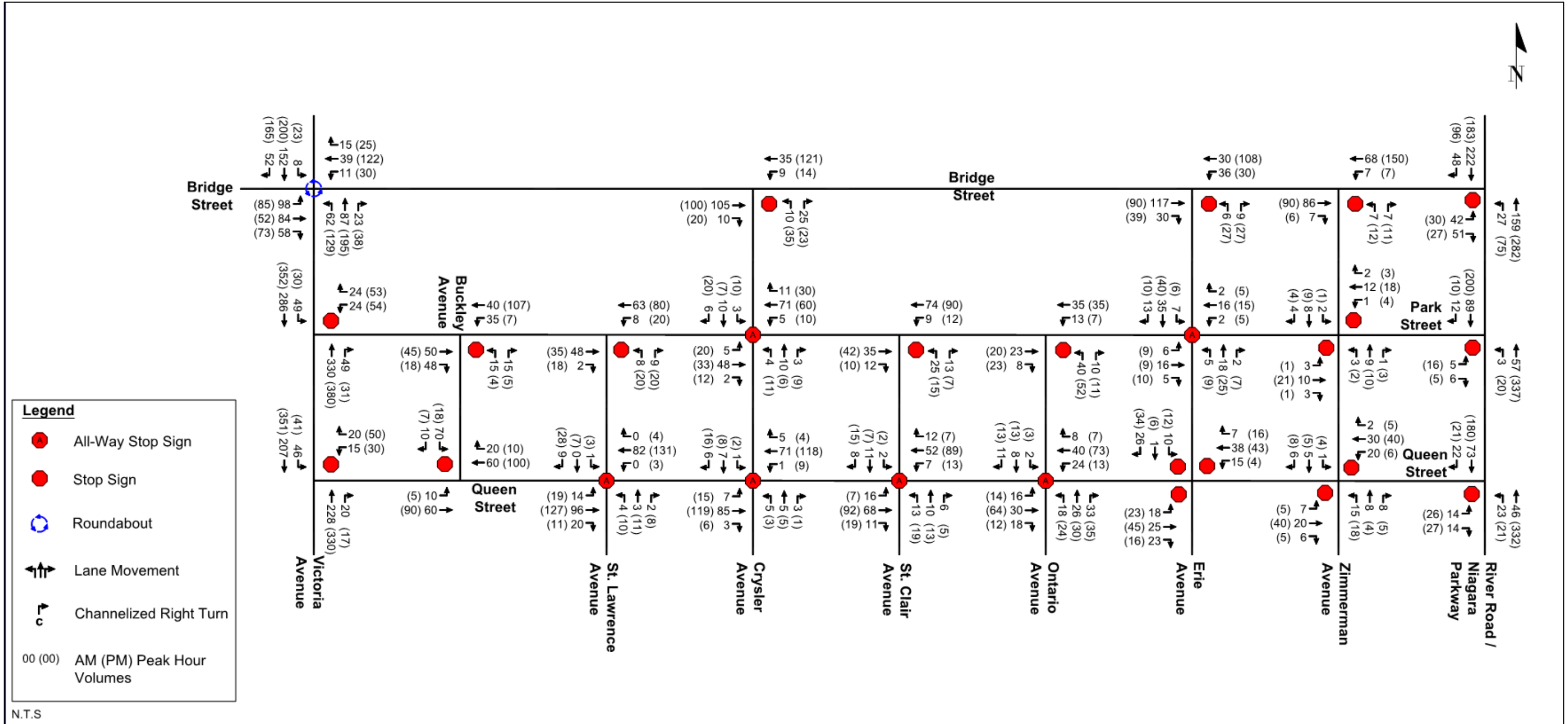
Automatic Traffic Recorder (ATR) counts and Turning Movement Counts (TMCs) from 2019 (prior to the COVID-19 pandemic) were used with supplementary counts for turning movements at intersections.

The existing traffic volumes are illustrated in Figure 5.1. Existing traffic operations were assessed using Synchro 11 (HCM 2000) based on the traffic volumes shown in Figure 5.1.

Existing traffic operations are shown in Table 5.1. The Bridge Street / Victoria Avenue intersection needs have been addressed through the Thorold Stone Road Extension Class EA and the intersection is being reconstructed as a roundabout. All other intersections in the Study Area are unsignalized.

Under existing conditions, during both peak hours, all movements are operating and will operate with excess capacity and a level of service B or better; delays are minimal.

Figure 5.1: Existing Volumes



N.T.S

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Table 5.1: Existing Unsignalized Intersection Operations

Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
	v/c	LOS	Delay (s)	v/c	LOS	Delay (s)
Bridge Street and Chrysler Avenue						
EBTR	0.07	A	0	0.08	A	0
WBLT	0.01	A	1.6	0.01	A	0.8
NBLR	0.04	A	9.2	0.08	B	10
Bridge Street and Erie Avenue						
EBTR	0.10	A	0	0.09	A	0
WBLT	0.03	A	4.5	0.03	A	1.9
NBLR	0.02	A	9.6	0.08	B	10.2
Bridge Street and Zimmerman Avenue						
EBTR	0.06	A	0	0.06	-	0
WBLT	0.01	A	0.8	0.01	A	0.4
NBLR	0.02	A	9.2	0.03	A	9.6
Bridge Street and River Road / Niagara Parkway						
EBL	0.11	B	13.4	0.08	B	14.5
EBR	0.09	B	10.2	0.03	A	9.4
NBL	0.03	A	8.3	0.06	A	7.9
SBL	0.04	A	0	0.06	A	0
Park Street and Ontario Avenue						
EBTR	0.02	A	0	0.03	A	0
WBLT	0.01	A	2	0.01	A	1.3
NBLR	0.06	A	9.1	0.07	A	9.2
Park Street and Erie Avenue						
EBLTR	0.03	A	7.2	0.03	A	7.2
WBLTR	0.02	A	7.2	0.03	A	7.2
NBLTR	0.03	A	7.2	0.05	A	7.3
SBLTR	0.07	A	7.2	0.07	A	7.3
Park Street and Zimmerman Avenue						
EBLTR	0.02	A	9.1	0.03	A	9.3
WBLTR	0.02	A	9.1	0.03	A	9.2
NBLTR	0	A	1.6	0	A	0.9
SBLTR	0	A	1	0	A	0.5
Queen Street and Erie Avenue						
EBLTR	0.10	A	7.4	0.12	A	7.7
WBLTR	0.09	A	7.5	0.09	A	7.5
SBLTR	0.06	A	7.4	0.08	A	7.7

5.1.2 Future Traffic Level of Service

Future traffic volumes will consist of existing traffic, plus background traffic (50 vehicles or 1.5%) including additional traffic generated as a result of the Thorold Stone Road extension currently under construction (50 vehicles or 1.5%) and traffic generated from the Secondary Plan development. Traffic volumes were projected to the design year of 2041.

The Niagara Falls VIA Rail/GO Transit Station Area Zoning map provided by Niagara Region gives a block-by-block summary of potential developments based on the land use policies of the Secondary Plan. As a conservative assumption, future projections are based on the Secondary Plan area reaching build-out within the 2041 horizon year. Blocks 'A' and 'B' refer to developments south of Bridge Street and south of Park Street, respectively, as shown in Figure 5.2. The potential developments and associated land uses are summarized in Table 5.2.

Since the completion of the traffic analysis and justification of transportation needs, the Calibrex development, which is located in the southwest quadrant of the Zimmerman Avenue and Park Street intersection (Block B7 in Figure 5.2), proposed a new site composition that resulted in a higher residential unit count and less commercial space than previously proposed. However, given the excess capacity at intersections near the site under future 2041 conditions (as presented in the subsequent sections), the anticipated change in traffic will not result in significant change to the findings. In addition, it is also recognized that these site statistics are still preliminary and subject to change.

Table 5.2: Potential Developments Summary

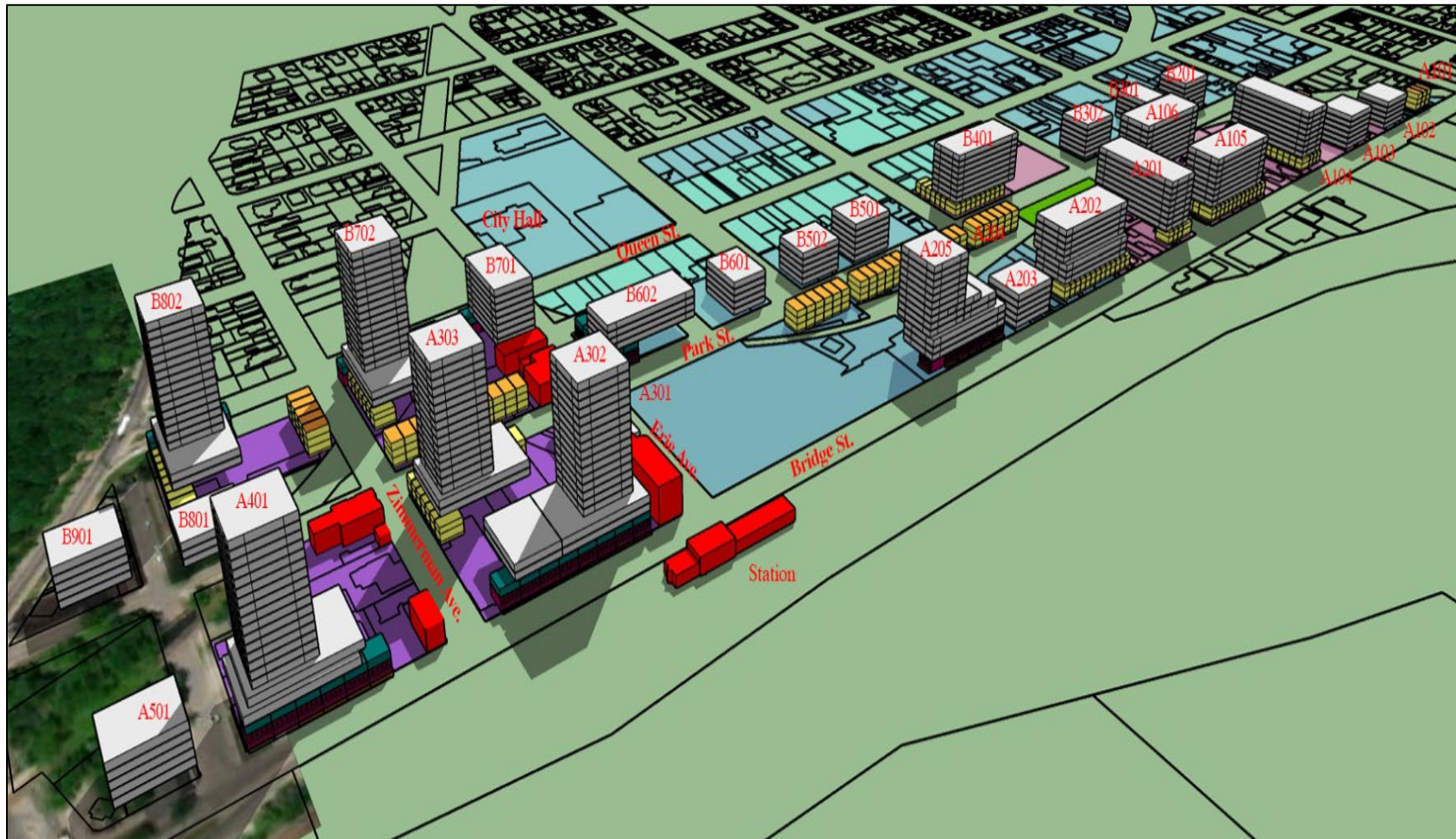
Block	Townhouse (Units)	Mid-Rise Apartment Building (Units)	High-Rise Apartment Building (Units)	Commercial Area (m ²)	Office Area (m ²)
A	165	836	644	2,800	2,128
B	74	750	160	2,352	2,352
Total	239	1,586	804	5,152	4,480

Trip generation for the Secondary Plan developments was based on data contained in the *Trip Generation Manual, 10th Edition*, published by the Institute of Transportation Engineers (ITE). The trips generated from the Secondary Plan development were adjusted to account for the 5% non-auto trips in the ITE trip data. The non-auto mode split of 15% was derived partly based on the projected 10% total non-auto use by 2031 as per the *Niagara Falls Sustainable Transportation Master Plan* (AECOM, 2011).

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Trip distribution was estimated based on Transportation Tomorrow Survey (TTS) data. For the assignment of trips from development to the road network, it was assumed that trips travelling to / from Blocks 'A' and Blocks 'B' will take Bridge Street and Park Street, respectively, to enter / exit the site. Since site driveways for Secondary Plan developments were unknown, it is assumed that the majority (80%) of trips will access sites from Bridge Street or Park Street and the remaining trips will access sites via local north-south roads.

Figure 5.2: Potential Secondary Plan Developments



Future traffic volumes are shown in Figure 5.3. Traffic volumes on Bridge Street will grow by approximately 300 vehicles per hour per direction, however the projected volumes of approximately 400 vehicles per hour per direction can be accommodated by one through lane per direction plus auxiliary turn lanes at intersections and major accesses.

Future traffic operations were assessed using Synchro 11 (HCM 2000) based on traffic volumes shown in Figure 5.3. Future traffic operations are shown in Table 5.3. As per the City's Traffic Impact Study Guidelines, individual movements that exceed LOS E at unsignalized intersections should be identified for road or intersection improvement.

Under future conditions, during both peak hours, all movements are operating and will operate with excess capacity and a level of service C or better, with the exception of the eastbound left movement on Bridge Street at River Road (Niagara Parkway). This movement is forecasted to operate with a LOS of F with maximum (95th percentile) queues of 50 m AM and 37 m PM. It is noted, however, the analysis is a conservative approach, where vehicles were assumed to wait for gaps such that left turns could be made in one movement.

Commonly, these left-turning vehicles would take advantage of the centre median area to cross traffic, reducing delays and queues at the stop-controlled approach. Modelling of the two-stage entry on Synchro, for this movement indicates a more realistic level of service (LOS) of C (20 sec delay) and a 21-metre queue which will not obstruct vehicles at Cataract Avenue west of River Road.

5.1.3 Future Lane Warrants and Traffic Control

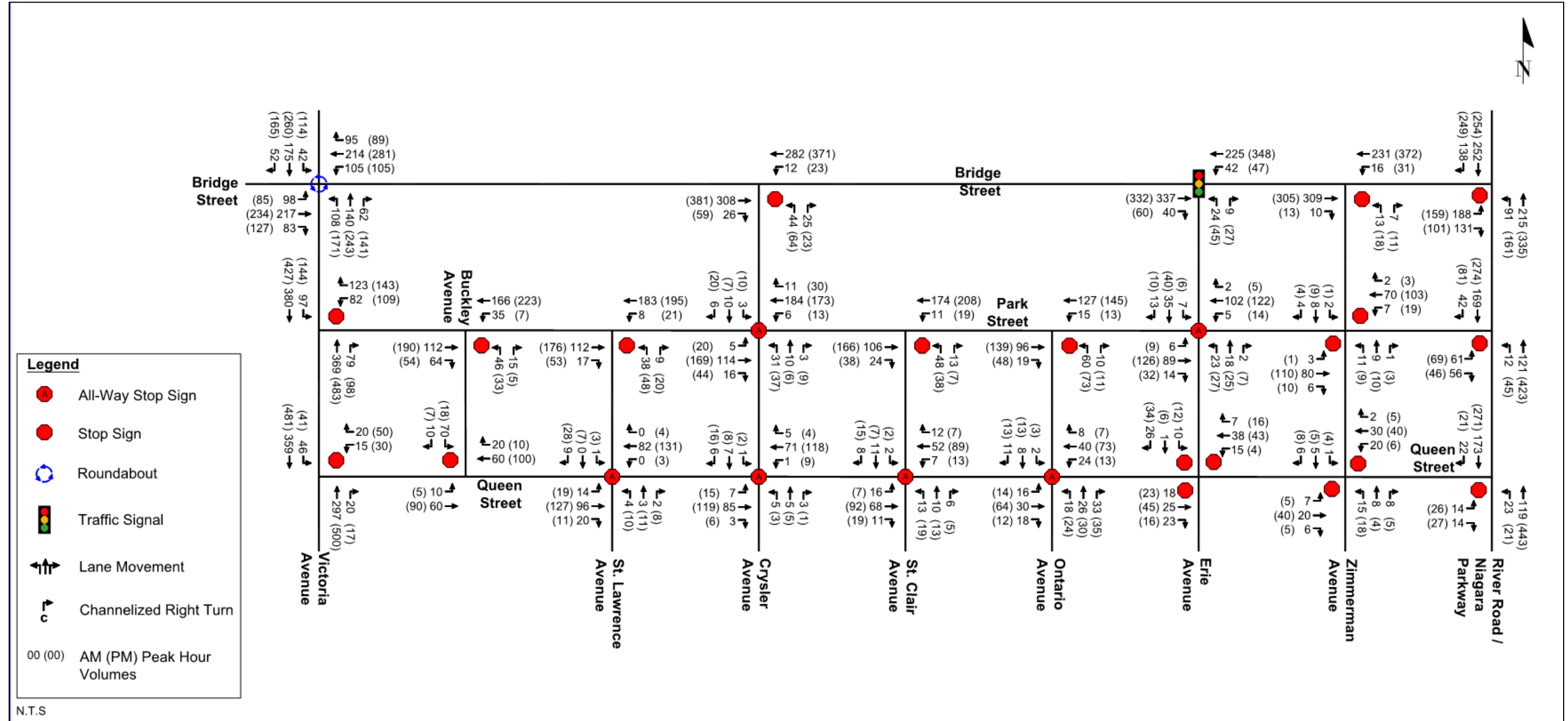
Bridge Street and River Road Intersection

Traffic signal warrant analysis indicates that traffic control signals are not warranted at the Bridge Street / River Road intersection based on 2041 projected volumes. It is recommended that future traffic and warrants be monitored at Niagara Parkway / River Road and Bridge Street through regular counts and updated forecasts from traffic impact studies for developments in the Secondary Plan Area.

Bridge Street and Erie Avenue Intersection

The Bridge Street and Erie Avenue intersection was analyzed to assess traffic level of service in the short term and in the longer term with full build out of the secondary plan area. The analysis recognized that traffic conditions immediately adjacent to the Niagara Falls VIA Rail/GO Transit Station has unique traffic control needs. Traffic, and particularly pedestrian traffic, is highly focused on GO train arrivals and departures. There is a need to accommodate pedestrian crossings of Bridge Street and a need to manage the impact of pedestrian flow on vehicular traffic, including bus traffic.

Figure 5.3: 2041 Future Traffic Volumes



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Table 5.3: 2041 Future Unsignalized Intersection Operations

Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
	v/c	LOS	Delay (s)	v/c	LOS	Delay (s)
Bridge Street and Chrysler Avenue						
EBTR	0.21	A	0	0.28	A	0
WBLT	0.01	A	0.4	0.02	A	0.8
NBLR	0.17	B	14.5	0.3	C	20.8
Bridge Street and Zimmerman Avenue						
EBTR	0.2	A	0	0.2	A	0
WBLT	0.01	A	0.6	0.03	A	0.9
NBLR	0.05	B	12.8	0.08	C	15.1
Bridge Street and River Road / Niagara Parkway						
EBL	0.81	F (C)*	54.5	0.73	F (C)*	53.4
EBR	0.24	B	11.9	0.15	B	10.9
NBL	0.11	A	8.7	0.13	A	8.3
SBL	0.1	A	0	0.15	A	0
Park Street and Ontario Avenue						
EBTR	0.07	A	0	0.12	A	0
WBLT	0.01	A	0.9	0.01	A	0.7
NBLR	0.11	B	10.9	0.15	B	12
Park Street and Erie Avenue						
EBLTR	0.14	A	7.9	0.22	A	8.5
WBLTR	0.14	A	8	0.19	A	8.5
NBLTR	0.06	A	7.9	0.09	A	8.2
SBLTR	0.07	A	7.8	0.08	A	8.1
Park Street and Zimmerman Avenue						
EBLTR	0.12	A	9.8	0.16	B	10
WBLTR	0.1	A	9.9	0.17	B	10.3
NBLTR	0.01	A	3.8	0.01	A	3.1
SBLTR	0	A	1	0.00	A	0.5
Queen Street and Erie Avenue						
EBLTR	0.10	A	7.4	0.12	A	7.7
WBLTR	0.09	A	7.5	0.09	A	7.5
SBLTR	0.06	A	7.4	0.09	A	7.7

Note: F (C) denotes level of service 'C' based on a two-staged left turn

At the Bridge Street / Erie Avenue intersection, existing traffic levels and estimated pedestrian levels (with a train arrival or departure) meet the thresholds for a pedestrian crossover. It is anticipated that when GO rail service increases, traffic and pedestrian volumes will warrant traffic signals. It has been determined that a traffic control signal would be more appropriate for implementation, particularly when the planned parking lot is completed at the southwest corner of the Bridge Street and Erie Avenue intersection.

It is noted that it is Niagara Region policy to implement left turn lanes at signalized intersections. With signal operations, Niagara Region policy would be to include an exclusive left turn lane for westbound traffic on Bridge Street at Erie Avenue.

Other Intersections and Major Accesses

The warrants for left turn lanes were reviewed at intersections along the corridor, based on projected traffic volumes, Niagara Region Policy and Ministry of Transportation monographs contained in the *MTO Design Supplement for Geometric Design Guide for Canadian Roads – April 2020*.

With traffic growth, left turn volumes projections along Bridge Street at Chrysler Avenue does not indicate that left turn warrants will be met; left turn volumes at the driveways at future developments is not known. It is noted that future left turn traffic volumes at Chrysler Avenue on site accesses may be sufficiently high to warrant an exclusive left turn lane depending upon the number and location of driveways for new developments in west end of the corridor.

Left turn lanes along the corridor are not warranted in the short term; the need for left turn lanes by 2041 are dependent upon access locations for new development blocks. Given the uncertainty of the configuration of future development, it would be prudent to protect for a future left turn lane.

5.2 Pedestrian and Cycling Level of Service Needs and Opportunities

Much like vehicle traffic level of service (LOS), there are measures for assessing active transportation LOS. The existing level of service for pedestrians was assessed using the point system developed by L. Dixon (TRB Transportation Research Record 1538), which is based on the following criteria: facilities provided, points of conflict with vehicle traffic, traffic speed, motor vehicle level of service and facility maintenance.

The existing LOS for cyclists was assessed using the Bicycle Compatibility Index (BCI) method from the Federal Highway Administration, which is based on the following criteria: presence of bicycle lanes or paved shoulders, bicycle lane or paved shoulder width, curb lane width, vehicle traffic volumes, 85th percentile speed of traffic, presence

of a parking lane with more than 30% occupancy, type of roadside development and truck volumes.

The results are summarized in Table 5.4.

Table 5.4: Pedestrian and Cyclist LOSC

Road	Pedestrian LOS	Cyclist LOS*
Bridge Street	C	E
Park Street	B	D
Queen Street	A	D
Zimmerman Avenue	B	D
Ontario Avenue	B	D
St. Clair Avenue	B	D
Crysler Avenue	B	D
St. Lawrence Avenue	B	D
Buckley Avenue	B	D

Due to the lack of bicycle facilities that are separated from vehicle traffic (e.g., bike lanes, multi-use path or cycle-track) in the Study Area, the cyclist LOS determined by BCI is moderately low (LOS of D) for most streets and is very low (LOS of E) for Bridge Street.

Bridge Street also has lower than average pedestrian LOS compared to other streets due to sidewalks that are narrow, discontinuous and immediately adjacent to traffic lanes.

Previous planning studies, by Niagara Region, City of Niagara Falls, and Metrolinx, have identified opportunities for new pedestrian and cycling connections (see Transit Needs and Opportunities

The Niagara Falls Transit terminal on the south side of Bridge Street has vehicular access via both Bridge Street and Park Street. Boarding and alighting of passengers occur within designated bus bays on the terminal property, as well as via designated curbside stops on both sides of Erie Avenue and on the north side of Bridge Street.

The City of Niagara Falls is anticipated to decommission the Niagara Falls Transit terminal (Erie Ave) as part of the redevelopment of the Niagara Falls VIA Rail / GO Transit station precinct. The current City-owned Erie Avenue transit terminal site will be transitioned to a municipal parking lot, with transit station supportive elements such as passenger pick-up / drop-off (PPUDO), taxi stands, and public realm improvements.

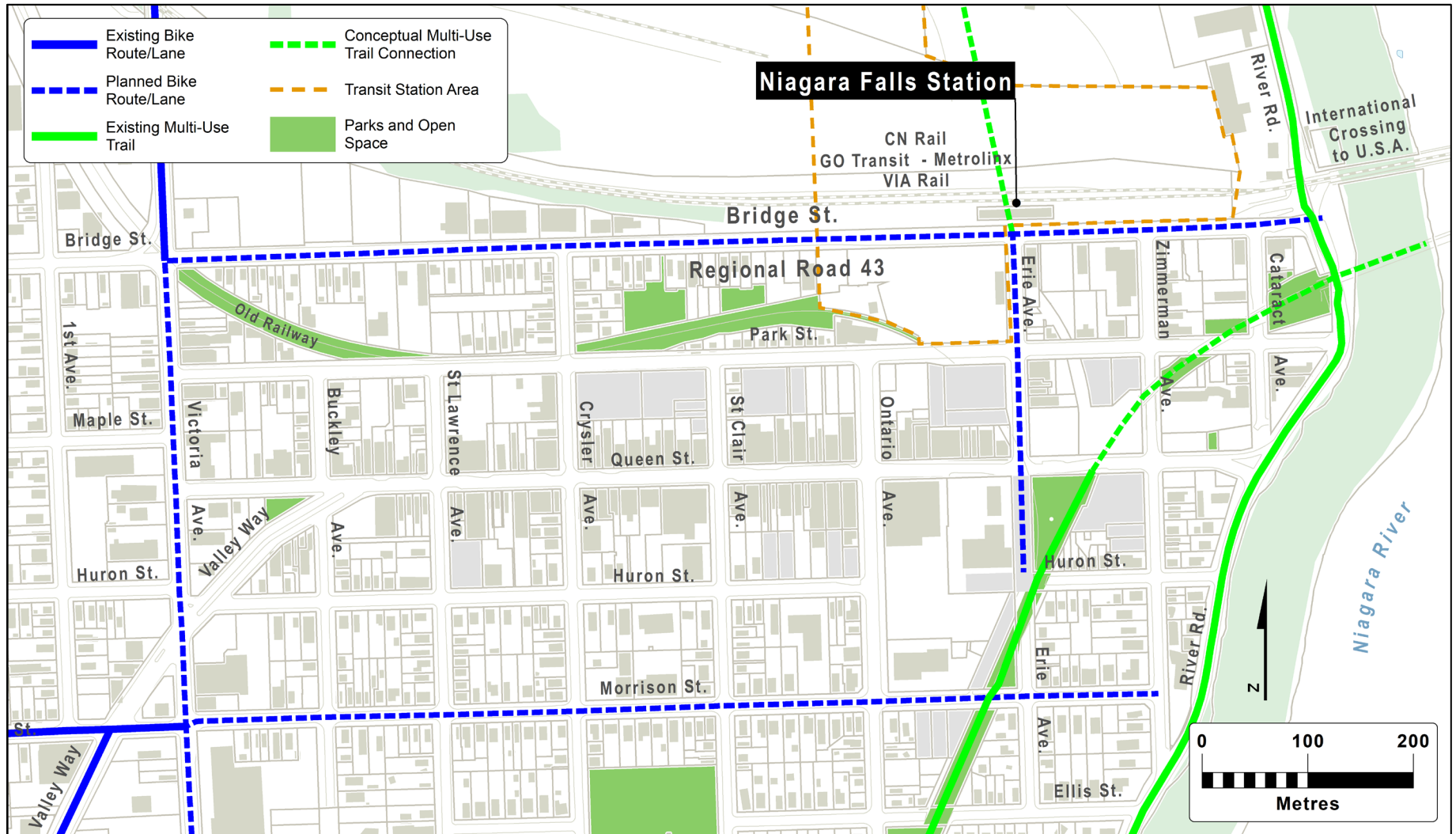
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All bus operations currently supported either at the Terminal or on-road will be relocated to two new bus loops on Region-owned land on the north side of Bridge Street - one east of the station and one to the west. Relocation of transit operations to these off-street bus loops will provide dedicated facilities for bus operations, reducing conflicts with pedestrians, cyclists, and vehicles.

How the design of the new bus loops was considered and interfaces with recommended design of Bridge Street developed through this MCEA is discussed in greater detail in Section 7.1.1.

The current Niagara Falls Transit Terminal will remain in operation until such time as the new bus loops north of Bridge Street, adjacent to the station building, are operational. These loops are anticipated to be constructed in parallel with the reconstruction of Bridge Street supported by this MCEA.

Figure 5.4: Planned Active Transportation Routes



Future bus demand has been estimated through forecasts from the Niagara Region Transportation Master Plan and information provided by City of Niagara Falls and other transit providers. Table 5.5 summarizes future transit demand.

Table 5.5: Future 2041 Transit Demand

Transit Service Provider	Future 2031 Annual Ridership	Future 2041 Annual Ridership	Average Daily 2041 Ridership	Number of Weekday Routes	Average Daily 2041 Ridership per Route
GO Bus	130,952	194,480	748	1	748
City Transit	29,582	44,200	170	3	57
WEGO	101,475	150,800	580	1	380
Total	262,009	389,480			

Based on transit forecasts and discussions with the Region and transit providers, it is anticipated that bus bay requirements will include: one active bay for and one layover for GO Transit, four bays for Niagara Falls Local Transit, three bays for WEGO and likely one bay for private operators.

5.3 Traffic Safety Needs

A collision review was conducted for the Study Area for collisions that occurred from January 2015 to December 2019. A total of 27 collisions were recorded within the Study Area. One collision resulted in a non-fatal injury while the other 26 collisions resulted in property damage.

The collisions do not indicate any obvious patterns related to location as collisions were not concentrated at a particular intersection or road segment. Also, no collisions involving pedestrians or cyclists were found in the record. Bridge Street currently has low traffic volumes with low levels of vehicle-vehicle, vehicle-cyclist and vehicle-pedestrian interaction; hence it has a low potential for collisions.

Notwithstanding the low level of collision exposure and collision trends, there are elements of traffic operations and roadway configuration that could contribute to the level of safety through the western portion of the corridor, including the straight, flat profile with no stops and wide undefined lanes that may contribute to higher speeds. There may be opportunities to provide greater positive guidance to drivers and other road users by better defining the roadway space.

As traffic grows and GO station operations expand, safety issues may arise from the lack of controlled crossing of Bridge Street for pedestrians or cyclists and the presence

of on-street GO bus loading of passengers which may contribute to midblock pedestrian crossing activity. Design solutions will be needed to mitigate these future safety risks.

5.4 Parking Operations

For existing land uses, most properties have on-site parking accommodation. There may be some need for short-term on-street parking for visitors based on site observations. In addition to the south side of Bridge Street in the western portion of the Study Area, short duration parking is provided on the north side of Park Street, on Zimmerman Avenue and Erie Avenue south of Park Street. The Niagara Region and City of Niagara Falls are planning a parking facility at the southwest corner of Bridge Street and Erie Avenue. It is also noted that the City of Niagara Falls will be conducting a parking study to assess parking needs and solutions in the downtown. Therefore, there is sufficient parking capacity in the study area to meet both current and future projected parking demand.

5.5 Streetscape Policy and Objectives

Both the Niagara Region and the City of Niagara Falls embrace the philosophy of “complete streets” in determining design typologies for street design. Complete street designs support and enhance the local neighbourhood context and character, providing streets that meet travel needs, providing access to businesses and homes to maintain prosperity and fulfilling their placemaking role as public spaces. The goals of complete streets in these overlapping needs are summarized in the following:

- Streets for People’s Travel Needs – providing safe, accessible, multi-modal choices; connectivity in a seamless network;
- Streets for Access and Prosperity – providing access to jobs, retail, goods / services; ensuring that the travel options are inclusive of all incomes, races, ages, genders and abilities; and
- Streets for Placemaking – creating public spaces that reflect the existing and planned function, scale and character of a neighbourhood.

Street designs should provide sufficient flexibility to change with time, to respond the growth, preferences, or technologies. Understanding the roles and relationships of a street with its surrounding context is a critical step in the complete streets’ design approach. Street types and key objectives for each type have been identified that may be used to support the design decisions. It is recognized that the street ROW must accommodate different and competing roles including accommodation of motor vehicle travel, pedestrians, cyclists, transit, on-street parking, streetscaping, municipal infrastructure and in some cases a marketing zone.

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The Niagara Falls Urban Design Guidelines (2007) provides some planning context for the Study Area. The vision for the downtown districts in the Urban Design Guideline was intended to encourage revitalization of these areas, protection of heritage buildings and views, and provision of a high degree of walkability, through permeability in the pedestrian routes.

These complete streets principles will need to be incorporated into alternative solutions and designs.

6.0 Project Problem and Opportunities

6.1 Summary of Needs and Opportunities

A collision analysis within the Study Area did not indicate any obvious patterns related to location, as collisions were not concentrated at a particular intersection or road segment. There are no obvious causal relationships between collisions and traffic conditions or road geometry.

Under future traffic conditions, during both peak hours, all movements are operating and will operate with excess capacity and a level of service C or better. It is noted that the eastbound left movement at Niagara Parkway / River Road and Bridge Street will operate at LOS C with a two-stage entry analysis (a conservative single movement analysis indicates a LOS of F). It is recommended that future traffic be monitored at Niagara Parkway / River Road and Bridge Street through traffic impact studies for developments in the Secondary Plan Area to determine if traffic signals are warranted in the longer term.

The existing two through traffic lanes on Bridge Street (one lane per direction) is sufficient to accommodate future travel demands including the development traffic associated with the GO Station Secondary Plan. Future traffic volumes will meet the warrants for a left-turn lane on Bridge Street westbound at Erie Avenue by 2041. Depending on the location of accesses on Bridge Street, there may be future warrants for additional left-turn lane locations. It is recommended that traffic signals be installed at the Bridge Street and Erie Avenue intersection given the existing traffic and estimated pedestrian levels, as well as anticipated increases to pedestrian volumes with GO rail service increases. Niagara Region traffic operating policies for the signalization at the Bridge Street / Erie Avenue intersection would require a left turn lane.

There are discontinuities in the existing sidewalk network, particularly on the north side of Bridge Street. Existing sidewalks west of Erie Avenue have substandard width; furthermore, there are streetlight and utilities that obstruct the sidewalk east and immediately west of Erie Avenue. There are currently no controlled pedestrian crossing locations for Bridge Street. Bridge Street has lower than average pedestrian LOS compared to other streets due to its narrow and non-continuous sidewalks.

Cyclist LOS determined by BCI is moderately low (LOS of D) for most streets and is very low (LOS of E) for Bridge Street. There are opportunities to improve cycling accommodation on Bridge Street, consistent with recent planning documents. There is also an opportunity to connect the Olympic Torch Trail to the future Niagara Falls VIA Rail/GO Transit Station.

Existing bus stops are well-situated. It is recommended that pedestrian volumes be monitored at Bridge Street / Erie Avenue with the implementation of new transit improvements. Alternatives for the Niagara Falls VIA Rail / GO Transit Station and proposed bus terminal on the north side of Bridge Street could be investigated further to identify alternatives that limit transit operations on Bridge Street for safer and more efficient operations.

The alternative solutions will address the following needs and opportunities:

- Continuity of pedestrian network on both sides of streets within the Study Area, meeting AODA requirements;
- Dedicated cycling connections along Bridge Street and a connection between the Olympic Torch Trail to Bridge Street and the Niagara Falls VIA Rail / GO Transit Station;
- Features in support of transit operations including bus operational bays and pedestrian boarding areas, passenger pick-up and drop-off and short-term parking in the vicinity of the Niagara Falls VIA Rail / GO Transit Station;
- Traffic control signal at the Bridge Street / Erie Avenue intersection;
- Protection for dedicated left turn lanes on Bridge Street; and
- Opportunities for wider boulevard space in support of streetscape and gateway features and in support of ground level commercial development.

6.2 Problem and Opportunity Statement

Based on the review of relevant policies, a review of existing conditions, as well as findings of the transportation assessment for existing and future transportation needs, this Class Environmental Assessment addressed the following Problem / Opportunity Statement:

Problems:

- Improvements are required to the transportation infrastructure to support anticipated increased service levels at the Niagara Falls GO Transit Station, as previously approved in the *2011 Niagara Rail Service Expansions – Environmental Review Study*.
- A Schedule C Municipal Class Environmental Assessment (MCEA) is being undertaken to identify alternate solutions and designs to support detailed design and construction of suitable infrastructure.

Opportunities:

- The improvement to the transportation infrastructure in the area of the Niagara Falls VIA Rail/GO Transit Station provides the opportunity to:
 - Facilitate access to the Niagara Falls VIA Rail / GO Transit Station for all travel modes (i.e., cars, buses, cycling, pedestrian), including improvement of the connectivity and integration with the City’s downtown core and with existing and planned transportation networks / facilities;
 - Implement the goals and policies of the Region’s Transportation Master Plan, the City’s Downtown Node and Transit Station Secondary Plan, and the City’s Niagara Falls GO Station Precinct Plan, improving the safety and connectivity of all travel modes;
 - Incorporate complete streets design guidelines and current urban design guidelines into public realm improvements along or adjacent to Bridge Street, Erie Avenue, Park Street and Zimmerman Avenue;
 - Establish a municipally owned and operated parking facility at the southwest corner of Bridge Street and Erie Street; and
 - Niagara Region and the City of Niagara Falls are working collaboratively to plan, design and construct the enabling infrastructure.

The design of this project will also strive to implement the design vision of the Niagara Falls GO Station Secondary plan with respect to an enhanced public realm. The streetscape and placemaking elements will contribute to the station area as a gateway into both the City and the Region. The emphasis on streetscaping will ensure that the implementation of the council endorsed secondary plan is realized.

7.0 Alternative Solutions

7.1 Context for Developing Alternative Solutions

7.1.1 Niagara Falls VIA Rail/GO Transit Station and Bus Operations Impacts on Alternatives

The design of transit facilities supporting the Niagara Falls VIA Rail / GO transit station is not formally part of the Bridge Street MCEA. However, early in the development of the MCEA it was identified that understanding the optimal location of transit bus operations within the overall precinct zone would have a direct impact on the MCEA. Specifically, the configuration of vehicular lanes and active transportation facilities would be directly impacted by on-street bus bays should they be required.

Therefore, in support of the MCEA, Burnside developed conceptual designs for transit facilities in concert with the MCEA. These concepts utilized Region-owned land on the north side of Bridge Street, both to the east and west side of the existing station building.

These concepts were developed to:

- Confirm that the required bus operations could be accommodated within the available land on these two parcels, and that the need for on-road stops or laybys on Bridge Street would be significantly reduced; and
- Demonstrate how the bus loops would interface with the recommended alternatives for Bridge Street through the MCEA, considering factors such as facilitating transit vehicle movements and access, providing continuous active transportation facilities on Bridge Street, and reducing potential points of conflict.

The concept plans developed accommodate buses in off-street bus bays adjacent to the GO Station, with one on-street space. The bus bays include:

West Loop:

- One Private (Intercity) Bus Bay
- Two GO Transit Bus Bays
- Four City of Niagara Falls Bus Bays (Two 40' Bays, Two 60' Bays)

East Loop:

- Two WEGO off-road bus bays
- One WEGO on-road bus bay/layby

These conceptual designs are shown in Appendix G.

Consideration was given to the bus drive aisle and loading zone requirements for GO Transit buses based upon Metrolinx Bulletin FEA-002 “Amendment Notice: Bus Infrastructure”, August 12, 2020, modifications to the DRM. The requirements include consideration of minimum space for bus passing in the bus loop and minimum horizontal bus loading / clearance platform space.

These bus loops are anticipated to be constructed in parallel with the reconstruction of Bridge Street supported by this MCEA. The conceptual designs included in this ESR should be considered as preliminary and will be subject to further refinement as design progresses.

The design considerations and development of the off-street bus loops were developed and summarized as provided in Appendix G.

7.1.2 Solution Time Horizons

The Bridge Street corridor and surrounding area will be changing with redevelopment. The Downtown Niagara Falls Transit Station Secondary plan will allow for the redevelopment of the area from single family residential uses to high density mixed use.

This change poses a challenge for developing transportation solutions and designs that can be implemented without significant disruption and additional cost as the corridor changes. As a result, solutions have been considered that can meet needs in the interim time horizon and ultimate time horizon.

The ‘Interim’ time horizon, which extends from the date of construction to the time when significant development and / or property acquisition occurs, which could be 10 or 20 years maybe longer. In the interim time horizon:

- Most residences and businesses will remain;
- Limited or no property will be acquired; and
- Traffic levels will remain low, but Niagara Falls VIA Rail / GO Transit Station activity is expected to grow.

The ‘Ultimate’ time horizon will be implemented when there is sufficient redevelopment and / or additional property to expand the features within the corridor. In the Ultimate time horizon will generate additional traffic, that is anticipated to require the centre left-turn lane on Bridge Street throughout Study Area.

The development of solutions and designs were considered for both the Interim and Ultimate time horizons, but the strategies were coordinated. It is the Interim time horizon that will be approved through this Class Environmental Assessment.

7.1.3 Corridor Sections

The Study Area along Bridge Street has varying roadway environments. The East Section and West Section of the Bridge Street corridor have different characteristics: different land uses, different redevelopment potential, different constraints, and different opportunities. The Bridge Street West Section extends from east of Victoria Avenue roundabout to the west end of the Niagara Falls VIA Rail / GO Transit Station and Bridge Street East Section (from west end of the Niagara Falls VIA Rail / GO Transit Station to River Road

The West Section has employment uses on the north side and low-density residential uses on the south side; redevelopment will provide opportunities to widen the right-of-way.

The East Section has the existing Niagara Falls VIA Rail / GO Transit Station on the north side and hotel and employment uses on the south side including heritage sites that restrict right-of-way widenings.

Given the differing characteristics, it was appropriate to consider and evaluate these sections individually in selecting preferred designs.

7.2 Bridge Street Alternative Solutions

The Western Section of the road has an urban cross section with 11 m of asphalt within a ROW of approximately 18.3 m. In the Eastern Section, the road tapers to a wider width to the west of Chrysler Avenue, resulting in a road width of about 14.2 to 14.5 m, within a ROW of about 21 m, from just west of Erie Avenue to River Road.

The following are alternative solutions for Bridge Street to address the needs and opportunities along Bridge Street:

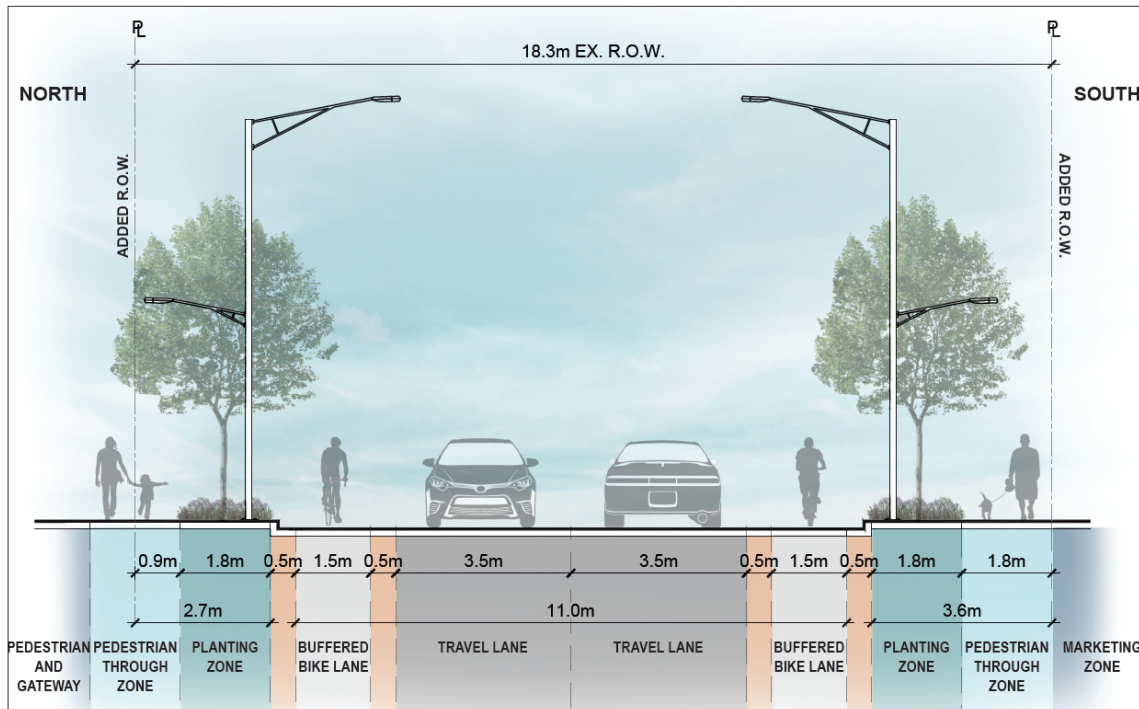
Alternative Solution	Description
Alternative 0	Do Nothing: maintain existing lane configuration without active
Alternative 1	One-way Bicycle Facility (Bike Lanes or Cycle-Track): provide a dedicated one-way bicycle facility on both sides of the roadway with sidewalk improvements and streetscape features consistent with the Region Streetscape Guidelines
Alternative 2	North-side two-way Bicycle Facility (Cycle-Track or Multiuse Path): provide north-side bicycle facility with sidewalk improvements and introduce streetscape features consistent with the Region Streetscape Guidelines
Alternative 3	South-side two-way Bicycle Facility (Cycle-Track or Multiuse Path): provide south-side bicycle facility with sidewalk improvements and introduce streetscape features consistent with the Region Streetscape Guidelines

The configuration within the cross-section depends upon the planned right-of-way and the design elements included. The Bridge Street right-of-way is planned to be increased from the existing 18.3 m (for much of the roadway) to 23.3 m.

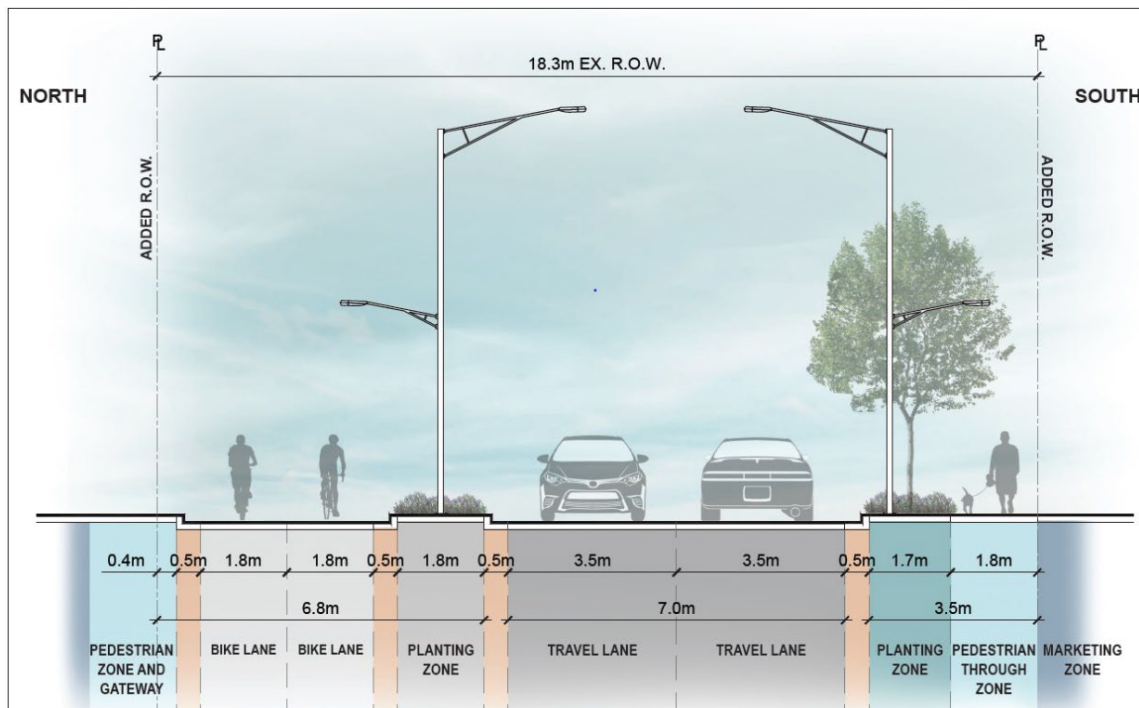
Alternative Solutions have been developed with and without a centre left turn lane. The Alternative Solutions for Bridge Street have been illustrated in Figure 7.1. Design elements such as cycling lanes, edge zones, planting and furnishing zones, pedestrian zones, and marketing zones will be subject to refinement through the design process.

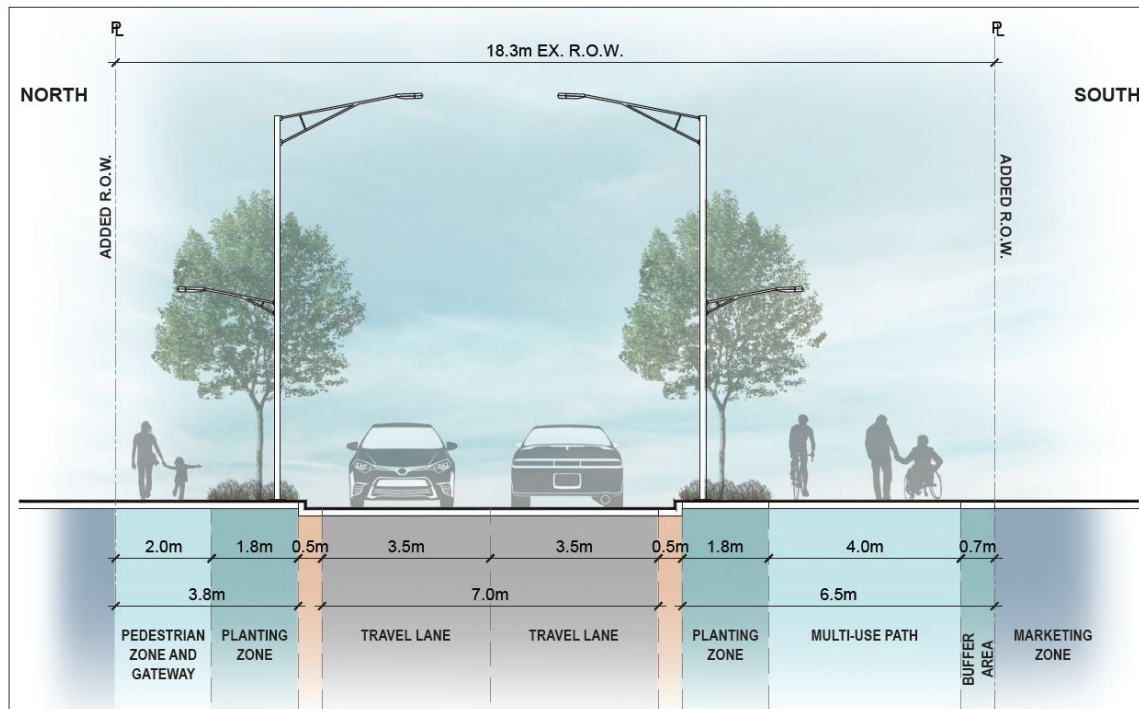
Figure 7.1: Bridge Street Alternative Solution Cross-Sections

Alternative 1: One-way Bicycle Facility (On-Road)



Alternative 2: North Side Two-way Bicycle Facility (Off-Road)



Alternative 3: South Side Two-way Bicycle Facility (Off-Road)**7.3 Municipal Streets Alternative Solutions**

The City of Niagara Falls streets of Erie Avenue, Zimmerman Avenue and Park Street (east and west of Erie Avenue) have been included as part of the Study Area as an extension of Bridge Street and the Niagara Falls VIA Rail / GO Transit Station precinct area. Elements similar to treatments for Bridge Street will be considered for Erie Avenue, Zimmerman Avenue and Park Street.

Erie Avenue is a local north/south two-lane road with concrete sidewalks on the east and west sides; it has a regulatory speed limit of 50 km/h (unposted). The section of Erie Avenue in the Study Area was reconstructed in 1988. Erie Avenue has a pavement width of 12.5 m, within a ROW of approximately 18.3 m.

Park Street is a local east/ west roadway with concrete sidewalks on the north and south sides of the road, except east of Cataract Avenue and the frontage of 2781 Park Street along the north side: regulatory speed limit of 50 km/h (unposted). The section of Park Street in the Study Area has a pavement width that ranges from 9.5 m to 10.8 m, within a ROW of approximately 18.3 m.

Zimmerman Avenue is a two-lane local north/south roadway that extends from Regional Road 43 (Bridget Street) to River Road. There are concrete sidewalks on the east and west sides of the road, except between Park Street and Queen Street on the east side.

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It has a regulatory speed limit of 50 km/h (unposted). The section of Zimmerman Avenue in the Study area has a pavement width of approximately 10.4 m, within a ROW of approximately 17.5 m.

The three city streets can provide an extension of improvements associated with Bridge Street. The following are alternative solutions for Erie Avenue, Park Street and Zimmerman Avenue to address the needs and opportunities of the municipal streets.

The alternative solutions considered for Erie Avenue include:

Alternative Solution	Description
Alternative 0	Do Nothing: maintain existing lane configuration without active transportation improvements, but introduce streetscape improvements
Alternative 1	One-way Bicycle Facility: provide a dedicated one-way bicycle facility on both sides of the roadway with sidewalk improvements and streetscape features consistent with the Region Streetscape Guidelines
Alternative 2	West or North-side two-way Bicycle Facility: provide north-side bicycle facility with sidewalk improvements and introduce streetscape features consistent with the Region Streetscape Guidelines
Alternative 3	East or South-side two-way Bicycle Facility: provide south-side bicycle facility with sidewalk improvements and introduce streetscape features consistent with the Region Streetscape Guidelines
Alternative 4	Woonerf: changing the nature of the roadway to a Woonerf type of street accommodating all modes of travel and street elements at lower speeds

The alternative solutions considered for Park Street and Zimmerman Avenue include:

Alternative Solution	Description
Alternative 0	Do Nothing: maintain existing lane configuration without active transportation improvements, but introduce streetscape improvements
Alternative 1	One-way Bicycle Facility: provide a dedicated one-way bicycle facility on both sides of the roadway with sidewalk improvements and streetscape features
Alternative 2	West or North-side enhanced streetscape features
Alternative 3	East or South-side enhanced streetscape features
Alternative 4	Woonerf: changing the nature of the roadway to a Woonerf type of street accommodating all modes of travel and street elements at lower speeds

Figure 7.2 illustrates an example of a Woonerf street design.

Figure 7.2: Woonerf Concept Example



7.4 Evaluation of Alternatives

7.4.1 Evaluation Context

Niagara Region and the City of Niagara Falls have developed policy documents that identify and articulate the planning direction for the Niagara Falls VIA Rail / GO Transit Station and surrounding area as described in sections 2.3 and 2.4. The assessment of alternative transportation solutions has regard for policies from the Downtown Niagara Falls GO Transit Station Secondary Plan, Niagara Region Official Plan and City of Niagara Falls Official Plan.

7.4.2 Evaluation Criteria

Evaluation criteria and sub-criteria have been developed for the alternative solutions based on typical requirements of the Municipal Class EA process. Indicators are measure of these criteria that reflect insights on qualitative measures or available quantitative data.

Each alternative has been assessed for its ability to address transportation needs and achieve transportation opportunities for all modes of travel. The relative merits and priorities of the alternative modes of travel were considered incorporating input from Region and City staff and any preliminary input from the public. Accommodation of active transportation and transit are high priorities for Bridge Street.

There are limited natural environment features within the Study Area, however the implications for natural heritage were considered. Cultural heritage resources were also considered.

Socio-economic measures involve impacts to existing land uses, including property requirements and impacts to parking for residential and businesses. The ability to accommodate planning objectives of the secondary plan and future development were also considered; this includes potential future development accesses and turning vehicles.

Cost measures are impacted by the of property acquisition, given the changing nature of the corridor. It is desirable to minimize impacts and costs by coordinating the acquisition of additional right of way for the planned improvements at nominal cost through the development process. Costs and impacts could be reduced if the improvements would be staged with development. Ideally design elements, such as curb placement and streetscape elements will not change.

The criteria and indicators were informed by public input and are listed in Table 7.1

Table 7.1: Evaluation Criteria and Indicators**Table 7.1a: Criteria for Transportation Services**

Sub-Criteria	Criteria Indicator(s)
Road Capacity and Traffic Safety	Traffic capacity and turning movement storage Impacts to vehicular to traffic delay Impacts to vehicle conflicts and safety
Transit Operation Needs	Minimize transit delay Accommodate transit turning movements Accommodate safe passenger boarding Accommodate safe passenger pick-up / drop-off
Active Transportation Accommodation	Accommodate commuter and tourist cycling Directness and continuity of pedestrian routes Cyclist safety and conflict points with vehicles Pedestrian conflict with vehicles

Table 7.1b: Criteria for Natural Environment

Sub-Criteria	Criteria Indicator(s)
Impact designated natural areas	Impacts to Areas of Natural or Scientific Interest or Provincially or Locally Significant Wetlands Impacts to hazard lands or Special Policy Areas
Impact terrestrial environment	Potential impacts to existing vegetation Impacts to wildlife, wildlife habitats Potential impact to terrestrial Species at Risk
Impact source water or aquatic environment	Impacts to existing watercourses Impacts to aquatic habitats and Species at Risk Impacts to ground water

Table 7.1c: Criteria for Socio-Economic and Cultural Environment

Sub-Criteria	Criteria Indicator(s)
Land or other property impact	Land requirements from existing properties Impacts to access, parking, plantings, buildings
Support Development Objectives	Accommodates planned development Supports place making, gateways, complete streets
Impact cultural heritage resources	Impacts areas with high archaeological potential Impacts to built heritage resources and cultural heritage landscapes

Table 7.1d: Criteria for Financial

Sub-Criteria	Criteria Indicator(s)
Capital cost	Road rehabilitation costs New construction of road and boulevard elements
Property and utility cost	Number and area of properties proactively acquired Utility relocation costs
Operating and maintenance cost / revenue	Traffic control operations Staff and maintenance requirements of new features Parking revenue

7.4.3 Evaluation of Alternative Solutions

An evaluation of the Alternative Solutions was undertaken based on the evaluation criteria and associated measures that addressed: public concerns, corporate sustainability objectives and typical measures associated with the environmental assessment process. The evaluation was undertaken in consideration of the preliminary input from the public at PIC #1 and stakeholder comment input.

Bridge Street Evaluation

The overall Preferred Alternative Solution takes advantage of the most effective short-term and most effective long-term alternatives.

Alternative 1 (one-way bicycle facility) provides the best option based on the evaluation for both East Section and West Section of Bridge Street. A summary of the evaluation is illustrated in Table 7.2. In the Ultimate time horizon, the preferred solution includes the addition of a centre left-turn lane.

In the Interim time-horizon the preferred solution can be implemented with minimal additional costs within the existing right of way.

The evaluation of solutions for Bridge Street considered the implications of accommodating a turn lane through the corridor in the Ultimate time horizon. A left turn lane would facilitate turns into future developments and reduce potential the risk of transit delay; left turn lanes, would however limit opportunities for streetscape features or would require additional property in the Interim horizon.

Erie Avenue Evaluation

The preferred solution for Erie Avenue is Alternative 2, a two-way cycling facility on the west side of the roadway. The evaluation of the preferred solution for Erie Avenue reflects the constraints in the corridor and opportunities beyond the study area. The benefits of this alternative are the opportunity to utilize the City of Niagara Falls property on the west side of Erie Avenue from Park Street to Bridge Street and the opportunity to connect to a two-way multiuse pathway on Erie Avenue south of Queen Street. A summary of the evaluation is illustrated in Table 7.3.

Zimmerman and Park Street Evaluation

The evaluation of the preferred solution for Zimmerman Avenue and Park Street was undertaken in recognition of the lack of designated or identified cycling facilities and existing and proposed land uses. Alternative 0 which includes streetscape improvements only was identified as the preferred solution for both roadways. A summary of the evaluation is illustrated in Table 7.4.

The detailed evaluation uses the following five category-ranking to represent the extent of the impact of the alternative when evaluated against the evaluation criteria. The analysis assesses future conditions and transportation needs. These symbols, summarized in the legend below, are used to visually represent the qualitative analysis and is not meant as a quantitative assessment tool.

Legend

Significant Negative Impact (Least Desirable):	
Negative Impact:	
Nominal Impact:	
Positive Impact:	
Significant Positive Impact (Most Desirable):	

Table 7.1: Evaluation of Alternative Solutions for Bridge Street

Evaluation Criteria	Alternative 0 "Do Nothing"	Alternative 1 One-way Bicycle Facility	Alternative 2 Two-way North-Side Bicycle Facility	Alternative 3 Two-way South-Side Bicycle Facility
Transportation:	◐	●	◐	◐
Road Capacity and Traffic Safety	<ul style="list-style-type: none"> Provides sufficient capacity 	<ul style="list-style-type: none"> Provides sufficient capacity Can accommodate left turn lane in longer term 	<ul style="list-style-type: none"> Provides sufficient capacity Requires reconstruction for left turn lane long term 	<ul style="list-style-type: none"> Provides sufficient capacity Requires reconstruction for left turn lane long term
Transit Operation Needs	<ul style="list-style-type: none"> Bus loading on-street 	<ul style="list-style-type: none"> Moderate interaction and potential for conflicts of cycling with GO station operations 	<ul style="list-style-type: none"> High interaction and potential for conflicts of cycling with GO station operations 	<ul style="list-style-type: none"> Low interaction of cycling with GO station operations
Active Transportation Accommodation	<ul style="list-style-type: none"> High cyclist-vehicle interaction Poor pedestrian accommodation 	<ul style="list-style-type: none"> Moderate cyclist-vehicle interaction Low cyclist-pedestrian interaction High accommodation of commuter cyclists 	<ul style="list-style-type: none"> Low cyclist-vehicle interaction Low to moderate cyclist-pedestrian interaction High accommodation of commuter cyclists 	<ul style="list-style-type: none"> Low cyclist-vehicle interaction Moderate cyclist-pedestrian interaction Moderate accommodation of commuter cyclists
Natural Environment:	◐	◐	◐	◐
Designated natural area impacts	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Minor loss of vegetation and trees; opportunities for mitigation 	<ul style="list-style-type: none"> Minor loss of vegetation and trees; opportunities for mitigation 	<ul style="list-style-type: none"> Minor loss of vegetation and trees; opportunities for mitigation
Terrestrial environment impact	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Minor wildlife disturbance due to noise and dust during construction 	<ul style="list-style-type: none"> Minor wildlife disturbance due to noise and dust during construction 	<ul style="list-style-type: none"> Minor wildlife disturbance due to noise and dust during construction
Source water or aquatic Impacts	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> No water crossings or habitat Close to a Highly Vulnerable Aquifer, but minimal potential impact to groundwater quality 	<ul style="list-style-type: none"> No water crossings or habitat Close to a Highly Vulnerable Aquifer, but minimal potential impact to groundwater quality 	<ul style="list-style-type: none"> No water crossings or habitat Close to a Highly Vulnerable Aquifer, but minimal potential impact to groundwater quality
Socio-Economic and Cultural Environment:	◐	◐	◐	◐
Land or other property impact	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Minimal property impacts Limited impacts to access and on-site parking 	<ul style="list-style-type: none"> Minimal property impacts Impacts to access and on-site parking to commercial properties and GO station operations 	<ul style="list-style-type: none"> Minimal property impacts Impacts to access and on-site parking to residential properties
Support Development Objectives	<ul style="list-style-type: none"> Does not support planning vision 	<ul style="list-style-type: none"> Accommodates development Supports place making, complete streets 	<ul style="list-style-type: none"> Accommodates development Supports place making, complete streets 	<ul style="list-style-type: none"> Accommodates development Supports place making, complete streets
Impact heritage / archaeological features	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Construction methods to mitigate impacts to heritage properties Archaeological potential, but no impacts expected 	<ul style="list-style-type: none"> Construction methods to mitigate impacts to heritage properties Archaeological potential in area, but no impacts expected 	<ul style="list-style-type: none"> Construction methods to mitigate impacts to heritage properties Archaeological potential in area, but no impacts expected

Evaluation Criteria	Alternative 0 "Do Nothing"	Alternative 1 One-way Bicycle Facility	Alternative 2 Two-way North-Side Bicycle Facility	Alternative 3 Two-way South-Side Bicycle Facility
Financial:	◐	◐	◐	◐
	<ul style="list-style-type: none"> Rehabilitation costs 	<ul style="list-style-type: none"> Moderate capital cost relative to rehabilitation 	<ul style="list-style-type: none"> higher capital cost relative to rehabilitation Future costs to accommodate left turn lane 	<ul style="list-style-type: none"> higher capital cost relative to rehabilitation Future costs to accommodate left turn lane
Overall	◐	◑ Recommended	◐	◐

Table 7.2: Evaluation of Alternative Solutions for Erie Avenue

Evaluation Criteria	Alternative 0 "Do Nothing"	Alternative 1 One-way Bicycle Facility	Alternative 2 Two-way Bicycle Facility West Side	Alternative 3 Two-way Bicycle Facility East Side	Alternative 4 Woonerf (Shared Space)
Transportation	◐	◐	◑	◑	◐
Road Capacity and Traffic Safety	<ul style="list-style-type: none"> Provides sufficient capacity 	<ul style="list-style-type: none"> Provides sufficient capacity Provides turning capacity 	<ul style="list-style-type: none"> Provides sufficient capacity Provides turning capacity 	<ul style="list-style-type: none"> Provides sufficient capacity May provide turning capacity 	<ul style="list-style-type: none"> Provides sufficient capacity May provide turning capacity
Transit Operation Needs	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> No impact to transit delay 	<ul style="list-style-type: none"> Minor impact to transit delay 	<ul style="list-style-type: none"> Minor impact to transit delay 	<ul style="list-style-type: none"> High impact to transit delay
Active Transportation Accommodation	<ul style="list-style-type: none"> High cyclist-vehicle interaction 	<ul style="list-style-type: none"> Low cyclist-vehicle interaction Commuter cyclists Low cyclist-pedestrian interaction 	<ul style="list-style-type: none"> Very low cyclist-vehicle interaction Recreational cyclists; link to OT Trail Moderate cyclist-pedestrian interaction 	<ul style="list-style-type: none"> Very low cyclist-vehicle interaction Recreational cyclists; link to OT Trail Moderate cyclist-pedestrian interaction 	<ul style="list-style-type: none"> High cyclist-vehicle interaction All cyclists; link to OT Trail High cyclist-pedestrian interaction
Natural Environment:	◐	◐	◐	◐	◐
Designated natural area impacts	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> No loss of vegetation and trees 	<ul style="list-style-type: none"> No loss of vegetation and trees 	<ul style="list-style-type: none"> No loss of vegetation and trees 	<ul style="list-style-type: none"> No loss of vegetation and trees
Terrestrial environment impact	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Minimal impact 	<ul style="list-style-type: none"> Minimal impact 	<ul style="list-style-type: none"> Minimal impact 	<ul style="list-style-type: none"> Minimal impact
Source water or aquatic Impacts	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> No water crossings or habitat Minimal impact to groundwater 	<ul style="list-style-type: none"> No water crossings or habitat Minimal impact to groundwater 	<ul style="list-style-type: none"> No water crossings or habitat Minimal impact to groundwater 	<ul style="list-style-type: none"> No water crossings or habitat Minimal impact to groundwater

Evaluation Criteria	Alternative 0 "Do Nothing"	Alternative 1 One-way Bicycle Facility	Alternative 2 Two-way Bicycle Facility West Side	Alternative 3 Two-way Bicycle Facility East Side	Alternative 4 Woonerf (Shared Space)
Socio-Economic and Cultural Environment:	◐	◑	●	◐	◑
Land or other property impact	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Minimal property impacts Temporary construction impacts 	<ul style="list-style-type: none"> Minimal property impacts Temporary construction impacts Opportunity to use City land 	<ul style="list-style-type: none"> Minimal property impacts Temporary construction impacts 	<ul style="list-style-type: none"> Minimal property impacts Temporary construction impacts
Support Development Objectives	<ul style="list-style-type: none"> Does not support planning vision 	<ul style="list-style-type: none"> Accommodates development Supports place making / gateways Supports east side market area 	<ul style="list-style-type: none"> Accommodates development Supports place making / gateways Supports east side market area 	<ul style="list-style-type: none"> Accommodates development Supports place making / gateways, complete streets 	<ul style="list-style-type: none"> Accommodates development Support for place making, gateways, complete streets
Impact heritage / archaeological features	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Construction methods to mitigate impacts to heritage properties Archaeological potential in area, but limited impacts expected 	<ul style="list-style-type: none"> Construction methods to mitigate impacts to heritage properties Archaeological potential in area, but limited impacts expected 	<ul style="list-style-type: none"> Construction methods to mitigate impacts to heritage properties Archaeological potential in area, but limited impacts expected 	<ul style="list-style-type: none"> Construction methods to mitigate impacts to heritage properties Archaeological potential in area, but limited impacts expected
Financial:	◐	◑	◐	◐	◑
Capital cost	<ul style="list-style-type: none"> Rehabilitation costs 	<ul style="list-style-type: none"> Low added cost for bike lanes 	<ul style="list-style-type: none"> Low added cost for bike facility 	<ul style="list-style-type: none"> Low added cost for bike facility 	<ul style="list-style-type: none"> High added cost for reconstruction
Property and Utility Costs	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> No property or utility costs 	<ul style="list-style-type: none"> No property; limited utility impacts 	<ul style="list-style-type: none"> No property; limited utility impacts 	<ul style="list-style-type: none"> No property; potential utility impact
Operating and maintenance cost	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Additional winter and spring maintenance of bikeway 	<ul style="list-style-type: none"> Additional winter and spring maintenance of bikeway 	<ul style="list-style-type: none"> Additional winter and spring maintenance of bikeway
Overall	◐	◑	● Recommended	◐	◑

Table 7.3: Evaluation of Alternative Solutions for Park Street and Zimmerman Avenue

Evaluation Criteria	Alternative 0 “Do Nothing”	Alternative 1 Dedicated Bicycle Facility	Alternative 2 Enhanced Boulevard West/North	Alternative 3 Enhanced Boulevard East/South	Alternative 4 Woonerf (Shared Space)
Transportation	◐	◑	◑	◑	◐
Road Capacity and Traffic Safety	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Provides sufficient capacity Provides turning capacity 	<ul style="list-style-type: none"> Provides sufficient capacity Provides turning capacity 	<ul style="list-style-type: none"> Provides sufficient capacity Provides turning capacity 	<ul style="list-style-type: none"> May provide sufficient capacity May provide turning capacity
Transit Operation Needs	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> No impact to transit delay 	<ul style="list-style-type: none"> No impact to transit delay 	<ul style="list-style-type: none"> No impact to transit delay 	<ul style="list-style-type: none"> Potential transit delay
Active Transportation Accommodation	<ul style="list-style-type: none"> Moderate cyclist-vehicle interaction 	<ul style="list-style-type: none"> Very low cyclist-vehicle interaction Low cyclist-pedestrian interaction 	<ul style="list-style-type: none"> Low cyclist-vehicle interaction Moderate cyclist-pedestrian interaction 	<ul style="list-style-type: none"> Low cyclist-vehicle interaction Moderate cyclist-pedestrian interaction 	<ul style="list-style-type: none"> High cyclist-vehicle interaction High cyclist-pedestrian interaction
Natural Environment:	◐	◐	◐	◐	◐
Designated Natural Area Impacts	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> No loss of vegetation and trees 	<ul style="list-style-type: none"> No loss of vegetation and trees Additional planting opportunities 	<ul style="list-style-type: none"> No loss of vegetation and trees Additional planting opportunities 	<ul style="list-style-type: none"> No loss of vegetation and trees
Terrestrial Environment Impact	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Minimal impact 	<ul style="list-style-type: none"> Minimal impact 	<ul style="list-style-type: none"> Minimal impact 	<ul style="list-style-type: none"> Minimal impact
Source Water or Aquatic Impacts	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> No water crossings or habitat Minimal groundwater impact 	<ul style="list-style-type: none"> No water crossings or habitat Minimal groundwater impact 	<ul style="list-style-type: none"> No water crossings or habitat Minimal groundwater impact 	<ul style="list-style-type: none"> No water crossings or habitat Minimal groundwater impact
Socio-Economic and Cultural Environment:	◐	◑	●	◑	◑
Land or other Property Impact	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Minimal property impacts Construction impacts Impact to on-street parking 	<ul style="list-style-type: none"> Minimal property impacts Construction impacts Impact to on-street parking 	<ul style="list-style-type: none"> Minimal property impacts Construction impacts Impact to on-street parking 	<ul style="list-style-type: none"> Minimal property impacts Construction impacts Impact to on-street parking
Support Development Objectives	<ul style="list-style-type: none"> Does not support the planning vision 	<ul style="list-style-type: none"> Accommodates development Supports place making / gateways 	<ul style="list-style-type: none"> Accommodates development Supports place making / gateways Highly positive integration with adjacent land use 	<ul style="list-style-type: none"> Accommodates development Supports place making / gateways Positive integrations with adjacent land use 	<ul style="list-style-type: none"> Accommodates development Support for place making / gateways
Impact Heritage / Archaeological Features	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Construction to mitigate impacts to heritage properties Archaeological potential, but limited impacts expected 	<ul style="list-style-type: none"> Construction to mitigate impacts to heritage properties Archaeological potential, but limited impacts expected 	<ul style="list-style-type: none"> Construction to mitigate impacts to heritage properties Archaeological potential, but limited impacts expected 	<ul style="list-style-type: none"> Construction to mitigate impacts to heritage properties Archaeological potential, but limited impacts expected

Evaluation Criteria	Alternative 0 "Do Nothing"	Alternative 1 Dedicated Bicycle Facility	Alternative 2 Enhanced Boulevard West/North	Alternative 3 Enhanced Boulevard East/South	Alternative 4 Woonerf (Shared Space)
Financial:	◐	◐	◐	◐	◑
Capital Cost	<ul style="list-style-type: none"> Rehabilitation cost 	<ul style="list-style-type: none"> Low added cost for bike lanes 	<ul style="list-style-type: none"> Low added cost planting area 	<ul style="list-style-type: none"> Low added cost for planting area 	<ul style="list-style-type: none"> High added cost for reconstruction
Property and Utility Costs	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> No property or utility costs 	<ul style="list-style-type: none"> No property; limited utility impacts 	<ul style="list-style-type: none"> No property; limited utility impacts 	<ul style="list-style-type: none"> No property; potential utility impact
Operating and Maintenance Cost	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Additional winter and spring maintenance 	<ul style="list-style-type: none"> Additional winter and spring maintenance 	<ul style="list-style-type: none"> Additional winter / spring maintenance of bikeway
Overall	◐	◐	◑ Recommendation	◐	◑

8.0 Alternative Designs

8.1 Identification of Alternative Design Concepts

Alternative Designs were developed for preferred active transportation facility type solutions considering a range of factors, including: the identified problems and opportunities, baseline conditions in the Study Area, design issues and constraints associated with the preferred alternative solution, and public and stakeholder feedback received during the consultation process.

Alternative Designs were developed for each of the following project components: Bridge Street West Section (from east of Victoria Avenue roundabout to the west end of the Niagara Falls VIA Rail / GO Transit Station), Bridge Street East Section (from west end of the Niagara Falls VIA Rail / GO Transit Station to River Road) and Erie Avenue (north of Park Street, south of Park Street). Cycling facilities were not included in the preferred solution for Zimmerman Avenue or Park Street, hence design alternatives were not presented.

8.1.1 Alternative Bridge Street Design Concepts

Alternative cycling design treatments considered for the preferred solution on Bridge Street include buffered bike lanes and one-way cycle tracks. Design practices of these facilities are documented in publication entitled Ontario Traffic Manual Book 18 Cycling facilities. These facilities are illustrated in Figure 8.1.

Figure 8.1: Bridge Street Bicycle Facility Design Alternatives

Alternative A
Buffered Bike Lane (City of Toronto)



Source: OTM Book 18 Figure 4.21

Alternative B1
One-way Cycle Track (City of Toronto)



Source: OTM Book 18 Figure 4.30

Alternative B2
One-way Cycle Track (City of London)



Source: Fanshaw Park Road (Google Maps)

Alternative A is an on-street bicycle lane in each direction with a marked buffer separation from vehicle traffic.

Alternative B is a cycle-track is elevated from the vehicular lanes and adjacent to the sidewalk. Alternative B1 presents a rolled curb adjacent to the traffic lane and Alternative B2 presents a boulevard separation from the traffic lane. Best practices include a buffer between the cycle track a both the vehicle lanes and sidewalk.

8.1.2 Alternative Erie Avenue Design Concepts

Alternative cycling design treatments considered for the preferred solution on Erie Avenue include buffered two-way cycle tracks and multi-use path. Design practices of these facilities are documented in publication entitled Ontario Traffic Manual Book 18 Cycling facilities. These facilities are illustrated in Figure 8.2.

Figure 8.2: Ontario Traffic Manual Book 18 Cycling Facilities

Alternative C
Multiuse Trail (City of Richmond Hill)



Source: OTM Book 18 Figure 4.44

Alternative D
Two-way Cycle Track (City of Toronto)



Source: City of Toronto

Alternative C is a multiuse path accommodating cyclists and pedestrians as a shared facility

Alternative D is a cycle-track is elevated from the vehicular lanes and adjacent to the sidewalk. Best practices include a buffer between the cycle track a both the vehicle lanes and sidewalk.

8.2 Analysis and Evaluation of Alternative Design Concepts

Once developed, the design alternatives were assessed and compared against a comprehensive set of evaluation criteria. The evaluation criteria groupings used are similar to those used in the evaluation of Alternative Solutions.

As noted, the study area along Bridge Street has varying roadway environments. The development of solutions and designs were considered for both the west section (from east of Victoria Avenue roundabout to the west end of the Niagara Falls VIA Rail / GO Transit Station) and east section (from west end of the Niagara Falls VIA Rail / GO Transit Station to River Road) as illustrated in Figure 8.3.

Figure 8.3 Bridge Street West Section and East Section



Some adjustments were made to the criteria to reflect the Alternative Designs and their potential impacts. No ranking or weighting of the criteria were undertaken. In rationalizing the differences among the alternatives, the magnitude of the impact / benefit was considered as well as the availability of impact management measures to reduce the significance of negative effects.

An evaluation assessment is provided in Table 8.1, Table 8.2 and Table 8.3 and described in the following sections. The analysis assesses future conditions and transportation needs associated with the preferred solution. These symbols, summarized in the legend below, are used to visually represent the qualitative analysis and is not meant as a quantitative assessment tool.

Legend

Significant Negative Impact (Least Desirable):	○
Negative Impact:	◐
Nominal Impact:	◑
Positive Impact:	◒
Significant Positive Impact (Most Desirable):	●

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Table 8.1: Evaluation of Alternative Designs for Bridge Street – East Section

Evaluation Criteria	Alternative 0 “Do Nothing”	Alternative A Buffered Bike Lane	Alternative B One-way Cycle Track
Transportation:	○	◐	●
Road Capacity and Traffic Safety	<ul style="list-style-type: none"> Does not address preferred solution 	<ul style="list-style-type: none"> Provides sufficient capacity and left turn lane in longer term Lower level of cyclist separation. Potential for safety issues due to conflict with auto vehicles 	<ul style="list-style-type: none"> Provides sufficient capacity and left turn lane in short and longer term Higher level of cyclist separation.
Transit Operation Needs	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Lower interaction and potential for conflicts of cycling with GO and east (third) on-road bus bay and platform 	<ul style="list-style-type: none"> Higher interaction and potential for conflicts of cycling with GO and east (third) on-road bus bay and platform
Active Transportation Accommodation	<ul style="list-style-type: none"> Does not address preferred solution 	<ul style="list-style-type: none"> Moderate cyclist-vehicle interaction Low cyclist-pedestrian interaction High accommodation of commuter cyclists 	<ul style="list-style-type: none"> Low cyclist-vehicle interaction Low to moderate cyclist-pedestrian interaction High accommodation of commuter cyclists
Natural Environment:	◐	◐	◐
Designated natural area impacts	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Minor loss of vegetation and trees 	<ul style="list-style-type: none"> Minor loss of vegetation and trees
Terrestrial environment impact	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Minor wildlife disturbance due to noise and dust during construction 	<ul style="list-style-type: none"> Minor wildlife disturbance due to noise and dust during construction
Source water or aquatic Impacts	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> No water crossings or habitat Close to a Highly Vulnerable Aquifer, but minimal potential impact to groundwater quality 	<ul style="list-style-type: none"> No water crossings or habitat Close to a Highly Vulnerable Aquifer, but minimal potential impact to groundwater quality
Socio-Economic and Cultural Environment:	◐	◐	◐
Land or other property impact	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Minimal property impacts Limited impacts to access and on-site parking 	<ul style="list-style-type: none"> Minimal property impacts Limited impacts to access and on-site parking
Support Development Objectives	<ul style="list-style-type: none"> Does not support planning vision 	<ul style="list-style-type: none"> Accommodates development Supports place making, complete streets 	<ul style="list-style-type: none"> Accommodates development Supports place making, complete streets
Impact heritage / archaeological features	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Construction methods to mitigate impacts to heritage properties Archaeological potential, but no impacts expected 	<ul style="list-style-type: none"> Construction methods to mitigate impacts to heritage properties Archaeological potential in area, but no impacts expected
Financial:	◐	◐	◐
	<ul style="list-style-type: none"> Rehab. costs 	<ul style="list-style-type: none"> Moderate capital cost relative to rehabilitation Minor additional spring maintenance costs 	<ul style="list-style-type: none"> Moderate capital cost relative to rehabilitation Minor additional winter maintenance costs
Overall	◐	◐	● Recommended

Table 8.2: Evaluation of Alternative Designs for Bridge Street – West Section

Evaluation Criteria	Alternative 0 “Do Nothing”	Alternative A Buffered Bike Lane	Alternative B One-way Cycle Track
Transportation:	○	◐	●
Road Capacity and Traffic Safety	<ul style="list-style-type: none"> Does not address preferred solution 	<ul style="list-style-type: none"> Provides sufficient capacity and left turn lane in longer term Lower level of cyclist separation. Potential for safety issues due to conflict with auto vehicles 	<ul style="list-style-type: none"> Provides sufficient capacity and left turn lane in longer term Higher level of cyclist separation.
Transit Operation Needs	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Lower interaction and potential for conflicts of cycling with GO and east (third) on-road bus bay and platform 	<ul style="list-style-type: none"> Higher interaction and potential for conflicts of cycling with GO and east (third) on-road bus bay and platform
Active Transportation Accommodation	<ul style="list-style-type: none"> Does not address preferred solution 	<ul style="list-style-type: none"> Low cyclist-vehicle interaction Low cyclist-pedestrian interaction High accommodation of commuter cyclists 	<ul style="list-style-type: none"> Low cyclist-vehicle interaction Low to moderate cyclist-pedestrian interaction High accommodation of commuter cyclists
Natural Environment:	◐	◐	◐
Designated natural area impacts	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Minor loss of vegetation and trees 	<ul style="list-style-type: none"> Minor loss of vegetation and trees
Terrestrial environment impact	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Minor wildlife disturbance due to noise and dust during construction 	<ul style="list-style-type: none"> Minor wildlife disturbance due to noise and dust during construction
Source water or aquatic Impacts	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> No water crossings or habitat Close to a Highly Vulnerable Aquifer, but minimal potential impact to groundwater quality 	<ul style="list-style-type: none"> No water crossings or habitat Close to a Highly Vulnerable Aquifer, but minimal potential impact to groundwater quality
Socio-Economic And Cultural Environment:	◐	◐	○
Land or other property impact	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Minimal property impacts Limited impacts to access and on-site parking 	<ul style="list-style-type: none"> Significant property impacts in the interim prior to redevelopment Impacts to access and on-site parking
Support Development Objectives	<ul style="list-style-type: none"> Does not support planning vision 	<ul style="list-style-type: none"> Accommodates development Supports place making, complete streets 	<ul style="list-style-type: none"> Accommodates development Supports place making, complete streets
Impact heritage / archaeological features	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Construction methods to mitigate impacts to heritage properties Archaeological potential, but no impacts expected 	<ul style="list-style-type: none"> Construction methods to mitigate impacts to heritage properties Archaeological potential, but no impacts expected
Financial:	◐	◐	○
	<ul style="list-style-type: none"> Rehab. costs 	<ul style="list-style-type: none"> Moderate capital cost relative to rehabilitation Minor additional spring maintenance costs 	<ul style="list-style-type: none"> High property costs and high capital cost relative to rehabilitation Minor additional spring maintenance costs
Overall	◐	◐ Recommended	◐

Table 8.3: Evaluation of Alternative Designs for Erie Avenue

Evaluation Criteria	Alternative 0 "Do Nothing"	Alternative C Multiuse Trail	Alternative D Two-way Cycle Track
Transportation:			
Road Capacity and Traffic Safety	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Provides sufficient capacity Provides a separate active transportation route from vehicle traffic 	<ul style="list-style-type: none"> Provides sufficient capacity Provides separate dedicated cycling and pedestrian routes from vehicle traffic
Transit Operation Needs	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Low potential for conflicts of cycling with GO station operations 	<ul style="list-style-type: none"> Low potential for conflicts of cycling with GO station operations
Active Transportation Accommodation	<ul style="list-style-type: none"> Does not address preferred solution 	<ul style="list-style-type: none"> Low cyclist-vehicle interaction Moderate cyclist-pedestrian interaction Moderate accommodation of commuter cyclists 	<ul style="list-style-type: none"> Low cyclist-vehicle interaction Low to moderate cyclist-pedestrian interaction Moderate accommodation of commuter cyclists
Natural Environment:			
Designated natural area impacts	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Minor loss of vegetation and trees 	<ul style="list-style-type: none"> Minor loss of vegetation and trees
Terrestrial environment impact	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Minor wildlife disturbance due to noise and dust during construction 	<ul style="list-style-type: none"> Minor wildlife disturbance due to noise and dust during construction
Source water or aquatic Impacts	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> No water crossings or habitat Close to a Highly Vulnerable Aquifer, but minimal potential impact to groundwater quality 	<ul style="list-style-type: none"> No water crossings or habitat Close to a Highly Vulnerable Aquifer, but minimal potential impact to groundwater quality
Socio-Economic and Cultural Environment:			
Land or other property impact	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> No private property impacts Minimal public property impacts 	<ul style="list-style-type: none"> Minimal private property impacts Moderate public property impacts
Support Development Objectives	<ul style="list-style-type: none"> Does not support planning vision 	<ul style="list-style-type: none"> Accommodates development; promotes active transportation objectives Supports place making, complete streets 	<ul style="list-style-type: none"> Accommodates development; promotes active transportation objectives Supports place making, complete streets
Impact heritage / archaeological features	<ul style="list-style-type: none"> Status quo 	<ul style="list-style-type: none"> Construction methods to mitigate impacts to heritage properties No archaeological potential, or impacts expected 	<ul style="list-style-type: none"> Construction methods to mitigate impacts to heritage properties No archaeological potential in area, or impacts expected
Financial:			
	<ul style="list-style-type: none"> Rehab. costs 	<ul style="list-style-type: none"> Moderate capital cost relative to rehabilitation 	<ul style="list-style-type: none"> Higher capital cost relative to rehabilitation Minor additional winter maintenance costs
Overall		 Recommended	

8.2.1 Bridge Street West Section

The preferred design for the preferred solution (One-way Bicycle Facility - Alternative 1) for the West Section of Bridge Street in the interim time horizon is the introduction of on-street bike lanes. The merits of bike lanes include:

- Low cost to implement and low cost to convert the roadway to accommodate a future centre turn lane by shifting cycling facilities to the boulevard in the longer term
- Improved cycling safety and continuity of route

It is noted that the introduction of bike lanes would remove on-street parking, but it is recognized that the options with one way or two-way cycle tracks would either require the removal of on-street parking or it would impact properties by requiring additional road ROW in the short term.

The preferred design for the West Section of Bridge Street in the ultimate time horizon (when significant redevelopment is occurring and additional right-of-way is available) is the introduction of one-way boulevard cycle tracks. The merits of one-way boulevard cycle tracks include:

- A higher level of cyclist safety and continuity of the cyclist route
- Allows the roadway to accommodate a centre turn lane in the future when traffic levels are much higher

8.2.2 Bridge Street East Section

The East Section has a wider existing right-of-way. This allows the preferred design for the preferred solution (One-way Bicycle Facility – Alternative 1) for the East Section of Bridge Street to be the introduction of one-way boulevard cycle tracks for both the interim and ultimate time horizon. The merits of one-way boulevard cycle tracks include:

- A higher level of cyclist safety and continuity of the cyclist route
- Allows the roadway to accommodate a centre turn lane

8.2.3 Erie Avenue

The preferred design for Erie Avenue is a multiuse path that connects the Torch Trail to the Niagara Falls VIA Rail / GO Transit Station on the west side of Erie Avenue. A multiuse path requires less width than separate cycle track and sidewalk facilities, which will allow for streetscape features on both sides of Erie Avenue.

Between Park Street and Bridge Street the City of Niagara Falls has property on the west side of the roadway. The City has indicated that the multi-use path could be provided on the City lands outside the road right-of-way, which would allow for a market zone on the east side of that portion of the street to complement the future commercial land uses.

9.0 Recommended Design

9.1 Design Criteria

The design solutions were developed using the Region's Complete Streets guidelines. The specific design elements are based on design criteria from on Niagara Region and City of Niagara Falls design practices. The tables below (Table 9.1, Table 9.2 and Table 9.3) provide a summary of the key elements of the design criteria upon which the design is based to prepare the Preliminary Detailed design for Bridge Street and the adjacent City roads.

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Table 9.1: Bridge Street Design Criteria

Road Design Parameters	Existing Conditions	Design Standards	Proposed Standards	Reference Document
Road Classification	UCU60	UCU60	UCU60	TAC, Tab. 2.6.2
Design Speed	60 km/h	60 km/h	60 km/h	TAC, Sec. 2.3.6
Posted Speed	50 km/h	50 km/h	50 km/h ¹	TAC, Sec. 2.3.6
Min. Stopping Sight Distance	85 m	85 m	85 m	TAC, Tab. 2.5.2
Equivalent Minimum 'K' Factor	24 (Crest)	11 (Crest)	25 (Crest)	TAC, Tab. 3.3.2
	6.50 (Sag)	8 - 9 (Sag)	9 (Sag)	TAC, Tab. 3.3.5
Grades Maximum	4%	6%	4.40%	TAC, Tab. 3.3.1
Grades Minimum	0.03%	0.50% or 0.60%	0.50%	TAC, Sec. 3.3.2.5
Min. Horizontal Centerline Road Radius	Tangent	R 130 m (0.04 m/m) R 185 m (RC) R 1290 m (NC)	Tangent	TAC, Tab. 3.2.8
Maximum Rate of Superelevation	Normal Crown	4% max.	Normal Crown	TAC, Tab. 3.2.8
Lane Width	4.00 m - 5.00 m	2 lanes @ 3.50 m	2 lanes @ 3.50 m	TAC, Tab. 4.2.3
Active Transportation Facility Type	1.50 m Conc. Sidewalk	1.50 m Bike Lane min. 0.30 m Buffer	1.50 m Bike Lane 0.50 m Buffer	TAC, Tab. 5.3.2
		1.50 m – 2.30 m Conc. Sidewalk	1.80 m Conc. Sidewalk	TAC, Fig. 4.6.1
Minimum Boulevard Width	N/A	2.00 m - 3.00 m	1.80m – 2.70m	TAC, Fig. 4.6.1 Streetscape Design Guidelines
Minimum Right-of-Way	18.30 m	23.30 m	23.30 m	Streetscape Design Guidelines

Notes: 1. Proposed posted speed: 50 km/h from Victoria Avenue to 200m west of Erie Avenue; 40 km/h from 200m west of Erie Avenue to River Road (Niagara Parkway)

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Table 9.2: Erie Avenue Design Criteria

Road Design Parameters	Existing Conditions	Design Standards	Proposed Standards	Reference Document
Road Classification	ULU50	ULU50	ULU50	TAC, Tab. 2.6.2
Design Speed	50 km/h	50 km/h	50 km/h	TAC, Sec. 2.3.6
Posted Speed	40 km/h	40 km/h	40 km/h	TAC, Sec. 2.3.6
Minimum Stopping Sight Distance	65 m	65 m	65 m	TAC, Tab. 2.5.2
Equivalent Minimum 'K' Factor	11 (Crest)	7 (Crest)	15 (Crest)	TAC, Tab. 3.3.2
	8 (Sag)	5 - 6 (Sag)	8 (Sag)	TAC, Tab. 3.3.5
Grades Maximum	4.50%	6%	4.50%	TAC, Tab. 3.3.1
Grades Minimum	0.10%	0.50% or 0.60%	0.50%	TAC, Sec. 3.3.2.5
Min. Horizontal Centerline Road Radius	Tangent	R 200 m (0.04 m/m) R 290 m (RC) R 1680 m (NC)	Tangent	TAC, Tab. 3.2.8
Maximum Rate of Super Elevation (4% Maximum)	Normal Crown	4%	Normal Crown	TAC, Tab. 3.2.8
Lane Width	4.00 m - 5.00 m 2.50 m Parking	2 lanes @ 3.50 m 2.40 m Parking	2 lanes @ 3.50 m 2.40 m Parking	TAC, Tab. 4.2.3 TAC, Fig. 4.13.3
Active Transportation Facility Type	2.50 m Pavers	2.70 m – 6.00 m (MUP)	4.0 m (MUP)	TAC, Tab. 5.3.5
		1.50 m – 2.30 m Conc. Sidewalk	1.80 m Conc. Sidewalk	TAC, Fig. 4.6.1
Minimum Boulevard Width	N/A	2.00 m - 3.00 m	1.80 m	TAC, Fig. 4.6.1 Streetscape Design Guidelines
Minimum Right-of-Way	18.30 m	18.30 m	18.30 m	Existing ROW

Municipal Class Environmental Assessment for Regional Road 43 (Bridge Street) and Adjacent Municipal Roadways
November 2022

Table 9.3: Zimmerman Avenue Design Criteria

Road Design Parameters	Existing Conditions	Design Standards	Proposed Standards	Reference Document
Road Classification	ULU50	ULU50	ULU50	TAC, Tab. 2.6.2
Design Speed	50 km/h	50 km/h	50 km/h	TAC, Sec. 2.3.6
Posted Speed	40 km/h	40 km/h	40 km/h	TAC, Sec. 2.3.6
Minimum Stopping Sight Distance	65 m	65 m	65 m	TAC, Tab. 2.5.2
Equivalent Minimum 'K' Factor	5 (Crest)	7 (Crest)	7 (Crest)	TAC, Tab. 3.3.2
	6.25 (Sag)	5 - 6 (Sag)	8 (Sag)	TAC, Tab. 3.3.5
Grades Maximum	4.25%	6%	4%	TAC, Tab. 3.3.1
Grades Minimum	0.40%	0.50% or 0.60%	0.50%	TAC, Sec. 3.3.2.5
Min. Horizontal Centerline Road Radius	Tangent	R 200 m (0.04 m/m) R 290 m (RC) R 1680 m (NC)	Tangent	TAC, Tab. 3.2.8
Maximum Rate of Super Elevation (4% Maximum)	Normal Crown	4 %	Normal Crown	TAC, Tab. 3.2.8
Lane Width	4.00 m - 5.00 m	2 lanes @ 3.50 m 2.40 m Parking	2 lanes @ 3.50 m 2.40 m Parking	TAC, Tab. 4.2.3 TAC, Fig. 4.13.3
Active Transportation Facility Type	1.50 m Conc. Sidewalk	1.50 m – 2.30 m Conc. Sidewalk	2.50 m Conc. Sidewalk	TAC, Fig. 4.6.1
Minimum Boulevard Width	N/A	2.00 m - 3.00 m	2.90 m	TAC, Fig. 4.6.1 Streetscape Design Guidelines
Minimum Right-of-Way	18.30 m	18.30 m	18.30 m	Existing ROW

9.2 Preferred Design

9.2.1 Bridge Street

East Section

The Preferred Alternative for Bridge Street in the in the East Section is Alternative 1B – a boulevard cycling facility. This design is the Interim as well as the ultimate design prior to the redevelopment of adjacent lands and the basis for this Class Environmental Assessment. The design will be comprised of:

- 1 EB and 1 WB through lane 3.5 m each;
- Dedicated 3.25 m westbound left turn lanes at Erie Avenue and Zimmerman Avenue;
- A North Side 1.3 m to 1.5 m cycle track, 2.3 to 2.9 m of space for sidewalk, buffers are provided between the cycle track and the sidewalk and the roadway;
- A South side 1.3 m cycle track with buffers to the road and the 1.8 m sidewalk; and
- The design will be coordinated with the design of an east-side bus loop for WEGO buses conceptually illustrated in this figure.

The preferred alternative for Bridge Street in the vicinity of the Niagara Falls VIA Rail / GO Transit Station will be coordinated with the Niagara Falls VIA Rail / GO Transit Station site design process. The Niagara Falls VIA Rail / GO Transit Station concepts are in development and bus bay and access locations illustrated here are very preliminary. Integrated with the GO Station. The preferred solution is – a boulevard cycling facility: the design will be comprised of:

- 1 EB and 1 WB through lane 3.5 m each;
- North Side 1.5 m cycle track, 2.27 m of space for sidewalk and fence clearance – buffers are provided between the cycle track and both the sidewalk and the roadway; and
- South side 1.3 m cycle track (with buffers), a 1.6 boulevard area for planting area and for utilities and 1.8 m sidewalk.

The design of the East Section of Bridge Street is illustrated in Figures 9.1 to 9.3.

The preferred alternative for Bridge Street in the vicinity of the Niagara Falls VIA Rail / GO Transit Station will be further refined during the detailed design process, reflecting the need to ensure pedestrian and cyclist connectivity and safety in an area of high-volume transit operations. Accordingly, the specific active transportation connections, bus bay layout, and access locations illustrated as part of the conceptual

design should be considered as preliminary and will be subject to further refinement as design progresses.

West Section

For the West Section the Interim time horizon the on-road bike lanes and road design will be integrated into the design of the roundabout at Victoria Avenue currently under construction. The Interim design is proposed to be comprised of:

- 1 EB and 1 WB through lane 3.5 m each;
- On-road 1.5 m bicycle lanes with 0.5 m buffer
- North 2.7 m area for boulevard features including plantings and utilities and hard surface for commercial property parking lot access; and
- South side 1.8 m area for boulevard features including plantings, and a 1.8 m sidewalk.

An Ultimate design configuration can be provided when the adjacent lands are developed. The Ultimate design alternative for Bridge Street in the in the West Section is a boulevard cycling facility and can be implemented with more limited disruption and cost. The Ultimate design is proposed to be comprised of:

- 1 EB and 1 WB through lane 3.5 m each;
- A 4.0 m two-way centre left turn lane;
- North Side 1.5 m cycle track, 1.6 m area for boulevard features including plantings and utilities and 1.8 m sidewalk; and
- South side 1.5 m cycle track (with buffers), 1.8 m area for boulevard features including plantings, and a 2.0 m sidewalk.

The design of the West Section of Bridge Street is illustrated in Figures 9.4 to 9.6.

9.2.2 Erie Avenue / Park Street / Zimmerman Avenue

The preferred design for Erie Avenue is a multi-use path that connects the Torch Trail to the Niagara Falls VIA Rail / GO Transit Station on the west side of Erie Avenue. A multiuse path requires less width than separate cycle track and sidewalk facilities, which will allow for streetscape features on both sides of Erie Avenue.

Between Park Street and Bridge Street the City of Niagara Falls has property on the west side of Erie Avenue. The City has indicated that the multi-use path could be provided on the City lands outside the road right-of-way, which would allow for a market zone on the east side of that portion of the street to complement the future commercial land uses.

Municipal Class Environmental Assessment for Regional Road 43 (Bridge Street) and Adjacent Municipal Roadways
November 2022

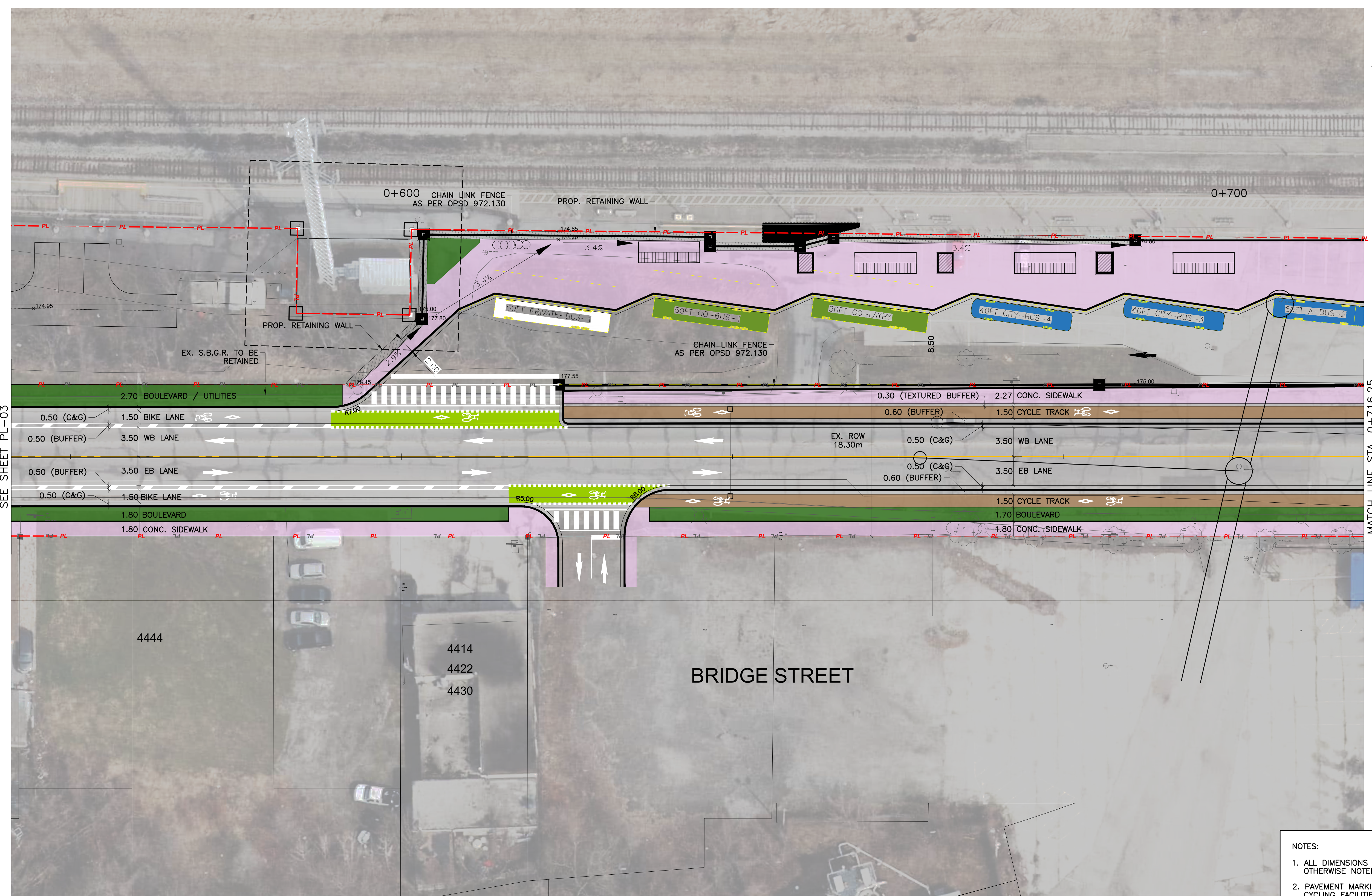
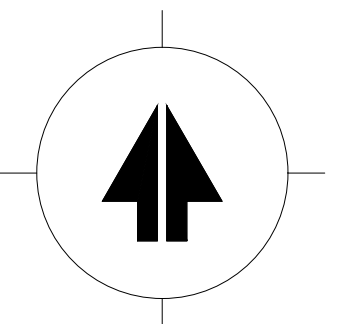
The design of Erie Avenue includes a narrower pavement width of 9.15 m and the additional space reallocated

- Between Bridge Street and Park Street, space is allocated to a market zone in the boulevard on the east side, with a boulevard multi-use path on the west side on City lands immediately west of the road ROW; and
- Between Park Street and Queen Street, space is allocated to a multi-use path within the road ROW on the west side.

The preferred alternative for both roads is additional streetscaping and providing missing sidewalk links. Landscape designs will be developed in Detail Design. Appendix H summarizes landscape design concepts to be considered during detail design.

Cycling facilities have not been identified for Zimmerman Avenue and Park Street. These streets have narrower pavement widths and ROW and opportunities for dedicated bike facilities are more limited. There are however opportunities to provide better connectivity for sidewalks and to introduce streetscaping consistent with the preferred alternatives.

The Design of Erie Avenue, Park Street and Zimmerman Avenue is illustrated in Figures 9.7 to 9.9. The design plans for the recommended design are also provided in the Appendix I.



MATCH LINE STA. 0+553.00
SEE SHEET PL-03

MATCH LINE STA. 0+716.25
SEE SHEET PL-05

4444

4414
4422
4430

BRIDGE STREET

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LEGENDS:

	BOULEVARD		BIKE ZONE
	SIDE WALK		GO TRANSIT
	MULTI-USE PATHWAY		PRIVATE CARRIER
	BOULEVARD / UTILITIES		WEGO BUS
	CITY BUS		EX. PROPERTY LINE

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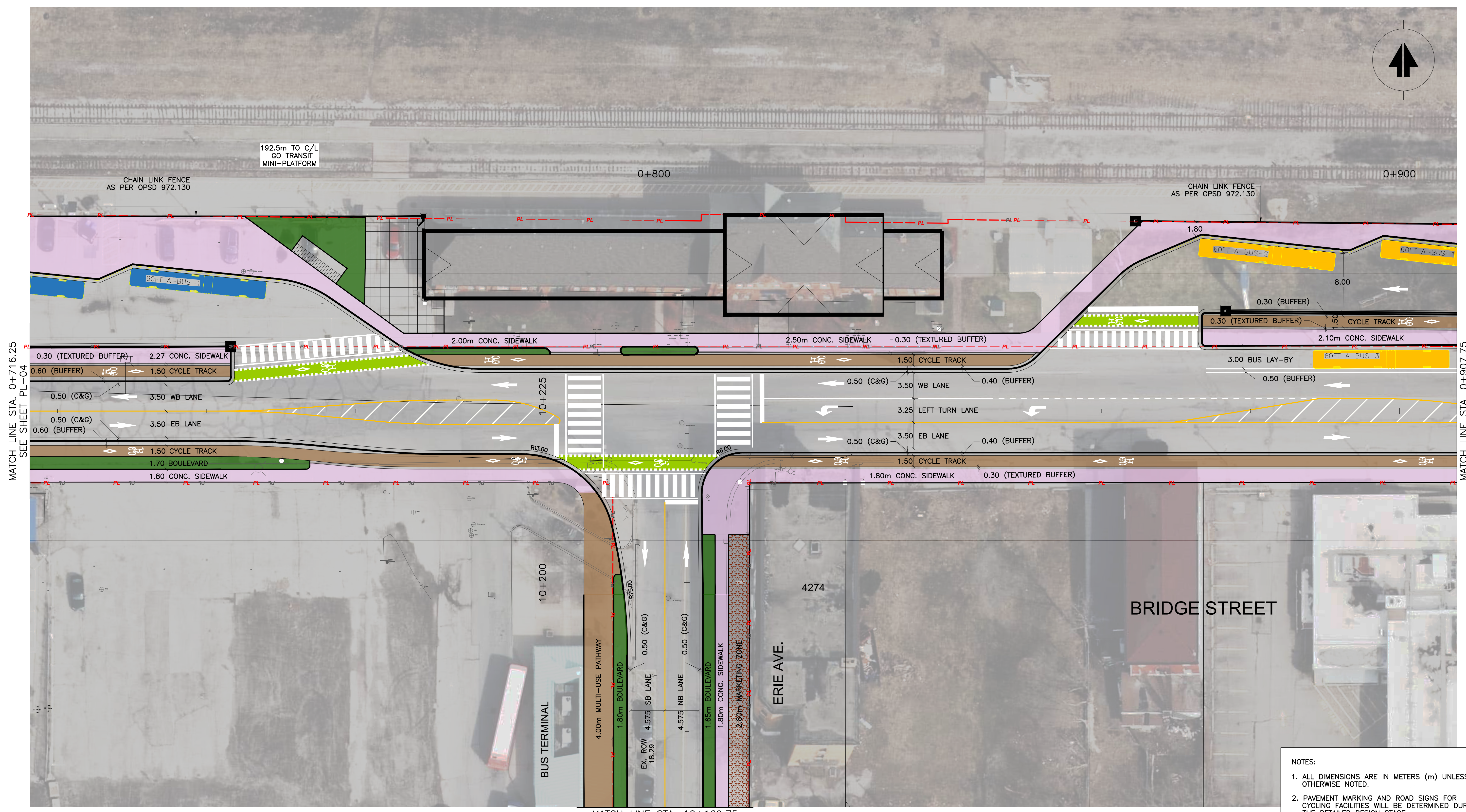
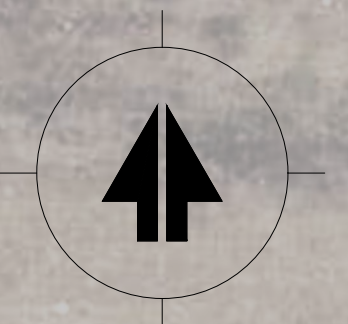
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**BRIDGE STREET AND ADJACENT ROADS
EA ASSESSMENT**

BRIDGE STREET
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STA. 0+553.00 TO STA. 0+716.25

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Project No. 300051307	Contract No.	Revision No. 0	9.1		

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MATCH LINE STA. 0+716.25
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MATCH LINE STA. 0+907.75
SEE SHEET PL-06

MATCH LINE STA. 10+169.75
SEE SHEET PL-07

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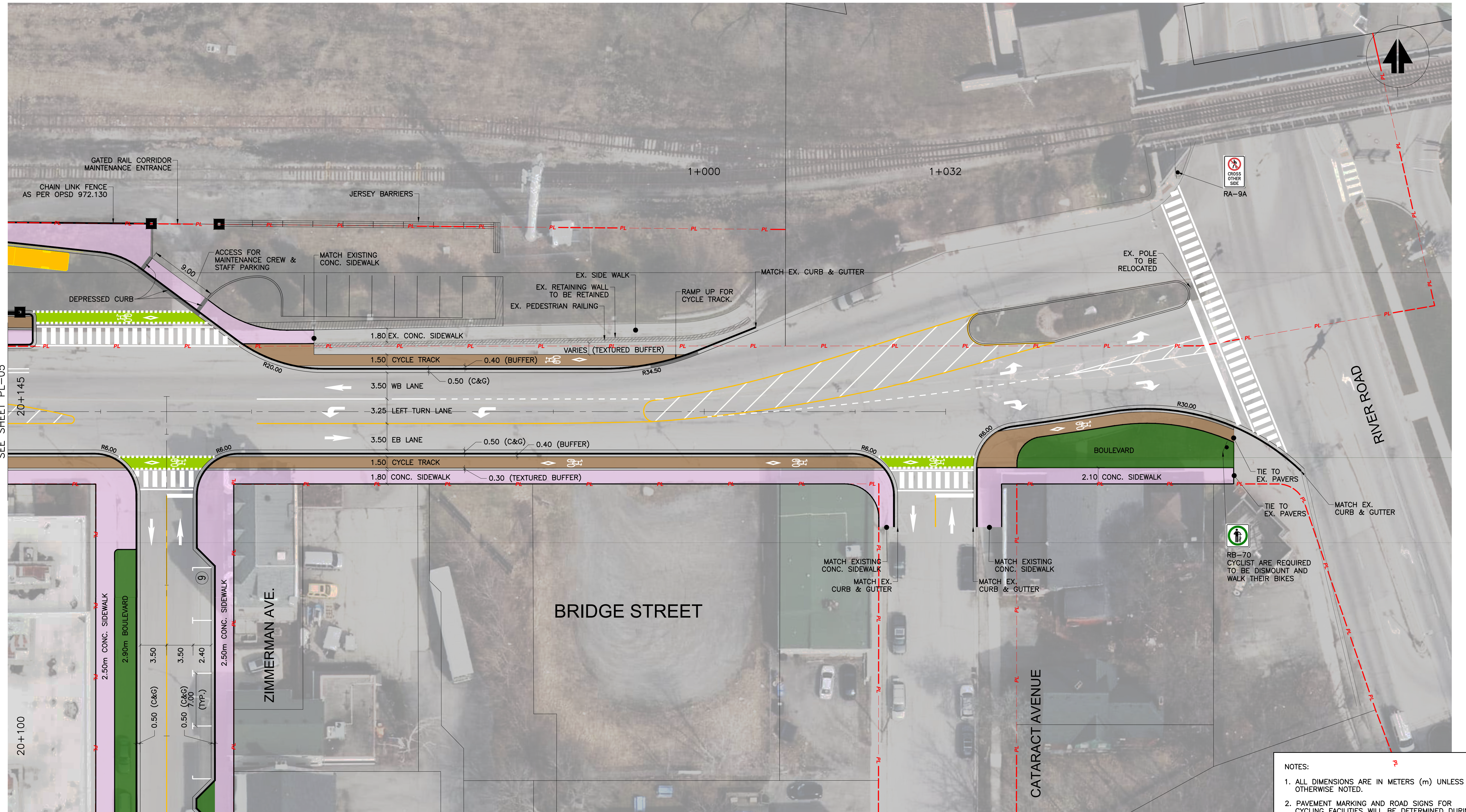
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	SIDE WALK		GO TRANSIT
	MULTI-USE PATHWAY		PRIVATE CARRIER
	BOULEVARD / UTILITIES		WEGO BUS
	CITY BUS		EX. PROPERTY LINE

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BRIDGE STREET / ERIE AVENUE PREFERRED DESIGN ALTERNATIVE - INTERIM STA. 0+716.25 TO STA. 0+907.75 / STA. 10+169.75 TO STA. 10+225.00						9.2
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20+145

20+100

MATCH LINE STA. 20+089.75
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	BOULEVARD / UTILITIES		WEGO BUS
	CITY BUS		EX. PROPERTY LINE

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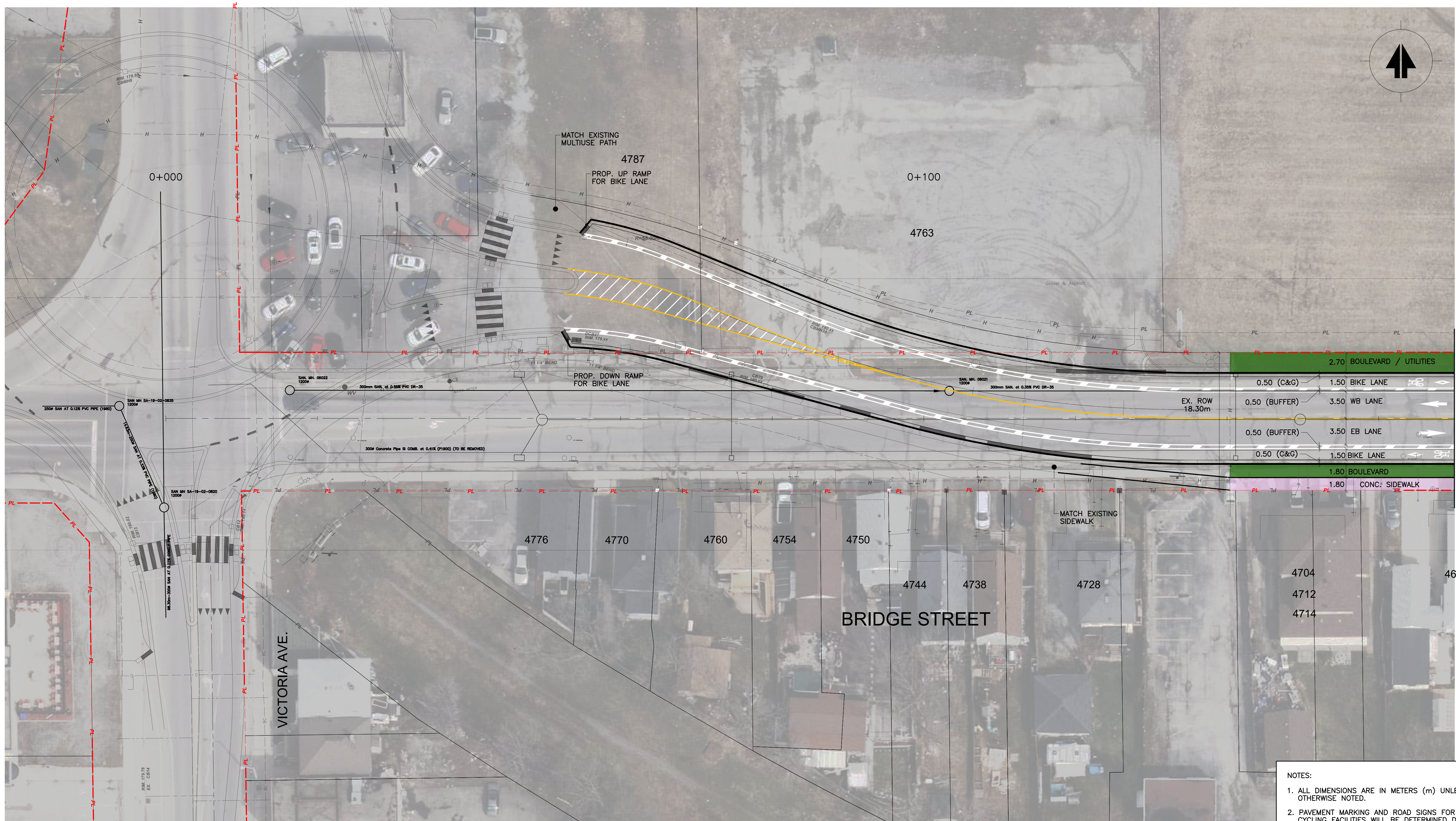
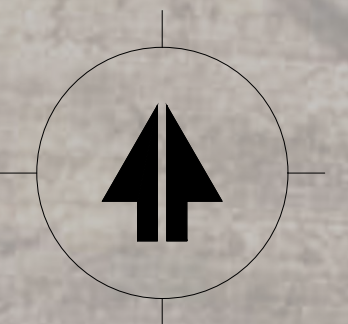
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9.3

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	MULTI-USE PATHWAY		PRIVATE CARRIER
	BOULEVARD / UTILITIES		WEGO BUS
	CITY BUS		EX. PROPERTY LINE

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9.4



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MATCH LINE STA. 0+361.50
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	MULTI-USE PATHWAY		PRIVATE CARRIER
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	CITY BUS		EX. PROPERTY LINE

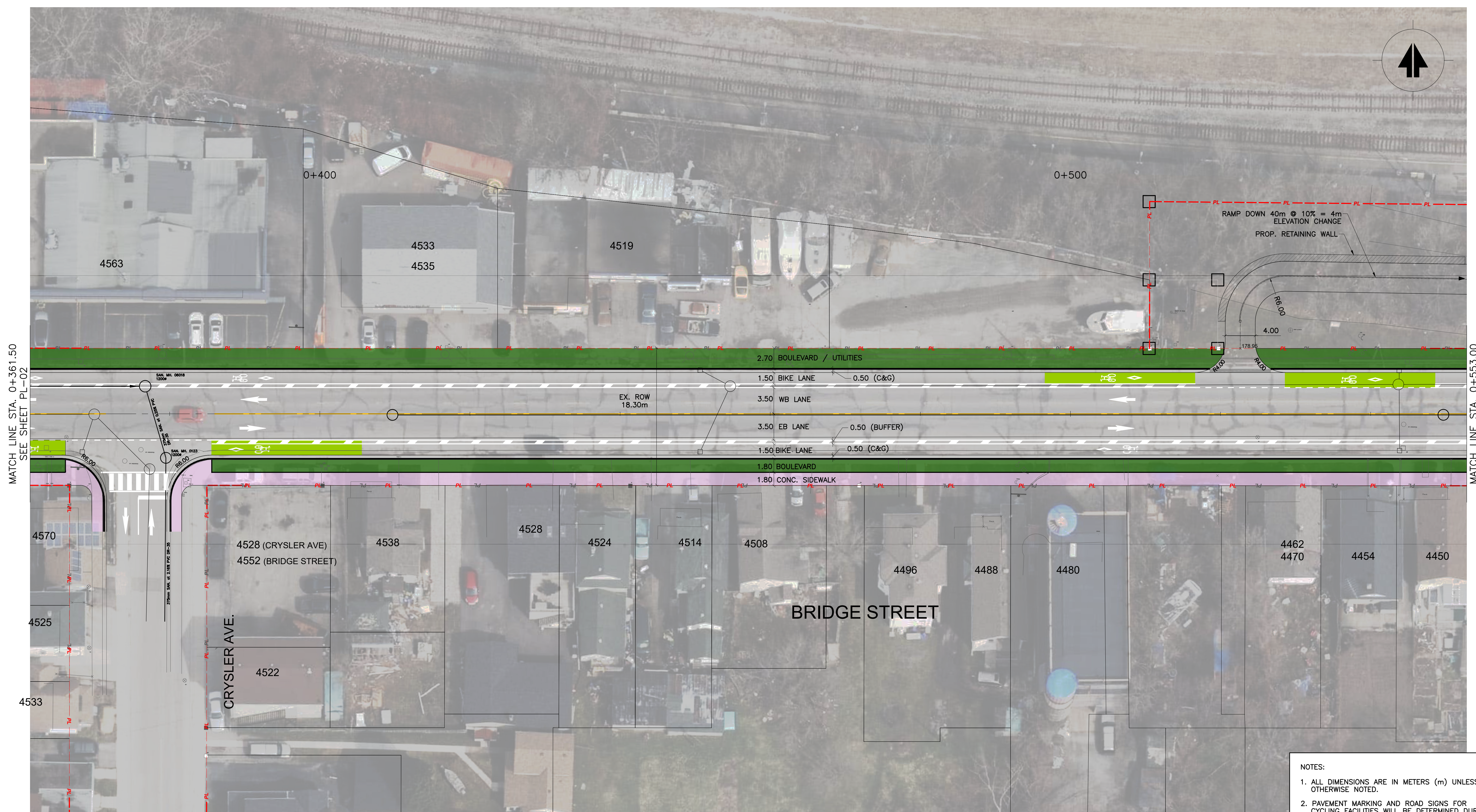
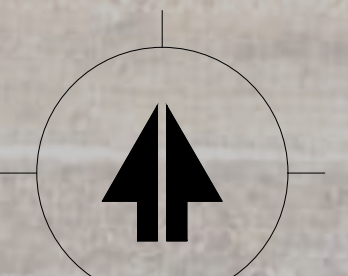
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	MULTI-USE PATHWAY		PRIVATE CARRIER
	BOULEVARD / UTILITIES		WEGO BUS
	CITY BUS		EX. PROPERTY LINE

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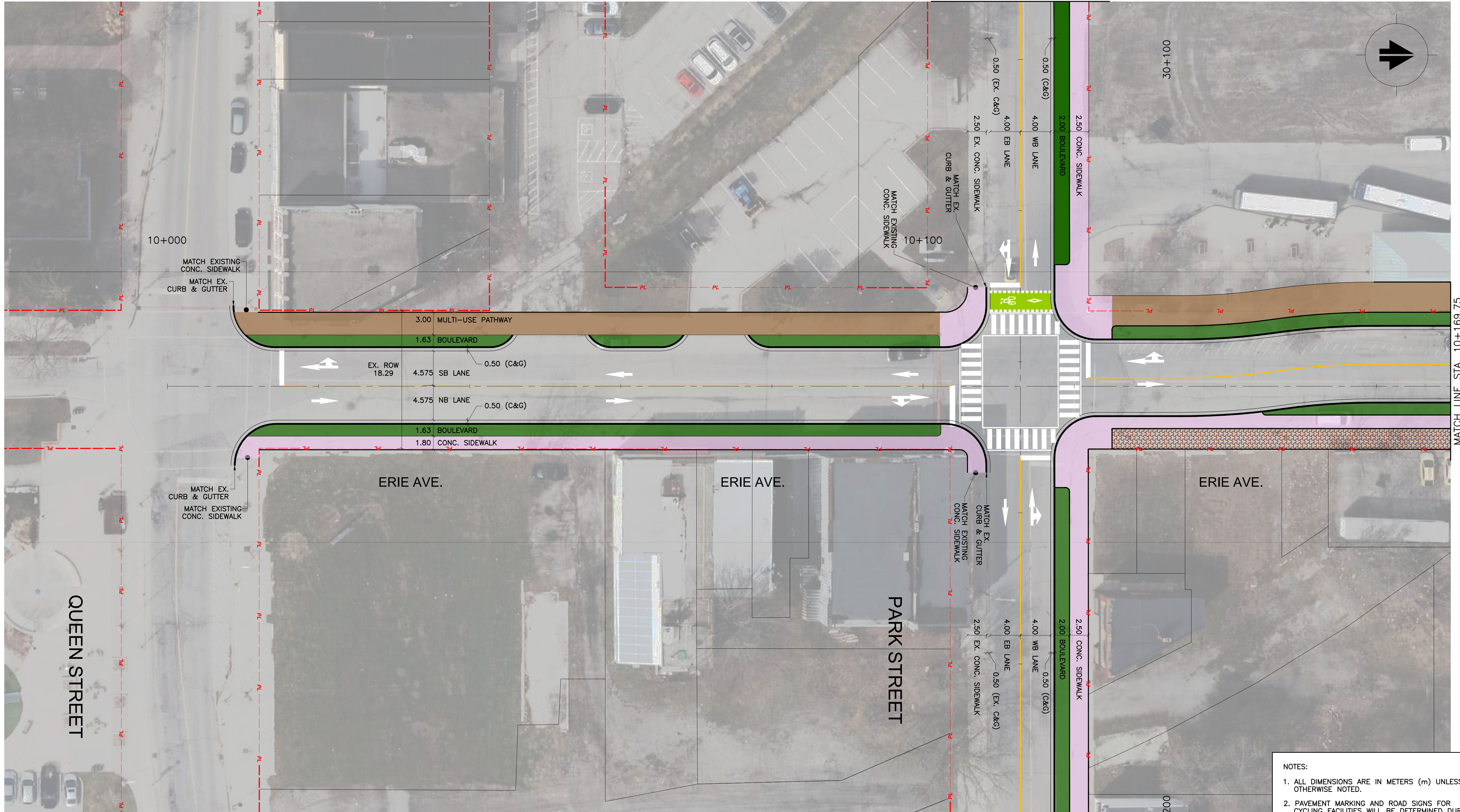
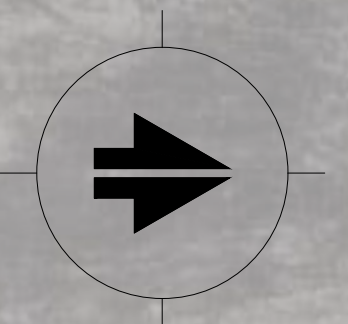
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Project No.	Contract No.	Revision No.				
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	SIDE WALK		GO TRANSIT
	MULTI-USE PATHWAY		PRIVATE CARRIER
	BOULEVARD / UTILITIES		WEGO BUS
	CITY BUS		EX. PROPERTY LINE

BURNSIDE

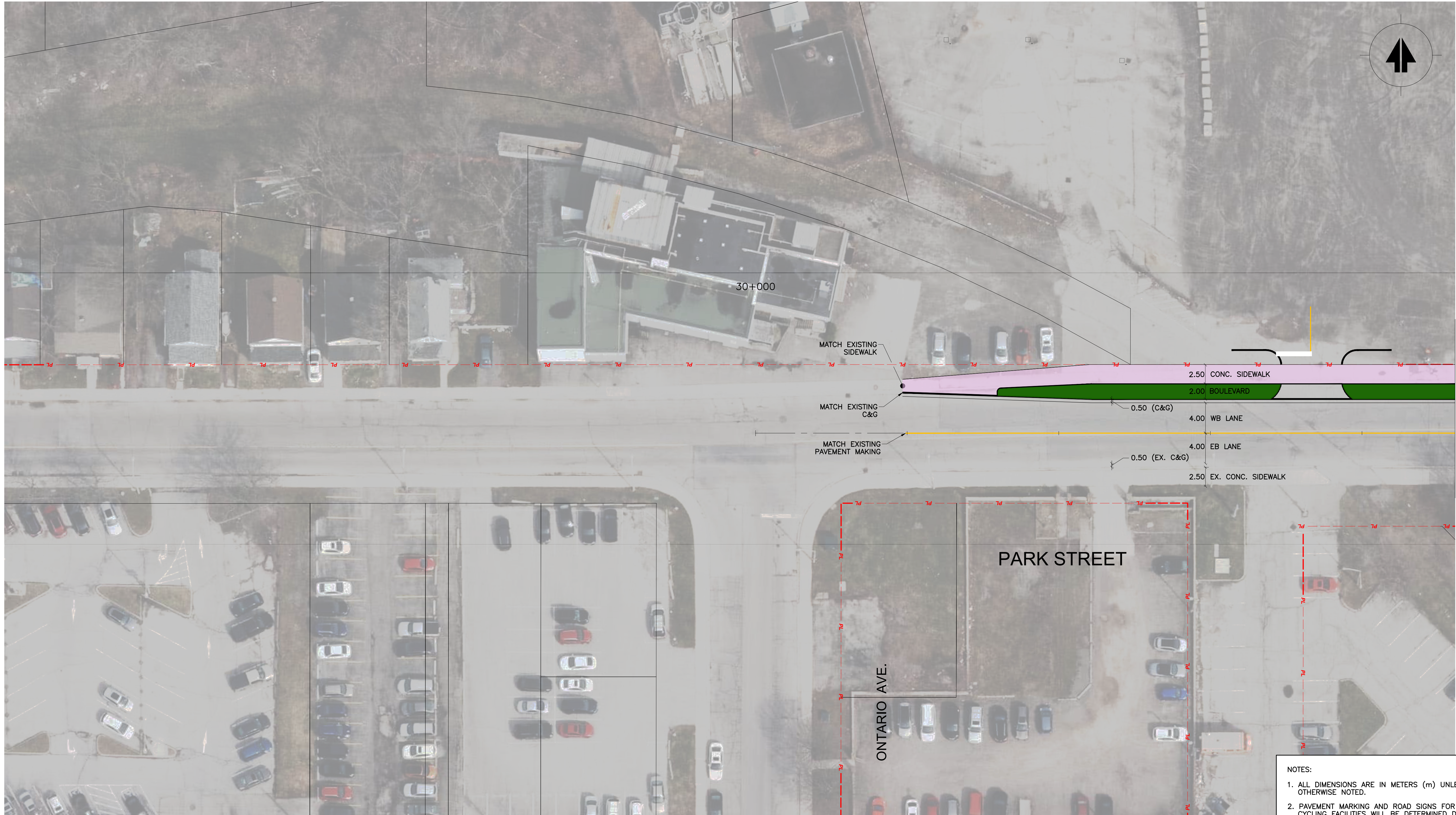
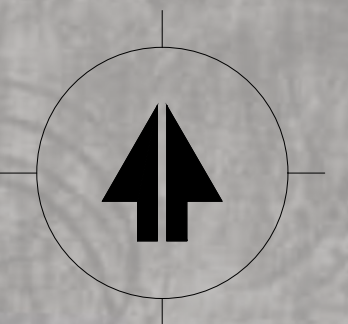
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BRIDGE STREET / ERI AVENUE / PARK STREET
PREFERRED DESIGN ALTERNATIVE - INTERIM
STA. 10+000.00 TO STA. 10+169.75 / STA. 30+199.75 TO STA. 30+092.25

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No.	Issue / Revision	Date	Auth.

LEGENDS:

BOULEVARD	BIKE ZONE
SIDE WALK	GO TRANSIT
MULTI-USE PATHWAY	PRIVATE CARRIER
BOULEVARD / UTILITIES	WEGO BUS
CITY BUS	EX. PROPERTY LINE

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**BRIDGE STREET AND ADJACENT ROADS
EA ASSESSMENT**

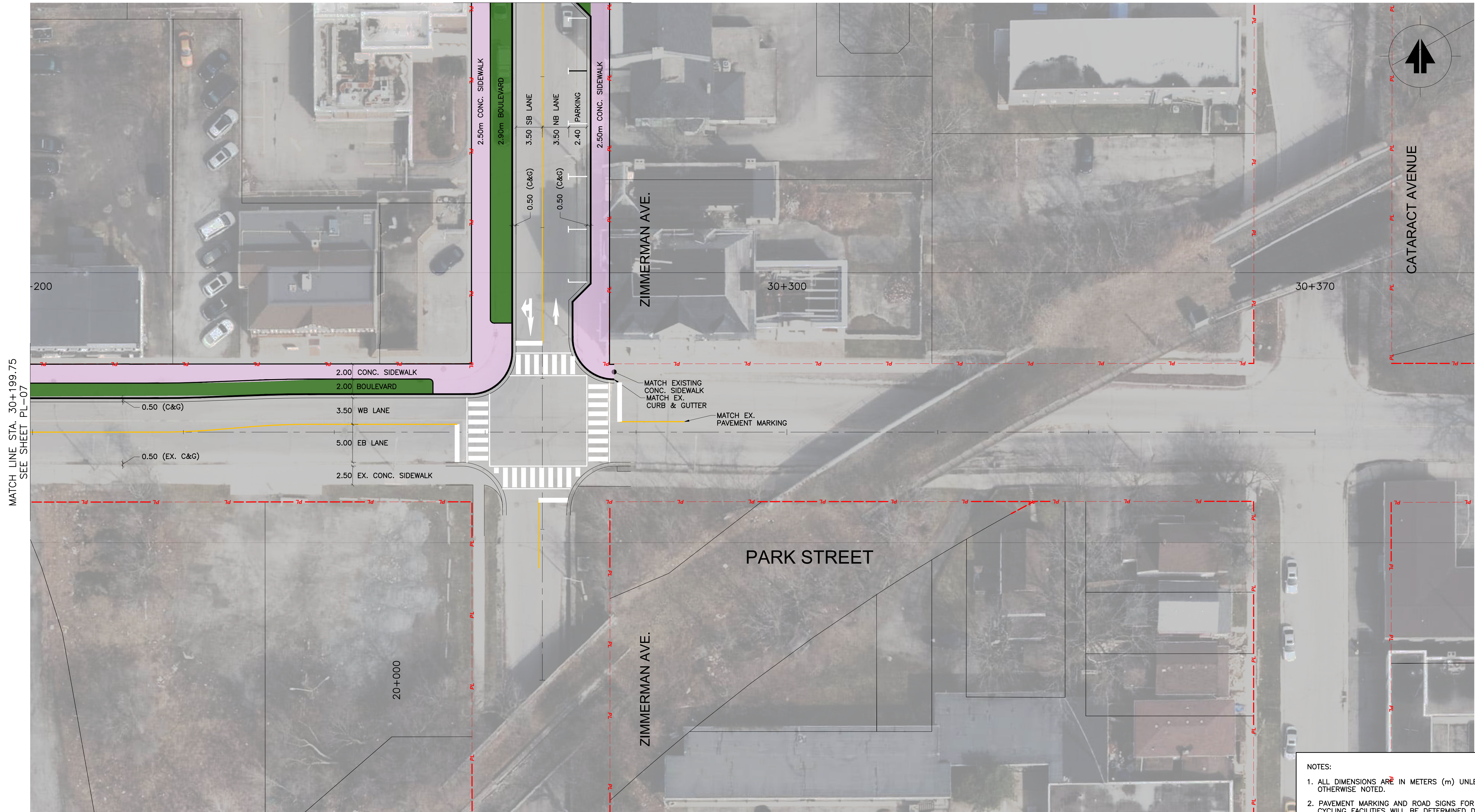
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Project No.	Contract No.	Revision No.			
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9.8

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MATCH LINE STA. 30+199.75
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LEGENDS:

	BOULEVARD		BIKE ZONE
	SIDE WALK		GO TRANSIT
	MULTI-USE PATHWAY		PRIVATE CARRIER
	BOULEVARD / UTILITIES		WEGO BUS
	CITY BUS		EX. PROPERTY LINE

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Drawing Title
**BRIDGE STREET AND ADJACENT ROADS
EA ASSESSMENT**
PARK STREET / ZIMMERMAN AVENUE
PREFERRED DESIGN ALTERNATIVE - INTERIM
STA. 30+199.75 TO STA. 30+370.00 / STA. 20+000.00 TO STA. 20+089.75

Drawn	Checked	Designed	Checked	Date	Revision No.
M.A.	A.I.	R.A.		22/03/30	
Project No.	Contract No.	Revision No.			
300051307		0			

Scale: 1:250

9.9

9.3 Phase 3 Technical Studies

9.3.1 Stormwater Management Assessment

The relevant stormwater management design criteria documents are listed below:

- Niagara Region Complete Streets Design Guidelines, Niagara Region, June 2017;
- NPCA Stormwater Management Guidelines, Niagara Peninsula Conservation Authority, March 2010; and
- Stormwater Management Planning and Design Manual, Ontario Ministry of Environment, March 2003.

Road improvements are not expected to result in a significant increased impervious area within the ROW, thereby resulting in a similar rate of storm runoff as in the existing condition. Peak flow analysis will be completed during the design stage to confirm post-improvement rates to not significantly exceed existing rates.

Conveyance of right of way runoff and external areas draining to the ROW via existing storm sewers appear sufficient for the 1:5-year storm runoff and will be confirmed during the detail design stage. It is anticipated the existing storm sewers will be maintained to provide conveyance of the improved road runoff. Runoff from storms exceeding the existing storm sewer capacity storm can continue to be conveyed overland within the ROW to the east, as in the existing condition.

Similarly, road improvements are not expected to have a negative impact on existing stormwater runoff quality. Quality controls are not proposed as overall travelled impervious areas are not to be increased from the existing condition. Appendix C summarizes the Stormwater Management Assessment.

9.3.2 Low Impact Development Assessment Feasibility

The study area includes highly urbanized roadway environments. These roads have constrained rights of way with limited opportunity for LID features; hence, it is not suitable to implement trenches, swales or rain gardens, but boulevard areas can include permeable areas. Permeable pavers may be feasible for the parking stalls on Zimmerman Avenue, the parking stalls north of Bridge Street east of the Niagara Falls VIA Rail / GO Transit Station and on the east boulevard of Erie Avenue. As the detailed design process progresses, permeable pavement features may be considered.

9.3.3 Property Requirements

All proposed, new facilities along Bridge Street, Park Street, Erie Avenue and Zimmerman Avenue can be constructed within existing property limits and City and Region lands. The four properties that have stairs or porches that encroach into or are immediately adjacent to the road right that have of way may require some modification.

Access management is important for safety, especially with the proposed on-street bike lanes on both sides of Bridge Street. Curb-cuts for driveways to commercial businesses on the north side of Bridge Street will maintain access to garage doors and parking but will be focused to one or two access points per property, if possible, to limit the number of conflict points with the bike lane. All accesses will be reassessed at detail design for consistency with Niagara Region access management practices.

9.3.4 Natural Heritage Impacts

Impacts to natural heritage features and functions are expected to be minimal due to the limited representation of naturalized vegetation features. The primary impacts of the Interim design are impacts or removal to 12 street trees on the south side of Bridge Street to accommodate sidewalks. Tree removals will not occur along Erie Avenue, Cataract Avenue, or Zimmerman Avenue.

Other impacts relate to the development of the Niagara Falls VIA Rail / GO Transit Station site to accommodate bus loops. Thirty (30) trees on the north side of Bridge Street will be impacted. The anticipated impacts include:

- Encroachment within TAGM5 ecosite to accommodate a CN Rail parking area west of the Niagara Falls VIA Rail / GO Transit Station on the north side of the Bridge Street; and
- Encroachment along the eastern margins of ecosite TG-A to accommodate the construction of a Metrolinx access road and bus loop.

All tree clearing activities will occur outside of the ECA and EPA boundaries identified within the City of Niagara Falls OP.

An additional four ornamental landscape trees will require removal along the south side of Bridge Street during the Ultimate Solution phase of the project. No additional encroachment into natural areas will occur during the implementation of the ultimate solution.

All the trees requiring removal on the south side of Bridge Street during the Interim and Ultimate Solution phases of the project are previously planted non-native species.

Direct Impacts and Mitigation Measures

Overall, encroachment into treed areas and street tree removals will result in a reduction of the overall urban tree canopy along Bridge Street, which already has limited tree cover. Tree loss will be offset through the provision of landscaped boulevards and new street trees and enhancement plantings within existing treed features.

Land Clearing within project limits may also result in a minor loss of or disturbance to migratory birds or their nests. Although bird habitat within the project limits is minimal, treed areas and individual landscape trees may provide suitable nesting habitat for birds. Additionally, disturbing migratory species, their nests, or eggs is a contravention of the MBCA. To mitigate any deleterious impacts to nesting birds and avoid being in contravention of the MBCA, all tree removals should be conducted outside of the core breeding bird window (April 1 – August 31). If clearing must occur within this window, a qualified Ecologist / Avian Biologist will first search the affected area. Any active nests will be flagged, and the surrounding area will be left undisturbed until the Ecologist / Avian Biologist confirms that the birds have fledged, and the nest is no longer active.

Indirect Impacts and Mitigation Measures

Impacts of development may extend beyond the proposed work zone and may indirectly impact natural heritage areas. Potential impacts include:

- Erosion / sedimentation beyond the development envelope due to grading and works within areas of exposed soil;
- Dust; and
- Impacts of construction on wildlife.

Sedimentation of watercourses and storm drains can deteriorate water quality. Construction noise can dissuade wildlife from using the area or disrupt their life cycles (e.g., prevent nesting).

It is anticipated that all potential indirect impacts to areas outside of the project limits can be mitigated using standard construction practices such as erosion and sediment control measures, abiding by noise by-laws, and environmental monitoring.

Provincially regulated features including SWH, habitat of endangered and threatened species, or ANSIs will not be directly impacted by the proposed works. It is anticipated that any potential indirect impacts such as dust and noise can be mitigated using standard construction practices.

9.3.5 Utilities

Existing utilities in the Bridge Street corridor are summarized in Table 9.4. Conflicts with the proposed construction will be identified and any necessary utility relocation will be determined during Detailed Design.

Table 9.4: Existing Utilities

Utility Owner	Description / Location
Bell Canada	Partially overhead on wooden poles (approximately 210m east of Victoria Avenue / and partially underground from approximately 210m east of Victoria Avenue
Enbridge Gas Distribution	Information not provided at the time of the report. Follow up will be required prior to detail design
Power	Underground hydro line on north side, overhead service cables
Cable	Partially on north side and south side Decorative light standards at VIA station
Niagara Region	Watermain, Sanitary Sewer and Storm Sewer

9.3.6 Electrical and Illumination

Roadway illumination is provided on the north side of Bridge Street from Victoria Avenue to Erie Avenue at approximately 30 m; east of Erie Avenue pedestrian scale illumination is provided on both sides of the street. A full review of illumination will be provided along this section of Bridge Street will be completed during Detailed Design. It will include a review of all existing illumination, warrants and determination of illumination improvements.

9.3.7 Preliminary Cost Estimate

Appendix J provides details of the Preliminary Cost Estimate of the Interim design. The project construction cost including contingencies and engineering is summarized below:

- Bridge Street: \$6,976,181
- Erie Avenue: \$2,053,901
- Zimmerman Avenue: \$ 348,935
- Park Street \$ 611,895

A preliminary assessment of the costs associated with excess soil based on the O.Reg 406/19 is estimated to be approximately \$40,000. This includes assessment of passed uses, sampling and testing (14 test pits), soil characterization report, and construction related tasks (not including contractor costs for soil management). This contingency cost has been included in the Bridge Street preliminary cost estimate.

9.3.7 Construction Staging and Traffic Management

Construction staging and traffic management plans for the roadworks in this section will be developed during Detailed Design. It is expected that construction of the road reconstruction, pavement markings and signage can be achieved while maintaining one lane of traffic in each direction. Periodic, short closures may be required for certain construction operations, but these will be kept to a minimum. Initial construction will likely involve utility relocations.

10.0 Future Mitigation and Monitoring Commitments

10.1 Design Impacts and Mitigation

For the interim solution there are no significant impacts to property, natural or cultural heritage resources. Impacts will be limited to:

- Three homes that have ramps, steps or porches that encroach onto Regional road ROW will require modifications;
- Some trees or other plantings within the road right of way will require relocation or replacement;
- Curb-cuts for driveways to commercial businesses on the north side of Bridge Street will maintain access to garage doors and parking, but will be focused to one or two access points per property if possible to limit the number of conflict points with the bike lane;
- On-street parking on Bridge Street will no longer be permitted; and
- Minor grading on adjacent properties may be required.

For the Ultimate solution (and again this is some time into the future), 2.5 m of property will be required on both sides of Bridge Street for properties west of the Niagara Falls VIA Rail / GO Transit Station; if the ultimate solution proceeds before the redevelopment of specific properties, then

- There will be up to seven homes directly impacted; and
- Parking and site circulation will be impacted for any existing businesses on the north side of Bridge Street that have not redeveloped at the time of the Ultimate solution.

The City of Niagara Falls has committed to undertake a parking study that will include analysis of needs and future parking supply within the Study Area.

10.2 Mitigation and Monitoring

The potential environmental impacts associated with construction, operation and maintenance of the proposed road improvements within the Study Area have been identified and are summarized Table 10.1. Proposed measures to mitigate these impacts and monitoring activities to ensure that the mitigation measures are implemented effectively are also provided in Table 10.1. All mitigation measures and monitoring activities shall be reviewed during the detailed design phase of the project.

Table 10.1: Mitigation and Monitoring Plan

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Transportation and Built Environments	Human Health and Safety	Potential safety hazard from construction activities, heavy equipment and increased construction traffic.	Construction Mitigation The contractor shall develop a Health and Safety Plan (HASP) and have it reviewed and approved by the Region prior to implementing. The HASP shall follow the <i>Occupational Health and Safety Act, 1990</i> and regulatory requirements.	N/A	No net effects anticipated.
Transportation and Built Environments	Transportation Infrastructure	Potential safety hazard from construction activities, heavy equipment and increased construction traffic.	General Mitigation Operation of construction related vehicles will be done in accordance with all appropriate safety policies and procedures, and based on Canadian Standards (Transport Canada, etc.). Construction Mitigation All contractors will be required to complete and follow appropriate construction site training and adhere to appropriate road safety regulations during construction. Work shall be done in such a manner as to minimize disruption to the adjacent residential and commercial neighbourhood. Noise and dust emissions shall be controlled. Contract specifications shall ensure that all equipment and vehicles are compliant with noise and air emission standards for applicable equipment.	An environmental monitor shall regularly inspect construction work areas to ensure that noise control measures and dust suppression measures are being adequately applied. If noise control measures and dust suppression measures are not functioning properly, alternative measures shall be implemented immediately and prioritized above other construction activities.	No net effects anticipated.
Transportation and Built Environments	Transportation Infrastructure	Temporary traffic flow / access disruptions.	Construction Mitigation Contractor will be required to develop and implement a traffic management plan in coordination with Niagara Region and City of Niagara Falls. Adequate signage to give advance notice of disruptions and detours is to be provided by the contractor.	N/A	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Physical Environment	Surface Water	Potential for erosion and sedimentation impacts.	<p>General Mitigation</p> <p>The Region is required to comply with the <i>Ontario Water Resources Act, 1990, c. O.40</i> with respect to the quality of water discharging into natural receivers. The footprint of disturbed areas shall be minimized to the extent possible. For example, vegetated buffers shall be left in place adjacent to natural vegetation features (forested areas) to the maximum extent possible.</p> <p>A Soil Management Plan (SMP) will be prepared by a Qualified Professional (QP) as defined in Ontario Regulation 160/06 for managing soil materials on-Site (includes excavation, location of stockpiles, reuse and off-Site disposal).</p> <p>All disturbed areas of the construction Site will be stabilized and re-vegetated as soon as conditions allow.</p> <p>Wet weather restrictions shall be applied during Site preparation and excavation.</p>	A qualified Person shall regularly monitor construction activities	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Physical Environment	Surface and Ground Water	Potential for localized surface water or groundwater impacts as a result of spills, discharge or dumping of materials, fluids and other wastes during construction of proposed road extension and associated surface water facilities (e.g., swales).	<p>Construction Mitigation</p> <p>Refueling and maintenance of construction equipment should occur within designated areas only. Any hazardous materials used for construction will be handled in accordance to appropriate regulations.</p> <p>A Construction Emergency Response and Communications Plan shall be developed and followed throughout the construction phase (including spill response plans). The Contractor shall develop spill prevention and contingency plans for the construction and general Site preparation for proposed road improvements. Personnel shall be trained in how to apply the plans and the plans shall be reviewed to strengthen their effectiveness and continuous improvement. Spills or depositions into watercourses shall be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. A hydrocarbon spill response kit will be on-Site at all times during the work. Spills will be reported to the Ontario Spills Action Centre at 1-800-268-6060.</p>	A qualified Person shall regularly monitor construction.	No net effects anticipated.
Physical Environment	Surface and Groundwater (Headwater feature)	Change in water balance to seasonally flooded or wet habitat within natural vegetation communities affecting groundwater recharge functions.	<p>General Mitigation</p> <p>Incorporation, where feasible, Low Impact Development (LID) to preserve local predevelopment water balance as they reduce runoff volume through the processes of infiltration and evapotranspiration and improve stormwater quality through to direct surface water flow to planting areas and permeable treatments in parking areas.</p>	Monitoring of vegetation communities for changes in plant species composition and soil moisture regime.	No net effects anticipated

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Natural Environment	Vegetation	<p>Direct effects of construction activities will include the limited clearing and loss of both herbaceous and woody vegetation. Indirect effects include the increase to edge habitats, which includes a number of potential effects, such as wind throw and sunscald, introduction of invasive plant and wildlife species which may outcompete or predate native species, change in soil moisture regime and water availability to plants and plant communities, increases in light penetration (pollution) and noise, soil compaction, equipment and pedestrian “traffic”, equipment laydown and spills.</p>	<p>General Mitigation Plant species loss should be minimized, where possible, and compensatory planting plans established in areas of the Study Area when no clearing activities are proposed. Potential for establishing pollinator species of plants should also be included when establishing a formal planting plan. The inclusion of bio swales, infiltration galleries or other features to promote localized surface water infiltration to maintain the existing water balance should be included as part of the detailed design and landscape plan for the road extension.</p> <p>Construction Mitigation Construction hoarding should be installed prior to commencement of construction activities to prevent pedestrian access, prevent the unnecessary encroachment / disturbance by humans and machinery into vegetation communities and to prevent wildlife from entering the construction areas. Hoarding should be installed and inspected prior to any land disturbance. Hoarding should be installed at the dripline of any trees to be preserved. Construction activity should be outside of the dripline of any trees that are to remain.</p>	<p>Fencing shall be inspected regularly to ensure damage is repaired in a timely manner and that additional risk to wildlife is minimized. Hoarding Site visit required.</p>	No net effects anticipated.
Natural Environment	Trees	Potential impacts to trees adjacent to road extension construction area.	<p>General Mitigation Clearly quantify the extent of loss of trees due to the planned Bridge Street and adjacent municipal streets construction. Tree loss will be replaced at a ratio of 10 new trees for each tree lost. Tree locations will be identified through a planting plan in the boulevard areas in the detail design process.</p> <p>Construction Mitigation Clearly delineate the extent of vegetation removal for the vegetation clearing and grubbing contractor. All vegetation must be cut in a way that it stays within the work zone.</p>	<p>Inspection of tree protection measures by the site supervisor or qualified person. All damaged, sagging or deficient measures must be fixed immediately. An arborist shall review all trees adjacent to the work zone and prior to opening the road for use by the general public. Branches and trunks damaged during the construction period that may cause damage or injury must be mitigated.</p>	

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Natural Environment	Wildlife and Wildlife Habitat (General) – Breeding Birds	Potential for disturbance or destruction of migratory breeding birds and their habitat (prohibitions under the <i>Migratory Bird Convention Act, 1994</i>).	<p>General Mitigation</p> <p>To reduce the risk of contravening the <i>Migratory Bird Convention Act, 1994</i>, timing constraints shall be applied to avoid any limited vegetation clearing (including grubbing) and/or structure works (construction, maintenance) during the breeding bird period – broadly from April 1st to August 31st for most species (regardless of the calendar year).</p> <p>Active nests (nests with eggs or young birds) of protected migratory birds, including SAR protected under the <i>Endangered Species Act (ESA), 2007</i>, cannot be destroyed at any time of the year. The destruction of inactive nests for some species may also be prohibited.</p> <p>Construction Mitigation</p> <p>If a nesting migratory bird (or SAR protected under <i>ESA, 2007</i>) is identified within or adjacent to the construction Site (or during operations and maintenance activities) and the activities are such that continuing works in that area would result in a contravention of the <i>Migratory Birds Convention Act, 1994</i> or <i>ESA, 2007</i>, all activities will stop and the Contract Administrator (with assistance from an Avian Biologist) shall discuss mitigation measures with the Region. Should SAR be identified, all activities will stop and MNDMNRF will be contacted immediately to ensure compliance with the ESA. The Contract Administrator shall instruct the Contractor on how to proceed based on the mitigation measures established through discussions with the Region, the MNDMNRF and/or Environment Canada.</p>	<p>An Avian Biologist may be required on-Site as needed should a nesting migratory bird (or SAR protected under <i>ESA, 2007</i>) be identified within or adjacent to the construction Site. The Avian Biologist may be required to confirm the presence and identification of an active nest and/or breeding bird prior to contacting MNDMNRF for further advice.</p>	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Natural Environment	Wildlife and Wildlife Habitat (General)	<p>Temporary displacement of, and disturbance to, wildlife and wildlife habitat during the construction phase (i.e., vegetation removals, noise, light trespass), including SAR. Development in these habitats may limit wildlife movement and reduce useable habitat.</p> <p>Wildlife habitat may be removed as a result of the proposed activities.</p>	<p>Construction Mitigation</p> <p>In the event that an animal is encountered during construction and does not move from the construction zone, the Contract Administrator will be notified. If the construction activities are such that continuing construction in the area would result in harm to wildlife, construction activities in that location will temporarily stop and the MNDMNR shall be contacted for direction.</p> <p>If temporary construction hoarding is used at a location, it shall be installed to allow wildlife to leave the fenced area during vegetation clearing. Once the work area has been cleared, it can be securely fenced to prevent wildlife from returning.</p> <p>The excluded area should be searched immediately following fencing installation for any wildlife (including SAR) that may have become trapped. Any wildlife should be safely relocated, or permitted to escape, to a suitable habitat. All works should stop immediately and MNDMNR contacted should a SAR be encountered within a construction or operational area to ensure compliance with the ESA.</p> <p>Avoid vegetation clearing during sensitive times of the year for local wildlife, such as spring and early summer (when many animals bear their young or migrate between wintering and summer habitats).</p>	Fencing shall be inspected regularly to ensure damage is repaired in a timely manner and that additional risk to wildlife is minimized.	No net effects anticipated.
Natural Environment	Fish Habitat	Potential indirect impacts to downstream fish habitat from water quality and quantity impairments (sediment loading; fuels and lubricants from machinery) as a result of construction works (earthworks-based activities).	<p>General Mitigation</p> <p>Compliance with the <i>Ontario Water Resources Act, 1990</i> shall be maintained with respect to the quality of water discharging into natural receivers.</p>	A qualified person shall regularly monitor construction activities.	No net effects anticipated

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Cultural Environment	Archaeology	Based on the results of the Stage 1 Archaeological Assessment, the project impact area with the footprint of the preferred alternative being within the already disturbed areas, does not retain archaeological potential; however, no archaeological assessment, no matter how thorough or carefully completed, can necessarily predict, account for, or identify every form of isolated or deep buried archaeological deposit. Therefore, it is possible that archaeological remains may be found during construction.	Should previously undocumented archaeological resources be discovered by the Contractor during subsequent construction activities, the alteration of the site shall be ceased immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the Ontario Heritage Act. The consultant archaeologist, approval authority and the Heritage Planning Unit of the Ministry of Citizenship and Multiculturalism will immediately be notified by the Contractor.	N/A	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Cultural Environment	Built Heritage Resources and Cultural Heritage Landscapes	<p>Based on the Cultural Heritage Report results:</p> <ul style="list-style-type: none"> Indirect impacts to identified BHRs and CHLs within 50 m of the proposed limits of impact are possible due to construction activities which may result in limited and temporary adverse vibration impacts to 15 known and potential BHRs and CHLs 	<ul style="list-style-type: none"> The Region shall consult with heritage planning staff at the City of Niagara Falls to determine if HIAs are required for: 4238-4240 Bridge Street West (BHR 3); 4190 Bridge Street (BHR 5); 4177 Park Street (BHR 6); 4600—4610 Erie Avenue (BHR 7); 4624 Erie Avenue (BHR 8); 4454, 4450, and 4462 Bridge Street (within CHL 1) and 4299 Queen Street (within CHL 2). If determined to be required by City staff, these HIAs should be undertaken by a qualified person as early as possible in the detailed design phase and be developed in consultation with, and submitted for review to, MCM and the municipal heritage planner and/or municipal heritage committee and Indigenous communities, as appropriate. To ensure that identified BHRs and CHLs are not adversely impacted during construction, baseline vibration monitoring should be undertaken in advance of construction. Should this advance monitoring assessment conclude that any features on these properties be subject to vibration impacts: <ol style="list-style-type: none"> Construction activities should be planned to avoid adverse vibration impacts; and where potential adverse vibration impacts cannot be avoided A qualified engineer should include these properties in the condition assessment of structures within the vibration zone of influence for this project. Further, the Contractor must make a commitment to repair any damages caused by vibrations. 	N/A	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Noise and Air Quality	Noise	Potential for noise through the use of large equipment for construction of the proposed road extension.	<p>General Mitigation</p> <p>A complaint response protocol for nuisance impacts including construction noise shall be prepared during the detailed design phase of the project and implemented prior to construction.</p> <p>Construction Mitigation</p> <p>Noise control measures shall be implemented where required during the construction phase, such as restricted hours of operation and the use of appropriate machinery and mufflers. The noise produced by the equipment can be limited through proper equipment maintenance.</p> <p>All construction activities shall conform to the criteria set out in NPC-115 of 83 dB. All construction activities shall conform to the City of Niagara Fall Noise By-law (https://niagarafalls.ca/pdf/by-laws/noise_by-law.pdf).</p> <p>The construction contractor will be required to develop a Construction Management Plan (CMP) that specifically addresses noise controls, mitigation to be implemented and frequency of equipment inspection.</p>	An environmental monitor shall regularly monitor construction noise to ensure that noise control measures are being adequately applied and confirm the requirements outlined in the CMP are being followed. If noise control measures are not functioning properly, alternative measures shall be implemented immediately and prioritized above other construction activities.	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Noise and Air Quality	Air Quality	Potential air quality impacts during construction.	<p>General Mitigation A complaint response protocol for nuisance impacts including dust emissions will be prepared during the detailed design phase of the project and implemented prior to construction.</p> <p>Construction Mitigation During construction, the following mitigation measures shall be used:</p> <ul style="list-style-type: none"> • The road shall be graded as required to remove potholes, ruts and ripples in the road surface. Efforts to prevent contamination of the road surface, such as spilling sands, silts and clays, will also help to minimize dust. • Considerations shall be given to using of chemical suppressants to reduce dust, use of wind barriers and limiting exposed areas which may be a source of dust and equipment washing. • If appropriate equipment is available, the roadway shall be sprayed with water as required to minimize dust generation prior to paving. • The construction contractor shall develop a Construction Management Plan (CMP) that specifically addresses dust controls, and contingency plans to mitigate dust when it occurs. 	An environmental monitor shall regularly inspect construction work areas to ensure that dust suppression measures are being adequately applied and confirm the requirements outlined in the CMP are being followed. If dust suppression measures are not functioning properly, alternative measures shall be implemented immediately and prioritized above other construction activities.	No net effects anticipated.

10.3 Future Commitments

10.3.1 Detailed Design Future Commitments

- Indigenous communities that were included in the EA contact list shall be consulted and given an opportunity to participate in the Stage 2 Archeological Assessment reporting and monitoring process.
- All indigenous communities previously engaged shall be reached out to, if there are any substantial changes to the project/process or if the Region applies for subsequent permits from the Ministry (MECP) that may be of interest or concern to communities.
- It shall be ensured during the detailed design and construction phases of the project that the Species at Risk (SAR) are not killed, harmed, or harassed, and that their habitat is not damaged or destroyed through the proposed activities to be carried out on the site. If the proposed activities cannot avoid impacting protected species and their habitats, then the Region will apply for an authorization under the Endangered Species Act (ESA). If the Region finds that their proposed activities are going to have an impact or is uncertain about the impacts, it will contact SAROntario@ontario.ca to undergo a formal review under the ESA.
- Non-chloride dust suppressants shall be applied during construction according to the Cheminfo Services Inc. Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities report prepared for Environment Canada. March 2005.
- All waste generated during construction shall be disposed of in accordance with ministry requirements.
- Should future work require an expansion of the study area then a qualified heritage consultant shall be contacted in order to confirm the impacts of the proposed work on potential heritage resources. Prior to detailed design for the Ultimate Solution, a Cultural Heritage Report should be completed by a qualified heritage professional to assess potential impacts to identified features of cultural heritage value or interest and to recommend appropriate mitigation measures.
- A complaint response protocol for nuisance impacts including dust emissions shall be prepared during the detailed design phase of the project and implemented prior to construction.
- A complaint response protocol for nuisance impacts including construction noise shall be prepared during the detailed design phase of the project and implemented prior to construction.
- The Region shall consult with heritage planning staff at the City of Niagara Falls to determine if HIAs are required for: 4238-4240 Bridge Street West (BHR 3); 4190 Bridge Street (BHR 5); 4177 Park Street (BHR 6); 4600—4610 Erie Avenue

(BHR 7); 4624 Erie Avenue (BHR 8); 4454, 4450, and 4462 Bridge Street (within CHL 1) and 4299 Queen Street (within CHL 2). If determined to be required by City staff, these HIAs should be undertaken by a qualified person as early as possible in the detailed design phase and be developed in consultation with, and submitted for review to, MCM and the municipal heritage planner and/or municipal heritage committee and Indigenous communities, as appropriate.

- To ensure that identified BHRs and CHLs are not adversely impacted during construction, baseline vibration monitoring should be undertaken in advance of construction. Should this advance monitoring assessment conclude that any features on these properties be subject to vibration impacts:
 1. Construction activities shall be planned to avoid adverse vibration impacts; and where potential adverse vibration impacts cannot be avoided
 2. A qualified engineer shall include these properties in the condition assessment of structures within the vibration zone of influence for this project. Further, the Contractor must make a commitment to repair any damages caused by vibrations.
- Compliance with the *Ontario Water Resources Act, 1990* shall be maintained with respect to the quality of water discharging into natural receivers.
- To reduce the risk of contravening the *Migratory Bird Convention Act, 1994*, timing constraints shall be applied to avoid any limited vegetation clearing (including grubbing) and/or structure works (construction, maintenance) during the breeding bird period – broadly from April 1st to August 31st for most species (regardless of the calendar year).
- Active nests (nests with eggs or young birds) of protected migratory birds, including SAR protected under the *Endangered Species Act (ESA), 2007* shall not be destroyed at any time of the year. The destruction of inactive nests for some species may also be prohibited.
- Clearly quantify the extent of loss of trees due to the planned Bridge Street and adjacent municipal streets construction. Tree loss shall be replaced at a ratio of 10 new trees for each tree lost. Tree locations shall be identified through a planting plan in the boulevard areas in the detail design process.
- Plant species loss should be minimized, where possible, and compensatory planting plans established in areas of the Study Area when no clearing activities are proposed. Potential for establishing pollinator species of plants shall also be included when establishing a formal planting plan.
- The inclusion of bio swales, infiltration galleries or other features to promote localized surface water infiltration to maintain the existing water balance shall be included as part of the detailed design and landscape plan for the road extension.

- Where feasible, Low Impact Development (LID) shall be incorporated, to preserve local predevelopment water balance as they reduce runoff volume through the processes of infiltration and evapotranspiration and improve stormwater quality through to direct surface water flow to planting areas and permeable treatments in parking areas.
- The Region shall comply with the *Ontario Water Resources Act, 1990, c. O.40* with respect to the quality of water discharging into natural receivers. The footprint of disturbed areas shall be minimized to the extent possible. For example, vegetated buffers shall be left in place adjacent to natural vegetation features (forested areas) to the maximum extent possible.
- A Soil Management Plan (SMP) shall be prepared by a Qualified Professional (QP) as defined in Ontario Regulation 160/06 for managing soil materials on Site (includes excavation, location of stockpiles, reuse and off-site disposal).
- All disturbed areas of the construction Site shall be stabilized and re-vegetated as soon as conditions allow.
- Wet weather restrictions shall be applied during Site preparation and excavation.
- Operation of construction related vehicles shall be done in accordance with all appropriate safety policies and procedures, and based on Canadian Standards (Transport Canada, etc.).
- An Excess Soil Management Report shall be prepared by a Qualified Professional (QP) as defined in Ontario Regulation 406/19, On-site and Excess Soil Management.

10.3.2 Construction Commitments

- The road shall be graded as required to remove potholes, ruts and ripples in the road surface. Efforts to prevent contamination of the road surface, such as spilling sands, silts and clays, will also help to minimize dust.
- If appropriate equipment is available, the roadway shall be sprayed with water as required to minimize dust generation prior to paving.
- The construction contractor shall develop a Construction Management Plan (CMP) that specifically addresses dust controls, and contingency plans to mitigate dust when it occurs.
- An environmental monitor shall regularly inspect construction work areas to ensure that dust suppression measures are being adequately applied and confirm the requirements outlined in the CMP are being followed. If dust suppression measures are not functioning properly, alternative measures shall be implemented immediately and prioritized above other construction activities.
- Noise control measures shall be implemented where required during the construction phase, such as restricted hours of operation and the use of appropriate

machinery and mufflers. The noise produced by the equipment can be limited through proper equipment maintenance.

- All construction activities shall conform to the criteria set out in NPC 115 of 83 dB.
- The construction contractor shall develop a Construction Management Plan (CMP) that specifically addresses noise controls, mitigation to be implemented and frequency of equipment inspection.
- An environmental monitor shall regularly monitor construction noise to ensure that noise control measures are being adequately applied and confirm the requirements outlined in the CMP are being followed. If noise control measures are not functioning properly, alternative measures shall be implemented immediately and prioritized above other construction activities.
- Should previously undocumented archaeological resources be discovered by the Contractor during subsequent construction activities, the alteration of the site shall be ceased immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the Ontario Heritage Act. In the event that archeological remains are found by the Contractor during subsequent construction activities, Tthe consultant archaeologist, approval authority and the Heritage Planning Unit of the Ministry of Citizenship and Multiculturalism Cultural Program Unit of the Ministry of Tourism Culture and Sport will immediately be notified by the Contractor.
- A qualified person shall regularly monitor construction activities.
- In the event that an animal is encountered during construction and does not move from the construction zone, the Contract Administrator will be notified. If the construction activities are such that continuing construction in the area would result in harm to wildlife, construction activities in that location will temporarily stop and the MNDMNRF shall be contacted for direction.
- If temporary construction hoarding is used at a location, it shall be installed to allow wildlife to leave the fenced area during vegetation clearing. Once the work area has been cleared, it can be securely fenced to prevent wildlife from returning.
- The excluded area shall be searched immediately following fencing installation for any wildlife (including SAR) that may have become trapped. Any wildlife shall be safely relocated, or permitted to escape, to a suitable habitat. All works shall stop immediately and MNDMNRF contacted should a SAR be encountered within a construction or operational area to ensure compliance with the ESA.
- Vegetation clearing shall be avoided during sensitive times of the year for local wildlife, such as spring and early summer (when many animals bear their young or migrate between wintering and summer habitats).
- Fencing shall be inspected regularly to ensure damage is repaired in a timely manner and that additional risk to wildlife is minimized.

- If a nesting migratory bird (or SAR protected under *ESA, 2007*) is identified within or adjacent to the construction Site (or during operations and maintenance activities) and the activities are such that continuing works in that area would result in a contravention of the *Migratory Birds Convention Act, 1994 or ESA, 2007*, all activities shall stop and the Contract Administrator (with assistance from an Avian Biologist) shall discuss mitigation measures with the Region. Should SAR be identified, all activities shall stop and MNDMNRFP will be contacted immediately to ensure compliance with the ESA. The Contract Administrator shall instruct the Contractor on how to proceed based on the mitigation measures established through discussions with the Region, the MNDMNRFP and/or Environment Canada.
- An Avian Biologist may be required on Site as needed should a nesting migratory bird (or SAR protected under *ESA, 2007*) be identified within or adjacent to the construction Site.
- The Avian Biologist may be required to confirm the presence and identification of an active nest and/or breeding bird prior to contacting MNDMNRFP for further advice.
- Clear delineation of the extent of vegetation removal shall be done for the vegetation clearing and grubbing contractor. All vegetation shall be cut in a way that it stays within the work zone. Inspection of tree protection measures by the site supervisor or qualified person. All damaged, sagging or deficient measures shall be fixed immediately.
- An arborist shall review all trees adjacent to the work zone and prior to opening the road for use by the general public. Branches and trunks damaged during the construction period that may cause damage or injury must be mitigated.
- Construction hoarding shall be installed prior to commencement of construction activities to prevent pedestrian access, prevent the unnecessary encroachment / disturbance by humans and machinery into vegetation communities and to prevent wildlife from entering the construction areas. Hoarding should be installed and inspected prior to any land disturbance. Hoarding should be installed at the dripline of any trees to be preserved.
- Construction activity shall be outside of the dripline of any trees that are to remain.
- Fencing shall be inspected regularly to ensure damage is repaired in a timely manner and that additional risk to wildlife is minimized.
- Hoarding Site visit is required.
- Monitoring shall be done of vegetation communities for changes in plant species composition and soil moisture regime.
- Refueling and maintenance of construction equipment shall occur within designated areas only. Any hazardous materials used for construction shall be handled in accordance with appropriate regulations.

- A Construction Emergency Response and Communications Plan shall be developed and followed throughout the construction phase (including spill response plans). The Contractor shall develop spill prevention and contingency plans for the construction and general Site preparation for proposed road improvements. Personnel shall be trained in how to apply the plans and the plans shall be reviewed to strengthen their effectiveness and continuous improvement. Spills or depositions into watercourses shall be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. A hydrocarbon spill response kit will be on Site at all times during the work. Spills will be reported to the Ontario Spills Action Centre at 1 800 268 6060.
- A qualified Person shall regularly monitor construction.
- The contractor shall develop a Health and Safety Plan (HASP) and have it reviewed and approved by the Region prior to implementing. The HASP shall follow the Occupational Health and Safety Act, 1990 and regulatory requirements.
- All contractors shall complete and follow appropriate construction site training and adhere to appropriate road safety regulations during construction.
- Work shall be done in such a manner as to minimize disruption to the adjacent residential and commercial neighbourhood. Noise and dust emissions shall be controlled. Contract specifications shall ensure that all equipment and vehicles are compliant with noise and air emission standards for applicable equipment.
- An environmental monitor shall regularly inspect construction work areas to ensure that noise control measures and dust suppression measures are being adequately applied. If noise control measures and dust suppression measures are not functioning properly, alternative measures shall be implemented immediately and prioritized above other construction activities.
- Contractor shall develop and implement a traffic management plan in coordination with Niagara Region and City of Niagara Falls.
- Adequate signage to give advance notice of disruptions and detours shall be provided by the contractor.

10.4 Climate Change

Climate change is defined as any significant change in long-term weather patterns. The term can apply to any major variation in temperature, wind patterns or precipitation that occurs over time. Global warming describes the recent rise in the average global temperature caused by increased concentrations of greenhouse gases (GHGs) trapped in the atmosphere. Scientists have concluded that human activity is largely responsible for recently observed changes to our climate since GHGs are mainly caused by burning fossil fuels to produce energy.

The MECP finalized a document entitled “Considering Climate Change in the Environmental Assessment Process” in 2017 that provides guidance relating to the Ministry’s expectations for considering climate change during the EA process. This guide is recommended to be consulted if an approved Class EA has no climate consideration method.

There are two types of climate change effects that can be considered. The first is the effect that a project can have on climate change. In this case, the degree to which the project can provide some climate change mitigation measures is to be assessed. The second is the effect climate change has on the project. In this case, the degree to which the project can demonstrate adaptation to climate change impacts is assessed. Climate Change was considered during this MCEA study and is discussed in this Section.

10.4.1 Niagara Region Climate Change Trend

With the forecasted rapid population growth for the Greater Toronto and Hamilton Area, emissions are anticipated to continue to rise substantially in the absence of control measures. Within this context, the Region is projected to have its emission levels increase by over 80% by the year 2050 if no meaningful GHG emissions control measures are introduced (Climate Change Discussion Paper Regional Official Plan Review June, 2020).

According to New Niagara Official Plan, Climate Change Discussion Paper (2019), Climate changes already seen within Niagara have been:

- An increase in annual average temperature of 1.3°C in the last 40 years;
- Increase of +30°C days;
- More heat waves of 3 or more consecutive hot days;
- Longer growing season, with May and September significantly warmer;
- Increase in average number of frost-free days;
- More rain and less snow in winter and More summer droughts and dry spells;
- Increased numbers of freeze-thaw cycles (when daily temperatures fluctuate above and below freezing); and
- Increase in heavy rain events.

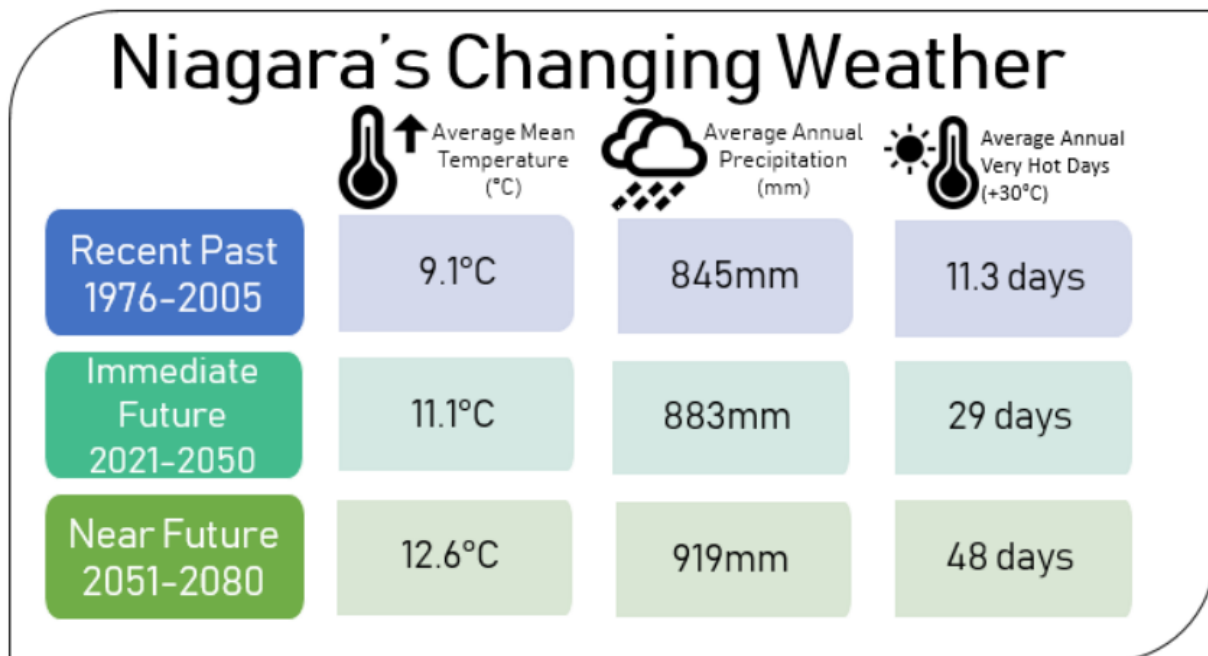
Future projections indicate these changes will increase, with more unpredictability. The Climate Atlas of Canada released projections in 2018 for Niagara Falls, St. Catharines, and Welland (Figure 10.1). The Climate Atlas uses hindcasting, which models the climate of the past, to recreate the averages, extremes, and seasonal

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patterns to predict future climate. Projections from both Penney (2012) and The Climate Atlas of Canada (2018) for Niagara indicate:

- An increase in average annual temperature by 2°C-3.5°C by 2050-2080;
- An increase in annual precipitation by 38mm to 74mm by 2050-2080;
- An increase in the number of very hot days (+30°C) by 18-37 days by 2050-2080;
and
- Increase in freeze-free days by 30 to 50 days by 2050-2080.

Figure 10.1: Projections of Niagara's weather – Climate Atlas of Canada, 2018.



For more information visit see Climate Atlas of Canada (www.climateatlas.ca)

As a result, some of the hazards that may experience changes in frequency and severity due to climate change in Niagara are:

- Floods;
- Freezing Rain/Ice Storms;
- Severe Storms;
- Extreme Temperatures;
- Droughts; and
- Vectorborne Diseases.

10.4.2 Effects of the Project on Climate Change

The provision of improvements to make walking and cycling more viable alternative travel modes through this project is expected to result in a reduction in vehicle traffic. The provision of improved sidewalk and dedicated cycling facilities will allow active transportation to be a more viable mode of travel and shift auto use to more sustainable modes of travel. Additionally, the provision of improvements will facilitate access to the rail station, in anticipation of increased transit service levels in the future, which will contribute to carbon emissions reduction from facilitating modal shifts to transit.

The Project is not anticipated to generate additional pavement area, as existing roadway space will be repurposed for active transportation infrastructure. As a result of the recommended solution and design, it is anticipated that Greenhouse Gas (GHG) emissions will be reduced, contributing to a reduction in climate change effects.

Existing vegetation will be retained to the extent practicable. Removals will be kept to a minimum to limit direct effects to vegetation communities and vascular flora, as well as indirect effects (e.g., soil compaction and changes to topography and drainage). Disturbed areas will be re-stabilized, incorporating revegetation using non-invasive, preferably native plantings and / or seed mix appropriate to the site conditions and adjacent vegetation communities. Seed mixes will be used in conjunction with an appropriate non-invasive cover crop as appropriate.

Additionally, landscape architecture design practices can contribute to a reduction in climate change effects. Planting of shade trees can reduce stormwater runoff and reduce the heat island effect. Native species can improve biodiversity, increase habitat and reduce need for watering / irrigation, and use of LID features can re-purpose stormwater.

10.4.3 Effects on the Project from Climate Change

There is potential for the project to be affected by climate change. Climate change is usually associated with any significant change in long-term weather patterns. Changes in the composition of the atmosphere are resulting in processes that alter global temperature and precipitation, in turn affecting local weather patterns. These processes can ultimately lead to increased occurrence of extreme weather events such as floods, droughts, ice storms and heat waves.

Precipitation, whether it is rainfall, snowfall, or other forms of frozen/liquid water, is the key climate and weather-related variable of concern with respect to drainage and culvert design. As a result of climate change, storm events are predicted to become more intense, which can result in larger volumes of precipitation at one time. Other climate

variables such as temperature are major inputs to evaporation and snowmelt processes. Increases in temperature are likely to impact precipitation and snowmelt runoff volumes discharged to watercourses.

Precipitation, whether it is rainfall, snowfall, or other forms of frozen/liquid water, is the key climate and weather-related variable of concern in stormwater management (SWM). As a result of climate change, storm events are predicted to become more intense, which can result in larger volumes of precipitation at one time.

10.5 Project Implementation

Phase 5 of Municipal Class EA process involves the completion of detailed design drawings, specifications, and tender documents to be provided to a successful contractor for the construction of the proposed project. During the implementation phase, the Region will need to adhere to several mitigation measures and monitoring plans as documented in this ESR, some of which will need to be in place prior to and during construction. Permits will need to be applied for from various regulatory agencies.

10.5.1 Anticipated Timeline

- Detailed Design; Spring 2023
- Property acquisition
- Utility Relocation
- Approvals and Permits
- Construction: 2024/2025

