MCEA PROJECT FILE REPORT

Schedule "B" Municipal Class Environmental Assessment Study, Confederation Drive River Crossing, Town of Smiths Falls, Ontario

MP Project No.: CCO-22-2838

Prepared for:

SMITHS FALLS
RISE AT THE FALLS

Town of Smiths Falls
77 Beckwith Street North
Smiths Falls, ON K7A 2B8

Prepared by:

McINTOSH PERRY

McIntosh Perry Consulting Engineers
115 Walgreen Road
Carp, ON K0A 1L0

MCEA PROJECT FILE REPORT
SCHEDULE "B" MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT STUDY, CONFEDERATION DRIVE RIVER CROSSING, TOWN OF SMITHS FALLS, ONTARIO

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115 Walgreen Road
Carp, Ontario, K0A 1L0

May 2022

Prepared by:	Reviewed by:
DRAFT	DRAFT
_______________________________	_______________________________
Kerry Reed	Lisa Marshall, P.Eng.
Environmental Planner	Project Manager
McIntosh Perry Consulting Engineers Ltd.	McIntosh Perry Consulting Engineers Ltd.

MCINTOSH PERRY

May 26, 2022
MP Project No.: CCO-22-2838

Town of Smiths Falls
77 Beckwith Street North
Smiths Falls, Ontario K7A 2B8

Attention: Paul McMunn, Director of Public Works and Utilities

RE: Project File Report: Schedule "B" Municipal Class Environmental Assessment Study, Confederation Drive River Crossing, Town of Smiths Falls, Ontario.

Dear Mr. McMunn,

McIntosh Perry Consulting Engineers Ltd. (McIntosh Perry) is pleased to submit this draft Project File Report for the Schedule "B" Municipal Class Environmental Assessment for the Confederation Drive River Crossing within the Town of Smiths Falls.

This Project File Report provides a comprehensive review of the various solutions, the evaluation criteria, and will identify the ***recommendation Technically Preferred Alternative*** for Confederation Drive River Crossing. Our team has conducted an in-depth review of the study area, desktop review of structural conditions, servicing needs, and stakeholder/public requirements. At this time, this report is intended to:

- Provide a background to the study;
- Define the nature and extent of the problem or opportunity, and explain the source of the concern or issue and the need for a solution;
- Outline the existing structural engineering and environmental (natural, social, cultural) conditions within the study area;
- Provide the alternative solutions considered;
- Provide evaluation followed and selection of the recommended technically preferred alternative;
- Outline consultation process to be followed during the MCEA process, and
- Summarize the public and agencies consultation received to date.

Please note that this draft Project File Report will be update through the MCEA process and will be finalized following the 30-day Notice of Completion review period.

If you have any questions or require any additional information, please contact the undersigned.

Sincerely,

Lisa Marshall, P.Eng.
McIntosh Perry Consulting Engineers Ltd.
Project Manager

EXECUTIVE SUMMARY

The Town of Smiths Falls (Town) retained McIntosh Perry Consulting Engineers Ltd. (McIntosh Perry) to undertake a Schedule "B" Municipal Class Environmental Assessment (MCEA) in accordance with the Municipal Class Environmental Assessment (MCEA) process (October 2000, amended 2011, 2015 and 2017), approved under the Ontario Environmental Assessment Act, in order to identify and develop a technically preferred solution for addressing concerns related to the Confederation Drive River Crossing (Confederation Bridge) in the Town of Smiths Falls, as shown on the key map below.

The existing Confederation Drive River Crossing is in an advanced state of deterioration and has been closed for public use at this time. The existing Confederation Drive River Crossing is a twin span Warren type pony truss constructed in 1904. The steel truss bridge sits on a masonry pier and two concrete abutments. The deck was post-tension timber resting on steel stringers. The existing bridge is also a single-lane bridge with other functional and operational deficiencies. McIntosh Perry was retained by the Town to conduct this MCEA, to identify and evaluate alternative solutions to determine a preferred solution to address the aging infrastructure with the Confederation Drive River Crossing.

The Confederation Drive River Crossing, constructed in 1904, crosses the Rideau River, a Canadian Heritage River and is adjacent to the Rideau Canal World Heritage Site (WHS) and National Historic Site of Canada (NHSC). The Cultural Heritage Evaluation Report (CHER) determined that the Confederation Drive Rive Crossing meets three of the criteria from Ontario Regulation 9/06 and is eligible for designation under Part IV Section 29 of the Ontario Heritage Act (OHA). The bridge has physical and design value as an early, rare and representative two-span Warren Pony Truss bridge. It has contextual value because it supports and maintains the historic industrial character of the area and has historical and visual links to its surroundings. The bridge is a cultural heritage resource, supports the landscape setting of the Rideau Canal and is also an important contributor to the unique variety of bridges in the Town of Smiths Falls.

This draft Project File Report has been prepared to present the results of the transportation engineering and environmental assessment study and has been prepared to document the consultation program, findings of technical background studies, the evaluation of alternative design solutions and the selection of the ***recommended Technically Preferred Alternative***.

This MCEA study considered four (4) alternative design concepts to address issues withing the Confederation Drive River Crossing study area:

- **Alternative 1:** Do nothing.
- **Alternative 2:** Remove the existing Confederation Drive River Crossing and provide new turn around areas on either side of the watercourse crossing.
- **Alternative 3:** Rehabilitate the existing Confederation Drive River Crossing to meet engineering and public safety standards, reinstate as a new vehicle crossing and/or pedestrian structure.
- **Alternative 4:** Remove the existing Confederation Drive River Crossing and replace with a new vehicle and/or pedestrian structure.

Consultation in accordance with the requirements of a Schedule "B" MCEA project is being carried out to provide members of the community, government agencies, municipal staff, emergency services, Indigenous Communities and other key interest groups an opportunity to review the study process, alternatives and recommended technically preferred solution.

As part of the MCEA process, McIntosh Perry is required to develop alternative solutions pertaining to the bridge, with rehabilitation being an alternative. Through McIntosh Perry's review of available bridge evaluation documentations for the Confederation Bridge (previous studies completed by Greer Galloway Consulting Engineers and Keystone Bridge Management Corp.), it was noted that integral structural elements of the existing structure have deteriorated and would require replacement if the bridge were to be rehabilitated. In order to determine to what extent existing elements of the bridge would require replacement, a Close-Up Inspection and Structural Analysis would be required. The existing bridge was constructed in 1904 (118 years old). It should be noted that a typical bridge life span built in 1900's should be only 50 years based on OHBDC (previous bridge code in Ontario replaced by CHBDC). In addition, if the bridge were to be rehabilitated, it would be limited by the service life of the remaining elements that were not rehabilitated. Based on the existing condition of bridge elements, material strength, and date of construction, it is recommended that rehabilitation not be considered as a viable of Alternative Solution for vehicular traffic nor as an active transportation link. Town Council unanimously agreed not to proceed with any further structural evaluation of the Confederation Drive River Crossing and that the period of time when the bridge could have been saved has since past. Council members indicated that they would like to see the bridge cloned as the preferred design option whether it is for vehicles and/or pedestrian traffic.

Based on the comprehensive review of the four (4) alternative design concepts against a multiple bottom line evaluation process that took into consideration environmental, social, constructability, financial, and operational factors, ***Alternative Solution 4 -*** remove the existing Confederation Drive River Crossing and provide a new structure in its place, has been identified as the ***recommended Technically Preferred Alternative***.

During this MCEA study, it will be identified within this report consideration that needs to be made during the Detail Design phase of this project for permitting and approvals (i.e., Rideau Valley Conservation Authority, Parks Canada, Department of Fisheries and Oceans, Transport Canada, and the Ministry of Environment, Conservation and Parks), as well as recommendations for preliminary mitigation measures. In addition, heritage considerations will need to be given (i.e., Cultural Heritage Resource Documentation Report, cloning of the existing bridge, commemorative plaque, etc.) as the Confederation Drive River Crossing has been identified to have "significant cultural and heritage value" and therefore the Municipal Heritage Committee must be consulted during the detail design phase to ensure a sympathetic design and/or a commemorative strategy is implemented.

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1.0 INTRODUCTION

The Corporation of the Town of Smiths Falls (Town of Smiths Falls/Town) retained McIntosh Perry Consulting Engineers Ltd. (McIntosh Perry) to undertake a Schedule "B" Municipal Class Environmental Assessment (MCEA) in accordance with the Municipal Class Environmental Assessment (MCEA) process (October 2000, amended 2011, 2015 and 2017), approved under the *Ontario Environmental Assessment Act*, in order to identify and develop a technically preferred solution for addressing concerns related to the Confederation Drive River Crossing in the Town of Smiths Falls.

The existing Confederation Drive River Crossing (Confederation Bridge) is in an advanced state of deterioration and has been closed for public use at this time. The existing bridge is also a single-lane bridge with other functional and operational deficiencies. McIntosh Perry was retained by the Town to conduct this MCEA, to identify and evaluate alternative solutions to determine a preferred solution to address the aging infrastructure within the Confederation Drive River Crossing area (Figure 1-1).

Figure 1-1: Confederation Drive River Crossing Study Area Key Map

2.0 CLASS ENVIRONMENTAL ASSESSMENT PROCESS

2.1 Ontario's Environmental Assessment Act

Ontario's Environmental Assessment Act (EAA) was passed in 1975 and was proclaimed in 1976. The EAA requires proponents to examine and document the environmental effects that could result from major projects or activities and their alternatives. Municipal undertakings became subject to the EAA in 1981. The EAA's comprehensive definition of the environment is:

- Air, land or water;
- Plant and animal life, including human life;
- The social, economic and cultural conditions that influence the life of humans or community;
- Any building, structure, machine or other device or thing made by humans;
- Any solid, liquid, gas, odour, heat, sound, vibration, or radiation resulting directly or indirectly from human activities, and
- Any part of a combination of the foregoing and the interrelationships between any two or more of them, in or of Ontario.

The purpose of the EAA is the betterment of the people as a whole, or any part of Ontario by providing for the protection, conservation and wise management of the environment in Ontario (RSO 1990, c.18, s.2). It is the objective of the EAA proponents to ensure that decisions result from a rational, objective, transparent, replicable, and impartial planning process.

To meet the requirements of Ontario's EAA, class environmental assessments were approved by the Minister of the Environment in 1987 as a means of obtaining project-specific approval under the Ontario EAA. The Class EA approach streamlines the planning and approvals process for projects that are:

- Recurring;
- Similar in nature;
- Usually limited in scale;
- Predictable in the range of environmental impacts, and
- Responsive to mitigation.

2.2 Class Environmental Assessment Process

The MCEA, prepared by the Municipal Engineers Association (MEA) (October 2000, amended 2011, 2015 and 2017) outlines the procedures to be followed to satisfy Class EA requirements for water, wastewater, stormwater management and road projects. The MCEA process provides municipalities with a five-phase planning procedure approved under the EAA for proponents to follow to meet Ontario's EA requirements.

- **Phase 1:** Problem or Opportunity Statement
- **Phase 2:** Identification and Evaluation of Alternative Solutions
- **Phase 3:** Examination of Alternative Methods

- **Phase 4:** Documentation of the Class EA Process
- **Phase 5:** Implementation and Monitoring.

Projects subject to the Class EA process are classified into the following four “Schedules” based on the degree of the expected impacts.

- **Schedule “A”:** Projects are limited in scale, have minimal adverse effects and include the majority of municipal maintenance and operational activities. These projects are approved and may proceed directly to Phase 5 for implementation without following the other phases.
- **Schedule “A+”:** Projects are limited in scale and have minimal adverse effects. These projects are approved and may proceed directly to Phase 5 for implementation without following the other phases. However, the public is to be advised prior to project implementation, though there is no ability for the public to request a Part II Order.
- **Schedule “B”:** Projects have the potential for some adverse environmental effects. The municipality is required to undertake a screening process (Phases 1 and 2) involving mandatory contact with directly affected public and relevant review agencies to ensure that they are aware of the project and that their concerns are being addressed. Schedule “B” project require that a Project File report be prepared and submitted for review by the public and review agencies. If there are no outstanding concerns, then the municipality may proceed to Phase 5 for implementation.
- **Schedule “C”:** Projects have the potential for significant environmental effects and must proceed under the full planning and documentation procedures specified in the MCEA Document (Phases 1 to 4). Schedule “C” projects require that an Environmental Study Report be prepared and submitted for review by the public and review agencies. If there are no outstanding concerns, then the municipality may proceed to Phase 5 for implementation.

Figure 2-1 illustrates the MCEA planning and design process with the phases required for each schedule.

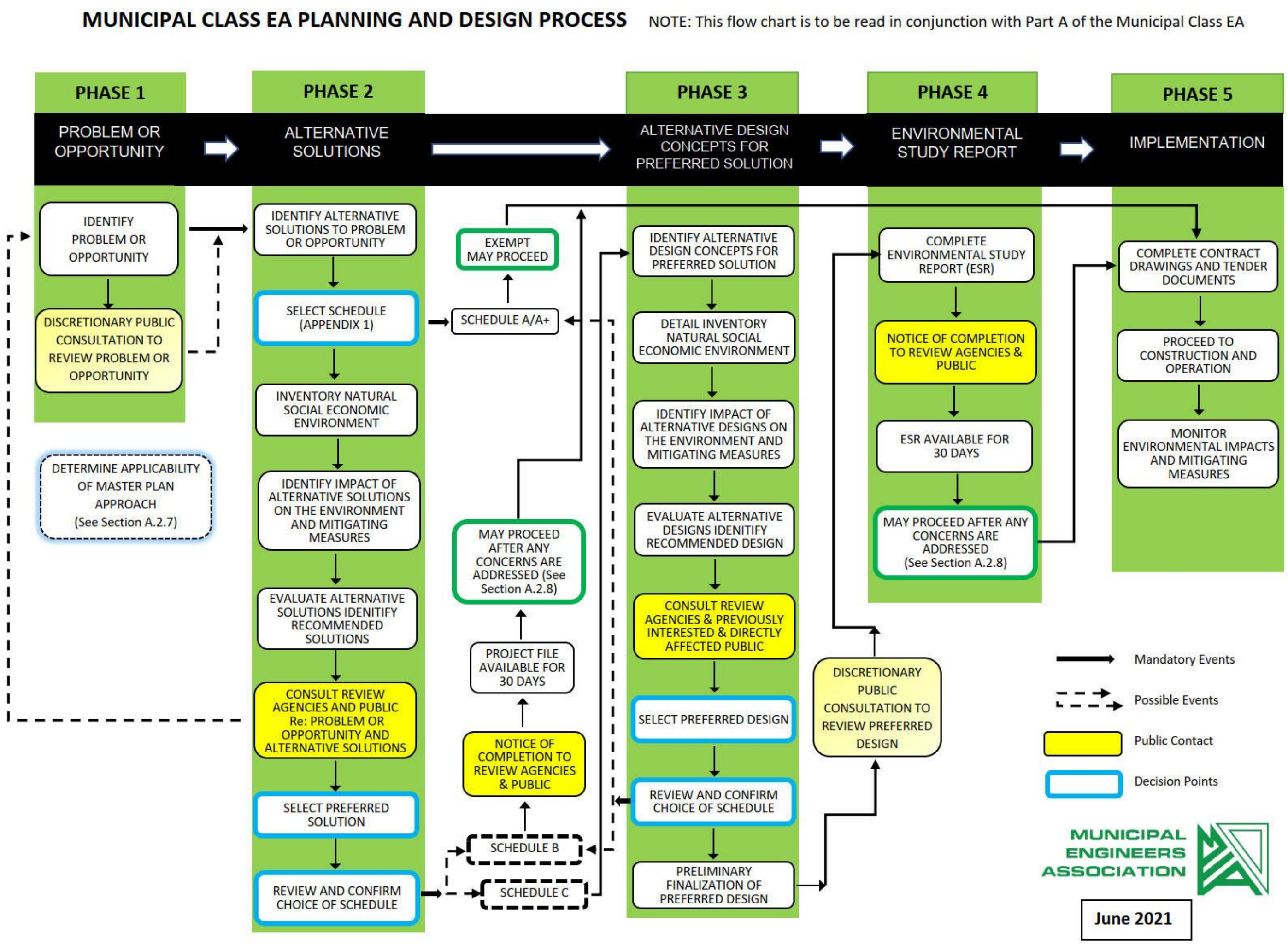

Figure 2-1: Municipal Class EA Planning and Design Process

2.2.1 Schedule B Classification

The Confederation Drive River Crossing study is designated as a Schedule "B" undertaking according to the Municipal Class EA (October 2000, amended 2011, 2015 and 2017). A Schedule "B" undertaking must fulfill the first two phases of the MCEA process before moving on to the detail design and implementation. The MCEA planning phases undertaken for this study are listed below.

Phase 1: Identify the Problem / Opportunity
This phase involves not only identifying the problem/opportunity, but also describing it in sufficient detail to formulate a clear problem/opportunity statement. It is important that this statement is concise and considers the goals and objectives of the MCEA, as it is used to dictate the scope of the project.

Phase 2: Identify and Evaluate Alternative Solutions to the Problem/Opportunity
This phase involves undertaking the following six steps:

- Identify reasonable alternative solutions to the problem/opportunity;
- Prepare a general inventory of the existing natural, social and economic environments in which the project is to occur;
- Identify the net positive and negative effects of each alternative solution including mitigating measures, where possible;
- Evaluate the alternative solutions and identify a technically preferred solution;
- Consult with review agencies and the public to solicit comments and input; and
- Select/confirm the technically preferred solution.

2.2.1.1 Mandatory Principles

The planning process followed not only adheres to the guidelines outlined by the MCEA document, but reflects the following five mandatory principles of MCEA planning under the EAA:

- Consultation with affected parties early on and throughout the process, such that the planning process is a cooperative venture;
- Consideration of a reasonable range of alternatives, both functionally different alternative to the project (known as alternative solutions) and alternative methods of implementing the preferred solution;
- Identification and consideration of the effects of each alternative on all aspects of the environment;
- Systematic evaluation of alternatives in terms of their advantages and disadvantages, to determine their net environmental effects; and
- Provision of clear and complete documentation of the planning process followed to allow 'traceability' of decision-making with respect to the project.

Following these five principles ensures that the MCEA process is devoted to the prevention of problems and environmental damage through planning and decision-making, recognizing that research and evaluation of possible impacts have been considered prior to implementation of the project.

2.2.2 Impact Assessment Act

On August 28, 2019, the Impact Assessment Act (IAA) replaced the former Canadian Environmental Assessment Act (CEEA), 2012. The projects and activities that are subject to the IAA are very similar to those that were subject to an environmental assessment under the CEAA, 2012. However, some changes have been made to the "Project List", such as new thresholds or projects have been introduced or increased. Under the IAA, only those projects designated by the Physical Activities Regulations or designated by the Minister of Environment on a discretionary basis may be subject to federal environmental assessment.

It has been determined that this project does not include physical activities identified on the list and is therefore not subject to the IAA process.

3.0 STUDY OVERVIEW

Phase 1 of the MCEA study required a clear and concise Problem/Opportunity Statement, followed by Phase 2 Alternative Solutions considered to address the identified Problem/Opportunity. At this point in the study, the details of the Alternative Solutions are considered 'preliminary' until a Preferred Solution is adopted by the Town of Smiths Falls to carry forward into detail design.

3.1 Phase 1 – Problem/Opportunity Statement

Confederation Drive River Crossing is in an advanced state of deterioration and has been closed for public use at this time. The existing bridge is also a single lane with other functional and operational deficiencies. Therefore, the Town of Smiths Falls has the opportunity to identify and evaluate alternative solutions and determine a preferred bridge solution in accordance with the Municipal Class Environmental Assessment Process.

3.2 Phase 2 – Alternative Solutions

To address the Problem/Opportunity Statement the following four (4) Alternative Solutions were developed:

- **Alternative 1:** Do nothing.
- **Alternative 2:** Remove the existing Confederation Drive River Crossing and provide new turn around areas on either side of the watercourse crossing.
- **Alternative 3:** Rehabilitate the existing Confederation Drive River Crossing to meet engineering and public safety standards, reinstate as a new vehicle crossing and/or pedestrian structure.
- **Alternative 4:** Remove the existing Confederation Drive River Crossing and replace with a new vehicle and/or pedestrian structure.

3.2.1 Alternative 1

Alternative 1 involves leaving the existing Confederation Drive River Crossing in place, in its deteriorating condition and continuing to restrict public access. Continued inaction on the deteriorating conditions of Confederation Drive River Crossing will amount to demolition by neglect which would pose as a health and safety concern. Therefore, Alternative 1 is not considered to be a viable option, however, this option has been carried forward for evaluation to use as a benchmark for the other Alternative Design Concepts.

3.2.2 Alternative 2

Alternative 2 involves the complete removal of the existing Confederation Drive River Crossing and construction of new turnaround areas at the east and west sides of Rideau River for traffic on Confederation Driver and Canal Street. This option would not include reinstating the Confederation Drive Rive Crossing.

3.2.3 Alternative 3

Alternative 3 involves the rehabilitation of the existing Confederation Drive River Crossing solely as a vehicle and/or pedestrian crossing in its current location. The rehabilitation of the bridge would attempt to extend the service life of the bridge through the replacement of certain components. In order for this to be deemed a valid alternative, additional engineering work would need to be completed to determine the feasibility of the rehabilitation alternative which would involve a Structural Steel Close-Up Inspection and Structural Evaluation of the existing bridge to help further evaluate the potential for rehabilitation. The service life of the rehabilitated bridge would be limited by the service life of the remaining elements that were not rehabilitated.

3.2.4 Alternative 4

Alternative 4 involves removing the existing Confederation Drive River Crossing and replacing it with a new vehicle and/or pedestrian structure. The existing bridge would be replaced with a vehicle/pedestrian bridge or only a pedestrian bridge. The service life of the new pedestrian bridge will be 75 years. A suitable pedestrian bridge would have a 3.0 m deck width that is primarily designed for active transportation, may be designed to carry light service vehicles such as a pickup truck.

4.0 INVENTORY OF EXISTING CONDITIONS

This section presents an overview of the background information (secondary source information) and the results of the field investigations undertaken specifically for this study. The following sections provide a summary of the existing natural, socio-economic, and cultural environments, as well as the existing structural conditions of Confederation Drive Rive Crossing.

4.1 Natural Environmental Conditions

Determining the existing natural environmental conditions of the study area is required to assess the potential impacts of each alternative option considered as part of this MCEA study.

A desktop review was undertaken to collect background data and document all known natural features within the study area, prior to undertaking field investigations. Information was obtained from the following sources during the desktop review:

- Wildlife atlases for birds and herpetofauna, (Bird Studies Canada et al. 2006, Ontario Nature, 2020);
- Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF) Land Information Ontario (LIO) database;
- The Ontario Geological Survey Earth (OGS Earth) geoscience database (OSG, 2010);
- NDMNRF Make a Map: Natural Heritage Areas mapping application (NDMNRF, 2022);
- Department of Fisheries and Oceans (DFO) Aquatic Species at Risk Mapping Tool (DFO, 2022);
- Fish ON-Line (NDMNRF, 2022);
- Rideau Valley Conservation Authority;
- Ministry of Environment, Conservation and Parks (MECP) Source Protection Atlas (MECP, 2021), and
- Town of Smiths Falls Official Plan.

Field investigations were conducted on December 13, 2021, to collect current, and site-specific information related to terrestrial and aquatic ecosystems within the study area by McIntosh Perry. Field investigations included identification of the following where applicable:

- Existing vegetation communities;
- Wetland areas;
- Existing fish and fish habitat;
- Reptiles, amphibian, and associated habitat;
- Species at Risk (SAR) and their habitat;
- Resident or migrant bird and wildlife species;
- Wildlife corridors and concentration areas;
- Critical habitat areas, and
- Existing land uses surrounding the study area.

For detailed information obtained through McIntosh Perry's desktop review and field investigations at the Confederation Drive River Crossing study area, please refer to the Summary of Existing Environmental Conditions Report (**Appendix A**). The following sections summarize the natural environmental conditions of the study area.

4.1.1 Vegetation

The study area is located within the Lake Simcoe-Rideau Ontario Ecoregion (Ecoregion 6E), of the Mixedwood Plains Ecozone within the Great Lakes-St. Lawrence Forest Region (Crins et al., 2009). The region is largely comprised of cropland (57%), pastures (44.4%), and abandoned fields (12.8%). Forested areas of the Lake Simcoe-Rideau Ecoregion are composed primarily of deciduous forest (16%) with some additional coniferous and mixed forests. Typical tree species include green ash (*Fraxinus pennsylvanica*), silver maple (*Acer saccharinum*), red maple (*Acer rubrum*), eastern white cedar (Thuja occidentalis), yellow birch (Betula alleghaniensis) balsam fir (*Abies balsamea*), black ash (Fraxinus nigra), black spruce (*Picea mariana*), tamarack (*Larix laricina*) and numerous other species (Crins et al., 2009).

The study area is comprised of urban parkland areas with manicured/mown grass and ornamental/landscaped gardens. No significant or unique vegetation communities exist within the greater study area (i.e., 120 m of the Confederation Drive River Crossing), thus no ELC communities were classified. No species at risk (SAR) or rare vegetation was identified during the field investigation.

4.1.2 Wetland Habitat

A Provincially Significant Wetland (PSW) is located approximately 550 m west of the within the Confederation Drive River Crossing study area. The PSW is referred to as the Swale Wetland and is evaluated as a provincially significant marsh. This PSW is within the Swale Marsh, an Area of Natural and Scientific Interest (ANSI). According to the Ontario Flow Assessment Tool (OFAT), these features are connected to upstream portions of the Rideau River, separated by two federally owned dames, one approximately 10 m upstream and another approximately 500 m upstream of the Confederation Drive River Crossing study area. Background review found several other unevaluated wetlands (swamp, marsh, and fens) in areas adjacent to Smiths Falls and the aforementioned ANSI and PSW; however, none of these were observed through field investigations or background review to be present within 120 m of the Confederation Drive River Crossing study area.

4.1.3 Wildlife

Characteristic wildlife of the area includes white-tailed deer (Odocoileus virginianus), northern raccoon (*Procyon lotor*), striped skunk (*Mephitis mepthitis*), woodchuck (*Marmota monax*), Red-spotted Newt (*Notophthalmus viridescens*), Snapping Turtle (*Chelydra serpentina*), Eastern garter snake (*Thamnophis sirtalis sirtalis*) and common watersnake (*Nerodia sipedon*). Representative bird species include field sparrow (*Spizella pusilla*), Grasshopper Sparrow (*Ammodramus savnnarum*), and Eastern Meadowlark (*Sturnella magna*) (Crins et al., 2009). A Colonial Waterbird Nesting area designated as a wildlife concentration area is also identified within the vicinity of the study area.

During the 2021 field investigation, the following wildlife species were observed: American black duck (*Anas rubripes*), Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), ring-billed gull (*Larus delawarensis*), rock pigeon (*Columba livia*), and Eastern gray squirrel (*Sciurus carlinensis*). Hoary bat (*Lasiurus cinereus*) which are widespread, may utilize treed habitat within the study area for maternity colonies, purpose, though they are typically less dependent on specialized habitat for this function (i.e., cavities, etc.).

No migratory or SAR bird nests were observed on Confederation Drive River Crossing during the field investigation.

4.1.4 Fisheries and Aquatic Ecosystems

The watercourse associated with the Confederation Drive River Crossing area is the Rideau River, one of the largest tributaries of the Ottawa River. Aquatic Resource Area (ARA) mapping has not defined the thermal regime for the Rideau River, however based on the baitfish and sportfish present, the Rideau River is identified as having a warm water thermal regime.

The field investigation was completed by walking along the shoreline of the Rideau River within the study area. Electrofishing surveys were not undertaken due to inaccessibility and safety concern with the dam; however, background information and watercourse habitat information was recorded.

During the field investigation, water was observed to be flowing well over the weir approximately 10 m south (upstream) of the study area. Some back eddies were observed between the weir and the bridge, as well as large riffles/flats downstream of the bridge then pools even further, along the shoreline, before the watercourse flows over another weir. The shoreline downstream of the bridge was comprised of vertical armour stone, and flat bedrock (with some deciduous trees growing through cracks) under the bridge.

Specialized habitat for sportfish may potentially be present directly upstream, downstream, and under the Confederation Drive Bridge as well as potential specialized habitat for sport and baitfish specific life processes (i.e., spawning and nursery/rearing habitat) in the further downstream habitat features (i.e., riffle and pool structures).

As per the MNDMNRF Kemptville District’s in-water timing guidelines for all other watercourses within FMZ 18 within the district, no in-water works are to occur between March 15 and June 30, of any year (in order to avoid impacting spring spawning species).

4.1.5 Species at Risk

Ontario wildlife atlases were reviewed for SAR Element Occurrence (EO) records within 10 km of the study area. The Ontario Reptile and Amphibian Atlas (Ontario Nature, 2020) identified records of:

- Blanding’s Turtle (*Emydoidea blandingii*);
- Eastern Musk Turtle (*Sternotherus odoratus*);
- Midland Painted Turtle (*Chrysemys picta marginata*);
- Snapping Turtle *(Chelydra serpentina);*
- Northern Map Turtle (*Graptemys geographica*);
- Eastern Milksnake (*Lampropeltis triangulum triangulum*);
- Gray Ratsnake (*Pantherophis spiloides*), and
- Western Chorus Frog (*Pseudacris triseriata*).

No habitat was observed directly within or adjacent to the Confederation Drive River Crossing study area which would support specific life processes (i.e., overwintering or nesting) for SAR reptiles or amphibians. Adequate nesting habitat for Snapping Turtle was identified in numerous locations throughout the study area, characterized by soft sand or gravel banks.

Although the Confederation Drive River Crossing study area falls within an elemental occurrence record for the Gray Ratsnake, no habitat to support significant life processes was observed directly within or adjacent to the study area (i.e., accessible crevices and/or available chambers below the frost line to support overwintering, no suitable oviposition sites such as rotten interior cavities of large deciduous trees and stumps or compost piles).

Due to elemental occurrence records for Blanding's Turtle existing approximately 1.5 km northwest and 1.8 km east of the Confederation Drive River Crossing study area, areas within 30 m of the Rideau River are considered Category 2 habitat and areas beyond 30 m, up to 250 m are considered Category 3 habitat.

The Ontario Breeding Bird Atlas (Bird Studies Canada et al., 2006) identified ten (10) SAR birds known to occur within 10 km of the study area:

- Bank Swallow (*Riparia riparia*);
- Barn Swallow (*Hirundo rustica*);
- Black Tern (*Chlidonias niger*)
- Bobolink (*Dolichonyx oryzivorus*);
- Chimney Swift (*Chaetura pelagica*);
- Common Nighthawk (*Chordeiles minor*);
- Eastern Meadowlark (*Sturnella magna*);
- Eastern Wood-peewee (*Contopus virens*);
- Golden-winged Warbler (*Vermivora chrysoptera*);
- Grasshopper Sparrow (*Ammodramus savannarum*);
- Least Bittern (*Ixobrychus exilis*), and
- Wood Thrush (*Hylocichla mustelina*).

Potential habitat was identified for Barn Swallow on the Confederation Drive River Crossing, although no nests were identified (it should be noted that the entire structure could not be fully examined due to limited accessibility). Due to the location of the Confederation Drive River Crossing study area (i.e., urban area containing structures and chimneys), potential habitat for the Chimney Swift is present within the study area. However, the structures that potentially provide Chimney Swift habitat are approximately 65 m north of the bridge and are not part of the scope of the project works. Other adjacent habitat features exist in the form of urban parkland and manicured grass with landscaped gardens which would not support life processes of grassland or woodland SAR birds. Finally, no habitat features (i.e., wetlands) exist within the study area which would support life processes of the Black Tern.

NHIC identified the following SAR within 1 km of the study area:

- Butternut (Juglans cinerea)
- Black Tern
- Eastern Meadowlark
- Eastern Musk Turtle
- Gray Ratsnake
- Northern Map Turtle
- Wood Thrush

Habitat for Butternut is available within the Confederation Drive River Crossing study area due to the wide range of habitat preferences for Butternut. However, no Butternut individuals were observed during field investigation.

DFO Aquatic SAR mapping tool found no aquatic SAR records or critical habitat within the study area; however, approximately 4.6 km upriver of the study area, in Lower Rideau Lake and its associated tributaries the following species are known to/may persist:

- Bridle Shiner

No specialized habitat (i.e., abundance of aquatic vegetation/macrophytes which provide spawning habitat, foraging sites and cover from predation) exists within the immediate study area.

No specialized bat habitat (i.e., structures with interstitial spaces such as joists and rafters or deep caves/abandoned mines) which would provide overwintering habitat appears to be associated with the Confederation Drive River Crossing; however, structures at the northern extent of the study area could provide such habitat. Furthermore, no typical roosting habitat (i.e., rock crevices, tree cavities, or snag trees) were observed during field investigations which would support SAR bats as maternity colony sites within the immediate study area.

Please note that during Preliminary and Detail Design, if it is determined that the proposed activities cannot avoid impacts to protected SAR and their habitat, an application for authorization under the *Endangered Species Act* (ESA) would be required. If impacts are determined, or impacts are unknown, SAROntario@ontario.ca should be contacted to undergo a formal review under the ESA.

LEGEND

- Site Location
- MECP Well Location
- 120m Buffer
- Regulation Limit (RVCA)
- Category 2 Blanding's Turtle Habitat
- Category 3 Blanding's Turtle Habitat
- Virtual Flow
- Waterbody

REFERENCE

GIS data provided by the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry, 2022.

40 20 0 40

Scale 1:1,500 Metres

CLIENT: TOWN OF SMITHS FALLS

PROJECT: SUMMARY OF EXISTING ENVIRONMENTAL CONDITIONS REPORT

TITLE: CONSTRAINTS AND OPPORTUNITIES

McINTOSH PERRY
115 Walgreen Road, RR3, Carp, ON K0A1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

PROJECT NO:	CCO-22-2838	FIGURE:
Date	Feb., 14, 2022	4-1
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4.1.6 Groundwater

A search of the publicly accessible MECP well records within 500 m of the study area identified a total of five (5) water supply wells. Of the five water supply wells, there are two (2) domestic, one (1) commercial, one (1) industrial, and one (1) public water supply water wells. These wells were constructed between 1960 and 1994 with an average depth of 21.3 m below ground surface (MECP, 2021). Aside from water supply wells, several (34) other monitoring and test holes exist within 500 m of the Confederation Drive River Crossing study area with an average depth of 4.9 m below surface level; however, not exceeding a maximum depth of 10.4 m. Static water levels of the water supply wells ranges from 3.4 to 12.2 m with an average static level of 6.1 m.

4.1.7 Surface Water

Confederation Drive River Crossing crosses the Rideau River which is a tributary of the Ottawa River. The Rideau River flows north from Upper Rideau Lake and into the Ottawa River at the Rideau Falls in Ottawa, Ontario. The Rideau River is immediately north of the Rideau Canal and the Rideau Canal links the Rideau River by a series of canals and dams to the south-flowing Cataraqui River. The Rideau Canal is 202 km long which starts at the Ottawa River and flows into Lake Ontario. The Confederation Drive River Crossing study area is within the Rideau-Smiths Falls catchment basin.

4.1.8 Rideau Valley Source Protection Area

The study area is located within the Rideau Valley Source Protection Area (RVSPA), which is subject to the Mississippi-Rideau Source Protection Plan (MRSPP, 2020). The Town of Smiths Falls receives its water from the Rideau River. The Confederation River Crossing study area is located within proximity to an Intake Protection Zone 1 and 2 (IPZ), with a vulnerability score of 10 and 8 respectively, meaning the area is of highest concern. The study area is also located approximately 540 m north from a Wellhead Protection Area (WHPA).

The Ministry of Environment, Conservation, and Parks (MECP) Source Protection Information Atlas indicates the Confederation River Crossing study area with the following:

- Wellhead Protection Area: No
- Wellhead Protection Area E (GUDI): No
- Intake Protection Zone: No
- Issue Contributing Area: No
- Significant Groundwater Recharge Area: No
- Highly Vulnerable Aquifer: Yes
- Event-Based Area: No
- Wellhead Protection Area Q1: No
- Wellhead Protection Area Q2: No
- Intake Protection Zone Q: No

4.1.9 Physiography, Soils and Bedrock

The study area lies within in the Lake Simcoe-Rideau Ecoregion (Ecoregion 6E), of the Mixed Plains Ecozone within the Great Lakes-St. Lawrence Forest Region (Crins et al., 2009), and is primarily made up of March Formation sandstone and dolostone. The bedrock across the catchment is mainly overlain by a thin veneer of glacial sediment, referred to as 'drift' that is generally less than a metre in thickness; although there is significant areas of glacial till and organic deposits (RVCA, 2015).

4.1.10 Designated Areas

The Confederation Drive River Crossing study area is classified as Category 2 and Category 3 Blanding's Turtle habitat due to the proximity of elemental occurrence data provided by the NHIC (within 2 km). General Habitat Description for the Blanding's Turtle (*Emydoidea blandingii)* (MNR, 2013b) states activity in Blanding's Turtle general habitat "…can continue as long as the function of these areas for the species is maintained and individuals of the species are not killed, harmed or harassed."

The study area is located within the Rideau Valley Conservation Authority (RVCA) regulation limit under the provisions of O. Reg. 97/04: Content of Conservation Authority Regulations under Subsection 28 (1) of the Act: *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses, thus permits consultation and permitting from the RVCA is required for any development within this limit or alteration to a watercourse.*

The Swale Wetland PSW and the Swale Marsh ANSI (functionally the same systems under different delineation and classification) are present approximately 550 m west of the Confederation Drive River Crossing study area within the *Rideau-Smiths Falls catchment basin, existing within the regulation limit of O. Reg. 174/06: Rideau Valley Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses.*

4.1.11 Air Quality and Noise

Air quality and dust generation may be a by-product of construction in the study area. Generation of dust, fumes, and odours may be created during construction, by machinery working within the study area. These fumes may degrade air quality in the immediate vicinity of the work area.

The Town of Smiths Falls has a noise bylaw (By-law No. 4022-73) in effect. Nosie sensitive receptors within the study area that could be impacted by the construction works include nearby residences and businesses as well as park users.

4.2 Archaeological Resources

A Stage 1 Archaeological Assessment was conducted by Past Recovery Archaeological Services Inc. (Past Recovery) in December 2021 for Confederation Drive River Crossing prior to the commencement of this MCEA Study. The objective of the Stage 1 Archaeological Assessment was to compile available information known and potential cultural heritage resources within the study area and provide direction for the protection, management and/or recovery of these resources, consistent with the Ministry of Heritage, Sport, Tourism, and Culture Industries (MHSTCI) Guidelines.

The Stage 1 Archaeological Assessment resulted in the determination that the subject area retains potential for the presence of deeply buried archaeological resources in the form of a mid-nineteenth century storehouse requiring monitoring in the event of below-grade excavation.

This storehouse was located on Ward Island (referred to as Veterans' Memorial Park) and was documented to present by 1863 and removed prior to 1889, given its size it likely had fairly substantial foundations that may still be present in the ground. Given the extent of previous disturbance from the road realignments and utility line construction, this feature, if still present, would be considered to be deeply buried.

Below grade excavations within the footprint of the mid-nineteenth century storehouse or a 5 m buffer within the study area should be the subject of Stage 2 archaeological monitoring as shown below in Figure 4. There are no further concerns to impacts archaeological sites within the remainder of the Stage 1 study area and no further archaeological assessment of these parts of the subject property is required.

For information on the Stage 1 Archaeological Assessment, please refer to the Stage 1 Archaeological Assessment report prepared by Past Recovery (**Appendix B**).

Figure 4-2: Stage 2 Archaeological Monitoring

4.3 Cultural Heritage Value

In 1952, the Historic Sites and Monuments Board of Canada declared the Rideau Canal to be a site of national significance. In 2000, the Rideau River, which forms a significant part of the Rideau Canal, was designated a Canadian Heritage River for its human heritage and recreational values. Then in 2007, the Rideau Canal was inscribed as Canada's 14th and Ontario's only World Heritage Site. It is considered of universal value by the United Nations Educational, Scientific and Cultural Organization (UNESCO).

The Confederation Drive Crossing was constructed in 1904 by the Locomotive and Machine Company of Montreal (LMCM). LMCM was established in 1883 producing steam and diesel locomotives for companies including CP, Grand Trunk and Intercontinental and CN Railways. The bridge was a replacement for a series of bridges in the same location constructed as early as 1849. Confederation Drive River Crossing was owned and maintained by the Department of Transport until 1986 when it was transferred to the Town of Smiths Falls. The bridge constructed in 1904 and is a metal 5 panel rivet-connected Warren Pony Truss, Fixed with a total length of 159', 16' wide and 5' wide cantilevered walkway. The steel truss bridge sits on a masonry pier and two concrete abutments and has a 12" wood joist frame affixed with a 3" plank roadbed. The bridge has been largely unaltered with the exception of the replacement of road boards documented in the 1970's.

Under the MCEA system, any bridge that is 40 years old and over are subject to a Cultural Heritage Evaluation Report (CHER). McIntosh Perry retained Letourneau Heritage Consulting Inc. (LHC) to carry out a Cultural Heritage Evaluation Report (CHER) as it is known that the bridge was constructed in 1904 (118 years old) and a Heritage Impact Assessment (HIA) as the Confederation Drive River Crossing crosses the Rideau River, a Canadian Heritage River and is adjacent to the Rideau Canal World Heritage Site (WHS) and National Historic Site of Canada (NHSC).

To be designated under Ontario Regulation 9/06, a property must meet one or more of the criteria grouped into the categories of design or physical value, historical or associative value, and contextual value. The CHER determined that the Confederation Drive River Crossing meets three of the criteria from O. Reg. 9/06 and is eligible for designation under Part IV Section 29 of the Ontario Heritage Act (OHA). The bridge has physical value and design value as an early, rare and representative two-span Warren Pony Truss bridge. It has contextual value because it supports and maintains the historic industrial character of the area and has historical and visual links to its surroundings. The bridge is a cultural heritage resource and supports the landscape setting of the Rideau Canal.

Confederation Drive River Crossing is an important contributor to the unique variety of bridges in the Town of Smiths Falls and exhibits the following unique characteristics:

- It is an uncommon example of a multi-span pony truss bridge as most constructed tend to be single span structures;
- At 159' in length, the bridge represents an uncommonly long bridge structure due to its nature as a multi-span bridge;
- It is a rare surviving example of the use of rivet-connected trusses, most of which remain intact and unaltered, which represented a scientific advancement for its day,
- Limestone abutments and pier made of large blocks with a natural finish, and
- It includes a unique cantilever pedestrian walkway addition on the side of the structure.

In LHC's professional opinion, the bridge should be conserved and rehabilitated to be used and recommends that the heritage attributes of the bridge be conserved where possible.

If replacement is the preferred alternative, it is recommended that options to rehabilitate the abutments and pier be explored and that a replacement be a two span, each with five panel Warren Pony Truss structure.

Please refer to the Cultural Heritage Evaluation Report prepared by LHC (**Appendix C**) for the following information:

- A general description of the history of the study area, as well as a detailed historical summary of the bridge's history including historical mapping and photographs;
- A description of the cultural heritage landscape;
- A description of the built heritage resource including representative photographs of the entire property including landscape features such as the rural road cross-section, views to and from the bridge, and elements of the bridge;
- Summary of consultation undertaken;
- Comparative analysis of the bridge type within Southern Ontario and locally, and
- A cultural heritage resource evaluation guided by the OHA criteria.

A Heritage Impact Assessment (HIA) is required as part of the design for rehabilitation or replacement. The HIA approach will consists of the following:

- Consultation with the Town of Smiths Falls, and other Townships and Municipalities that were noted through the OHA to have similar bridge types;
- A description of the nature and condition of the cultural heritage resource;
- A summary of the cultural heritage value of the property;
- An evaluation of potential project impacts of the proposed alternatives for the bridge; and
- The provision of suggested strategies for the future conservation of the heritage attributes.

Upon completion of the HIA, further information on the alternative's assessment/evaluation process, and LHC's recommended mitigation measures for implementation will be summarized within this Project File Report.

4.4 Property and Jurisdiction

The Town of Smiths Falls owns the Confederation Drive Right-of-Way (ROW), as well as the park area in the Northeast, Northwest and Southwest quadrants of the study area. The land adjacent to the ROW within the Southeast quadrant is titled to Parks Canada. The riverbed located within this study area is Parks Canada land, as well as the existing walkway along the shore of the Rideau River, south of the Confederation Drive River Crossing.

RVCA will also have a vested interest in this project. Parks Canada is responsible for managing water levels and flows surrounding the bridge, whereas RVCA regulates development within the floodplain. RVCA will want to be consulted about the project and will review the hydraulic design and floodplain mapping associated with the project preliminary and detail design. Shoreline changes and bridgeworks require consultation and a permit.

4.5 Parks Canada

The Rideau Canal Headquarters Office is located in the Town of Smiths Falls and is responsible for the overall administration of the Canal. Canal lands consist of the bed of the Canal and all lands owned by Parks Canada consisting of lockstations, islands, dams, embankments, dikes and other lands required for the operation of the Canal (Parks Canada, 2005).

The Rideau River and Canal is a managed system, and the water levels are manipulated by the operation of numerous dams. Smiths Falls is located in the Middle Rideau subwatershed, which has nine (9) dam and lock complexes with 13 locks for a fall of 36.2 metres over 35.6 kilometres (RVCA, 2015). Water levels are managed for recreational purposes and ensures there is enough water during the navigation season (May to October).

Parks Canada owns and operates the dam located adjacent to Confederation Drive River Crossing on the upstream side. The Combined Dam is a concrete structure composed of 3 stop log spillways and a fixed overflow spillway. The stop log spillways are operated using manual winches. The Combined Dam is used to maintain navigation levels in the "Basin". During mid to late April, the water level is brought up to Navigation level and is held in that range by the stop logs until the near the end of October. Near the end of October Parks Canada removes all the stop logs and drains the "Basin." The water level is then held through the winter until the spring freshet. Water levels in the "Basin" fluctuate based on upstream flows. The drainage area to Combined is around 1,300 sq.km. The entire upstream area runs through this dam with no other diversion employed by Parks Canada. To reduce the impact of the higher flows in the spring, the amount of snow water equivalent, forecast rain, ice cover, flows and levels are assessed and the dams in the Middle Rideau reach are operated accordingly to quickly pass as much water as possible. In late April and early May, the dams are gradually closed, and water levels are brought up to be ready, once again, for the navigation season. Parks Canada does not operate this dam at all outside of April to October, of any given year.

Parks Canada staff and Canal visitors were regular users of the bridge up until its closure. Confederation Drive River Crossing provides linkages Parks Canada pathways across and around the Rideau Canal waterway. Parks Canada staff and Canal visitors were regular users of the bridge up until its closure. With the bridge being out of service, pedestrian movement across the river is facilitated by a pathway which is part of the Rideau Trail/Smiths Falls Walking Trail, located south of the dam. The pathway is not designed as nor intended to be a primary pedestrian and bicycle crossing, and in winter additional precautions such as extra fencing and lighting, are required for the crossing to be made safe. While acceptable as a short-term solution, better crossing access is required for the long term.

Based on preliminary consultation with Parks Canada, any works in/on/over the Rideau River will trigger review and approval by Parks Canada under the federal Impact Assessment Act (i.e., Basic Impact Assessment (BIA)). However, any new pier configurations for the replacement bridge alternative must maintain or enhance the conveyance ability of the dam. A reduction in capacity as a result of a new bridge would not be supported by Parks Canada. Once the Impact Assessment has been approved, Parks Canada will approve the work permit application, and should a new bridge be put in place, a bridge agreement with the Town and Parks Canada will be required.

4.5.1 Existing Hydrology and Hydraulic Assessment

The Rideau River flows through the Middle Rideau and is within the Middle Rideau subwatershed. Rideau River is within the jurisdictional watershed of the Rideau Valley Conservation Authority (RVCA). The RVCA was contacted to obtain any relevant hydrologic or hydraulic information or models for Confederation Drive River Crossing.

A detail hydrologic and hydraulic assessment, including a review of the existing soffit elevations, has not yet been completed. The assessment will follow the Ministry of Transportation (MTO) Highway Drainage Design Standards, with a 25-year storm used as the design return period for the analysis with the 100-year storm being the check flow. A VO6 model will be developed to calculate the return period and Regional storm flows. HEC-RAS modeling will be used to complete the hydraulic assessment and review.

4.6 Transport Canada's Navigation Protection Program

The newly updated *Canadian Navigable Waters Act* (CNWA) came into effect August 2019. Under this act, owners of works who propose to construct, place, alter, rebuild, remove or decommission works that are in, on, over, under, through or across any navigable water may be required to apply for an approval to Transport Canada (TC), or seek authorization through the public resolution process.

While the Rideau River is listed as a scheduled waterway, the Confederation Drive River Crossing is located between two dams. Vessels cannot enter the area due to the pedestrian walkway therefore making the waterway not navigable. The Combined locks provides passage for boats and there is also a bypass around an island in the area. A 'No Interference with Navigation' notification of work will be required to be submitted to TC and posted on their registry.

4.7 Existing Bridge Condition

The Confederation Bridge was built in 1904 and is a single lane twin span Warren type pony truss with a 1.37 m wide pedestrian pathway on the upstream side that is believed to be original to the bridge. The spans have a nominal length of 23.8 m each, and a centre-to-centre truss spacing of 5.33 m. This bridge is an example of a rivet-connected truss bridge and is the only example of a truss bridge within the Town of Smiths Falls and is an important contributor to the unique variety of bridges within the Town. The Confederation Drive Crossing bridge can be accessed from Confederation Drive, that leads to Centennial Park or Canal Street off Highway 15, at Veterans' Memorial Park and the Smiths Falls Combined Lockstation Lock 29a. Both of these roads are paved 2-lane roads. There is also a dam located adjacent to the bridge on the upstream side. According to the Confederation Drive Bridge Assessment & Options Report (Keystone Bridge Management Corp., 2020), a PUC lighting cable and a Parks Canada power duct were located under the bridge sidewalk deck in the 1986 drawings.

The available historic records for the bridge are lack or are incomplete. Prior to rehabilitation in 1986, it is believed the bridge deck consisted of 10 lines of 4" x 12" timber stringers lapped on the floor beams, supporting 3-1/2" x 8" timber plank decking. The sidewalk deck was carried on three 4" x 8" timber stringers. Before 1986, all the structural connections were steel rivets. The bridge received a comprehensive rehabilitation circa 1986 which consisted of:

- Replacement of the timber stringer deck with a prestressed laminated creosoted timber deck;

- Replacement of all the floor beams;
- Replacement of select bottom chord structural steel, particularly all the chord members on the south truss;
- Reconstruction of the pedestrian walkway with salvaged timber from the deck;
- Installation of 20 mm diameter high-strength steel bolts where rivets were replaced;
- Reconstruction of the truss verticals on the upstream side, and
- Some masonry work was included at the abutments and pier as part of the work.

In late 2015, the timber deck was removed, and the bridge has been barricaded off and remains out of service to both vehicular and pedestrian traffic. The bridge has remained closed to vehicle and pedestrian traffic since due to safety concerns relating to the deterioration of the steel structure. Prior to its closure, the bridge had a load restriction of a maximum of 7 tonnes. Due to the aging infrastructure and current condition of the bridge, a decision needs to be made on the best course of action for the replacement of the existing bridge with either a pedestrian or vehicular bridge.

Keystone Bridge Management Corp. inspected the bridge in 2018, and identified several issues with the existing bridge including:

- The bottom chord areas of both trusses have incurred severe corrosion with localized areas of critical section loss due to the presumed application of de-icing salt on the bridge;
- The vertical paired gusset plates at the lower panel points appear to have a systemic crevice corrosion type feature on the inboard gussets;
- There is significant and critical section loss of the bottom chord angles at the SE bearing of the east truss;
- One bottom lateral bracing member is severed;
- The outriggers supporting the pedestrian walkway were only inspected at one location. a more comprehensive inspection of the outriggers is warranted;
- The principal masonry of the abutments and pier is in good condition, and
- The truss components above the level of the former bridge deck are in good condition.

The Keystone report identified that there are high concentrations of lead in the paint system of the bridge. Lead is a known toxin, and cleaning and recoating the bridge will prove very costly if preparatory work for repainting the bridge is conducted on site.

Given the significant debris and corrosion accumulation at/near the gusset plates, accurate section losses estimation for the bottom chords and floor beam would not be possible as indicated in the condition assessment. A structural evaluation would only provide an approximate structural assessment for the load carrying capacity of the existing structure. In addition, based on the previous structural assessment by The Greer Galloway Group Inc, the rehabilitation would only increase the usable life span of the bridge for another 5 years.

In addition, based on the poor condition of the gusset plates, the bottom chords and floor beam, the rehabilitation would have to be completed by removing the existing bridge off site and supported on temporary supports on temporary layout area or in a shop to safely replace/reinforce the gusset plates, bottom chords, and floor beams.

The existing bridge was constructed in 1904 and is 117 years old. It should be noted that a typical bridge life span built in 1900's should be only 50 years based on OHBDC (previous bridge code in Ontario replaced by CHBDC). From the MTO Structure Rehabilitation Manual, the rehabilitation strategy should be compatible with the remaining service life of the structure. A structure may require replacement where it does not meet current design criteria for geometry or load capacity, or where other deficiencies are present in components of the structure that will otherwise limit its service life. Any rehabilitation option would be limited by the service life of the remaining elements that were not rehabilitated. Accordingly, the original bridge has passed more than twice of its' anticipated life span and therefore replacement is recommended

Based on the above noted condition of bridge elements, material strength, and date of construction, it is recommended that rehabilitation not be considered as a viable of Alternative Solution for vehicular traffic nor as an active transportation link.

For information pertaining to the condition of the existing structure, please refer to the Desktop Review of Structural Evaluations completed by McIntosh Perry, March 4, 2022 (**Appendix D**).

4.8 Existing Municipal Infrastructure

There is an existing municipal watermain (50mm diameter) that runs across the riverbed immediately north (downstream) of the Confederation Bridge. The Town identified that the watermain services the Parks Canada Building. Due to the age of the watermain and location, the Town would like to consider relocating the watermain to be affixed to the side or underside of the Confederation Drive River Crossing.

4.9 Active Transportation

McIntosh Perry reviewed the connectivity of the active transportation facilities within the area surrounding the Confederation Drive River Crossing to see if the are any missing links to ensure a fully connected network or pathways.

Within the study area on road bike facilities are shown for the lengths of Confederation Drive, Strathcona Street, and Lombard Street. There are also bike facilities along Abbott Street north of the intersection with Strathcona Street. There is also a designated bike lane on Beckwith Street that begins at the intersection of Beckwith Street and Chambers Street and continues north to the intersection of Beckwith Street and Russell Street. Refer to Figure 4-3.

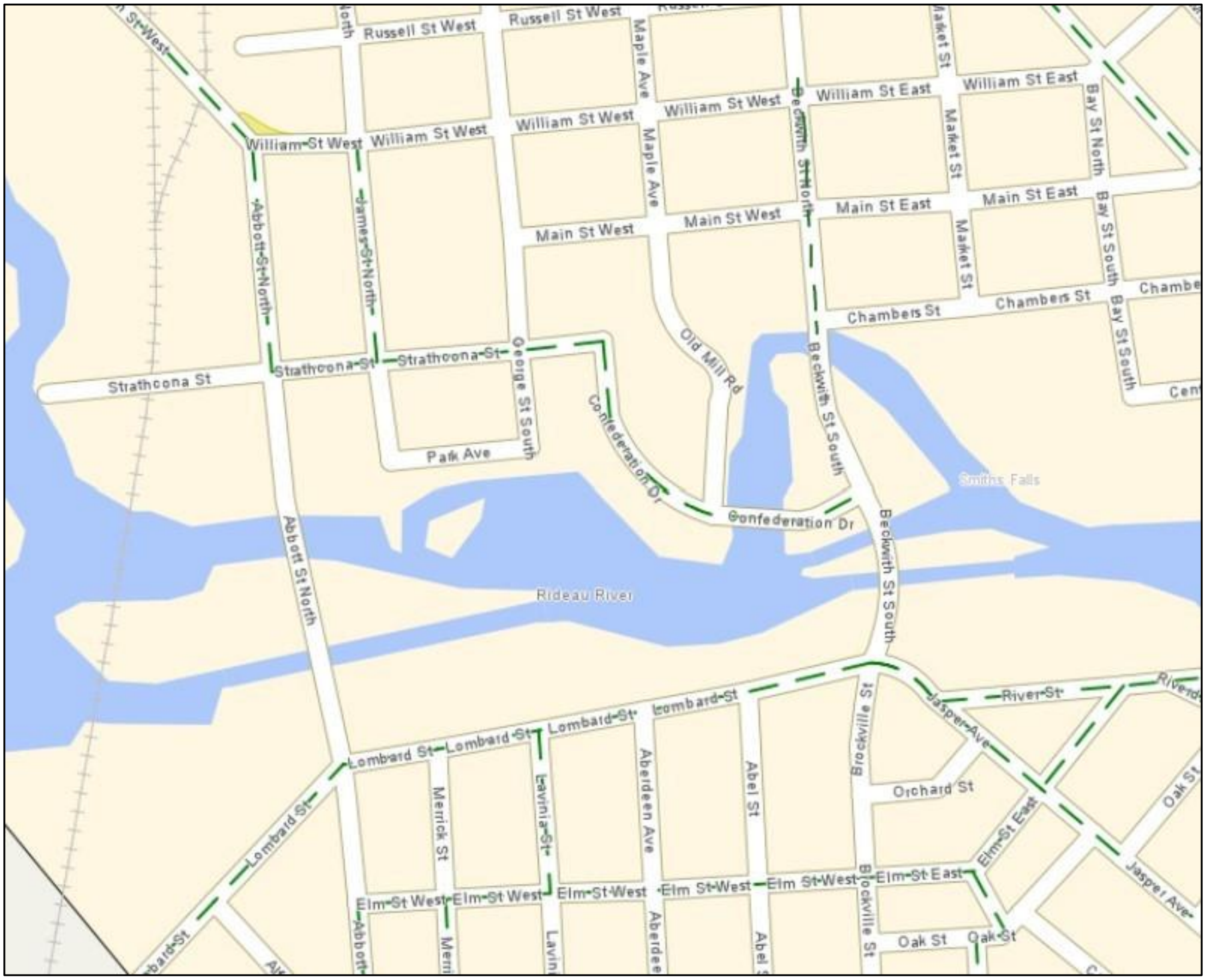

Figure 4-3: On Road Bike Facilities

As shown in Figure 4-4, there are also many bike paths throughout the Town of Smiths Falls. There is one bike path that utilises the Confederation Drive River Crossing. This path adds connectivity to the south of the Rideau River towards Lombard Street and crosses the locks just west of the Beckwith Street Bridge and then continues onto Confederation Drive and Crossing at the Confederation Drive River Crossing Bridge to then continue on Confederation Drive and up further north into the Town of Smiths Falls.

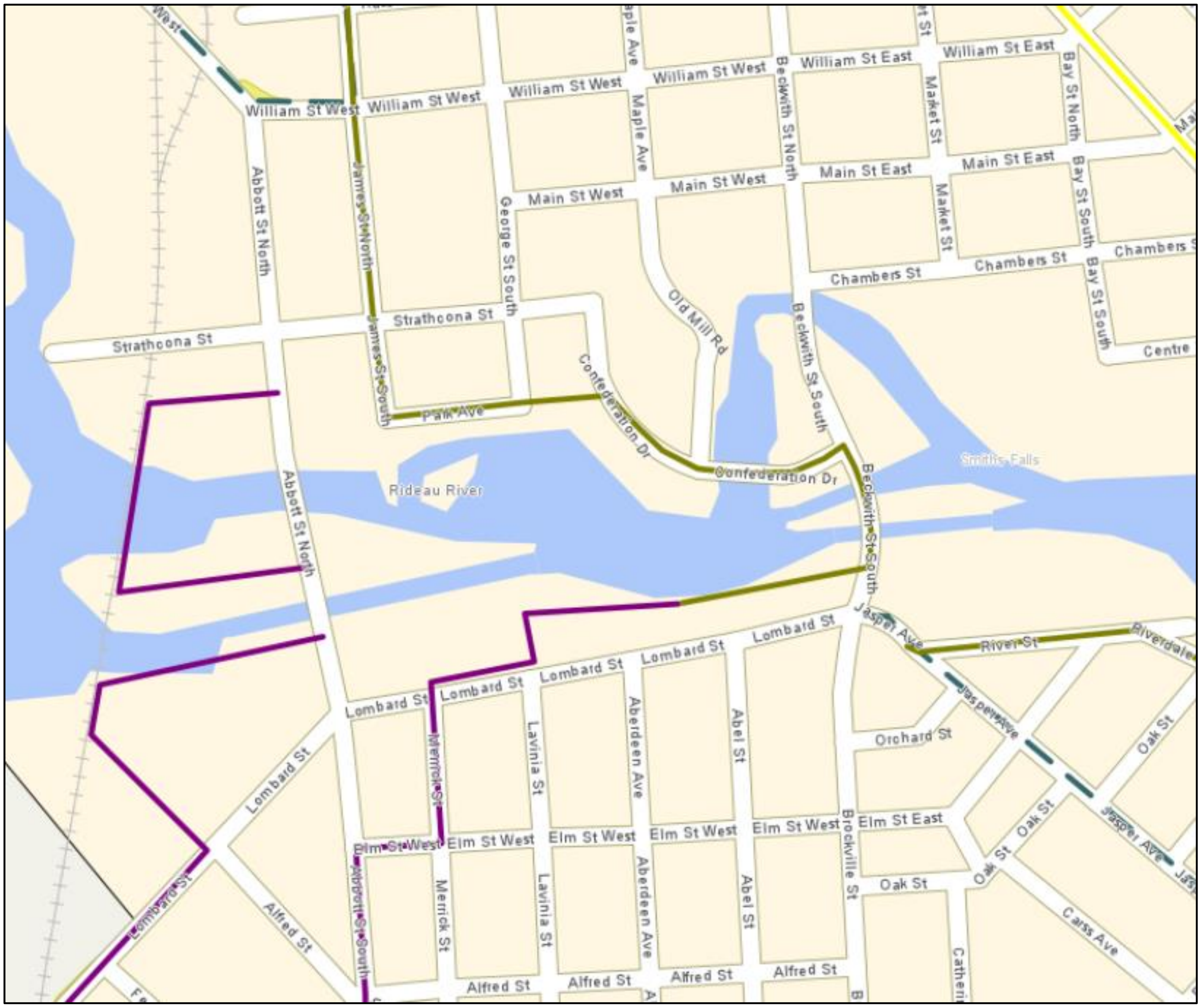

Figure 4-4: Bike Trails

Currently there are two multi use trails, within the vicinity of the Confederation Drive River Crossing. One MUP is on the south of the rideau river going east-west along the river adjacent to Lombard Street. The other is to the north of the river going from east-west traveling along the river, then connecting to Confederation Drive and following it to the intersection of Old Mill Road (before the Confederation Drive River Crossing) and then continuing northbound on Old Mill Road and continuing to the east along Beckwith Street to Chambers Street and then back following the Rideau River. There is shown to be a clear disconnect between the northern and southern Multi-Use Path.

Figure 4-5: Multi-use Trails

4.10 Traffic Impact Assessment

As part of the MCEA study, a Traffic Impact Assessment (TIA) was undertaken to review the impacts to the Town's traffic network if the bridge is to be replaced in kind to reinstate vehicular traffic or if the bridge was to remain closed to vehicles. For the TIA, McIntosh Perry reviewed the traffic operations for the following roads and intersections:

- Beckwith Street, Main Street, Chambers Street, Confederation Drive, Old Mill Road and Abbott Street, and
- Beckwith Street at Main Street, Beckwith Street at Chambers Street, Beckwith Street at Confederation Drive, and Old Mill Road at Confederation Drive.

McIntosh Perry reviewed the Town of Smiths Falls Official Plan, and it is mentioned within that a review of the Official Plan 2013-2014 Land Needs Background Study projected an annual population growth rate of 0.51% to the year2031. However, the Canadian Census report illustrates depopulation within the Town of Smiths Falls from the years 2011-2016 of -2.2%. Based on the local knowledge of MP staff combined with the increase in large business developments within the Town of Smiths Falls and the fact that traffic grow rate is a product of both employment and population growth, McIntosh Perry has utilized an annual growth rate of 2% in order to extrapolate the provided traffic data to 2022 and 2032 conditions. This annual 2% is in order to remain conservative with the total traffic the study road network experiences to account for many unknowns when it comes to the development that has taken place as the data received is as aged as 10 years.

The Town of Smiths Falls is currently looking for developer interested in redeveloping the former Water Treatment Plant (25/19 Old Mill Road). The Town is also currently considering the potential redevelopment expanding onto the eastern side of Old Mills Road where the existing Water Tower is located. The site is being marketed as an urban-oriented development that is consistent with the Town's ongoing efforts to revitalize the downtown core area and integrate it with the Rideau Canal and waterfront area. The Town of Smiths Falls is seeking a developer that shares the Town's vision to develop a mix of retail/commercial and residential offerings. These site locations are currently zoned as OS – Open Space, however, as part of the current zoning bylaw updates, it is being rezoned as C1 – General Commercial. As such, under the new zoning it allows for all developments to be 6-7 stories with commercial on the ground floor and condo units from floors 2-6 or 7. To ensure the TIA remains conservative, the maximum development size including the construction of all three locations to include the ground floor of commercial and the following 6 floors of residential uses.

Based on the Level of Service (LOS)/Capacity Analysis, it was shown that whether the Confederation bridge is reopened or remains closed to vehicular traffic, there are minimal changes to the network traffic operations. There are no concerns with capacity or degrading levels of service throughout the network based on the analysis competed.

The eastbound left turn volumes from Confederation Drive onto Beckwith Street were found to experience significant delays and LOS of "E" (approaching failure). This was found to be the case regardless of whether the bridge was open or closed to vehicle traffic and is likely the result of traffic volume growth on Beckwith Street. As such, signalization of the intersection should be considered and investigated further in the future. Other options such as turn restrictions may also be considered; however, would require input from Parks Canada / locks operators.

If the bridge were to be completely closed to pedestrians/cyclists, this may result in a gap in the active transportation network. Consideration should be given to keeping the Confederation Bridge as an active transportation link. However, to ensure better connectivity throughout the study area, it is recommended that a cycling facility be extended along Beckwith Street to the intersection of Confederation Drive from Chambers Street.

For information pertaining to existing and future traffic impacts, please refer to the Traffic Impact Assessment Report completed by McIntosh Perry, March 7, 2022 (**Appendix E**).

5.0 CONSULTATION PROGRAM

Consultation is a key component of the MCEA process for Schedule “B” projects. It is important for members of the community and stakeholders to provide balanced and objective information and consulting them to obtain feedback on the study process, alternatives, and preliminary technically preferred solution.

A consultation program was developed specific to this study under the following basis:

- Present clear and concise information at key stages of the study process;
- Solicit community, regulatory and municipal staff input;
- Identify concerns related to the undertaking;
- Consider stakeholder comments when developing the technically preferred solution; and
- Meet MCEA consultation requirements.

Consultation early and throughout the MCEA process attempts to meet the growing expectation on the part of the public that they will be consulted regarding decisions made by public decision-making bodies. The project Consultation Plan can be seen in **Appendix G**.

5.1 Project Contact List

A Project Contact List was developed at the initiation of this study and regularly updated throughout the course of the project to add, remove or revise information as necessary. The Project Contact list includes government ministries/agencies, municipal staff, emergency services, school boards, student transportation, businesses, potentially affected pubic, member of provincial parliament, Indigenous Communities, and key interest groups. The Project Contact List can be found in **Appendix G.**

5.2 Project Team

The following Project Team was involved in carrying out this Class EA:

Proponent: Town of Smiths Falls
Contact Information: Paul McMunn, Project Manager, Director of Public Works & Utilities
77 Beckwith Street North, Smiths Falls K7A 2B8
Telephone: 613-283-4124 x 1152
Email: pmcmunn@smithsfalls.ca

Prime Consulting Engineer: McIntosh Perry Consulting Engineers Ltd.
Contact Information: Lisa Marshall, P.Eng., Project Manager
115 Walgreen Road, R.R.3
Carp, ON K0A 1L0
Telephone: 613-714-0815
Email: l.marshall@mcintoshperry.com

5.3 Indigenous Community Involvement

Engaging Indigenous Communities is an important way of acknowledging interest in the stewardship of their heritage. The project team reached out to the MECP for input and recommendations on the Indigenous Communities contacts who may have an interest in this project, as well as consult with the Town of Smiths Falls their knowledge of interested Indigenous Communities.

The following Indigenous Communities have been and will continued to be engaged during the consultation process for this MCEA study: Algonquins of Ontario, Algonquins of Pikwakanagan First Nation, Pasapkedjawaong Algonquin First Nation and Métis Nation of Ontario.

The project team will include all of the above-mentioned Indigenous Communities on the distribution of all project notices. At this time, Town of Smiths Falls and McIntosh Perry have not received any responses with Indigenous Communities, however, consultation will continue throughout the MCEA process.

5.4 Municipal Heritage Committee & Town Council Meetings

On February 2nd, 2022, the Town of Smiths Falls Project Manager, Paul McMunn, and McIntosh Perry's Project Manger, Lisa Marshall, attend a Municipal Heritage Committee (MHC) meeting to discuss the Confederation Drive River Crossing and the commencement of the MCEA process. During the MHC meeting, member of MHC summarized the historical significance of the bridge and that the MCEA needs to take into consideration not only the historical value of the bridge but also what the bridge and surrounding land uses (i.e., Parks Canada Locks/Dam, Town Park lands, etc.) bring to the community from a recreational standpoint, as well as a tourism attraction. It was also noted that Council had previously passed a Resolution (2015-08-162) on August 4, 2015, stating "THAT the Council of the Town of Smiths Falls resolve to recognize Confederation Bridge under Section 27 of the Ontario Heritage Act RSO 1990, as amended, and place the property on the municipal registry of "Properties of Interest". Prior to concluding the meeting, MHC stated that consideration should be given to putting forth a recommendation to Council (Spring 2022) to have the Confederation Drive River Crossing designated as having "significant cultural and heritage value" under the Ontario Heritage Act. The MHC also requested that the Committee continue to receive notifications and be consulted throughout the MCEA process.

On February 23rd, 2022, the MHC passed a motion recommending Council consider designating the Confederation Drive River Crossing.

On April 8th, 2022, McIntosh Perry submitted a request to the Town of Smiths Falls to undertake a Structural Steel Close-Up Inspection and Structural Evaluation of the existing bridge to help further evaluate the potential for rehabilitation. As part of the MCEA process, McIntosh Perry is required to develop alternative approaches pertaining to the bridge, with rehabilitation being an alternative. Through McIntosh Perry's review of available bridge evaluation documentations for the Confederation Bridge (previous studies completed by Greer Galloway Consulting Engineers and Keystone Bridge Management Corp.), it was noted that integral structural elements of the existing structure have deteriorated and would require replacement if the bridge were to be rehabilitated. In order to determine to what extent existing elements of the bridge would require replacement, a Close-Up Inspection and Structural Analysis would be required.

order to determine to what extent existing elements of the bridge would require replacement, a Close-Up Inspection and Structural Analysis would be required.

A Town Council meeting was held on May 2nd, 2022. During the Council meeting, a report was put forth seeking direction from Council with respect to undertaking a physical inspection of the bridge, as noted above. Following the presentation of the report, McIntosh Perry's Structural Engineer conveyed to Council that the existing bridge was constructed in 1904 (118 years old). It should be noted that a typical bridge life span built in 1900's should be only 50 years based on OHBDC (previous bridge code in Ontario replaced by CHBDC). In addition, should the Town decided to proceed with any rehabilitation option, the structure would be limited by the service life of the remaining elements that were not rehabilitated. Based on the existing condition of bridge elements, material strength, and date of construction, it is recommended that rehabilitation not be considered as a viable of Alternative Solution for vehicular traffic nor as an active transportation link. Prior to concluding this item at the Council meeting, Town Council unanimously agreed not to proceed with any further structural evaluation of the Confederation Bridge and that the period of time when the bridge could have been saved has since past. Council members indicated that they would like to see the bridge cloned as the preferred replacement option whether it is for vehicles and/or pedestrian traffic.

5.5 Study Commencement

Notice of Study Commencement letters were distributed by McIntosh Perry on January 20, 2022, to the project Contact List. The Notice of Study Commencement was posted to the Town of Smiths Falls' website, Speak up Smiths Falls, Facebook page and was advertised in the Smiths Falls Record News newspaper on January 20th and 27th, 2022. The Notice of Study Commencement can be found in **Appendix G.**

A summary of the comments received from the Notice of Study Commencement have been summarized in Table 5-1 below, with the exception of requests for inclusion in the Project Contact list. Responses received by various stakeholders as a result of the Notice of Study Commencement and consultation responses, including emails received and sent by the project team, can be found in **Appendix G.**

Table 5-1: Responses to Notice of Study Commencement

Stakeholder/Agency	Comments Received	How It Was Addressed / Response
Heritage Committee	In reading your post this morning concerning what is referred to as Confederation Bridge, I have noted that its historical significance is not really mentioned. I believe before coming to any judgment on this structure, the citizens and interested parties need to be apprised of its historical value. Indeed, the bridge is listed as a National Historic Bridge, it is one of five Smiths Falls bridges listed as Historic Bridges of Lanark County. It is also listed in the International Database and Gallery of Structures as bridge number 461 of 552 Pony Truss Bridges worldwide. It is also protected under the Municipal Heritage Act as a property of interest. It is being put forward this spring to be designated under the Ontario Heritage Act as a structure of significant cultural and heritage value. Indeed, this structure is part of Smiths Falls Tourism network. While it is unfortunate that the bridge has been allowed to deteriorate through neglect it is not beyond redemption. Consideration should be given to the positive public relations internationally Smiths Falls would be receiving on its rehabilitation.	Thank you for your detailed email and interest in the Confederation Bridge. As I am sure you are aware, the Town has recently started to undertake a Municipal Class Environmental Assessment (MCEA) of the structure which is assigned to our consultant McIntosh Perry. As part of the Schedule 'B' MCEA there will be public, stakeholder agencies, and provincial and federal ministry consultation. There will be a Cultural Heritage Evaluation Report (CHER) and a Heritage Impact Assessment (HIA) completed as part of this assignment. As you mentioned, the structure has deteriorated to the point it was closed to vehicular traffic. The MCEA process will inform the public and other stakeholders, Town staff, and Council as to the best approach going forward. There will be a Public Information Center (PIC) hosted this coming spring, likely late March or early April. This PIC will be advertised well in advance so all interested parties can participate. I appreciate you advising that this spring, the Municipal Heritage Committee (MHC) will be requesting designation of "significant cultural and heritage value" under the Ontario Heritage Act. I understand from Karl Grenke that there is a MHC meeting on Wednesday February 2nd which I will be attending. I look forward to meeting you and other members of the committee. In the interim, if you have any questions please do not hesitate to reach out to my office.
Public	#1 – There should be a new bridge. #2 – It should have two lanes of traffic – one each way and two sidewalks – one on each side. #3 – When the existing bridge lasted for approximately 110 years, and with the technology of the human being today and the equipment we have today compared to then, we should be able to build a new bridge that will last between 200 and 500 years.	Thank you for your interest in the Confederation Bridge and we will ensure that you are added to our contact list. The Town will be hosting a Public Information Centre this spring for which I would suggest that you participate to express your concerns. We will reach out to you by email when the Public Information Centre date and time have been determined. In the interim, if you have any questions please do not hesitate to reach out to my office.
Rideau Valley Conservation Authority (RVCA)	Floodplain hazard associated with the Rideau River, a letter of permission for alternation or interference to watercourses or interference or development to and within regulatory floodplains will be required in accordance with Ontario Regulation 174/06 (Development, Interference with Wetlands and Alterations to Shorelines and Watercourses).Our primary interest in regulating activities is to ensure that there will be appropriate control of flooding, protection from erosion and pollution and that the conservation of land will not be adversely impacted. Rideau River-Smiths Falls Catchment Report - The catchment report provides an overview of conditions, issues and opportunities within the Town of Smiths Falls, though there is limited information specific to this section of the river it may provide useful background information. We formally request notice of any public open houses, public information centres, or any other required meetings that will be scheduled. In addition, we request to be provided new and updated information as available so that we may be kept informed of the project.	Information has been noted and will be taken into consideration.

Stakeholder/Agency	Comments Received	How It Was Addressed / Response
Ministry of Heritage, Sport, Tourism and Cultural Industries (MHSTCI)	While some cultural heritage resources may have already been formally identified, others may be identified through screening and evaluation. Indigenous communities may have knowledge that can contribute to the identification of cultural heritage resources, and we suggest that any engagement with Indigenous communities includes a discussion about known or potential cultural heritage resources that are of value to these communities. Municipal Heritage Committees, historical societies and other local heritage organizations may also have knowledge that contributes to the identification of cultural heritage resources. Municipal Heritage Bridges: Cultural, Heritage & Archaeological Resources Assessment Checklist Under the EA process, the proponent is required to determine a project's potential impact on cultural heritage resources. The Municipal Engineers Association provides screening criteria for work on bridges that falls under the Municipal Class EA with a checklist and background material available online, developed in coordination with MHSTCI. Part A – Municipal Class EA Activity Selection Please use the checklist and background material to determine the Municipal Class EA schedule (A, A+, B or C) for the project. Completing the remainder of this checklist determines what technical cultural heritage studies may be required. Part B - Cultural Heritage Assessment If Part B of the checklist determines that the bridge or study area warrants the preparation of a Cultural Heritage Evaluation Report (CHER), and the undertaking of a Heritage Impact Assessment (HIA), our ministry's Info Sheet #5: Heritage Impact Assessments and Conservation Plans outlines the scope of HIAs. CHERs and HIAs are to be prepared by qualified consultants. Please send HIAs to MHSTCI for review and make copies available to local organizations or individuals who have expressed an interest in cultural heritage. Part C – Heritage Assessment If Part C of the checklist determines that the CHER has identified heritage features on the project and recommends that a Heritage Impact Assessment (HIA) be undertaken, our Ministry's Info Sheet #5: Heritage Impact Assessments and Conservation Plans outlines the scope of HIAs. CHERs and HIAs are to be prepared by qualified consultants. Please send HIAs to MHSTCI for review and make copies available to local organizations or individuals who have expressed an interest in cultural heritage. Part D – Archaeological Resources Assessment If Part D of the checklist establishes that an archaeological assessment is required, it is to be conducted by an archaeologist licenced under the Ontario Heritage Act (OHA), who is responsible for submitting	Thank you for your response. We will review and follow up with MHSTCI should we have any additional requests for clarifications. Please note that we will circulate future notices to MHSTCI as we continue to follow the MCEA process.

Stakeholder/Agency	Comments Received	How It Was Addressed / Response
	the report directly to MHSTCI for review. MHSTCI archaeological sites data are available at archaeology@ontario.ca. After completing the checklist, please update MHSTCI on the project Class EA schedule and whether any technical cultural heritage studies will be completed for the project. Please provide all technical heritage studies to MHSTCI before issuing a Notice of Completion or commencing any of work on site. Environmental Assessment Reporting All technical cultural heritage studies and their recommendations are to be addressed and incorporated into EA projects. If the screening has identified no known or potential cultural heritage resources, or no impacts to these resources, please include the completed checklists and supporting documentation in the EA report or file.	

5.6 Public Information Centre

In compliance with the MCEA process, the Town will host an online Public Information Centre (PIC) to solicit input on the study process and the ***recommended Technically Preferred Alternative***. The PIC is anticipated to take place mid/late May 2022. Notice of Public Information Centre (PIC) letters will be distributed by McIntosh Perry to the project contact list and all properties in the vicinity of the study area. The Notice of PIC will also be posted to the Town of Smiths Falls' website, Speak Up Smiths Falls, Facebook page and will be advertised in the Smiths Falls Record News newspaper. The draft Notice of PIC can be found in **Appendix G**.

Due to current COVID-19 Pandemic, the PIC will be held virtually to adhere to public health concerns. The Online PIC will be available through Speak Up Smiths Falls at: https://speakupsmithsfalls.com/confederation-drive from May 26th to June 23rd. Voice narration will be provided to meet the requirements of the Accessibilities of Ontarians with Disabilities Act (AODA, 2005). Visitors of the online presentation will also be given the opportunity to submit comments and questions through the Town's website and/or email, and responses will be circulated accordingly.

During the Online PIC, any responses to the PIC received by the project team will be summarized within this Project File Report. PIC materials including information slides, FAQ's and comments/responses received, will be appended to **Appendix G**.

5.7 Study Completion

A draft Notice of Study Completion will be distributed by McIntosh Perry to the project contact list. The Notice of Study Completion will be posted on the Town of Smiths Falls' website, Facebook page, Listen Up Smiths Falls and advertised in the Smiths Falls Record News. The draft Notice of Study Completion can be found in **Appendix G.**

The purpose of the Notice of Study Completion is to advise of the commencement of the 30-day public review period for the Project File Report prepared as part of this MCEA. The Notice of Study Completion advises that Interested persons may provide comment to the project team within 30 calendar days from the start of the public review period. In addition, the letter advises that a request may be made to the Ministry of the Environment, Conservation and Parks for an order requiring a higher level of study (i.e., requiring an individual/comprehensive EA approval before being able to proceed), or that conditions be imposed (e.g., require further studies), only on the grounds that the request order may prevent, mitigate or remedy adverse impacts to constitutionally protected Aboriginal and treaty rights. Requests on other ground will not be considered.

During the 30-day public review period for the Project File Report, responses received by the project team will be summarized within this Project File Report. Comments/responses received, will be appended in **Appendix G**.

6.0 EVALUATION OF ALTERNATIVE SOLUTIONS

An evaluation of Alternative Solutions was undertaken to address the problem and opportunity statement identified for this project (Section 3.1), considering all aspects of the MCEA study. All reasonable potential solutions to the problem(s), including the 'Do Nothing' option, are considered. The overall assessment and evaluation process followed two basic concepts:

1. Assessment of Alternatives: the potential benefits of each alternative are assessed against four major Evaluation Categories: Transportation/Operational, Natural Environment, Socio-economic and Implementation factor groups.
    - **Transportation/Operational** – Evaluates whether the alternative Solution addresses the problem and opportunities identified at Confederation Drive River Crossing; as well as evaluate the operational suitability and engineering characteristics of each solution and determine which will have the least risks and greatest extension of service life.
    - **Natural Environment** – Impacts or opportunities that an alternative may have related to the natural environment (i.e., fisheries, wildlife, water quality, etc.).
    - **Social/Cultural Environment** – Impacts or opportunities created by the alternative as they relate to the community and social features, businesses, properties, and archaeological, built and cultural heritage features within the study area.
    - **Implementation** – The financial implications and implementation opportunities of the alternative Solution.
2. Evaluation of Alternatives: An evaluation framework was developed by the Project Team, including technical considerations and environmental components that address the broad definition of the environment as described in the EAA and those based on comments received from relevant agencies. Each criterion was assigned a weighting to reflect its level of importance (**1 - being of low importance to 5 - being of high important**) relative to other criteria. The weighting system was developed in consultation with the Town and indirect feedback received through stakeholder consultation for this MCEA. The relative level of impact for each criterion for each alternative solution was then assessed based on the scoring system summarized in Table 6-1. The Alternative Solution that ranked the highest according to the scoring system was selected as the ***recommended Technically Preferred Alterative*** and will be presented to stakeholders to solicit input prior to finalizing.

Table 6-1: Evaluation Ranking

Score	Level of Impact
1	Least Positive or Negative Impact
2	Minor Negative Impact
3	Neutral Impact
4	Minor Positive Impact
5	Significant Improvement or Positive Impact

Table 6-2: Proposed Alternative Solutions Evaluation

Evaluation Category	Criteria	Weight (1 to 5)	Description of Criteria Measures	Alternative 1 (Do Nothing)		Alternative 2 (Remove Bridge and Construct New Turn Around Areas)		Alternative 3 (Rehabilitate the Existing Bridge as a Vehicle and/or Pedestrian Crossing)		Alternative 4 (Replacement with a New Vehicle and/or Pedestrian Crossing)	
				Rationale	Score	Rationale	Score	Rationale	Score	Rationale	Score
Transportation / Operational	Safety	5	Potential to address safety considerations related to current bridge/road network/pedestrian walkway standards	- Does not address safety concerns with the existing bridge (structurally and roadside safety). - Bridge will continue to deteriorate and remain a liability for the Town. - Bridge would remain closed.	1	- Addresses safety concerns with the existing bridge for the long term as the bridge would be decommissioned/ removed. - Appropriate safety mitigation measures such as barriers and signage would need to be installed. - Liability associated with the condition of the existing bridge will be eliminated as it will be permanently removed.	4	- The bridge currently closed to vehicle and pedestrian traffic since 2015 due to safety concerns relating to the deterioration of the steel structure. Further extensive evaluation would be required to determine if rehabilitation is feasible. - May addresses safety concerns with the existing bridge for the short term and allows structure to be reopened. However, load restrictions still may need to be imposed on the bridge. - Condition of structure would need to be continuously monitored to ensure safe condition is maintained after the rehabilitation works. - Bridge would only provide a single-lane crossing while the Confederation Drive and Canal Street approaches are two-lanes. - Would need to meet current standards. - Current condition of the existing abutments and pier is unknown at this time.	2	- Addresses safety concerns with the existing bridge for the long-term. - New bridge could potentially be replaced with a bridge that allows two-lanes of traffic over Rideau River which is preferred from a safety traffic perspective. - Would meet current engineering standards.	5
	Active Transportation	4	Potential to address pedestrian and cyclist needs, and provide safety and connectivity to the Town's active transportation network	- Does not address active transportation needs nor provides safe connectivity within the area. - With Confederation Bridge closed, pedestrians and cyclists are required to detour around the bridge using alternative routes. One alternative route is an existing pathway along the shore of Rideau River, located south of the dam.	1	- Does not address active transportation needs nor provides safe connectivity within the area. - With the permanent removal of Confederation Bridge, pedestrians and cyclists will be required to detour around the bridge using surrounding multi-use pathways (i.e., Rideau Trail/Smiths Falls	1	- Confederation Drive River Crossing is a proposed signed bike route (shared space). However, with rehabilitation as a solely a pedestrian bridge, it would no longer be a shared space as vehicular traffic would be permitted. - Narrow paved road width would be maintained with rehabilitation which does not provide any	4	- Confederation Drive River Crossing is a proposed signed bike route and would provide active transportation connections between Confederation Drive and Chambers Street along Beckwith Street as well as further along Beckwith Street crossing the Rideau River.	4

Evaluation Category	Criteria	Weight (1 to 5)	Description of Criteria Measures	Alternative 1 (Do Nothing)		Alternative 2 (Remove Bridge and Construct New Turn Around Areas)		Alternative 3 (Rehabilitate the Existing Bridge as a Vehicle and/or Pedestrian Crossing)		Alternative 4 (Replacement with a New Vehicle and/or Pedestrian Crossing)	
				Rationale	Score	Rationale	Score	Rationale	Score	Rationale	Score
				However, this walkway is not designed as nor intended to be a primary pedestrian and bicycle crossing. There are a number of hazards along this path such as boat tie offs, lack of railing, narrow pathway, etc. While acceptable as a short-term solution, better crossing access is required for the long term.		Walking Trail, walkway along shore or Rideau River, etc.)		improvements for Active Transportation. - Would provide an active transportation connection between Confederation Drive and Chambers Street along Beckwith Street as well as further along Beckwith Street crossing the Rideau River.			
	Accessibility	3	Potential impacts to accessibility to adjacent properties (i.e., Parks Canada, municipal infrastructure, residence, etc.) and future development access along the corridor	- Continued deterioration of the bridge will result lack continued lack of connectivity/access for vehicular and pedestrian traffic on Confederation Drive/ Canal Street over the Rideau River. - Continue impacts to Parks Canada operations.	1	- Does not provide connectivity for vehicular and pedestrian traffic on Confederation Drive/ Canal Street over the Rideau River. - Continue impacts to Parks Canada operations.	1	- Potential to reinstates connectivity for traffic on Confederation Drive/Canal Street over the Rideau River. - Dependent on proposed rehabilitation, may not address safety concerns related to traffic capacity on the structure (i.e., load limit, single lane for traffic over Rideau River). - Continue impacts to Parks Canada operations should load restrictions remain on the Bridge following rehabilitation. - Does not allow for a wider pedestrian walkway that better satisfies accessibility standards. - If repurposed solely as pedestrian/cyclist bridge, allows for a wider pedestrian walkway that better satisfies accessibility standards.	2	- Reinstates connectivity for traffic on Confederation Drive/ Canal Street over Rideau River. - Assists with Parks Canada operations. - Allows for a wider pedestrian walkway that better satisfies accessibility standards.	5
Technical / Structural	Extension of Service Life	4	The amount of time that is anticipated for the design alternative to provide safe service, before needing rehabilitation/replacement works.	- This option does not extend the service life of the existing bridge and poses significant risks from a structural engineering perspective.	1	- Service life is unrestricted.	5	- Additional structural inspection and evaluation are required to further determine how long rehabilitation would extend the service life of the existing bridge. However, Council has resolved not to pursue any further evaluation as the bridge is	3	- This option provides an anticipated 75-year extension to the service life of the bridge.	5

Evaluation Category	Criteria	Weight (1 to 5)	Description of Criteria Measures	Alternative 1 (Do Nothing)		Alternative 2 (Remove Bridge and Construct New Turn Around Areas)		Alternative 3 (Rehabilitate the Existing Bridge as a Vehicle and/or Pedestrian Crossing)		Alternative 4 (Replacement with a New Vehicle and/or Pedestrian Crossing)	
				Rationale	Score	Rationale	Score	Rationale	Score	Rationale	Score
								well passed its service life for a structure constructed in the 1900's.			
	Durability	3	The ability to withstand wear, pressure or damage.	- Durability is poor as the bridge would continue to deteriorate.	1	- Durability is considered to be the best as structure will no longer present.	5	- Durability is marginally improved as most components of the existing bridge are in poor condition and after rehabilitation would only be considered in good/fair condition. - The structure's durability could be limited by the remaining elements that were not rehabilitated.	3	- Durability is improved with a new structure.	4
	Structural Engineering Risks	3	Based on the existing information know about the bridge, what level of structural engineering risk does each alternative consider.	- Poses significant risks from a structural engineering perspective as inspections have already concluded that the bridge poor condition and has been closed to vehicular and pedestrian traffic.	1	- No structural engineering risks associated with this alternative as bridge will be removed.	5	- Structural Engineering risks are high due to the remaining elements that were not rehabilitated.	2	- Structural Engineering risks are considered low, as all components would be new. - New bridge would need to ensure no negative impacts to hydraulic function of the Parks Canada Dam immediately upstream of the bridge.	5
Natural Environment	Environmentally Sensitive Areas	3	Continued deterioration of the existing bridge may pose significant impacts to the natural environment with debris falling into Rideau River and the potential for the structure to collapse into the watercourse which has the potential to impact dam operations.	- Continued deterioration of the existing bridge may pose significant impacts to the natural environment with debris falling into Rideau River and the potential for the structure to collapse into the watercourse which has the potential to impact dam operations.	1	- Limited natural environment impacts associated with the removal of the existing bridge. - Mitigation measures would need to be implemented during removal to prevent lead paint from entering the watercourse/ environment.	4	- Moderate natural environment impacts associated with the rehabilitation of the existing bridge. - Bridge would need to be removed from its current location to a temporary staging area or brought off-site to undertake rehabilitation work. Mitigation measures would need to be implemented during removal to prevent lead paint from entering the watercourse/ environment.	3	- Moderate/high natural environment impacts associated with the removal of the existing bridge and replacement due to access and stagging areas, as well as dependent on configuration of replacement structure. - Mitigation measures would need to be implemented during removal to prevent lead paint from entering the watercourse/ environment.	3
	Wildlife Habitats (Terrestrial)	2	No impacts to terrestrial wildlife habitat.	- No impacts to terrestrial wildlife habitat.	4	- Minor impacts to terrestrial wildlife habitat may occur as a result of vegetation removal to construct new turn around areas.	3	- Minor/moderate impacts to terrestrial wildlife habitat may occur as a result of vegetation removal for the rehabilitation of the structure. In order to complete the rehabilitation, the existing bridge needs to be removed and relocated	3	- Moderate impacts to terrestrial wildlife habitat may be required through vegetation removal activity for replacement of structure or potential widening, as well as potential disturbance	3

Evaluation Category	Criteria	Weight (1 to 5)	Description of Criteria Measures	Alternative 1 (Do Nothing)		Alternative 2 (Remove Bridge and Construct New Turn Around Areas)		Alternative 3 (Rehabilitate the Existing Bridge as a Vehicle and/or Pedestrian Crossing)		Alternative 4 (Replacement with a New Vehicle and/or Pedestrian Crossing)	
				Rationale	Score	Rationale	Score	Rationale	Score	Rationale	Score
								to a staging area either adjacent to the existing crossing or off-site.		for construction of new abutment walls.	
	Fisheries/ Aquatic Impacts	2	Continued deterioration of the existing bridge may pose significant impacts to fisheries and aquatic ecosystems associated with Rideau River with debris falling and the potential for the structure to collapse into the watercourse.	- Continued deterioration of the existing bridge may pose significant impacts to fisheries and aquatic ecosystems associated with Rideau River with debris falling and the potential for the structure to collapse into the watercourse.	1	- In-water works likely to be required for short duration. - No anticipated impacts to fisheries and aquatic ecosystems within the vicinity of the existing bridge. - Due to the presence of lead paint, appropriate mitigation measures will need to be implemented to ensure paint fragments don't entire the watercourse/environment.	3	- Minor/moderate impacts to fisheries and aquatic ecosystems depending on the levels of repairs required for the existing abutments and pier. - High concentrations of lead paint are present on the existing bridge. Lead is a known toxin, and cleaning and recoating the bridge will prove very costly if preparatory work for repainting/galvanizing the bridge is conducted on site.	2	- No anticipated impacts to fisheries and aquatic ecosystems within the vicinity of bridge as the majority work would take place outside of the watercourse. - Due to the presence of lead paint, appropriate mitigation measures will need to be implemented to ensure paint fragments don't entire the watercourse/environment.	3
	Species at Risk	3	No impacts to SAR anticipated.	- No impacts to SAR anticipated.	5	- Potential impacts to SAR birds and turtles can be mitigated.	3	- Potential impacts to SAR birds and turtles can be mitigated.	3	- Potential impacts to SAR birds and turtles can be mitigated.	3
	Ground and Surface Water Quality/Quantity	2	No impacts to groundwater are anticipated, however, if the bridge collapses into the watercourse the concrete debris may cause flooding within the area and impacts to dam operations.	- No impacts to groundwater are anticipated, however, if the bridge collapses into the watercourse the concrete debris may cause flooding within the area and impacts to dam operations.	2	- No impacts anticipated to groundwater or surface water. - Turn around areas to be designed to ensure no stormwater runoff impacts.	3	- No impacts anticipated to groundwater or surface water.	3	- No impacts anticipated to groundwater or surface water.	3
	Climate Change	2	Increased greenhouse emissions may be incurred due to detours caused by removal of connectivity of Confederation Drive/ Canal Street over Rideau River.	- Increased greenhouse emissions may be incurred due to detours caused by removal of connectivity of Confederation Drive/ Canal Street over Rideau River.	3	- Increased greenhouse emissions may be incurred due to detours caused by removal of connectivity of Confederation Drive/Canal Street over Rideau River.	3	- Reinstates connectivity for traffic on Confederation Drive/Canal Street over the Rideau River which may help reduce greenhouse emission as detour will no longer be required.	4	- Reinstates connectivity for traffic on Confederation Drive/Canal Street over the Rideau River which may help reduce greenhouse emission as detour will no longer be required	4
Social and Cultural Environment	Land Use / Socio-Economic Conditions	4	Potential impacts to residences, community facilities, public parks, tourism, institutions, businesses, municipal services (i.e., garbage and snow removal) and emergency services within or adjacent to the study corridor.	- Does not provide connectivity for the community on Confederation Drive/ Canal Street over Rideau River. - Does not provide a connective link for the community and tourists to such attractions: UNESCO World Heritage Rideau Canal, National Historic Site of Canada, and Parks	1	- Does not provide connectivity for the community on Confederation Drive/ Canal Street over Rideau River. - Does not provide a connective link for the community and tourists to such attractions: UNESCO World Heritage Rideau Canal, National Historic Site of Canada, and Parks	1	- Load postings may still be required after rehabilitation works which could potentially limit access. - Provides an active transportation route that takes advantage of scenic areas.	4	- Provides the community and tourists with connections to community facilities/ tourism features, commercial businesses and residential communities. - Municipal service vehicles such as garbage and snow removal trucks will be able to use the new	5

Evaluation Category	Criteria	Weight (1 to 5)	Description of Criteria Measures	Alternative 1 (Do Nothing)		Alternative 2 (Remove Bridge and Construct New Turn Around Areas)		Alternative 3 (Rehabilitate the Existing Bridge as a Vehicle and/or Pedestrian Crossing)		Alternative 4 (Replacement with a New Vehicle and/or Pedestrian Crossing)	
				Rationale	Score	Rationale	Score	Rationale	Score	Rationale	Score
				Canada locks, and two municipal parks. - With the deterioration of the existing bridge, it has the ability to permanently change the natural surrounding features. - By not providing connectivity on Confederation Drive, it could have potential impacts on the redevelopment of the former Water Treatment Plant and surrounding lands.		Canada locks, and two municipal parks. - With the deterioration of the existing bridge, it has the ability to permanently change the natural surrounding features. - By not providing connectivity on Confederation Drive, it could have potential impacts on the redevelopment of the former Water Treatment Plant and surrounding lands.		- The bridge is viewed as a very important pedestrian link to the community, as well as tourism.		bridge as there will be no restrictive load posting. - Provides an active transportation route that takes advantage of historical landmark and scenic areas with the Town of Smiths Falls. - Provided connectivity for the redevelopment of the former Water Treatment Plant and surrounding lands.	
	Archaeological, Built Heritage and Cultural Heritage Features	4	Potential impacts to registered archaeological resources and designated built heritage resources under the Heritage Act; as well as potential impacts on archaeological/built and cultural heritage resources within study area.	- No anticipated impacts to archaeological resources - Not considered a viable alternative from a heritage perspective as continued inaction on the deteriorating conditions of the bridge will amount to demolition by neglect which would result in a total loss of the cultural heritage resource.	1	- No anticipated impacts to archaeological resources. - Not considered viable alternative from a heritage perspective as the structure will be completely removed. - Would need to incorporate mitigation to commemorate the bridge.	1	- No anticipated impacts to archaeological resources. - Identified as the best alternative from a heritage perspective as it preserves the existing bridge.	5	- Below grade excavations within the footprint of the mid-nineteenth century storehouse or a 5 m buffer within the study area should be the subject of Stage 2 archaeological monitoring. - Not considered a viable alternative from a heritage perspective as existing bridge will be removed. - New bridge could have a similar appearance (i.e., clone) as the existing bridge but would be constructed of all new materials.	2
	Construction Impacts	2	Duration of construction, staging options and potential for construction-related impacts on traffic circulation, access, noise and dust.	- No construction related impacts.	5	- Minor construction-related impacts.	2	- Significant construction related impacts as the rehabilitation would consists of full removal and reinstatement of the bridge. Rehabilitation would take place in a temporary stagging area or brought off-site. - Due the existing bridge being currently closed; it is assumed that the closure will remain in place until bridge is reinstated.	1	- Minimal construction related impacts anticipated as existing bridge is currently closed (i.e., detour already put in place). - It is assumed that the closure will remain in place until bridge is replaced. - Minimal impacts to property entrances anticipated during construction.	2

Evaluation Category	Criteria	Weight (1 to 5)	Description of Criteria Measures	Alternative 1 (Do Nothing)		Alternative 2 (Remove Bridge and Construct New Turn Around Areas)		Alternative 3 (Rehabilitate the Existing Bridge as a Vehicle and/or Pedestrian Crossing)		Alternative 4 (Replacement with a New Vehicle and/or Pedestrian Crossing)	
				Rationale	Score	Rationale	Score	Rationale	Score	Rationale	Score
Implementation	Capital Costs	4	Capital cost of proposed improvement	- No capital cost due to no construction required for this option.	5	- Costs associated with this option are the second lowest and service life is unrestricted. - Minimal project scope.	4	- Due to the poor condition of the structure, it is not recommended to rehabilitate the structure. - Capital costs associated with this option cannot be estimated due to the amount of uncertainty of the structure's condition. Although, the cost would be significantly high, construction costs will be similar or more costly than bridge replacement. - High risk to incur cost overrun during construction, as the cost estimate may be significantly variable based on the conditions revealed during rehabilitation efforts, as well as relocation of structure during construction.	2	- High capital costs, however, this alternative is the most economical solution based on the anticipated extension of service life (75 years). - Risk of cost overrun is low, due to all-new bridge components.	1
	Operational and Maintenance Costs	3	Operational and maintenance costs of proposed improvement over life-cycle	- Operational and Maintenance costs due to structural assessments and monitoring required, with no extension of service life.	2	- Operational and Maintenance costs are lowest due to this option not requiring annual structural assessments and periodic structural rehabilitations.	5	- Highest operational and Maintenance costs for maintaining the structure at this age. - Load postings may still be required after rehabilitation works which would potentially restrict access to municipal service vehicles such as garbage and snow removal trucks.	1	- Operational and Maintenance costs for maintaining the new structure would be anticipate to be low/moderate.	4
			TOTAL SCORE	**RANK = 4th**	**104**	**RANK = 2nd**	**165**	**RANK = 3rd**	**150**	**RANK = 1st**	**195**

7.0 RECOMMENDED ALTERNATIVE SOLUTION

The Alternative Solutions were assessed against the evaluation criteria as described in Table 6.2. Each criterion was assigned a weighting to reflect its level of importance relative to other criteria. The weighting system was developed in consultation with the Town and indirect feedback received through stakeholder consultation for this Class EA. The selection of the recommended alternative solution involved identifying and making trade-offs among the advantages and disadvantages of the alternatives. The Alternative that ranked the highest according to the scoring system was selected as the ***recommended Technically Preferred Alternative***.

As part of the MCEA process, McIntosh Perry is required to develop alternative solutions pertaining to the bridge, with rehabilitation being an alternative. Through McIntosh Perry's review of available bridge evaluation documentations for the Confederation Bridge (previous studies completed by Greer Galloway Consulting Engineers and Keystone Bridge Management Corp.), it was noted that integral structural elements of the existing structure have deteriorated and would require replacement if the bridge were to be rehabilitated. In order to determine to what extent existing elements of the bridge would require replacement, a Close-Up Inspection and Structural Analysis would be required. The existing bridge was constructed in 1904 (118 years old). It should be noted that a typical bridge life span built in 1900's should be only 50 years based on OHBDC (previous bridge code in Ontario replaced by CHBDC). In addition, if the bridge were to be rehabilitated, it would be limited by the service life of the remaining elements that were not rehabilitated. Based on the existing condition of bridge elements, material strength, and date of construction, it is recommended that rehabilitation not be considered as a viable of Alternative Solution for vehicular traffic nor as an active transportation link. Town Council unanimous agreed not to proceed with any further structural evaluation of the Confederation Drive River Crossing and that the period of time when the bridge could have been saved has since past. Council members indicated that they would like to see the bridge cloned as the preferred design option whether it is for vehicles and/or pedestrian traffic.

Based on the above evaluation, correspondence with governing agencies (i.e., RVCA, Parks Canada, etc.) and Indigenous Communities, consultation with the Town of Smiths Falls Heritage Committee, and public input, ***Alternative Solution 4 -*** remove the existing Confederation Drive River Crossing and provide a new structure in its place (vehicle and/or pedestrian, has been identified as the ***recommended Technically Preferred Alternative (TPA)***.

The recommended TPA allows the Town of Smiths Falls to provide safe and reliable connectivity of Confederation Drive/Canal Street over the Rideau River. At this time, this alternative was determined to have the best balance of benefits for transportation/operational, technical/structural while having minimal impacts to the socio-economic and natural environment. This option does have the highest capital costs; however, this alternative is the more economical solution based on the anticipated extension of service life. It is recognized that this alternative is not favourable from a heritage perspective and therefore consideration will be given throughout the MCEA process and preliminary/detail design to ensure mitigation measures are incorporated to commemorate the Confederation Drive River Crossing such as cloning the structure/ sympathetic design elements, completing a Cultural Heritage Resource Documentation Report, commemorative display, etc.

The service life of a new bridge will be 75 years. As the intention is to provide a bridge that meets operational and safety standards, further consideration will be given to determine if the new bridge should be constructed to accommodate vehicular/pedestrian/cyclist traffic or just pedestrian/cyclist traffic.

The scope of work for recommend alternative solution could include, but not be limited to:

- Removal and disposal of the existing superstructure and substructure;
- Install dewatering system, if deemed required;
- Construct bridge foundations and abutments;
- Install bearings;
- Construct or install new superstructure that is compliant with current operational and safety standards, and
- Regrade around new bridge and tie into existing road allowance.

7.1 Project Implementation

The Town of Smiths Falls is striving to have Council endorsement of the Technically Preferred Alternative and the MCEA Project File Report no later than August 12, 2022. The project will then proceed to Detail Design Fall 2022 with construction anticipated to commence Spring 2023 pending agencies approvals and funding availability.

7.2 Next Steps

In compliance with the MCEA process, the Town will host an Online Public Information Centre (PIC) to elicit input on the study process and aid in the selection of the ***Technically Preferred Alternative***. The PIC will provide an opportunity for interested parties to review findings of investigations, proposed alternative solutions, evaluation criteria, and comment on the recommended Technically Preferred Alternative.

Following the PIC, the MCEA Project File Report will be updated and will be made available for a 30-Day Public Review Period. This document is not finalized until the mandatory 30-Day Public Review Period has expired and any objections have been addressed. Following the public review period, the MCEA Project File Report and select Technically Preferred Alternative will be presented to Town Council for their endorsement.

APPENDIX A – SUMMARY OF EXISTING ENVIRONMENTAL CONDITIONS

EXISTING ENVIRONMENTAL CONDITIONS REPORT

Schedule “B” Municipal Class Environmental Assessment Study, Confederation Drive River Crossing

MP Project No.: CCO-22-2838

Prepared for:

Corporation of the Town of Smiths Falls
77 Beckwith St. N
Smiths Falls, Ontario, K7A 2B8

Prepared by:

McINTOSH PERRY

McIntosh Perry Consulting Engineers Ltd.
6240 Highway 7, Suite 200
Woodbridge, Ontario L4H 4G3

EXISTING ENVIRONMENTAL CONDITIONS REPORT

SCHEDULE “B” MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT STUDY, CONFEDERATION DRIVE RIVER CROSSING

Prepared for:

Corporation of the Town of Smiths Falls
77 Beckwith St. N
Smiths Falls, Ontario, K7A 2B8

Prepared by:

McINTOSH PERRY

McIntosh Perry Consulting Engineers Ltd.
6240 Highway 7, Suite 200
Woodbridge, Ontario L4H 4G3

February 21, 2022

Prepared by:

Riley Rutherford

____
Riley Rutherford
Junior Biologist
McIntosh Perry Consulting Engineers Ltd.

Reviewed by:

Kerry Reed

____
Kerry Reed
Environmental Planner
McIntosh Perry Consulting Engineers Ltd.

Reviewed by:

Erik Pohanka

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Erik Pohanka
Biologist
McIntosh Perry Consulting Engineers Ltd.

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APPENDICES

1.0 INTRODUCTION

The Corporation of the Town of Smiths Falls (Town of Smiths Falls) has initiated a Municipal Class Environmental Assessment (MCEA) to assess a path forward with respect to improvements for the deteriorating Confederation Drive River Crossing which is located over the Rideau River in Smiths Falls (**Figure 1**). The current design of this bridge is a single-lane (two-span) with Warren type pony trusses, constructed in approximately 1904. In late 2015, the bridge was barricaded and closed (i.e., the existing timber deck was removed from the bridge) as a result of deteriorated structural conditions. Prior to closure in 2015, capacity of the bridge was monitored and reduced to 7-tonne single truck load limit on the bridge due to aforementioned deteriorating conditions. Options to address the aging Confederation Drive River Crossing will be assessed to determine the preferred alternative and the scope of work required. The MCEA is being carried out as a Schedule 'B' undertaking in accordance with the Municipal Class Environmental Assessment process (October 2000, amended 2007, 2011 and 2015), approved under the Ontario *Environmental Assessment Act* (1990).

The Confederation Drive River Crossing study area is located in the Geographic Township of Elmsley, Town of Smiths Falls, Ontario and is regulated under the Rideau Valley Conservation Authority (RVCA) and the Southern Region of the Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF), Kemptville District. The Confederation Drive River Crossing spans over the original channel of the Rideau River, located to the immediate north of the Rideau Canal locks, connecting Canal Street and Confederation Drive as seen in **Figure 1**. This *Existing Environmental Conditions Report* has been prepared to provide a synopsis of the existing environmental conditions of the study area. Environmental information used in the production of this report has been assembled from existing background data for the general study area in addition to data generated from field surveys.

Figure 1: Confederation Drive River Crossing Key Map

2.0 METHODOLOGY

2.1 Background Data Collection

A desktop review was undertaken to collect background data and document all environmental features within the study area prior to undertaking fieldwork. Information was obtained from the following sources:

- Wildlife atlases for birds and herpetofauna, (Bird Studies Canada et al. 2006, Ontario Nature, 2020);
- NDMNRF Land Information Ontario (LIO) database (NDMNRF, 2022a);
- The Ontario Geological Survey Earth (OGS Earth) geoscience database (OSG, 2010);
- NDMNRF Make a Map: Natural Heritage Areas mapping application (NDMNRF, 2022b);
- Fisheries and Oceans Canada (DFO) Aquatic Species at Risk Mapping Tool (DFO, 2022);
- Fish ON-Line (NDMNRF, 2022c);
- RVCA Regulation Mapping (RVCA, 2022);
- Ministry of Environment, Conservation and Parks (MECP) Source Protection Atlas (MECP, 2021), and
- Smiths Falls Official Plan (J.L. Richards & Associates Limited , 2014)

2.2 Field Investigations

A field investigation was conducted to collect current information related to terrestrial and aquatic ecosystems within the study area. E. Pohanka of McIntosh Perry Consulting Engineers Ltd. (McIntosh Perry) visited the Confederation Drive River Crossing study area on December 13, 2021, under the following conditions:

- Time of day: 12:00 h;
- Duration of visit: 35 min;
- Sunny conditions, some breeze, and
- Air temperature: 7°C.

The field investigations included identification of the following, where applicable:

- Existing vegetation communities;
- Wetland areas;
- Existing fish habitat;
- Reptiles, amphibians, and associated habitat;
- SAR and their habitat;
- Resident or migrant bird and wildlife species;
- Wildlife corridors and Concentration areas;
- Critical habitat areas, and
- Existing land uses surrounding the study area.

2.2.1 Vegetation Community Field Surveys

A site vegetation inventory was undertaken. Assessed vegetation communities were characterized and mapped using the Ministry of Natural Resources (MNR) guidelines for Ecological Land Classification (ELC) for Southern Ontario (Lee, 2009). ELC polygons representative of distinct communities identified were then delineated on an aerial photograph of the study area. A botanical inventory of the site was also conducted, with field staff listing all observed terrestrial plant species.

2.2.2 Wildlife and Wildlife Habitat Field Survey Methods

Wildlife habitat assessments were conducted simultaneously with vegetation surveys, based on procedures provided in the *Significant Wildlife Habitat Technical Guide* (MNRF 2000), the *Ecoregion Criteria Schedules* (Ministry of Natural Resources and Forestry [MNRF], 2015), and the *Natural Heritage Reference Manual* (MNRF 2010).

Wildlife species (e.g., mammals, birds, and nests on structures, and herpetofauna) noted during the investigations were identified by signs, visual observations, and vocalizations. The extent of the study area used for wildlife species observations was within the existing right-of-way and adjacent lands for 120 m unless a sensitive receptor greater than 120 m was likely to be adversely affected. For the purpose of this assessment, any species observed within and adjacent to the study area were identified and considered to be residents of, or visitors to, the study area.

3.0 EXISTING CONDITIONS

Determining the existing environmental conditions of the study area is required in order to assess potential impacts associated with alternative improvement options for the Confederation Drive River Crossing. The following sections summarize the existing physical and biological conditions within the study area and surrounding lands. A photo log of site conditions prior to any alteration can be found in **Appendix A**.

3.1 Ecoregion Soils and Physiography

The study area is located within the Lake Simcoe- Rideau Ontario Ecoregion (Ecoregion 6E), of the Mixedwood Plains Ecozone within the Great Lakes-St. Lawrence Forest Region (Crins et al., 2009). Bedrock composition in the study area consists mainly of dolostone, and sandstone rock types, within the Beekmantown Group (Ontario Geological Survey, 2010). Soil types belong to the Farmington class, comprised of sandy loam (sandy loam till 30 – 45 cm deep over sandstone), over a smooth, level topography, and a moderate stony class which attributes to well drained soils (Hoffman et al. 1967).

3.2 Terrestrial Ecosystems

3.2.1 Ecoregion Vegetation

The Lake Simcoe-Rideau Ecoregion (6E) is dominated by croplands (57%), followed by pasture lands (44.4%), and abandoned fields (12.8%). Forested areas of the ecoregion are composed primarily of deciduous forest (16.0%) with some addition of coniferous and mixed forests. Forest stands within the ecoregion contain typically green ash (*Fraxinus pennsylvanica*), silver maple (*Acer saccharinum*), red maple (*Acer rubrum*), eastern white-cedar (*Thuja occidentalis*), yellow birch (*Betula alleghaniensis*), balsam fir (*Abies balsamea*), black ash (*Fraxinus nigra*), black spruce (*Picea mariana*), and tamarack (*Larix laricina*) (Crins et al., 2009).

3.2.2 Vegetation Communities

The land surrounding the Confederation Drive River Crossing is comprised of urban parkland areas with manicured/mown grass and ornamental/landscaped gardens. No significant or unique vegetation stands exist within the greater study area (i.e., 120 m of the Confederation Drive River Crossing), thus no ELC communities were classified for the purpose of this report.

Table 1 lists the vegetation species identified during the 2021 field investigation.

Table 1: Vegetation Identified within the Confederation Drive River Crossing Study Area			
Tree Species			
Common Name	**Scientific Name**	**Common Name**	**Scientific Name**
common barberry *	*Berberis vulgaris*	white elm	*Ulmus americana*
common buckthorn *	*Rhamnus cathartica*	white oak	*Quercus alba*
eastern red-cedar	*Juniperus virginiana*	white spruce	*Picea glauca*
Norway maple *	*Acer platanoides*	willow sp.	*Salix sp.*
Poplar sp.	*Populus sp.*	-	-
Shrub Species			
Common Name	**Scientific Name**	**Common Name**	**Scientific Name**
fly honeysuckle	*Lonicera canadensis*	Virginia creeper *	*Parthenocissus quinquefolia*
red-osier dogwood	*Cornus sericea*	wild red raspberry	*Rubus occidentalis*
riverbank grape	*Vitis riparia*	-	-
Herb Species			
Common Name	**Scientific Name**	**Common Name**	**Scientific Name**
bittersweet nightshade *	*Solanum dulcamara*	reed canary grass *	*Phalaris arundinacea*
common mugwort	*Artemisia vulgaris*	smooth brome *	*Bromus inermis*
common mullein	*Verbascum thapsus*	sulphur cinquefoil	*Potentilla recta*
goldenrod spp.	*Solidago spp.*	sweet-clover sp.	*Melilotus spp.*
green bristle grass	*Setaria viridis*	-	-

* These species are known to be invasive or exotic and are currently tracked in Ontario in accordance with *Invasive Species Act* (1995) by *EDDMapS* (2021).

3.2.3 Wetland Habitat

The Swale Marsh is an Area of Natural and Scientific Interest (ANSI) which is present approximately 550 m west of the Confederation Drive River Crossing study area (**Figure 2**). Within this ANSI, a Provincially Significant Wetland (PSW) exists (The Swale Wetland), which is evaluated as a provincially significant marsh (**Figure 2**). According to the Ontario Flow Assessment Tool (OFAT), these features are connected to upstream portions of the Rideau River, separated by two (2) federally-owned dams, one approximately 10 m upstream and another approximately 500 m upstream of the Confederation Drive River Crossing study area (MNRF, 2020). Background review found several other unevaluated wetlands (swamp, marsh, and fens) in areas adjacent to Smiths Falls and the aforementioned ANSI and PSW; however, none of these were observed through field investigations or background review to be present within 120 m of the Confederation Drive River Crossing study area.

3.2.4 Wildlife

Characteristic wildlife of the Smiths Falls Ecodistrict (6E-11) includes (however, is not limited to): white-tailed deer (*Odocoileus virginianus*), red fox (*Vulpes vulpes*), coyote (*Canis latrans*), northern raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), beaver (*Castor canadensis*), eastern gray squirrel (*Sciurus carolinensis*), Great Blue Heron (*Ardea herodias*), Red-tailed Hawk (*Buteo jamaicensis*), Black-capped Chickadee (*Poecile atricapillus*), Blue Jay (*Cyanocitta cristata*), American Robin (*Turdus migratorius*), Wood Thrush (*Hylocichla mustelina*), Yellow Warbler (*Setophaga petechia*), Midland Painted Turtle (*Chrysemys picta marginata*), Eastern Red-backed Salamander (*Plethodon cinereus*), Smallmouth Bass (*Micropterus dolomieu*), Walleye (*Sander vitreus*), Yellow Perch (*Perca flavescens*), Pearl Dace (*Margariscus margarita*), and Spottail Shiner (*Notropis hudsonius*).

A Colonial Waterbird Nesting area designated as a wildlife concentration area is also identified within the vicinity of the Confederation Drive River Crossing study area.

Table 2 lists the wildlife species observed in the study area during the field investigation.

Table 2: Wildlife Observed within the Confederation Drive River Crossing Study Area			
Birds			
Common Name	**Scientific Name**	**Common Name**	**Scientific Name**
American Black Duck	*Anas rubripes*	Ring-billed Gull	*Larus delawarensis*
Canada Goose	*Branta canadensis*	Rock Pigeon	*Columba livia*
Mallard	*Anas platyrhynchos*	-	-
Mammals			
eastern gray squirrel	*Sciurus carolinensis*	-	-

3.3 Fisheries and Aquatic Ecosystems

The watercourse associated with the Confederation Drive River Crossing study area is the Rideau River, one of the largest tributaries of the Ottawa River. LIO and Aquatic Resource Area (ARA) mapping has not defined the thermal regime for the Rideau River; however, the watercourse is considered warm water and information obtained from a desktop review has shown that the Rideau River is known to contain the fish species listed in **Table 3.**

During the 2021 field investigation, McIntosh Perry's staff assessed the watercourse from the available portions of shoreline, and adjacent accessible foot bridges. Water was observed to be flowing well over the weir approximately 10 m south (upstream) of the study area. Some back eddies were observed between the weir and the bridge, as well as large riffles/flats downstream of the bridge then pools even further, along the shoreline, before the watercourse flows over another weir. The shoreline downstream of the bridge was comprised of vertical armour stone, and flat bedrock (with some deciduous trees growing through cracks) under the bridge.

Specialized habitat for sportfish may potentially be present directly upstream, downstream, and under the Confederation Drive River Crossing as well as potential specialized habitat for sport and baitfish specific life processes (i.e., spawning and nursery/rearing habitat) in the further downstream habitat features (i.e., riffle and pool structures). Based on limited background information availability, and conditions confirmed during the field investigations, the fish community and habitat composition of the Confederation Drive River Crossing study area cannot be determined without thorough fish/habitat surveys carried out under approved protocols. Based on the best information available, an in-water timing window will be proposed for the Confederation Drive River Crossing study area in **Table 3**.

LEGEND

- Site Location
- MECP Well Location
- 120m Buffer
- Regulation Limit (RVCA)
- Category 2 Blanding's Turtle Habitat
- Category 3 Blanding's Turtle Habitat
- Virtual Flow
- Waterbody

REFERENCE

GIS data provided by the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry, 2022.

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Scale 1:1,500 Metres

CLIENT: TOWN OF SMITHS FALLS

PROJECT: SUMMARY OF EXISTING ENVIRONMENTAL CONDITIONS REPORT

TITLE: CONSTRAINTS AND OPPORTUNITIES

McINTOSH PERRY
115 Walgreen Road, RR3, Carp, ON K0A1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

PROJECT NO: CCO-22-2838		FIGURE:
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Table 3: Existing Fish Community Summary Table			
Waterbody	**Fish Species Present**	**Species at Risk Present**	**In-water Work Timing Window**
Rideau River	<u>*ARA Data:*</u> Black Crappie (*Pomoxis nigromaculatus*), Bluegill (*Lepomis macrochirus*), Brook Silverside (*Labidesthes sicculus*), Brown Bullhead (*Ameiurus nebulosus*), Channel Catfish (*Ictalurus punctatus*), Common Carp (*Cyprinus carpio*), Golden Shiner (*Notemigonus crysoleucas*), Iowa Darter (*Etheostoma exile*), Largemouth Bass (*Micropterus salmoides*), Muskellunge (*Esox masquinongy*), Northern Pike (*Esox lucius*), Pumpkinseed (*Lepomis gibbosus*), Rock Bass (*Ambloplites rupestris*), Round Goby (*Neogobius melanostomus*), Shorthead Redhorse (*Moxostoma macrolepidotum*), Smallmouth Bass, Spottail Shiner, Walleye, White Sucker (*Catostomus commersonii*), Yellow Bullhead (*Ameiurus natalis*), and Yellow Perch. <u>*LIO Data (Fish ON-Line):*</u> Black Crappie, Bluegill, Brown Bullhead, Channel Catfish, Common Carp, Largemouth Bass, Muskellunge, Northern Pike, Pumpkinseed, Rock Bass, Smallmouth Bass, Walleye, White Sucker, and Yellow Perch.	DFO Aquatic Species at Risk Map does not indicate any Species at Risk (SAR) or SAR critical habitat within a one (1) km radius of the Confederation Drive River Crossing; however, the Bridle Shiner (*Notropis bifrenatus*) is known to/may persist upstream of the study area within Lower Rideau Lake and its associated tributaries.	In order to satisfy *Ontario Regulation (O. Reg.) 239/13*. and in accordance with the MNR *In-water Work Timing Window Guidelines* (2013a), and available data on species composition of the Rideau River, the following windows are recommended for the Southern Region: <u>Muskellunge/ Northern Pike/ Walleye</u> • *March 15 – May 31* <u>Largemouth/ Smallmouth Bass</u> • *May 01 – June 30* Due to the known presence of the above species in the Rideau River, a combined in-water work timing window of <u>***March 15 – June 30***</u> is recommended to accommodate for these spring spawning species.

3.4 Species at Risk

Ontario wildlife atlases were reviewed for SAR elemental occurrence records within 10 km of the study area. The Ontario Reptile and Amphibian Atlas (Ontario Nature, 2020) identified records of:

- Blanding's Turtle
- Eastern Musk Turtle (*Sternotherus odoratus*)
- Midland Painted Turtle
- Northern Map Turtle (*Graptemys geographica*)
- Snapping Turtle *(Chelydra serpentina)*
- Eastern Milksnake (*Lampropeltis triangulum triangulum*)
- Gray Ratsnake
- Western Chorus Frog (*Pseudacris triseriata*).

No habitat was observed directly within or adjacent to the Confederation Drive River Crossing study area which would support specific life processes (i.e., overwintering or nesting) for SAR reptiles or amphibians. The fast-flowing currents created by the upstream dam have created a scrubbed river bottom, preventing the buildup of sediment or soils which would allow for macrophyte growth or provide suitable overwintering sites for aquatic species. The steep shoreline created by the placement of armour stone which prevents riparian erosion, also prevent access to the shoreline from the watercourse.

Although the Confederation Drive River Crossing study area falls within an elemental occurrence record for the Gray Ratsnake, no habitat to support significant life processes was observed directly within or adjacent to the study area (i.e., accessible crevices and/or available chambers below the frost line to support overwintering, no suitable oviposition sites such as rotten interior cavities of large deciduous trees and stumps or compost piles).

Due to elemental occurrence records for Blanding's Turtle existing approximately 1.5 km northwest and 1.8 km east of the Confederation Drive River Crossing study area, areas within 30 m of the Rideau River are considered Category 2 habitat and areas beyond 30 m, up to 250 m are considered Category 3 habitat (**Figure 2**).

The Ontario Breeding Bird Atlas (Bird Studies Canada et al., 2006) identified ten (10) SAR birds known to occur within 10 km of the study area:

- Bank Swallow (*Riparia riparia*)
- Barn Swallow (*Hirundo rustica*)
- Black Tern (*Chlidonias niger*)
- Bobolink (*Dolichonyx oryzivorus*)
- Chimney Swift (*Chaetura pelagica*)
- Common Nighthawk (*Chordeiles minor*)
- Eastern Meadowlark (*Sturnella magna*)
- Eastern Wood-Pewee (*Contopus virens*)
- Golden-winged Warbler (*Vermivora chrysoptera*)
- Grasshopper Sparrow (*Ammodramus savannarum*)
- Least Bittern (*Ixobrychus exilis*)
- Wood Thrush (*Hylocichla mustelina*)

Potential habitat was identified for Barn Swallow on the bridge structure, although no nests were identified (however, it should be noted that the entire structure could not be fully examined due to limited accessibility). Due to the location of the Confederation Drive River Crossing study area (i.e., urban area containing structures and chimneys), potential habitat for the Chimney Swift is present within the study area. However, the structures that potentially provide Chimney Swift habitat are approximately 65 m north of the bridge and are not part of the scope of the project works. Other adjacent habitat features exist in the form of urban parkland and manicured grass with landscaped gardens which would not support life processes of grassland or woodland SAR birds. Finally, no habitat features (i.e., wetlands) exist within the study area which would support life processes of the Black Tern.

Natural Heritage Information Centre (NHIC) mapping identified the following SAR within 1 km of the study area:

- Butternut (*Juglans cinerea*)
- Black Tern
- Eastern Meadowlark
- Eastern Musk Turtle
- Gray Ratsnake
- Northern Map Turtle
- Wood Thrush

Habitat for Butternuts is available within the Confederation Drive River Crossing study area due to the wide range of habitat preferences for Butternuts in which to grow. Butternuts are shade intolerant and prefer open areas but often become crowded out by other tree species. However, no Butternut individuals were observed during field investigation.

Furthermore, the study area falls within a NHIC 1 km grid Gray Ratsnake (*Pantherophis spiloides*) elemental occurrence record, as well as several NHIC 1 km grid Blanding's Turtle (*Emydoidea blandingii*) elemental occurrence record exists within 2 km of the Confederation Drive River Crossing study area.

DFO Aquatic SAR mapping tool found no aquatic SAR records or critical habitat within the study area; however, approximately 4.6 km upriver of the study area, in Lower Rideau Lake and its associated tributaries the following species are known to/may persist:

- Bridle Shiner

No specialized habitat (i.e., abundance of aquatic vegetation/macrophytes which provide spawning habitat, foraging sites and cover from predation) exists within the immediate study area.

During the daytime field investigation, McIntosh Perry's staff assessed the adjacent habitat and provided a determination if there was potential for bats to use such for significant life processes (i.e., maternity roost or hibernation sites). Based on this assessment, it was determined that no specialized bat habitat (i.e., structures with interstitial spaces such as joists and rafters or deep caves/abandoned mines) which would provide overwintering habitat appears to be associated with the Confederation Drive River Crossing; however, structures at the northern extent of the study area could provide such habitat. Furthermore, no typical roosting habitat (i.e., rock crevices, tree cavities, or snag trees) were observed during field investigations which would support SAR bats as maternity colony sites within the immediate study area. Though no SAR bats are anticipated to utilize the site for the purposes of maternity colonies, it is anticipated that not-at-risk tree bat species (i.e., hoary bat [Lasiurus cinereus]) which are still widespread, may utilize treed habitat within the study area for this purpose, though they are typically less dependent on specialized habitat for this function (i.e., cavities, etc.).

Background research identified the potential for various SAR to be present within the study area. Table 5 outlines potential SAR which man exist within the study area based on background review, habitat suitability, and the possibility of using the study area as a migratory corridor.

Common Name	Scientific Name	Endangered Species Act (ESA) Status	Species at Risk Act (SARA) Status	Suitable Habitat Present within Study Area
Plants				
Butternut [1]	*Juglans cinerea*	Endangered	Endangered	Yes; however, species is a habitat generalist. No individuals observed during field investigations.
Insects				
Monarch [4]	*Danaus plexippus*	Special Concern	Special Concern	No habitat observed within study area.
Fish				
Bridle Shiner [5]	*Notropis bifrenatus*	Special Concern	Special Concern	No habitat observed within study area.
Snakes and Amphibians				
Eastern Milksnake [3]	*Lampropeltis triangulum*	No Status	Special Concern	No habitat observed within study area.
Gray Ratsnake [1] (Great Lakes/St. Lawrence pop.)	*Pantherophis spiloides*	Threatened	Threatened	No habitat observed within study area.
Western Chorus Frog [3] (Great Lakes/St. Lawrence pop.)	*Pseudacris triseriata*	No Status	Threatened	No habitat observed within study area.
Turtles				
Blanding's Turtle [1, 3]	*Emydoidea blandingii*	Threatened	Threatened	Yes. Although the study area is Category 2 and 3 habitat for this species, no specialized habitat for specific life processes is present within the study area.
Eastern Musk Turtle [1, 3]	*Sternotherus odoratus*	Special Concern	Special Concern	No habitat observed within study area.
Midland Painted Turtle [3]	*Chrysemys picta*	No Status	Special Concern	No habitat observed within study area.
Northern Map Turtle [1, 3]	*Graptemys geographica*	Special Concern	Special Concern	No habitat observed within study area.
Snapping Turtle [3]	*Chelydra serpentina*	Special Concern	Special Concern	No habitat observed within study area.
Birds				
Bank Swallow [2]	*Riparia riparia*	Threatened	Threatened	No habitat observed within study area.
Barn Swallow [2]	*Hirundo rustica*	Threatened	Threatened	Yes, bridge structure may provide nesting opportunities; however, no individuals observed during field investigations.
Black Tern [1, 2]	*Chlidonias niger*	Special Concern	No Status	No habitat within the direct study area; however, known Colonial Waterbird Nesting area designated as a wildlife concentration area is associated with

Common Name	Scientific Name	Endangered Species Act (ESA) Status	Species at Risk Act (SARA) Status	Suitable Habitat Present within Study Area
				the adjacent ANSI and PSW, hence individuals could be incidentally encountered within the study area.
Bobolink [2]	*Dolichonyx oryzivorus*	Threatened	Threatened	No habitat observed within study area.
Chimney Swift [2]	*Chaetura pelagica*	Threatened	Threatened	Yes; however, not associated with the bridge (i.e., chimneys and other manmade structures)
Common Nighthawk [2]	*Chordeiles minor*	Special Concern	Threatened	No habitat observed within study area.
Eastern Meadowlark [1, 2]	*Sturnella magna*	Threatened	Threatened	No habitat observed within study area.
Eastern wood-peewee [2]	*Contopus virens*	Special Concern	Special Concern	No habitat observed within study area.
Golden-winged Warbler [2]	*Vermivora chrysoptera*	Special Concern	Threatened	No habitat observed within study area.
Grasshopper sparrow [2]	*Ammodramus savannarum*	Special Concern	Special Concern	No habitat observed within study area.
Least Bittern [2]	Ixobrychus exilis	Threatened	Threatened	No habitat observed within study area.
Wood Thrush [1, 2]	*Hylocichla mustelina*	Special Concern	No Status	No habitat observed within study area.
Mammals				
Eastern Small-footed Myotis [6]	*Myotis leibii*	Endangered	Special Concern	No suitable maternity colony habitat is present.
Little Brown Myotis [6]	*Myotis lucifugus*	Endangered	Endangered	Yes; however, not associated with the bridge (i.e., chimneys and other manmade structures)
Northern Myotis [6]	*Myotis septentrionalis*	Endangered	Endangered	No suitable maternity colony habitat is present.
Tri-colored Bat [6]	*Perimyotis subflavus*	Endangered	Endangered	No suitable maternity colony habitat is present.

This table was assembled from various sources of background information. The following information sources were consulted to compile background information:

[1] Land Information Ontario - NHIC database (NHIC; MNRF, 2020)
[2] Ontario Breeding Bird Atlas (OBBA; Bird Studies Canada, 2006)
[3] Ontario Reptile and Amphibian Atlas (ORAA; Ontario Nature, 2020)
[4] Ontario Butterfly Atlas (OBA; Toronto Entomologists' Association, 2020)
[5] Department of Fisheries and Oceans Canada (DFO; Government of Canada, 2021)
[6] Within species general range but not identified by other source

3.5 Groundwater

A total of two (2) domestic, one (1) commercial, one (1) industrial, and one (1) public water supply wells were identified within 500 m of the the Confederation Drive River Crossing study area. These wells were constructed between 1960 and 1994 with a measured average depth of 21.3 m below ground surface (MECP, 2021). Aside from water supply wells, several (34) other monitoring and test holes exist within 500 m of the the Confederation Drive River Crossing study area with an average depth of 4.9 m below surface level; however, not exceeding a maximum depth of 10.4 m. Static water levels of the water supply wells ranges from 3.4 to 12.2 m with an average static level of 6.1 m.

3.6 Designated Areas

The Confederation Drive River Crossing study area is classified as Category 2 and Category 3 Blanding's Turtle habitat due to the proximity of elemental occurrence data provided by the NHIC (within 2 km). *General Habitat Description for the Blanding's Turtle (*Emydoidea blandingii*)* (MNR, 2013b) states activity in Blanding's Turtle general habitat "…can continue as long as the function of these areas for the species is maintained and individuals of the species are not killed, harmed or harassed."

The study area is located within the Rideau Valley Conservation Authority (RVCA) regulation limit under the provisions of *O. Reg. 97/04: Content of Conservation Authority Regulations under Subsection 28 (1) of the Act: Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*, thus permits consultation and permitting from the RVCA is required for any development within this limit or alteration to a watercourse.

The Swale Wetland PSW and the Swale Marsh ANSI (functionally the same systems under different delineation and classification) are present approximately 550 m west of the Confederation Drive River Crossing study area within the Rideau-Smiths Falls catchment basin, existing within the regulation limit of *O. Reg. 174/06: Rideau Valley Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses.*

Two (2) Intake Protection Zones (IPZ) are present approximately 500 m west of the Confederation Drive River Crossing study area within the Mississippi-Rideau Source Protection Region.

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APPENDIX A – STUDY AREA PHOTOGRAPHS

Photo 1: *View of existing habitat conditions adjacent to the eastern portion of Confederation Drive River Crossing study area. Adjacent habitat was comprised mainly of manicured/mown grass with landscaped gardens in the form of urban parkland and some mature trees. No vegetation communities within the study area (i.e., 120 m of the Confederation Drive Bridge) were significant or natural enough to be classified under ELC protocol.*

Photo 2: *Barricaded eastern entrance to the Confederation Drive bridge, implemented in 2015 due to unsafe structural conditions; however, this barricade also limited access and obstructed view to some portions of the bridge during the 2021 field investigations.*

Photo 3: *Full view of the entire Confederation Drive bridge from the northwestern bank. Below the bridge flows a portion of the Rideau River, diverted to the north from the implementation of a federal dam.*

Photo 4: *View of the federal dam from the west (left) and east (right) banks adjacent to the Confederation Drive bridge. The presence of this dam creates fast flowing water, which scrubs substrate material and vegetation from the bed of the river and creates large riffles, flats and pools downstream which provides a variety of specialized habitat for several fish species.*

Photo 5: *Large riffles, flats and pools created by the upstream dam, before flowing into another dam at the downstream, northern portion of the Confederation Drive River Crossing study area.*

Photo 6: *Sections of the Confederation Drive bridge structure where existing timber deck was removed from the bridge (left) and the remnants of the wooden pedestrian pathway (right).*

Photo 7: *Panoramic view of the dam upriver of the Confederation Drive River Crossing study area, showing the greater study area on a large-scale view.*

Photo 8: *View of the Rideau River flowing into the downstream dam as mentioned in* ***Photo 5****. Structures at the northern extent of the Confederation Drive River Crossing study area appear to be historic buildings and may provide summer maternity sites for SAR and non-SAR bats as well as Chimney Swifts.*

APPENDIX B – REGULATORY AGENCY CORRESPONDENCE

December 10, 2021

Ministry of Environment, Conservation, and Parks

Re: Town of Smiths Falls Confederation Drive Crossing
Species at Risk Information Request

To whom it may concern,

The Town of Smiths Falls (the Town) is undertaking the reconstruction of the Confederation Drive crossing over Rideau River (Geographic Township of Elmsley). The study area is located within the Kemptville District of the Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF). The coordinates of the study area are as follows: 18T 419347 m E 4972051 m N.

As part of the reconstruction, the Town has retained the services of McIntosh Perry Consulting Engineers (McIntosh Perry) to undertake an environmental assessment of the natural heritage features in the study area. Please see the attached key map indicating the study area location.

The purpose of this information request is to identify any significant habitat and Species at Risk (SAR) habitat related to the study area. McIntosh Perry has conducted a preliminary review of background environmental information publicly available for the study area regarding SAR presence using various resources such as the Land Information of Ontario (LIO) database, Natural Heritage Information Centre (NHIC) data from the Make a Map: Natural Heritage Areas tool, and various wildlife atlases. Publicly available information has been summarized in Table 1.

Table 1: Background Environmental Information for the Confederation Drive Crossing

Source	Background Information
Fish ON-Line (NDMNRF, 2021)	• Riduea River is known to contain the following species of sport fish: Black Crappie, Bluegill, Brown Bullhead, Channel Catfish, Common Carp, Largemouth Bass, Muskellunge, Northern Pike, Pumpkinseed, Rock Bass, Smallmouth Bass, Walleye, White Sucker, and Yellow Perch.
Aquatic Resource Area (ARA) Data (NDMNRF, 2021)	• Rideau River is known to contain the following species of fish: Black Crappie, Bluegill, Brook Silverside, Brown Bullhead, Channel Catfish, Common Carp, Golden Shiner, Iowa Darter, Largemouth Bass, Muskellunge, Northern Pike, Pumpkinseed, Rock Bass, Round Goby, Shorthead Redhorse, Smallmouth Bass, Spottail Shiner, Walleye, White Sucker, Yellow Bullhead, and Yellow Perch.
LIO Data (NDMNRF 2021)	• The study area is within a Gray Ratsnake record square; • The study area is approximately 970 m south of Blanding's Turtle record squares, and • A provincially significant wetland (PSW) called The Swale Wetland, which is also an Area of Natural and Scientific Interest (ANSI) is present approximately 560 m west of the study area.
NHIC Data (NDMNRF, 2021)	• The following Wildlife Concentration Areas were identified within the vicinity of the study area: Colonial Waterbird Nesting Area, and

Table 1: Background Environmental Information for the Confederation Drive Crossing

Source	Background Information
	• The following species at risk (SAR) were identified within the vicinity of the study area: Black Tern, Butternut, Eastern Meadowlark, Eastern Musk Turtle, Gray Ratsnake, Northern Map Turtle, and Wood Thrush.
Fisheries and Oceans Canada (DFO) SAR mapping (DFO, 2021)	• The following aquatic SAR were identified upstream of the study area within the Rideau River: Bridle Shiner.
Ontario Breeding Bird Atlas (OBBA) (Bird Studies Canada et. al., 2006)	• The following SAR birds were identified within the vicinity of the study area: Bank Swallow, Barn Swallow, Black Tern, Bobolink, Chimney Swift, Common Nighthawk, Eastern Meadowlark, Eastern Wood-Pewee, Golden-winged Warbler, Grasshopper Sparrow, Least Bittern, and Wood Thrush.
Ontario Reptile and Amphibian Atlas (ORAA) (Ontario Nature, 2020)	• The following SAR reptiles and amphibians were identified within the vicinity of the study area: Blanding's Turtle, Common Snapping Turtle, Eastern Musk Turtle, Midland Painted Turtle, Northern Map Turtle, Eastern Milksnake, Gray Ratsnake, and Western Chorus Frog.
Ontario Butterfly Atlas (OBA) (Toronto Entomologists' Association, 2020)	• The following SAR butterflies were identified within the vicinity of the study area: Monarch.
Rideau Valley Conservation Authority Mapping (2021)	• The property is located within regulated floodplain area, and • The property is located within regulated areas under Ontario Regulation (O. Reg.) 42/06.
Town of Smiths Falls Official Plan (2014)	• The study area land use is considered 'Water Body' and 'Open Space', and • The study area is within'100 Year Flood Plain'.

McIntosh Perry is requesting confirmation of the above SAR information and any further site-specific environmental information from the Ministry of Environment, Conservation and Parks (MECP) for the Town undertaking. McIntosh Perry is also requesting information to determine if any SAR management, constraints, mitigation measures, and potential enhancements are applicable for the design.

We look forward to MECP's response to our request. We appreciate any assistance you can provide with this project. Feel free to contact me if you require any additional information.

Erik Pohanka

Erik Pohanka

Biologist
115 Walgreen Road, Carp, ON K0A 1L0
W. 613.903.6137 **C.** 613.203.5470

e.pohanka@mcintoshperry.com | www.mcintoshperry.com

APPENDIX B – STAGE 1 ARCHAEOLOGICAL ASSESSMENT REPORT

STAGE 1

ARCHAEOLOGICAL ASSESSMENT FOR THE PROPOSED CONFEDERATION DRIVE RIVER CROSSING REHABILITATION MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

CONFEDERATION DRIVE AND CANAL STREET, LOT 1, CONCESSION 4 GEOGRAPHIC TOWNSHIP OF ELMSLEY TOWN OF SMITHS FALLS COUNTY OF LANARK, ONTARIO

DRAFT

Past Recovery

Archaeological Services Inc.

STAGE 1 ARCHAEOLOGICAL ASSESSMENT FOR THE PROPOSED CONFEDERATION DRIVE RIVER CROSSING REHABILITATION MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT, CONFEDERATION DRIVE AND CANAL STREET, LOT 1, CONCESSION 4, GEOGRAPHIC TOWNSHIP OF ELMSLEY, TOWN OF SMITHS FALLS, COUNTY OF LANARK, ONTARIO

DRAFT

Prepared for: Ms. Kerry Reed
Environmental Planner
McIntosh Perry Consulting Engineers Ltd.
115 Walgreen Road
Carp, ON K0A 1L0

Phone: (613) 264-9600
Email: K.Reed@mcIntoshperry.com

Re: Municipal Class Environmental Assessment (MCEA)

Prepared by: Past Recovery Archaeological Services Inc.
99c, Unit 1 Dufferin Street
Perth, ON K7H 3A5

Phone: (613) 267-7028
Email: pras@pastrecovery.com

Project No.: PR21-059

Licensee: Stephanie Cleland, M.A., Licence P1201
Staff Archaeologist
Past Recovery Archaeological Services Inc.

P.I.F. No.: P1201-0120-2021

Date: February 18th, 2022 Original Report

ACKNOWLEDGMENTS

Ms. Kerry Reed, Environmental Planner, and Ms. Lisa Marshall, P.Eng., Manager, Environmental Engineering, McIntosh Perry Consulting Engineers Ltd., provided project mapping and logistical assistance.

PROJECT PERSONNEL

Licence Holder	Stephanie Cleland, M.A. (P1201)
Background Research	Sara Lavigne, M.A.
Stage 1 Site Visit	Jessalyn Miller, M.A. (R1111) Sara Lavigne
Report Writing	Sara Lavigne
Report GIS	Sara Lavigne
Report Review	Jeff Earl, M.Soc.Sc.

EXECUTIVE SUMMARY

Past Recovery Archaeological Services Inc. was retained by McIntosh Perry Consulting Engineers Ltd., on behalf of the Town of Smiths Falls, to undertake a Stage 1 archaeological assessment in support of a Municipal Class Environmental Assessment (MCEA) for the Confederation Drive river crossing in the Towns of Smiths Falls. The subject property is located on part of Lot 1, Concession 4 of the geographic Township of Elmsley, County of Lanark, and spans part of the Rideau River / Rideau Canal, and is approximately 0.28 hectares (0.69 acres) in size (see Maps 1 and 2).

The purpose of the Stage 1 investigation was to evaluate the archaeological potential of the study area and present recommendations for the mitigation of any significant known or potential archaeological resources. To this end, historical, environmental and archaeological research was conducted in order to make a determination of archaeological potential. A property inspection was completed on December 14th, 2021 to determine current conditions and to record factors that could affect the assessment of archaeological potential within the study area. The results of this study have indicated that the subject property retains potential for the presence of deeply buried archaeological resources in the form of a mid-nineteenth century storehouse requiring monitoring in the event of below-grade excavation (see Map 8).

The results of the archaeological assessment documented in this report form the basis for the following recommendations:

1) Below-grade excavations within the foot-print of the mid-nineteenth century storehouse or a 5 m buffer within the study area should be the subject of Stage 2 archaeological monitoring undertaken by a licensed consultant archaeologist, in compliance with Section 4.2.8 of *Standards and Guidelines for Consultant Archaeologists* (MHSTCI 2011; see Map 8). Prior to the initiation of work, a protocol should be arranged with the contractor containing provisions for the recording of any archaeological remains and/or the recovery of significant archaeological

deposits revealed by the construction activity, a protocol which would both ensure that sufficient archaeological information is recovered and, as much as possible, ensure that there are not significant delays to the construction schedule.

2) There are no further concerns for unlicensed impacts to archaeological sites within the remainder of the Stage 1 study area, as presently defined (see Map 8), and no further archaeological assessment of these parts of the subject property is required.

3) In the event that future planning results in the identification of additional areas of impact beyond the limits of the present Stage 1 study area, further archaeological assessment may be required. It should be noted that screening for impacts should include all aspects of the proposed development that may cause soil disturbances or other alterations (i.e. access roads, staging/lay down areas, associated works etc.), and that that even temporary property needs should be considered.

4) Any future archaeological assessment should be undertaken by a licensed consultant archaeologist, in compliance with *Standards and Guidelines for Consultant Archaeologists* (MHSTCI 2011).

The following recommendation has been included as per a request from the Algonquins of Ontario:

5) Since the potential always exists to miss important information in archaeological surveys, if any artifacts of Indigenous interest or human remains are encountered during the development of the subject property, please contact: Algonquins of Ontario Consultation Office, 31 Riverside Drive, Suite 101, Pembroke, ON, K8A 8R6; Tel: 613-735-3759; Fax: 613-735-6307; E-mail: algonquins@tanakiwin.com.

The reader is also referred to Section 6.0 below to ensure compliance with relevant provincial legislation and regulations as may relate to this project.

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1.0 INTRODUCTION

Past Recovery Archaeological Services Inc. (Past Recovery) was retained by McIntosh Perry Consulting Engineers Ltd. (McIntosh Perry), on behalf of the Town of Smiths Falls, to undertake a Stage 1 assessment in support of a Municipal Class Environmental Assessment (MCEA) being prepared for the Confederation Drive river crossing. The subject property spans the Rideau River / Rideau Canal on part of Lot 1, Concession 4 of the geographic Township of Elmsley, now part of the Town of Smiths Falls, County of Lanark (Maps 1 and 2).

The objectives of the Stage 1 archaeological assessment were as follows:

- To provide information concerning the geography, history, previous archaeological fieldwork and current land condition of the study area;
- To evaluate the potential for the subject property to contain significant archaeological resources; and,
- To recommend appropriate strategies for Stage 2 archaeological assessment in the event further assessment is warranted.

2.0 PROJECT CONTEXT

This section of the report provides the context for the archaeological work undertaken, including a description of the study area, the related legislation or directives triggering the assessment, any additional development-related information, and the confirmation of permission to access the study area for the purposes of the assessment.

2.1 Property Description

The subject property is located on the Rideau River and Rideau Canal on part of Lot 1, Concession 4 of the geographic Township of Elmsley, now part of the Town of Smiths Falls, County of Lanark, and consists of approximately 0.28 hectares (0.69 acres) of land surrounding the bridge connecting Confederation Drive and Canal Street (see Maps 1 and 2). The property is bordered on the former Jason Island (the west bank of the bridge) by Centennial Park which contains walking trails, open greenspace and the Smiths Falls water tower, as well as several paved parking lots. The east bank of the bridge, located on Ward Island, is bordered to the north of Canal Street by Veterans' Memorial Park and to the south of Canal Street by a small greenspace, a paved parking lot, and the Smiths Falls Lockstation at Lock 29a.

2.2 Development Context

The Town of Smiths Falls has retained McIntosh Perry to complete a Municipal Class Environmental Assessment (MCEA) for the replacement of the Confederation Drive river crossing. The study area encompasses the existing bridge footings as well as buffers and construction laydown areas to either side. Given the proximity of the Rideau River/Canal, an archaeological assessment was deemed to be a requirement of the MCEA. Past Recovery was thus retained by McIntosh Perry to complete a Stage 1 archaeological assessment.

2.3 Access Permission

Permission to access the subject property and complete all aspects of the archaeological assessment, including photography and the collection of artifacts, was granted by McIntosh Perry Consulting Engineers Ltd. on behalf of the Town of Smiths Falls.

2.4 Territorial Acknowledgement

The study area falls within the traditional territory of the Anishinaabeg and forms part of the Algonquins of Ontario (AOO) Settlement Area set out by the current Agreement-in-Principle between the AOO and the federal and provincial governments, signed in 2016.[1]

[1] The Algonquins of Ontario are composed of ten communities: The Algonquins of Pikwakanagan First Nation, Antoine, Kijicho Manito Madaouskarini (Bancroft), Bonnechere, Greater Golden Lake,

The study area also lies within an area of interest of the Huron Wendat Nation and of the Williams Treaties First Nations as signatories of the Crawford Purchases.

Mattawa/North Bay, Ottawa, Shabot Obaadjiwan (Sharbot Lake), Snimikobi (Ardoch), Whitney and Area. Federally unrecognized Algonquin communities, including Ardoch First Nation, also live in the territory but do not form part of the AOO (see Lawrence 2012). The Agreement-In-Principle is between the Algonquins of Ontario and the Governments of Ontario and Canada. Algonquins have sought recognition and protection of their traditional territory dating back to 1772 and in 1983 the Algonquins of Pikwàkanagàn First Nation (previously Algonquins of Golden Lake) formally submitted a petition to the Government of Canada, and in 1985 to the Government of Ontario. The claim was accepted for negotiations in 1991 and 1992, an Agreement-In-Principle was signed in 2016, and negotiations are on-going. For further information see www.tanakiwin.com.

3.0 HISTORICAL CONTEXT

This section of the report is comprised of an overview of human settlement in the region using information derived from background historical research. The purpose of this research is to describe the known settlement history of the local area, with the intention of providing a context for the evaluation of known and potential archaeological sites, as well as a review of property-specific information presenting a record of settlement and land use history.

3.1 Regional Pre-Contact Cultural Overview

While our understanding of the pre-Contact sequence of human activity in the region is limited, it is possible to provide a general outline of pre-Contact occupation based on archaeological, historical, and environmental research conducted across what is now eastern Ontario.[2] Archaeologists divide the long sequence of Indigenous occupation into both temporal periods and regional groups based primarily on the presence and/or style of various artifact types. While this provides a means of discussing the past, it is an archaeological construct and interpretation based only on a few surviving artifact types; it does not reflect the generally gradual nature of change over time, nor the complexities of interactions between different Indigenous groups. It also does not reflect Indigenous world views and histories as detailed in the oral traditions of Indigenous communities who have long-standing relationships with the land. The following summary uses the generally accepted archaeological chronology for the pre-Contact period while recognizing its limitations.

Across the region, glaciers began to retreat around 15,000 years ago (Munson 2013:1). The earliest human occupation of Ontario began approximately 13,500 before present (B.P.) with the arrival of small groups of hunter-gatherers referred to by archaeologists as Palaeo-Indians (Ellis 2013:35). These groups gradually moved northward as the glaciers and glacial lakes retreated. While very little is known about their lifestyle, it is likely that Palaeo-Indian groups travelled widely relying on the seasonal migration of caribou as well as small animals and wild plants for subsistence in a sub-arctic environment. They produced a variety of distinctive stone tools including fluted projectile points, scrapers, burins and gravers. Their sites are rare, and most are quite small (Ellis 2013:35-36). Palaeo-Indian peoples tended to camp along shorelines, many of which are now inland due to environmental changes over thousands of years. Indigenous settlement of much of eastern Ontario happened comparatively later than in other parts of Ontario as a result of the high-water levels associated with glacial Lake Algonquin, the early stages of glacial Lake Iroquois and the St. Lawrence Marine Embayment of the post-glacial Champlain Sea (Hough 1958:204). In eastern Ontario, the old shoreline ridges of Lake Algonquin,

[2] Current common place names are used throughout this report while recognizing that the many Indigenous peoples who have lived in the region for thousands of years had, and often maintain, their own names for these places and natural features.

Lake Iroquois, the Champlain Sea and of the emergent St. Lawrence and Ottawa river channels and their tributaries would be the most likely areas to find evidence of Palaeo-Indian occupation (see AOO 2017; Ellis 2013; Ellis and Deller 1990; Watson 1999).

During the succeeding Archaic period (c. 10,000 to c. 3,000 B.P.), the environment of the region approached modern conditions and more land became available for occupation as water levels in the glacial lakes dropped. Populations continued to follow a mobile hunter-gatherer subsistence strategy, although there appears to have been a greater reliance on fishing and gathered food (e.g. plants and nuts) and more diversity between regional groups. The tool kit also became increasingly diversified, reflecting an adaptation to environmental conditions which were more similar to those of today. This included the presence of adzes, gouges and other ground stone tools believed to have been used for heavy woodworking activities such as the construction of dug-out canoes, grinding stones for processing nuts and seeds, specialized fishing gear including net sinkers, and a general reduction in the size of projectile points. The middle and late portions of the Archaic period saw the development of trading networks spanning the Great Lakes, and by 6,000 years ago copper was being mined in the Upper Great Lakes and traded into southern Ontario. There was increasing evidence of ceremonialism and elaborate burial practices and a wide variety of non-utilitarian items were being manufactured such as gorgets, pipes, and 'birdstones'. By the end of this period populations had increased substantially over the preceding Palaeo-Indian occupation (Ellis 2013; Ellis et al. 1990).

More extensive Indigenous settlement of the region began during this period, sometime between 7,500 and 6,500 B.P. Artifacts from Archaic sites suggest a close relationship between these communities and the peoples referred to by archaeologists as the Laurentian Archaic stage peoples who occupied the Canadian biotic province transition zone between the deciduous forests to the south and the boreal forests to the north. This region included northern New York State, the upper St. Lawrence Valley across southern Ontario and Quebec, and the state of Vermont (Ritchie 1969; Clermont et al. 2003). The 'tradition' associated with this period is characterized by a seemingly systematic sharing of several technological features, including large, broad bladed, chipped stone and ground slate projectile points, and heavy ground stone tools. This stage is also known for the extensive use of cold-hammered copper tools including "*bevelled spear points, bracelets, pendants, axes, fishhooks and knives*" (Kennedy 1970:59). Generally, the systematic sharing of this 'tradition' is perceived by archaeologists to support or suggest a close relationship between these people groups and or their participation in the same interaction networks (Clermont et al. 2003). Cemeteries also appear for the first time during the Late Archaic. Evidence of Archaic occupation has been found across eastern Ontario (see Clermont 1999; Clermont et al. 2003; Ellis 2013; Kennedy 1962, 1970; Laliberté 2000; Watson 1990).

Archaeologists use the appearance of ceramics in the archaeological record to mark the beginning of the Woodland period (c. 3,000 B.P. to c. 350 B.P.). Ceramic styles and decorations suggest the continued differentiation between regional populations and are commonly used to distinguish between three periods: Early Woodland (2,900 to 2,300 B.P.), Middle Woodland (2,300 to 1,200 B.P.), and Late Woodland (1,200 to 400 B.P.). The introduction of ceramics to southern Ontario does not appear to have been associated with significant changes to lifeways, as hunting and gathering remained the primary subsistence strategy throughout the Early Woodland and well into the Middle Woodland. It does, however, appear that regional populations continued to grow in size, and communities continued to participate in extensive trade networks that, at their zenith c. 1,750 B.P., spanned much of the continent and included the movement of conch shell, fossilized shark teeth, mica, copper and silver; a large number of other items that rarely survive in the archaeological record would also have been exchanged, as well as knowledge.[3] Social structure appears to have become increasingly complex, with some status differentiation evident in burials. In southeastern Ontario, the first peoples to adopt ceramics are identified by archaeologists as belonging to the Meadowood Complex, characterized by distinctive biface preforms, side-notched points, and Vinette I ceramics which are typically crude, thick, cone-shaped vessels made with coils of clay shaped by cord-wrapped paddles. Meadowood material has been found on sites across southern Ontario extending into southern Quebec and New York State (Fox 1990; Spence et al. 1990).

In the Middle Woodland period, increasingly distinctive trends or 'traditions' continued to evolve in different parts of Ontario (Spence et al. 1990). Although regional patterns are poorly understood and there may be distinctive traditions associated with different watersheds, the appearance of better-made (thinner-walled and containing finer grit temper) ceramic vessels decorated with dentate or pseudo-scallop impressions have been used by archaeologists to distinguish the Point Peninsula Complex. These ceramics are identified as Vinette II and are typically found in association with evidence of distinct bone and stone tool industries. Sites exhibiting these traits are known from throughout south-central and eastern Ontario, northern New York, and northwestern Vermont, and are often found overlying earlier occupations. Some groups appear to have practiced elaborate burial ceremonialism that involved the construction of large earthen mortuary mounds and the inclusion of numerous and often exotic materials in burials, construed as evidence of influences from northern Ontario and the Hopewell area to the south in the Ohio River valley. Investigations of sites with occupations dating to this time period have allowed archaeologists to develop a better picture of the seasonal round followed in order to harvest a variety of resources within a home territory. Through the late fall and winter, small groups would occupy an inland 'family' hunting area. In the spring,

[3] For example, the recent discovery of a cache of charred quinoa seeds, dating to 3,000 B.P. at a site in Brantford, Ontario, indicates that crops were part of this extensive exchange network, which in this case travelled from the Kentucky-Tennessee region of the United States. Thus far, there is no indication that these seeds were locally grown (Crawford et al. 2019).

these dispersed families congregated at specific lakeshore sites to fish, hunt in the surrounding forest and socialize. This gathering would last through to the late summer when large quantities of food would be stored up for the approaching winter (Spence et al. 1990).

Towards the end of the Middle Woodland period (1200 B.P.), groups living in southern Ontario included horticulture in their subsistence strategy. Available archaeological evidence, which comes primarily from the vicinity of the Grand and Credit rivers, suggests that this development was not initially widespread. The adoption of maize horticulture instead appears to be linked to the emergence of the Princess Point Complex which is characterized by decorated ceramics combining cord roughening, impressed lines, and punctate designs; triangular projectile points; T-based drills; steatite and ceramic pipes; and ground stone chisels and adzes (Fox 1990). The distinctive artifacts and horticultural practices have led to the suggestion that these populations were ancestral to the Iroquoian-speaking peoples who later inhabited southern Ontario (Warrick 2000:427).[4]

Archaeologists have distinguished the Late Woodland period by the widespread adoption of maize horticulture by some Indigenous groups primarily across much of southern Ontario and portions of the southeast with favourable soils. The cultivation of corn, beans, squash, sunflowers and tobacco radically altered subsistence strategies and gained economic importance in the region over time. This change is associated with increased sedentarism, and with larger and more dense settlements focused on areas of easily tillable farmland. In some areas, semi-permanent villages, with communal 'longhouse' dwellings, appeared for the first time. These villages were occupied year-round for 12 to 20 years until local firewood and soil fertility had been exhausted. Many were surrounded by defensive palisades, evidence of growing hostilities between neighbouring groups. Associated with these sites is a burial pattern of individual graves occurring within the village. Upon abandonment, the people of one or more villages often exhumed the remains of their dead for reburial in a large communal burial pit or ossuary outside of the village(s) (Birch and Williamson 2013; Wright 1966). More temporary habitations such as small hamlets, agricultural cabin sites, and hunting and fishing camps were also used. Throughout much of eastern Ontario, however, the shield-

[4] There have been several studies, however, that indicate assigning ethnicity to archaeological sites based on ceramic typologies and other kinds of artifacts is problematic (see Hart and Englebrecht 2012; Kapyrka 2017). For instance, Iroquoian-style pottery is found on sites within traditional Anishinaabe territories in eastern New York and Ontario (Hart and Englebrecht 2012: 335, 345). Further, artifact traits associated with particular ethnicities are not always agreed upon by archaeologists and in many cases these traits indicate the presence of more than one group (Fox and Garrad 2004). Though valuable "*in terms of the history of archaeological thought*," equating an Indigenous artifact trait with ethnicity is overly simplistic and lacking any means for evaluation, exemplifying the importance of other lines of evidence, including oral histories, in an interpretive historical framework (Kapyrka 2017).

like terrain limited horticulture and Indigenous groups continued to move frequently across this territory hunting, fishing, and gathering (Pilon 1999)

At the end of the Late Woodland period several Indigenous groups were living within eastern Ontario, although the territories associated with each and the relationships between them were complex and are not fully understood. Anishinaabe oral histories suggest a broad homeland extending far to the west of Ontario and include references to a migration from the Atlantic seaboard, as well as a subsequent return via the St. Lawrence River to the Great Lakes region, with the latter having occurred around 500 B.P. (Hessel 1993; Sherman 2015:27). Those who became known as the Algonquin[5] settled along the Ottawa River or Kichi-Sibi[6] and its tributaries in eastern Ontario and western Quebec; the Ojibwa and Nipissing were located further to the north and west. Living on and around the Canadian Shield, all Anishinaabeg maintained a more nomadic lifestyle than their agricultural neighbours to the south, and accordingly their presence is less visible in the archaeological record (Morrison 2005; Sherman 2015:28).

The so-called St. Lawrence Iroquoians occupied the St. Lawrence River valley from the east end of Lake Ontario to the Quebec City region and beyond. They have also been identified archaeologically based on a distinctive material culture, a horticulture-based subsistence supplemented with fishing, hunting and gathering, and the presence of large semi-permanent villages as well as smaller camps. Numerous discrete settlement clusters have been identified across this large territory; however, the political and social relationships between these populations is unclear (Tremblay 2006). In eastern Ontario, significant St. Lawrence Iroquoian site clusters have been identified near the Spencerville/Prescott area, and just north of Lake St. Francis (sometimes referred to as the 'Cornwall Cluster'; Tremblay 2006). The material culture and settlement patterns of the fourteenth and fifteenth century Iroquoian sites found along the upper St. Lawrence in Ontario are directly related to the Iroquoian-speaking groups that Jacques Cartier and his crew encountered in A.D. 1535 at Stadacona (Quebec City) and Hochelaga (Montreal Island; Jamieson 1990:386; Tremblay 2006). By the late sixteenth century, however, all of the St. Lawrence Iroquoian settlements appear to have been abandoned. There are various hypotheses for the 'disappearance' of the St. Lawrence Iroquoians, although increasing hostilities with neighbouring populations, notably the Mohawk, is the most widely accepted (Tremblay 2006). At the time of their 'disappearance,' there was a significant increase in St. Lawrence Iroquoian ceramic vessel types on ancestral Huron-Wendat sites and also on some Algonquin sites, suggesting segments of the St. Lawrence

[5] The Algonquin of eastern Ontario increasingly use the Anishinaabemowin word Omàmiwinini to refer to themselves. Omàmiwinini describes the relationship with the land in the language, and though it was largely replaced by 'Algonquin' for many years, efforts are underway to reintroduce the term (Sherman 2008:77).

[6] The Algonquin have various names specific to each part of the Ottawa River. The lower part of the river from Mattawa down to Lake of Two Mountains is traditionally known as the Kichi-Sibi, also spelled Kiji Sibi, Kichisipi, Kichissippi, and Kichisippi (AOO n.d.; Morrison 2005:9; Sherman 2015:27).

Iroquoian population relocated into other regions as captives or refugees (Birch 2015:291; Sutton 1990:54; Tremblay 2006).

Agricultural villages of ancestral Huron-Wendat have been recorded along the north shore of Lake Ontario and up the Trent River dating to c. 550 B.P. By c. 450 B.P., the easternmost settlements of the ancestral Huron-Wendat were located between Balsam Lake and Lake Simcoe in the region that would become historic Huronia. This population movement is not fully understood, and undoubtedly involved complex interactions between different cultural groups including the Anishinaabeg and, as noted above, may also have included St. Lawrence Iroquoians. As such, there are conflicting interpretations of the archaeological and historical records related to this period (see Gaudreau and Lesage 2016; Gidigaa Migizi 2018; Gidigaa and Kapyrka 2015; Lainey 2006; Richard 2016; Pendergast 1972).

Finally, while the Iroquois or Haudenosaunee[7] homeland was initially south of Ontario in New York state, their oral histories suggest their hunting grounds extended along the north shore of Lake Ontario and the St. Lawrence River into southeastern Ontario and Quebec (Hill 2017). Archaeological data indicates some Haudenosaunee were living year-round in Ontario by the early seventeenth century (Konrad 1981).

The Indigenous population shifts and relationships of the late sixteenth and early seventeenth centuries through the period of initial contact with Europeans were complex and are not fully understood. They were certainly in part a result of the disruption of traditional trade and exchange patterns among all Indigenous peoples brought about by the arrival of the French, Dutch and British along the Atlantic seaboard the subsequent emergence of the lucrative St. Lawrence River trade route.

3.2 Regional Post-Contact Cultural Overview

The first Europeans to travel into eastern Ontario arrived in the early seventeenth century; predominantly French, they included explorers, fur traders and missionaries. While exploring eastern Ontario and the Ottawa River watershed between c. 1610 and 1613,[8] Samuel de Champlain and others documented encounters with different Indigenous groups speaking Anishinaabemowin, including the Matouweskarini along the Madawaska River, the Kichespirini at Morrison Island on the Ottawa River, the Otaguottouemin along the river northwest of Morrison Island, the Weskarini in the Petite

[7] Sometime between A.D. 1142 and A.D. 1451 the Mohawk, Oneida, Onondaga, Cayuga, and Seneca united to form the Haudenosaunee Confederacy, also known as the League of Five Nations, and called the Iroquois by the French. When the Tuscarora Nation joined the confederacy in 1722, it became the League of Six Nations.

[8] From this section onwards all dates are presented as A.D.

Nation River basin,[9] and the Onontchataronon[10] living in the South Nation River basin as far west as the Gananoque River basin (Hanewich 2009; Hessel 1993; Sherman 2015:29). These extended family communities subsisted by hunting, fishing, and gathering, and undertook some horticulture (see also Pendergast 1999; Trigger 1987). The Anishinaabeg living in the Upper Ottawa Valley and northeastward towards the headwaters of the Ottawa River included the Nipissing, Timiskaming, Abitibi (Wahgoshig), and others; however, as the French moved inland, they referred to all these groups who spoke different dialects of Anishinaabemowin as Algonquin (Morrison 2005:18).

At the time of Champlain's travels, the Algonquin were already acting as brokers in the fur trade and exacting tolls from those using the Ottawa River waterway which served as a significant trade route connecting the Upper Great Lakes via Lake Nipissing and Georgian Bay to the west and the St. Maurice and Saguenay via the Rivières des Outaouais (the portion of the Ottawa River extending eastward into Quebec from Lake Timiskaming). These northern routes avoided the St. Lawrence River and Lower Great Lakes route and, therefore, potential conflict with the Haudenosaunee (Joan Holmes & Associates Inc. 1993:2-3). Access to this southern route and the extent of settlement in the region fluctuated with the state of hostilities (Joan Holmes & Associates Inc. 1993:3). As the fur trade in New France was Montreal-based, Ottawa River navigation routes were of strategic importance in the movement of goods inland and furs down to Montreal and, in the wake of Champlain's travels, the Ottawa River became the principal route to the interior for the French. The recovery of European trade goods (e.g., iron axes, copper kettle pieces, glass beads, etc.) from sites throughout the Ottawa River drainage basin provides some evidence of the extent of interaction between Indigenous groups and the French during this period (Kennedy 1970).

With Contact, major population disruptions were brought about by the introduction of European diseases against which Indigenous populations had little resistance; severe smallpox epidemics in 1623-24 and again between 1634 and 1640 resulted in drastic population decline among all Indigenous peoples living in the Great Lakes region (Konrad 1981). The expansion of hunting for trade with Europeans also accelerated decline in the beaver population, such that by the middle of the seventeenth century the centre of the fur trade had shifted northward from what became the northeastern states into southern Ontario. The French, allied with the Huron-Wendat, the Petun, and the Anishinaabeg, refused advances by the Haudenosaunee to trade with them directly. Seeking to expand their territory and disrupt the French fur trade, the Haudenosaunee

[9] The Petite Nation River is in Quebec, with its mouth on the north side of the Ottawa River between Ottawa and Hawkesbury. It is sometimes confused with the South Nation River in eastern Ontario which empties into the south side Ottawa River opposite the Petite Nation River. Consequently, the Weskarini territory is sometimes associated with the South Nation River, but this appears to be an error (*cf.* Hessel 1993).
[10] This is a Haudenosaunee term and is, therefore, thought to be an Algonquin community that adopted Iroquoians who had been displaced from their territory along the St. Lawrence River near Montreal (Fox and Pilon 2016).

launched raids into the region and established a series of winter hunting bases and trading settlements near the mouths of the major rivers flowing into the north shore of Lake Ontario and the St. Lawrence River.[11] The first recorded Haudenosaunee settlements were two Cayuga villages established at the northeastern end of Lake Ontario (Konrad 1981). Between 1640 and 1650, the success of the Haudenosaunee Confederacy in warfare led to the dispersal of the Anishinaabeg and Huron-Wendat who had been occupying much of southern Ontario.

Fort Frontenac was established by the French at the present site of Kingston in 1673, and another fort was constructed at La Presentation (Ogdensburg, New York) in 1700. These forts served to solidify control of the fur trade and to enhance French ties with local Indigenous populations. To this end, the French also encouraged the establishment of Indigenous villages near their settlements (Adams 1986). The full extent of Indigenous settlement in eastern Ontario through to the end of the seventeenth century, however, is uncertain. The Odawa appear to have been using the Ottawa River for trade from c. 1654 onward and some Algonquin remained within the area under French influence, possibly having withdrawn to the headwaters of various tributaries in the watershed. In 1677 the Sulpician Mission of the Mountain was established near Montreal where the Ottawa River empties into the St. Lawrence River. While it was mostly a Mohawk community that became known as Kahnawake, some Algonquin who had converted to Christianity settled at the mission for part of the year and were known as the Oka Algonquin (Joan Holmes & Associates Inc. 1993).

As a result of increased tensions between the Haudenosaunee and the French, and declining population from disease and warfare, the Cayuga villages were abandoned in 1680 (Edwards 1984:17). Around this time, Anishinaabeg began to mount an organized counter-offensive against the Haudenosaunee who were pushed back to their traditional lands further south, resulting in a Mississauga presence in southern and south-eastern Ontario. This change saw Anishinaabeg gain wider access to European trade goods and allowed them to use their strategic position to act as intermediaries in trade between the British and Indigenous communities to the north (Edwards 1984:10,17; Ripmeester 1995; Surtees 1982).

Following almost a century of warfare, the Great Peace was signed in Montreal in 1701 between New France and 39 Indigenous Nations, including the Anishinaabeg, Huron-Wendat and Haudenosaunee. This led to a period of relative peace and stability. During the first half of the eighteenth century, the Haudenosaunee occupation appears to have been largely restricted to south of the St. Lawrence River, while Mississauga and Ojibwa were living in southern and central Ontario, generally beyond the Ottawa River watershed (Joan Holmes & Associates Inc. 1993:3). Algonquin were residing along the

[11] These settlements included: Quinaouatoua near present day Hamilton, Teiaiagon on the Humber River, Ganatswekwyagon on the Rouge River, Ganaraske on the Ganaraska River, Kentsio on Rice Lake, Kente on the Bay of Quinte, and Ganneious, near Napanee (Adams 1986).

Ottawa River and its tributaries, as well as outside the Ottawa River watershed at Trois-Rivières; Nipissing were located around Lake Nipissing and at Lake Nipigon. Reports from c. 1752 suggest that some non-resident Algonquin and Nipissing were trading at the mission at Lake of Two Mountains during the summer but returning to their hunting grounds "*far up the Ottawa River*" for the winter, and there is some indication that they may have permitted Haudenosaunee residents of the mission to hunt in their territory (Joan Holmes & Associates Inc. 1993:3; Heidenreich and Noël 1987:Plate 40).

In 1754, hostilities over trade and the territorial ambitions of the French and British led to the Seven Years' War, in which many Anishinaabeg fought on behalf of the French. With the French surrender in 1760, Britain gained control over New France, though in recognition of Indigenous title to the land the British government issued the Royal Proclamation of 1763. This created a boundary line between the British colonies on the Atlantic coast and the 'Indian Reserve' west of the Appalachian Mountains. This line then extended from where the 45th parallel of latitude crossed the St. Lawrence River near present day Cornwall northwestward to the southeast shore of Lake Nipissing and then northeastward to Lac St. Jean. The proclamation specified that "*Indians should not be molested on their hunting grounds*" (Joan Holmes & Associates Inc. 1993:4) and outlawed the private purchase of Indigenous land, instead requiring all future land purchases to be made by Crown officials "*at some public Meeting or Assembly of the said Indians*" occupying the land in question (cited in Surtees 1982: 9). In 1764, the post at Carillon on the Ottawa River was identified as the point beyond which traders could only pass with a specific licence to trade in "*Indian Territory.*" Petitions in 1772 and again in 1791 described Algonquin and Nipissing territory as the lands on both sides of the Ottawa River from Long Sault to Lake Nipissing. Settlers continued to trespass into this territory, however, cutting trees and driving away game vital to Indigenous lifeways (Joan Holmes & Associates Inc. 1993:5). Akwesasne, within the Haudenosaunee hunting territory, became a permanent settlement towards the middle of the eighteenth century (www.firstbatuibs.info/akwesasne.html).

At first, the end of the French Regime brought little change to eastern Ontario. Between 1763 and 1776 some British traders traveled to the Kingston area, but the British presence remained sporadic until 1783 when Fort Frontenac was officially re-occupied. With the conclusion of the American Revolutionary War (1775 to 1783), however, the British sought additional lands on which to settle United Empire Loyalists fleeing the United States, disbanded soldiers, and the Mohawk who had fought with the British under Thayendanegea (Joseph Brant) and Chief Deserontyon and were, therefore, displaced from their lands in New York State. To this end, the British government undertook hasty negotiations with Indigenous groups to acquire rights to lands; however, these negotiations did not include Algonquin and Nipissing who were continuously ignored, despite much of the area being their traditional territory (Lanark County Neighbours for Truth and Reconciliation 2019). Initially the focus for settlement was the north shore of Lake Ontario and the St. Lawrence River, resulting in a series of 'purchases' and treaties beginning with the Crawford Purchases of 1783. As noted, these treaties did not include all of the Indigenous groups who lived and hunted in the region and the recording of the purchases – including the boundaries – and their execution were problematic; they also did not extinguish Indigenous rights and title to the land (Joan Holmes & Associates Inc. 1993:5; Royal Commission on Aboriginal Peoples 1996). The *Crown Grant to the Mohawks of the Bay of Quinte* was issued in 1784 in recognition of the Six Nations' support during the American Revolutionary War. It included lands on the Bay of Quinte, originally part of the Crawford Purchases, on which Chief Deserontyon and other Haudenosaunee settled (https://www.ontario.ca/page/map-ontario-treaties-and-reserves).

Major Samuel Holland, Surveyor General for Canada, began laying out the land within the Crawford Purchases in 1784 with such haste that the newly established townships were assigned numbers instead of names. Euro-Canadian settlement along the north shore of the St. Lawrence River and the eastern end of Lake Ontario began in earnest about this time. By the late 1780s the waterfront townships were full and more land was required to meet both an increase in the size of grants to all Loyalists and grant obligations to the children of Loyalists who were now entitled to 200 acres in their own right upon reaching the age of 21 (H. Belden & Co. 1880:16). In 1792 John Graves Simcoe, Lieutenant Governor of the Province of Upper Canada, offered free land grants to anyone who would swear loyalty to the King, a policy aimed at attracting more American settlers. As government policy also dictated the setting aside of one seventh of all land for the Protestant Clergy and another seventh as Crown reserves, pressure mounted to open up more of the interior. As a result, between 1790 and 1800 most of the remainder of the Crawford Purchases was divided into townships (H. Belden & Co. 1880:16).

A number of other purchases during the late eighteenth century between representatives of the Crown and certain Anishinaabe covered lands immediately west of the Crawford Purchases, from the north shore of Lake Ontario northward to Lake Simcoe and Georgian Bay/Lake Huron. These included the John Collins Purchase of 1785, the Johnson-Butler Purchase[12] of 1787-88, and the 1798 Penetanguishene Purchase (Treaty 5) aimed at acquiring a harbour on Lake Huron for British vessels (https://www.ontario.ca/page/map-ontario-treaties-and-reserves). The lands purportedly covered by these purchases were often poorly defined and were thus included in the later Williams Treaties of 1923 (see below).

The *Constitution Act* of 1791, which created the provinces of Upper and Lower Canada (later Ontario and Quebec) used the Ottawa River as the boundary between the two. This effectively divided the Algonquin and Nipissing territories, both of which straddled the river. The Algonquin and Nipissing sent a letter to the Governor General of the Province of Canada in 1798, requesting that settlers be restricted to the banks of the Ottawa River

[12] Sometimes referred to as the 'Gunshot Treaty' as it reportedly covered the land as far back from the lake shore as a person could hear a gunshot (https://www.ontario.ca/page/map-ontario-treaties-and-reserves).

and detailing the difficulties caused by encroaching settlement (Joan Holmes & Associates Inc. 1993:5; see also Lanark County Neighbours for Truth and Reconciliation 2019). In this letter the Chiefs noted the belt of wampum and map of their lands that was given to Governor Carleton some years earlier, pleading for no more of the encroachment that was driving away game and pushing them into infertile lands; however, there was no response. In the early 1800s, a few Algonquin and Nipissing settled on the shores of Golden Lake, known to them as 'Peguakonagang;' they called themselves 'Ininwezi,' which they translated as 'we people here along' (Johnson 1928; MacKay 2016).[13] The Golden Lake band, as they initially came to be known, resided in this area for at least part of the year, with various band members maintaining traplines, hunting territories, and sugar bushes.

The War of 1812 between the United States and Great Britain (along with its colonies in North America and its Indigenous allies) brought another period of conflict to the region. In 1815, at the conclusion of the war, the British government issued a proclamation in Edinburgh to further encourage settlement in British North America. The offer included free passage and 100 acres of land for each head of family, with each male child to receive his own 100 acre parcel upon reaching the age of 21 (H. Belden & Co. 1880:16). At the same time, the government was seeking additional land on which to resettle disbanded soldiers from the War of 1812. Demobilized forces could thereby act as a 'force-in-being' to oppose any possible future incursions from the United States. Veterans were encouraged to take up residence within a series of newly created 'military settlements' including those at Perth (1816) and Richmond (1818). The pressure to find more land was exacerbated by the sheer number of settlers moving into the region as a result of these initiatives, which began to push settlement beyond the acquired territory into what had formally been protected as 'Indian Land.'[14]

Additional 'purchases' were signed in the early nineteenth century between the Crown and certain Anishinaabe communities including the Lake Simcoe Purchase (Treaty 16) signed in 1815 and covering lands between Lake Simcoe and Georgian Bay, the Nottawasaga Purchase (Treaty 18) of 1818 to the south and west of the Lake Simcoe Purchase, and the Rice Lake Purchase or Treaty 20 of 1818 which covered a large area around Rice Lake (https://www.ontario.ca/page/map-ontario-treaties-and-reserves).

Further east, with the settlement of the region underway, Lieutenant Governor Gore ordered Captain Ferguson, the Resident Agent of Indian Affairs at Kingston, to arrange the purchase of additional lands from the chiefs of the Ojibwa and Mississauga or Michi Saagiig Nishnaabeg. The resulting Rideau Purchase (Treaty 27 and 27¼) extended from the rear of the earlier Crawford Purchases to the Ottawa River and was signed by the

[13] The Algonquin of River Desert identified The Golden Lake Band using the name "Nozebi'wininiwag," translated as "Pike-Water People" (Speck in Johnson 1928:174).

[14] Between 1815 and 1850 over an estimated 800,000 Euro-Canadian settlers moved into the region (https://www. lanarkcountyneighbours.ca/the-petitions-of-chief-shawinipinessi.html).

Michi Saagiig Nishnaabeg or Mississauga in 1819 and confirmed in 1822. This 'purchase' was also problematic and excluded the Algonquin whose traditional territory it covered (Canada 1891:62; Surtees 1994:115). As this purchase included lands within the Ottawa River watershed, the Algonquin and Nipissing protested in 1836 when they became aware of its terms (Joan Holmes & Associates Inc. 1993:6).

As Euro-Canadian settlement spread, Indigenous groups were increasingly pushed out of southern and eastern Ontario, generally moving further to the north and west, although some families remained in their traditional lands, at least seasonally. Records relating to the Hudson's Bay Company, the diaries of provincial land surveyors, the reports of geologists sent in by the Geological Survey of Canada, census returns,[15] store account books and settler's diaries all provide indications of the continued Indigenous settlement in the region, as does Indigenous oral history. In addition to their interactions with the Algonquin who remained in the area, the nineteenth century settlers found evidence of the former extent of Indigenous occupation, particularly as they began to clear the land. In 1819, Andrew Bell wrote from Perth:

> *All the country hereabouts has evidently been once inhabited by the Indians, and for a vast number of years too. The remains of fires, with the bones and horns of deers (sic) round them, have often been found under the black mound... A large pot made of burnt clay and highly ornamented was lately found near the banks of the Mississippi, under a large maple tree, probably two or three hundred years old. Stone axes have been found in different parts of the settlement.*
>
> (cited in Brown 1984:8)

While some Algonquin and Nipissing continued to spend part of the summer at Lake of Two Mountains through this period, most of the year appears to have been spent on their traditional hunting grounds, and by the 1830s there were specific claims for land by individuals such as Mackwa on the Bonnechere River and Constant Pennecy on the Rideau waterway. In 1842, Chief Pierre Shawinipinessi,[16] an Algonquin leader, petitioned the Crown for a land tract of 2,000 acres between the townships of Oso, Bedford and South Sherbrooke to enable his people to sustain themselves (Huitema 2001; Ripmeester 1995:164-166; Sherman 2008:32-33).[17] A licence of occupation for the 'Bedford Algonquin' was granted in 1844, with Mississauga (Michi Saagiig Nishnaabeg) from

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[15] While Indigenous peoples were clearly still residing in the area and making use of the land, they often do not appear in the 1851 to 1871 census records. Huitema (2001:129) notes that Algonquin were sometimes listed in these records as 'Frenchmen' or 'halfbreeds' because they had utilized the mission at Lake of Two Mountains as their summer gathering place and, therefore, were thought of as being French.

[16] There are numerous variations in the spelling of Chief Shawinipinessi's name; he is also known by the name of Peter Stephens or Stevens).

[17] July 17, 1842 petition 115 addressed to Sir Charles Bagot, Governor General, Library and Archives Canada RG10, V186 part 2, as transcribed in Joan Holmes & Associates Inc. (1993) *Report on the Algonquins of Golden Lake Claim* Vol. 10-12:101.

Alnwick reportedly also living at Bedford (Joan Holmes & Associates Inc. 1993:7-8). Illegal logging operations, however, interfered with life on the reserve, and despite protests from Chief Shawinipinessi and legislation passed in 1838 and then later in 1850 to protect Indigenous lands,[18] it was allowed to continue, depleting the local food resources. In response to an 1861 petition to address the trespassing of settlers, the existence of the Bedford tract was denied (LAC microfilm reel C-13419). At this time some of the community moved to nearby lands while others joined the Algonquin at Kitigan Zibi, and at Pikwàkanagàn where the 'Golden Lake Reserve' was created in 1873 (Hanewich 2009; Joan Holmes & Associates Inc. 1993:9). Around 1836 some consideration was given to facilitating Algonquin and Nipissing settlement in the Grand Calumet Portage and Allumette Island area, but this was not pursued (Joan Holmes & Associates Inc. 1993).

Other treaties signed in the mid-nineteenth century included the St. Regis Purchase (Treaty 57) signed in 1847 between the Crown and the Mohawk and covering a narrow parcel of land, known as the 'Nutfield Tract' extending north of the St. Lawrence River at Cornwall towards the Ottawa River, and the Robson-Huron Treaty (Treaty 61) of 1850 between the Crown and certain Anishinaabeg for lands east of Georgian Bay and the northern shore of Lake Huron eastward to the Ottawa River (https://www .ontario.ca/page/map-ontario-treaties-and-reserves).

Through the early twentieth century, off-reserve Algonquin and Nipissing were told to move to established reserves at Golden Lake (Pikwàkanagàn), Maniwaki (Desert River) and at Gibson on Georgian Bay (which had been established for the re-settlement of both Algonquin and Mohawk from Lake of Two Mountains), but many remained in their traditional hunting territories. There is also evidence to suggest that Akwesasne Mohawk trapped and hunted north of their reserve as far as Smiths Falls and Rideau Ferry between c. 1924 and 1948 (Joan Holmes & Associates Inc. 1993:10-11; Sherman 2008:33).

The Williams Treaties of 1923 were signed between the Crown and seven Anishinaabe First Nations to address lands that had not been surrendered via a formal treaty process (see above; https://www.ontario.ca/page/map-ontario-treaties-and-reserves). These lands covered a large area from the north shore of Lake Ontario to Lake Nipissing and overlapped with a number of other treaties and 'purchases.' The Williams Treaties First Nations include the Chippewas of Beausoleil, Georgina Island and Rama, and the Mississaugas of Alderville, Curve Lake, Hiawatha and Scugog Island. To address further issues with a number of the pre-confederation purchases and treaties, the Williams Treaties First Nations ratified the Williams Treaties Settlement Agreement with Canada

[18] Chapter XV. An Act for the protection of the Lands of the Crown in this Province, from Trespass and Injury. Thirteenth Parliament, 2nd Victoria, A.D. 1839. An Act for the Protection of the Indians in Upper Canada from Imposition and the Property Occupied or Enjoyed by Them from Trespass and Injury; passed by the government of Upper Canada on August 10, 1850. Available from https://bnald.lib.unb.ca/node/5342; United Canadas (1841-1857) 13 & 14 Victoria – Chapter 74:1409.

and Ontario in June, 2018. This agreement recognized harvesting rights in Treaties 5, 16, 18, 20, 27 and 27¼ (www.williamstreatiesfirstnations.ca).

As noted above, lands considered traditional Algonquin territory were included in various nineteenth century purchases that did not involve the Algonquin. Algonquin claims to these lands include a series of petitions to the Crown going back to 1772 that asserted Algonquin rights to land and resources. An official land claim was made in the 1980s and, in 2016, an Agreement-in-Principle was signed by Ontario, Canada and the Algonquins of Ontario, a step towards a treaty recognizing Algonquin rights across much of eastern Ontario (https://www.ontario.ca/page/map-ontario-treaties-and-reserves).

South Elmsley Township and Smiths Falls

In 1783 Lieutenant Gershom French, led by Indigenous guides, travelled up the Ottawa River, along the Rideau River to its headwaters and down the Gananoque River to scout out areas for future colonization. He concluded that there was little land suitable for settlement along the Gananoque system but that more favourable land lay along the Rideau River (Lockwood 1996:23-24). William Fortune began an initial survey of Montague, Wolford, Elmsley, Kitley, Burgess and Bastard townships in 1794. This survey was limited to the planting of markers for the various lots and concessions along the township perimeters as a guide for incoming settlers and future surveyors. Interestingly, in travelling through these remote areas Fortune came across three roads cut into the region by settlers already seeking favourable land and mill sites in the un-surveyed interior (Lockwood 1996:27-28).

Much of South Elmsley Township was parcelled out in large and small grants to United Empire Loyalists, with many being absentee owners who had no intention of settling their lots, due in large part to the distance from the St. Lawrence River, the lack of roads and the difficulties in navigating the Rideau River.[19] In 1820 the population of the township was only 127, but by 1824 it had nearly doubled to 242. After the construction of the Rideau Canal there was an influx of immigrants which helped to develop villages centred around the lock stations. A lack of access by road, however, continued to hamper the occupation of lands away from the canal (Lockwood 1994:20, 66).

United Empire Loyalist Major Thomas Smyth obtained the Crown patent for Lots 1 and 2 in Concession 4 of South Elmsley Township in 1786.[20] Smyth did not develop the land until 1823 when he built a sawmill at the falls on the Rideau River, but he resided elsewhere and there is no record indicating that the sawmill operated successfully. In 1824 the rights to Smyth's lands and mill were contested. Smyth lost the court case because he had defaulted on a mortgage payment, initially taken out in 1810, for which

[19] An 11 metre drop in less than 0.4 kilometres made the waters in the vicinity of Smiths Falls well suited for industrial use but an obstacle to navigation.
[20] Between 1798 and 1829 he obtained grants of additional land totalling 3,500 acres (Lockwood 1994:38).

he had used Lots 1 and 2 as collateral. In 1825 the lots were put up for sale by the district sheriff at public auction, and Charles Jones (for whom Jones Falls was later named) acquired the property. In 1827 he sold a large part of the property (minus the water lots) to Truman Hicock and James Simpson at six times the amount he had paid for it only two years earlier. Abel Russel Ward was the first person to settle on the land, arriving in 1826. By 1827 Ward had re-outfitted the sawmill and had built a log house nearby. He eventually purchased the mill site in 1831. The area was briefly known as Wardsville during this time.[21] Until the opening of the Rideau Canal in 1832, much of the area remained vacant (Lockwood 1994:36, 38, 77).

The construction of the Rideau Canal was the major impetus for the development of the village. As a result of the steep topography,[22] construction included a flight of three locks, known today as the Smiths Falls Combined Lockstation. The natural course of the river was dammed to create a basin upstream of the locks, with a fourth detached lock constructed at the upper end. Another flight of two locks (Old Slys Lockstation, named for William Sly, the original settler at this location) was required approximately one and one-half kilometres downstream. Defensible lockmaster's houses were built at all three lock stations, the house at Old Slys in 1838 and the houses at the combined and detached locks in Smiths Falls circa 1842 (Lockwood 1994).

Following the initial post-canal population boom, Ward and Simpson became partners in various local improvement projects. James Simpson built a road north from Smiths Falls connecting it to the road between Perth and Bytown at Gilles Corners. He also built a gristmill, general store and other buildings on the town site and improved the road to Merrickville. In 1831 James Shaw opened a general store and blacksmith shop in the town. The same year he built flouring mills on Jason Island and a bridge between Jason and Ward's Islands. He also constructed a second dam below the canal dam erected by the government (Lockwood 1994:85, 103).

Smith's Gazetteer for 1846 described the settlement as a flourishing village on the banks of the Rideau River/Canal, with a population of 200. The village included 50 dwellings, two grist mills (one of which had four run of stones), two sawmills, one carding and fulling mill, seven stores, six groceries, an axe factory, six blacksmiths, two wheelwrights, a cabinet maker, a chair maker, three carpenters, a gunsmith, eleven shoemakers, seven tailors and two taverns (Smith 1846). By 1860 the population had risen to 1,100 inhabitants (Lockwood 1994).

The settlement was officially incorporated as the town of Smith's Falls in 1882; it was not until 1968 that an act passed by the Ontario Legislature changed the name to Smiths Falls.

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[21] The name of the community soon reverted back to Smyth's Falls. It is not clear when the name Smyth became corrupted to Smith.

[22] As noted above, an 11 metre drop over only 400 metres at this location had previously proved an obstacle to navigation.

The Brockville and Ottawa Railway was extended on a north-south route through Smiths Falls in 1859, merging with the Canada Central Railway in 1878 and finally with the Canadian Pacific Railway in 1881. An additional east-west Canadian Pacific line was completed between 1884 and 1888, with Smiths Falls able to benefit by becoming a divisional point and the rail hub for the region. This created a second population and economic boom as the rail lines provided a direct trade route to Montreal and international shipping. As such, many through-trains operating between eastern and western Canada passed through the town. The Canadian Northern Ontario Railway (later merging with the Canadian National Railway) extended a line through the town in 1913, with a passenger station added the following year[23] (Andreae 1997:118-123).

As a result of its strategic location and access to varied transportation routes, the second half of the twentieth century saw several, large-scale manufacturers base their operations in Smiths Falls. The best known of these was the Canadian operation of the Hershey Company, which operated between 1963 and 2008. The closure of the Hershey factory, as well as that of the Rideau Regional hospital site the following year resulted in an economic down-turn in the community. More recently the town has undergone a revitalization associated with the redevelopment of the previous Hershey factory by Canopy Growth Corporation.

3.3 Property History

Lot 1, Concession 4

Archival research was conducted in order to develop a general picture of the bridge and land use history for the study area through the nineteenth and twentieth centuries, particularly as it relates to the archaeological potential of the property. Information was compiled from a variety of sources, including nineteenth and early twentieth century maps and fire insurance plans, as well as twentieth century aerial photographs (Maps 3 to 5; Image 1).[24]

The study area lies within Lot 1, Concession 4, along the north bank of the Rideau River, at the Combined Locks within the town of Smiths Falls. The existing Confederation Bridge is a single lane twin span pony truss that crosses the Rideau Canal waste weir. The first iteration of this bridge was constructed in 1831 by Jason Gould to connect Jason

[23] It now serves as the Smiths Falls Railway Museum, located at 90 William Street West.

[24] Historical maps and aerial photographs have been geo-referenced using Geographic Information Systems (GIS) software to generate the mapping contained in this report. Geo-referencing is the name given to the process of transforming a map or image by assigning X and Y coordinates to features, allowing the software to rotate, stretch, and in some cases warp the original image to best match the supplied coordinates. Owing to considerable variation in the scale, accuracy, and resolution of historical maps and aerial photographs, there is often an unknown degree of error introduced in the process of geo-referencing and, as for this reason, the location and extent of the study area overlain on these maps should be considered approximate.

Island (at present commonly referred to as Centennial Park) and Ward Island (at present commonly referred to as Veterans' Memorial Park). The bridge is purported to have been a wooden bridge ten feet wide (Lockwood 1994:103). Both Jason Island and Ward Island were the seat of industrial enterprise in the mid- to late-nineteenth century and twentieth century.

The bridge is depicted in a plan detailing the Ordnance land boundaries around the Smiths Falls lock station commissioned in 1846 (see Map 3). A report for the bridge by the Town of Smiths Falls in April, 1871, described it as "*very old and dilapidated*" and noted that the bridge had been damaged in a flood in 1870. The bridge was purportedly replaced at the combined expense of the canal authorities and the Town of Smiths Falls in the early 1870s (DeLottinville 1979a:50). A map dating to 1881, titled *Plan of a Portion of Smiths Falls,* depicts the new bridge crossing the canal waste weir at the 'OLD 40 FOOT STREET' right-of-way on Ward Island (see Map 4). In 1904 this bridge was replaced by a steel span structure measuring 153 feet long, constructed by the Locomotive and Machine Company of Montreal; a subsequent fire insurance plan dating to 1916 shows that the steel bridge had been realigned to cross the waste weir further south at the newer '66 foot wide' street (present day Canal Street) which abutted with the old 40 foot street allowance (see Map 4). There is a very faint sketch of the new alignment on the 1881 plan illustrating how the two structures were positioned in relation to each other. Th e steel span bridge was in turn replaced in 1924 by a two span steel truss bridge by the same company. The 1924 bridge included a three-and-one-half-foot sidewalk along the southern edge (DeLottinville 1979a:50).

3.3.1 Jason Island

The earliest map consulted which depicts the study area dates to 1827 and was commissioned by the Inspector General of Fortifications for the proposed Rideau Canal locks Nos. 27, 28, and 29 (see Map 3). The map shows Jason Island to be a vacant wooded lot. The Rideau River splits at the southern point of the island and flows around it on both its east and west banks before merging downriver past the northern point. Along the west bank at the southernmost point of the mainland the map depicts a existing sawmill dam and further downriver the sawmill itself, located on the east bank of the mainland. The map also depicts the proposed location for the new canal locks along the east bank of Jason Island, as well as a proposed bridge 24 feet high on the west bank between the mill dam and the mill, connecting the island to the mainland.

The construction of the Rideau Canal locks between 1827 and the opening of the canal in 1832 severed the mainland promontory across from the east bank of Jason Island and created the island that would become known as Ward Island. The first iteration of the bridge within the study area was constructed in 1831 by Jason Gould to connect Jason Island with the newly formed Ward Island (Lockwood 1994:103). The bridge is depicted in the plan described above detailing the Ordnance land boundaries around the Smiths Falls lock station commissioned in 1846 (see Map 3). The map shows that a considerable amount of development had taken place on both islands, particularly along the banks of the Rideau River. At their southernmost points the islands had been connected by a waste weir which helped both to manage the water levels for the canal system as well as allowing a sufficient flow of water to the mills downriver. In 1832 an embankment was constructed from the waste weir to the riverbank on Jason Island. The embankment measured 600 feet in length, 12 feet in height, and 42 feet in thickness, and was meant to curtail leakage from the canal basin (DeLottinville 1979a:45). Farther downriver from the waste weir but still at the southern end of the islands was the bridge built by Mr. Gould. The bridge connected two roads which functioned as the main roads from the town leading to the various mills, foundries, and shops on the islands.

The area around the bridge on the east bank of Jason Island was clear of other structures. There were five buildings on the island, all of which were located on the northern third and all of which were privately owned wooden structures according to the 1846 Ordnance map. On the northernmost point of the east bank was an elongated 'T'-shaped building labelled as 'GOULD'S FOUNDRY.' South of the foundry on the east bank were two rectangular structures identified as grist mills. The fourth structure on the east bank was an 'L'-shaped building identified as 'BARTLET' which appeared to jut out into the river beside the confluence of the mill race which bisected Jason Island. The fifth structure on the Jason Island was located on its west bank roughly across from the northernmost grist mill. It was identified as a stable. A later Ordnance map from 1849 provides additional detail and identifies the 'L'-shaped structure as 'BARTLET'S SAWMILL' (see Map 3).

The Walling map for Smiths Falls from 1863 provides further information about the location of the structures on Jason Island (see Map 3). This map indicates that there were only two structures on the island as of 1863. One structure is identified as a rectangular sawmill which sat roughly in the location and orientation of the southernmost grist mill, possibly the grist mill repurposed. The second structure appears to be new. It was a square building to the southwest of the sawmill, identified only as a 'SHOP'. Additionally, the mill-race that had bisected Jason Island is no longer visible on the map, as well as the sawmill, northern grist mill, foundry, and stable.

By 1867, however, the island had seen more change. Three structures are recorded on Jason Island on an 1867 Ordnance plan (see Map 4). The first seems to be a building of the same shape and roughly in the same location as the 'L'-shaped Bartlet's sawmill visible on the earlier 1849 Ordnance plan. The other two structures appear in roughly the same location as the two grist mills visible on the earlier map, perhaps indicating that the Walling map had omitted certain structures. Unfortunately, the structures illustrated are not labelled.

Some time after 1867 Jason Island was connected to the mainland when part of the western channel of the Rideau River was infilled downriver from the sawmill dam first documented on the 1827 Inspector General of Fortifications map discussed above (see

Map 4). A drawn bird's-eye view image of Smiths Falls, dating to 1874, shows the reclaimed land clearly (see Image 1). The drawing identifies seven structures on the new land as the "Rideau Foundry and Machine Shops, Landon, Seeber & Co., Proprietors" buildings. It also shows the first iteration of the current Old Mill Road. Along the east bank of Jason Island, the drawing depicts five structures which are collectively identified as "H. & J. Gould's Flour, Carding and Saw Mills." It was also the earliest image found to show two structures at the south end of Jason Island across the road from the bridge within the study area.

Similarly, a Smiths Falls town plan dated to 1881 depicts the island with two large buildings roughly in the locations of the three structures seen on the 1867 Ordnance map and the Gould mills depicted in the 1874 bird's-eye view drawing (see Map 4). The two buildings were identified respectively as 'FOSTER & WARDS STONE GRIST MILL' and 'FOSTER & WARDS SAW MILL.' The 1881 plan also depicts two structures on the northern bank of Jason Island identified as a 'MILL SHED' and 'CARDING MILL' also owned by Foster and Ward. Four buildings, belonging to Mr. Gould, were depicted in place of the Rideau Foundry complex. One was identified as an office, while the northernmost structure was labelled as the Gould blacksmith shop.

Around the turn of the century Jason Island experienced a high volume of renovation, repurposing, and/or construction which is best shown by a fire insurance map published in 1916 (see Map 4). The bridge within the study area is labelled as 'WOODEN BRIDGE'. Upriver from the bridge, the waste weir is labelled as a dam with two gates to control water flow at either end. Downriver from the bridge four additional dams had been erected creating two head races to mills - one on the east bank of Jason Island, the other on the west bank of Ward Island. Until the twentieth century, very few if any structures could have been considered to be near the wooden bridge. By 1916, however, two large structures and nine smaller ones had been constructed at the southernmost end of Jason Island adjacent to the wooden bridge. Along the south bank of the island beside the canal basin there were three small unidentified outbuildings. Just to the north of these, in line with the dam south of the wooden bridge, was a large semi-rectangular structure measuring approximately 125 feet by 50 feet used for coal and lumber storage, as was the second large structure just north of the first, similar in length and roughly half the width. Surrounding the second large coal shed on its east and north sides were the remaining six smaller structures, one of which was labelled 'STORAGE.' All of this small complex of buildings was owned by Foster & Co.

The structures on the east bank of Jason Island, north of the wooden bridge, also show a high volume of change on the 1916 fire insurance map. In the place of the Foster and Ward mills depicted in 1881 there were (from south moving north) a foundry and machine shop (nearest the bridge); a building identified as 'LUMBER' amongst several smaller outbuildings; a planing mill; the water works pumping station; and at the northernmost point stood a feed mill.

Inland on Jason Island, north of the Foster & Co. structures and west of the foundry and machine shop, was a large semi-rectangular structure on a southeast-northwest axis identified as a 'LUMBER SHED' owned by M. Ryan who was operating a builders' supplies business. Between the foundry and lumber shed were two smaller unidentified outbuildings. On the reclaimed land, the former Rideau Foundry and Machine Shops operated by Landon, Seeber & Co., were being used for storage. The main building had three small outbuildings near it - one adjacent to the southern corner and two to the southeast. Furthermore, two structures were located on reclaimed land between the builders' supplies structure and the foundry. One was an 'L'-shaped structure beside a pond formed from the remnant of the former channel, and another oriented on an east-west axis was being used to store lumber. A subsequent plan of Jason Island showing the building layout in 1922, created by Peter DeLottinville (1979b:377), identifies the former Rideau Foundry and Machine Shops buildings as having been converted for use as a 'chemical works.'

A subsequent fire insurance map, dating to 1929, depicts several changes to the structures on Jason Island (see Map 4). First, the large semi-rectangular structure in line with the dam south of the wooden bridge previously identified as a coal shed had been partially razed, leaving only the west wing of the previous structure intact. The central outbuilding beside the canal basin to the south of this structure had also been removed. The second large coal shed further north had been extended to the east, connecting it to the small storage structure that had been freestanding on the 1916 fire insurance map. A similar addition had been erected adjoining the former builders' supplies structure to the southeast, which was at the time identified as a 'GARAGE.' The extension had required the removal of one of the smaller outbuildings and the reorientation of two others. The 1929 fire insurance map also depicts the town water tower, constructed in 1925.

Along the east bank of Jason Island, the 1929 fire insurance map indicates that the foundry near the wooden bridge was at that time a vacant structure. Additionally, the lumber storage building and the planing mill south of the waterworks and pumping station had been replaced by a large rectangular structure jutting out into the head race, identified as a 'FILTRATION PLANT' associated with the waterworks. The four additional dams which had been located downriver from the wooden bridge are no longer shown; their removal was likely needed to facilitate the construction of the filtration plant. Moreover, the large former foundry and machine shop on the reclaimed land had been converted to, in part, a dairy, a steam laundry, and a storage area. The structures on the northernmost point along the east bank had been repurposed into a wagon shed and feed mill, respectively.

By 1959, when another edition of the fire insurance map was published, only two structures remained on the southernmost part of the island (see Map 5). The first structure was a large, thin 'L'-shaped building which had been adapted from the former northmost coal shed in line with the wooden bridge and first depicted on the 1916 fire insurance map. An addition had been constructed off the southwest corner of the southern wall, extending to the wall of the canal basin. The entire structure appears to have been owned by 'WESTON MOTORS.' A large unidentified rectangular wooden structure had replaced the small outbuildings along the south bank of the island, though in photographs and drawings of this building it is shown to have been painted with the word 'Quaker' (Image 2). Additionally, the garage to the north of the coal shed, near the water tower, had been reduced in size. The outbuildings around these two large structures had also been razed.

Along the east bank by 1959 the vacant building, formerly the foundry, had been removed, as had the wagon shed and feed mill on the northernmost point of the island. The map also shows that the former pond created during the land reclamation sometime before 1874 had been in-filled, as well as the east-west running mill race that had bisected the island, turning Jason Island into a mainland promontory. The 1959 fire insurance map also illustrates extensive land reclamation along the southwest corner of the island, behind the Weston Motors building (see Map 5).

The dam forming the canal basin between the west bank of Jason Island and the mainland had a long history of leaking. Jason Gould had used this to his advantage by cutting the east-west running mill race through the island to use the leaking waters to provide extra waterpower to his mills on the eastern side (Lockwood 1994:131 Plate 63 caption; Watson 2000:59). Several attempts to fix the leaking basin were undertaken between 1906 and the 1920s (DeLottinville 1979a:45-46). Another retaining wall was built in front of the dam in 1959, likely when the canal basin was relined with cement in the same year (Lockwood 1994:111 Plate 53 caption; DeLottinville 1979a:48). The space between the wall and the dam was filled in and reclaimed. In 1965 the Smiths Falls Town Council bought the land on Jason Island to create Centennial Park and a further retaining wall was built in 1966 (DeLottinville 1979a:48). Confederation Drive was later constructed over the area of reclaimed land, with Centennial Park to the south of the road planted with intermittent trees. Both are clearly shown in an aerial photograph dating to 1978 (see Map 5).

The 1978 aerial photograph also confirms that the structures on the southern half of the island, with the exception of the water tower, had been demolished to construct Old Mill Road and Confederation Drive and establish the park. Lampposts had also been installed along the sides of both roads. The only remaining buildings on Jason Island were those associated with the waterworks pumping station and filtration plant. A subsequent aerial photograph, dating to 1991, shows that the only change to the island was that the area behind the water tower in the location of the former pond had been converted to an unpaved parking lot (see Map 5). The parking lot was later paved.

3.3.2 Ward Island

The earliest illustration of Ward Island and the bridge within the study area consulted was a plan detailing the Ordnance boundaries around the Smiths Falls lock station commissioned in 1846 (see Map 3). This map shows that Ward Island at the time was the location of the majority of the town's industrial and economic endeavors. The structures on Ward Island encroached more closely onto the study area than those on Jason Island, and the Ordnance map records that all but one of these buildings were privately owned wooden structures. Ward Island is trisected by two roads which meet in a 'T' shaped intersection – the road leading from the bridge within the study area (the current Canal Street) and the main road connecting the island to the bodies of mainland to the north and south (the current Beckwith Street South). For the purposes of the following historical discussion, Ward Island has been divided into the three areas delineated by the roads - the southwest section, the west bank and the east bank.

Ward Island Southwest Section

The Ordnance boundaries map of 1846 depicts two structures within the southwest section of Ward Island (see Map 3). Inland from the waste weir along the north edge of the canal basin wall was a square structure identified by the name 'SHAW'S.' This may have been the general store or possibly the blacksmiths shop built by James Shaw in 1831 (Lockwood 1994b:103). The map also depicts a channel of water entering and exiting the structure, possibly representing a flume or mill race. To the east of Shaw's structure is a smaller building near the intersection of the roads identified as 'H. CHALMERS.' A later Ordnance map from 1849 provides additional detail and identifies the Shaw structure as 'SHAW'S STORE' (see Map 3).

The Walling map for Smiths Falls from 1863 provides further information about the location of the structures on the southwest section of Ward Island (see Map 3). This map indicates that Shaw's store had been removed by this time and the possible flume or mill race beneath the shop is more clearly defined. The Chalmers structure appears to have remained a few years longer until 1867 when it is no longer visible on the Ordnance plan produced in that year, suggesting that this building was razed soon after the Walling map had been produced (see Map 4). The 1867 Ordnance plan does, however, show a new structure roughly in the location of the original Shaw store. This structure appears to have been quite large and is identified as 'OLD FRAME STORE HOUSE.'

The next development within the southwest section of Ward Island is recorded on the 1874 bird's-eye view drawing of Smiths Falls, which depicts four structures in the area (see Image 1). The first was a large rectangular building on a north-south axis immediately adjacent to the waste weir extending to 'Basin Street' (the current Canal Street), roughly in the location of the old frame store house noted on the 1867 Ordnance plan. The structure is shown to have had a dock or loading ramp that extended from the building into the canal basin near the head of the locks. Two of the remaining three structures appear to have been homes near the intersection of the roads, while the third was a small shed or outbuilding of some kind. None of these structures were identified or labelled in the drawing. On a subsequent plan of Smiths Falls dating to 1881, a structure labelled as a 'FRAME STORE HOUSE' is shown roughly in the location of the large rectangular building with the dock (see Map 4). This structure was not, however, depicted with a corresponding dock. The largest of the remaining structures recorded in the bird's-eye view was identified as a 'BLACKSMITHS SHOP' on the 1881 plan.

Ward Island, similarly to Jason Island, experienced a high volume of demolition and construction around the turn of the century that is best shown on the 1916 fire insurance map (see Map 4). This map confirms that all of the previous structures in the southwest section of the island had been removed. In 1889 'Lock Street' and the swing bridge it connected to were realigned to create a straighter roadway and intersection. The road no longer crossed the canal over the central lock but rather traversed the upper lock. (Watson 2000:60). The 1916 fire insurance map depicts the realignment of the road and bridge, which resulted in a reduction in the size of the southwest section of the island.

The southwest area remained vacant until sometime before 1978; the aerial photograph taken that year shows that Beckwith Street South had been realigned once again (see Map 5). The swing bridge over the upper lock had been removed and the road redesigned between 1973 and 1974. The original combined locks – each with a roughly 8 foot lift and combined 25 foot lift – were abandoned and replaced with a high lift lock (Lock 29a) north of the original combined locks, with a lift of 26 feet. This was excavated through the southwest section of Ward Island, as well as through the southern part of the east bank. The present five-lane bridge which crosses the canal was built over the new high lift lock at the same time (Watson 2000:57-61). The 1978 and 1991 aerial photographs show that the west part of the open space between the new alignment of Canal street and Lock 29a was converted to a parking lot and a lock station building constructed to the east of that parking lot; at present both structures and the surrounding grounds remain as shown in 1991 (Image 3; see Map 5).

Ward Island West Bank

The Ordnance boundaries map of 1846 depicts eight structures on the west bank of Ward Island. Nearest to the intersection of the roads, inland from the river, was a rectangular building that ran northwest to southeast following the angle of the road. This structure is identified as 'E. CHAL … RS.' Further to the north along the main road was a square residence identified as 'SCHOFIELD.' A garden appears to have joined these two houses. Still farther north along the main road were two additional buildings: a square stable and a small, rectangular structure identified as 'WALTER.' The fifth building, identified as the 'BRYCE CARDING MILL,' appears to have been built offshore fully surrounded by flowing water. Just north of the carding mill on the west bank was a small shed. The seventh structure was again located offshore north of the carding mill and was slightly smaller in size. Finally, on the northernmost point of the west bank, located between the river and the main bridge leading to 'Bytown,' was a large square building. Both the small offshore structure and large square building are unidentified on this map; however, the later 1849 Ordnance plan identifies the smaller as a 'PIGSTYE' and the larger as 'WARD'S GRIST MILL' (see Map 3).

The Walling map for Smiths Falls from 1863 provides further information about the location of the structures on the west bank of Ward Island (see Map 3). This map indicates that there were still eight structures in this area, in roughly similar locations to the 1846 plan; however, it is unclear if the changes noted were a result of the older structures being razed and replaced by new ones or if the older structures had just been renovated to suit new purposes. Nearest the intersection of the roads in the location of the former 'E. CHAL … RS' structure was an 'L'-shaped building identified as 'CARRIAGE SHOP' owned by J. Scott. Further north along the main road was a square commercial building identified as 'CHALMERS & BURNS.' This was followed by an 'L'-shaped structure, roughly in the location of the 'WALTER' structure on the previous maps, that is identified as 'J. RATH'S STORE.' The fourth and fifth structures along the main road north of J. Rath's store are unidentified. Ward's grist mill remained in place; however, the Walling map appears to indicate that some land reclamation had occurred along the west bank causing the channel between Jason and Ward Islands to narrow at the north end. Alternatively, land may have been removed or eroded near the location of the carding mill, causing the north end of the channel to appear narrower. The carding mill also appears to have been replaced by or repurposed into a shingle mill. The location of the 'pigstye' was occupied by a much larger rectangular structure identified as an 'OAT MILL.'

Following 1863 most of the structures on the west bank appear to have been razed, as the 1867 Ordnance map only records one large structure in the approximate location of the Ward grist mill at the northernmost point (see Map 4). The map also depicts a new mill-race or flume cut near this structure that travelled under the main road bridge. The 1874 bird's-eye view image shows five large structures along the west bank of Ward Island which are collectively labelled as "J. B. & G. A. Ward's Flour, Carding, Saw and Shingle Mills" (see Image 1). South of the Ward mills, the drawing depicts a dense cluster of six to eight buildings in the location of the carriage shop, Chalmers/Burns residence and Rath's store illustrated on the 1863 Walling map. Unfortunately, these structures are not identified or otherwise labelled; therefore, their continuity with the previous structures is unclear. In contrast, the 1881 plan of Smiths Falls depicts a less dense industrial center than is shown in the bird's-eye view drawing (see Map 4). This plan illustrates five structures on the west bank of Ward Island, north of the new flume and mill-race (labelled as a 'sluice' on this plan). Four of these structures are labelled as Wards frame grist mill, stone grist mill, mill shed, and carding mill, respectively.

The structures on the west bank of Ward Island also saw demolition, relocation, or reconstruction around the turn of the century when 'Lock Street' was realigned to become Beckwith Street South. The 1916 fire insurance map depicts six structures located between the west bank and the new road (see Map 4). The southernmost cluster consisted of one large square structure with two attached small square rooms – one at the southwest corner and the other at the northwest corner. Three smaller outbuildings are shown to the west of that structure, none of which are identified or labelled. North of this cluster was a large 'staircase'-shaped structure identified as 'BAKERY.' Just south of the mill-race or flume first depicted on the 1867 Ordnance map (now covered), north of the bakery, was a large unidentified structure. The fire insurance map also shows that Ward's mills remained in place. A subsequent fire insurance map dating to 1929 depicts all of the west bank below the flume as having been converted to a park, vacant of structures – the present Veterans' Memorial Park (see Map 4). The mill structures north of the covered flume remained but had been repurposed, identified as an elevator, a 'BEER WHSE L.C.B.O.' and a 'FEED MILL.' By 1959 the L.C.B.O. and feed mill structures had been converted to offices (see Map 5). The west bank of Ward Island gained additional greenspace for Veterans' Memorial Park when Beckwith Street South was realigned in the mid-1970s, as shown on the aerial photograph taken in 1978 (see Map 5). This view also shows lampposts having been installed along the north edge of Canal Street. By 1991 a footpath had been constructed along the west bank of the island (see Map 5). At present the west bank of Ward Island remains as shown in these aerial photographs.

Ward Island East Bank

The east bank of Ward Island falls outside of the MCEA study area, but has been included to provide a more complete picture of the development of the island. On the 1846 Ordnance boundaries map twelve structures are shown between the main road and the east bank of the island (see Map 3). These structures included: Abel Russell Ward's sawmill; a granary to the north; William Ferguson's tannery nearest the intersection of the roads; Harper's store to the south; several stables; and a small square structure near the locks identified as the residence of the lock labourer (Lockwood 1994b:131 Plate 63; see Map 3). There was also a small Ordnance structure located near the locks to the northwest of Harper's store which was labelled 'BLACK' on the 1846 map; the later 1849 map indicated that the 'BLACK' structure had become privately owned.

The 1863 Walling map suggests that nearly all the previous structures had been razed by that time (see Map 3). Ward's sawmill remained in the northernmost location near the main bridge; there were also two square unidentified buildings beside the main road near the canal locks that roughly correspond to the two structures appearing on the earlier maps, though it is unclear if they were the same. The 1874 bird's-eye view of this area depicts some development, showing four or five outbuildings at the location of the two square structures and a large building on the southeastern point of the island (see Image 1). None of these structures are shown on the 1881 plan of Smiths Falls, save 'MR. WOODS SHINGLE MILL' which appears to have taken the place of Ward's sawmill at the northernmost part of the east bank beside the main bridge (see Map 4).

By the early 1900s more structures had been erected on the east bank of Ward Island. The 1916 fire insurance map depicts three buildings north of Canal Street and four structures south of Canal Street (see Map 4). The mill at the northernmost point of the east bank remained. This old building, once Ward's mill, had been rebuilt by its new owner, Alexander Wood, in 1887 (see Section 4.4). The second structure north of Canal Street was located roughly halfway along Beckwith Street South, oriented parallel to the road. It is a rectangular structure labelled 'AUTO …' and was likely a garage. The third structure was a small unidentified building alongside Canal Street near the Beckwith Street intersection.

South of Canal Street, the four structures illustrated were smaller unidentified buildings. The first was located at the intersection of Beckwith Street South and Canal Street; another was located adjacent to the eastern end of Canal Street; the third was north of and parallel to Lock No. 28; and the final structure was nearer to the canal and closer to Lock No. 27. The subsequent fire insurance map dating to 1929 shows that the third structure parallel to Lock No. 28 had been razed by that time (see Map 4). It also shows that a swimming pool and dressing rooms had been installed along the northern edge of Canal Street. Additionally, the 'AUTO …' structure or Wood's sawmill appear to have been removed. The 1959 fire insurance map depicts the east bank north of Canal Street as vacant, and south of Canal Street only the two easternmost small outbuildings that had first been illustrated on the 1916 fire insurance map survived. Aerial photographs taken respectively in 1978 and 1991 show that the east bank of Ward Island had been converted to greenspace with intermittent trees, vacant of any structures, and that it had been reduced in size as a result of the realignment of Beckwith Street South and the building of the five-lane bridge over Lock No. 27 (see Map 5). At present the east bank of Ward Island remains as shown in these aerial photographs.

4.0 ARCHAEOLOGICAL CONTEXT

This section describes the archaeological context of the study area, including known archaeological research, known cultural heritage resources (including archaeological sites), and environmental conditions. In combination with the historical context outlined above, this provides the necessary background information to evaluate the archaeological potential of the property.

4.1 Previous Archaeological Research

In order to determine whether any previous archaeological fieldwork has been conducted within or in the immediate vicinity of the present study area, a search of the titles of reports in the *Public Register of Archaeological Reports* maintained by the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) was undertaken. To augment these results, a search of the Past Recovery corporate library was also conducted.[25]

A prime source for unregistered archaeological finds is the initial series of *Annual Archaeological Reports for Ontario* (AARO), which were published as appendices to the report of the Minister of Education in the *Ontario Sessional Papers*. In these reports, dating between 1887 and 1928, staff of the provincial museum (which eventually became the Royal Ontario Museum) published articles by several of Ontario's most prominent collectors, amateur archaeologists, and museum staff. The articles provide a record of some of the earliest archaeological fieldwork to have taken place in the province, as well as documentation of the private collections that were donated to the museum. These articles report on extensive artifact collecting in Lanark County in the late nineteenth and early twentieth centuries, especially around the Rideau Lakes (cf. Beeman 1894).

To the knowledge of Past Recovery staff, no previous archaeological assessment has occurred within the study area. Known cultural resource management assessments in the immediate vicinity include the following:

- Golder Associates Ltd. undertook Stage 1 and Stage 2 archaeological assessments for the Smiths Falls Heritage Multi-Use Trail through Lot 1, Concession 4, Lanark County, Town of Smiths Falls which is located parallel to River Street and Riverdale Avenue, between the roads and the Rideau River. The Stage 2 testing

[25] In compiling the results, it should be noted that archaeological fieldwork conducted for research purposes should be distinguished from systematic property surveys conducted during archaeological assessments associated with land use development planning (generally after the introduction of the *Ontario Heritage Act* in 1974 and the *Environmental Assessment Act* in 1975), in that only those studies undertaken to current standards can be considered to have adequately assessed properties for the presence of archaeological sites with cultural heritage value or interest. In addition, it should be noted that the vast majority of the research work undertaken in the area has been focussed on the identification of pre-Contact Indigenous sites, while current MHSTCI requirements minimally require the evaluation of the material remains of occupations and or land uses pre-dating 1900.

did not find any sites or artifacts. (Golder Associates Ltd. 2019; PIF: P340-0094-2019).

- Parks Canada, Archaeology Services, Ontario Service Centre undertook monitoring of a waterline trench excavation on the east side of Beckwith Street. The trench (designated Sub-operation 142H1A) was extended from west of the Lockmaster's house to just north of Jasper Avenue. Several artifacts were recovered; however, no cultural resources were impacted during the excavation. It was determined that no further archaeological work was required (Tulloch 2008).

4.2 Previously Recorded Archaeological Sites

The primary source for information regarding known archaeological sites in Ontario is the *Archaeological Sites Database* maintained by the Ontario by the Ministry of Tourism, Culture, and Sport (MHSTCI). The database largely consists of archaeological sites discovered by professional archaeologists conducting archaeological assessments required by legislated processes under land use development planning (largely since the late 1980s). A search of the *Sites Database* indicated that there are two registered sites, both pre-Contact Indigenous sites, located within a one-kilometre radius of the study area (Table 1). Site BfGa-21 was located at the foot of the rapids at Old Sly's Lockstation and consisted of two decorated sandstone artifacts that were conjectured to be trade items lost during the capsizing of a canoe. Site BfGa-19 was located on the eastern edge of Smiths Falls in a hay field and consisted of two lithic artifacts including a projectile point and a groundstone celt.

Table 1. Summary of Registered Archaeological Sites within a One-Kilometre Radius of the Study Area.

Borden Number	Site Name	Time Period	Inferred Agency	Inferred Function	Review Status
BfGa-21	Old Slys Locks	Archaic or Early Woodland	Indigenous	Isolated find spot	No further CHVI
BfGa-19	Blinkhorn 1	Archaic or Woodland	Indigenous	Isolated lithic find spot	Further CHVI

CHVI – Cultural Heritage Value or Interest

4.3 Cultural Heritage Resources

The recognition or designation of cultural heritage resources (here referring only to built heritage features and cultural heritage landscapes) may provide valuable insight into aspects of local heritage, whether identified at the local, provincial, national, or international level. As some of these cultural heritage resources may be associated with significant archaeological features or deposits, the background research conducted for this assessment included the compilation of a list of cultural heritage resources that have previously been identified within or immediately adjacent to the current study area. The following sources were consulted:

- Federal Heritage Buildings Review Office online Directory of Heritage Designations (http://www.pc.gc.ca/eng/progs/beefp-fhbro/index.aspx);
- Canada's Historic Places website (http://www.historicplaces.ca/en/home accueil.aspx);
- Ontario Heritage Properties Database (http://www.hpd.mcl.gov.on.ca/scripts/hpdsearch/english/default.asp);
- Ministry of Tourism, Culture and Sport's List of Heritage Conservation Districts (http://www.mtc.gov.on.ca/en/heritage/heritage_conserving_list.shtml);
- Ontario Heritage Trust website (https://www.heritagetrust.on.ca/en/index.php/online-plaque-guide); and,
- Rideau Canal National Historic Site of Canada Submerged Cultural Resource Inventory. 2005. Prepared by Jonathan Moore. Underwater Archaeology Service Ontario Service Centre Parks Canada Agency.

Nine land based cultural heritage sites were found within a three-kilometre radius from the study area.

The Smiths Falls Bascule Bridge National Historic Site of Canada is located on the Rideau Canal to the west of Lock No. 31. The rail bridge was a movable concrete and steel bridge built between 1912 and 1913 over the Rideau Canal, known as a Scherzer Rolling Lift bascule bridge. It was designated a national historic site in 1983. It is 0.6 kilometres from the study area.

The Smiths Falls Railway Station (Canadian Northern) National Historic Site of Canada is located at 90 William Street West. The station was constructed between 1912 and 1914. It is a brick station with a distinctive turret and polygonal waiting room which was a unique design likely created by architect R.B. Pratt. The station was in operation from 1914 to 1979 and became a museum in 1983 – the same year it was designated a national historic site. It is 0.72 kilometres from the study area.

The 'East Mill and Wood's Mill Complex' is located at 34 Beckwith Street South. It is a large, four-storey, stone building with rows of regular windows, abutted by a smaller two-storey addition on its south façade. The extant building was constructed between 1890 and 1892. The building is in the historic location for A.R. Ward's early nineteenth century mills and was Alexander Wood's late nineteenth century and early twentieth century mill. Both mills contributed to establishing the grain mill industry in eastern Ontario. It was designated a national historic site in 1988. It is 0.14 kilometres from the study area.

The 'West Mill and Wood's Mill Complex' is located at 34 Beckwith Street South. It is a large stone building with rows of regular windows, gable-roofed dormers and a five-bay façade. The extant building was constructed between 1852 and 1855, but is in the historic location for A.R. Ward's early nineteenth century mills which contributed to establishing the grain mill industry in eastern Ontario. It was designated a national historic site in 1988. It is 0.14 kilometres from the study area.

The 'Recreation Centre' is located at 79 Beckwith Street North. This building was constructed in 1871, with an addition in 1878, and was formerly the 'Old Central School.' It is a two-and-one-half-storey stone building and was recognized as a heritage site by the Town of Smiths Falls in 1977. It is 0.62 kilometres from the study area.

The Town Hall is located at 77 Beckwith Street North. This building was constructed in 1859, and is a two-storey stone structure constructed in the Classical Revival style by John Dodds and Francis Ballantyne. The building had various additions in 1876, 1890, and again in 1947, and has been used as municipal offices, police department, Chamber of Commerce, as well as a fair ground, dance hall, and a place to host meetings, lectures, traveling exhibits, etc. It was recognized as a heritage site by the Town of Smiths Falls in 1977. It is 0.62 kilometres from the study area.

The Heritage House Museum, also known as Ward House, is located at 11 Old Slys Road. It is a two-and-one-half-storey Georgian clapboard structure, abutted by a one-and-one-half-storey board and batten extension. It was constructed in 1862 by Joshua Bates on his mill property. The building was later purchased by Truman Russell Ward and was used as a residence until 1977 when it was bought by the Town of Smiths Falls and recognized as a heritage site. It was converted into a museum which opened in 1981. It is 1.5 kilometres from the study area.

The 'Defensible Lockmaster's House' is located at 1 Jasper Avenue. The lockmaster's house is just south of Rideau Canal Lock No. 29a. It is a two-storey stone first floor and clapboarded second floor structure built in 1841. In 1992 it became a Recognized Federal Heritage Building, and has been used as an interpretation centre and museum. It is 0.2 kilometres from the study area.

The Rideau Canal National Historic Site of Canada connects the Ottawa River with waterways, towns, and Lake Ontario between the cities of Ottawa and Kingston. The canal was built between 1826 and 1832 as part of the military defense infrastructure deemed necessary after the War of 1812. The Rideau Canal spans 200 kilometres and travels through Smiths Falls adjacent to the current study area. The construction of the original combined locks (No. 28, 29, and 30) as well as the associated dams and waste weirs at Smiths Falls played a significant role in the creating the water systems that powered nineteenth century mills. In the 1970s the combined locks were replaced by a new high lift lock (Lock No. 29a) built north of the original combined locks, significantly altering the landscape directly adjacent to the study area. The Rideau Canal was designated a National Historic Site in 1967 and a UNESCO World Heritage Site in 2007 (Tulloch 2008:4-5; DeLottinville 1979a:18).

4.3.1. Submerged Cultural Heritage Resources

Eleven submerged cultural heritage sites were found within a three-kilometre radius from the study area, all recorded as part of a Parks Canada Underwater Archaeology Services (UAS) survey of the Rideau Canal system completed in 2005 (Moore 2005:159-162).

The Smiths Falls Waste Weir Dam was a four foot wooden waste weir with four sluices crossing the river between Jason Island and Ward Island. The weir was refurbished or rebuilt in 1859, 1862, 1909, 1928, 1957, and 1990. UAS inspected the weir in 1990 during the rebuilding of the current concrete weir. It is 14 metres from the study area (DeLottinville 1979a:49; Moore 2005:159).

Gould's Dam was constructed circa 1877 by James Henry Gould, and was later used for generating electricity in 1893 by The Citizen's Electric Light Company. The site was inspected by a UAS walking survey between Locks 29a and 31. It is located between 0.3 kilometres and 0.5 kilometres from the study area along the north shore of the Rideau River (Moore 2005:159).

Smiths Falls Shipyard was operational between 1869-1921. Unfortunately, the exact location of the yard is unknown (Moore 2005:159). It has been included as a possible heritage resource in the event that its location was within the vicinity of the study area.

An abandoned shipwreck on the north side of the canal basin at the foot of the waste channel was known to exist in 1931 (Moore 2005:159-160). Its exact location is not recorded; however the foot of the waste channel is approximately 80 metres from the study area.

The historical Jason Island bridge was a wooden structure which crossed the Rideau River at the present alignment of Beckwith Street. It was rebuilt into a two arch bridge in the late nineteenth century (Moore 2005:161). It is 0.16 kilometres from the study area.

The John W. Ward sawmill was constructed around 1831 beside the historical Jason Island Bridge, discussed above. In 1883 the mill was rebuilt by Alexander Wood after a fire, but closed in 1922 after another fire. The stone foundations were visible in the water in a photograph taken circa 1924 (Moore 2005:161). It is approximately 0.14 kilometres from the study area.

There was purportedly a footbridge in the early twentieth century that crossed the Rideau River from the foot of Market Street at the Foster and Wood Company location to "Jason Island" (Moore 2005:161). It has been included as a possible heritage resource because if present it would have been approximately 0.18 kilometres from the study area.

A concentration of submerged nineteenth and twentieth century artifacts and debris has been identified as the Smiths Falls Historic Artifacts Find Spot. The shore directly north of the find spot was once the location of Richard Locke's Planing Mill and subsequent industrial structures. UAS conducted a diving search on September 16, 1998. The concentration measured roughly 15 metres in length by 6 metres in width, and was determined to be a midden which had either been dumped into the river or had washed into its current location (Moore 2005:161-162). It is approximately 0.25 kilometres from the study area.

UAS identified a crib measuring 6 metres square, possibly part of a wharf, investigated with side scan sonar (Moore 2005:162). The location is not recorded. The crib has been included as a possible heritage resource in the event that its location was within the vicinity of the study area.

The Old Slys ice breaker cribs and boom possibly date to the 1890s and early twentieth century. There were a minimum of four cribs; however, their locations are not specified (Moore 2005:162). Old Sly's Lock is approximately 1.43 kilometres from the study area.

The Matheson Store wharf was built at Old Sly's at the head of Lock No. 27 circa 1851. UAS photographed the site from the surface in 2002 (Moore 2005:162). It is approximately 1.43 kilometers from the study area.

4.4 Heritage Plaques and Monuments

The recognition of a place, person, or event through the erection of a plaque or monument may also provide valuable insight into aspects of local history, given that these markers typically indicate some level of heritage recognition. As with cultural heritage resources (built heritage features and/or cultural heritage landscapes), some of these places, persons, or events may be associated with significant archaeological features or deposits. Accordingly, this study included the compilation of a list of heritage plaques and/or markers in the vicinity of the study area. The following sources were consulted:

- The Ontario Heritage Trust Online Plaque Guide (https://www.heritagetrust.on.ca/en/index.php/online-plaque-guide);
- A listing of plaques transcribed at www.readtheplaque.com;
- Parks Canada Directory of Federal Heritage Designations (https://www.pc.gc.ca/apps/dfhd/default_eng.aspx); and,
- A listing of historical plaques of Ontario maintained by Sarah J. McCabe (https://ontarioplaques.omeka.net/).

Twelve plaques were found within a three-kilometre radius from the study area. One plaque commemorates the centennial of Confederation in Smiths Falls, located on the south side of Confederation Drive near the Old Mill Road intersection. It reads:

1867 1967
CENTENNIAL OF CONFEDERATION
SMITHS FALLS
CENTENNIAL PARK
CONSTRUCTED BY THE TOWN OF SMITHS FALLS IN PERMANENT COMMEMORATION OF THE CENTENNIAL OF CONFEDERATION IN CANADA IN 1967.
CONSTRUCTION WAS MADE POSSIBLE THROUGH THE CO-OPERATION OF THE PROVINCE OF ONTARIO THE COVERNMENT OF CANADA.

One plaque commemorates the dam at Smiths Falls, located in Confederation Park just northwest of the Confederation Fountain. It reads:

Smiths Falls and the Dam

Where are the Falls? The Town gets its name from a mile long series of rapids, which originally flowed from the water tower in Centennial Park, to the stone arch bridge on Beckwith Street. As boat traffic increased in the early 1800's, the shallow waters of the river proved to be problematic for boats that were attempting to navigate the course. In an effort to solve this dilemma, a plan was proposed in 1827 to build a dam lying between the west bank of the river and Jason's Island. This dam would drown the falls and deepen the water, allowing boats to travel through Smiths Falls with more ease. Completed in 1828, the navigational issue was resolved, although the redirection of the river during construction resulted in the elimination of the falls. In 1959 sections of the dam were filled in, and only about one metre of the seven metre high dam can be seen today.

One plaque commemorates the waterworks, located in Confederation Park just northeast of the Confederation Fountain. It reads:

Water Works

The current water system in Smiths Falls began in a three-story brick building in 1886 under the management of "Captain" Adam Foster. While it began on the east side of Beckwith Street to supply the water tanks in the CPR yards, it eventually expanded to supply many of the major town streets. The Town bought the water system in 1899 from Foster and in the early 1920's a filtration plant was constructed to purify and chlorinate the water, providing safe water for the town's consumption.

One plaque commemorates The Canadian Heritage Rivers System, located in Confederation Park at the foot of the walking bridge that connects Jason Island with Ward Island at their southernmost points. It reads:

The Canadian Heritage Rivers System
February 2000

The Rideau Waterway

The Rideau Waterway stretches 202 kilometres through a chain of lakes, rivers, and canals, linking Smiths Falls, the heart of the Rideau, to the historic city of Kingston on Loke Ontario and the Ottawa, Canada's capital. To follow the Rideau Waterway is not only a trip through some of the most picturesque countryside in eastern Ontario, but also a voyage through history.

The Rideau Canal National Historic Site, the core of the Rideau Waterway, was built between 1826 and 1832. It is the oldest continuously operating canal in North America. Originally conceived as a key part of a military defence system for Upper Canada (now Ontario), it soon became a route for local trade and luxury steamers. The Rideau Canal is considered on of the greatest engineering feats of the 19th century. Thirty-one locks raise vessels 83 metres from the Ottawa River to the height of land, south of here at Newboro on Upper Rideau Lake, and 14 locks lower vessels to Lake Ontario at Kingston. The tradition of hand-operating the locks and swing bridges continues at most of the lockstations, but one fo the few electronically operated locks on the system can be seen here. Along the Rideau, one finds a unique blend of wildlife, city life and country life, of past and present, nature and culture. Designation of the Rideau Waterway as a Canadian Heritage River not only is testimony to its significance as a national treasure, but will also ensure stewardship and wise management of the waterway, and will safeguard the integrity of its unique resources for all time.

One plaque commemorates the HMCS Smiths Falls, located in Veterans' Memorial Park west of the cenotaph. It reads:

HMCS Smiths Falls

Launched in Kingston August 19, 1944 this Corvette (of the Flower Class) sailed under Pennant K345 commanded by Lt. CDR. Philip Taber Byers. The ship made 3 Atlantic crossings as a convoy escort, later transporting men to Quebec City who were volunteering for South Pacific duties after VE day.

Lt. Philip Cabel Evans in 1943 in praise of the value of the corvettes said "remember the Canadian corvettes – those far flung, storm tossed little ships on which the German Fuhrer has never looked and yet have since 1940, stood between him and the conquest of the world".

One plaque commemorates Wood's Mill, located in Veterans' Memorial Park along the west bank of the park toward the north end of the walking path. It reads:

Wood's Mill

Originally built in 1830 under Abel Russell Ward, this site has changed faces and owners many times. Throughout the course of its history, it was an oatmeal and grist mill, and then rebuilt in 1887 under the new ownership of Alexander Wood. After nearly a century of production, the mills were closed down under the new ownership of the Waterworks Commission in 1924. Parks Canada bought the infrastructure in 1981, and renovated it. It now houses both the offices for Parks Canada and the Rideau Visitor Centre. Opened to the public since 1989, visitors can now view artifacts and displays that depict this flagship interpretation centre for the entire Rideau Canal.

One plaque commemorates Beckwith Street and the bridge connecting Ward Island to the mainland and Smiths Falls town centre. It reads:

Beckwith Street and Bridge

Created during the town's settlement in the early 1820's, the name of Beckwith Street and its bridge derived from Beckwith Township, when strong ties existed between the Anglican congregations of both communities. At 99 feet wide, Beckwith Street and its bridge encompassed a striking view for travelers who arrived from steamboats at the Combined Locks. While Smiths Falls boasted that it had two of the widest main streets in Upper Canada, local mythology suggests that the surveyors who were working on the street's construction were inebriated at the time and mistakenly marked the street twice, laying a double width of the street out on each side.

One plaque commemorates the opening of the Rideau Canal, located in Veterans' Memorial Park just north of the northern line of flagpoles associated with the cenotaph. It reads:

ERECTED IN 1927
BY
POONAHMALLE CHAPTER IMPERIAL ORDER DAUGHTERS OF THE EMPIRE
TO COMMEMORATE THE OPENING OF THE RIDEAU CANAL
~1832~

One plaque commemorates the Rideau Waterway, located in Victoria Park, on the north side of Lombard Street (Highway 15) across from Aberdeen Street, 2 blocks west of Beckwith Street. It reads:

Constructed 1826-32 by the British government for military purposes, but used principally for commerce, the Rideau waterway, together with the lower Ottawa River, was the first canalized route from Montreal to the Great Lakes. Although eastbound traffic continued to use the St. Lawrence, westbound traffic, including many thousands of immigrants, utilized the new route to avoid the hazards and delays of upstream navigation on that river. With the completion, in 1846, of the St. Lawrence canals, use of the Rideau as a commercial thoroughfare declined sharply. However, it remained vitally important to the region by

providing its agriculture and industry with economic access to markets. In time the Rideau became one of Ontario's major recreational waterways.
Erected by the Archaeological and Historic Sites Board,
Department of Public Records and Archives of Ontario

One plaque commemorates the Rideau Waterway, located in Victoria Park, Lombard Street and Highway 29. It reads:

Constructed between 1826 and 1832 for military purposes, but used mainly for commerce, the Rideau waterway linked with the lower Ottawa River to form the first canalized route from Montreal to the Great Lakes.

One plaque commemorates the Smiths Falls Bascule Bridge, located on Abbot Street at the canal. It reads:

Smiths Falls Bascule Bridge

This Scherzer Rolling Lift bascule bridge is an outstanding early example of a novel concept in movable bridges, developed by William Scherzer, an American engineer. It combines the balanced counterweight of a conventional bascule bridge, with a unique rolling lift motion that all but eliminates friction. Erected in 1912-1913 to carry the Canadian Northern Railway main line across the Rideau Canal, a busy steamboat navigation system, the bridge was renowned for its ease and speed of operation, proving the efficiency of the concept.
Historic Sites and Monuments Board of Canada
Government of Canada

One plaque commemorates the Canadian Northern Railway Station, located on William Street West at the former railway station, now the Railway Museum of Eastern Ontario, on the outside wall just to the right of the main door. It reads:

Canadian Northern Railway Station
Opened in 1914, on the new Toronto-Ottawa line, this station reflected the western-based Canadian Northern's ambition to compete directly with the established Canadian Pacific Railway in populous Ontario in an attempt to achieve Transcontinental status. Probably designed by company architect R.B. Pratt of Winnipeg, the building featured the low profile, linear arrangement and wide projecting eves common to many small stations. Its decorative turret, individualized styling and substantial construction were, however, a signal departure from the Canadian Northern's usual practice of building cheaply from standard plans.
Historic Sites and Monuments Board of Canada
Government of Canada

One cenotaph was found within a three-kilometre radius from the study area. The cenotaph was erected in 1925, designed by the Thompson monument company and placed in Veterans' Memorial Park to commemorate war casualties (Image 4; Lockwood 1994b:468).

4.5 Cemeteries

The presence of historical cemeteries in proximity to a parcel undergoing archaeological assessment can pose archaeological concerns in two respects. First, cemeteries may be associated with related structures or activities that may have become part of the archaeological record, and thus may be considered features indicating archaeological potential. Second, the boundaries of historical cemeteries may have been altered over time, as all or portions may have fallen out of use and been forgotten, leaving potential for the presence of unmarked graves. For these reasons, the background research conducted for this assessment included a search of available sources of information regarding historical cemeteries. For this study, the following sources were consulted:

- A complete listing of all registered cemeteries in the province of Ontario maintained by the Consumer Protection Branch of the Ministry of Consumer Services (last updated 06/07/2011);
- Field of Stones website (http://freepages.history.rootsweb.ancestry.com/~clifford/);
- Ontario Cemetery Locator website maintained by the Ontario Genealogical Society (https://vitacollections.ca/ogscollections/2818487/data?g=d);
- Ontario Headstones Photo Project website (https://canadianheadstones.ca/wp/cemetery-lookup/); and,
- Available historical mapping and aerial photography.

No known cemeteries were located within or adjacent to the study area.[26] The closest registered cemetery is Saint John's Anglican Cemetery, located 1.63 kilometres northwest of the study area on Lot 30, Concession 5 in the Township of Montague. There is also an unregistered burial ground named 'Ward Burial Ground' located near the corner of Aberdeen and Jessie Streets, on Lot 2, Concession 4, Township of Elmsley, Town of Smiths Falls, Ontario. It is 0.82 kilometres from the study area.

4.6 Mineral Resources

The presence of scarce mineral resources on or near to a property may indicate potential for archaeological resources associated with both pre-Contact and post-Contact exploration and exploitation. For this reason, the background research conducted for the assessment includes a search of available sources of information on the locations of

[26] It should be noted that the research undertaken as part of this Stage 1 archaeological assessment is unlikely to identify the potential for the presence of unrecorded burial plots. See Section 6.0 of this report for information regarding compliance with provincial legislation in the event that human remains are identified during future development.

outcrops of rare and highly valued minerals, such as quartz, chert, ochre, copper, and soapstone, as well as minerals sought out by post-Contact prospectors and miners for more industrial-scale exploitation (i.e. gold, copper, iron, mica, etc.). Useful tools in this search are provided by databases maintained by the Ontario Geological Survey and the Ministry of Northern Development and Mines, including:

- *Abandoned Mines Information System* which contains a list of all known abandoned and inactive mine sites and associated features in the province;
- *Mining Claims* which contains a list of all active claims, alienations, and dispositions;
- *Mineral Deposits Inventory* which contains a list of known mineral occurrences of economic value in the province;
- *Bedrock Geology Data Set*, which shows the distribution of bedrock units and illustrates geologic rock types, major faults, iron formations, kimberlite intrusions, and dike swarms.

A review of the above-mentioned databases revealed no cases of mineral deposits within the immediate area. A nineteenth century limestone quarry is purported to have been opened on northwest side of Rideau River to build the dam between Jason Island and the mainland (Watson 2000:57).

4.7 Local Environment

The assessment of present and past environmental conditions in the region containing the study area is a necessary component in determining the potential for past occupation as well as providing a context for the analysis of archaeological resources discovered during an assessment. Factors such as local water sources, soil types, vegetation associations and topography all contribute to the suitability of the land for human exploitation and/or settlement. For the purposes of this assessment, information from local physiographic, geological and soils research was compiled to create a picture of the environmental context for both past and present land uses.

The physiography and distribution of surficial material in this area are largely the result of glacial activity that took place in the Late Wisconsinan and Holocene periods. The Late Wisconsinan, which lasted from approximately 23,000 to 10,000 years before present, was marked by the repeated advance and retreat of the massive Laurentide Ice Sheet (Barnett 1992 in Lee 2013). As the ice advanced, debris from the underlying sediments and bedrock accumulated within and beneath the ice. The debris, a mixture of stones, sand, silt, and clay, was deposited over large areas as till and associated stratified deposits. During deglaciation, as the Late Wisconsinan ice margin receded to the north, glacial lake waters in the Lake Ontario basin expanded into the Ottawa River valley, almost as far north as Ottawa, creating Glacial Lake Iroquois. With much of the region isostatically depressed below sea level, proglacial freshwater lakes developed at the ice margin. The uncovering of the St. Lawrence River valley, which occurred between 12,100 and 11,100 years ago, caused water levels to drop in the Lake Ontario basin and allowed seawater to inundate the depressed Ottawa and upper St. Lawrence River valley areas, forming the Champlain Sea (Lee 2013). This inland sea has left numerous traces of its existence, in the form of beaches, deltas, and plains. In the latter case, the locations of what were formerly deep marine basins became the collection points for a thick succession of clays and silts. By 9,600 BP, the salinity of the Champlain Sea is thought to have dropped to the point that these waters could support a variety of freshwater species (during a period where this body of water is referred to as Lampsilis Lake), before continued isostatic uplift resulted in the establishment of the present drainage pattern by about 4,700 BP (ASI and GII 1999:41).

The study area lies within the Smiths Falls Limestone Plain physiographic region, characterized by shallow soils over limestone. The rock strata in this region belong to the Beekmantown group and include grey limestone, magnesian limestone, blue-grey dolostone and some calcareous sandstone. The lands are mostly level (Chapman and Putnam 1984:196-7). Surficial geology mapping at 1:50:000 scale indicates the property contains glacial deposits over Paleozoic bedrock consisting of till veneer, which has a discontinuous cover over bedrock with an average thickness of less than one metre which may include pockets of sand and gravel or silty clay in low-lying areas (Map 6). The study area is relatively level, with land elevations generally hovering around 118 metres above mean sea level. Though presently in the core of urban development, soils mapping at 1:63,360 scale indicates that the soil within the study area would originally have been Farmington loam, which is a well-draining, shallow brown forest soil formed in till over limestone bedrock (Hoffman, Miller and Wicklund 1967; see Map 6).

The study area lies within the Upper St. Lawrence sub-region of the Great Lakes-St. Lawrence Forest Region. The deciduous trees characterizing this sub-region include sugar and red maples, beech, basswood, white ash, large tooth aspen, yellow birch, and red and burr oaks, while coniferous trees include eastern hemlock, eastern white pine, white spruce and balsam fir (Rowe 1972:94). All original growth forest would have been removed from the property in the early nineteenth century.

The study area is on the Rideau River/Canal system, within the Rideau River watershed.

5.0 STAGE 1 ARCHAEOLOGICAL ASSESSMENT

This section of the report includes an evaluation of the archaeological potential within the study area, in which the results of the background research described above are synthesized to determine the likelihood of the property to contain significant archaeological resources.

5.1 Optional Property Inspection

In addition to the above research, Past Recovery completed an optional site inspection on December 14th, 2021. The weather was sunny with minimal clouds, with a high of 4 degrees Celsius. This inspection was conducted according to the archaeological fieldwork standards outlined in *Standards and Guidelines for Consultant Archaeologists* (MHSTCI 2011), with field conditions and features influencing archaeological potential documented through digital photography. The complete Stage 1 photographic catalogue is included as Appendix 1 and the locations and orientations of all photographs referenced in this section of the report are shown on Map 8. As per the *Terms and Conditions for Archaeological Licences* in Ontario, curation of all photographs generated during the Stage 1 archaeological assessment is being provided by Past Recovery pending the identification of a suitable repository. An inventory of the records generated during the inspection is provided below in Table 2. The property inspection has been used to supplement the background information to help inform the archaeological potential model developed below.

The site visit confirmed the conditions obvious in the 2019 aerial image used to define the study area (see Map 2) and noted other natural features or disturbance affecting the archaeological potential of the property. The study area consisted of primarily paved road on either site of the Confederation Drive bridge. On the west side there were narrow strips of grass around Old Mill Street and Confederation Drive, which contained lampposts, electrical boxes, fire hydrants, watermain valves, and manhole covers indicative of underground utility lines (Images 5 to 10). On the east side were also narrow

Table 2. Inventory of the Stage 1 Documentary Record.

Type of Document	Description	Number of Records	Location
Photographs	Digital photographs documenting the subject property and conditions at the time of the property survey	92 digital photographs	On Past Recovery computer network – file PR21-059
Field Notes	Field notes from the site visit	1 digital file page	In Past Recovery office – file PR21-059

strips of grass around the south edge of Canal Street which contained lampposts, electrical boxes, cement-covered underground access points, and additional manhole covers. The strip of grass to the north of Canal Street was wider (between five and ten metres) and included, in addition to the features listed previously, a row of flag poles associated with the cenotaph in Veterans' Memorial Park (Images 11 to 16).

5.2 Evaluation of Archaeological Potential

The evaluation of the potential of a particular parcel of land to contain significant archaeological resources is based on the identification of local features that have demonstrated associations with known archaeological sites. For instance, archaeological sites associated with pre-Contact settlements and land uses are typically found in close physical association with environmental features such as sources of potable water, transportation routes (navigable waterways and trails), accessible shorelines, areas of elevated topography (i.e. knolls, ridges, eskers, escarpments, and drumlins), areas of sandy and well-drained soils, distinctive land formations (i.e. waterfalls, rock outcrops, caverns, mounds, and promontories and their bases), as well as resource-rich areas (e.g. migratory routes, spawning areas, scarce raw materials, etc.). Similarly, post-Contact archaeological sites are often found in association with many of these same environmental features, though they are also commonly connected with known areas of early Euro-Canadian settlement, early historical transportation routes (e.g. roads, trails, railways, etc.), and areas of early Euro-Canadian industry (i.e. the fur trade, logging and mining). For this reason, assessments of the potential of a particular parcel of land to contain post-Contact archaeological sites rely heavily on historical and archival research, including reviews of available land registry records, census returns and assessment rolls, historical maps, and aerial photographs. The locations of previously discovered archaeological sites can also be used to shed light on the chances that a particular location contains an archaeological record of past human activities.

Archaeological assessment standards established in the *Standards and Guidelines for Consultant Archaeologists* (MHSTCI 2011) specify which factors, at a minimum, must be considered when evaluating archaeological potential. Licensed consultant archaeologists are required to incorporate these factors into potential determinations and account for all features on the property that can indicate the potential for significant archaeological sites. If this evaluation indicates that any part of a subject property exhibits potential for archaeological resources, the completion of a Stage 2 archaeological assessment is commonly required prior to the issuance of approvals for activities that would involve soil disturbances or other alterations.

The *Standards and Guidelines for Consultant Archaeologists* (MHSTCI 2011) also establish minimum distances from features of archaeological potential that must be identified as exhibiting potential for sites. For instance, this includes all lands within 300 metres of primary and secondary water sources, past water sources (i.e. glacial lake shorelines), registered archaeological sites, areas of early Euro-Canadian settlement, or locations identified as potentially containing significant archaeological resources by local histories or informants. It also includes all lands within 100 metres of early historic transportation routes (e.g. roads, trails, and portage routes). Further, any portion of a property containing elevated topography, pockets of well-drained sandy soils, distinctive land formations, resource-rich/harvesting areas, and/or previously identified cultural heritage resources (i.e. built heritage properties and/or cultural heritage landscapes that may be associated with significant archaeological resources) must also be identified as exhibiting archaeological potential.

5.3 Analysis and Conclusions

The background research undertaken for this assessment indicates that the majority of the subject property exhibits characteristics that indicate potential for the presence of significant archaeological resources associated with pre-Contact settlement and/or land uses. Specifically:

- All of the study area lies within 300 metres of the Rideau River, a major pre-Contact transportation corridor and a source of potable water and food, making it a suitable location for camps for pre-Contact hunter-gatherer populations;
- The original soil type within the study area would have been well-drained sandy loam, of a type preferred for temporary campsites;
- Waterfalls were generally considered to be sacred sites by pre-Contact populations; and,
- The recovery of pre-Contact artifacts from locations less than one kilometre from the property indicates the surrounding area has been inhabited for thousands of years.

The study area also exhibits characteristics that indicate potential for the presence of significant archaeological resources associated with post-Contact settlement and/or land uses. Specifically:

- All of the study area lies within 300 metres of the Rideau River, which continued to serve as a major transportation corridor through the post-Contact era, including for nineteenth century lumbering operations;
- There is documented nineteenth century development within and in the immediate vicinity of the study area;
- There are several designated heritage structures and underwater resources in the immediate vicinity of the study area; and,
- All of the study area lies within 100 m of Beckwith Street, a nineteenth century transportation corridors illustrated on historical mapping.

Given the extensive nineteenth and twentieth century development on both Jason and Ward Islands, the historical maps depicting buildings, fire insurance plans and other documents were used to create an overlay map showing the sequence and foot-prints of buildings within or in proximity to the study area (Map 7). This presents a visual record of the development over the nineteenth and twentieth centuries, and a reference for where intact nineteenth century or earlier archaeological remains may survive. Areas revealed to have been the location of pre-1900 industrial, commercial, or residential land uses (eg. structures, adjacent work/storage areas, undisturbed yards or other areas where buried topsoil deposits are likely to be found) and to have escaped destruction through later development exhibit archaeological potential.

It should be noted that the process of overlaying historical plans to generate a map identifying areas of archaeological potential includes numerous potential sources of error that must be recognized when evaluating the results. These include the consistency with which common reference points were mapped, differences in the quality/scale of map production, differences of scale and resolution between sources, as well as distortions introduced by scanning paper originals or reproductions (in some cases copies of copies). In an effort to manage these variables and provide detailed coverage over the entirety of the study area, the available plans were layered over one another showing the known locations of pre-1900 structures, as well as areas likely to have been disturbed by post-1900 re-development. It is worth noting that fire insurance plans were compiled from surveys for reference purposes and were not legal surveyed plans. Therefore, while care was taken throughout the process of creating the archaeological potential map included in this report, the location or configuration of any particular feature of potential should be treated as being approximate.

The evaluation of archaeological potential also included a review of available sources of information (i.e. high resolution aerial photographs and satellite imagery) as well as the results of the site inspection to determine if part or all of the study area had been subject to deep and intensive soil disturbance (i.e. quarrying, road construction, major landscaping involving grading below topsoil, former building footprints, utility line and infrastructure development, etc.) in the recent past, as these activities would have severely damaged the integrity of or removed any archaeological resources that might have been present. As has been noted above, most of the property consists of built infrastructure indicative of deep disturbance, including the existing bridge abutments, the existing roads (mostly redesigned in the 1970s), former road beds (particularly on the east side of the bridge where Canal Street was realigned more than once), existing parking lots and existing and former utility lines. Evidence for several of the last was clearly visible in the greenspaces on the fringes of the study area associated with either Veterans' Memorial Park to the east of the bridge or Confederation Park to the west, confirming disturbance throughout the study area.

While the buildings depicted on the historical structure overlay within the study area all appear to have been constructed in the early twentieth century (particularly on the former Jason Island; see Map 7), one structure that is not illustrated is the storehouse on Ward Island shown on the 1867 and 1881 maps, which appears to have projected into the study area from the south, extending below the current Canal Street (see Map 4). This building is documented to have been present by 1863 and removed prior to 1889; given its size it likely had fairly substantial foundations that may still be present in the ground. Given the extent of the disturbance from the road realignments and utility line construction, however, if this feature survives it would by now be considered deeply buried; thus if there is to be any excavation within the foot-print of this building or within a 5 m buffer as its precise location is uncertain, this excavation should be monitored by a licensed archaeologist in case remnants of this potentially significant archaeological resource survive. The archaeological potential associated with the study area has been illustrated on Map 8.

5.4 Stage 1 Recommendations

The results of the background research discussed above have indicated that the study area retains potential for the presence of deeply buried archaeological resources. Accordingly, it is recommended that:

1) Below-grade excavations within the foot-print of the mid-nineteenth century storehouse or a 5 m buffer within the study area should be the subject of Stage 2 archaeological monitoring undertaken by a licensed consultant archaeologist, in compliance with Section 4.2.8 of *Standards and Guidelines for Consultant Archaeologists* (MHSTCI 2011; see Map 8). Prior to the initiation of work, a protocol should be arranged with the contractor containing provisions for the recording of any archaeological remains and/or the recovery of significant archaeological deposits revealed by the construction activity, a protocol which would both ensure that sufficient archaeological information is recovered and, as much as possible, ensure that there are not significant delays to the construction schedule.

2) There are no further concerns for unlicensed impacts to archaeological sites within the remainder of the Stage 1 study area, as presently defined (see Map 8), and no further archaeological assessment of these parts of the subject property is required.

3) In the event that future planning results in the identification of additional areas of impact beyond the limits of the present Stage 1 study area, further archaeological assessment may be required. It should be noted that screening for impacts should include all aspects of the proposed development that may cause soil disturbances or other alterations (i.e. access roads, staging/lay down areas, associated works etc.), and that that even temporary property needs should be considered.

4) Any future archaeological assessment should be undertaken by a licensed consultant archaeologist, in compliance with *Standards and Guidelines for Consultant Archaeologists* (MHSTCI 2011).

The following recommendation has been included as per a request from the Algonquins of Ontario:

5) Since the potential always exists to miss important information in archaeological surveys, if any artifacts of Indigenous interest or human remains are encountered during the development of the subject property, please contact: Algonquins of Ontario Consultation Office, 31 Riverside Drive, Suite 101, Pembroke, ON, K8A 8R6; Tel: 613-735-3759; Fax: 613-735-6307; E-mail: algonquins@tanakiwin.com.

The reader is also referred to Section 6.0 below to ensure compliance with relevant provincial legislation and regulations as may relate to this project.

6.0 ADVICE ON COMPLIANCE WITH LEGISLATION

In order to ensure compliance with relevant Provincial legislation as it may relate to this project, the reader is advised of the following:

1) This report is submitted to the Minister of Heritage, Sport, Tourism and Culture Industries as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Heritage, Sport, Tourism and Culture Industries, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

2) It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeological Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

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

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

5) Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological licence.

7.0 LIMITATIONS AND CLOSURE

Past Recovery Archaeological Services Inc. has prepared this report in a manner consistent with that level of care and skill ordinarily exercised by members of the archaeological profession currently practicing under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and physical constraints applicable to this report. No other warranty, expressed or implied, is made.

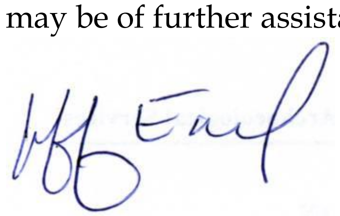
This report has been prepared for the specific site, design objective, developments and purpose prescribed in the client proposal and subsequent agreed upon changes to the contract. The factual data, interpretations and recommendations pertain to a specific project as described in this report and are not applicable to any other project or site location.

Unless otherwise stated, the suggestions, recommendations and opinions given in this report are intended only for the guidance of the client in the design of the specific project.

Special risks occur whenever archaeological investigations are applied to identify subsurface conditions and even a comprehensive investigation, sample and testing program may fail to detect all or certain archaeological resources. The sampling strategies in this study comply with those identified in the Ministry of Heritage, Sport, Tourism and Culture Industries' *Standards and Guidelines for Consultant Archaeologists* (2011).

The documentation related to this archaeological assessment will be curated by Past Recovery Archaeological Services Inc. until such a time that arrangements for their ultimate transfer to an approved and suitable repository can be made to the satisfaction of the project owner(s), the Ontario Ministry of Heritage, Sport, Tourism and Culture Industries and any other legitimate interest group.

We trust that this report meets your current needs. If you have any questions or if we may be of further assistance, please do not hesitate to contact the undersigned.



Jeff Earl, M.Soc.Sc.
Principal
Past Recovery Archaeological Services Inc.

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PRIMARY DOCUMENTS:

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NMC 9698	*Fire Insurance Plan, Sheet 6* (1929)
NMC 19027	*Plan of the Town of Smiths-Falls in the County of Lanark, Ontario* (1886)
NMC 21887	*Map commissioned by the Inspector General of Fortifications for the proposed Rideau Canal locks Nos. 27, 28, and 29* (1827)
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1846 Rideau Canal Plan No. 12 Record 60558
1867 Plan Smith's Falls Station Record 61738
1962 The Corporation of the Town of Smiths Falls Ontario Record 59895

Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF):

Crown Land Surveys:

1849 Rideau Canal File SR 2688 J11

Forest Resource Inventory (FRI) Aerial Photography:

Year	Film Roll#	Flight Line #	Photograph #	Original Scale
1953	4441	0012	0059	unrecorded
1978	4462	0077	0133	unrecorded
1991	4460	0042	0096	unrecorded

Smiths Falls Public Library:

Birds Eye View Series:

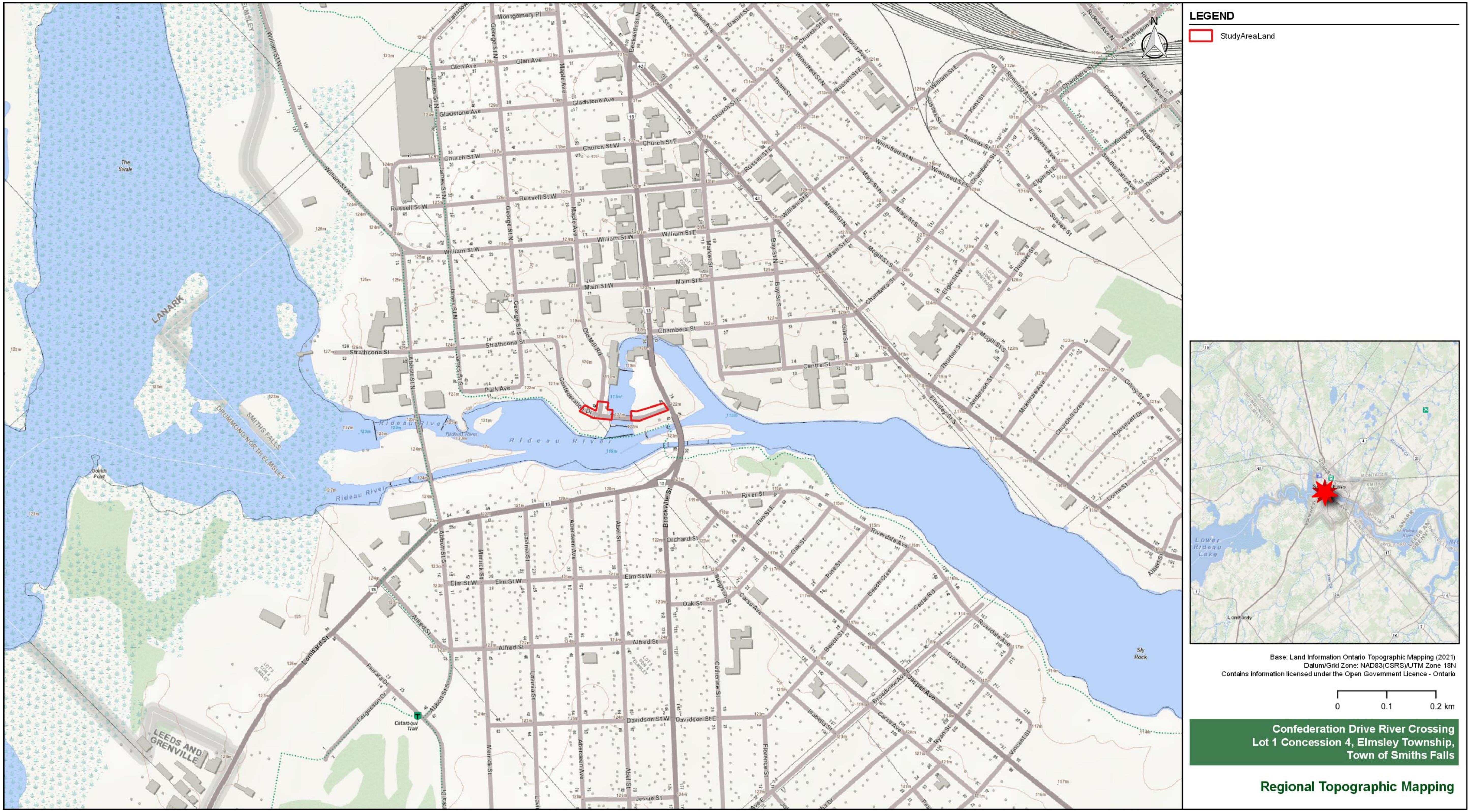
Smith's Falls, Province Ontario. Canada Record 003722616pf

The Corporation of the Town of Smiths Falls Special Committee of the Whole Meeting, Meeting Minutes:

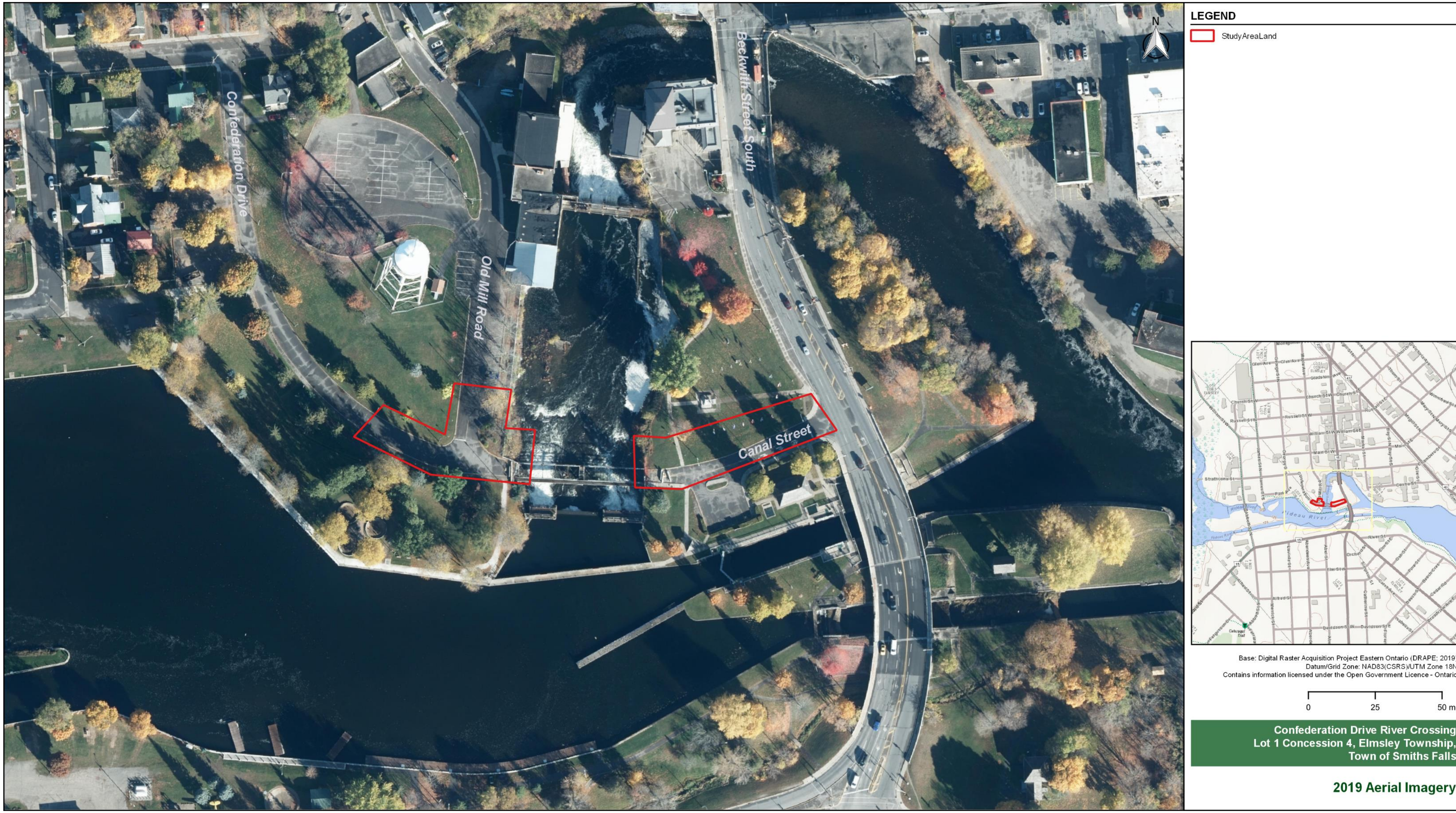
Former Water Treatment Plant Environmental Site Assessments Executive Summary (2017) by D. Hodgson, Malroz Engineering Inc.:

1916 Fire Insurance Plan, Sheet 1
1959 Fire Insurance Plan, Sheet 20

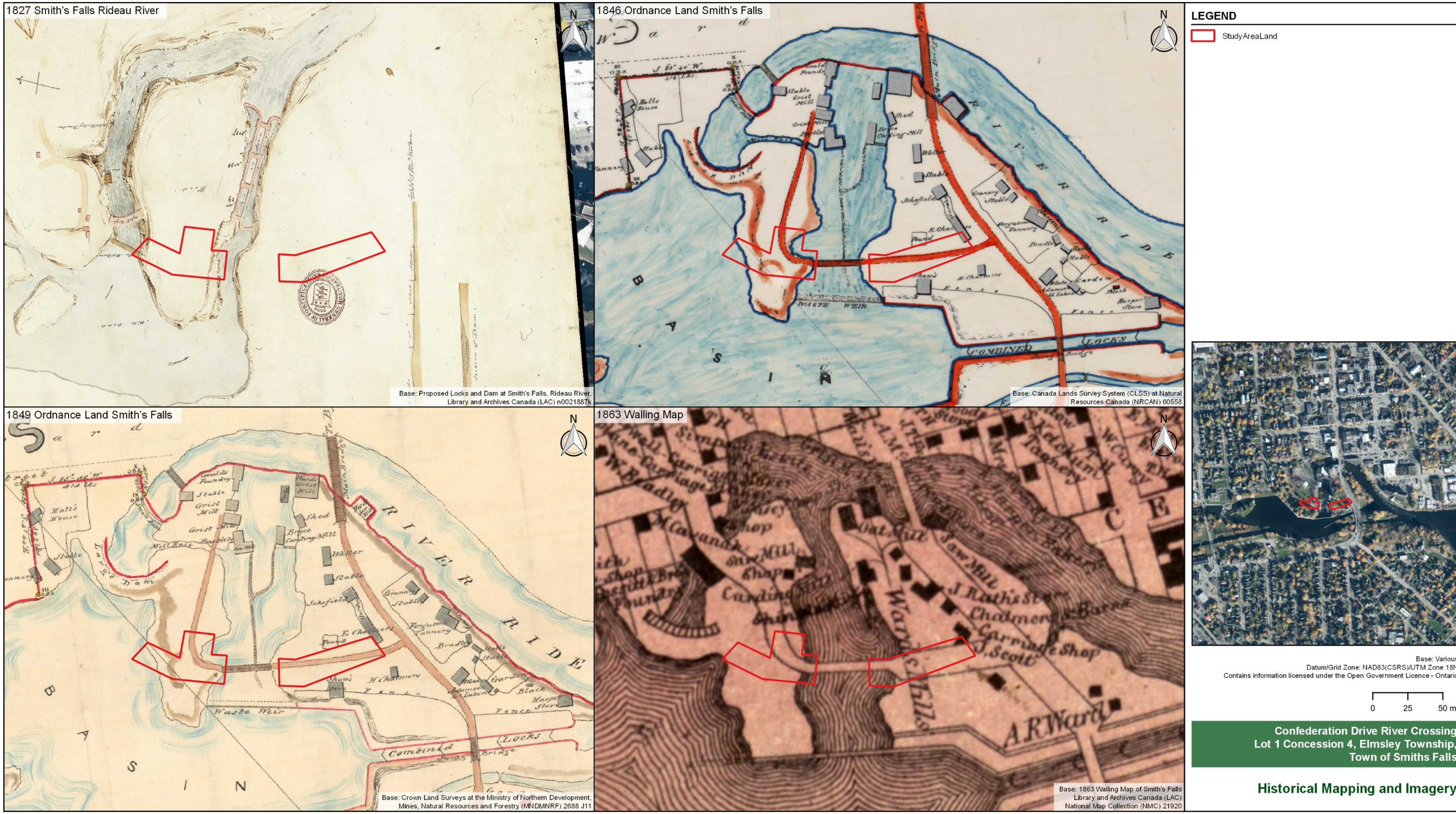
9.0 MAPS



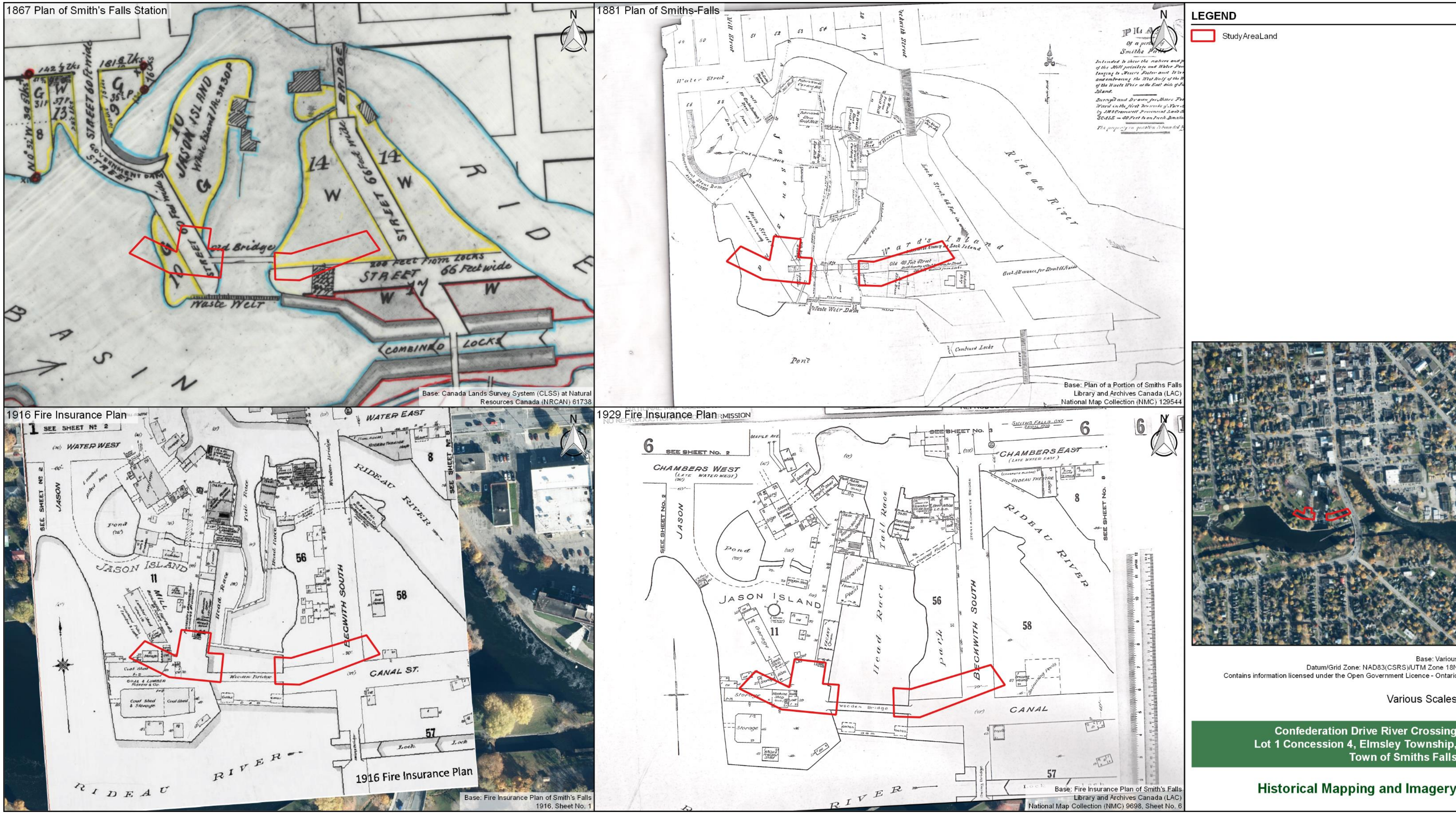
Map 1. Location of the study area.



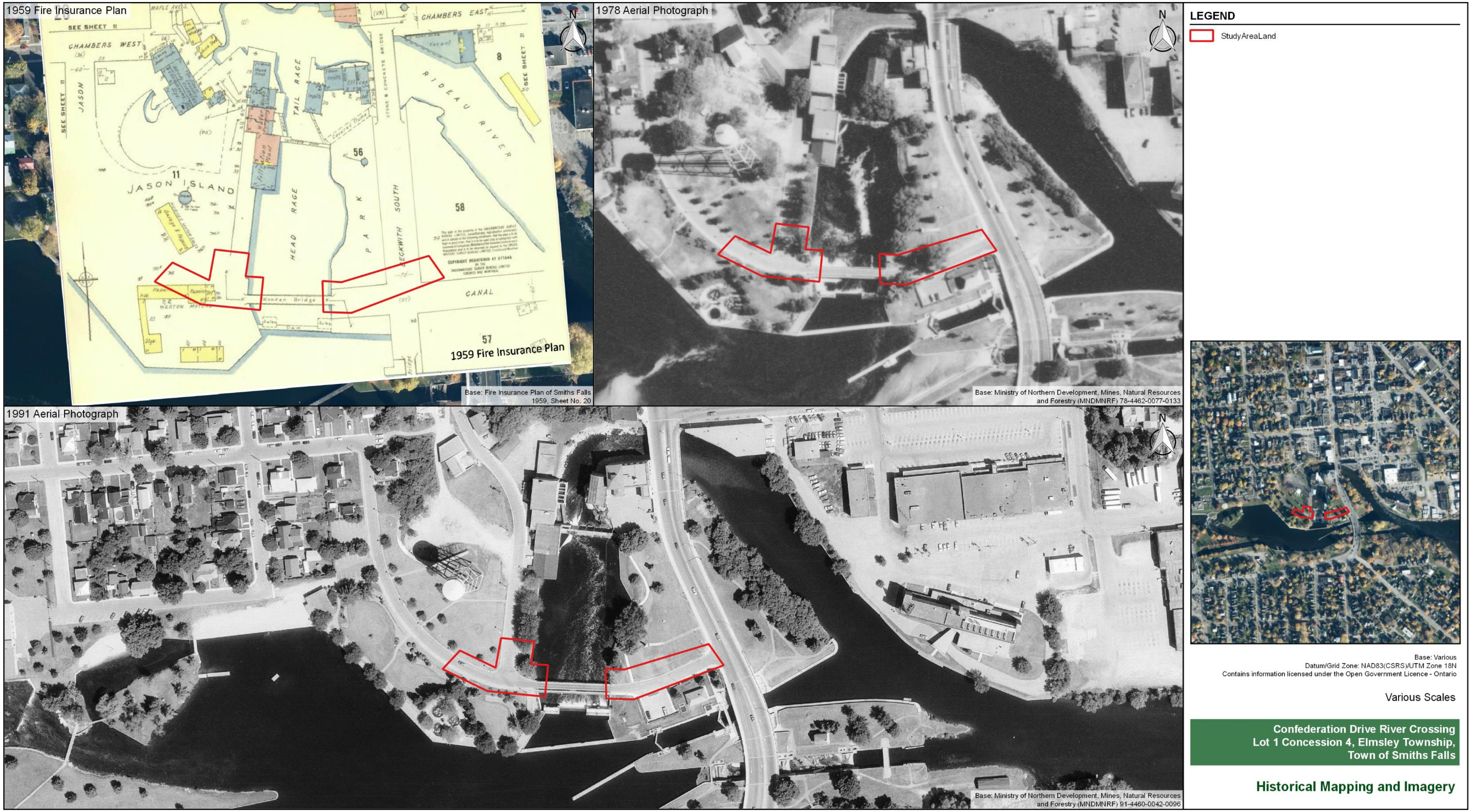
Map 2. Recent (2019) orthographic imagery showing the study area.



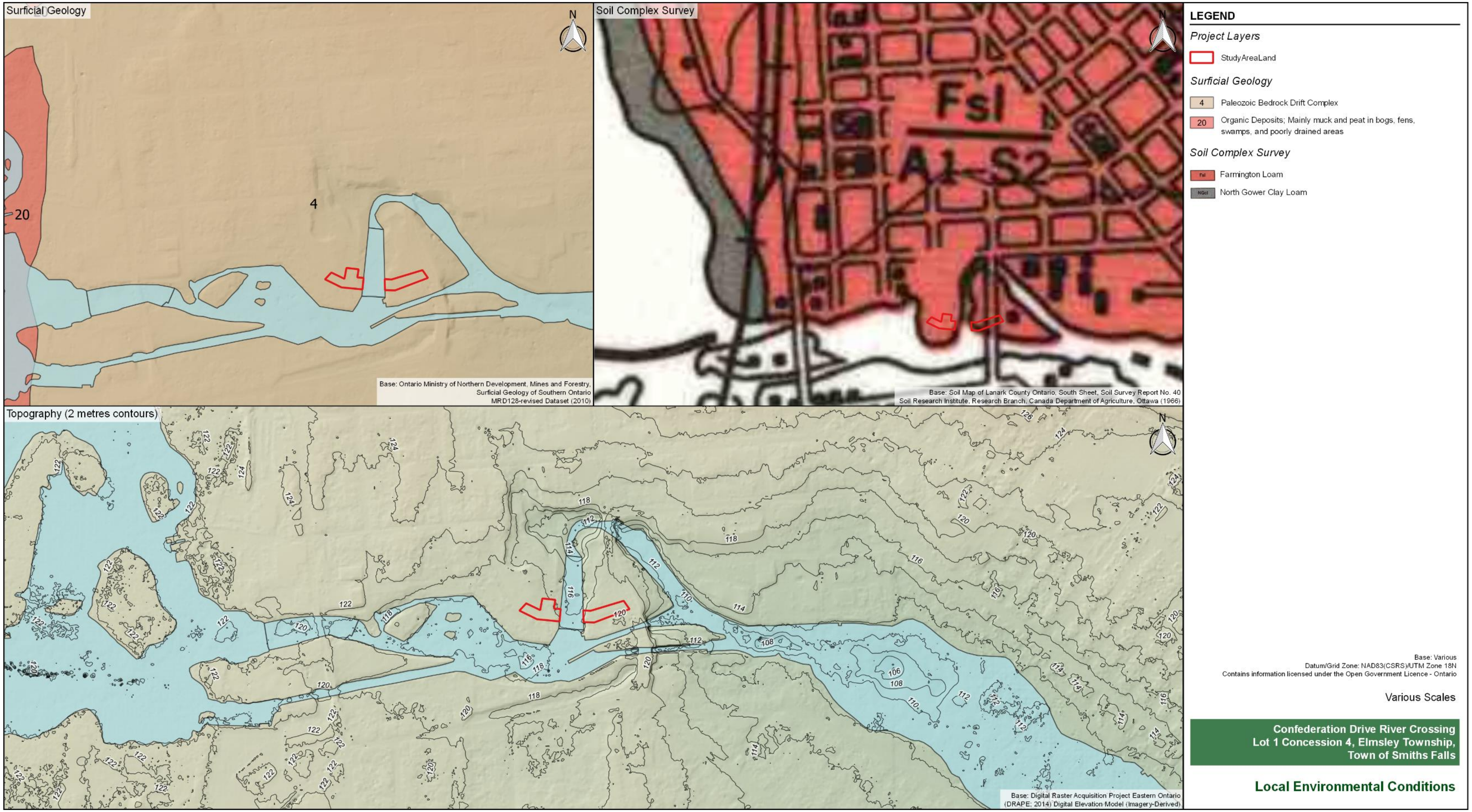
Map 3. Historical mapping showing the approximate location of the study area.



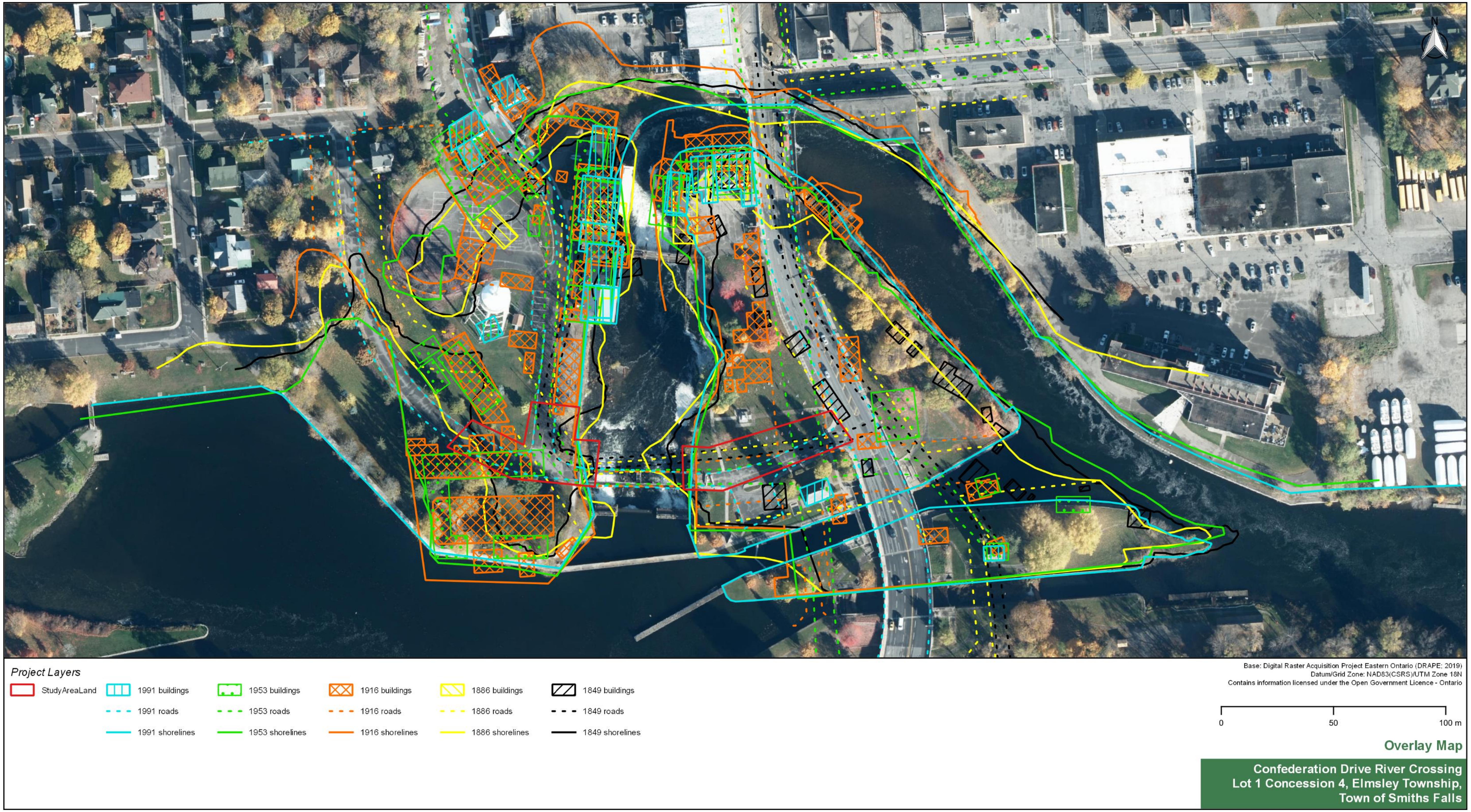
Map 4. Historical mapping showing the approximate location of the study area.



Map 5. Historical mapping and aerial photography showing the study area.



Map 6. Environmental mapping showing the study area.



Map 7. Historical overlay showing the locations of former structures on Jason and Ward Islands.

Map 8. Recent (2019) orthographic imagery showing areas of archaeological potential in the study area and the approximate locations and orientations of site visit photographs referenced in this report.

10.0 IMAGES

Image 1. Section from the 1874 Bird's-Eye View of Smiths Falls showing the study area. (Smiths Falls Public Library, reference number 003722616pf)

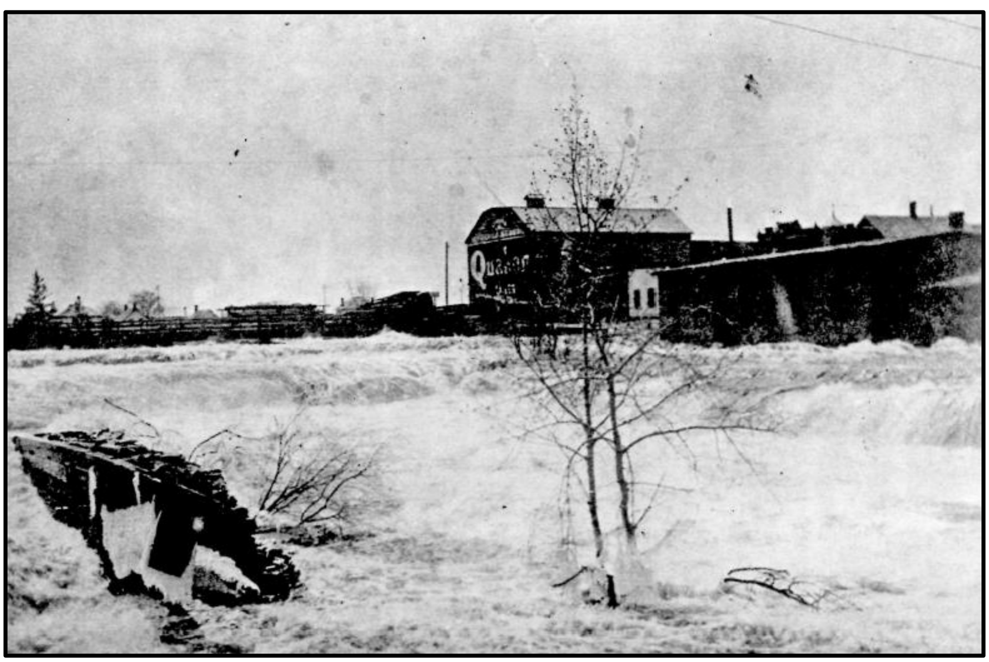


Image 2. View of the mill building in the southeast corner of Jason Island with the 'Quaker' advertisement, facing west. (Photograph from DeLottinville 1979b:397; no date)

Image 3. View of the lock house (left) and parking lot (centre) in the southwest section of Ward Island, facing south. (PR21-059D067)

Image 4. View of the cenotaph in Veterans' Memorial Park, facing east. (PR21-059D059)

Image 5. View of the Confederation Drive bridge as seen from northwest of the study area, facing south. (PR21-059D002)

Image 6. View of a fire hydrant and water main valves in the northwest part of the study area, facing north. (PR21-059D030)

Image 7. View of the Confederation Drive bridge at the intersection of Old Mill Road and Confederation Drive, facing southeast. (PR21-059D005)

Image 8. View of Confederation Drive in the westernmost part of the study area looking toward the Confederation Drive bridge, facing east. (PR21-059D010)

Image 9. View of the Confederation Drive bridge and an electrical box within the western part of the study area, facing northeast. (PR21-059D019)

Image 10. View of the western footing of the Confederation Drive bridge as seen from the east bank of the waste water channel, facing west. (PR21-059D070)

Image 11. View of the Confederation Drive bridge, underground disturbance and electrical boxes as seen from the walking path within the southeast part of the study area near Canal Street, facing northwest. (PR21-059D042)

Image 12. View of Canal Street in eastern part of the study area, facing east. (PR21-059D046)

Image 13. View of the Confederation Drive bridge, Canal Street and a manhole cover in the eastern part of the study area, facing northeast. (PR21-059D051)

Image 14. View of Canal Street as seen from the easternmost part of the study area looking toward the Confederation Drive bridge, facing west. (PR21-059D053) Note the row of flag poles.

Image 15. View of the Confederation Drive bridge, facing northwest. (PR21-059D074)

Image 16. View of the eastern footing of the Confederation Drive bridge as seen from the west bank of the waste water channel, facing east. (PR21-059D090)

APPENDIX 1: Photographic Catalogue

Camera: Panasonic Lumix DMC-TS3

Catalogue No.	Description	Dir.
PR21-059D001	confederation bridge	S
PR21-059D002	confederation bridge	S
PR21-059D003	confederation bridge from old mill road	SE
PR21-059D004	confederation bridge from old mill road	SE
PR21-059D005	confederation bridge from intersection of old mill rd. and confederation drive	SE
PR21-059D006	confederation bridge from intersection of old mill rd. and confederation drive	SE
PR21-059D007	confederation drive looking toward confederation bridge	E
PR21-059D008	confederation drive looking toward confederation bridge	E
PR21-059D009	confederation drive looking toward confederation bridge	E
PR21-059D010	confederation drive looking toward confederation bridge	E
PR21-059D011	plaque and electrical boxes adjacent to study area	S
PR21-059D012	plaque and electrical boxes adjacent to study area	S
PR21-059D013	plaque about dams and head races	N
PR21-059D014	plaque about dams and head races	N
PR21-059D015	plaque about water works	N
PR21-059D016	plaque about water works	N
PR21-059D017	centennial fountain plaque	S
PR21-059D018	electrical box adjacent to study area facing confederation bridge	NE
PR21-059D019	electrical box adjacent to study area facing confederation bridge	NE
PR21-059D020	confederation bridge as seen from beside the dam	NE
PR21-059D021	confederation bridge as seen from beside the dam	NE
PR21-059D022	confederation bridge as seen from beside the dam	NE
PR21-059D023	confederation bridge as seen from beside the dam	NE
PR21-059D024	confederation bridge from west footing of the bridge, east	E
PR21-059D025	confederation bridge from west footing of the bridge, east	E
PR21-059D026	view down river from west footing of the bridge, north	N
PR21-059D027	view down river from west footing of the bridge, north	N
PR21-059D028	culvert drainage into rideau river	E
PR21-059D029	culvert drainage into rideau river	E
PR21-059D030	survey marker, fire hydrant, water main valve	N
PR21-059D031	fire hydrant	E
PR21-059D032	fire hydrant	E
PR21-059D033	fire hydrant	SE
PR21-059D034	survey marker, fire hydrant, water main valve	E
PR21-059D035	rideau waterway plaque	SE
PR21-059D036	rideau waterway plaque	SE
PR21-059D037	view of dam south of confederation bridge	N
PR21-059D038	view of dam south of confederation bridge	N
PR21-059D039	view of dam south of confederation bridge	N

Catalogue No.	Description	Dir.
PR21-059D040	Rideau Canal lock no. 29a	E
PR21-059D041	Rideau Canal lock no. 29a	E
PR21-059D042	confederation bridge from walking path near Canal Street	NW
PR21-059D043	confederation bridge from walking path near Canal Street	NW
PR21-059D044	electrical box in study area beside confederation bridge	NW
PR21-059D045	electrical box in study area beside confederation bridge	NW
PR21-059D046	view of Canal Street, east	E
PR21-059D047	view of Canal Street, east	E
PR21-059D048	view of cenotaph, northeast	NE
PR21-059D049	view of cenotaph, northeast	NE
PR21-059D050	manhole cover in front of Confederation Bridge from East footing	NE
PR21-059D051	manhole cover in front of Confederation Bridge from East footing	NE
PR21-059D052	Canal Street looking toward confederation bridge, W	W
PR21-059D053	Canal Street looking toward confederation bridge, W	W
PR21-059D054	view of study area adjacent to Beckwith St. S.	N
PR21-059D055	view of study area adjacent to Beckwith St. S.	N
PR21-059D056	Veterans' Memorial Park and cenotaph from Beckwith St. S.	W
PR21-059D057	Veterans' Memorial Park and cenotaph from Beckwith St. S.	W
PR21-059D058	Veterans' Memorial Park and cenotaph from Beckwith St. S.	W
PR21-059D059	cenotaph	WNW
PR21-059D060	confederation bridge viewed from beside the cenotaph	SW
PR21-059D061	confederation bridge viewed from beside the cenotaph	SW
PR21-059D062	HMSC Smiths Falls plaque	W
PR21-059D063	HMSC Smiths Falls plaque	W
PR21-059D064	Canal Street	E
PR21-059D065	Canal Street	E
PR21-059D066	parking lot beside lock house	S
PR21-059D067	parking lot beside lock house	S
PR21-059D068	view of Confederation Bridge west bank footing, west	W
PR21-059D069	view of Confederation Bridge west bank footing, west	W
PR21-059D070	view of Confederation Bridge west bank footing, west	W
PR21-059D071	view of Confederation Bridge, SW	SW
PR21-059D072	possible water main valve near east footing of confederation bridge	SW
PR21-059D073	possible water main valve near east footing of confederation bridge	SW
PR21-059D074	confederation bridge	NW
PR21-059D075	confederation bridge	NW
PR21-059D076	Wood mill plaque	W
PR21-059D077	Wood mill plaque	W
PR21-059D078	Wood mill plaque	W
PR21-059D079	Beckwith Street plaque and bridge	N
PR21-059D080	Beckwith Street plaque and bridge	N
PR21-059D081	Beckwith Street plaque and bridge	N
PR21-059D082	Beckwith Street plaque and bridge	N

Catalogue No.	Description	Dir.
PR21-059D083	plaques of names	W
PR21-059D084	plaques of names	W
PR21-059D085	plaque commemorating the opening of the canal in 1832	W
PR21-059D086	plaque commemorating the opening of the canal in 1832	W
PR21-059D087	plaque commemorating the opening of the canal in 1832	W
PR21-059D088	Canal lock no. 29a	WNW
PR21-059D089	Canal lock no. 29a	WNW
PR21-059D090	confederation bridge east footing	E
PR21-059D091	confederation bridge east footing	E
PR21-059D092	confederation bridge east footing	E

APPENDIX 2: Glossary of Archaeological Terms

Archaeology:
The study of human past, both prehistoric and historic, by excavation of cultural material.

Archaeological Sites:
The physical remains of any building, structure, cultural feature, object, human event or activity which, because of the passage of time, are on or below the surface of the land or water.

Archaic:
A term used by archaeologists to designate a distinctive cultural period dating between 8000 and 1000 B.C. in eastern North America. The period is divided into Early (8000 to 6000 B.C.), Middle (6000 to 2500 B.C.) and Late (2500 to 1000 B.C.). It is characterized by hunting, gathering and fishing.

Artifact:
An object manufactured, modified or used by humans.

B.P.:
Before Present. Often used for archaeological dates instead of B.C. or A.D. Present is taken to be 1951, the date from which radiocarbon assays are calculated.

Backdirt:
The soil excavated from an archaeological site. It is usually removed by shovel or trowel and then screened to ensure maximum recovery of artifacts.

Chert:
A type of silica rich stone often used for making chipped stone tools. A number of chert sources are known from southern Ontario. These sources include outcrops and nodules.

Contact Period:
The period of initial contact between Native and European populations. In Ontario, this generally corresponds to the seventeenth and eighteen centuries depending on the specific area. See also Protohistoric.

Cultural Resource / Heritage Resource:
Any resource (archaeological, historical, architectural, artifactual, archival) that pertains to the development of our cultural past.

Cultural Heritage Landscapes:
Cultural heritage landscapes are groups of features made by people. The arrangement of features illustrate noteworthy relationships between people and their surrounding environment. They can provide information necessary to preserve, interpret or reinforce the understanding of important historical settings and changes to past patterns of land use. Cultural landscapes include neighbourhoods, townscapes and farmscapes.

Diagnostic:
An artifact, decorative technique or feature that is distinctive of a particular culture or time period.

Disturbed:
In an archaeological context, this term is used when the cultural deposit of a certain time period has been intruded upon by a later occupation.

Excavation:
The uncovering or extraction of cultural remains by digging.

Feature:
This term is used to designate modifications to the physical environment by human activity. Archaeological features include the remains of buildings or walls, storage pits, hearths, post moulds and artifact concentrations.

Flake:
A thin piece of stone (usually chert, chalcedony, etc.) detached during the manufacture of a chipped stone tool. A flake can also be modified into another artifact form such as a scraper.

Fluted:
A lanceolate shaped projectile point with a central channel extending from the base approximately one third of the way up the blade. One of the most diagnostic Palaeo-Indian artifacts.

Historic:
Period of written history. In Ontario, the historic period begins with European settlement.

Lithic:
Stone. Lithic artifacts would include projectile points, scrapers, ground stone adzes, gun flints, etc.

Lot:
The smallest provenience designation used to locate an artifact or feature.

Midden:
An archaeological term for a garbage dump.

Mitigation:
To reduce the severity of development impact on an archaeological or other heritage resource through preservation or excavation. The process for minimizing the adverse impacts of an undertaking on identified cultural heritage resources within an affected area of a development project.

Multicomponent:
An archaeological site which has seen repeated occupation over a period of time. Ideally, each occupation layer is separated by a sterile soil deposit that accumulated during a period when the site was not occupied. In other cases, later occupations will be directly on top of earlier ones or will even intrude upon them.

Operation:
The primary division of an archaeological site serving as part of the provenience system. The operation usually represents a culturally or geographically significant unit within the site area.

Palaeo-Indian:
The earliest human occupation of Ontario designated by archaeologists. The period dates between 9000 and 8000 B.C. and is characterized by small mobile groups of hunter-gatherers.

Prehistoric:
Before written history. In Ontario, this term is used for the period of Native occupation up until the first contact with European groups.

Profile:
The profile is the soil stratigraphy that shows up in the cross-section of an archaeological excavation. Profiles are important in understanding the relationship between different occupations of a site.

Projectile Point:
A point used to tip a projectile such as an arrow, spear or harpoon. Projectile points may be made of stone (either chipped or ground), bone, ivory, antler or metal.

Provenience:
Place of origin. In archaeology this refers to the location where an artifact or feature was found. This may be a general location or a very specific horizontal and vertical point.

Salvage:
To rescue an archaeological site or heritage resource from development impact through excavation or recording.

Stratigraphy:
The sequence of layers in an archaeological site. The stratigraphy usually includes natural soil deposits and cultural deposits.

Sub-operation:
A division of an operation unit in the provenience system.

Survey:
To examine the extent and nature of a potential site area. Survey may include surface examination of ploughed or eroded areas and sub-surface testing.

Test Pit:
A small pit, usually excavated by hand, used to determine the stratigraphy and presence of cultural material. Test pits are often used to survey a property and are usually spaced on a grid system.

Woodland:
The most recent major division in the prehistoric sequence of Ontario. The Woodland period dates from 1000 B.C. to A.D. 1550. The period is characterized by the introduction of ceramics and the beginning of agriculture in southern Ontario. The period is further divided into Early (1000 B.C. to A.D. 0), Middle (A.D. 0 to A.D. 900) and Late (A.D. 900 to A.D.1550).

APPENDIX C – CULTURAL HERITAGE EVALUATION REPORT

DRAFT REPORT:

Cultural Heritage Evaluation Report

Confederation Drive Bridge
Smiths Falls, ON

LHC | Heritage Planning and Archaeology

837 Princess Street, Suite 400
Kingston, ON
K7L 1G8

Phone: 613-507-7817
Toll Free: 1-833-210-7817
E-mail: info@lhcheritage.com

28 February 2022

Project # LHC0286

LHC

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Report prepared for: Lisa Marshall, P.Eng.
Manager – Environmental Engineering
McIntosh Perry Consulting Engineers Ltd.
115 Walgreen Road, R.R. 3, Carp, ON
K0A 1L0

Report prepared by: Colin Yu, MA
Benjamin Holthof, MPI, MMA, CAHP

Graphics prepared by: Jordan Greene, BA

Reviewed by: Christienne Uchiyama, MA, CAHP

RIGHT OF USE

The information, recommendations and opinions expressed in this report are for the sole benefit of McIntosh Perry and the Town of Smiths Falls (The 'Client'). Any other use of this report by others without permission is prohibited and is without responsibility to LHC. The report, all plans, data, drawings and other documents as well as all electronic media prepared by LHC are considered its professional work product and shall remain the copyright property of LHC, who authorizes only the Owners and approved users (including municipal review and approval bodies as well as any appeal bodies) to make copies of the report, but only in such quantities as are reasonably necessary for the use of the report by those parties. Unless otherwise stated, the suggestions, recommendations and opinions given in this report are intended only for the guidance of Owners and approved users.

REPORT LIMITATIONS

The qualifications of the heritage consultants who authored this report are provided in Appendix A. All comments regarding the condition of the Bridge are based on a superficial visual inspection and are not a structural engineering assessment of the buildings unless directly quoted from an engineering report. The findings of this report do not address any structural or physical condition related issues associated the Bridge or the condition of any heritage attributes.

Concerning historical research, the purpose of this report is to assess potential impacts of the proposed site alteration on the cultural heritage value or interest and heritage attributes of the Bridge. The authors are fully aware that there may be additional historical information that has not been included. Nevertheless, the information collected, reviewed, and analyzed is sufficient to conduct this assessment. This report reflects the professional opinion of the authors and the requirements of their membership in various professional and licensing bodies.

The review of policy and legislation was limited to that information directly related to cultural heritage management and is not a comprehensive planning review. Additionally, soundscapes, cultural identity, and sense of place analyses were not integrated into this report.

Due to the ongoing COVID-19 pandemic, access to archives was limited.

EXECUTIVE SUMMARY

The Executive Summary only provides key points from the report. The reader should examine the complete report including background, results as well as limitations.

LHC was retained in December 2021, by McIntosh Perry Consulting Engineers Inc., on behalf of the Town of Smiths Falls, to prepare a Cultural Heritage Evaluation Report (**CHER**) for the Confederation Drive Bridge (**the Bridge**). The Bridge is located at Latitude 44°53'49.80"N, Longitude 76° 1'18.26"W in Lot 1 Concession 4 of the former Geographic Township of Elmsley, now in the Town of Smiths Falls, ON. It carries Confederation Drive across the Rideau River and connects Centennial Park to the Smiths Falls Combined Lockstation –Lock 29a—and Veterans' Memorial Park.

This CHER is in support of a Municipal Class Environmental Assessment for rehabilitation or replacement of the Bridge.

In 2015 Town Planners completed a preliminary evaluation of the Bridge using Ontario Regulation 9/06 (O. Reg. 9/06) under the *Ontario Heritage Act* (**OHA**). Municipal Council passed resolution 2015-08-162 on August 4, 2015 to add the Confederation Bridge to the Municipal Heritage Register under Part IV Section 27 of the OHA. The Bridge crosses the Rideau River –a Canadian Heritage River—and is adjacent to the Rideau Canal World Heritage Site (**WHS**) and National Historic Site of Canada (**NHSC**).

LHC finds that the Bridge meets three of the criteria from *O. Reg. 9/06* and is eligible for designation under Part IV Section 29 of the *OHA*. In LHC's professional opinion the Bridge meets criteria 1i, 3i and 3ii. It has physical value and design value as an early, rare and representative two-span Warren Pony Truss bridge. It has contextual value because it supports and maintains the historic industrial character of the area and has historical and visual links to its surroundings. The Bridge is a cultural heritage resource and supports the landscape setting of the Rideau Canal.

In LHC's professional opinion the Bridge should be conserved and rehabilitated to be used. This opinion is based on international, federal, provincial and municipal guidance outlined in Section 3.0 of this CHER.

LHC recommends that the heritage attributes of the Bridge be conserved where possible and a Heritage Impact Assessment be required as part of design for rehabiliation or replacement. If replacement is the preferred alternative it is recommended that options to rehabilitate the abutments and pier be explored and that a replacement be a two span, each with five panel Warren Pony Truss structure.

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1.0 INTRODUCTION

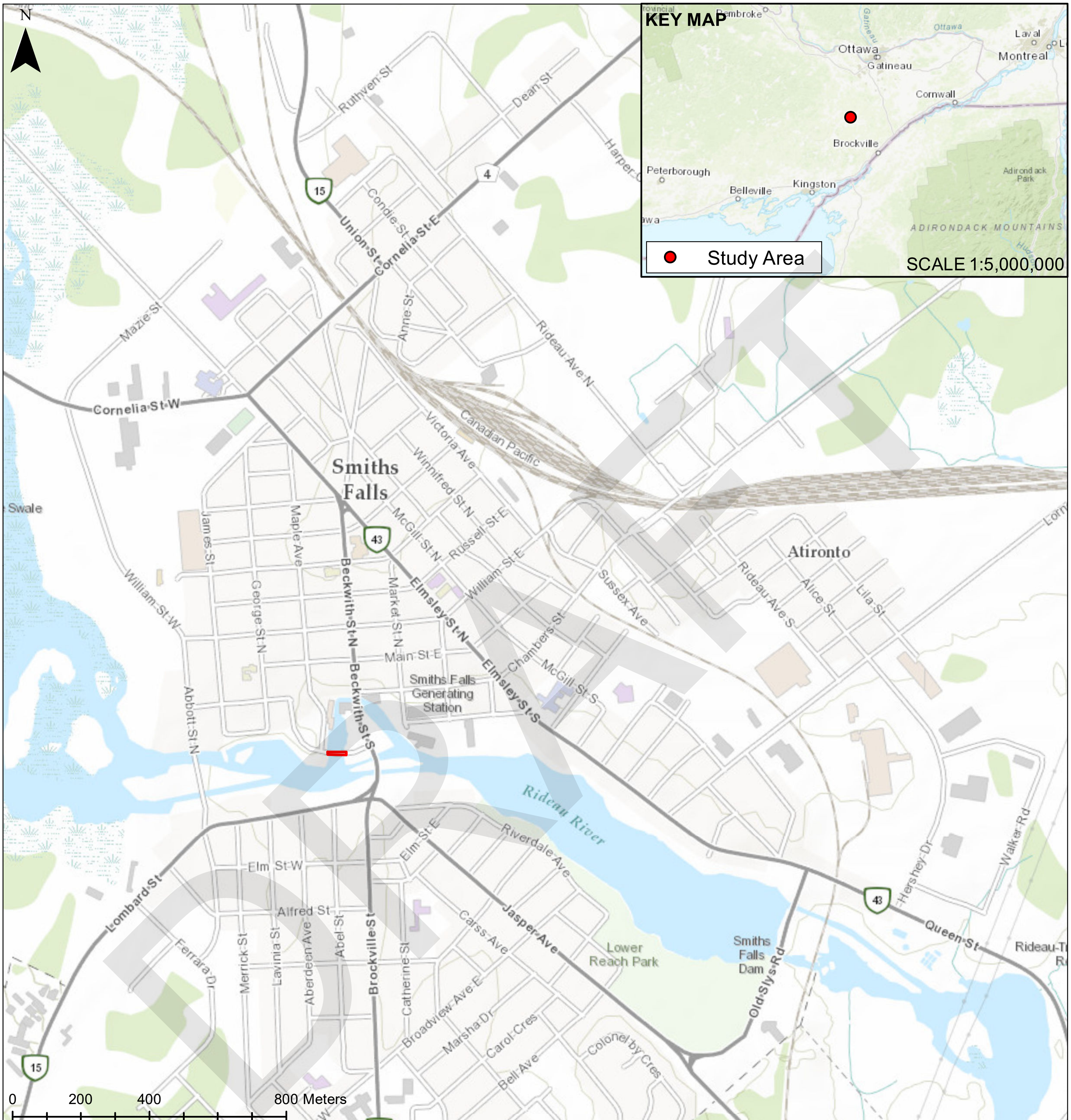
LHC was retained in December 2021, by McIntosh Perry Consulting Engineers Inc., on behalf of the Town of Smiths Falls, to prepare a Cultural Heritage Evaluation Report (**CHER**) for the Confederation Drive Bridge (**the Bridge**). The Bridge is located at Latitude 44°53'49.80"N, Longitude 76° 1'18.26"W in Lot 1 Concession 4 of the former Geographic Township of Elmsley, now in the Town of Smiths Falls, ON (Figure 1 and Figure 2). It carries Confederation Drive across the Rideau River and connects Centennial Park to the Smiths Falls Combined Lockstation –Lock 29a—and Veterans' Memorial Park.

This CHER is in support of a Municipal Class Environmental Assessment for rehabilitation or replacement of the Bridge.

In 2015 Town Planners completed a preliminary evaluation of the Bridge using *Ontario Regulation 9/06* (***O. Reg. 9/06***) under the *Ontario Heritage Act* (***OHA***).[1] Municipal Council passed resolution 2015-08-162 on August 4, 2015 to add the Confederation Bridge to the Municipal Heritage Register under Part IV Section 27 of the *OHA.* The Bridge crosses the Rideau River –a Canadian Heritage River—and is adjacent to the Rideau Canal World Heritage Site (**WHS**) and National Historic Site of Canada (**NHSC**).

This cultural heritage evaluation was undertaken following guidance from the *Ontario Heritage Tool Kit* (2006). The process included background research into the site, an on-site assessment, and evaluation of the cultural heritage value of the property based on the criteria of *O. Reg. 9/06: Criteria for Determining Cultural Heritage Value or Interest* under the *OHA*. Guidance from the Ontario Ministry of Transportation's (MTO) 2008 *Interim Ontario Heritage Bridge Guidelines* and its criteria were used to inform the evaluation and guide background research for this CHER.

[1] Dwyer, Niki. Memo to Municipal Heritage Committee, Confederation Bridge. Smiths Falls Planning and Sustainable Growth. July 13, 2015. Pdf.



Legend

Bridge

NOTE(S) 1. All locations are approximate.

REFERENCE(S)

1. Service Layer Credits: Source: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

TITLE	**Location Plan**
CLIENT	McIntosh Perry Consulting Engineers Ltd.
PROJECT	Cultural Heritage Evaluation Report Confederation Drive Bridge Smiths Falls, ON
PROJECT NO.	LHC0286
CONSULTANT	LHC
YYYY-MM-DD	2022-02-23
PREPARED	LHC
DESIGNED	JG
FIGURE #	1

Legend

Bridge

Ownership

Town of Smith's Falls

Parks Canada

NOTE(S) 1. All locations are approximate.

REFERENCE(S)
1. Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, ans the GIS User Community

TITLE
Site Plan

CLIENT
McIntosh Perry Consulting Engineers Ltd.

PROJECT
Cultural Heritage Evaluation Report Confederation Drive Bridge Smiths Falls, ON

PROJECT NO. LHC0286

CONSULTANT

LHC

YYYY-MM-DD	2022-02-23
PREPARED	LHC
DESIGNED	JG
FIGURE #	2

2.0 STUDY APPROACH

LHC follows a three-step approach to understanding and planning for cultural heritage resources based on the understanding, planning and intervening guidance from the Canada's Historic Places *Standards and Guidelines for the Conservation of Historic Places in Canada* and MHSTCI *Ontario Heritage Tool Kit*.[2] Understanding the cultural heritage resource involves:

- Understanding the significance of the cultural heritage resource (known and potential) through research, consultation and evaluation–when necessary.
- Understanding the setting, context and condition of the cultural heritage resource through research, site visit and analysis.
- Understanding the heritage planning regulatory framework around the cultural heritage resource.

This is consistent with the recommended methodology outlined by the MHSTCI in the *Ontario Heritage Tool Kit: Heritage Property Evaluation*. To evaluate a property for cultural heritage value or interest (CHVI) the MHSTCI identifies three key steps: Historical Research, Site Analysis, and Evaluation.

2.1 Legislation and Policy Review

The CHER includes a review of provincial legislation, plans and cultural heritage guidance, and relevant municipal policy and plans. This review outlines the cultural heritage legislative and policy framework that applies to the Bridge.

2.2 Historical Research

Historical research for this CHER included local history research and the history of bridges. LHC consulted primary and secondary research sources including:

- Local histories;
- Historic maps;
- Aerial photographs;
- Books and articles about bridges and the history of bridges in Ontario; and,
- Online sources about local history, bridges and bridge history.

Online sources consulted included (but was not limited to):

- The Archives of Ontario;
- Library and Archives Canada;
- The OCUL, Historical Topographic Map Digitization Project;
- The Canadian County Atlas Digital Project;
- Smiths Falls Public Library;
- Heritage House Museum – Smiths Falls; and,
- Western University.

[2] Canada's Historic Places, "Standards and Guidelines for the Conservation of Historic Places in Canada", 2010, p. 3, and Ministry of Heritage, Sport, Tourism and Culture Industries, "Heritage Property Evaluation" Ontario Heritage Tool Kit, 2006, p. 18.

2.3 Enquiries

LHC contacted:

- Susan Millar – Planner, Ontario Waterways Rideau Canal Office Parks Canada for confirmation on Parks Canadas lands around the Bridge and information on any heritage value Parks Canada identifies relevant to the Bridge and surrounding area.
- Sherry – Local History, Smiths Falls Public Library / Digital Archives for local history information.
- An Archivist with the Heritage House Museum for local history information.
- Zack MacDonald – archivist, Western University for maps of the area around the Bridge.

Parks Canada confirmed that the Bridge is not a cultural heritage resource associated with the Rideau Canal, but it does contribute to the landscape setting of the Rideau Canal.

2.4 Site Visit

A site visit was conducted on 28 January 2022 by Heritage Planner Benjamin Holthof. The purpose of this site visit was to document the current conditions of the Bridge, its structure, and its surrounding context. Unless otherwise attributed all photographs in this CHER were taken during the site visit. A selection of photographs from the site visit that document the Bridge are included in section 5.0.

2.5 Evaluation

Under Provincial legislation and policy, the conservation of cultural heritage resources is a key Provincial interest (see Section 3.3 below for details). The environmental assessment process requires evaluation of this Bridge for CHVI.

O. Reg. 9/06 identifies the criteria for determining cultural heritage value or interest under Section 29 of the *OHA* and is used to create a Statement of Cultural Heritage Value or Interest (**SCHVI**). These criteria are used in determining if an individual property has CHVI. LHC has applied these criteria to the evaluation of the Bridge.

The regulation has three criteria, each with three sub-criteria:

1) The property has design value or physical value because it,
   i. is a rare, unique, representative or early example of a style, type, expression, material or construction method;
   ii. displays a high degree of craftsmanship or artistic merit, or
   iii. demonstrates a high degree of technical or scientific achievement.
2) The property has historical value or associative value because it,
   i. has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community;
   ii. yields, or has the potential to yield, information that contributes to an understanding of a community or culture, or
   iii. demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.

3) The property has contextual value because it,

   i. is important in defining, maintaining or supporting the character of an area;

   ii. is physically, functionally, visually or historically linked to its surroundings, or

   iii. Is a landmark.[3]

Properties –including bridges—that meet one of these criteria may be designated under Part IV Section 29 of the *OHA*.

Additional guidance for evaluation of bridges comes from the Ontario Ministry of Transportation (MTO). As the largest owner of bridges in the province the MTO has developed guidance on heritage evaluation and conservation of bridges through:

- The *Ontario Heritage Bridge Guidelines for Provincially Owned Bridges* (***OHBG***, 2008);
- The *Environmental Guide for Built Heritage and Cultural Heritage Landscapes* (2007); and,
- Section 3.7 of the *Environmental Reference for Highway Design, Cultural Heritage – Built Heritage and Cultural Heritage Landscapes* (2006).

The *OHBG* has an evaluation process that builds from *O. Reg. 9/06.* This CHER has referenced and uses guidance from MTO sources to inform research, documentation and evaluation of the Bridge. CHERs for municipally owned bridges may reference MTO guidance but must use *O. Reg. 9/06* when evaluating the bridge for CHVI.

This CHER uses guidance from the *Ontario Heritage Tool Kit* and MTO sources to inform our recommendations.

[3] *O. Reg. 9/06*: *Criteria for Determining Cultural Heritage Value or Interest* under *Ontario Heritage Act*, R.S.O. 1990, c. O.18

3.0 POLICY AND LEGISLATION CONTEXT

3.1 International Context

3.1.1 The Burra Charter (2013)

The *Burra Charter* was first adopted in 1979 and most recently updated in October 2013. Place is defined by the *Burra Charter* as "…a geographically defined area. It may include elements, objects, spaces and views. Place may have tangible and intangible dimensions".[4] The *Burra Charter* serves as a best practice guide for conservation of heritage places and includes several conservation principles. The following principles are relevant for the proposed project.

Article 2. Conservation and Management

2.1 Places of cultural significance should be conserved.

2.2 The aim of conservation is to retain the cultural significance of a place.

2.3 Conservation is an integral part of good management of places of cultural significance.

2.4 Places of cultural significance should be safeguarded and not put at risk or left in a vulnerable state.

Article 7. Use

7.1 Where the use of a place is of cultural significance it should be retained.

7.2 A place should have a compatible use.

Article 8. Setting

Conservation requires the retention of an appropriate setting. This includes retention of the visual and sensory setting, as well as the retention of spiritual and other cultural relationships that contribute to the cultural significance of the place.

New construction, demolition, intrusions or other changes which would adversely affect the setting or relationships are not appropriate.[5]

Article 26. Applying the Burra Charter Process

26.1 Work on a place should be preceded by studies to understand the place which should include analysis of physical, documentary, oral and other evidence, drawing on appropriate knowledge, skills and disciplines. The results of studies should be kept up to date, regularly reviewed and revised as necessary.

26.2 Written statements of cultural significance and policy for the place should be prepared, justified and accompanied by supporting evidence. The statements of significance and policy should be incorporated into a management plan for the place.[6]

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[4] Australia ICOMOS, "The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance," Australia, October 31, 2013, https://australia.icomos.org/wp-content/uploads/The-Burra-Charter-2013-Adopted-31.10.2013.pdf, 2.
[5] Australia ICOMOS, "The Burra Charter," 2013, 5.
[6] Australia ICOMOS, "The Burra Charter," 2013, 8.

Article 27. Managing change

27.1 The impact of proposed changes, including incremental changes, on the cultural significance of a place should be assessed with reference to the statement of significance and the policy for managing the place. It may be necessary to modify proposed changes to better retain cultural significance.

27.2 Existing fabric, use, associations and meanings should be adequately recorded before and after any changes are made to the place.[7]

When applied to the Study Area, the *Burra Charter*'s principles emphasize the need for a CHER and impact studies which consider the place as a whole rather than its component parts.

3.1.2 Rideau Canal World Heritage Site Management Plan (2005)

The *Rideau Canal World Heritage Site Management Plan* was prepared by Parks Canada in 2005 to reflect the Government of Canada's commitment to the conservation and protection of the Rideau Canal as a World Heritage Site.[8] The World Heritage Management Plan lists the world heritage values to be protected, the policy framework for management, how the management system will be implemented, and mechanisms for future monitoring.[9]

3.2 National Context

3.2.1 Rideau Canal National Historic Site of Canada Management Plan (2005)

The *Rideau Canal National Historic Site of Canada Management Plan* was prepared by Parks Canada in 2005 to manage the Canal in keeping with national legislation and policy. The purpose of the Plan is to ensure commemorative integrity, appropriate public use, the use of cultural resource management principles and practices, and to conserve the Canal.[10] Section 6 deals with Waterfront Land Use and Development one of the goals is to "encourage respect for the natural, cultural and scenic values of the Canal's waterfront lands."[11] Parks Canada relies on municipalities to have adequate policies in their Official Plans which protect the Canal's heritage character.[12] These policies should be consistent with:

> Parks Canada's primary interest in land uses *adjacent* to the Canal and Canal lands (the designated place) is the retention and enhancement of the natural, cultural and scenic values (heritage character) of the Canal waterfront lands. Therefore, the potential impact of the construction of in-water and shoreline works, buildings and associated boating activities on the cultural and natural environment of the Canal and public safety of Canal users is of primary concern.[13]

[7] Australia ICOMOS, "The Burra Charter," 2013, 8.
[8] Parks Canada, "Rideau Canal World Heritage Site Management Plan," prepared for the Government of Canada, 2005, 4.
[9] Parks Canada, "Rideau Canal World Heritage Site Management Plan," 2005, 4.
[10] Parks Canada, "Rideau Canal National Historic Site of Canada Management Plan," 2005, 1.
[11] Parks Canada, "Rideau Canal National Historic Site of Canada Management Plan," 2005, 29.
[12] Parks Canada, "Rideau Canal National Historic Site of Canada Management Plan," 2005, 28.
[13] Parks Canada, "Rideau Canal National Historic Site of Canada Management Plan," 2005, 28.

3.2.1.1 Commemorative Integrity Statement

The *Rideau Canal National Historic Site of Canada Management Plan* includes the Rideau Canal's Commemorative Integrity Statement which outlines the reasons for designation. The Commemorative Integrity Statement describes Level One and Level Two "cultural resources.[14]" Level One Resources: Symbolize or Represent the National Significance of the Site.[15]

Parks Canada divides Level One into the categories of Designated Place (e.g., the engineering achievement of the construction of the Canal), *In Situ* Resources (e.g., Smiths Falls), Moveable Resources (e.g., archival material), and Messages of National Significance (e.g., the construction of the Canal system).

In the case of the Rideau Canal, the designated place consists of the lands and waters under the jurisdiction of Parks Canada including the bed of the Rideau Canal to the high-water mark between the Ottawa River and the harbor in Kingston.[16]

Level Two resources for the Canal are "other associative and physical historic values that contribute to the site's heritage character and heritage experience."[17] Level Two resource are divided into the categories of *In Situ* Resources (e.g., Tay Canal), Moveable Resources (e.g., tools and hardware), the Natural Environment of the Rideau Canal Corridor (e.g., natural ecosystem inventory), and Heritage Messages Communicated to the Public (e.g., evolving use of the Canal from commercial to recreational waterway).

The Level One and Two resources are the basis for determining national historic significance and must be considered in terms of impacts. The Commemorative Integrity Statement in the Management Plan also identifies other historic values of the Canal systems and its environment that extend beyond the land administered by Parks Canada. These values include:

> *Significant* view sheds, visual linkages and associative values encompass a variety of urban, rural and natural areas *adjacent* to the Canal.[18]

The Rideau Canal's visual setting extending over the shoreline is a value that must be considered by any proposed project.

3.2.2 Rideau Corridor Landscape Strategy: Landscape Character Assessment & Planning and Management Recommendations (2012)

The Rideau Corridor Landscape Strategy (the Strategy) was created in 2010 under recommendation of the World Heritage Committee. Parks Canada funded the Strategy, and its development was led by a steering committee from Parks Canada, the National Capital Commission, the Province of Ontario, First Nations and the thirteen municipalities, three counties and two conservation authorities located along the Rideau Canal. The Strategy was developed to strengthen the visual protection outside of the buffer zone (30 m), in order to ensure the visual values of the setting are protected alongside the environmental values.

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[14] Parks Canada uses the term "cultural resources" instead of "cultural heritage resources". This CHER uses the Parks Canada vocabulary when relevant.
[15] Parks Canada, "Rideau Canal National Historic Site of Canada Management Plan," 2005, 69.
[16] Parks Canada, "Rideau Canal National Historic Site of Canada Management Plan," 2005, 69.
[17] Parks Canada, "Rideau Canal National Historic Site of Canada Management Plan," 2005, 76.
[18] Parks Canada, "Rideau Canal National Historic Site of Canada Management Plan," 2005, 69.

A landscape character assessment was completed as part of the Strategy. It was meant to identify and classify the elements which give the Rideau Canal a sense of place. This ensures that "…future development is respectful of the valued views and landscapes that make up the Corridor and consider ways to protect and even improve or enhance them".[19]

The Study Area falls within Geographic Sector 2: Hogs Back Locks to Newboro Lock and Subsector 2c: Burritts Rapids Lock to Smiths Falls. This sector's values, views and visual relationships are identified as:

- Upper and Lower Nicholsons Lockstations, excavated channel and replica king post swing bridge; Clowes Lockstation and stone arch dam
- meandering, wooded river and scenic river road between Burritts Rapids Merrickville with views to historic homes / farms;
- historic downtown Merrickville, Merrickvile Lockstation and Blockhouse, Blockhouse Park, the Depot and industrial ruins
- Rideau Bird Sanctuary and wetlands, interspersed with long views over agricultural landscapes between Merrickville and Smiths Falls
- Kilmarnock Lockstation, Edmonds Lockstation and stone arch dam, view to dam from river
- Old Slys Locks, Smiths Falls Combined Lock, Smiths Falls Detached Lock, Bascule railway bridge, Centennial Park and associated greenspace.[20]

The Bridge is near the Smiths Falls Combined Lock and the landscape strategy describes:

> Between Old Slys Lock and the Detached Lock through Smiths Falls, the landscape becomes increasingly more urban with views of industrial / commercial and modern development interspersed with those of the historic elements. These include the restored former mill complex that houses the Rideau Canal Visitor Information Centre and the Parks Canada Rideau Canal Headquarters Office. The riverfront includes extensive parkland on either side which connects the lockstations and other destinations. Victoria Park which offers docks and a campground operated by Smiths Falls is a prominent feature and popular recreational site along the Canal.
>
> The Smiths Falls Combined Lock (Lock 29A) was built in the 1970s to replace three of the original locks (Locks 28-30) which were constructed in 1830. At 7.9 metres the Combined Lock which is a hydraulic/electric concrete lock has the greatest single lift on the Rideau Canal system. The island between contains the frame defensible lockmaster's house which dates to 1841, with a later addition around 1900. [21]

The landscape near the Bridge is identified as Urban with high sensitivity to change.[22]

[19] Dillon Consulting Limited, "Rideau Corridor Landscape Strategy: Landscape Character Assessment & Planning and Management Recommendations," prepared for Parks Canada, 2012, 3.
[20] Dillon Consulting Limited, "Rideau Corridor Landscape Strategy," 2012, 16.
[21] Dillon Consulting Limited, "Rideau Corridor Landscape Strategy," 2012, 16.
[22] Dillon Consulting Limited, "Rideau Corridor Landscape Strategy," 2012, 25-26.

3.2.2.1 Rideau Canal Waterway – Principles for Good Waterfront Development along the Rideau Canal Waterway

Ten principles for good waterfront development were developed from the Strategy. These principles "provide guidance on how waterfront and shoreline development and redevelopment can respect, protect and enhance these values, through property owner's actions and municipal decision making."[23] Application of these principles is intended to support the long-term conservation of the Rideau Canals valued landscapes. The ten principles are:

1. Understand and respect the local landscape character.
2. Conserve historic buildings and cultural heritage features.
3. Conserve, protect and enhance wetlands.
4. Maintain and retain natural shoreline.
5. Located development back from the shoreline.
6. Work with the landscape, not against it.
7. Design buildings to complement the site.
8. Design residential docks and boathouses for low impact.
9. Protect water quality.
10. Prevent hazards and property damage.[24]

For this CHER principles 1, 2, 6, and 7 may be relevant to guide recommendations.

3.2.3 Canadian Heritage Rivers System

The Rideau Waterway, including the Cataraqui River, was designated in 2000 as a Canadian Heritage River. The cultural heritage value of the waterway is because it is the oldest continually functioning canal system in North America and as a testament to the ingenuity and perseverance of Lieutenant-Colonel John By and others involved in its construction. The forty-seven locks and many of the original buildings survive to this day.[25] Management of the waterway and details on its cultural heritage values as a Canadian Heritage River is achieved through Parks Canada's management plans.

3.2.4 Standards and Guidelines for the Conservation of Historic Places

Canada's Historic Places' *Standards and Guidelines for the Conservation of Historic Places in Canada* (**S&Gs**) is a national tool to be consulted in planning conservation of historic places. The S&Gs outline the conservation decision making process which includes a sequence of actions:

- Understanding the historic place;
- Planning for its conservation; and,
- Intervening.

This CHER is part of understanding the historic place.

[23] Parks Canada, Rideau Canal Waterway Principles for Good Waterfront Development along the Rideau Canal Waterway, 2021.
[24] Parks Canada, 2021.
[25] Canadian Heritage Rivers System, "Rideau Waterway" accessed 09 April 2021, https://chrs.ca/en/rivers/rideau-waterway

3.3 Provincial Context

In Ontario, cultural heritage is considered a matter of provincial interest and cultural heritage resources are managed under Provincial legislation, policy, regulations, and guidelines. Cultural heritage is established as a key provincial interest directly through the provisions of the *Environmental Assessment Act* (***EAA***)*, Planning Act,* the *Ontario Heritage Act (**OHA**)*, and the *Provincial Policy Statement* (***PPS***). Other provincial legislation deals with cultural heritage indirectly or in specific cases. These various acts and the policies under these acts indicate broad support for the protection of cultural heritage by the Province. They also provide a legal framework through which minimum standards for heritage evaluation are established. What follows is an analysis of the applicable legislation and policy regarding the identification and evaluation of cultural heritage.

3.3.1 Environmental Assessment Act

The *Environmental Assessment Act*, R.S.O. 1990, c. E.18 was consolidated on 2 December 2021. The *Act's* purpose is the "betterment of the people of the whole or any part of Ontario by providing for the protection, conservation and wise management in Ontario of the environment. It applies to public sector projects and specific types of private sector projects in the province. The Minister of the Ministry of Environment, Conservation and Parks (**MECP**) administers this Act.

Under the *EAA* the meaning of environment is broad and includes –among other things—the social, economic and cultural conditions that influence the life of humans or a community, and any building, structure, machine or other device or thing made by humans [Part I1(1, c and d)].[26] Cultural Heritage sites, including bridges, are included in 'cultural conditions' and "building, structure… or thing made by humans."

The *EAA* aims to provide for the protection, conservation and wise management of Ontario's Environment. It applies to all public activities including project undertake by municipalities, public utilities and conservation authorities.

3.3.2 *Ontario Heritage Act, R.S.O. 1990, c. O.18*

The *Ontario Heritage Act, R.S.O. 1990, c O.18* (***Ontario Heritage Act** or **OHA***) was last consolidated 1 July 2021 and enables the provincial government and municipalities powers to conserve, protect, and preserve the heritage of Ontario. The Act is administered by a member of the Executive Council (provincial government cabinet) assigned to it by the Lieutenant Governor in Council. At the time of writing the *Ontario Heritage Act* is administered by the Minister—Ministry—of Heritage, Sport, Tourism and Culture Industries (MHSTCI). [27]

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[26] *Environmental Assessment Act,* Part I S:1.
[27] Since 1975 the Ontario ministry responsible for culture and heritage has included several different portfolios and had several different names and may be referred to by any of these names or acronyms based on them:
• Ministry of Culture and Recreation (1975-1982),
• Ministry of Citizenship and Culture (1982-1987),
• Ministry of Culture and Communications (1987-1993),
• Ministry of Culture, Tourism and Recreation (1993-1995),
• Ministry of Citizenship, Culture and Recreation (1995-2001),
• Ministry of Tourism, Culture and Recreation (2001-2002),
• Ministry of Culture (2002-2010),

Part I (2) of the *OHA* enables the Minister to determine policies, priorities, and programs for the conservation, protection, and preservation of the heritage of Ontario. The *OHA* and associated regulations establish the protection of cultural heritage resources as a key consideration in the land-use planning process, set minimum standards for the evaluation of heritage resources in the province, and give municipalities power to identify and conserve individual properties, districts, or landscapes of cultural heritage value or interest.[28] *O. Reg. 9/06* and *Ontario Regulation 10/06* (***O. Reg. 10/06***) outline criteria for determining cultural heritage value or interest and criteria for determining cultural heritage value or interest of provincial significance.

Individual heritage properties are designated by municipalities under Section 29, Part IV of the *OHA.* A municipality may list a property on a municipal heritage register under Section 27, Part IV of the *OHA.* A municipality may designate heritage conservation districts under Section 41, Part V of the *OHA.* An *OHA* designation applies to real property rather than individual structures.

3.3.3 *Planning Act*, R.S.O. 1990

The *Planning Act*, R.S.O. 1990, c.P13, was consolidated on 14 April 2020. The Minister – Ministry—of Municipal Affairs and Housing (MMAH) administers this act. Its purpose is to:

(a) to promote sustainable economic development in a healthy natural environment within the policy and by the means provided under this Act;
(b) to provide for a land use planning system led by provincial policy;
(c) to integrate matters of provincial interest in provincial and municipal planning decisions;
(d) to provide for planning processes that are fair by making them open, accessible, timely and efficient;
(e) to encourage co-operation and co-ordination among various interests;
(f) to recognize the decision-making authority and accountability of municipal councils in planning (Section 1.1).

The Planning Act is the primary document for municipal and provincial land use planning in Ontario. This Act sets the context for provincial interest in heritage. It states under Part I (2, d):

> The Minister, the council of a municipality, a local board, a planning board and the Municipal Board, in carrying out their responsibilities under this Act, shall have regard to, among other matters, matters of provincial interest such as…the conservation of features of significant architectural, cultural, historical, archaeological or scientific interest.[29]

To meet the purposes of the *Planning Act,* it enables the Province to issue policy statements under the authority of Part 1 (3) –the *Provincial Policy Statement*—on matters relating to municipal planning that are of provincial interest including cultural heritage and archaeology.

3.3.4 *Provincial Policy Statement* (2020)

The *PPS* is issued under the authority of Section 3 of *The Planning Act* and provides further direction for municipalities regarding provincial requirements. Land use planning decisions made

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• Ministry of Tourism, Culture and Sport (2011-2019).
[28] Province of Ontario, "Ontario Heritage Act," 2021
[29] Province of Ontario. "The Planning Act, R.S.O. 1990, c. P.13," last modified December 8, 2020, https://www.ontario.ca/laws/statute/90p13.

by municipalities, planning boards, the Province, or a commission or agency of the government must be consistent with the *PPS*. The *PPS* makes the consideration of cultural heritage equal to all other considerations in relation to planning and development within the province. The *PPS* addresses cultural heritage in Sections 1.7.1d and 2.6.

Section 1.7 of the *PPS* on long-term economic prosperity encourages cultural heritage as a tool for economic prosperity by "encouraging a sense of place, by promoting well-designed built form and cultural planning, and by conserving features that help define character, including *built heritage resources* and *cultural heritage landscapes*" (Section 1.7.1e).

Section 2.6 of the *PPS* articulates provincial policy regarding cultural heritage and archaeology:

> 2.6.1 *Significant built heritage resources* and *significant cultural heritage landscapes* shall be *conserved*.
>
> 2.6.2 *Development* and *site alteration* shall not be permitted on lands containing archaeological resources or areas of *archaeological potential* unless *significant archaeological resources* have been *conserved*.
>
> 2.6.3 Planning authorities shall not permit development and *site alteration* on *adjacent lands* to *protected heritage property* except where the proposed *development* and *site alteration* has been evaluated and it has been demonstrated that the *heritage attributes* of the *protected heritage property* will be *conserved.*
>
> 2.6.4 Planning authorities should consider and promote archaeological management plans and cultural plans in conserving cultural heritage and archaeological resources.
>
> 2.6.5 Planning authorities shall engage with Indigenous communities and consider their interests when identifying, protecting and managing cultural heritage and archaeological resources.[30]

The *Provincial Policy Statement* recognizes that there are complex interrelationships among environmental, economic and social factors in land use planning. It is intended to be read in its entirely and relevant policies applied in each situation.

3.4 Local Planning Context

3.4.1 Town of Smiths Falls Official Plan

The Town of Smiths Falls *Official Plan 2034* was approved and is in effect as of 6 September 2016. The community and neighbourhood livability vision (Section 2.2.3) includes objectives for a high-quality built environment that include:

- Preservation and enhancement of cultural heritage resources.
- Distinctive and attractive community image, design, and identity.
- Conservation of the Rideau Canal National Historic Site and UNESCO World Heritage Site.

[30] Province of Ontario, "The Provincial Policy Statement 2020," last modified May 1, 2020, https://files.ontario.ca/mmah-provincial-policy-statement-2020-accessible-final-en-2020-02-14.pdf

Objectives of Section 2.2.5, Culture, Parks, and Recreation Vision include a diverse range of cultural and recreational opportunities that includes:

- To recognize the Rideau Canal National Historic Site and UNESCO World Heritage Site as the Town's major tourism and recreation asset by implementing the Smiths Falls Lower Reach Development Concept and by supporting Parks Canada's Rideau Canal National Historic Site Management Plan and Rideau Canal World Heritage Site Management Plan, and the Rideau Corridor Landscape Strategy.

Section 4.2.3 of the *OP* outlines the Town's policies for cultural heritage and archaeology. This section states:

> Smiths Falls' history provides a significant contribution to its sense of community identity.
>
> Its cultural heritage resources include, but are not restricted to, built heritage, cultural heritage landscapes, archaeological sites (land and marine), cemeteries and burials, buildings and structural remains of cultural heritage value or interest.
>
> Goal ER-3 - Cultural Heritage and Archaeology
>
> To identify, conserve, protect, restore, maintain, and enhance cultural heritage resources in order to promote a greater sense of historic awareness and community identity.

Cultural heritage policy relevant to the Confederation Bridge include:

> ER-3.11 Cultural Heritage is an important component of sustainable development and place making. The preservation of our cultural heritage is essential to the character of our Town that can contribute to other social, cultural, economic, environmental goals of the Town of Smiths Falls. As a result, heritage conservation is integrated throughout the Plan's policies.
>
> ER-3.14 Properties on the Heritage Register will be promoted through educational programs, museums, local celebrations, and other programming opportunities.
>
> ER-3.20 Council will prevent the demolition, destruction or inappropriate alteration of cultural heritage resources. Furthermore, Council will conserve significant cultural heritage resources when undertaking public works. In attaining its goal for establishing a barrier-free environment to town-owned property, the Town shall endeavour to provide access solutions in a manner that respects the cultural heritage value or interest of a protected property. Council recognises that standardised designs may not always suffice and that each heritage property will require unique accessibility plans to ensure that alterations do not adversely affect the heritage attributes.
>
> 4.2.7 Cultural Heritage Landscapes
>
> ER-3.29 Potential cultural heritage landscapes will be identified and evaluated to determine their significance and cultural heritage

values. Significant cultural heritage landscapes will be included on the Heritage Register and/or designated under either Part IV or Part V of the Ontario Heritage Act.

4.2.8 Heritage Views

ER-3.30 The view to a property on the Heritage Register, including cultural heritage landscapes and the Rideau Canal, will be conserved whereas:

- The view is identified as a cultural heritage value or attribute for a property on the Heritage Register; and/or,
- The property is identified as a landmark in the cultural heritage values or attributes of a property on the Heritage Register.

3.4.2 Town of Smiths Falls Strategic Plan 2019-2022

The vision statement of the Town's Strategic Plan includes a section on cultural heritage that says:

> Smiths Falls is a caring community that provides citizens with a superior quality of life through effective and innovative services. We will achieve this through the following:
>
> 6. Preserving and enhancing our heritage buildings and services;

Waterfront development and placemaking initiatives include developing "a phasing plan to complete Waterfront trail (as per Waterfront Integration Master Plan) and pedestrian bridges. Develop wayfinding signage to heritage and new features. Install identification makers of key locations along waterfront." Tourism initiative include development of "a heritage walking tour that highlights Smiths Falls' unique built and natural heritage and the people who live here."

3.4.3 Town of Smiths Falls Downtown Revitalization and Waterfront Integration Master Plan

Guiding principles of the *Downtown Revitalization and Waterfront Integration Master Plan* (2013) include:

- Heritage character preservation.
- Protection and enhancement of key heritage resources.
- Reconnecting with the UNESCO Waterfront Heritage.

3.5 Summary of the Policy and Legislative Context of the Bridge

The Bridge is next to and crosses a World Heritage Site, National Historic Site of Canada, significant cultural heritage landscape and is identified as a cultural heritage resource by the Town. The Bridge is not a level one or two resource of the Rideau Canal but is part of the urban setting and industrial landscape of Smiths Falls. It has been evaluated against the criteria of *O. Reg. 9/06* once before and meets the criteria for a significant cultural heritage resource under the PPS. Policies from municipal planning documents along with guidance from Parks Canada management documents, the S&Gs and the Burra Charter must guide planning decisions about the conservation of the Bridge.

4.0 HISTORIC CONTEXT

4.1 Indigenous Pre-Contact History

4.1.1 Natural History and Early Indigenous Land Use

Although identifiable human occupation of present-day Ontario began during the retreat of the Wisconsin Glacier, this retreat resulted in the formation of the Champlain Sea – an inland sea in the St. Lawrence and Ottawa River valleys. The Champlain Sea covered the entirety of the Study Area and its surroundings until about 10,000 years ago when the area's first inhabitants were able to move into the region.[31] The present Lake Ontario water levels were reached by about 5,000 B.P when the Upper Great Lakes began to drain through Lakes Erie and Ontario.

Southern Ontario became open to settlement following the final retreat of the Laurentide Ice Sheet, which had covered much of the Great Lakes area until 12,000 B.P. Influenced by isostatic rebound, a sequence of water level changes for the Great Lakes followed. Much of the Ottawa Valley and eastern Ontario was covered by the Champlain Sea, an extension of the Atlantic Ocean, between 11,800 and 10,000 B.P.

It should be noted that historical documentation related to the location and movement of Indigenous peoples in present-day Southern Ontario is based on the documentary record of the experiences and biases of early European explorers, traders and settlers. This record provides only a brief account of the long and varied occupation and use of the area by various Indigenous groups known, through oral histories and the archaeological record, to have been highly mobile over vast territories which transcend prevailing modern understandings of geographical boundaries.

Paleo Period (11,000 – 9,500 B.P.)

The earliest human occupation of southern Ontario dates to 11,000 B.P. These early populations consisted of small groups of hunter gatherers who ranged long distances, relying on caribou and other resources available in Spruce dominated forests. Identified as the Paleo period, the lithic assemblages are characterized by lanceolate shaped points with a channel or flute extending from the base. Three "phases" for the **Early Paleo period**, Gainey, Barnes and Crowfield, are distinguished by stylistic variations in the fluted points. While there is substantial evidence of early Paleo occupation in southwestern Ontario, indications of Early Paleo populations in Eastern Ontario are largely limited to reported finds from the Rideau Lakes[32] and along the north shore of Lake Ontario.[33]

Evidence suggests that populations in the later half of the Paleo period, though still covering large areas, were more restricted in their movements suggesting that food resources were more readily available. These hunters made smaller non-fluted points produced from a broader range of lithic

[31] Lyman John Chapman and Donald F. Putnam, *The Physiography of Southern Ontario (*Toronto: University of Toronto Press, 1984), 38-40.
[32] Gordon Watson, "Prehistoric Peoples of the Rideau Waterway*"* (Ontario Archaeology 1982), 5-26. Accessed January 18, 2021 https://ontarioarchaeology.org/Resources/Publications/oa50-1-watson.pdf
[33] Arthur Roberts, "Paleo-Indian on the North Shore of Lake Ontario" (Archaeology of Eastern North America No. 8 1984), 28-45.

materials. A number of late Paleo sites that have been identified along the north shore of Lake Ontario.[34]

Archaic Period (9,500-2,800 B.P.)

The Archaic period is initially distinguished by the appearance of notched projectile points and the use of ground stone utilized in the production of heavy "wood working" tools. At the outset of this period forests where Pine dominated approaching present day conditions of mixed deciduous forests by 5,000 B.P. Water levels in the lower Great Lakes continued to rise through the first half of the Archaic with present day levels reached sometime between 7,000 and 5,000 B.P. Throughout this period populations continued to hunt, gather, and fish.

Within the early Archaic period three "phases" have been recognized, again distinguished by projectile point types: side notched, corner notched and bifurcate. Serrated edges are unique to projectile points made during the Early Archaic. Although sites in the Ottawa region are rare, they have been identified along the north shore of Ontario further east[35]. Evidence suggests that the seasonal movement of extended family units were becoming increasingly regionalized, encompassing smaller territories as food resources became more abundant. Dovetail or St. Charles Points have been identified in the Ottawa and Bancroft areas.[36]

The middle Archaic, encompassing several millennia, has been divided into two sub periods, Middle Archaic I and II, and is represented in Eastern Ontario by the Laurentian Archaic, exhibiting cultural affinities with contemporaneous populations to the east, including New York State and Atlantic Canada. Associated with the Middle Archaic I are stemmed points such as Kirk and Stanley along with the introduction of net sinkers and banner stones, the former, offering evidence for the increasing importance of fishing. Middle Archaic II included the production of side and corner notched points (Otter Creek and Brewerton). Laurentian Archaic sites have produced artifacts manufactured from copper originating from the north shore of Lake Superior in addition to ground stone projectile points, gouges, adzes, and plummets.[37]

Three phases, Narrow Point, Broad Point and Small Point have been identified for the Late Archaic Period. By this time there is increasing evidence to suggest the further regionalization of populations in Southern Ontario. An example is the increased utilization of local lithic materials including quartz, and other silicates in the projection of projectile points as well as other tools in eastern Ontario, contrasting with the almost exclusive use of cherts such as Onondaga, Selkirk, and Kettle Point in southwestern Ontario.

[34]Arthur Roberts, Paleo-Indian, "Preceramic Occupations Along the North Shore of Lake Ontario" (National Museum of Man, Archaeological Survey of Canada, Mercury Series, Paper 132, 1985)
[35] Arthur Roberts, Paleo-Indian, "Preceramic Occupations Along the North Shore of Lake Ontario" (National Museum of Man, Archaeological Survey of Canada, Mercury Series, Paper 132, 1985
[36] William A. Fox and Jean-Luc Pilon, "St. Charles or Dovetail Points in Eastern Ontario. (In Arch Notes, N.S. Vol. 20(1) 2015): 5-9.
[37] Gordon Watson, "Prehistoric Peoples of the Rideau" 1985

Within the Middle and Late Archaic period is the first evidence of burials, sometimes including grave goods such as Allumette Island in the Ottawa River[38], as well as Late Archaic Glacial Kame burials identified at Collins Bay[39], Prince Edward County and to the east at Prescott.

Woodland Period (2,800 – 400 B.P.)

The Woodland period is demarcated by the appearance of ceramics. The first ceramics produced in southern Ontario consisted of thick walled, grit tempered vessels with exterior cord marked impressions, referred to as Vinette 1. Although few Early Woodland occupation sites have been excavated in Southern Ontario, the presence of ceramics on those that have been investigated has not been ubiquitous, suggesting that Early Woodland populations "eased" into the usage of this new technology which did not become fully integrated until the Middle Woodland period.[40]

Two complexes, Middlesex and Meadowood, are recognized as part of the Early Woodland period. The Meadowood is thought to have emerged from the Glacial Kame Burial complex of the Late Archaic. Associated artifacts included polished stone bird stones, gorgets, pipe bowels along with other materials. Sites dating to this period in the Ottawa Valley are rare. The use of "exotic" cherts to produce medium to large Ovate shaped blades known as Adena are also a feature of this complex. Medium sized, parallel projectile points with a distinctive side notched and principally manufactured from Onondaga chert are also characteristic of the Early Woodland.

By the Middle Woodland period, circa 2400 B.P., there is a recognizable increase in the population of Southern Ontario. Nowhere is this more evident than in eastern Ontario with many sites identified along interior larger lakes as well as along the St. Lawrence and Ottawa Rivers. Several recognized complexes or traditions in Ontario appear at this time indicating the further regionalization of groups within the province. These include Point Peninsula through much of southeastern and southcentral Ontario, Saugeen and Couture in southwestern Ontario and Laurel in Northern Ontario. The Melocheville Tradition, centered along the St. Lawrence has been distinguished by some archaeologists.[41]

Middle Woodland populations continued to hunt, gather and fish, with smaller extended family units congregating in the late summer and early fall at larger sites, of which there are a number of examples in Eastern Ontario, such as Bell Island in the Cataraqui River, Johnson's Point on Loughbourgh Lake north of Kingston, Marshalls Bay in the Ottawa Valley, Ault Park along the St. Lawrence near Cornwall and a number of locations on Rice Lake along the Trent/Severn River

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[38] Clermont, Norman, Claude Chapdelaine, and Jacques Cinq-Mars, "Île aux Allumettes L'Archaïque supérieur dans l'Outaouais" (Montreal: Recherches amerindienne au Quebec 2003**)**

[39] William A. Ritchie, "The Archaeology of New York State," (Harrison New York: Harbour Hills Books 1980): 134.

[40] Bud, Parker, "The Fitzgerald Site: A non-Meadowood Early Woodland site in Southwestern Ontario. (Canadian Journal of Archaeology, Vol21(2), 1997): 121-148

[41] Christian, Gates St-Pierre, "The Middle Woodland Ancestors of the St. Lawrence Iroquoians" In A Passion for the Past: Papers in Honour of James F. Pendergast. Ed. By James V. Wright and Jean-Luc Pilon. Mercury Series Arch. Paper 164 (Quebec: Canadian Museum of Civilization 2004): 395-417

system.[42][43][44] These populations continue to participate in extensive trade networks. They are distinguished archaeologically by grit tempered, coil manufactured, conical based ceramics with variety of dentate stamp impressions including pseudo scallop shell stamp decoration.

Circa 1400 B.P. cultigens are introduced into Southern Ontario. In southwestern Ontario there is a shift in settlement pattern, with the location of permanent and semi permanent sites in riverine locations (e.g., Grand River valley). There is less evidence for this shift in Eastern Ontario. Across much of the province there appears to be a universal ceramic horizon characterized by the production of fine tempered, globular shaped ceramic vessels with cord wrapped stick impressions along with punctates (circular depressions) and bosses (raised surfaces). Identified as Princess Point, based on the type of site excavated at the western end of Lake Ontario, this transitional period has been distinguished in eastern Ontario as Sandbanks. Ceramics associated with this period have been identified along the Rideau and Gananoque waterways as the Foster Site located north of Belleville along the Moira River.[45]

The Late Woodland period is defined in southern Ontario by the increased reliance on cultigens and the associated transition to permanent village sites. Three phases identified as Early, Middle and Late have been distinguished. In Eastern Ontario these are represented by Pickering, Middleport, and Huron/St. Lawrence Iroquoian occupations and, although not easily distinguishable in the archaeological record, by Algonquin and Ojibway occupations of much of the region throughout this period. These villages consisting of cabins and longhouses were often palisaded. Ceramic vessel forms included larger globular shaped pots often with collars and later with castellations. In eastern Ontario, a well-developed bone tool technology emerged with lithic project points becoming comparatively rare. The antecedents of the Huron/Wyandot developed along the north shore of Lake Ontario moving northward in villages that increased in size. Although there are early historic accounts of Algonquin villages in the Ottawa Valley, none have been thus far identified in the archaeological record. It is likely that regional populations still relied principally on hunting, gathering, and fishing with food and other resources augmented through trade with southern horticultural Iroquoian speaking populations.

4.2 Seventeenth- and Eighteenth-Century Historic Context (1600s and 1700s)

While there may have been the appearance of European goods originating from the Basque fishing activities in the sixteenth century off the coast of Labrador it was not until the beginning of the seventeenth century that permanent European settlements were established in northeastern North America resulting in rapid changes in Indigenous populations influenced by trade, warfare, and disease. The Huron/Wyandot who, by the mid-seventeenth century, had occupied areas around Lake Simcoe and along the south end of Georgian Bay, were dispersed by the Iroquois from south of Lake Ontario. The Attawandaron (Neutral), at the west end of Lake Ontario, were similarly displaced by 1650 and the St. Lawrence Iroquois encountered by Cartier at Hochelaga

[42] Cataraqui Archaeological Research Foundation, "Frontenac County Conservation License Report 1987 License 87-21" (Conservation report prepared by Hugh Daechsel 1988)
[43] Cataraqui Archaeological Research Foundation, "Frontenac County Conservation License Report 1988 License 88-19" (Conservation report prepared by Hugh Daechsel 1989)
[44] Abacus, "Stage 3 Archaeological Assessment of the Johnson's Point 1 Site, BcGc-13, North Shore Road, Part Lot 23, Concession 6, Geographic Township of Loughborough, Township of South Frontenac, Frontenac County, Ontario (Consultant's report (P246-0228-2015) 2016).
[45] Hugh, Daechsel, "Moira Archaeological Survey – 1984: Report for archaeological license 85-05.

(Montreal) had completely disappeared by the time of Champlain's arrival to the region at the beginning of the seventeenth century.

As the Haudenosaunee Confederacy moved across a large hunting territory in southern Ontario, they began to threaten communities further from Lake Ontario, specifically the Ojibway (Anishinaabe). The Anishinaabe had occasionally engaged in military conflict with the Haudenosaunee Confederacy over territories rich in resources and furs, as well as access to fur trade routes; but in the early 1690s, the Ojibway, Odawa and Patawatomi, allied as the Three Fires, initiated a series of offensive attacks on the Haudenosaunee Confederacy, eventually forcing them back to the south of Lake Ontario.[46]

European activity in southern Ontario during the seventeenth century was principally limited to fur trade. Fort Frontenac was located at the confluence of Lake Ontario and the St. Lawrence River in present day Kingston. By this time, the Iroquois had established seven villages along the north of Lake Ontario including Ganneious situated on Hay Bay, west of Kingston.[47] Early in the eighteenth century these were abandoned as the Ojibway successfully pushed south from Georgian Bay, occupying all of southern Ontario.[48]

Following the defeat of the French in the Seven Years War the British issued a Royal Proclamation in 1763 in effort to administer the territories, including Canada, which had been won. The Proclamation established the Appalachian Mountains as the boundary between the "Indian" and Colonial lands and in doing so recognized the rights of indigenous populations to their lands.[49] Furthermore, boundaries were refined as extending from the Gaspe to a line just west of the Ottawa River.[50] The Royal Proclamation was the basis upon which lands were ceded to the Crown for compensation through treaties and/or land acquisitions. In 1774 British Parliament passed the *Quebec Act* extending the boundaries into what is now Ontario south of the Arctic watershed and including land that would become much of Ontario and several midwestern states in the United States.[51]

In Eastern Ontario a succession of often vague agreements was made beginning with the Crawford purchases of 1783, the Gunshot Treaty (1783-87) and provisional surrender of land claims from the Mississauga that included much of Renfrew, Carleton, Lanark, Frontenac and Lennox and Addington counties in 1819.[52] Lieutenant Governor John Graves Simcoe signed in 1792, what has become known as the Simcoe Deed, with Mohawk families displaced by the American Revolution. Loyalists to the British who left the United States following the American Revolution (1775-1783) put pressure on the British administration in the remaining British North

[46] Mississaugas of the Credit First Nation, "History", 3-4.
[47] Nick, Adams, "Iroquois Settlement at Fort Frontenac in the Seventeenth and Early Eighteenth Centuries," (Ontario Archaeology 46 1986), 5-209
[48] Peter, S, Schmalz, *The Ojibwa of Southern Ontario,* (Toronto: University of Toronto Press, 1987).
[49] Colin, G, Calloway, *The Indian World of George Washington,* (Oxford: Oxford University of Press 2018).
[50] White, Randall. 1985. *Ontario 1610-1985 a political and economic history*. Dundurn Press Limited. Toronto ON. p.51
[51] Ibid, p.51 and Archives of Ontario, "The Changing Shape of Ontario, The Evolution of Ontario's Boundaries 1774-1912," 2015a, accessed February 15, 2022
http://www.archives.gov.on.ca/en/maps/ontario-boundaries.aspx
[52] Orland, French, *Heritage Atlas of Hastings County,* (County of Hastings, 2006).

American colonies to open land for more settlement. The Crown rushed to purchase land and signed Treaties with local Indigenous groups.

4.2.1 Treaty

The Study Area is within the 1783 Crawford Purchase lands. The Crawford Purchases involved land along the north shore of eastern Lake Ontario and the St. Lawrence River and were made between Captain William Crawford, on behalf of the Crown, and Mynass, a Mississauga (Ojibwe) chief, rather than with the Algonquin who were occupying the lower Ottawa River Valley at the time.

It should be noted that historical documentation related to the location and movement of Indigenous peoples in present-day Ontario is based on the documentary record of the experiences and biases of early European explorers, missionaries, traders and settlers. This record provides only a brief account of the long, varied, and continuing occupation and use of the Upper St. Lawrence Valley by Haudenosaunee and Anishinaabe people known, through their histories and the archaeological record, to have been highly mobile over vast territories which transcend modern understandings of geographical boundaries

The following text was provided by the AOO for a similar project. The authors are appreciative of the additional background information, reproduced in full below.

> The Algonquins lived in present-day Ontario for thousands of years before Europeans arrived. Algonquin territory originally extended from the St. Lawrence River to the French River in the west, south to the Adirondack mountains in New York State, and north above Lake Abitibi. Over the past several hundred years, the description of Algonquin Territory has changed to be the lands and waters on both sides of the Ottawa River watershed from modern Hawkesbury to Lake Nipissing and north past the headwaters of the Ottawa River. Today, ten Algonquin communities comprise the Algonquins of Ontario:
>
> - The Algonquins of Pikwakanagan First Nation
> - Antoine
> - Kijicho Manito Madaouskarini (Bancroft)
> - Bonnechere
> - Greater Golden Lake
> - Mattawa/North Bay
> - Ottawa
> - Shabot Obaadijiwan (Sharbot Lake)
> - Snimikobi (Ardoch)
> - Whitney and Area
>
> Based on a Protocol signed in 2004, these communities are working together to provide a unified approach to negotiate a modern-day Treaty. The Algonquins of Ontario Settlement Area includes a territory of nine million acres within the watersheds of the Kitchisippi (Ottawa River) and the Mattawa River in Ontario.
>
> This unceded territory, encompasses most of eastern Ontario, including the City of Ottawa, and most of Algonquin Provincial Park. More than 1.2 million people live and work within the unceded AOO Settlement Area. There are 84 municipal

jurisdictions fully and partially located within the unceded AOO Settlement Area, including 75 lower and single tier municipalities and nine upper tier municipalities.

On October 18, 2016, the AOO and the Governments of Ontario and Canada reached a major milestone in their journey toward reconciliation and renewed relationships with the signing of the Agreement-in-Principle (AIP). The signing of the AIP is a key step toward a Final Agreement, which will clarify the rights of all concerned. By signing the AIP, the APP and the Crown have expressed, in a formal way, their mutual intention and desire for a lasting partnership. This event signaled the beginning of a new relationship between the AOO and the Crown, one in which the mistakes of the past must be supplanted by a new type of mutual respect and cooperation

4.3 Survey and Early Euro-Canadian Settlement

In 1788 the administration of the colony divided what would become southern and eastern Ontario into four political districts: Lunenburg, Mecklenburg, Nassau, and Hesse.[53] The districts were renamed the Eastern, Midland, Home, and Western Districts, respectively in 1791 when the Province of Upper Canada was formed.[54] Smiths Falls is in part of what was the Mecklenburg District, followed by Midland District. In 1798, the former districts were further divided and Johnstown District was created by severing it from Midland District.[55] In 1822, Bathurst District was created by further severing Johnstown District; it included Carleton County, where Perth was the District seat.[56] In 1824, Lanark County was formed by severing Carleton County, however, it still remained in Bathurst District and was united with Renfrew County; such that one representative was sent to the Legislative Assembly to represent both counties.[57][58]

The Bridge is located in present-day Lanark County. Lanark County was quick to develop after its formation. In 1842, the Township encompassed 40,901 acres, of which, 10,430 acres were under cultivation and had a population of 2,129.[59] Smith remarked, the Township was “well watered by the Mississippi River, had some excellent land, and the timber was a mixture of pine and hardwood.[60] By 1846, the township was well settled with mostly Scottish immigrants and 7,600 acres of Crown land was still available for purchase.[61]

[53] Archives of Ontario, “The Changing Shape of Ontario, Early Districts and Counties 1788-1899,” 2015b, accessed 15 February 2022 http://www.archives.gov.on.ca/en/maps/ontario-districts.aspx
[54] Archives of Ontario, “The Changing Shape of Ontario, The Evolution of Ontario’s Boundaries 1774-1912” accessed 18 February 2022 http://www.archives.gov.on.ca/en/maps/ontario-boundaries.aspx
[55] Archives of Ontario, “The Changing Shape of Ontario, Early Districts and Counties,”
[56] Archives of Ontario, “The Changing Shape of Ontario, Early Districts and Counties,”
[57] William, Smith, *Smith’s Canadian Gazetteer; comprising Statistical and General Information Respecting all parts of the Upper Province, or Canada West* (Toronto: H. & W. Rowsell, 1846), 10
[58] William, Smith, *Smith’s Canadian Gazetteer;* 10
[59] William, Smith, *Smith’s Canadian Gazetteer;* 96
[60] William, Smith, *Smith’s Canadian Gazetteer,* 96
[61] William, Smith, *Smith’s Canadian Gazetteer,* 96

4.4 Smiths Falls

Following the American Revolutionary War, Lieutenant Thomas Smyth was granted 400 acres of land in 1786 of what would later be known as Smiths Falls.[62] According to land registry records, Smyth received Lot 1, Concession 5 and 6 of North Elmsley Township.[63] Records also show the land was only registered in Smyth's name on 21 September 1804[64] and 21 September 1824[65], respectively.

Smyth never lived in or visited the area known but had a sawmill built in 1823 and named the area Smyth's Falls.[66] Several sources indicate Smyth failed to pay his mortgage for the land in 1824 and it was sold to Charles Jones in 1825.[67] Land registry records indicate Charles Jones owned Lot 1, Concession 5 and 6 as early as 16 April 1811.[68] Jones did not retain the land for very long and eventually sold it to Abel Russell Ward who moved into the area in 1826.[69]

In 1836, the name St. Francis was proposed for the village, however, the name did not gain widespread use and many residents reverted to Smyth's Falls.[70] Years later, in 1882, the name Rideau City and Atironda were proposed; however, the names were rejected by the residents. In 1883, when the Town was incorporated, a clerical error named the Town Smith's Falls.[71] This error was fixed in 1968, when it was officially recognized as Smiths Falls, without the apostrophe.[72]

By 1846, Smiths Falls was described as a "flourishing village in the township of North Elmsley, pleasantly situated on the Rideau River."[73] In 1846, the village had a population of 700, four churches, and postal service three times a week.[74] In 1884, the Canadian Pacific Railway (**CPR**) built a station in Smiths Falls and connected the Town to Montreal and other markets.[75] In 1914, The Canadian Northern Railway built a station in Smiths Falls which operated until 1979.[76]

Smiths Falls economic boom was supported by several industries such as Frost and Wood Co., Coca-Cola, RCA Victor Ltd., Rideau Regional Centre, and Hershey's Canada.[77] However, in the 1960s, Smiths Falls development began to slow. The Hershey's Factory and Rideau Regional Centre closed down in 2008 and 2009, respectively. This represented 40% of the jobs in Smiths

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62 SmithsFalls.ca, "History," accessed 18 February 2022 https://www.smithsfalls.ca/experience/museums-history/
63 Land Registry Office 27 [LRO 27], Abstract/Parcel Register Book, Lanark (27), North Elmsley, Book 0, Concession 4 to 6, Instrument No. Deed
64 LRO 27, Instrument No. Deed
65 LRO 27, Instrument No. Deed
66 Ken, Watson, W., "Town of Smiths Falls," ; Sam, "Local History & Genealogy, Snapshot of Smiths Falls, Ontario," accessed 18 February 2022 https://torontopubliclibrary.typepad.com/local-history-genealogy/2020/10/snapshot-of-smiths-falls-on.html
67 Ken, Watson, W., "Town of Smiths Falls,"; SmithsFalls.ca, "History,"
68 LRO 27, Instrument No. Folio 8
69 Ken, Watson, W., "Town of Smiths Falls,"; SmithsFalls.ca, "History,"
70 Ken, Watson, W., "Watson's 2021 Guide to the Rideau Canal," 2021, 43
71 Ken, Watson, W., "Watson's 2021 Guide to the Rideau Canal," 2021, 43
72 Ken, Watson, W., "Watson's 2021 Guide to the Rideau Canal," 2021, 43
73 William, Smith, *Smith's Canadian Gazetteer,* 173
74 William, Smith, *Smith's Canadian Gazetteer,* 173
75 SmithsFalls.ca, "History,"
76 Ken, Watson, W., "Town of Smiths Falls,"
77 SmithsFalls.ca, "History,"

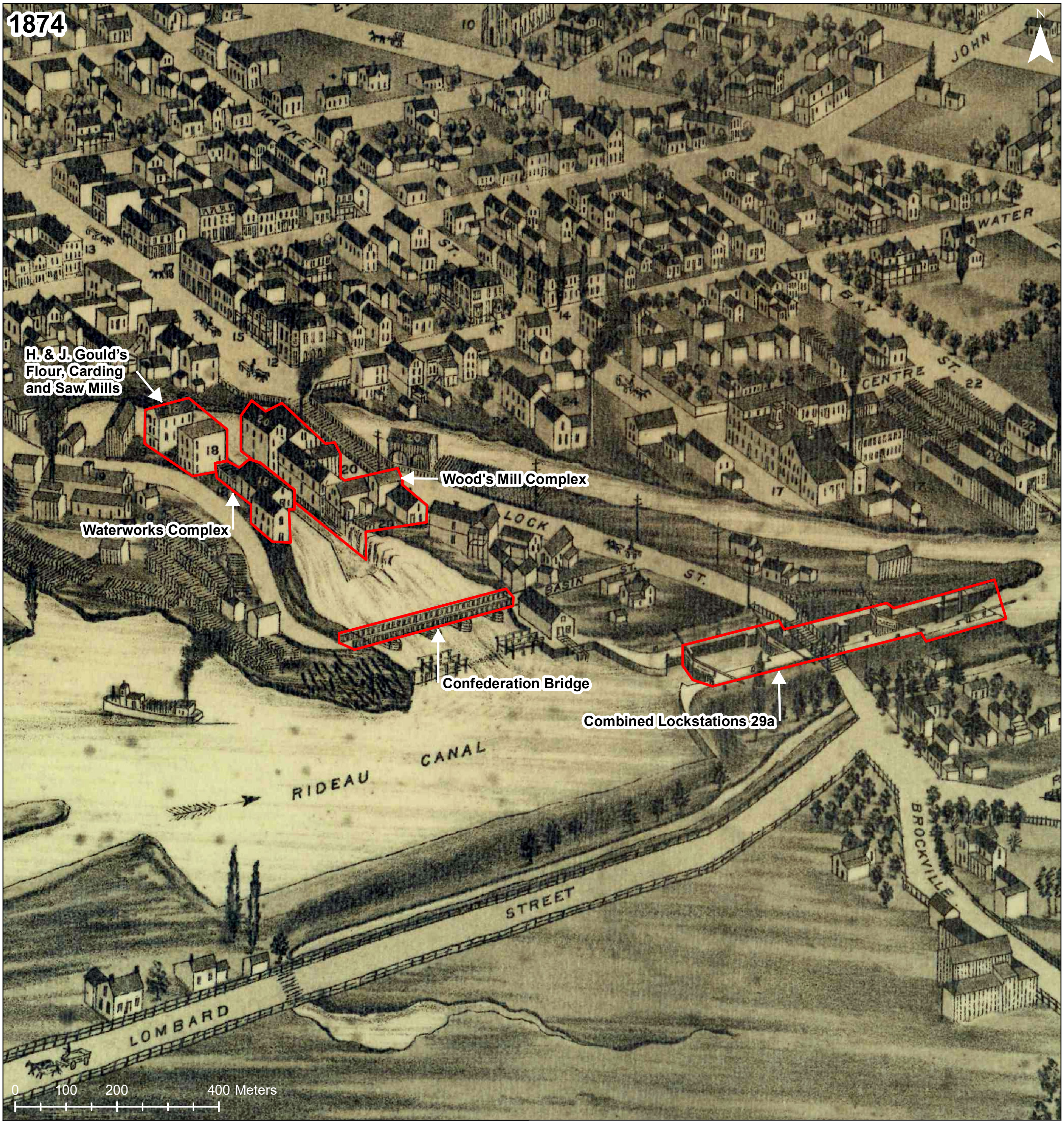
Falls.[78] Although two major industries left Smiths Falls, the population remained relatively unchanged in the years that followed. Smiths Falls population reached 8,978 by 2011 and fell a bit to 8,780 in 2016.[79]

4.4.1 Wood's Mill Complex

In anticipation for the construction of the Rideau Canal, A.R. Ward—one of the first permanent settlers in the area –replaced Smyth's mill around 1830.[80] Ward's mill can be seen in an 1835 watercolour painting of Smiths Falls (Figure 3). In 1832, the Rideau Canal was completed and the waterways in Smiths Falls were connected by the numerous locks.[81] Ward took advantage of the Canal and expanded the village and called it *Wardsville*.[82] Ward's expansion included the construction of a new grist mill in 1852, an oatmeal mill in 1868, and shingles mill.[83] A bird's eye view of Smiths Falls from 1874 identifies the mill complex as "J.B. & G.A. Ward's Flour, Carding, Saw and Shingle Mills" (Figure 4).

Figure 3: 1835 watercolour of Smiths Falls (John Burrows 1835)

[78] Sam, "Local History & Genealogy, Snapshot of Smiths Falls, Ontario,"
[79] Statistics Canada, "Census Profile, 2016 Census, Smiths Falls, Town," accessed 18 February 2022 https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CSD&Code1=3509004&Geo2=PR&Code2=35&SearchText=Smiths%20Falls&SearchType=Begins&SearchPR=01&B1=All&GeoLevel=PR&GeoCode=3509004&TABID=1&type=0
[80] Ken, Watson, W., "Smiths Falls Locks 28-31," accessed 24 February 2022 http://www.rideau-info.com/canal/history/locks/h28-31-smithsfalls.html
[81] Sam, "Local History & Genealogy, Snapshot of Smiths Falls, Ontario,"
[82] Ken, Watson, W., "Watson's 2021 Guide to the Rideau Canal," 2021, 43
[83] Ken, Watson, W., "Smiths Falls Locks 28-31"



Legend

Feature

TITLE
1874 Birds Eye View of the Property

CLIENT
McIntosh Perry Consulting Engineers Ltd.

PROJECT
Cultural Heritage Evaluation Report Confederation Drive Bridge Smiths Falls, ON

PROJECT NO. LHC0286

CONSULTANT

YYYY-MM-DD	2022-02-28
PREPARED	LHC
DESIGNED	JG
FIGURE #	4

NOTE(S) 1. All locations are approximate.

REFERENCE(S)
1. Lockwood, Glenn J., "Bird's Eye View of Smith's Falls, Province of Ontario, Canada", (https://vitacollections.ca/smithsfallsdigitalarchive/3722616/data?n=: accessed February 14, 2022), digitized map, Smith Falls Digital Archive, 1874

In 1880, the Alexander Wood purchased all of Ward's mills and in 1887 rebuilt the grist mill in stone.[84] Wood also added a carding mill, and granary.[85] Wood purchased his wheat from western Canada and processed them at his mills at Smiths Falls. In 1895 Wood died and the mill complex was leased to several individuals but was eventually purchased by Mary Chalmers Wood in 1907.[86] In 1919, the United Farmers of Ontario purchased the complex and operated a cooperative out of the mill until around 1923.[87] Under the direction of the Water Works Commission, the Town purchased the entire complex around this time.[88] The 1959 Fire Insurance Plan shows the mill complex had been repurposed as offices. The mill eventually came under the ownership of David James, who sold it to Parks Canada in 1981.[89] At that time, the mill was in poor condition, and $4 million was used to restore the old mill. The Rideau Canal Museum took up residence after the restoration in 1991 until 2012 when it was renamed the Rideau Canal Visitor Centre.

The Wood's Mill Complex was designated in 1979 under Section 29 Part IV of the *Ontario Heritage Act* under By-law 4493-79. The designation provides the following reasons:

> The property contains a three storey stone office building fronting onto Beckwith Street, a three storey stone mill building and a two storey office area adjoining the other two buildings.
>
> The Mill Building is reported to have been constructed before 1846 and the Office Building in the early 1870 era.
>
> Due to the prominent location in the centre of the Town and on the bend of the Rideau River adjacent to the Smiths Falls Rideau Canal Locks, its retention is important for preserving the character of the surrounding area.[90]

4.4.2 Waterworks Complex

Before a pumping station was operational on the western banks of the Rideau River, a sawmill, shop, and carding mill were established as early as 1863 (Figure 6). An 1874 bird's eye view of Smiths Falls, identifies the complex as "H.&J. Gould's Flour Carding and Saw Mills," (Figure 4). In 1886, Captain Adam Foster received a contract to build a water pipe system to supply water tanks at the CPR railyards.[91] Foster ran the water works until 1899 when the Town purchased the buildings and began to operate it themselves.[92] The Smiths Falls Waterworks Commission installed a 50 m water tower with a 200,000-gallon capacity in 1925.[93] In 1949, two additions were added to the waterworks building. A filtration plant was added to the south of the former

[84] Ken, Watson, W., "Smiths Falls Locks 28-31"
[85] Heritage Smiths Falls, "Designated Properties: Wood Mill Complex," 2022, accessed 24 February 2022 http://heritagesmithsfalls.ca/properties.html
[86] Heritage Smiths Falls, "Designated Properties: Wood Mill Complex,"
[87] Heritage Smiths Falls, "Designated Properties: Wood Mill Complex,"
[88] Ken, Watson, W., "Smiths Falls Locks 28-31,"
[89] Ken, Watson, W., "Smiths Falls Locks 28-31,"
[90] Corporation of the Town of Smiths Falls, "By-law Number 4493-79," (Corporation of the Town of Smiths Falls, 1979), 4
[91] Heritage Smiths Falls, "Designated Properties: Waterworks Building,"
[92] Heritage Smiths Falls, "Designated Properties: Waterworks Building,"
[93] Peter, DeLottinville, *A History of the Smiths Falls Lock Stations, 1827-1978,* (Canada: Environment Canada, 1979), 314

mill; it can be seen in a 1959 FIP. A one-storey concrete structure was added to the north of the former stone mill to support the new waterworks station.[94]

The Waterworks Building Complex was designated in 1977 under Section 29 Part IV of the *Ontario Heritage Act* under By-law 4350-77. The designation provides the following reasons:

> The tree storey brick building adjoining the offices was the original pumping station build for the purpose by Captain Adam Foster as a private business in the late 1800's. The three storey stone office building was originally a flour mill and bears the date 1854. The first filter plant was build in 1924 in a brick building south of the original Foster building. A further extension was carried out in 1952.[95]

4.5 Bridge History

The current bridge was built in 1904 by the Locomotive and Machine Company of Montreal.[96]

The Confederation Bridge is located in Lot 1, Concession 4 of Lanark Township, in the Town of Smiths Falls, Ontario. Lot 1, Concession 4 was granted to Thomas Smith by way of deed on 17 October 1810.[97] In 1869, Lot 1, Concession 4 was amalgamated and reorganized into the Town Smiths Falls.[98] Historic maps from as early as 1863 indicate the Bridge was public property after 1863 and has remained in public right of way for most of its history.

During the construction of the Rideau Canal in 1832, a bridge was constructed to connect Jason Island to the mainland by the mill operator.[99] There are no firsthand accounts, drawings, or maps of this bridge and no remnants are extant.[100]

The first documented bridge was built as early as c.1827.[101] A map of the area from 25 October 1827 produced by John By from the Royal Engineering Corp, titled *Locks and Dam at Smith's Falls. Rideau River* shows a bridge that is marked as "24 feet high" (Figure 5).[102] The 1827 map does not exactly line up with contemporary landmarks and it is unknown if the "24 feet high" bridge is the precursor to the Bridge. However, the strong relationship to current landmarks, such as lock stations 27,28, and 29, the sawmill, and sawmill dam, suggests this 1827 bridge was close to the location of the contemporary Bridge. A watercolour by John Burrows from c.1835 of the Smiths Falls locks shows the 1827 bridge (Figure 3). The watercolour also depicts lock stations 27, 28, 29, and 31, several structures on Jason Island include the mills, and the former road/bridge that would make up present day Beckwith Street.

In 1849, the Royal Engineering Corp sought to connect the island with roads and bridges that were more substantive and built a sturdier bridge overtop the 1927 iteration.[103] An 1863 historic

[94] Peter, DeLottinville, *A History of the Smiths Falls Lock Stations*, 314
[95] Corporation of the Town of Smiths Falls, "By-law No. 4350-77," (Corporation of the Town of Smiths Falls, 1977), 2
[96] Robert, Passfield, W., *Historic Bridges on the Rideau Waterways System, A Preliminary Report,* (Canada: Friends of the Rideau, 1976), 22
[97] LRO 27, Instrument No. Deed
[98] LRO 27, Instrument No. 30-83
[99] Robert, Passfield, W., *Historic Bridges on the Rideau Waterways System,* 22
[100] Robert, Passfield, W., *Historic Bridges on the Rideau Waterways System,* 22
[101] Smiths Falls Archives, "Locks and Dam at Smith's Falls Rideau River Sect. No. 10, John By Lt. Colonel Roy'l. Engrs., Com'g. Rideau Canal, 25th October 1827," accessed 18 February 2022 https://vitacollections.ca/smithsfallsdigitalarchive/3703856/data?n=13
[102] Smiths Falls Archives, "Locks and Dam at Smith's Falls Rideau River,"
[103] Robert, Passfield, W., *Historic Bridges on the Rideau Waterways System,* 22

map of Smiths Falls depicts the bridge over the current Confederation Bridge footprint (Figure 6). The map does not indicate the type of material or its dimensions but when overlaid onto contemporary satellite imagery suggests it was the 1849 bridge.

Correspondence provided by The Department of Indian Affairs and Northern Development[104] to various individuals indicate the bridge was rebuilt in 1870. [105][106] The 1874 bird's eye view of Smiths Falls (Figure 4) illustrates a multi span bridge on four support columns, and a simple railing with vertical posts; however, it was not uncommon for bird's eye views to take some artistic licence. It is unknown what materials were used at the time of this bridge. A plan of Smiths Falls from 1886 depicts the bridge; however, it does not provide significant information its materials or architectural design (Figure 7). The bridge was once again renewed in 1889.[107]

The bridge would be completely replaced in 1904, when the Confederation Bridge was built by the Locomotive and Machine Company of Montreal.[108] The Bridge was designed as a fixed five panel rivet-connected Warren pony truss with a total length of 159 feet (48.4 m), 16 feet (4.8 m) interior trusses, and 5 feet (1.5 m) wide cantilevered walkway.[109] The Bridge sat on a masonry pier and two concrete abutments with a 12-inch (30.4 cm) wooden joist frame connected with a 3-inch (7.6 cm) plank road deck.[110]

The 1904 bridge, as described by Passfield is:

> Approximately 50 feet below the waste weir dam and provides a through driveway connecting Beckwith Street on the east, via Confederation Drive across Jason Island and the high stone dam, with city streets to the north of the stone dam. The bridge is a low level, fixed steel structure consisting of two Warren truss spans. Overall, it is 159 feet long and 16 feet wide, inside of the trusses, and has a five foot wide sidewalk cantilevered on the outside of the upstream truss. The deck of the bridge consists of three inch planks spiked to 12 inch wooden joists, or stingers; and it has a carrying capacity of five tons. The substructure comprises a masonry pier and two concrete abutments.[111]

Historic topographic maps from 1928 and 1935 depict the Bridge, but no indication of its building material is provided. Several structures located to the east and west, and the combined lock station to the east of Beckwith Street are also included on these maps (Figure 8).

The Bridge remained in the possession of the Department of Transportation until 1968, when the Town of Smiths Falls assumed all responsibilities.[112] A that time the Bridge had a

[104] In 2019 the DIAND was replaced by two separate departments, the Department of Indigenous Services and Department of Crown-Indigenous Relations and Northern Affairs Canada.
[105] As due diligence, the correspondence from DIAND are provided in the References
[106] Robert, Passfield, W., *Historic Bridges on the Rideau Waterways System,* 22
[107] Robert, Passfield, W., *Historic Bridges on the Rideau Waterways System,* 22
[108] Robert, Passfield, W., *Historic Bridges on the Rideau Waterways System,* 23
[109] Smiths Falls, "Confederation Bridge," memo from Smiths Falls Planning and Sustainable Growth to the Municipal Heritage Committee, 13 July 2015
[110] Smiths Falls, "Confederation Bridge," memo from Smiths Falls Planning and Sustainable Growth to the Municipal Heritage Committee, 13 July 2015
[111] Robert, Passfield, W., *Historic Bridges on the Rideau Waterways System,* 22
[112] Robert, Passfield, W., *Historic Bridges on the Rideau Waterways System,* 23

comprehensive rehabilitation.[113] In the 1970s the road boards were replaced on the Bridge.[114] In 1986 the Bridge was rehabilitated which included:

- Replacement of the timber stringer deck with a prestressed laminated creosoted timber deck.
- Replacement of all the steel floor beams.
- Replacement of select bottom chord structural steel, particularly all the chord members on the south truss.
- Reconstruction of the pedestrian walkway with salvaged timber from the deck.
- Reconstruction of the truss verticals on the upstream side.
- Some masonry work was included at the abutments and pier as part of the work
- PUC lighting cable and a Parks Canada power duct located under the bridge sidewalk deck.[115]

Drawings from the 1986 rehabilitation are included as Appendix B. This work also included replacing deteriorated rivets with 20 mm diameter high-strength steel bolts.[116]

As per governmental regulation, the Bridge's structural components were reviewed as part of a biennial inspection. The most recent inspection was conducted in 2015 by the Greer Galloway Group. The inspection determined major structural concerns and was closed to all pedestrian and vehicular traffic at the time.[117] The final alteration to the Bridge happened in 2015, when the timber deck was removed as a safety precaution.

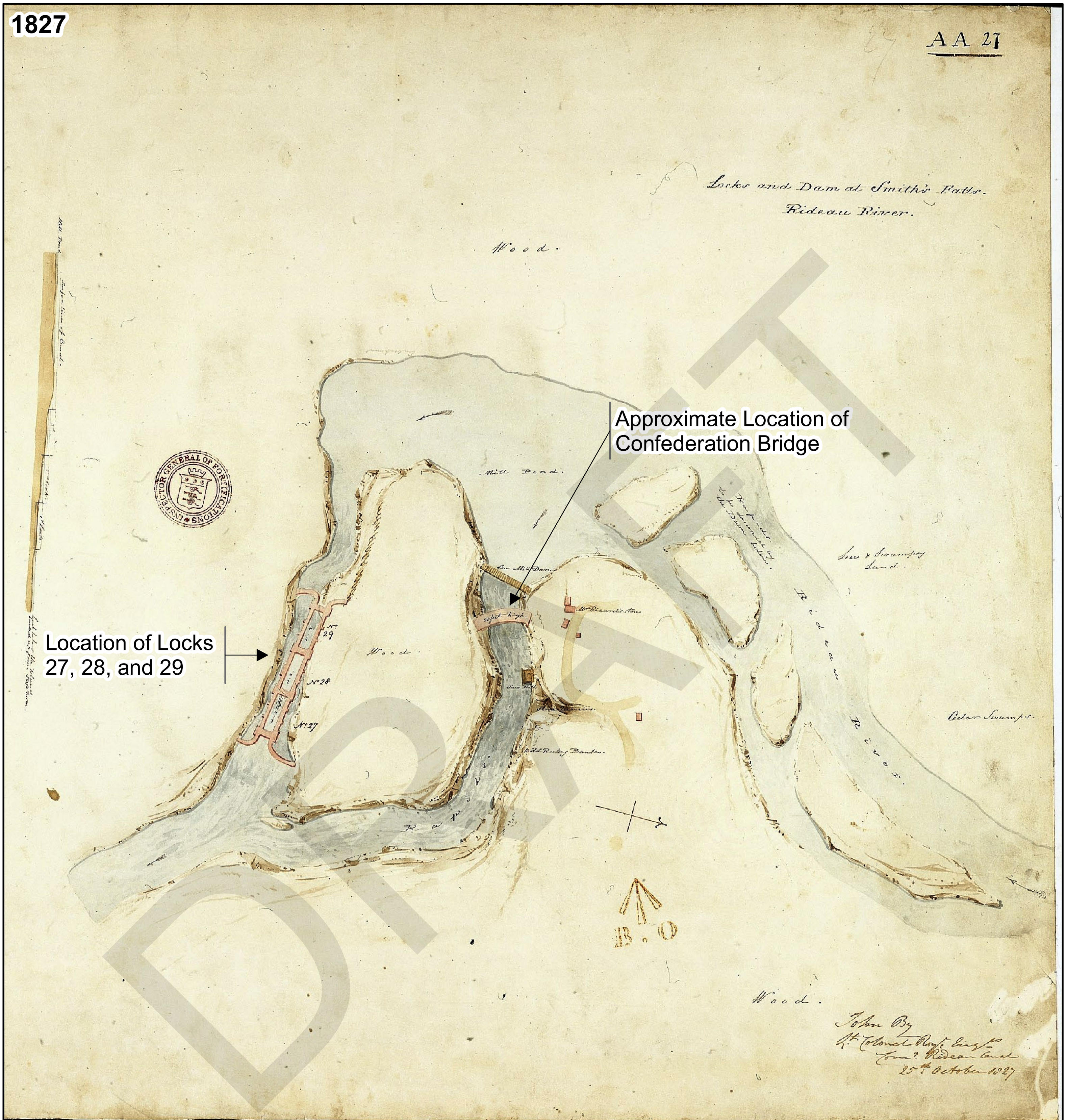
[113] Wyllie & Ufnal Consulting Engineering, "Town of Smiths Falls Contract for the Rehabilitation of Confederation Drive Bridge: Stage I Steelwork. (Wyllie & Ufnal Consulting Engineering, 1986); Wyllie & Ufnal Consulting Engineering, "Town of Smiths Falls Contract for the Rehabilitation of Confederation Drive Bridge: Stage II Laminated Prestressed Timber Deck. (Wyllie & Ufnal Consulting Engineering, 1986).

[114] Smiths Falls, "Confederation Bridge," memo from Smiths Falls Planning and Sustainable Growth to the Municipal Heritage Committee, 13 July 2015.

[115] Keystone Bridge Management Corp, "Confederation Drive Bridge Assessment & Options Report," (Town of Smiths Falls: Keystone Bridge Management Corp: Town of Smiths Falls, 2020), 2

[116] Keystone Bridge Management Corp, "Confederation Drive Bridge Assessment & Options Report,"

[117] Keystone Bridge Management Corp, "Confederation Drive Bridge Assessment & Options Report,"



Legend

Bridge

TITLE
1827 Hictoric Map Showing the Approximate Location of the Bridge

CLIENT
McIntosh Perry Consulting Engineers Ltd.

PROJECT
Cultural Heritage Evaluation Report Confederation Drive Bridge Smiths Falls, ON

PROJECT NO. LHC0286

NOTE(S)
1. All locations are approximate.
2. All label locations are approximate.
3. Locations of labels and study area approximate due to inaccuracies in the original 1827 map.

REFERENCE(S)
1. By, J., Lt. Colonel, Great Britain Army Corps of Royal Engineers, "Locks and Dam at Smith Falls Rideau River Sect. No. 10", (https://recherche-collection-search.bac-lac.gc.ca/eng/home/record?app=fonandcol&IdNumber=4134324: accessed February 14, 2022), digitized map, Library and Archives Canada, 1827

CONSULTANT
LHC

YYYY-MM-DD	2022-02-23
PREPARED	LHC
DESIGNED	JG
FIGURE #	5

Legend

Bridge

TITLE
The Bridge Location Overlaid on an 1863 Map

CLIENT
McIntosh Perry Consulting Engineers Ltd.

PROJECT
Cultural Heritage Evaluation Report Confederation Drive Bridge Smiths Falls, ON

PROJECT NO. LHC0286

CONSULTANT
LHC

YYYY-MM-DD	2022-02-23
PREPARED	LHC
DESIGNED	JG
FIGURE #	6

NOTE(S) 1. All locations are approximate.

REFERENCE(S)
2. Gray, O.W., "Map of the Counties of Lanark and Renfrew, Canada West", (https://www.arcgis.com/apps/webappviewer/index.html?id=8cc6be34f6b54992b27da17467492d2f: accessed February 16, 2022), digitized map, scale 1:7,920, Prescott: D.P. Putnam, 1863.

Legend

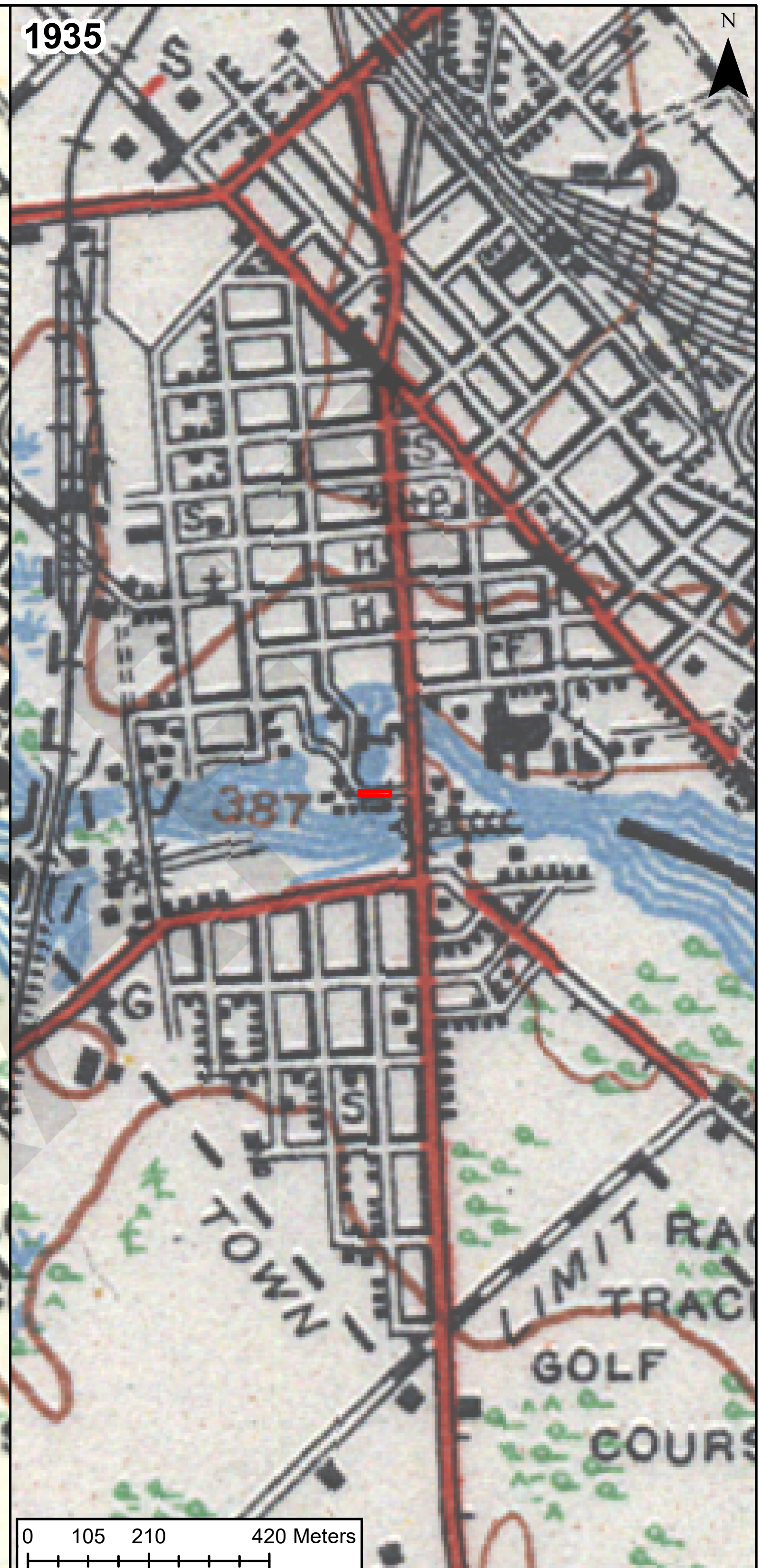
Bridge

NOTE(S) 1. All locations are approximate.

REFERENCE(S)

1. Cromwell, J.M.O., "Plan of the town of Smith's Falls in the County oif Lanark, Ontario", digitized map, Smith's Falls Public Library, 1886.(https://vitacollections.ca/smithsfallsdigitalarchive/3701225/data?n=3: accessed February 14, 2022),

TITLE	**The Bridge Location Overlaid on an 1886 Map**
CLIENT	McIntosh Perry Consulting Engineers Ltd.
PROJECT	PROJECT NO. LHC0286
	Cultural Heritage Evaluation Report Confederation Drive Bridge Smiths Falls, ON
CONSULTANT	LHC
YYYY-MM-DD	2022-02-24
PREPARED	LHC
DESIGNED	JG
FIGURE #	7



Legend

Bridge

NOTE(S) 1. All locations are approximate.

REFERENCE(S)

1. Department of National Defence, Geographical Section, General Staff, " Ontario, Perth Sheet", (http://geo2.scholarsportal.info/#r/details/_uri@=564032357&_add:true: accessed February 17, 2022), digitized map, sheet no. 101, scale 1:63,360, 1928.
2. Department of National Defence, Geographical Section, General Staff, "Ontario, Perth Sheet", (http://geo2.scholarsportal.info/#r/details/_uri@=564032357&_add:true: accessed February 17, 2022), digitized map, sheet no. 31 c/16, scale 1:63,360, 1928 rev. 1935.

TITLE
The Bridge on 1928 and 1935 Maps

CLIENT
McIntosh Perry Consulting Engineers Ltd.

PROJECT | PROJECT NO. LHC0286
Cultural Heritage Evaluation Report Confederation Drive Bridge Smiths Falls, ON

CONSULTANT: LHC

YYYY-MM-DD	2022-02-23
PREPARED	LHC
DESIGNED	JG
FIGURE #	8

4.6 Locomotive and Machine Company of Montreal

The Locomotive and Machine Company of Montreal (**LMCM**) was established in 1883.[118] The company was mostly contracted by larger firms such as the Canadian Pacific Railway (**CPR**), Grand Trunk Railway (**GTR**), and Canadian National Railway (**CN**) to construct steam and diesel trains.[119] Many American companies wished to enter the Canadian market; however, high tariffs imposed on them made it nearly impossible.[120] Several American companies purchased Canadian companies to circumvent these tariffs.[121]

In 1904, the LMCM was purchased by the American Locomotive Company (**ALCO**) and the renamed the Montreal Locomotive Works Limited (**MLW**).[122] The newly founded company expanded its offering to include bridges; such as the Confederation Bridge.[123] MLW repurposed their factories and built tanks for the Canadian war effort during the First and Second World Wars. (Figure 9 and Figure 10). In the 1920s, MLW became increasingly profitable and produced many of CN's locomotives.[124] The use of diesel became increasingly common after the Second World War and technological advances made diesel locomotives more efficient and profitable.[125]

New competition from the newly formed General Motors Diesel Ltd. slowed MLW's growth; however, it had already begun producing diesel engine trains and was able to continue supplying the Canadian market.[126] In the 1960s, ALCO was purchased by Worthington Corporation and MLW became known as MLW-Worthington.[127] In 1968, ALCO stopped producing locomotives and provided MLW with all its designs. In 1975, Bombardier purchased a majority share in MLW-Worthington and introduced the Hight Reliability (HR) series of trains.[128] The HR series was only purchased by CN and did not result in profits for Bombardier. In 1985, Bombardier stopped production on freight and refocused their interests in passenger and commuter rail.[129] The change resulted in Bombardier selling the MLW plant to General Electric in 1988. General Electric continued to use the plant until 1993 when it abandoned it and in 2004, the old MLW complex was demolished.[130]

One of MLW's legacy was the construction of the M-1 class cars, of which only 36 were constructed.[131] These new passenger trains were several tons lighter and more efficient than the Gloucester trains.[132] The Toronto Transit Commission (**TTC**) purchased the M-1 series to operate

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[118] Smiths Falls, "Confederation Bridge," memo from Smiths Falls Planning and Sustainable Growth to the Municipal Heritage Committee, 13 July 2015
[119] Smiths Falls, "Confederation Bridge,"
[120] Adam, Burns, "Montreal Locomotive Works," 3 February 2022, accessed 22 February 2022 https://www.american-rails.com/mlw.html
[121] Adam, Burns, "Montreal Locomotive Works,"
[122] Smiths Falls, "Confederation Bridge,"
[123] Smiths Falls, "Confederation Bridge,"
[124] Adam, Burns, "Montreal Locomotive Works,"
[125] Adam, Burns, "Montreal Locomotive Works,"
[126] Adam, Burns, "Montreal Locomotive Works,"
[127] Brain, Clogg, Kevin Holland, and Al Lill, "American Locomotive Co./ Montreal Locomotive Works: Histories of ALCO/MLW Locomotives," Canadian National Railways Historical Association, 2021.
[128] Brain, Clogg, Kevin Holland, and Al Lill, "American Locomotive Co./ Montreal Locomotive Works
[129] Adam, Burns, "Montreal Locomotive Works,"
[130] Adam, Burns, "Montreal Locomotive Works,"
[131] Aaron, Adel, James Bow, and Robert Lubinski, "The Montreal Series (M-1) Cars (1963-1999)," 2015, accessed 23 February 2022, https://transittoronto.ca/subway/5502.shtml
[132] Aaron, Adel, James Bow, and Robert Lubinski, "The Montreal Series (M-1) Cars

the newly constructed University line and it became known as the first subway car to be designed and built in Canada.[133] The M-1 series cars were delivered on 5 February 1962 and on 30 September 1962 the began operating the University subway line.[134] In 1999, the M-1 series was retired and the last two remaining pair (5300-5301) are on display at the Halton County Radial Railway museum (Figure 11).[135]

Figure 9: Montreal Locomotive Works factory in Montreal, Quebec (Library and Archives Canada 1918)

133 Aaron, Adel, James Bow, and Robert Lubinski, "The Montreal Series (M-1) Cars
134 Aaron, Adel, James Bow, and Robert Lubinski, "The Montreal Series (M-1) Cars
135 Halton County Radial Railway, "Toronto Transit Commission 5300-5301," accessed 23 February 2022 https://hcry.org/portfolio-items/toronto-transit-commission-5300-5301/

Figure 10: Montreal Locomotive Works factory in Montreal, Quebec (Library and Archives Canada 1942)

Figure 11: M-1 series car 5300-5301 last surviving pair on display at the Halton County Radial Museum (Halton County Radial Railway 2000).

4.7 Steel Truss Bridges in Ontario and Warren Truss Bridges

The earliest bridges in North America were built of wood and stone but over time technological improvements and economic factors led to the use of iron and steel, then later concrete, for bridge construction.[136] The earliest bridges were often constructed by local builders but over time, toward the end of the 19th century, bridge design had become the responsibility of civil engineers and specialized bridge building companies, as it does today.[137]

Engineering developments in bridge design and materials was often linked to developments in the railway industry. Railway bridge technology was later transferred to road bridges. Wood was the dominant material for bridge building in the early part of the 19th century. By the 1850s wrought iron was more common and was used through the 1870s.[138] In the 1880s steel began to replace wrought iron as the material of choice for bridges.[139] After the 1930s concrete bridges largely replaced steel bridge designs on roads in many places although steel and timber continued to be used.

Truss frame bridges were developed because they used materials efficiently and were able to distribute large loads through their network of beams arranged in triangle patterns. Trusses were originally developed for wood. With advances in iron and steel material technology these new materials were found to be very suitable for truss bridge design.[140]

Truss bridges were often selected from a catalogue. A community or railroad company requiring a bridge chose a basic design and a bridge company would design the specific bridge, fabricate the pieces, and ship the pieces to the location for assembly.[141]

Many early truss bridges were pin connected. Truss bridges were prefabricated and connected together on site at panel points using pins that passed through punched holes, pin plates or eyes.[142] The pin connections tended were advantageous because they were easy and quick to assemble but were prone to loosening from vibration of heavy loads.[143] The first hydraulic riveting machine was invented in 1865 by Ralph Hart Tweddell.[144] The hydraulic rivet machine was large and their use in the field was limited until a smaller and portable pneumatic machine was developed in the 1880s and 1890s.[145] In 1898, Joseph Boyer invented a pneumatic riveting hammer that could be used by a single person, thus facilitating the rivet based bridges.[146] Riveted truss bridges connected the members (chords, verticals, diagonals, end posts etc.) to gusset

[136] Cuming, David, “Discovering Heritage Bridges on Ontario’s Roads, 1984, p.18
[137] Cuming, 1984, p. 24
[138] Cuming, 1984, p. 38
[139] Cuming, 1984, p. 41
[140] Holth 2006
[141] Parsons Brikerhoff and Engineering and Industrial Heritage. A Context for Common Historic Bridge Types. (National Cooperative Highway Research Program, Transportation Research Council, National Research Council), 2005, 2-18
[142] TranSystems, “PennDOT Truss Maintenance Manual,” (Pennsylvania Department of Transportation Environmental Policy and Development Section, 2015), 1
[143] Parsons Brinkerhoff and Engineering and Industrial Heritage, 2-16
[144] Parsons Brinkerhoff and Engineering and Industrial Heritage, 2-16
[145] Parsons Brinkerhoff and Engineering and Industrial Heritage, 2-16
[146] Parsons Brinkerhoff and Engineering and Industrial Heritage, 2-16 to 2-17

plates at the panel points and depending on the type of members arranged determine the type of bridge like the Warren and Pratt bridge.[147]

In the 1870s in Ontario, the tied-arch or bowstring truss was one of the early preferred designs for metal bridges but by the 1880s pin-connected truss bridges were common.[148] The Pratt Truss, developed in 1844 by Thomas Willis Pratt, became a common pin-connected design in Ontario from the late 1870s to the 1920s.[149] The Warren Truss was developed in Europe and appeared in North America by the 1890s. It was a popular style into the 1930s, partly due to technological advances that made field riveting technology practical for construction.[150] This design was based on patents for truss designs that were granted to Alfred H. Neville in France and William Nash in England in 1838. James Warren and Willoughby Monzani patented a design in England in 1848.[151] The Warren Truss design used primarily diagonal members in a combination of equilateral triangles to act in compression and tension.[152] The basic Warren Truss was often altered by adding extra vertical or diagonal members to provide bracing for the triangular web system.[153]

The Warren truss was popular because of its relatively cheap cost and low maintenance.[154] By the 1920s, the Warren truss bridge overtook the popular Pratt bridge as the preferred design due to its economic use of materials.[155]

4.7.1 Deck, Pony, Through Truss Bridge

There are three main types of truss bridges. A deck truss, pony truss, and through truss bridge. A deck truss bridge is one with trusses below the deck and most of the load is supported at deck level or the top chord. Deck trusses can carry relatively heavy loads and have long spans.[156] A pony truss bridge carries the travel surface between the trusses that.[157] The trusses are not connected above the deck and as a result cannot carrying heavy loads.[158] A through truss bridge is made up of large trusses with a travel surface carried between them. stringers and beams are connected to the bottom of the trusses and the superstructure is connected overhead by lateral bracing. Through trusses can carry heavier loads and can generally have longer spans than pony trusses.[159]

[147] TranSystems, "PennDOT Truss Maintenance Manual," 1-2
[148] Holth 2006
[149] Parsons Brinkerhoff and Engineering and Industrial Heritage, 3-25 and Holth 2006
[150] Parsons Brinkerhoff and Engineering and Industrial Heritage, 3-39
[151] Griggs 2015
[152] Parsons Brinkerhoff and Engineering and Industrial Heritage, 3-39
[153] Historic American Engineering Recording. "Trusses a Study"
[154] Hamilton Bridge Works Company. "Advertisement booklet" (Hamilton: Hamilton Bridge Works Company), 1909, 12
[155] Parsons Brinkerhoff and Engineering and Industrial Heritage, 2-27.
[156] Parsons Brinkerhoff and Engineering and Industrial Heritage, 3-4
[157] Parsons Brinkerhoff and Engineering and Industrial Heritage, 3-4
[158] Parsons Brinkerhoff and Engineering and Industrial Heritage, 3-4
[159] Parsons Brinkerhoff and Engineering and Industrial Heritage, 3-4

5.0 EXISTING CONDITIONS

5.1 Surrounding Context

The Rideau River is the primary natural feature that characterizes the surrounding area. The Rideau Canal, a UNESCO World Heritage Site and National Historic Site of Canada, traverses the Bridge. The area around the Confederation Bridge can be characterized as urban. The Rideau River at Smiths Falls flows in an east-west direction except for a portion that flows north then southeast around Jason Island (Figure 2).[160] The Rideau River is a tributary to the Ottawa River, which in turn is a chief tributary of the St. Lawrence River.[161]

The Bridge is in the Limestone Plains physiographic region.[162] The Limestone Plains is the largest continuous tract of shallow soil over limestone in Southern Ontario and covers approximately 3,625 km^2.[163] The surrounding topography is gently rolling and slopes towards the Rideau River. The riverbanks around the Bridge are sparsely covered in mature trees (Figure 12).

The Bridge is in the center of Smiths Fall and connects Memorial Park and Centennial Park (Figure 13). To the south of the Bridge is the Rideau River and the combined Lockstation 29a (Figure 14). Downstream at 34 Beckwith Street South is the Rideau Canal Visitor Center, which was a stone mill during the 19th century (Figure 15).[164] West of the Visitor Center is a series of brick and stone structures which are the former Smiths Falls Waterworks buildings (Figure 16).[165]

The Rideau River flows through a concrete weir 10 m south of the Bridge (Figure 17). A pedestrian bridge/wharf along edge of the Rideau Canal is located approximately 30 m south of the Bridge (Figure 18).

[160] Province of Ontario, “Ontario Flow Assessment Tool,” accessed 23 February 2022 https://www.lioapplications.lrc.gov.on.ca/OFAT/index.html?viewer=OFAT.OFAT&locale=en-ca
[161] Maxwell, W., Finkelstein, “Rideau River,” 23 January 2014, accessed 23 February 2022 https://www.thecanadianencyclopedia.ca/en/article/rideau-river
[162] Chap Putnam 197
[163] 197
[164] Parks Canada, “Rideau Canal National Historic Site,” 2021, accessed 23 February 2022 https://www.pc.gc.ca/en/lhn-nhs/on/rideau/activ/accueil_info
[165] Heritage Smiths Falls, “Protected Properties: Designated Properties,” 2022, accessed 24 February 2022 http://heritagesmithsfalls.ca/properties.html

Figure 12: View northwest across the Bridge with trees along the riverbank and the Smiths Falls water tower

Figure 13: View west of Memorial Park

Figure 14: View east at Lock 29a

Figure 15: View north of National Historic Site, Rideau Canal Visitor Center

Figure 16: View west of former waterworks buildings on western banks of Rideau River

Figure 17: View west at the weir and Bridge

Figure 18: View east to Lock 29a across the pedestrian bridge/wharf south of the Bridge

5.2 The Bridge

The Bridge is a single-lane two-span Warren Pony Truss bridge (Figure 19 and Figure 20). The Bridge spans have a nominal length of 23.8 m each and consists of a centre-to-centre truss spacing of 5.33 m.[166]

The Bridge is supported on limestone masonry abutments at each end and a central limestone masonry pier (Figure 21 and Figure 22). The abutments and pier are made of large rectangular blocks with a natural surface finish. The riverbanks on either side of the abutments are supported by rough coursed limestone retaining walls (Figure 21). The upstream end of the pier is rounded and the downstream end is square (Figure 19 and Figure 22). The pier includes a concrete cap.

The deck of the Bridge has been removed exposing the steel I beam stringers and angle steel lateral cross braces (Figure 23). Each Bridge truss consist of five panels constructed of angle steel beams (Figure 24). The top chord includes a steel plate riveted to the angle steel (Figure 25). Vertical members include riveted diagonal braces (Figure 26). Diagonal members are riveted to the top and bottom chords with large gusset plates (Figure 27).

The Bridge includes a pedestrian walkway cantilevered on the north side of the north truss (Figure 28). Triangular beams made of steel plates with angle steel riveted to it are riveted to the north side of the truss and support wood stringers and deck boards (Figure 29)

[166] Keystone Bridge Management Corp, "Confederation Drive Bridge Assessment & Options Report," (Town of Smiths Falls: Keystone Bridge Management Corp: Town of Smiths Falls, 2020), 2

Figure 19: View north of Confederation Bridge

Figure 20: View south of Confederation Bridge

Figure 21: View of the east abutment of the Bridge

Figure 22: View southeast at the Bridge pier

Figure 23: View southeast across the Bridge

Figure 24: View southeast at the east half of the Bridge

Figure 25: Detail of the top chord construction

Figure 26: Detail of vertical and diagonal member construction

Figure 27: Detail of a gusset plate

Figure 28: View northwest at the cantilevered pedestrian walkway on the Bridge

Figure 29: Detail view of the cantilevered pedestrian walkway supports

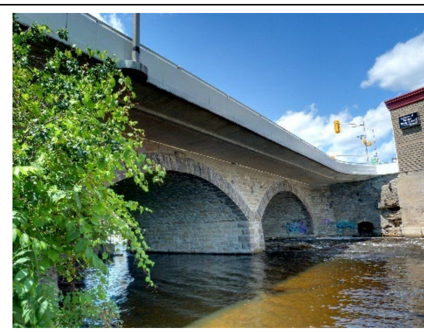
5.3 Analysis

The Bridge is a two-span Warren Pony Truss Bridge with vertical members. Two-span pony truss bridges are relatively rare. Review of the HistoricBridges.org database, an inventory of many historic bridges across North America compiled by historic bridge enthusiasts includes approximately 135 examples of rivet-connected Warren Pony Truss bridges in Ontario.[167] Only seven of these are two-span bridges and the Bridge is the oldest of those. The HistoricBridges.org database does not include any other two-span Warren Pony Truss bridges in Eastern Ontario. There are only a few single-span Warren Pony Truss Bridges in Eastern Ontario, one each in the Counties around Smiths Falls. The Ontario Ministry of Transportation does not own any Warren Pony Truss bridges.[168]

Table 1 summarizes nearby bridges in Smiths Falls that do not share similarities to the Confederation Bridge.

[167] HistoricBridges.org, Bridge Seek, accessed 20 May 2021. https://historicbridges.org/b_a_results.php?bridgeseek=seek, Note: the HistoricBridges.org database is not a comprehensive record of bridges across North America, it is compiled and managed by volunteer enthusiasts from 2003 to the present. Some bridges that have been documented may no longer exists and many bridges are not on the list.
[168] Ministry of Transportation Ontario. Bridge Conditions dataset. last updated 9 June 2021. Accessed at: https://data.ontario.ca/en/dataset/bridge-conditions

Table 1: Nearby bridges in Smiths Falls and Lanark County

Bridge and Location	Comment	Image
Smiths Falls Railway bridge – west of Abbott Street, east of Jordan Pommerville Island	Fixed (rolling lift) through girder bridge, metal	 (Historicbridges.org 2013)
Smiths Falls Bascule bridge – west of Abbott Street, northwest of Lockstation 31	Movable (single leaf bascule, rolling lift) through girder bridge, metal Designated National Historic Site in 1983.[169]	
Abbott Street Bridge – on Abbott Street, northeast of Lockstation 31	Movable (swing, center bearing bobtail) through girder bridge, metal	 (Historicbridges.org 2013)
Beckwith Street bridge – on Beckwith Street, north of Rideau Canal Visitor Centre	Fixed stone segmental deck arch bridge	 (Historicbridges.org 2013)

[169] Parks Canada, "Smiths Falls Bascule Bridge National Historic Site of Canada," accessed 25 February 2022 https://www.pc.gc.ca/apps/dfhd/page_nhs_eng.aspx?id=516

Bridge and Location	Comment	
Old Slys Road bridge – on Old Slys Road, west of Lockstation 26 and 27	Moveable (swing, center bearing bobtail) through girder bridge	 (Historicbridges.org 2013)
Clyde Forks bridge – on Clyde Forks Road, approximately 70 km northwest of Smiths Falls	Fixed Warren pony truss, rivet connected, metal[170] This bridge shares similar attributes to the Confederation Bridge such as its rivet connection and Warren pony truss; however, it is a fixed single span bridge with an asphalt deck.	 (Historicbridges.org 2013)
Beckwith Street bridge – on Beckwith Street, west of Drummond Street and north of Harvey Street in the Town of Perth	This bridge is unique in that it has both a fixed and moveable portion. Moveable double-intersection Warren pony truss (swing, center bearing bobtail) Fixed (approach span) rivet connected double-intersection Warren pony truss.	 (Historicbridges.org 2013)

[170] Historicbridges.org, "Clyde Forks Bridge," 2018, accessed 25 February 2022 https://historicbridges.org/bridges/browser/?bridgebrowser=ontario/clydeforks/

6.0 EVALUATION FOR CULTURAL HERITAGE VALUE OR INTEREST

Table 2 is LHCs evaluation of the Bridge against the Criteria for Determining Cultural Heritage Value or Interest (CHVI) from *O. Reg. 9/06*.

Table 2: Evaluation against *O. Reg. 9/06*

Criteria for Determining CHVI	Assessment (Yes/No)	Rationale
1. Design or Physical Value:		
i. is a rare, unique, representative or early example of a style, type, expression, material, or construction method,	Yes	The Bridge is a rare, representative and early example of a two-span rivet connected Warren Pony Truss bridge. As demonstrated in Section 5.3 this is a rare Bridge. Riveting technology used to build bridges in place was still relatively new technology at the turn of the twentieth century which means this Bridge is also an early example of a construction method in Ontario.
ii. displays a high degree of craftsmanship or artistic merit, or	No	The Bridge does not display a high degree of craftsmanship or artistic merit. The Warren Pony Truss was a common bridge type. Design and the construction of the Bridge appears to be consistent with an average level of craftsmanship.
iii. demonstrates a high degree of technical or scientific achievement.	No	The Bridge does not demonstrate a high degree of technical or scientific achievement. There had been bridges at the same location for decades through the nineteenth century and construction of this bridge would not have required overcoming technical or scientific challenges. Furthermore, while the riveting technology to construct a bridge on site was relatively new, it was widely adopted and represented a minor evolution of well-known technology. No evidence was found to suggest the use of this technology on this Bridge was historically significant.
2. Historical or Associative Value:		
i. has direct associations with a theme, event, belief, person, activity, organization or institution that is	No	The Bridge does not have direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community. No evidence was found demonstrating a direct and

Criteria for Determining CHVI	Assessment (Yes/No)	Rationale
significant to a community,		significant connection between this Bridge and a theme, event, belief, person, activity, organization or institution that is significant to a community
ii. yields, or has the potential to yield, information that contributes to an understanding of a community or culture, or	No	The Bridge does not yield or have the potential to yield significant information that contributes to an understanding of a community or culture. It is a well-known type of bridge and its history is well known (see Section 4.6).
iii. demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.	No	The Bridge does not reflect the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.
3. Contextual Value:		
i. is important in defining, maintaining or supporting the character of an area,	Yes	The Bridge is important in maintaining and supporting the character of an area. The Bridge is part of a larger industrial landscape that consists of Lock 29a and the weir upstream, the mill buildings –the Rideau Canal Visitor's Centre— the municipal waterworks building downstream and the water tower in Confederation Park. It supports the recreational character of the area by connecting the two municipal parks and the Parks Canada lands next to the Lock Station.
ii. is physical, functionally, visually or historically linked to its surroundings, or	Yes	The Bridge is historically linked to previous bridges at or near this location since at least 1827 (See Figure 5 through Figure 8). The Bridge is visually linked to its surroundings. The industrial character of the Bridge is visually connected to the industrial character of the nearby weir, water tower and former industrial buildings on the River. It did provide a functional link across the Rideau River but this functional link is broken since the Bridge has been closed and the deck removed. The nearby pedestrian bridge and wharf next to the lock station serves as the current functional link across the River.
iii. is a landmark.	No	The Bridge is not a landmark.

Criteria for Determining CHVI	Assessment (Yes/No)	Rationale
		While the Bridge is a recognizable feature in the landscape and it is understood that the 2015 evaluation of the Bridge identified it as one –with the caveat that this was an arguable position—in LHCs professional opinion the Bridge is not a landmark. No evidence was found that this Bridge was used for wayfinding or orienting people in the landscape and more prominent buildings and structures such as Lock 29a, the Smiths Falls water tower, the Rideau Canal Visitors Centre building and the adjacent cenotaph in Memorial Park nearby are more recognizable as landmarks.

6.1 Summary of Evaluation

LHC finds that the Bridge meets three of the criteria from *O. Reg. 9/06* and is eligible for designation under Part IV Section 29 of the *OHA*. In LHC's professional opinion the Bridge meets criteria 1i, 3i and 3ii. It has physical value and design value as an early, rare and representative two-span Warren Pony Truss bridge. It has contextual value because it supports and maintains the historic industrial character of the area and has historical and visual links to its surroundings. The Bridge is a cultural heritage resource. Section 6.3 (below) is a Statement of Cultural Heritage Value or Interest for the Bridge along with a list of its heritage attributes. Based on international, federal, provincial and municipal guidance planning the future of the Bridge should focus on conservation.

6.2 Heritage Integrity

In a heritage conservation and evaluation context, the concept of integrity is associated with the ability of a property to represent or support the cultural heritage value or interest of the property or to covey its heritage significance.[171] It is understood as the 'wholeness' or 'honesty' of a place[172] or if the heritage attributes continue to represent or support the cultural heritage value or interest of the property.[173] Heritage integrity can be understood through how much of the resource is 'whole', 'complete' changed or unchanged from its original or 'valued subsequent configuration'.[174] Changes or evolution to a place that have become part of its cultural heritage value become part of the heritage integrity, however if the cultural heritage value of a place is

[171] Heritage Property Evaluation: A Guide to Listing, Researching, and Evaluating Cultural Heritage Property in Ontario Communities, prepared by the Ministry of Culture, (Ottawa: Queen's Printer for Ontario, 2006). p. 26. And National Park Service, "How to Evaluate the Integrity of a Property", Chapter VIII in National Register Bulletin, How to Apply the National Register Criteria for Evaluation, U.S. Department of the Interior, National Park Service, Cultural Resources, 1997, p. 44.
[172] English Heritage, "Conservation Principles: Policies and Guidance for the Sustainable Management of the Historic Environment". 2008, p. 45.
[173] MHSTCI, p. 26.
[174] English Heritage, p. 45. And, Kalman, Harold and Marcus R. Létourneau, 2021. Heritage Planning: Principles and Process. 2nd Ed, Routledge, New York: 314.

linked to another structure or environment that is gone the heritage integrity is diminished.[175] Heritage integrity is not necessarily related to physical condition or structural stability.

The MHSTCI *Ontario Heritage Tool Kit* discusses integrity and physical condition in relation to evaluation. However, heritage integrity and physical condition are not part of the evaluation criteria. They are part of understanding a property and its potential cultural heritage resources. There are few tools describing a methodology to assess historic integrity. One of the tools come from the U.S. National Park Service (NPS), which has informed Ontario practice, and considers heritage integrity a necessary condition of listing on the National Register. The NPS states that "Heritage properties either retain integrity or they do not".[176] They identify seven aspects of integrity, degrees and combinations of which can be used to determine if a site has heritage integrity. The seven aspects include: Location; Design; Setting; Materials; Workmanship; Feeling; and Association.[177]

Understanding a place's significance or CHVI helps to identify which aspects of integrity support its heritage value. Furthermore, the heritage integrity of the heritage attributes supports the CHVI of a property. This is an iterative process to evaluate significance and plan appropriate management of a cultural heritage resource.

Using this guidance, it is understood that the Bridge retains its heritage integrity. The rivet-connected trusses are intact and convey a sense of design, setting feeling and association. Furthermore, the Bridge is in its original location on stone abutments. The historic design of the Bridge is evident. Many of the materials are original, however the Bridge has had significant repairs and may steel members have been replaced. Many rivets have been replaced with bolts. In general, the Bridge demonstrates historic integrity and conveys a sense of its history. However, replacement of parts and the use of bolts during repairs have affected its heritage integrity.

6.3 Statement of Cultural Heritage Value or Interest

6.3.1 Description of Property

The Confederation Drive Bridge is in Lot 1 Concession 4 of the former Geographic Township of Elmsley, now in the Town of Smiths Falls, ON. It carries Confederation Drive across the Rideau River and connects Confederation Park with Memorial Park adjacent to the Rideau Canal Lock 29a lockstation.

6.3.2 Summary of Cultural Heritage Value or Interest

This Bridge has cultural heritage value or interest for its physical value and design value as an early, rare and representative two-span Warren Pony Truss bridge; and contextual value because it supports and maintains the historic industrial character of the area and has historical and visual links to its surroundings.

The Bridge was built when steel truss bridges were common, however they are becoming rare. Typical of its type, the Bridge includes a deck supported by trusses on either side. This Bridge is unusual because it is a two-span Warren Pony Truss bridge when most bridges of this type are

[175] MHSTCI 2006a: 26.
[176] NPS 1997: 44.
[177] NPS 1997: 44.

single-span structures. The Bridge is an early example of a rivet-connected Warren Pony Truss bridge in the area.

The Bridge is important in maintaining and supporting the character of an area. It is part of a larger industrial landscape that consists of Lock 29a and the weir upstream, the mill buildings –the Rideau Canal Visitor's Centre— the municipal waterworks building downstream and the water tower in Confederation Park. It supports the recreational character of the area by connecting the two municipal parks and the Parks Canada lands next to the Lock Station.

The Bridge is historically linked to previous bridges at or near this location since at least 1827. It is visually linked to its industrial surroundings including the nearby weir, water tower and former industrial buildings on the River.

6.3.3 Heritage Attributes

The key heritage attributes of the Bridge are:

- The limestone abutments and pier made of large blocks with a natural finish;
- Two spans;
- The steel five panel Warren Trusses on each span; and,
- Rivet connections.

7.0 CONCLUSION AND RECOMMENDATIONS

LHC was retained in December 2021, by McIntosh Perry Consulting Engineers Inc., on behalf of the Town of Smiths Falls, to prepare a CHER for the Confederation Drive Bridge in the Town of Smiths Falls, ON. The Bridge carries Confederation Drive across the Rideau River and connects Centennial Park to the Smiths Falls Combined Lockstation –Lock 29a—and Veterans' Memorial Park.

This CHER is in support of a Municipal Class Environmental Assessment for rehabilitation or replacement of the Bridge.

In 2015 Town Planners completed a preliminary evaluation of the Bridge using Ontario Regulation 9/06 (O. Reg. 9/06) under the OHA. Municipal Council passed resolution 2015-08-162 on August 4, 2015 to add the Confederation Bridge to the Municipal Heritage Register under Part IV Section 27 of the OHA. The Bridge crosses the Rideau River –a Canadian Heritage River—and is adjacent to the Rideau Canal World Heritage Site and National Historic Site of Canada.

LHC finds that the Bridge meets three of the criteria from *O. Reg. 9/06* and is eligible for designation under Part IV Section 29 of the *OHA*. In LHC's professional opinion the Bridge meets criteria 1i, 3i and 3ii. It has physical value and design value as an early, rare and representative two-span Warren Pony Truss bridge. It has contextual value because it supports and maintains the historic industrial character of the area and has historical and visual links to its surroundings. The Bridge is a cultural heritage resource and supports the landscape setting of the Rideau Canal.

In LHCs professional opinion the Bridge should be conserved and rehabilitated to be used. This opinion is based on international, federal, provincial and municipal guidance outlined in Section 3.0 of this CHER.

LHC recommends that the heritage attributes of the Bridge be conserved where possible and a Heritage Impact Assessment be required as part of design for rehabiliation or replacement. If replacement is the preferred alternative it is recommended that options to rehabilitate the abutments and pier be explored and that a replacement be a two-span, each with five panels, Warren Pony Truss structure.

SIGNATURES

Christienne Uchiyama, M.A, CAHP
Principal, Manager Heritage Consulting Services
LHC

Benjamin Holthof, MPL, MMA, CAHP
Heritage Planner, Environmental Assessment Specialist
LHC

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APPENDIX A: PROJECT PERSONNEL

Benjamin Holthof, MPl, MMA, CAHP – Heritage Planner

Ben Holthof is a heritage consultant, planner, and marine archaeologist with LHC, with experience working in heritage consulting and not-for-profit museum sectors. He holds a Master of Urban and Regional Planning degree from Queens University; a Master of Maritime Archaeology degree from Flinders University of South Australia; a Bachelor of Arts degree in Archaeology from Wilfrid Laurier University; and a certificate in Museum Management and Curatorship from Fleming College.

Ben has consulting experience in cultural heritage screening, evaluation, heritage impact assessment, cultural strategic planning, cultural heritage policy review, historic research, and interpretive planning. His work has involved a wide range of cultural heritage resources including on cultural landscapes, institutional, industrial, commercial, and residential sites as well as infrastructure such as wharves, bridges, and dams. Much of his consultant work has been involved in heritage for environmental assessment. Before joining LHC, Ben worked for Golder Associates Ltd. as a Cultural Heritage Specialist from 2014-2020.

Ben is experienced in museum collections management, policy development, exhibit development and public interpretation. He has written museum strategic plans, interpretive plans and disaster management plans. He has been curator at the Marine Museum of the Great Lakes at Kingston, the Billy Bishop Home and Museum, and the Owen Sound Marine and Rail Museum. These sites are in historic buildings and he is knowledgeable with collections that include large artifacts including, ships, boats, railway cars, and large artifacts in unique conditions with specialized conservation concerns.

Ben is also a maritime archaeologist having worked on terrestrial and underwater sites in Ontario and Australia. He has an Applied Research archaeology license from the Government of Ontario (R1062). He is also a professional member of the Canadian Association of Heritage Professionals.

Christienne Uchiyama, MA, CAHP – Principal, LHC

Christienne Uchiyama MA CAHP is Principal and Manager - Heritage Consulting Services with LHC. She is a Heritage Consultant and Professional Archaeologist (P376) with more than a decade of experience working on heritage aspects of planning and development projects. She is currently President of the Board of Directors of the Canadian Association of Heritage Professionals and received her MA in Heritage Conservation from Carleton University School of Canadian Studies. Her thesis examined the identification and assessment of impacts on cultural heritage resources in the context of Environmental Assessment.

Since 2003 Chris has provided archaeological and heritage conservation advice, support and expertise as a member of numerous multi-disciplinary project teams for projects across Ontario and New Brunswick, including such major projects as: all phases of archaeological assessment at the Canadian War Museum site at LeBreton Flats, Ottawa; renewable energy projects; natural gas pipeline routes; railway lines; hydro powerline corridors; and highway/road realignments. She has completed more than one hundred cultural heritage technical reports for development proposals at all levels of government, including cultural heritage evaluation reports, heritage impact assessments, and archaeological licence reports. Her specialties include the development of Cultural Heritage Evaluation Reports, under both *O. Reg. 9/06* and *10/06*, and Heritage Impact Assessments

Colin Yu, MA – Cultural Heritage Specialist and Archaeologist

Colin Yu is a Cultural Heritage Specialist and Archaeologist with LHC. He holds a BSc with a specialist in Anthropology from the University of Toronto and a M.A. in Heritage and Archaeology from the University of Leicester. He has a special interest in identifying socioeconomic factors of 19th century Euro-Canadian settlers through quantitative and qualitative ceramic analysis.

Colin has worked in the heritage industry for over eight years, starting out as an archaeological field technician in 2013. He currently holds an active research license (R1104) with the Ministry of Heritage, Sport, Tourism, and Culture Industries (MHSTCI). In 2020, he was accepted as an intern member at the Canadian Association of Heritage Professionals (CAHP).

At LHC, Colin has worked on numerous projects dealing with all aspects of Ontario's cultural heritage. He has completed over thirty cultural heritage technical reports for development proposals and include Cultural Heritage Evaluation Reports, Heritage Impact Statements, Environmental Assessments, and Archaeological Assessments. Colin has worked on a wide range of cultural heritage resources including; cultural landscapes, institutions, commercial and residential sites as well as infrastructure such as bridges, dams, and highways.

He specializes in built heritage, historic research, and identifying cultural heritage value and/or interest though *O. Reg. 9/06* under the *Ontario Heritage Act.*

Jordan Greene, BA – Mapping Technician

Jordan Greene is a mapping technician with LHC. She holds a Bachelor of Arts in Geography with a Certificate in Geographic Information Science and a Certificate in Urban Planning Studies from Queen's University. The experience gained through the completion of the Certificate in Geographic Information Science allowed Jordan to volunteer as a research assistant contributing to the study of the extent of the suburban population in America with Dr. David Gordon. Prior to her work at LHC, Jordan spent the final two years of her undergraduate degree working in managerial positions at the student-run Printing and Copy Centre as an Assistant and Head Manager. Jordan has had an interest in heritage throughout her life and is excited to build on her existing professional and GIS experience as a part of the LHC team.

APPENDIX B: 1986 BRIDGE DRAWINGS

TOWN OF SMITHS FALLS

SMITHS FALLS
ONTARIO

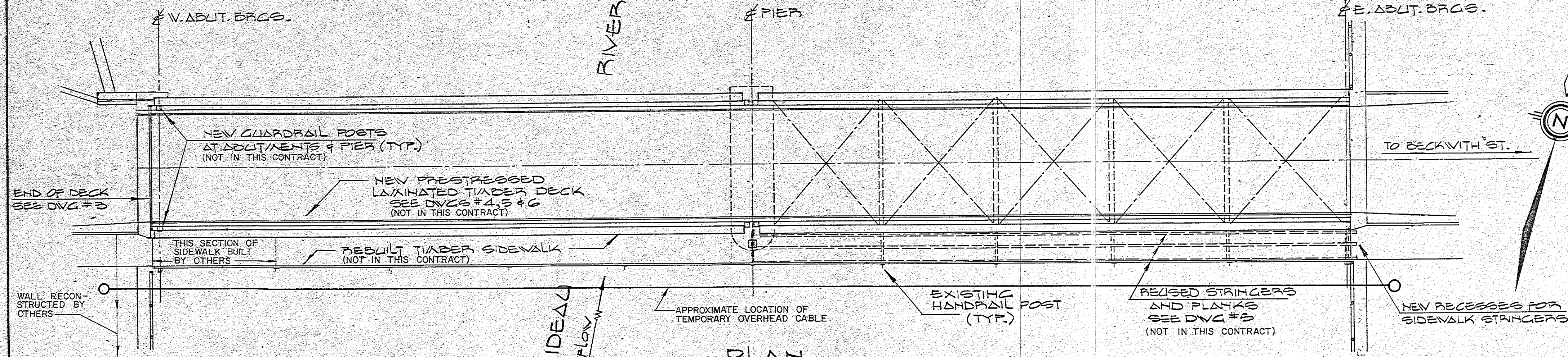
CONTRACT FOR THE REHABILITATION OF CONFEDERATION DRIVE BRIDGE

STAGE I STEELWORK

Wyllie & Ufnal
consulting engineers

FOR TENDER
PURPOSES ONLY
OCT 3 1986

SET 13



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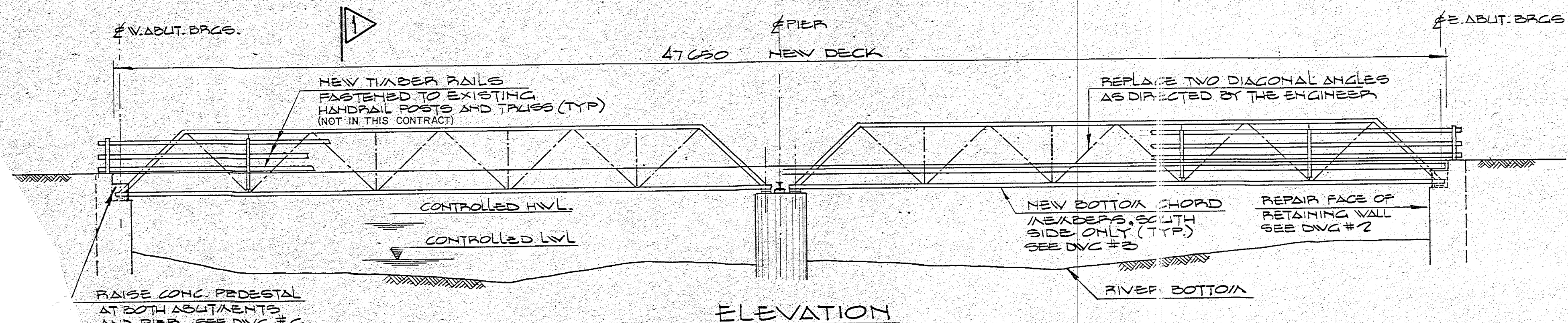

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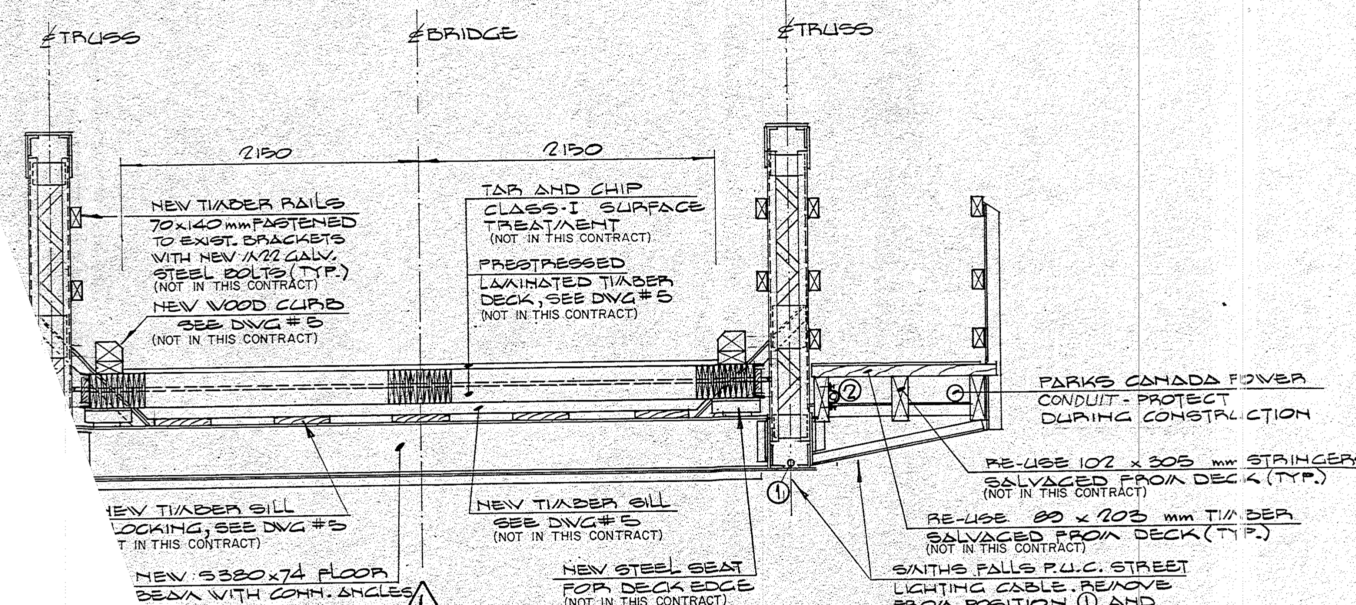

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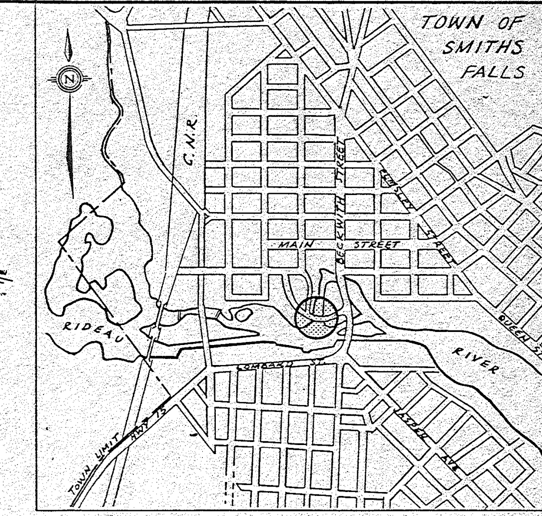


SITE PLAN

GENERAL NOTES:

1. CLASS OF CONCRETE
   ALL NEW CONCRETE SHALL BE 30 MPa.
2. REINFORCING STEEL
   GRADE 400
3. CLEAR COVER TO REINFORCING STEEL : 50 mm
4. CONSTRUCTION NOTES
   THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS OF THE EXISTING WORK AND ALL DETAILS ON SITE AND REPORT ANY DISCREPANCY TO THE ENGINEER BEFORE PROCEEDING WITH THE REPAIR WORK.
5. ~~TIMBER DECK~~
   a) ~~ALL STRUCTURAL STEEL AND HARDWARE TO BE G40.21 GRADE 300W.~~
   b) ~~ALL STRUCTURAL STEEL AND ALL HARDWARE TO BE GALVANIZED AFTER ALL DRILLING, CUTTING OR WELDING IN ACCORDANCE WITH CSA STANDARD G164.~~
   c) ~~ALL BOLTS SHALL BE IN ACCORDANCE WITH ASTM A307 AND SHALL BE GALVANIZED IN ACCORDANCE WITH CSA G164. STRESSING BARS SHALL CONFORM TO ASTM A722-75.~~
   d) ~~TIMBER LAMINATED DECK SHALL BE DOUGLAS FIR, NO. 2 GRADE AND BETTER (MAXIMUM 50% NO. 2) IN ACCORDANCE WITH CSA STANDARD 086. IT SHALL BE OIL BORNE PRESERVATIVE TREATED USING PENTACHLOROPHENOL IN TYPE 'A' HYDROCARBON SOLVENT WITH 0.4 lb/FT^3 RETENTION, IN ACCORDANCE WITH CSA STANDARD 080.~~
   e) ~~LAMINATIONS ARE TO BE CUT TO LENGTH AND THE HOLES FOR STRESSING BARS DRILLED PRIOR TO PRESERVATIVE TREATMENT. DIMENSIONS AND HOLE LOCATIONS ARE TO BE ACCURATE TO 3 mm.~~
   f) ~~CARE SHALL BE TAKEN IN HANDLING TREATED MATERIAL TO AVOID DEFACING THE SURFACE. NO CHAINS, HOOKS OR PEAVIES SHALL BE USED IN HANDLING.~~
   g) ~~FRESH SURFACES EXPOSED BY FIELD CUTTING AND DRILLING OF HOLES SHALL BE TREATED BY 3 COATS OF THE ORIGINAL PRESERVATIVE.~~
   h) ~~ALL NEW TIMBER USED IN THE CURBS AND RAILINGS SHALL BE FIR NO. 2 GRADE AND SHALL BE WOLMANIZED.~~

   NOT IN THIS CONTRACT
6. MODIFY EXISTING STRUCTURAL STEEL
   a) ALL NEW STRUCTURAL STEEL SHALL BE G40.21 GRADE 300W.
   b) ALL BOLTS SHALL BE ASTM A325 TYPE 2.
   c) ALL WELDING SHALL BE DONE IN ACCORDANCE WITH CSA W59 BY WELDERS APPROVED IN ACCORDANCE WITH CSA W178.

LIST OF DRAWINGS

1. GENERAL ARRANGEMENT
2. EXISTING CONDITIONS AND REMOVALS.
3. STRUCTURAL STEEL REPAIR DETAILS
4. ~~TIMBER DECK DETAILS I~~
5. ~~TIMBER DECK DETAILS II~~
6. TIMBER DECK DETAILS III
7. EXISTING STRUCTURAL STEEL I
8. EXISTING STRUCTURAL STEEL II

SCOPE OF WORK

1. REMOVE AND DISPOSE OF TIMBER IN SIDEWALK, CURBS, AND HANDRAILS.
2. REMOVE AND SALVAGE TIMBER DECK FROM ROADWAY.
3. DISCONNECT SMITHS FALLS P.U.C. LIGHT STANDARD CABLE AND SALVAGE. PROTECT PARKS CANADA CONDUIT DURING CONSTRUCTION.
4. REBUILD AREA OF RETAINING WALL UNDER SIDEWALK AT EAST ABUTMENT.
5. ~~AT WEST ABUTMENT REMOVE DETERIORATED MASONRY AND CONCRETE UNDER SIDEWALK AND REBUILD.~~
6. CONSTRUCT NEW CONCRETE PEDESTAL ON TOP OF EXISTING PIER AND ABUTMENTS.
7. MODIFY EXISTING STRUCTURAL STEEL IN FOLLOWING WAYS:
   (a) REMOVE FLOOR BEAMS AND REPLACE
   (b) REPLACE BOTTOM CHORD OF SOUTH SIDE TRUSS.
   (c) TRIM OUTSIDE EDGES OF HORIZONTAL GUSSET PLATES (8 LOCATIONS).
   (d) REPLACE TWO DAMAGED ANGLES IN TRUSS DIAGONALS.
   (e) SPLICE WIND BRACINGS WHERE RUSTED THROUGH (8 LOCATIONS).
   (f) REMOVE CORROSION PRODUCTS BETWEEN VERTICAL GUSSETS AND ADJOINING SPACER PLATES. DRILL NEW HOLE AND INSTALL A BOLT TO TIE TOEGETHER.
   (g) REPLACE CORRODED RIVETS WITH BOLTS (30 LOCATIONS), AS DIRECTED BY THE ENGINEER.
8. CLEAN AND COAT EXISTING AND NEW STRUCTURAL STEEL.
9. ~~SUPPLY AND INSTALL LAMINATED TIMBER DECK. PRESTRESS DECK BY STRESSING IN THREE STAGES.~~
10. ~~PLACE TAR AND CHIP RIDING SURFACE ON DECK.~~
11. ~~USE SALVAGED TIMBER TO REBUILD SIDEWALK. SUPPLY AND INSTALL NEW RAILINGS AND CURB TO MATCH EXISTING.~~
12. ~~REMOVE AND RECONSTRUCT CONCRETE CURB ON WEST APPROACH.~~
13. ~~REPLACE ASPHALT REMOVED ON EAST APPROACH.~~
14. RE-INSTALL P.U.C. CABLE UNDER THE SIDEWALK.

REGISTERED PROFESSIONAL ENGINEER
K. AUGUSTINAS
PROVINCE OF ONTARIO

TOWN OF SMITHS FALLS

Wyllie & Ufnal consulting engineers

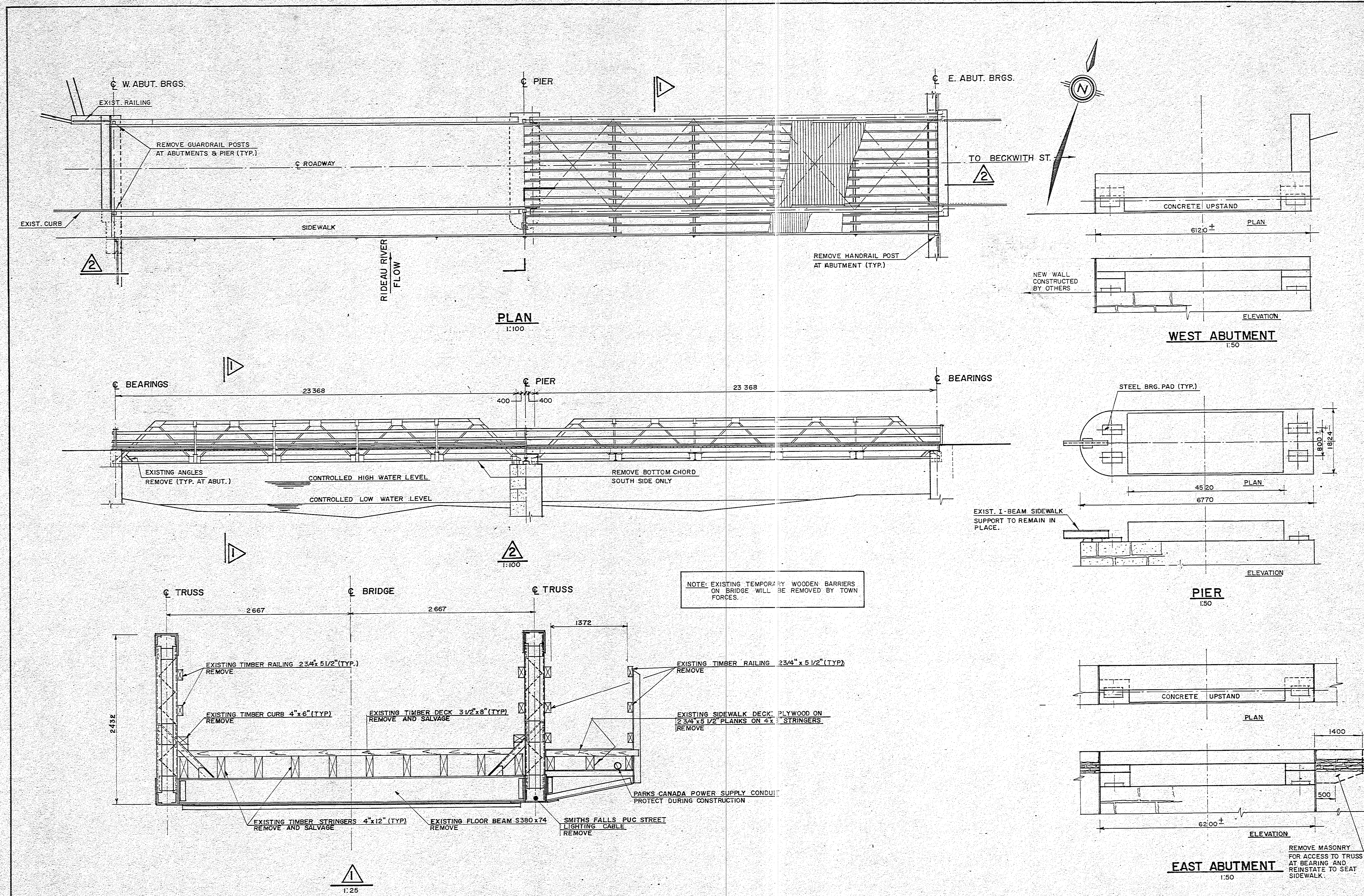
No.	BY	REVISIONS	DATE
1	JLU	TIMBER DECK ELIMINATED	SEPT 86

DESIGN	A.S.W.
DRAWN	G.S.
CHECKED	K.A.
APPROVED	B.F.
DATE	AUGUST 1986
SCALE	AS NOTED

CONFEDERATION DRIVE BRIDGE
REHABILITATION STAGE I

GENERAL ARRANGEMENT

PROJECT No. 8617
DRAWING No. 1
SHEET OF



APPROVED
CONSULTANT
AUG 10 · 86
DATE

REGISTERED PROFESSIONAL ENGINEER
K. J. AUGUSTINAS
PROVINCE OF ONTARIO

TOWN OF
SMITHS FALLS

Wyllie & Ufnal
consulting engineers

No.	BY	REVISIONS	DATE
1	JLU	GENERAL REVISIONS	SEPT 86

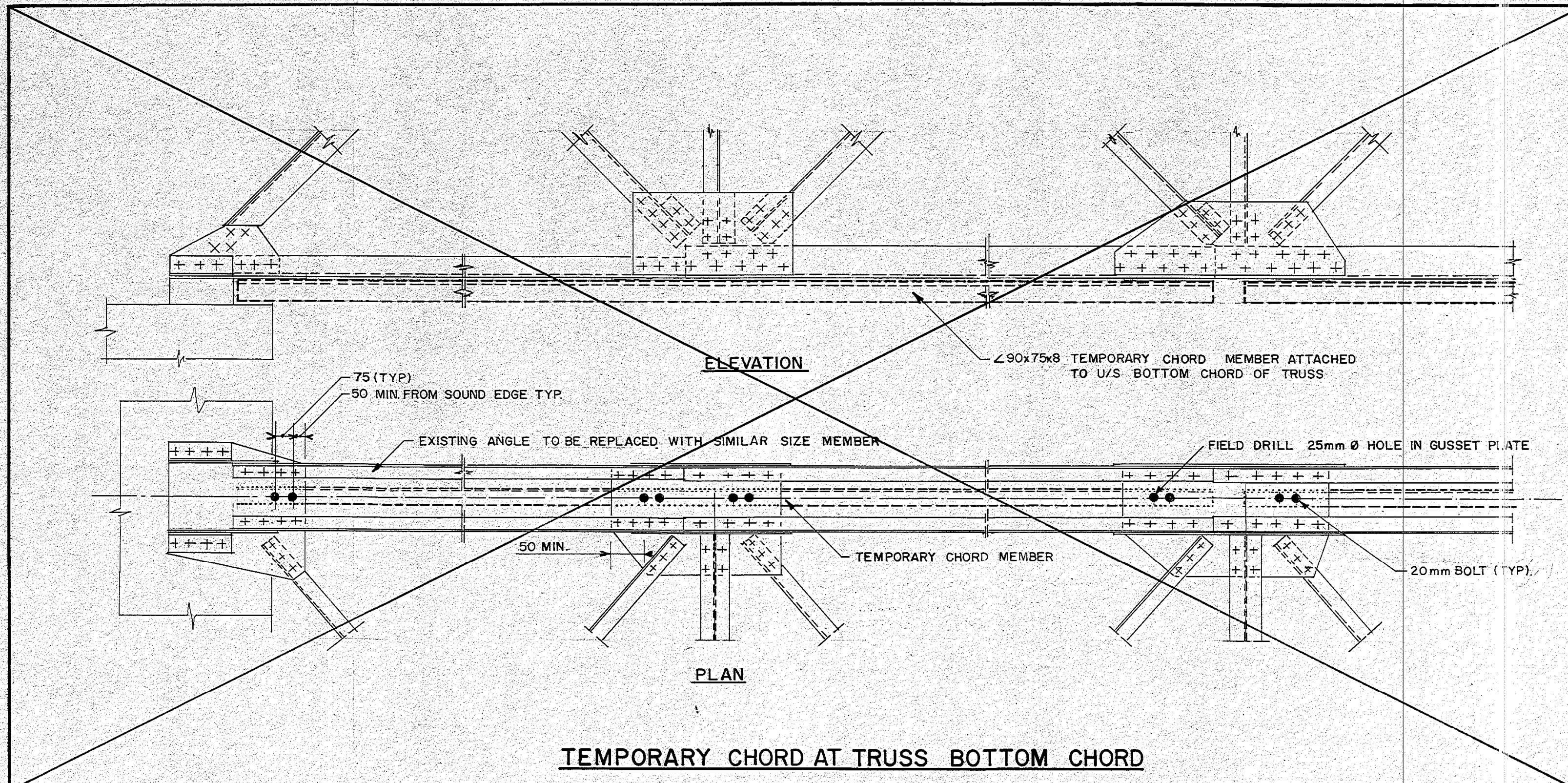
DESIGN	A.S.W.
DRAWN	J.J.
CHECKED	K.A.
APPROVED	B.F.
DATE	AUGUST 1986
SCALE	AS NOTED

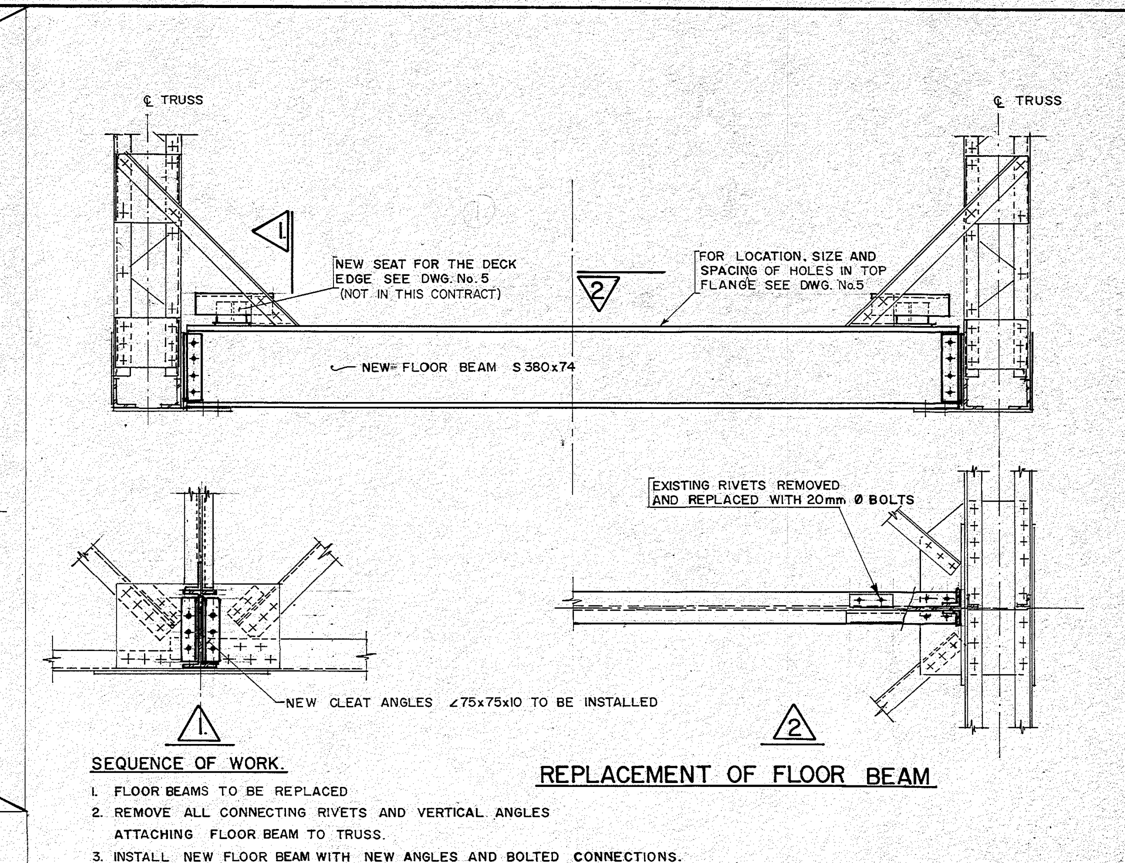
CONFEDERATION DRIVE BRIDGE
REHABILITATION STAGE I

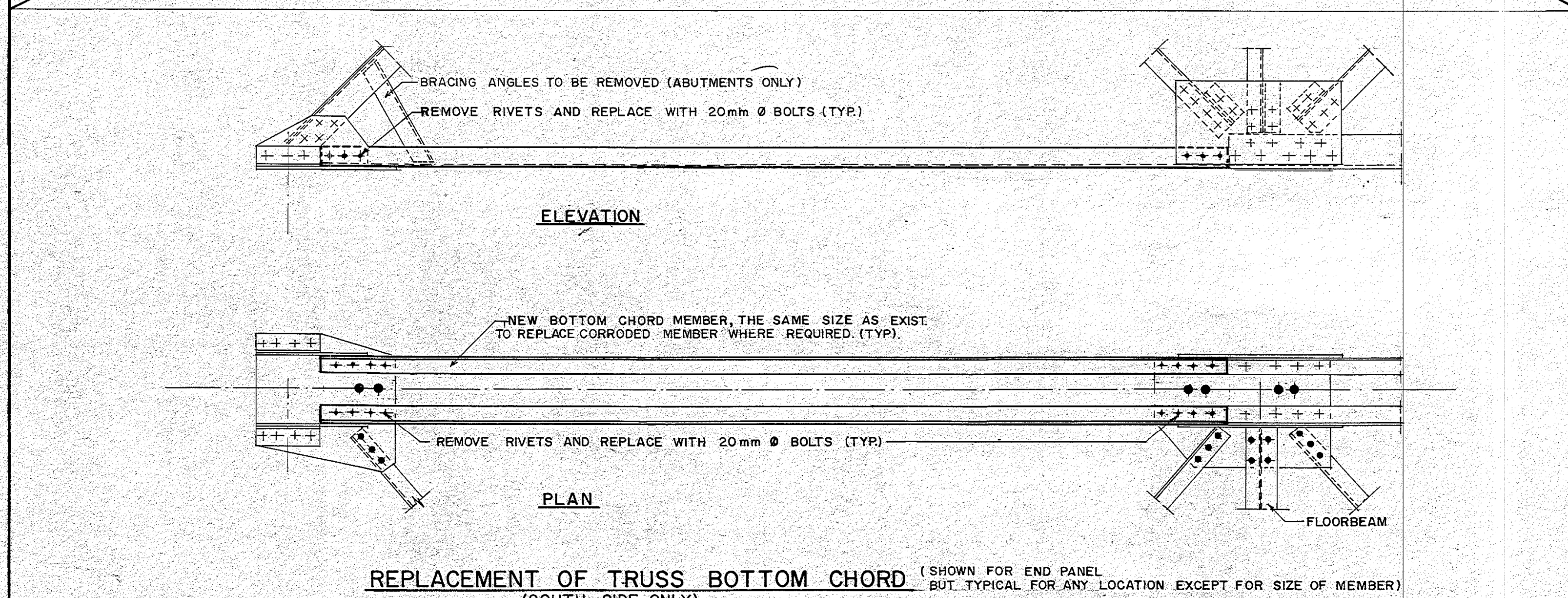
EXISTING CONDITIONS AND REMOVALS

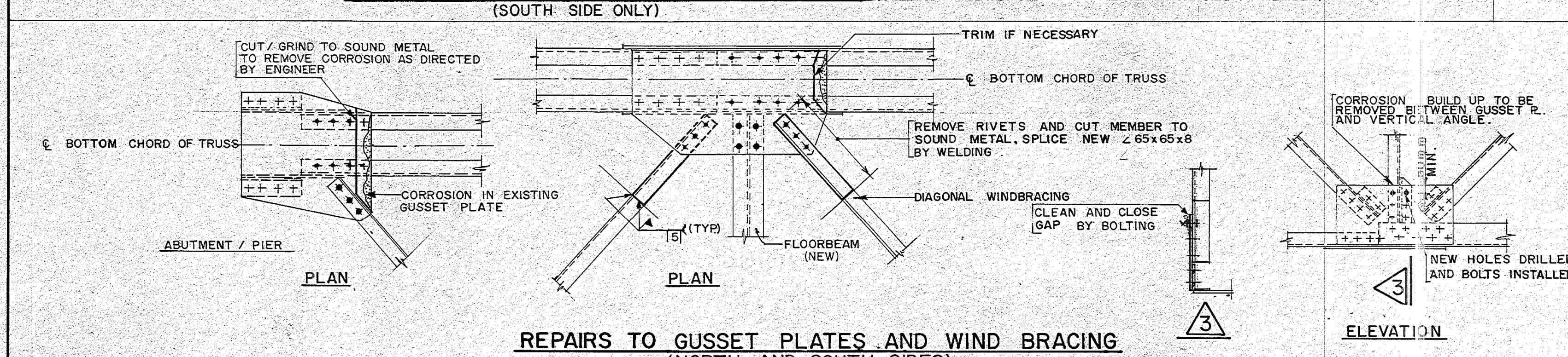
PROJECT No. 8617
DRAWING No. 2
SHEET OF

TRANSLAR









NOTES:

MATERIALS

- STRUCTURAL STEEL SHALL CONFORM TO C.S.A. STD. G40. 21M GRADE 300 W.
- BOLTS AND WASHERS SHALL BE GALVANIZED. BOLTS TO BE A.S.T.M. A325, TYPE 2, 20mm DIA.
- WELDING SHALL BE IN ACCORDANCE WITH C.S.A. STD. W59

SYMBOLS

+ EXISTING RIVETS REMAINING.
• NEW BOLTS TO BE INSTALLED.

DIMENSIONS

- CONTRACTOR TO VERIFY IN FIELD ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO ENGINEER.

PROTECTION OF WORK

- CONTRACTOR SHALL PROTECT ALL ADJACENT STEELWORK DURING REPAIRS AND MAKE GOOD ANY DAMAGES HE CAUSES TO THE SATISFACTION OF ENGINEER

1	JLU	TEMPORARY CHORD REMOVED	SEPT 86	
No.	BY	REVISIONS	DATE	

APPROVED B. Fanny
CONSULTANT
AUG 10. 86
DATE

REGISTERED PROFESSIONAL ENGINEER K. AUGUSTINAS PROVINCE OF ONTARIO

TOWN OF SMITHS FALLS

Wyllie & Ufnal consulting engineers

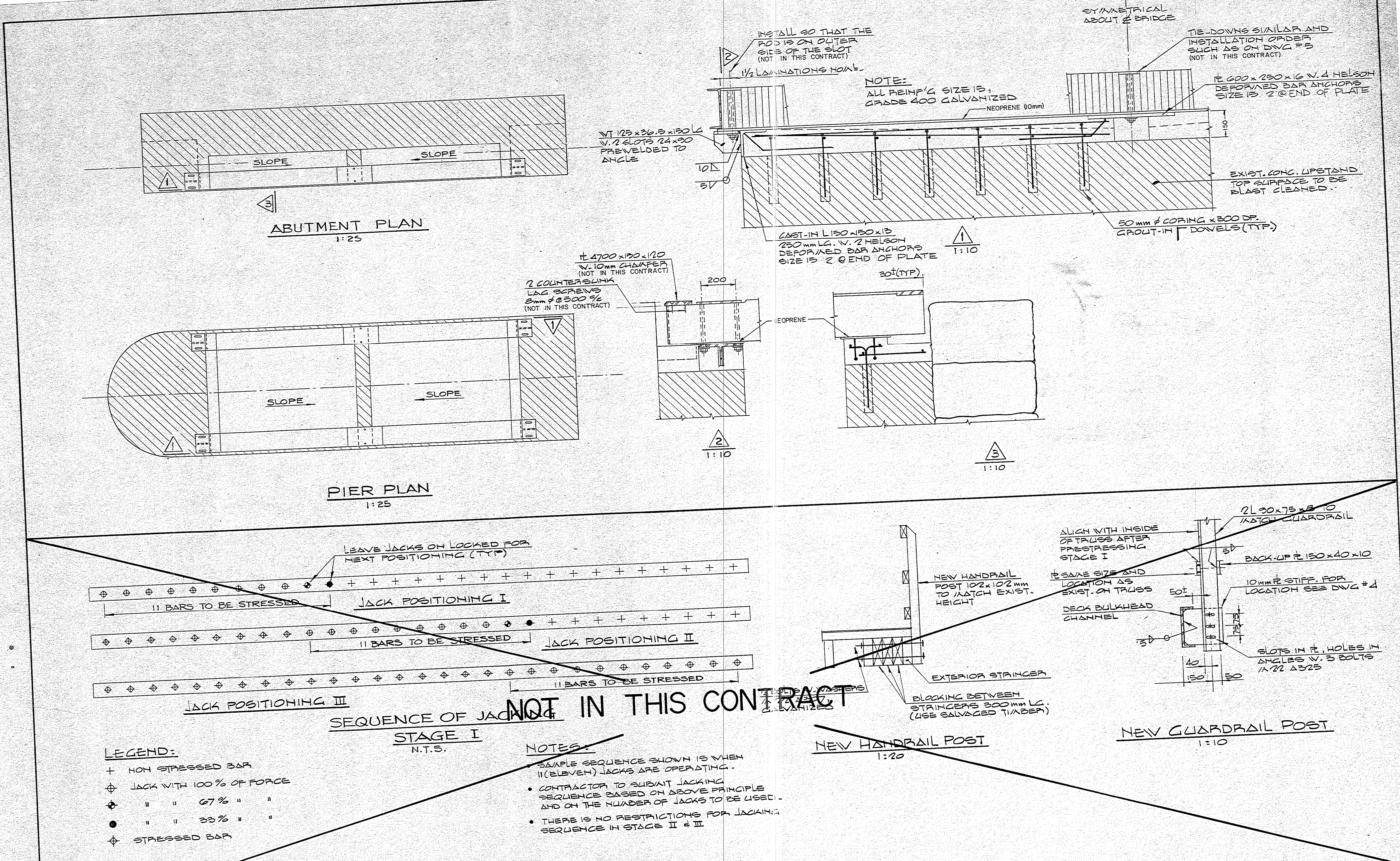
DESIGN	A.S.W.
DRAWN	J.J.
CHECKED	K.A.
APPROVED	B.F.
DATE	AUG.86.
SCALE	N.T.S.

CONFEDERATION DRIVE BRIDGE
REHABILITATION STAGE I

STRUCTURAL STEEL REPAIR DETAILS

PROJECT No. 8617
DRAWING No. 3
SHEET OF

TRANSLAR



APPROVED B.F. CONSULTANT AUG 10-86 DATE	K. AUGUSTINAS — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO	TOWN OF SMITHS FALLS	Wyllie & Ufnal consulting engineers

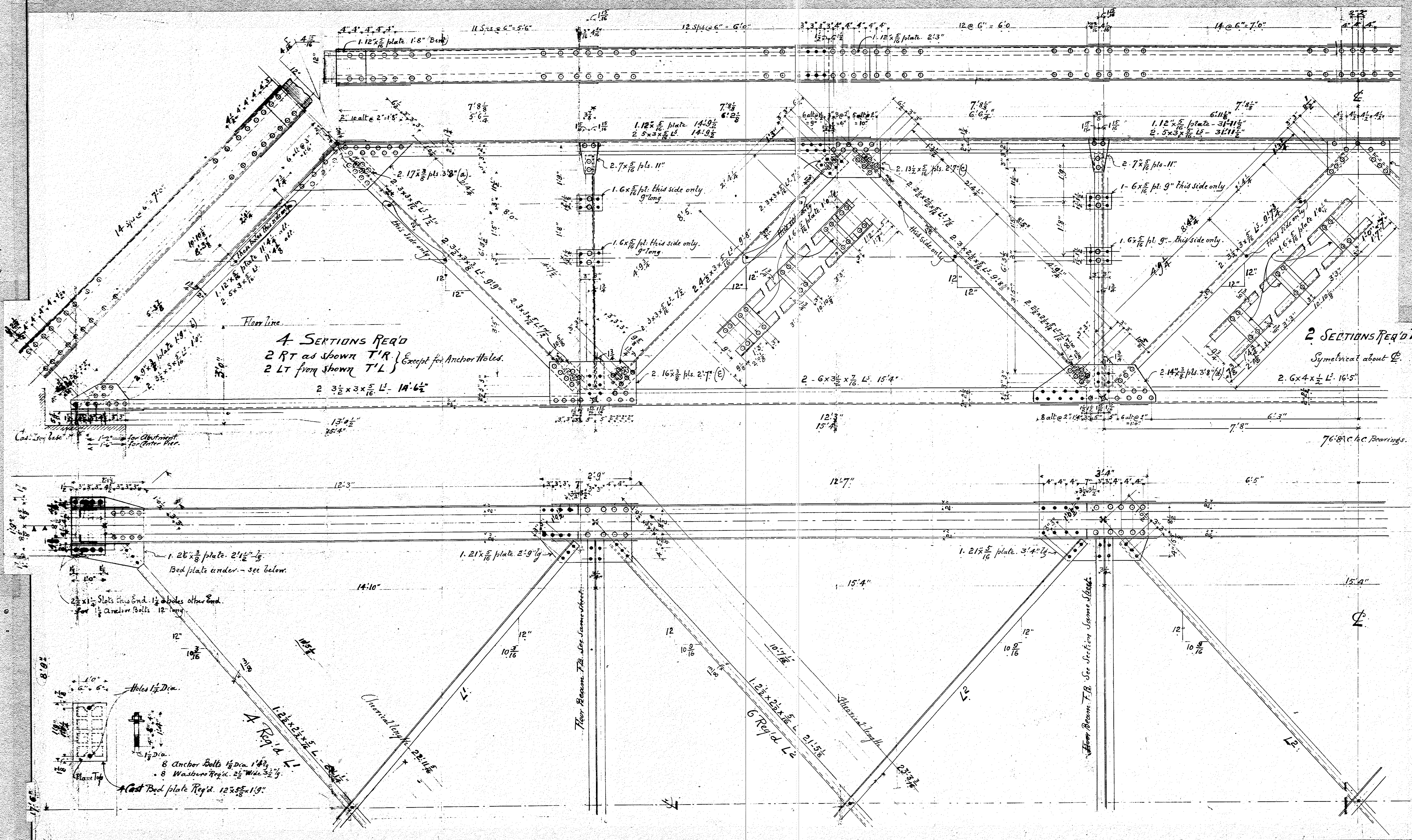
No.	BY	REVISIONS	DATE
1	JLU	DETAIL 3 REVISED	SEPT 86

DESIGN	K.A.
DRAWN	Y.C.
CHECKED	A.S.W.
APPROVED	B.F.
DATE	AUG. 1986
SCALE	AS NOTED

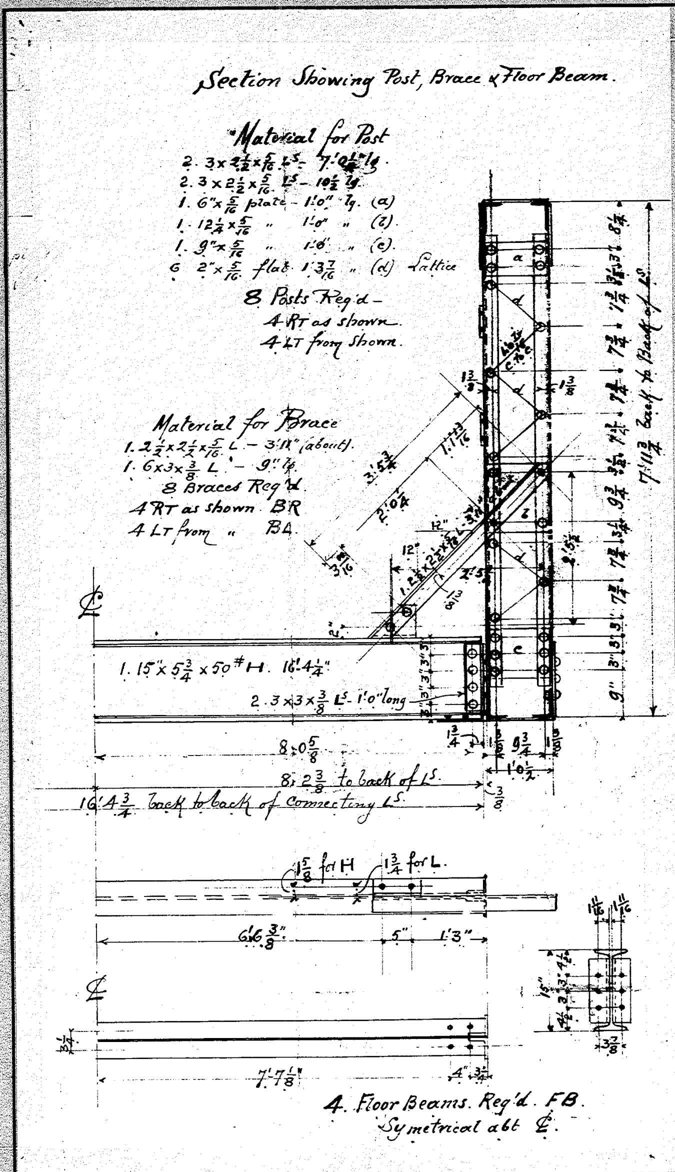
CONFEDERATION DRIVE BRIDGE REHABILITATION STAGE I

TIMBER DECK DETAILS III

PROJECT No. 8617
DRAWING No. 6
SHEET OF



APPROVED		TOWN OF SMITHS FALLS	Wyllie & Ufnal consulting engineers		DESIGN ADAP.	CONFEDERATION DRIVE BRIDGE REHABILITATION STAGE I	PROJECT No. 8617
CONSULTANT					DRAWN		DRAWING No. 7
DATE					CHECKED	EXISTING STRUCTURAL STEEL I	SHEET OF
				NO. BY REVISIONS DATE	APPROVED DATE SCALE		



NOTE: EXISTING SIDEWALK SUPPORTING STEELWORK IS NOT SHOWN ON THESE PLANS

APPROVED CONSULTANT DATE	TOWN OF SMITHS FALLS	Wyllie & Ufnal consulting engineers	DESIGN . ADAP. DRAWN CHECKED APPROVED DATE SCALE	CONFEDERATION DRIVE BRIDGE REHABILITATION STAGE I EXISTING STRUCTURAL STEEL II.

No.	BY	REVISIONS	DATE

PROJECT No. 8617
DRAWING No. 8
SHEET OF

TRANSLAR

TOWN OF SMITHS FALLS

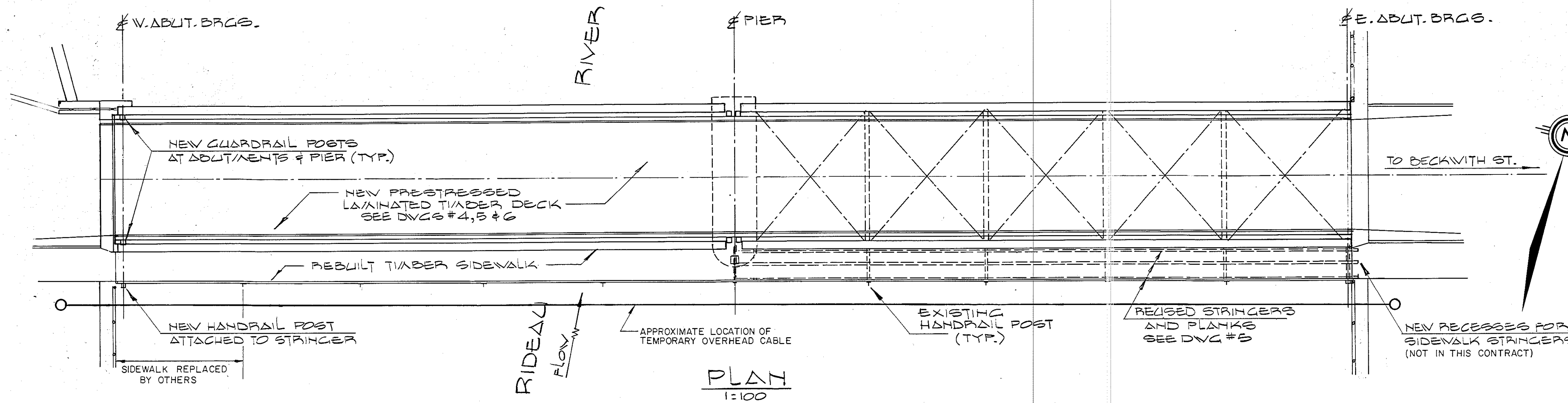
SMITHS FALLS
ONTARIO

CONTRACT FOR THE REHABILITATION OF CONFEDERATION DRIVE BRIDGE

STAGE II LAMINATED PRESTRESSED TIMBER DECK

Wyllie & Ufnal
consulting engineers

FOR TENDER
PURPOSES ONLY
OCT 3 1986



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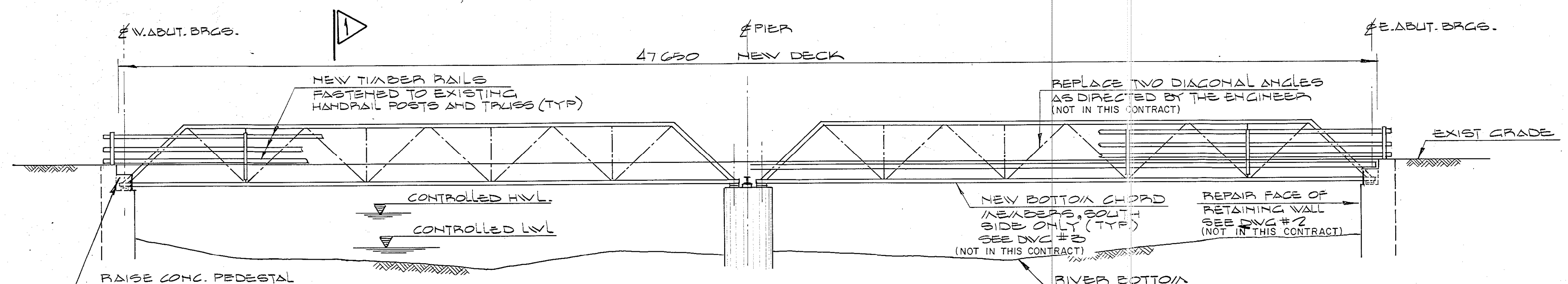

ELEVATION
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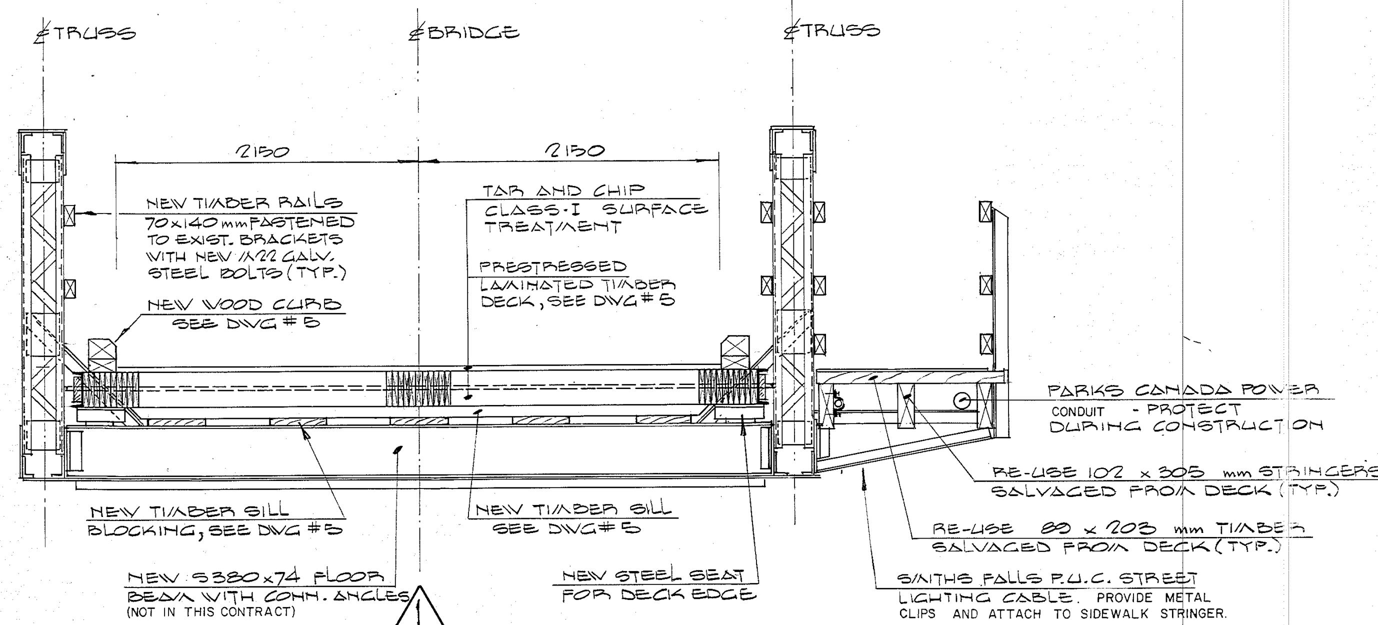

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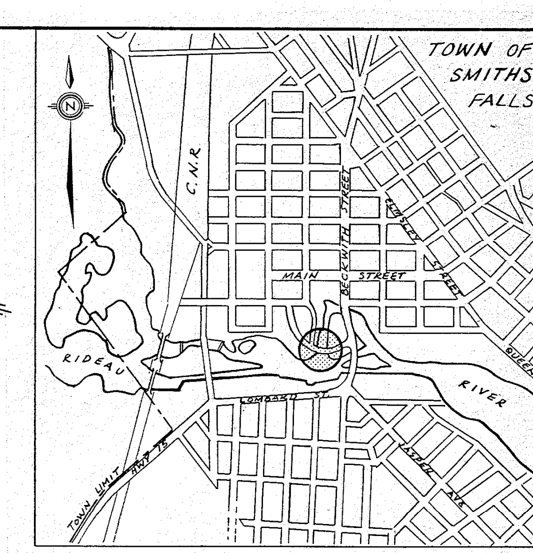


SITE PLAN

GENERAL NOTES:

~~1. CLASS OF CONCRETE~~
~~ALL NEW CONCRETE SHALL BE 30 MPa.~~

~~2. REINFORCING STEEL~~
~~GRADE 400~~

~~3. CLEAR COVER TO REINFORCING STEEL : 50 mm~~

4. CONSTRUCTION NOTES
THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS OF THE EXISTING WORK AND ALL DETAILS ON SITE AND REPORT ANY DISCREPANCY TO THE ENGINEER BEFORE PROCEEDING WITH THE REPAIR WORK.

5. TIMBER DECK
   a) ALL STRUCTURAL STEEL AND HARDWARE TO BE G40.21 GRADE 300W.
   b) ALL STRUCTURAL STEEL AND ALL HARDWARE TO BE GALVANIZED AFTER ALL DRILLING, CUTTING OR WELDING IN ACCORDANCE WITH CSA STANDARD G164.
   c) ALL BOLTS SHALL BE IN ACCORDANCE WITH ASTM A307 AND SHALL BE GALVANIZED IN ACCORDANCE WITH CSA G164. STRESSING BARS SHALL CONFORM TO ASTM A722-75.
   d) TIMBER LAMINATED DECK SHALL BE DOUGLAS FIR, NO. 2 GRADE AND BETTER (MAXIMUM 50% NO. 2) IN ACCORDANCE WITH CSA STANDARD 086. IT SHALL BE OIL BORNE PRESERVATIVE TREATED USING PENTACHLOROPHENOL IN TYPE 'A' HYDROCARBON SOLVENT WITH 0.4 lb/FT^3 RETENTION, IN ACCORDANCE WITH CSA STANDARD 080.
   e) LAMINATIONS ARE TO BE CUT TO LENGTH AND THE HOLES FOR STRESSING BARS DRILLED PRIOR TO PRESERVATIVE TREATMENT. DIMENSIONS AND HOLE LOCATIONS ARE TO BE ACCURATE TO 3 mm.
   f) CARE SHALL BE TAKEN IN HANDLING TREATED MATERIAL TO AVOID DEFACING THE SURFACE. NO CHAINS, HOOKS OR PEAVIES SHALL BE USED IN HANDLING.
   g) FRESH SURFACES EXPOSED BY FIELD CUTTING AND DRILLING OF HOLES SHALL BE TREATED BY 3 COATS OF THE ORIGINAL PRESERVATIVE.
   h) ALL NEW TIMBER USED IN THE CURBS AND RAILINGS SHALL BE FIR NO. 2 GRADE AND SHALL BE CHROMATED COPPER ARSENATE PRESERVATIVE TREATED

~~6. MODIFY EXISTING STRUCTURAL STEEL~~
   ~~a) ALL NEW STRUCTURAL STEEL SHALL BE G40.21 GRADE 300W.~~
   ~~b) ALL BOLTS SHALL BE ASTM A325 TYPE 2.~~
   ~~c) ALL WELDING SHALL BE DONE IN ACCORDANCE WITH CSA W59 BY WELDERS APPROVED IN ACCORDANCE WITH CSA W178.~~

LIST OF DRAWINGS

1. GENERAL ARRANGEMENT
2. EXISTING CONDITIONS AND REMOVALS
3. ~~STRUCTURAL STEEL REPAIR DETAILS~~
4. TIMBER DECK DETAILS I
5. TIMBER DECK DETAILS II
6. TIMBER DECK DETAILS III
7. EXISTING STRUCTURAL STEEL I
8. EXISTING STRUCTURAL STEEL II

SCOPE OF WORK

NOT IN THIS CONTRACT

1. REMOVE AND DISPOSE OF TIMBER IN SIDEWALK, CURBS, AND HANDRAILS.
2. REMOVE AND SALVAGE TIMBER DECK FROM ROADWAY.
3. DISCONNECT SMITHS FALLS P.U.C. LIGHT STANDARD CABLE AND SALVAGE. PROTECT PARKS CANADA CONDUIT DURING CONSTRUCTION.
4. REMOVE TOP COURSE OF STONE MASONRY AT EAST ABUTMENT, AND REBUILD TO DESIRED ELEVATION. REBUILD AREA OF RETAINING WALL UNDER SIDEWALK.
5. AT WEST ABUTMENT REMOVE DETERIORATED MASONRY AND CONCRETE UNDER SIDEWALK AND REBUILD.
6. CONSTRUCT NEW CONCRETE PEDESTAL ON TOP OF EXISTING PIER AND ABUTMENTS.
7. MODIFY EXISTING STRUCTURAL STEEL IN FOLLOWING WAYS:
   (a) REMOVE FLOOR BEAMS AND REPLACE ONE BY ONE.
   (b) INSTALL TEMPORARY CHORD AND REPLACE BOTTOM CHORD OF SOUTH SIDE TRUSS PANEL BY PANEL.
   (c) TRIM OUTSIDE EDGES OF HORIZONTAL GUSSET PLATES (8 LOCATIONS).
   (d) REPLACE TWO DAMAGED ANGLES IN TRUSS DIAGONALS.
   (e) SPLICE WIND BRACINGS WHERE RUSTED THROUGH (8 LOCATIONS).
   (f) REMOVE CORROSION PRODUCTS BETWEEN VERTICAL GUSSETS AND ADJOINING SPACER PLATES. DRILL NEW HOLE AND INSTALL A BOLT TO TIE TOEGETHER.
   (g) REPLACE CORRODED RIVETS WITH BOLTS (30 LOCATIONS), AS DIRECTED BY THE ENGINEER.
8. FIELD CLEAN AND COAT EXISTING AND NEW STRUCTURAL STEEL.
9. SUPPLY AND INSTALL LAMINATED TIMBER DECK. PRESTRESS DECK BY STRESSING IN THREE STAGES.
10. PLACE TAR AND CHIP RIDING SURFACE ON DECK.
11. USE SALVAGED TIMBER TO REBUILD SIDEWALK. SUPPLY AND INSTALL NEW RAILINGS, POSTS AND CURB.
12. ~~REMOVE AND RECONSTRUCT CONCRETE CURB ON WEST APPROACH.~~
13. ~~REPLACE ASPHALT REMOVED ON EAST APPROACH.~~
14. ~~RE INSTALL P.U.C. CABLE UNDER THE SIDEWALK.~~

APPROVED					
CONSULTANT					
AUG 10. 86					
DATE					
REGISTERED PROFESSIONAL ENGINEER K. AUGUSTINAS PROVINCE OF ONTARIO					
TOWN OF SMITHS FALLS					
Wyllie & Ufnal consulting engineers					

No.	BY	REVISIONS	DATE
1	JLU	STEEL AND CONCRETE WORK REMOVED	SEPT.86

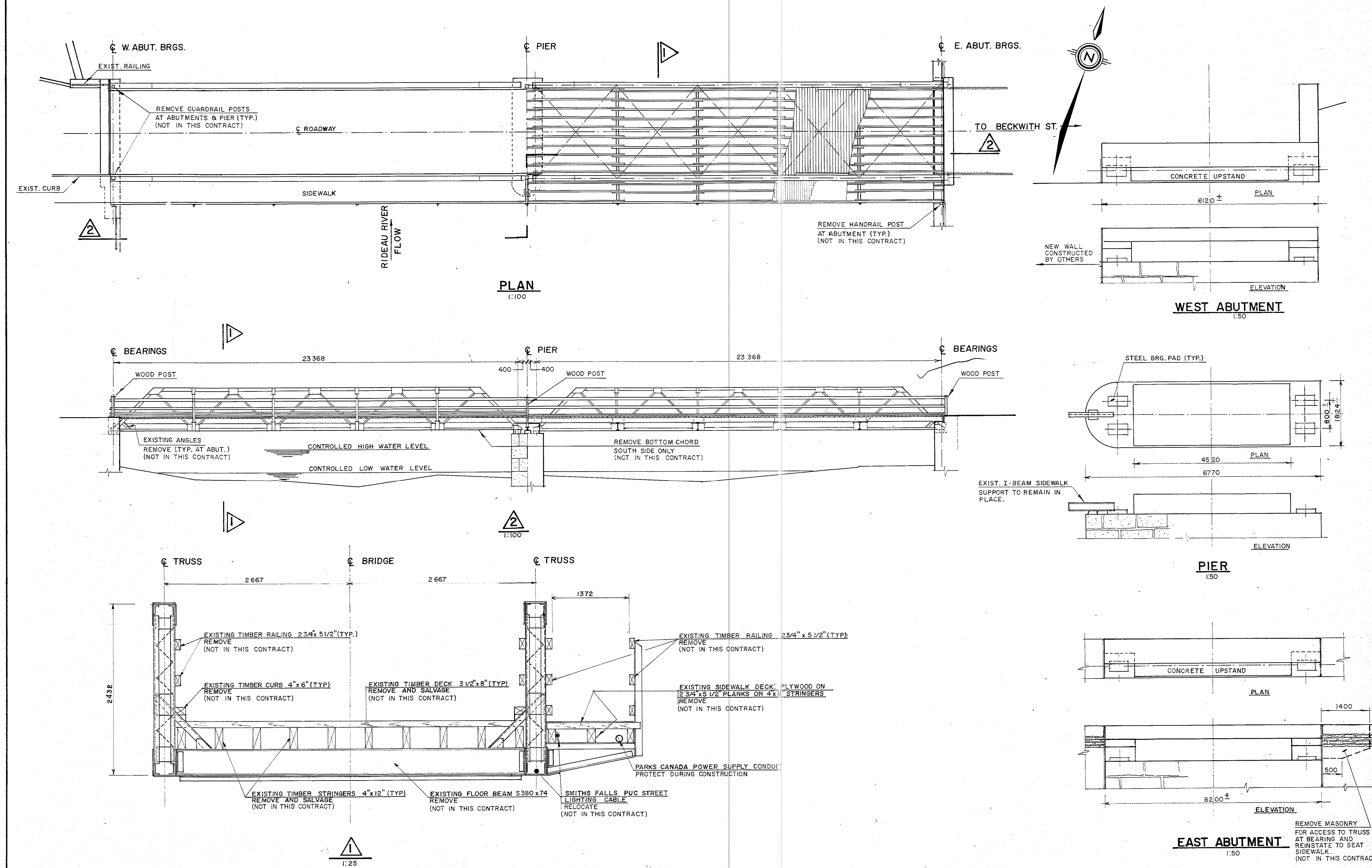
DESIGN	A.S.W.
DRAWN	G.S.
CHECKED	K.A.
APPROVED	B.F.
DATE	AUGUST 1986
SCALE	AS NOTED

CONFEDERATION DRIVE BRIDGE
REHABILITATION STAGE II

GENERAL ARRANGEMENT

PROJECT No.	8617
DRAWING No.	1
SHEET	OF

TRANSLAR



APPROVED	CONSULTANT	AUG 10 · 86	DATE

K.J. AUGUSTINAS — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

TOWN OF SMITHS FALLS

Wyllie & Ufnal consulting engineers

No.	BY	REVISIONS	DATE
1	JLU	GENERAL REVISIONS	SEPT 86

DESIGN	A.S.W.
DRAWN	J.J.
CHECKED	K.A.
APPROVED	B.F.
DATE	AUGUST 1986
SCALE	AS NOTED

CONFEDERATION DRIVE BRIDGE REHABILITATION STAGE II

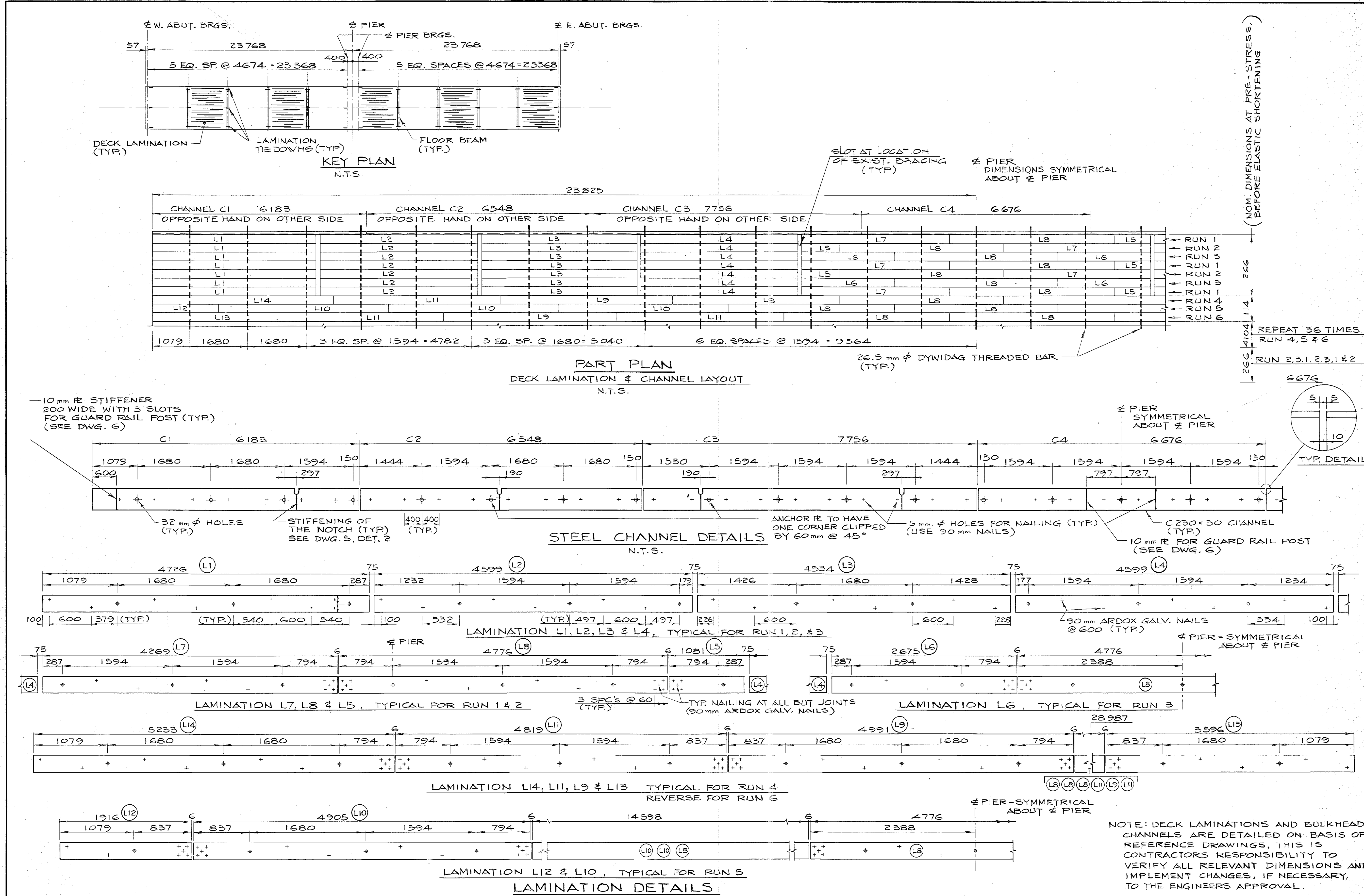
EXISTING CONDITIONS AND REMOVALS

PROJECT No. 8617

DRAWING No. 2

SHEET OF

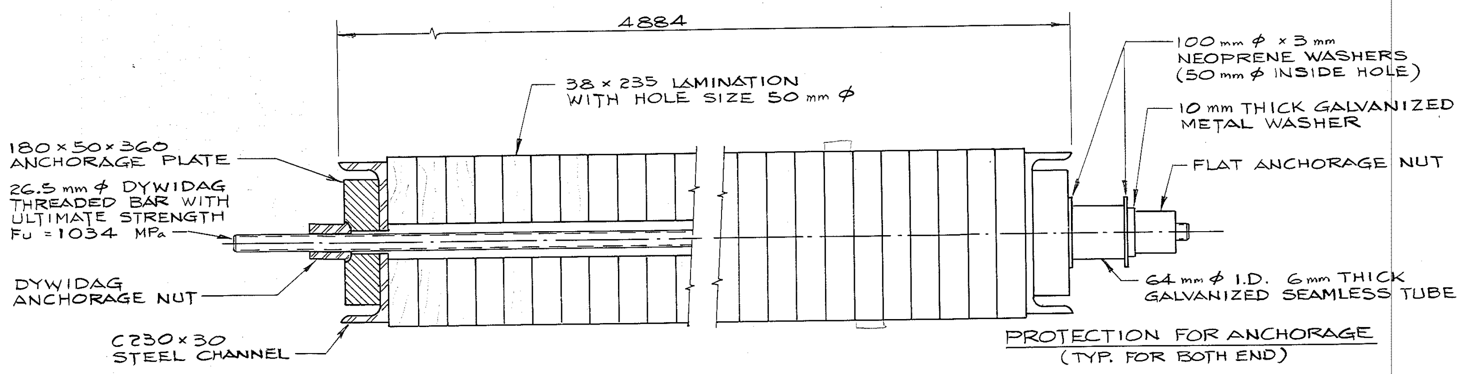
TRANSLAR



NOTE: DECK LAMINATIONS AND BULKHEAD CHANNELS ARE DETAILED ON BASIS OF REFERENCE DRAWINGS, THIS IS CONTRACTORS RESPONSIBILITY TO VERIFY ALL RELEVANT DIMENSIONS AND IMPLEMENT CHANGES, IF NECESSARY, TO THE ENGINEERS APPROVAL.

APPROVED	CONSULTANT: B. F. (signature), AUG 10. 86 DATE
Seal	REGISTERED PROFESSIONAL ENGINEER K. AUGUSTINAS PROVINCE OF ONTARIO
Client	TOWN OF SMITHS FALLS
Consultant	Wyllie & Ufnal consulting engineers
DESIGN	K.A.
DRAWN	Y.C.
CHECKED	A.S.W.
APPROVED	B.F.
DATE	AUG. 1986
SCALE	AS NOTED
Project	CONFEDERATION DRIVE BRIDGE REHABILITATION
Title	TIMBER DECK DETAILS I
PROJECT No.	8617
DRAWING No.	4
SHEET	OF

No.	BY	REVISIONS	DATE



TRANSVERSE PRESTRESSING DETAILS

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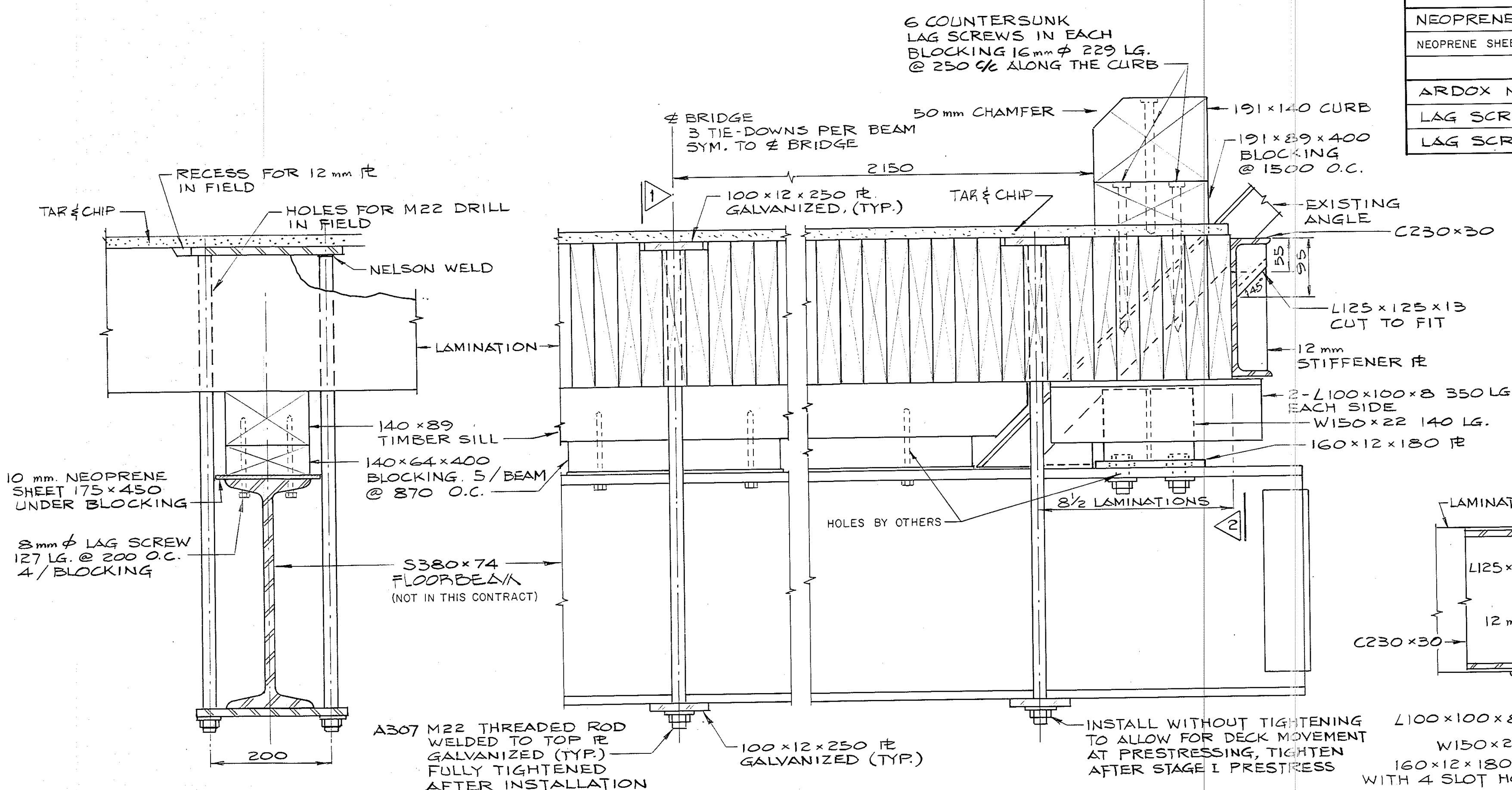
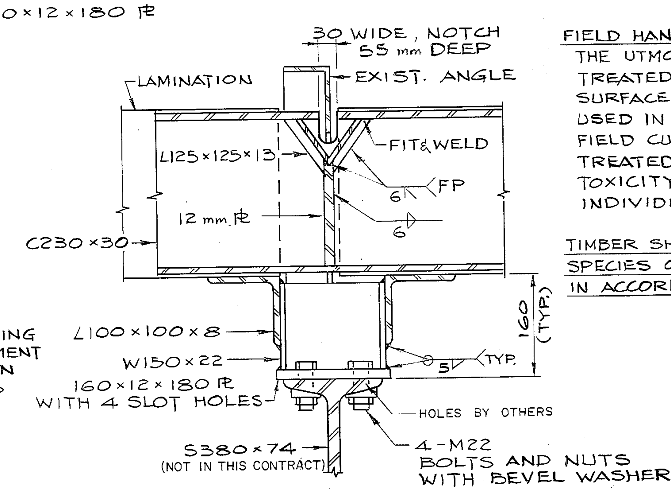


1 — 1:5

TYPICAL SECTION AT FLOOR BEAM

1:5



2 — 1:5

BILL OF TIMBER AND SUNDRIES

ITEM		No. REQ'D	SIZE	LENGTH	FINISH	REMARKS
TIMBER						
DECK LAMINATIONS	L1	28	38×235	4726	DRESSED	STEEL BULKHEAD,
" "	L2	28	38×235	4599	"	PRESTRESSING SYSTEM,
" "	L3	28	38×235	4534	"	TIE-DOWNS, GUARD RAILS
" "	L4	28	38×235	4599	"	AND SIDEWALK NOT INCLUDED
" "	L5	10	38×235	1081	"	
" "	L6	8	38×235	2675	"	
" "	L7	10	38×235	4269	"	
" "	L8	347	38×235	4776	"	
" "	L9	148	38×235	4991	"	
" "	L10	222	38×235	4905	"	
" "	L11	222	38×235	4819	"	
" "	L12	74	38×235	1916	"	
" "	L13	74	38×235	3596	"	
" "	L14	74	38×235	5233	"	
DECK SILL		8	140×89	4060	"	
SILL BLOCKINGS		40	140×64	400	"	
CURBS		2	191×140	47650	"	
CURB BLOCKINGS		64	191×89	400	"	
NEOPRENE SHEET		40	10×175	450		UNDER BLOCKING
NEOPRENE SHEET		4	10 X 275	4900		PIERS & ABUTMENTS 3
ARDOX NAILS		15940		90	GALV.	
LAG SCREWS		160	8 mm ϕ	127	GALV.	
LAG SCREWS		384	16 mm ϕ	229	GALV.	

NOTES:

TREATMENT OF TIMBER

DECK TIMBER: PENTACHLOROPHENOL IN TYPE A HYDROCARBON SOLVENT.

RAIL AND CURB TIMBER: CHROMATED COPPER ARSENATE.

TREATMENT AND RETENTION SHALL BE IN ACCORDANCE WITH C.S.A. STANDARD 080. AFTER TREATMENT WITH C.C.A., MATERIAL WITH EITHER DIMENSION 100 mm OR LESS SHALL BE DRIED, PRIOR TO SHIPMENT TO A MOISTURE CONTENT OF 25 %, MATERIAL WITH BOTH DIMENSIONS LARGER THAN 100 mm SHALL BE AIR DRIED AND STACKED WITH SPACERS FOR SHIPMENT.

FIELD HANDLING AND CARE OF TREATED MATERIAL

THE UTMOST CARE SHALL BE TAKEN IN HANDLING TREATED MATERIAL TO AVOID DEFACEMENT OF THE SURFACE, NO CHAINS, HOOKS OR PEAVIES SHALL BE USED IN HANDLING SAME, FRESH SURFACES EXPOSED BY FIELD CUTTING AND FIELD DRILLED HOLES SHALL BE TREATED BY SOAKING WITH PRESERVATIVE EQUAL IN TOXICITY TO THE ORIGINAL PRESERVATIVE. (THREE INDIVIDUAL APPLICATIONS REQUIRED)

TIMBER SHALL BE No. 2 STRUCTURAL GRADE HEM-FIR SPECIES OR EQUAL. ALL TIMBERS SHALL BE SUPPLIED IN ACCORDANCE WITH C.S.A. SPECIFICATION 0.86

APPROVED				
CONSULTANT: AUG 10.86 (DATE)	K. AUGUSTINAS — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO	TOWN OF SMITHS FALLS	Wylie & Ufnal consulting engineers	

No.	BY	REVISIONS	DATE
1	JLU	MATERIAL LIST REVISED	SEPT 86

DESIGN	K.A.
DRAWN	Y.C.
CHECKED	A.S.W.
APPROVED	B.F.
DATE	AUG. 1986
SCALE	AS NOTED

CONFEDERATION DRIVE BRIDGE REHABILITATION STAGE II

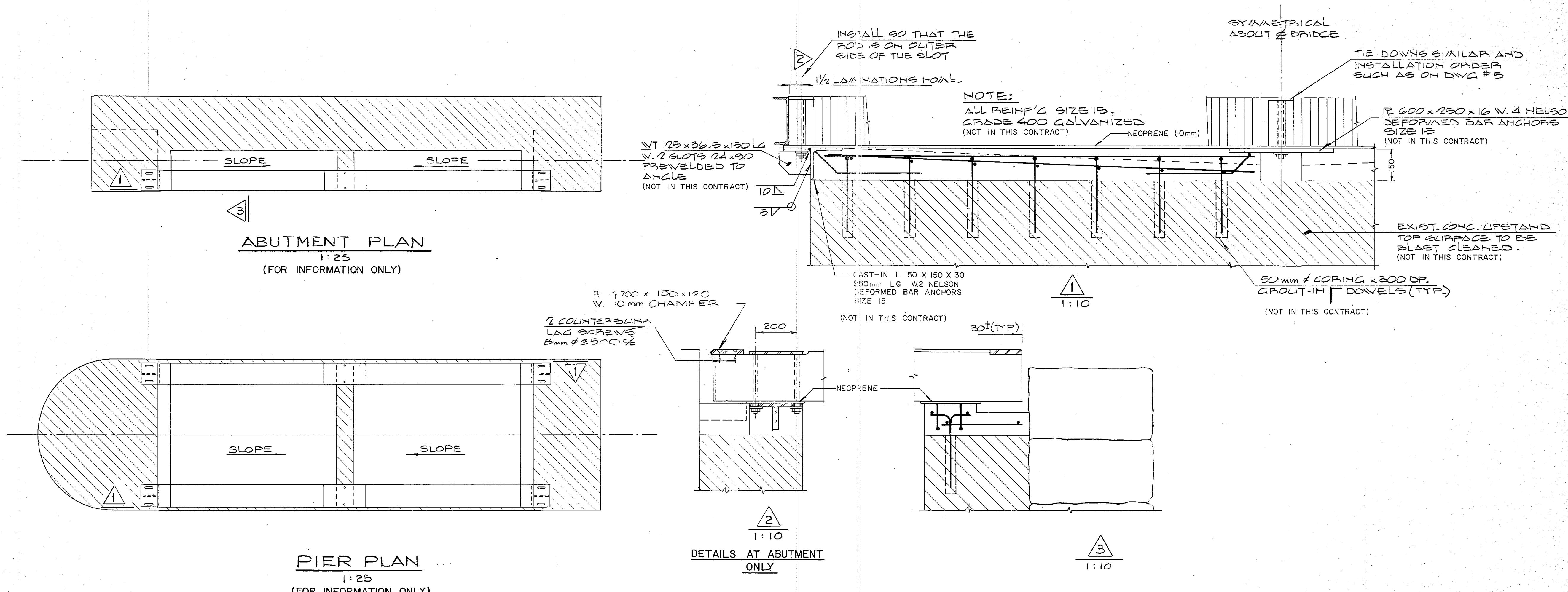
TIMBER DECK DETAILS II

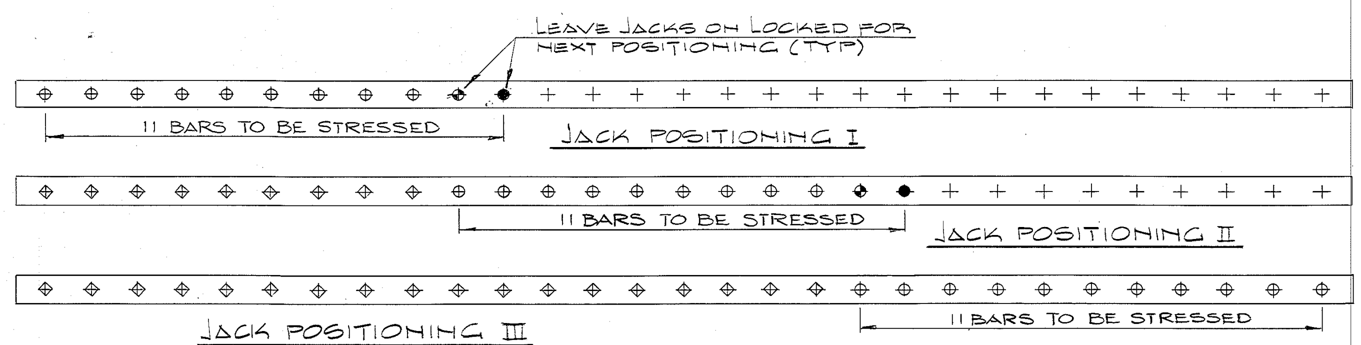
PROJECT No. 8617

DRAWING No. 5

SHEET OF

TRANSLAR





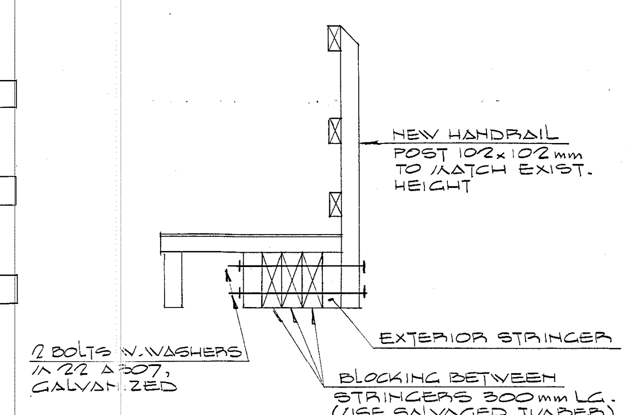
SEQUENCE OF JACKING
STAGE I
N.T.S.

LEGEND:

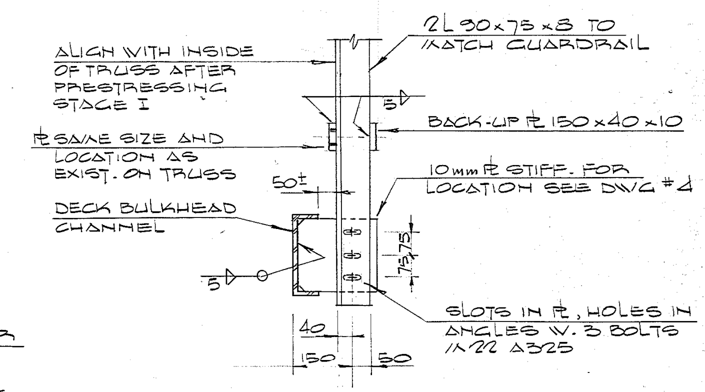
- + NON STRESSED BAR
- ⊕ JACK WITH 100 % OF FORCE
- " " 67 % " "
- ● " " 33 % " "
- ⊕ STRESSED BAR

NOTES:

- SAMPLE SEQUENCE SHOWN IS WHEN 11 (ELEVEN) JACKS ARE OPERATING.
- CONTRACTOR TO SUBMIT JACKING SEQUENCE BASED ON ABOVE PRINCIPLE AND ON THE NUMBER OF JACKS TO BE USED.
- THERE IS NO RESTRICTIONS FOR JACKING SEQUENCE IN STAGE II & III
- JACKING TO BE CARRIED OUT FROM THE DOWNSTREAM SIDE OF BRIDGE



NEW HANDRAIL POST
1:20



NEW GUARDRAIL POST
1:10

APPROVED		TOWN OF SMITHS FALLS	Wyllie & Ufnal consulting engineers
B. F. CONSULTANT AUG 15-86 DATE	REGISTERED PROFESSIONAL ENGINEER K. AUGUSTINAS PROVINCE OF ONTARIO		

No.	BY	REVISIONS	DATE
1	JLU	GENERAL REVISIONS - DETAIL 3	SEPT 86

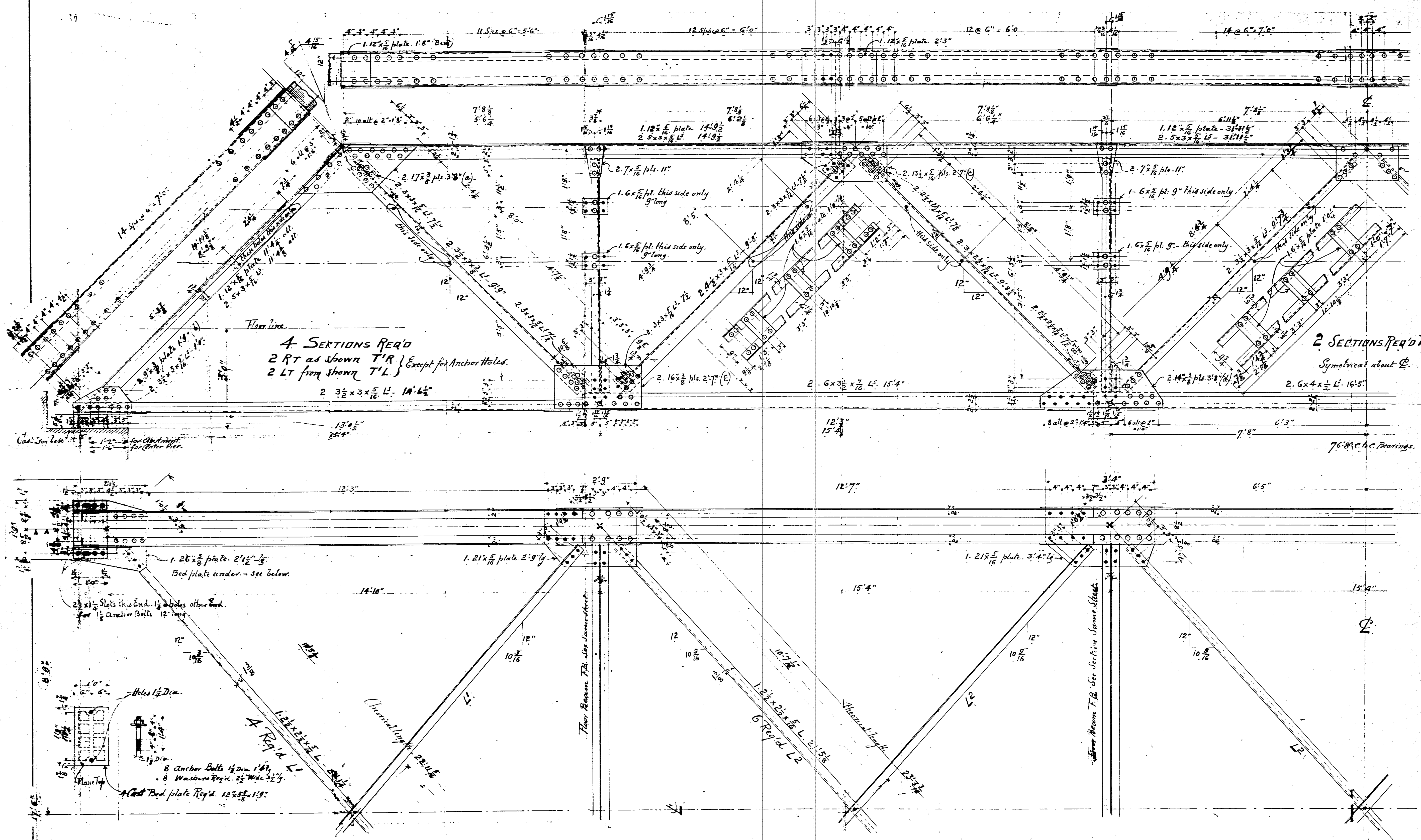
DESIGN	K.A.
DRAWN	Y.C.
CHECKED	A.S.W.
APPROVED	B.F.
DATE	AUG. 1986
SCALE	AS NOTED

CONFEDERATION DRIVE BRIDGE REHABILITATION STAGE II

TIMBER DECK DETAILS III

PROJECT No.	8617
DRAWING No.	6
SHEET	OF

TRANSLAR



APPROVED			
CONSULTANT			
DATE			

TOWN OF
SMITHS FALLS

Wyllie & Ufnal
consulting engineers

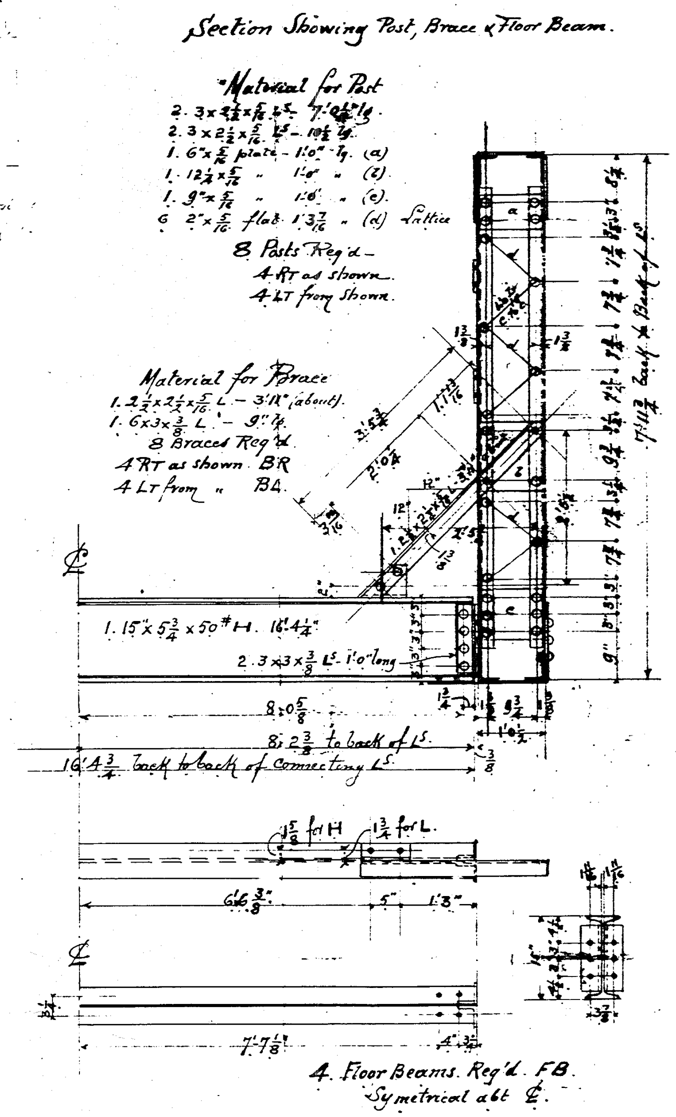
No.	BY	REVISIONS	DATE

DESIGN ADAP.
DRAWN
CHECKED
APPROVED
DATE
SCALE

CONFEDERATION DRIVE BRIDGE
REHABILITATION STAGE I

EXISTING STRUCTURAL STEEL I.

PROJECT No. 8617
DRAWING No. 7
SHEET OF



APPROVED CONSULTANT DATE			TOWN OF SMITHS FALLS	Wyllie & Ufnal consulting engineers	

No.	BY	REVISIONS	DATE

DESIGN	ADAP.
DRAWN	
CHECKED	
APPROVED	
DATE	
SCALE	

CONFEDERATION DRIVE BRIDGE
REHABILITATION STAGE I

EXISTING STRUCTURAL STEEL II.

PROJECT No. 8617
DRAWING No. 8
SHEET OF

APPENDIX D – DESKTOP REVIEW OF STRUCTURAL EVALUATION REPORTS

McINTOSH PERRY

MEMORANDUM

To: Paul McMunn, Director of Public Works & Utilities, Town of Smiths Falls

From: Ghassan Zanzoul, Senior Bridge Engineer, McIntosh Perry Consulting Engineers Ltd.

Date: March 4, 2022

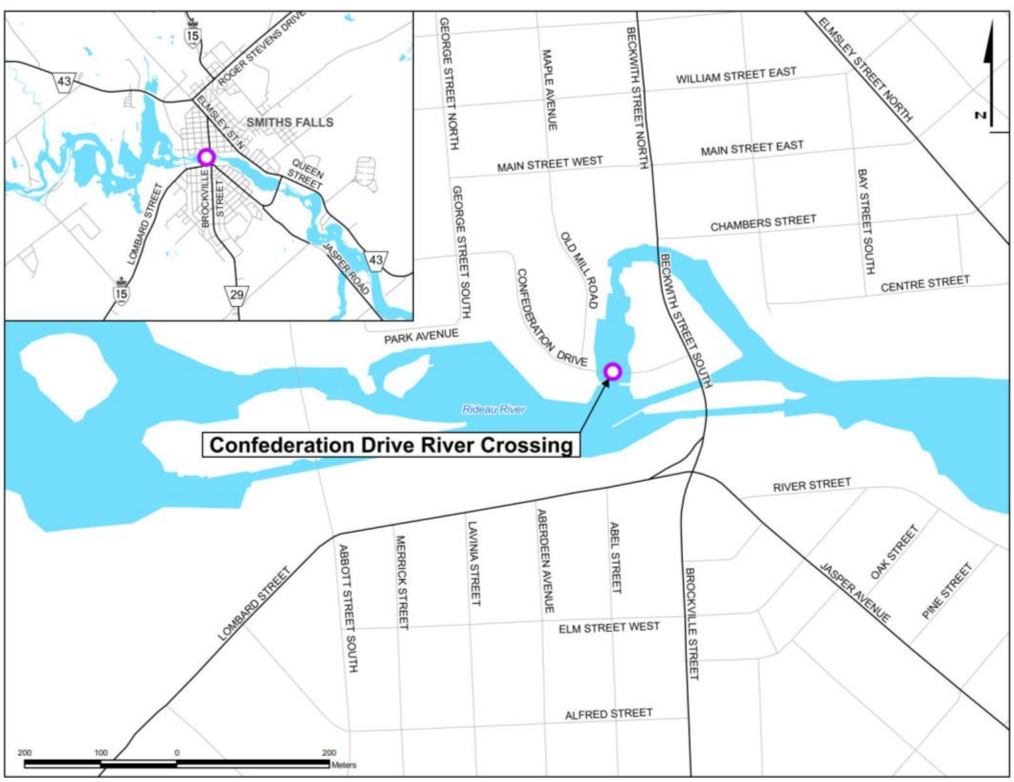
Re: Desktop Review of Structural Evaluation Reports

1.0 INTRODUCTION

McIntosh Perry Consulting Engineers (MP) was retained by the Town of Smiths Falls to undertake a Schedule "B" Municipal Class Environmental Assessment and Preliminary Design for the Confederation Drive River Crossing (Confederation Bridge). As part of the assignment, MP's structural engineering team has undertaken a desktop review of existing Structural Evaluation Reports and Assessments (i.e., OSIM Inspections) previously prepared under separate cover for the Confederation Bridge. This memorandum documents the existing condition of the Confederation Bridge and summarizes whether rehabilitation of the Confederation Bridge is considered a viable alternative as outlined in supporting documents.

1.1 Location

The Confederation Drive River Crossing is located within the Town of Smiths Falls and is illustrated on the key plan below. Confederation Drive River Crossing is located on Confederation Drive over the Rideau Canal and can be accessed from Confederation Drive, that leads to Centennial Park or Canal Street off Highway 15 (Beckwith Street South), at Veterans' Memorial Park (Cenotaph) and the Smiths Falls Combined Lockstation Lock 29a.



2.0 BACKGROUND

The Confederation Bridge was built in 1904 and is a single lane twin span Warren type pony truss with a 1.37 m wide pedestrian pathway on the upstream side that is believed to be original to the bridge. The spans have a nominal length of 23.8 m each, and a centre to centre truss spacing of 5.33 m. This bridge is an example of a rivet-connected truss bridge and is the only example of a truss bridge within the Town of Smiths Falls and is an important contributor to the unique variety of bridges within the Town. The Confederation Drive Crossing bridge can be accessed from Confederation Drive, that leads to Centennial Park or Canal Street off Highway 15, at Veterans' Memorial Park and the Smiths Falls Combined Lockstation Lock 29a. Both of these roads are paved 2-lane roads. There is also a dam located adjacent to the bridge on the upstream side. According to the Confederation Drive Bridge Assessment & Options Report (Keystone Bridge Management Corp., 2020), a PUC lighting cable and a Parks Canada power duct were located under the bridge sidewalk deck in the 1986 drawings.

The available historic records for the bridge are lack or are incomplete. Prior to rehabilitation in 1986, it is believed the bridge deck consisted of 10 lines of 4" x 12" timber stringers lapped on the floor beams, supporting 3-1/2" x 8" timber plank decking. The sidewalk deck was carried on three 4" x 8" timber stringers. Before 1986, all the structural connections were steel rivets. The bridge received a comprehensive rehabilitation circa 1986 which consisted of:

- Replacement of the timber stringer deck with a prestressed laminated creosoted timber deck;
- Replacement of all the floor beams;
- Replacement of select bottom chord structural steel, particularly all the chord members on the south truss;
- Reconstruction of the pedestrian walkway with salvaged timber from the deck;
- Installation of 20 mm diameter high-strength steel bolts where rivets were replaced;
- Reconstruction of the truss verticals on the upstream side, and
- Some masonry work was included at the abutments and pier as part of the work.

In late 2015, the timber deck was removed, and the bridge has been barricaded off and remains out of service to both vehicular and pedestrian traffic. The bridge has remained closed to vehicle and pedestrian traffic since due to safety concerns relating to the deterioration of the steel structure. Prior to its closure, the bridge had a load restriction of a maximum of 7 tonnes. Due to the aging infrastructure and current condition of the bridge, a decision needs to be made on the best course of action for the replacement of the existing bridge with either a pedestrian or vehicular bridge.

2.1 Available Documentation

The following references were provided by the Town of Smiths Falls to complete the structural desktop review. Please note that a physical structural evaluation is not part of the current scope of work.

- Greer Galloway Consulting Engineers letter to Town of Smiths Falls (April 4, 2011);
- Evaluation and Assessment of Confederation Bridge (Greer Galloway Consulting Engineers, April 2011);
- 2015 Bridge OSIM Report (Greer Galloway Consulting Engineers);
- Confederation Drive Bridge Assessment and Options Report (Keystone Bridge Management Corp., January 2020);

- Draft Tender for Confederation Bridge Road Deck Removal and Steel Repairs (Greer Galloway Consulting Engineers, September 2014), and
- Confederation Bridge Rehabilitation Sketches (Greer Galloway Consulting Engineers, September 2015).

3.0 EXISTING BRIDGE CONDITIONS

Bottom Chords: The bottom chords are in fair to poor condition with severe corrosion and localized areas of critical section loss and reduction. All bottom chords to be replaced in any rehabilitation alternative.

Vertical Paired Gusset Plates: The vertical paired gusset plates at the lower panel points are in poor condition with extensive corrosion and section loss including full perforations. All vertical paired gusset plates to be replaced in any rehabilitation alternative.

Floor Beams: The floor beams are in fair to poor condition extensive corrosion and section loss particularly at both ends of each beam. All floor beams to be replaced in any rehabilitation alternative.

Lateral Bracing: The bottom lateral bracings are in poor condition with severe corrosion and section loss including complete section loss at some locations. All lateral bracings to be replaced in any rehabilitation alternative.

Top Chord: The top chords appear to be in fair to good condition, but a detailed close-up structural steel inspection is required to determine the exact material condition. Exact condition will be determined during the close-up inspection and the rehabilitation design will be determined accordingly.

Verticals and Diagonals: The verticals and diagonals of the truss appear to be in fair to good condition with uncertainty as to the condition of the bottom ends due to debris resting on the horizontal gusset together with the congested nature of the panel point locations. Approximate section losses at the bottom connections can be determined by a closed-up inspection; however, accurate section losses could not be determined due to the accumulated corrosion. This could only be measured after through cleaning of the section using abrasive sand blasting method.

Substructure: The bridge is supported on masonry abutments and pier that consist of limestone blocks that may well pre-date the present bridge. The abutments and pier were not inspected due the fast-flowing water. A detailed inspection will be required of the abutments and pier including under-water inspection to determine the foundation condition and whether any scouring had been occurring due to the fast-flowing water over the years.


Lead Paint: The Keystone report identified that there are high concentrations of lead in the paint system of the bridge. Lead is a known toxin, and cleaning and recoating the bridge will prove very costly if preparatory work for repainting the bridge is conducted on site.

4.0 STRUCTURAL STEEL STRENGTH

The existing structural steel strength is unknown, but the bridge was built in 1904. Therefore, According to CHBDC (Canadian Highway Bridge Design Code), the structural steel strength that could be used in any structural evaluation will be Fy=180 MPa. For rivets constructed before 1936 or of unknown Fu=320 MPa, as per CHBDC. It is worth to note that the current standard for structural steel is 350 MPa and A325 bolts is 830 MPa at ultimate state.

5.0 CONCLUSION AND RECOMMENDATIONS

Given the significant debris and corrosion accumulation at/near the gusset plates, accurate section losses estimation for the bottom chords and floor beam would not be possible as indicated in the condition assessment. A structural evaluation would only provide an approximate structural assessment for the load carrying capacity of the existing structure. In addition, based on the previous structural assessment by The Greer Galloway Group Inc, the rehabilitation would only increase the usable life span of the bridge for another 5 years.

In addition, based on the poor condition of the gusset plates, the bottom chords and floor beam, the rehabilitation would have to be completed by removing the existing bridge off site and supported on temporary supports on temporary layout area or in a shop to safely replace/reinforce the gusset plates, bottom chords, and floor beams. Alternatively, a temporary Bailey bridge can be utilized to support the structure for any rehabilitation work, if deemed required. A temporary Bailey bridge can support the existing bridge on site while the removal or repair works are being completed safely. However, either option would cost significantly high construction cost that may be similar or more costly than the bridge replacement.

The existing bridge was constructed in 1904 and is 117 years old. It should be noted that a typical bridge life span built in 1900's should be only 50 years based on OHBDC (previous bridge code in Ontario replaced by CHBDC). From the MTO Structure Rehabilitation Manual, the rehabilitation strategy should be compatible with the remaining service life of the structure. A structure may require replacement where it does not meet current design criteria for geometry or load capacity, or where other deficiencies are present in components of the structure that will otherwise limit its service life. Any rehabilitation option would be limited by the service life of the remaining elements that were not rehabilitated. Accordingly, the original bridge has passed more than twice of its' anticipated life span and therefore replacement is recommended.

Based on the above noted condition of bridge elements, material strength, and date of construction, it is recommended that rehabilitation not be considered as a viable of Alternative Solution for vehicular traffic nor as an active transportation link. If the Town still in favour of perusing the rehabilitation of the bridge, the following engineering work is recommended to determine the feasibility of the rehabilitation alternative:

1. Complete a very detailed inspection of the structural steel after a thorough cleaning. The structural steel inspection will include:
    - Visual close-up inspection of all structural elements particularly those that intended to remain part of the rehabilitated bridge. This was also recommended with the Keystone Bridge Assessment and Options Report (January 2020);
    - Ultrasonic Testing to determine the thickness of the existing structural steel sections and the section loss in the corroded sections, and
    - Magnetic Particle Testing of any area that suspicious for crack.
2. Measure all structural sections and bridge components so that an as-built record of the bridge can be recorded in drawings, and
3. Perform a full structural analysis and evaluation, in accordance with Chapter 14 of CHBDC, in order determine the bridge load capacity.

Upon the Town's review of this memorandum, MP's structural team is available to discuss and determine whether further evaluation is warranted to support the Municipal Class Environmental Assessment process and selection of the technically preferred alternative.

APPENDIX E – TRAFFIC IMPACT ASSESSMENT REPORT

SMITHS FALLS CONFEDERATION RIVER CROSSING TRAFFIC IMPACT ASSESSMENT

Schedule “B” Municipal Class Environmental Assessment Study, Confederation Drive River Crossing, Town of Smiths Falls, Ontario

Project No.: CCO-22-2838

Prepared for:

Township of Smiths Falls
77 Beckwith Street North
Smiths Falls, ON
K7A 2B8

Prepared by:

McIntosh Perry Consulting Engineers Ltd.
115 Walgreen Road
Carp, ON
K0A 1L0

March 7, 2022

MCINTOSH PERRY

TABLE OF CONTENTS

1.0 INTRODUCTION

The Town of Smiths Falls (Town) retained McIntosh Perry Consulting Engineers Ltd. (McIntosh Perry) to undertake a Schedule "B" Municipal Class Environmental Assessment (MCEA). MP in support of the MCEA prepared a traffic impact assessment reviewing the use of the Confederation River Crossing under the existing conditions, and future conditions of the bridge and surrounding, while reviewing the area based on the future development located adjacent to the bridge, 19, 25 Old Mill Road.

2.0 EXISTING CONDITIONS

2.1 Background

The existing Confederation Drive River Crossing is in an advanced state of deterioration and has been closed for public use at this time. The existing bridge is also a single-lane bridge with other functional and operational deficiencies. McIntosh Perry was retained by the Town to conduct this MCEA, to identify and evaluate alternative solutions to determine a preferred solution to address the aging infrastructure within the Confederation Drive River Crossing area (Figure 1).

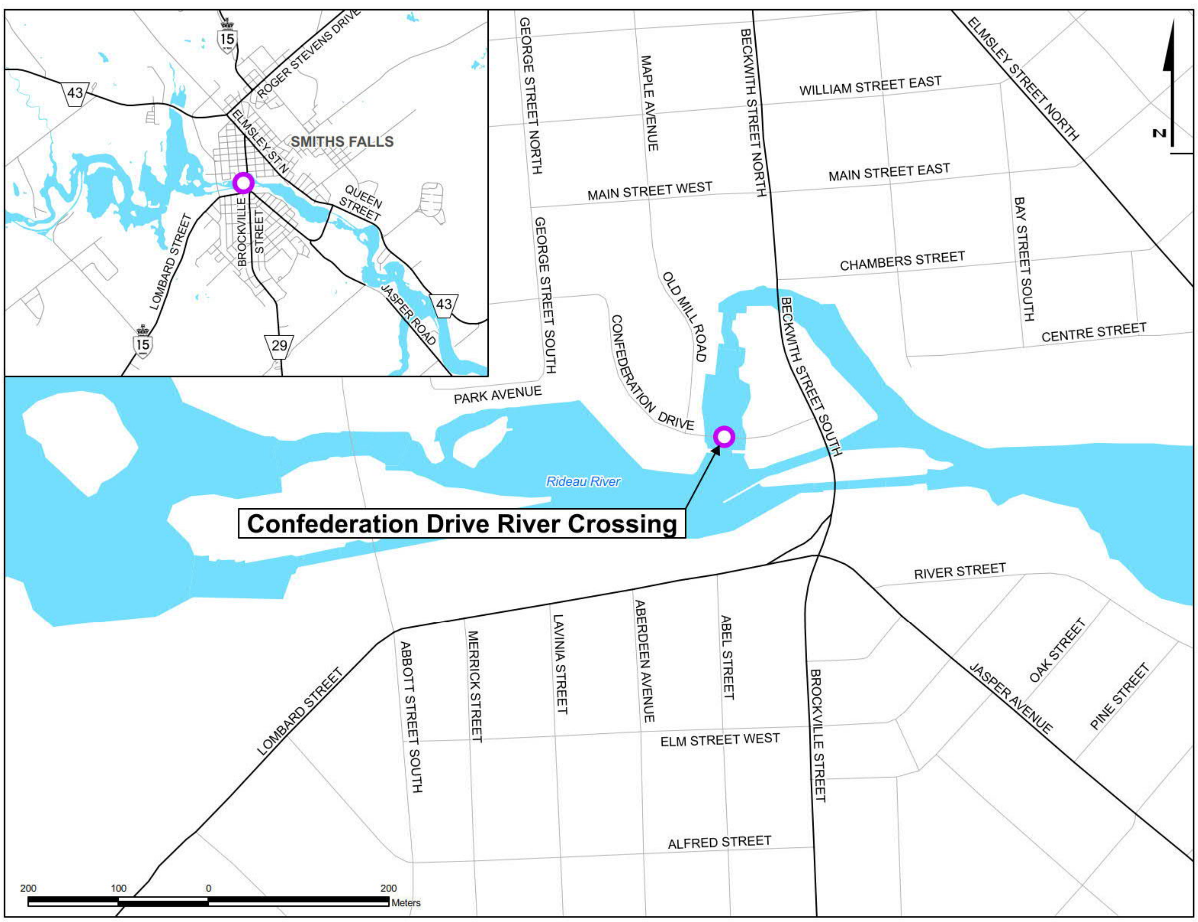


Figure 2.1 Site Location

This TIA will review the impacts to the traffic network if the bridge is to be replaced in kind to allow vehicular traffic to cross again or if it will remain closed to vehicles.

2.2 Study area

2.2.1 Road Network

MP included the following roadways within the study area:

- Beckwith Street;
- Main Street;
- Chambers Street;
- Confederation Drive;
- Old Mill Road, and;
- Abbot Street.

Beckwith Street is an undivided two-lane arterial roadway, with an unposted speed limit of 50 km/h, that runs from north to south within the Town of Smiths Falls. Within the Study area there are designated separated bike lanes, as well as street parking commencing at Chambers Street and continue to the north, and sidewalks all along Beckwith Street on both sides of the roadway.

Main Street is an undivided two-lane local roadway with an unposted speed limit of 50 km/, that runs from east to west within the Town of Smiths Falls. Within the Study there is street parking and concrete sidewalks on both sides of the roadway.

Chambers Street is an undivided two-lane collector roadway with an unposted speed limit of 50 km/h, that runs from east to west within the Town of Perth. Within the Study there is street parking and concrete sidewalks on both sides of the roadway.

Confederation Drive is an undivided two-lane local roadway, with an unposted speed limit of 50 km/h that runs east to west within the Town of Smiths Falls. Currently the Confederation Drive River Crossing is only operational to pedestrians. Currently there is a paved sidewalk on the south hand side of the roadway and concrete curbs on both sides of the roadway.

Old Mill Road is an undivided town-lane local roadway with an unposted speed limit of 50 km/h that runs north to south within the Town of Smiths Falls. There is designated street parking along the east side of the roadway to the north of the intersection of Old Mill Road and Confederation Drive. There are concrete curbs on both sides of the roadway, and a concrete sidewalk on the east side of the roadway.

Abbot Street is an undivided two-lane arterial roadway with an unposted speed limit of 50 km/h that runs from north to south within the Town of Smiths Falls. There are concrete sidewalks on both sides of the roadway south of Strathcona Street where the west hand side becomes a paved shoulder, and the east hand side continues to the north as concrete sidewalk.

2.2.2 Study Intersections

MP reviewed the following intersections based on the provided data:

- Beckwith Street at Main Street;
- Beckwith Street at Chambers Street;
- Beckwith Street at Confederation Drive, and;
- Old Mill Road at Confederation Drive.

Figure 2.2 illustrates the intersections during existing conditions with the Confederation Drive River Crossing closed.

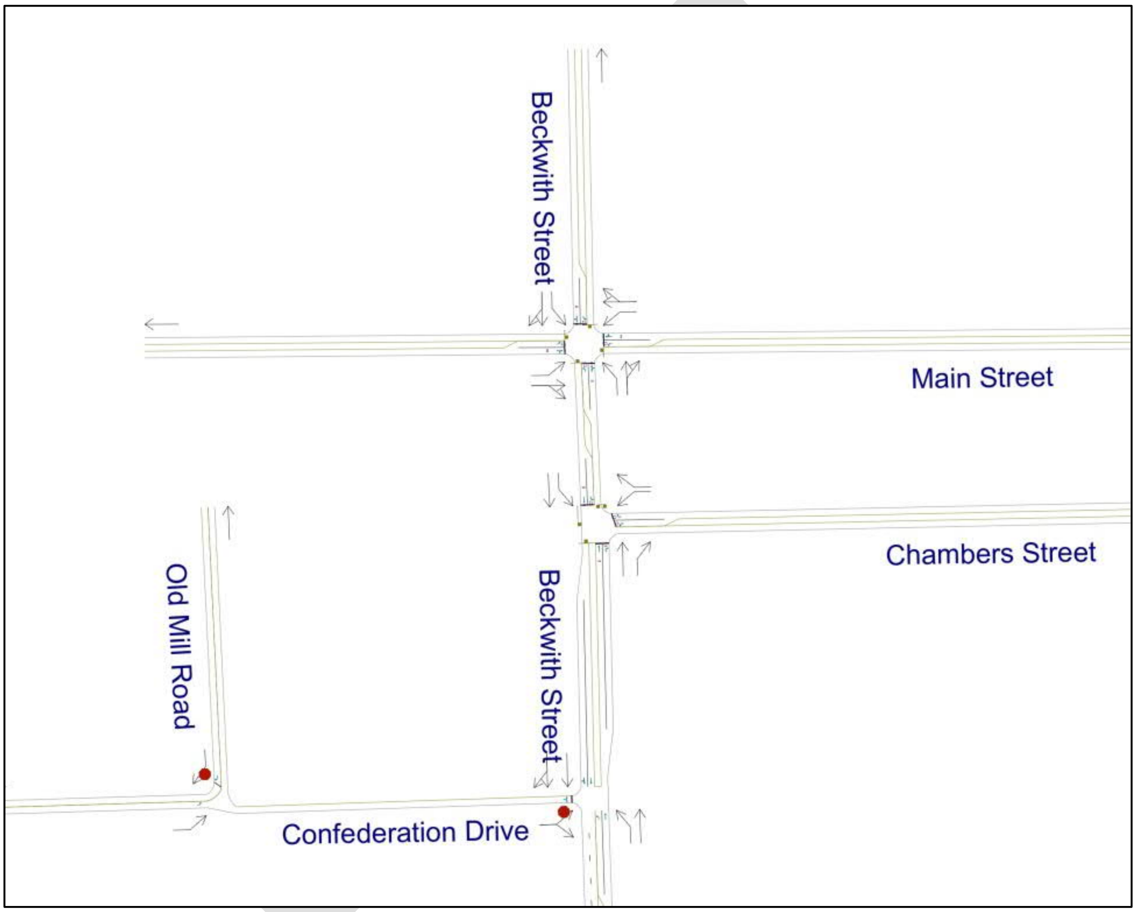


Figure 2.2 Intersections with Confederation Drive River Crossing Closed

Figure 2.3 illustrates the intersections during existing conditions with the Confederation Drive River Crossing opened.

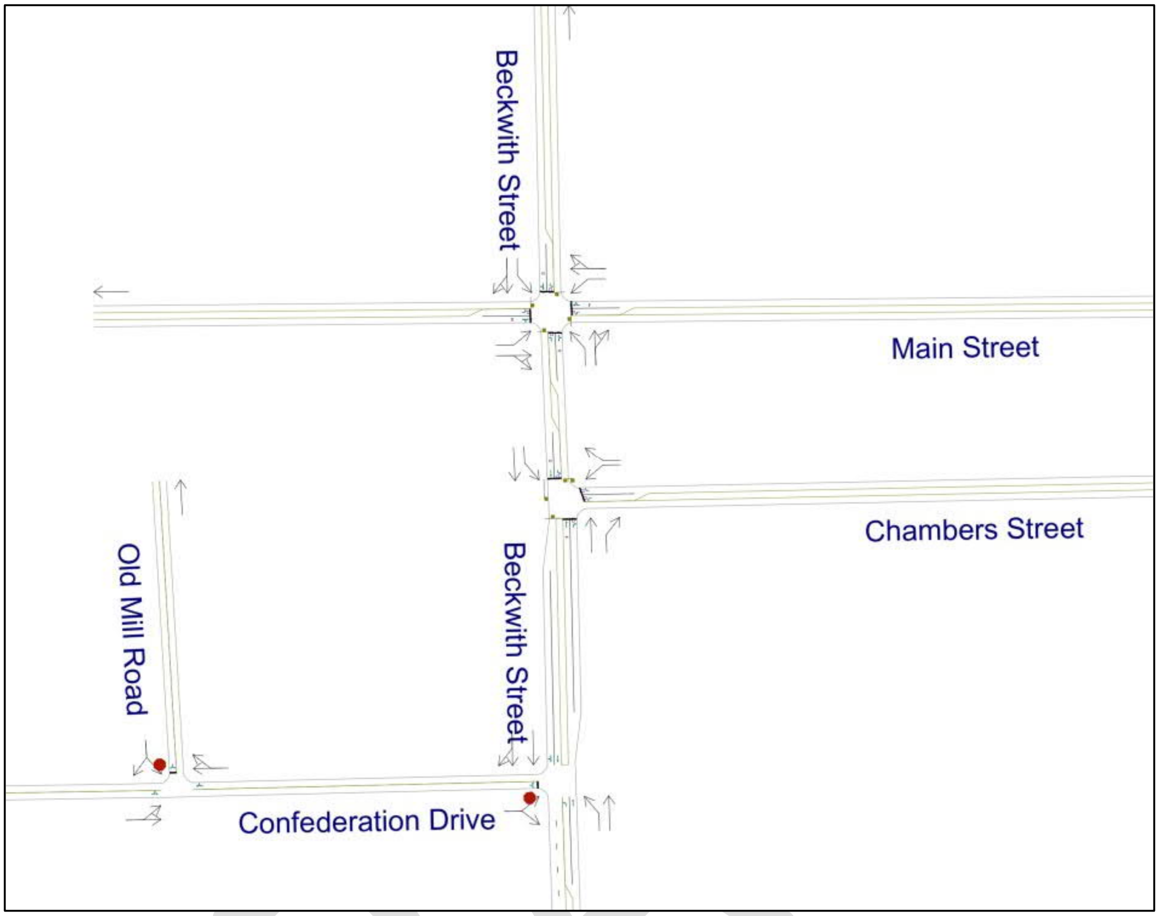


Figure 2.3 Intersections with Confederation Drive River Crossing Opened

2.2.3 Traffic Volumes and Characteristics

MP received data from the Township of Smiths Falls that is summarized in Table 2.1. All data can be found in Appendix A.

Table 2.1 Provided Traffic Data

Location	Count Type	Year
Beckwith Street - Confederation Drive to Chambers Street	ATR	2016
Abbot Street - Strathcona Street to Williams Street		2015
Old Mill Road - Main Street to Confederation Drive		2015
Strathcona Street - George Street to James Street		2015
Main Street - Maple Avenue and Beckwith Street		2011
Confederation Drive and Old Mill Road	TMC	2015
Main Street and Beckwith Street		2012
Beckwith Street and Chambers Street		2012
Beckwith Street at Confederation Drive		2012

MP received Turning Movement counts for the intersections of Confederation Drive and Old Mill Road, Beckwith Street and Main Street, Beckwith Street and Chambers Street, and Beckwith Street and Confederation Drive.

The characteristics of the volume provided showed a 56/44 split for vehicles heading into the downtown core of Smiths Falls apposed to leaving the downtown core during the am peak hour, where the opposite is true for the pm peak hour with a 54/46 split of vehicles leaving the downtown core. The pm peak hour is shown to have a higher volume of vehicles compared to the am peak hour with approximately 25% more traffic on the road network.

The following assumptions were used when preparing the existing condition network:

- As the bridge was closed in Spring 2015 the ATR counts all happened after the fact and were used to balance the road network.
- 5 vehicles per hour were added to the network during the pm and am peak hour turning from both the northbound and south bound approaches of Beckwith Drive onto Confederation and 5 vehicles turning both northbound and southbound onto Beckwith Street from Confederation Drive as there is the small parking lot for the locks located on the south hand side of Confederation. As there are 6 parking spaces, this is estimated to be conservative and demonstrate a turnover of around 30 minutes. As well as for the use of Parks Canada Staff and

Figure 2.2 illustrates the existing volumes for the road network.

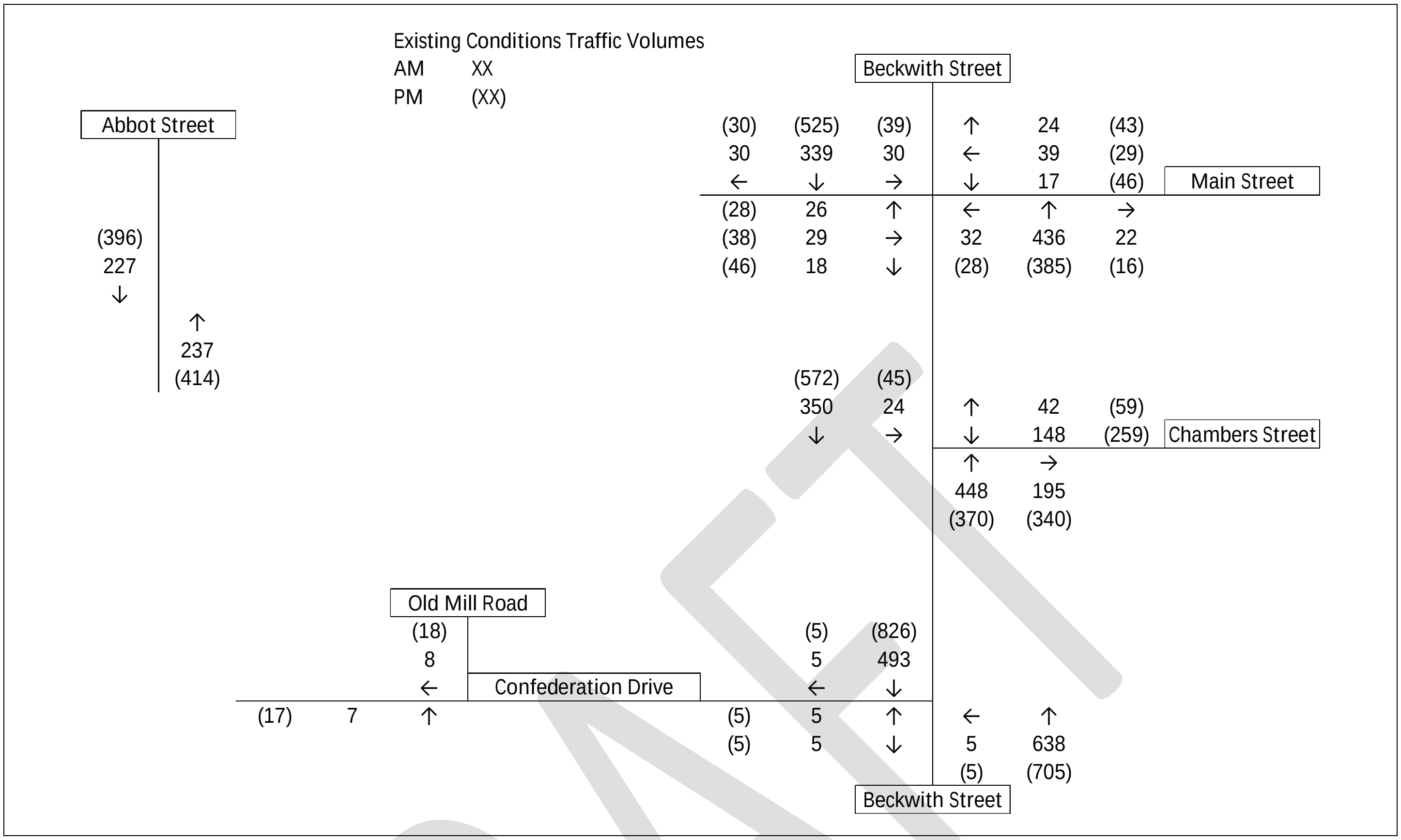


Figure 2.4 Existing Conditions Traffic Volumes

3.0 FUTURE CONDITIONS

3.1 Study Time Periods

MP reviewed the existing 2022 conditions, and the 10-year horizon (2032) study period. All scenarios were reviewed under the AM Peak (8:00-9:00) Hour and PM Peak Hour (16:00-17:00) of the adjacent roadway traffic found from the provided traffic data.

3.2 Modeling Scenarios

Three modelling scenarios were reviewed. The first modelling scenario was the existing 2022 conditions with all roadways and intersections operating as they currently do. In this scenario the Confederation Drive River Crossing is acting as a pedestrian cross-over only and is not open to vehicular traffic. MP also reviewed two scenarios during the 10-year horizon period comparing the operations of the existing road network when the Confederation Drive River Crossing remains as a pedestrian crossing and the other when the bridge is open for vehicular traffic. This was done to see if there is need to open the Confederation Drive River Crossing to vehicular traffic in the near future.

3.3 Background Traffic Growth

MP reviewed the Town of Smiths Falls Official Plan, and it is mentioned within that a review of the Official Plan 2013-2014 Land Needs Background Study projected an annual population growth rate of 0.51% to the year 2031. However, the Canadian Census report illustrates depopulation within the Town of Smiths Falls from the years 2011-2016 of -2.2%. Based on the local knowledge of MP staff combined with the increase in large business developments within the Town of Smiths Falls and the fact that traffic grow rate is a product of both employment and population growth, MP has utilized an annual growth rate of 2% in order to extrapolate the provided traffic data to 2022 and 2032 conditions. This annual 2% is in order to remain conservative with the total traffic the study road network experiences to account for many unknowns when it comes to the development that has taken place as the data received is as aged as 10 years.

3.3.1 Planned Developments

MP has been made aware of a large, planned development that is in the process of being confirmed located adjacent to the Confederation Drive River Crossing, located at 25, 19 Old Mills Road with the potential to expand onto the eastern side of Old Mills Road where the existing Water Tower is located. All three locations are currently zoned as OS – Open Space, however, as part of the current zoning bylaw updates, it is being rezoned as C1 – General Commercial. As such, under the new zoning it allows for all developments to be 6-7 stories with commercial on the ground floor and condo units from floors 2-6 or 7. To ensure MP remains conservative the MP will include the maximum development size including the construction of all three locations to include the ground floor of commercial and the following 6 floors of residential uses.

3.3.2 Trip Generation

Trip generation for the proposed development was calculated in accordance with Institute of Transportation Engineers (ITE) Trip Generation 10th Edition methodologies and data. Based on conversations with the Town of Smiths Falls, it was established that the proposed development to be built at 25/19 Old Mill Road would be in lines with a multi-story residential building with first floor commercial. The max height of the building based on the zoning by-laws allows for 22 meters (7-stories). The Town Staff mentioned that each residential floor would ideally include 6 residential condo units, and each floor would have a GFA of 16,206 Sq. Ft (1,505 m^2), and the building will be between 6-7 stories tall. As such MP, to remain conservative in the trip generation estimate, used a 7-story building, with commercial retail on the first floor and 6 residential condos per floor, from floor 2-7. For the commercial component, MP made a reduction of 10% of the GFA as this is to be assumed to be used for electrical/mechanical uses as well include hallways. With discussion with the town staff, it was also mentioned that there will be 2 buildings, one located at 19 Old Mill Road, and one located at 25 Old Mill Road, with a high probability of a third building being built at the location of the current water tower adjacent to 25 Old Mill Road, with all three buildings being similar in floor plan. As such, MP included all three buildings in the trip generation. Table 3.1 Illustrates the trip generation.

Table 3.1 ITE Trip Generation

Land use	ITE Land Use Code	GFA (Sq ft/units)	Trip generation Rate		Trips generated		AM Split		Pm Split	
			AM	PM	AM	PM	In	Out	In	Out
19 Old Mill Road										
Shopping Center	820	14,585	0.94	2.04	14	55	8	6	26	29
Multifamily Housing (Mid Rise)	221	36 units	0.36	0.44	13	16	3	10	10	6
25 Old Mill Road										
Shopping Center	820	14,585	0.94	2.04	14	55	8	6	26	29
Multifamily Housing (Mid Rise)	221	36 units	0.36	0.44	13	16	3	10	10	6
At location of present water tower										
Shopping Center	820	14,585	0.94	2.04	14	55	8	6	26	29
Multifamily Housing (Mid Rise)	221	36 units	0.36	0.44	13	16	3	10	10	6
Total					81	213	33	48	108	105

MP utilised ITE land use code 820 for a Shopping center to model the commercial retail component of the first floor due to uncertainty of the exact type of retail to be taken place. As such this provides an over-estimate of the trips generated by said retail uses. As well, as the buildings are planned on a shared use of commercial and residential a site synergy reduction can be used. This is to say that some of the trips generated will be people that will go to the retail and then from the retail to their residential units. As such, MP included a 20% reduction for Site Synergy between the retail and residential component. Table 3.2 illustrates the trip generation after the reduction.

Table 3.2 Site Synergy Reduction

	Trips generated		AM Split		Pm Split	
	AM	PM	In	Out	In	Out
Total Trips	81	213	33	48	108	105
20 % on site synergy reduction	16	43	7	10	22	21
Total trips after reduction	65	170	26	38	86	84

The proposed development is anticipated to generate 65 trips during the am peak hour with 26 trips entering the site and 38 trips exiting. During the pm peak hour, the proposed development is anticipated to generate 170 total trips with 86 entering the site and 84 exiting the site.

3.3.3 Trip Distribution and Trip Assignment

The distribution of trips is developed only considering new auto driver trips. As such, the new commercial/residential buildings will act as the origin and destination of the new trips during the respective peak hours. All generated trips are anticipated to follow existing traffic patterns within the study area. Trip distribution and assignment were done modelling the two different scenarios of the Confederation Drive River

Crossing being closed to vehicular traffic (Figure 3.1, Figure 3.2 and Figure 3.3) and then open to vehicular traffic (Figure 3.4, Figure 3.5 and Figure 3.6).

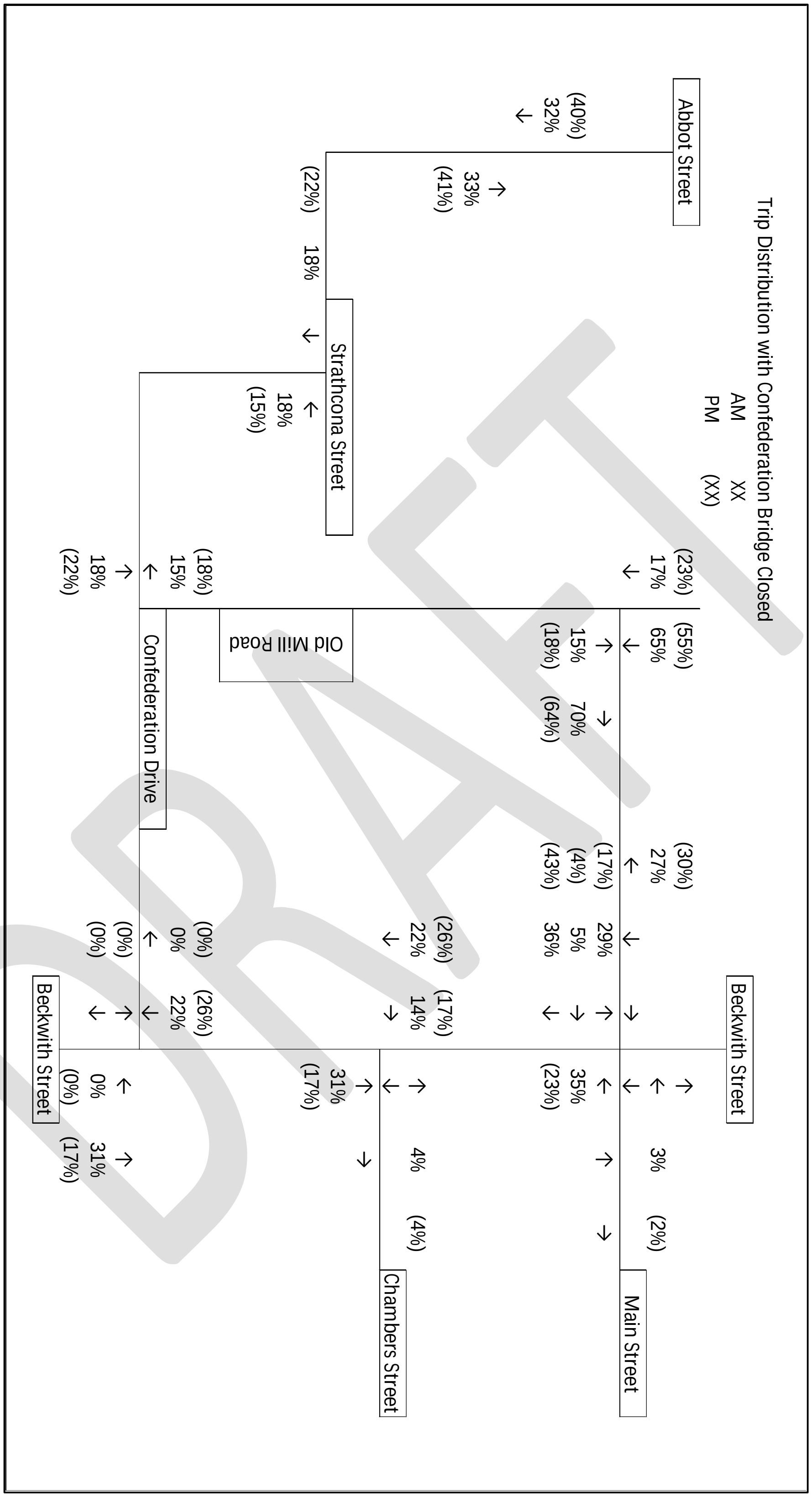


Figure 3.1 Trip Distribution with Confederation Drive River Crossing Closed

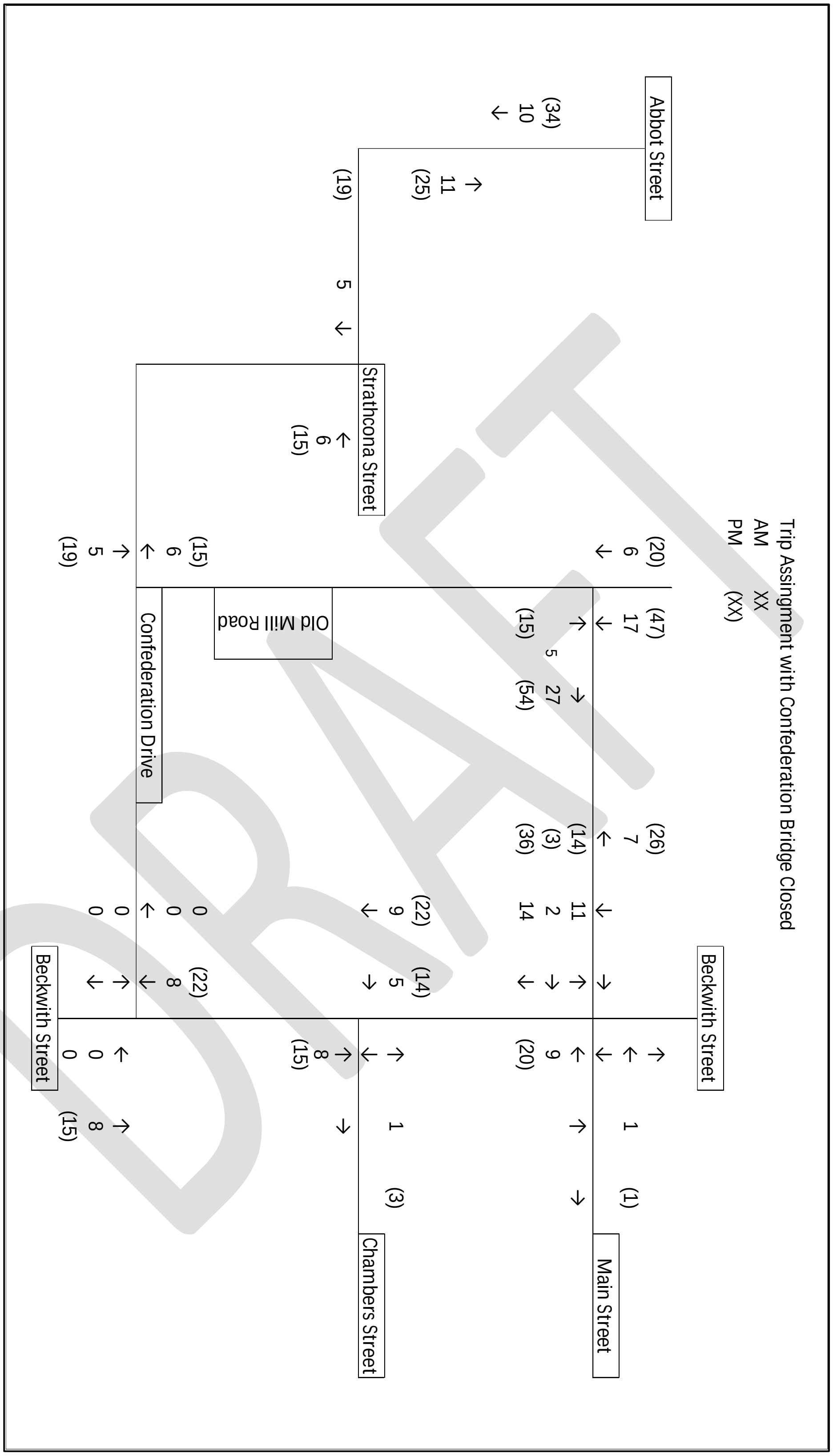


Figure 3.2 Trip Assignment with Confederation Drive River Crossing Closed

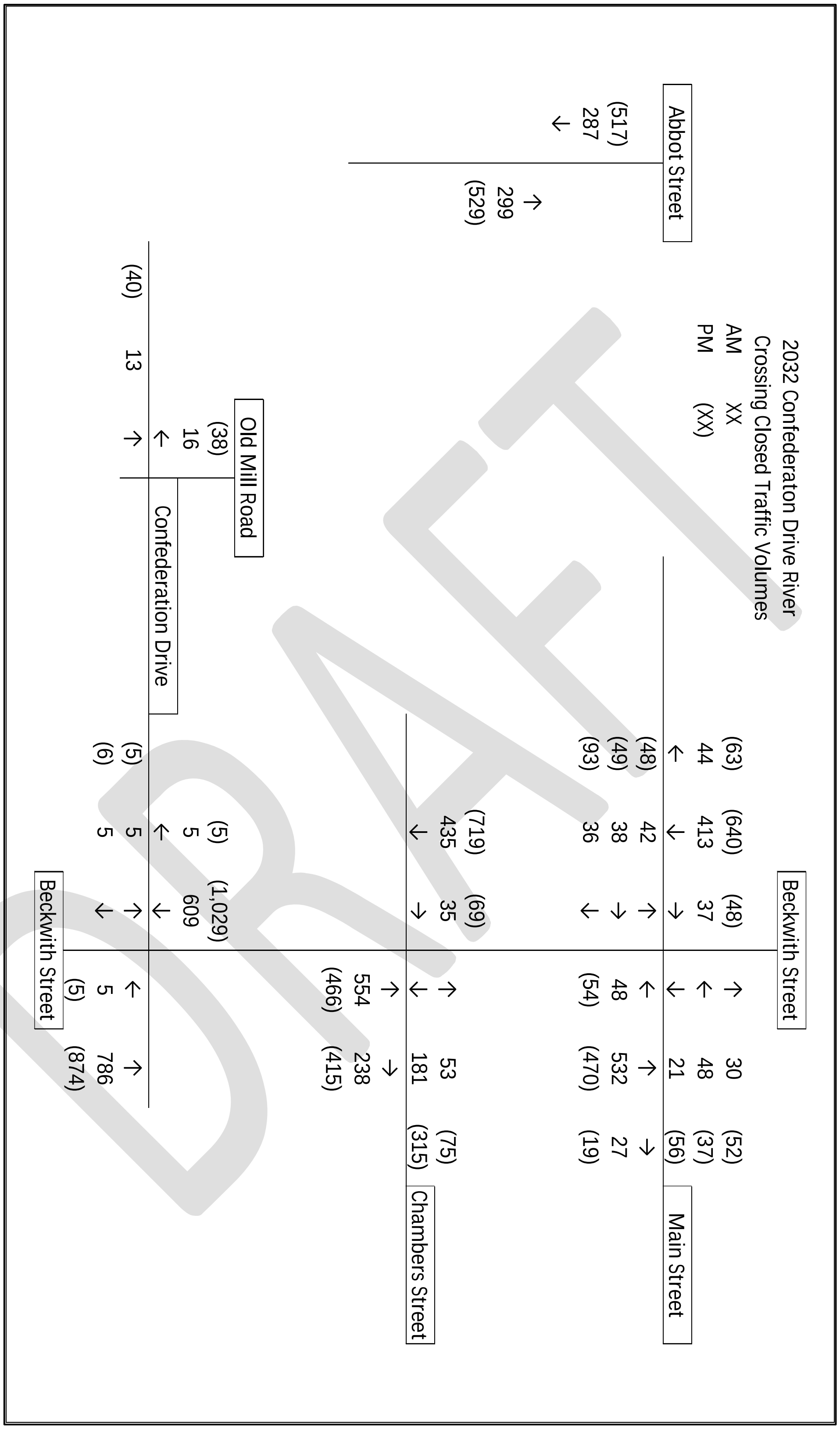


Figure 3.3 2032 Confederation Drive River Crossing Closed Traffic Volume

The following is a list of assumptions made to the trip distribution and assignment for when the Confederation Drive River Crossing is opened to vehicular traffic:

- One third of the traffic volume turning right from Beckwith Street onto Main Street and into the development has been rerouted to continue south and turn right at Beckwith Street onto Confederation Drive and into the development.
- Half of the vehicular volume turning right from Main Street onto Beckwith Street and then continuing south has be rerouted to turn right onto Beckwith Street from Confederation Drive and heading south.
- One Quarter of the volume making the left turn from Main Street onto Beckwith Street has been rerouted to make the left turn from Confederation Drive onto Beckwith Street and head north.
- Half of the volume that would take the left hand turn onto Main Street from Beckwith Street and continue into the development has been rerouted to turn left onto Confederation Drive from Beckwith Street and continue into the development.
- 1 % of total through traffic on both Beckwith Street and Abbott Street was rerouted to use Confederation as a crossing from one roadway to the other.

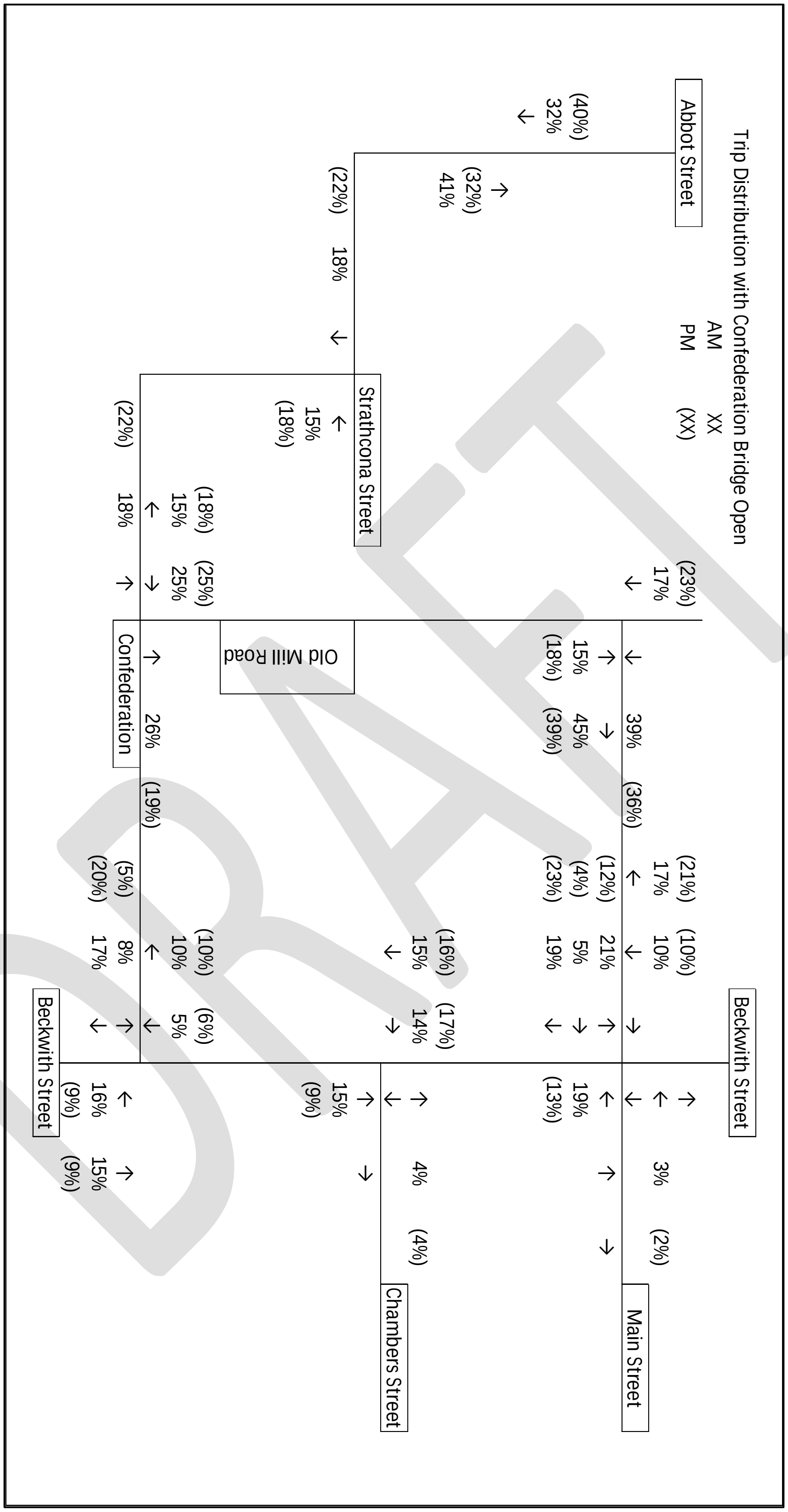


Figure 3.4 Trip Distribution with Confederation Drive River Crossing Open

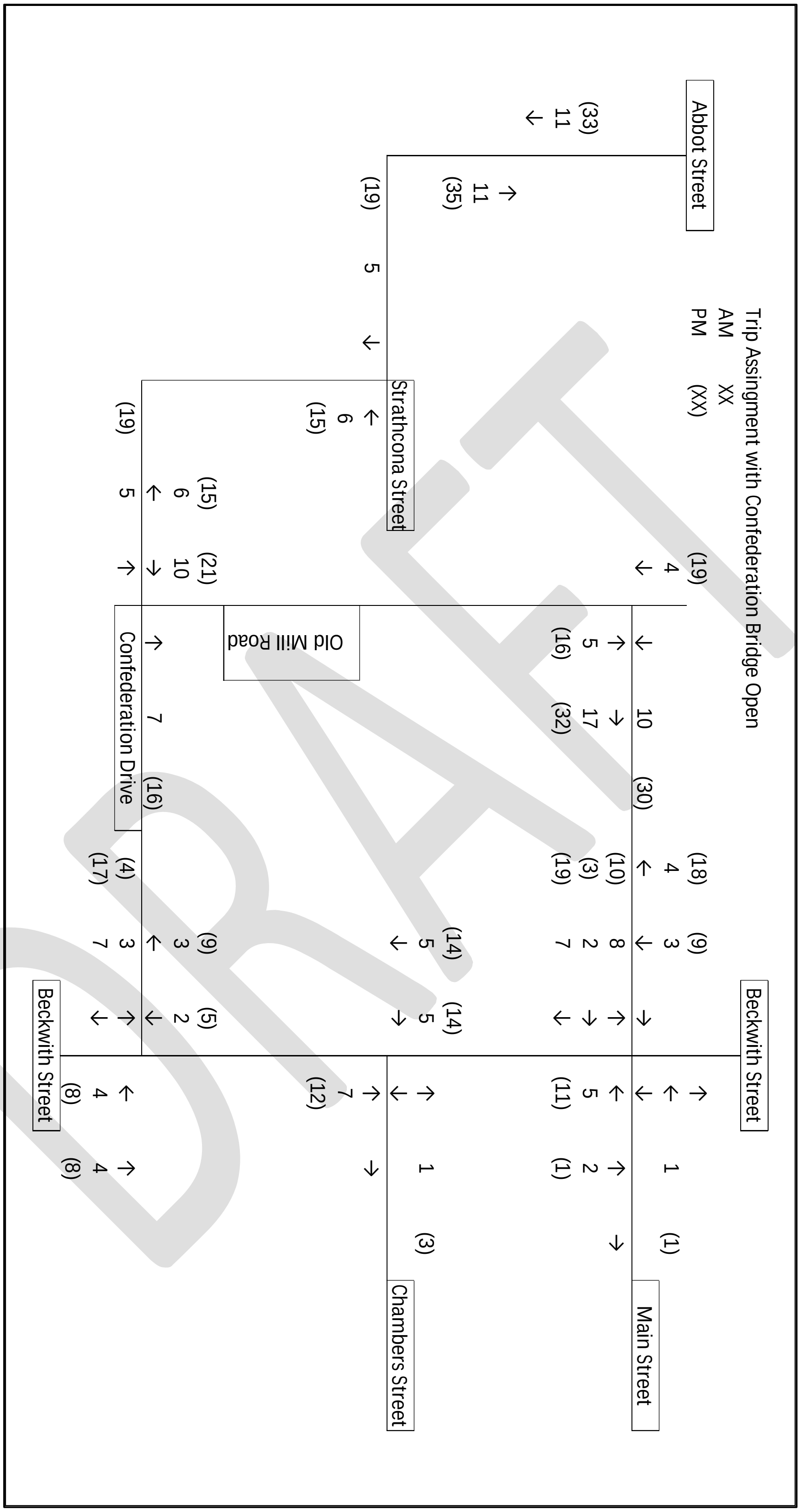


Figure 3.5 Trip Assignment with Confederation Drive River Crossing Open

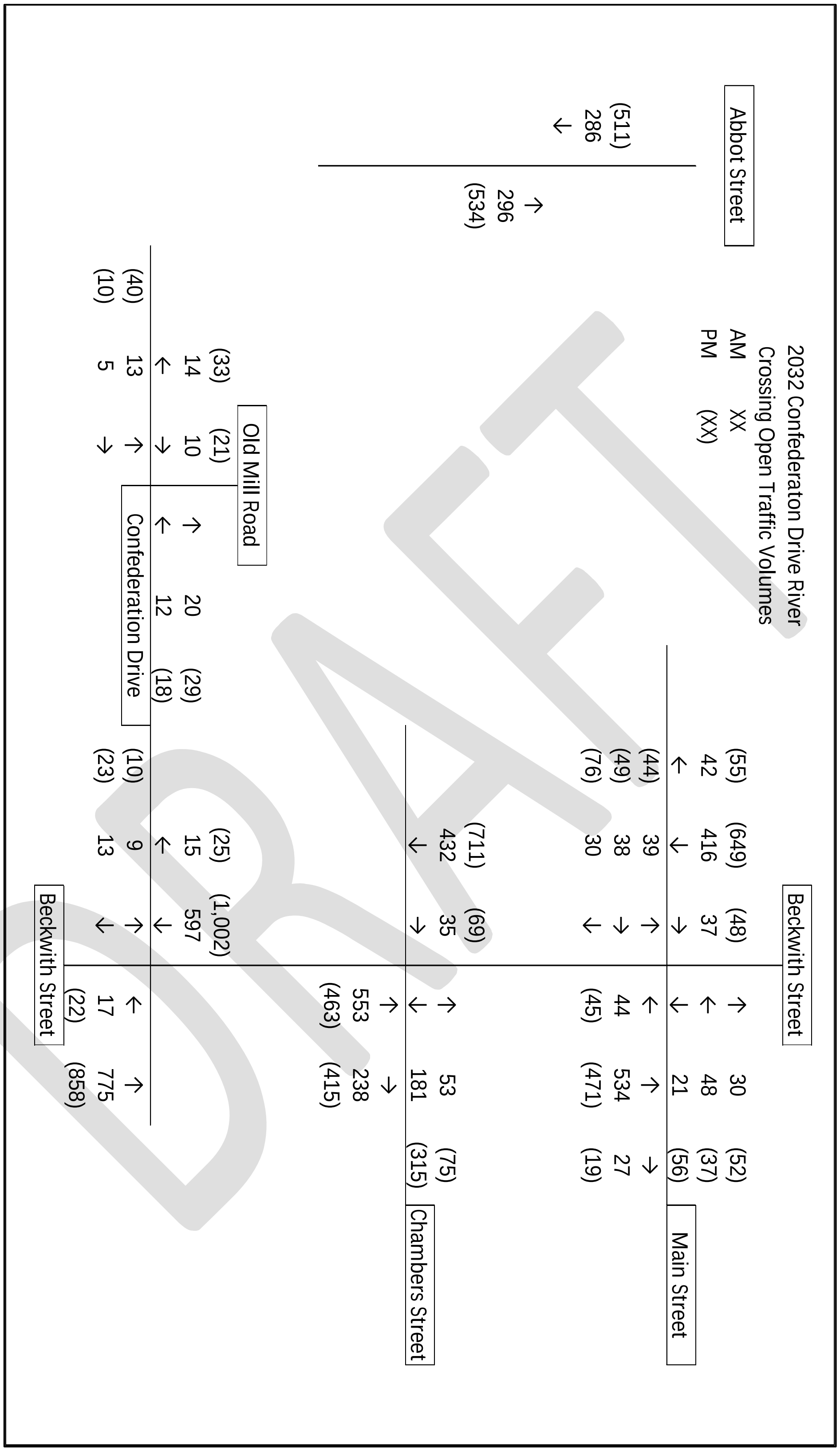


Figure 3.6 2032 Confederation Drive River Crossing Open Traffic Volume

4.0 ACTIVE TRANSPORTATION

MP reviewed the connectivity of the active transportation facilities within the area surrounding the Confederation Drive River Crossing to see if the are any missing links to ensure a fully connected network or pathways.

Figure 4.1 illustrates the on-road bike facilities.

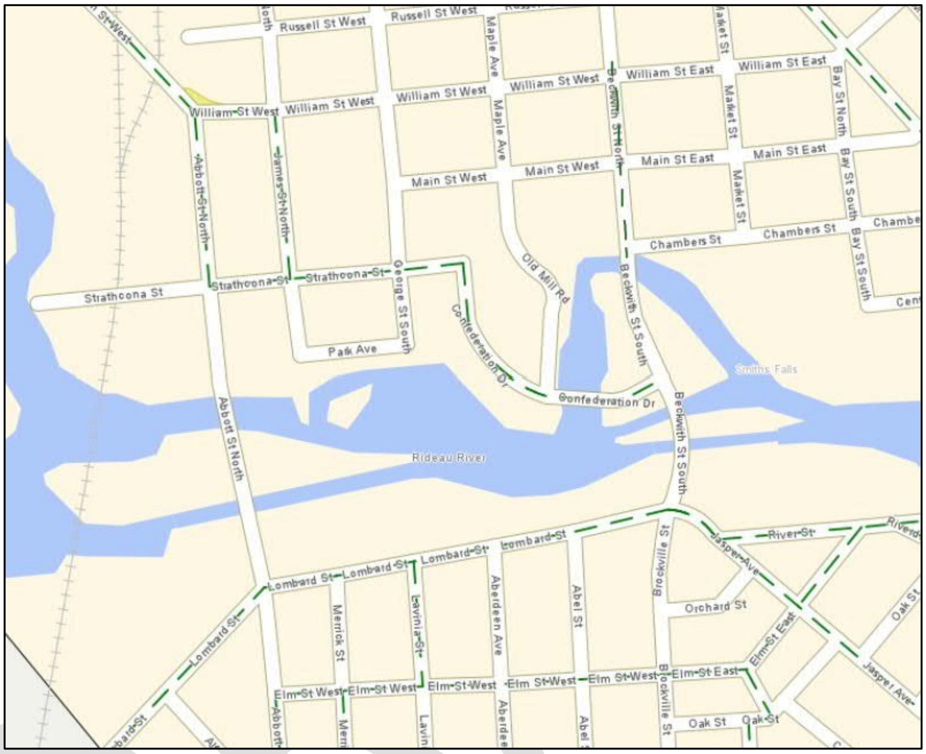


Figure 4.1 On Road Bike Facilities

Within the study area on road bike facilities are shown for the lengths of Confederation Drive, Strathcona Street, and Lombard Street. There are also bike facilities along Abbott Street north of the intersection with Strathcona Street. There is also a designated bike lane on Beckwith Street that begins at the intersection of Beckwith Street and Chambers Street and continues north to the intersection of Beckwith Street and Russell Street.

There are also many bike paths in the area as shown in Figure 4.2.

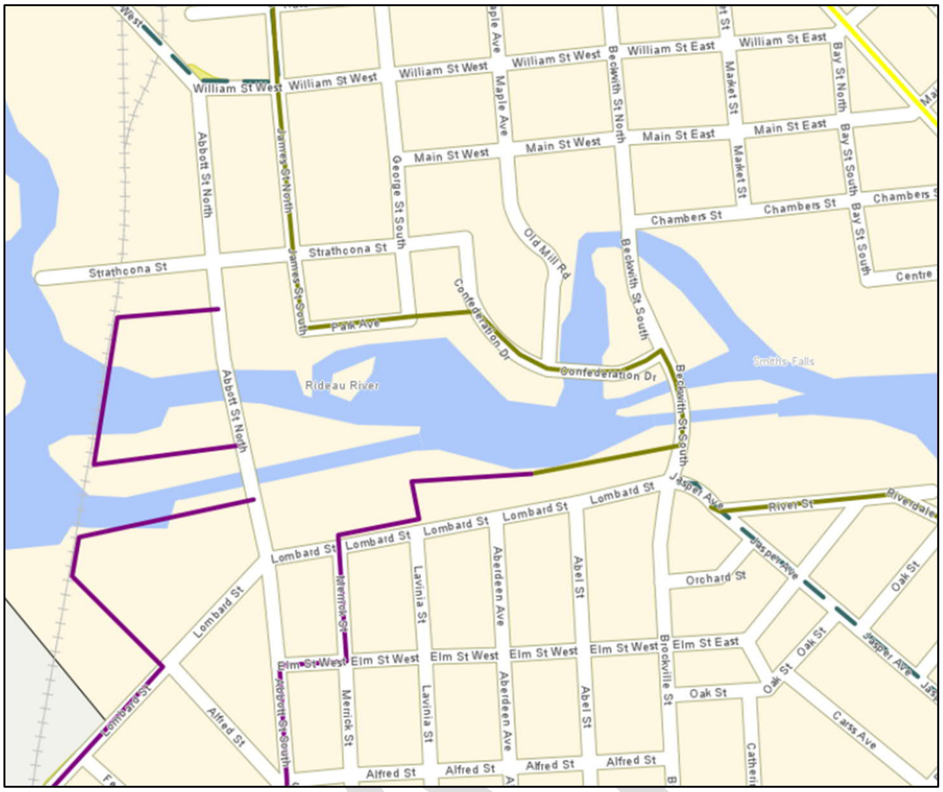


Figure 4.2 Bike Trails

As shown in Figure 4.2, there are many pike baths throughout the Town of Smiths Falls. There is one bike path that utilises the Confederation Drive River Crossing. This path adds connectivity to the south of the Rideau River towards Lombard Street and crosses the locks just west of the Beckwith Street Bridge and then continues onto Confederation Drive and Crossing at the Confederation Drive River Crossing Bridge to then continue on Confederation Drive and up further north into the Town of Smiths Falls.

Figure 4.3 illustrates the multi use trails in the area.

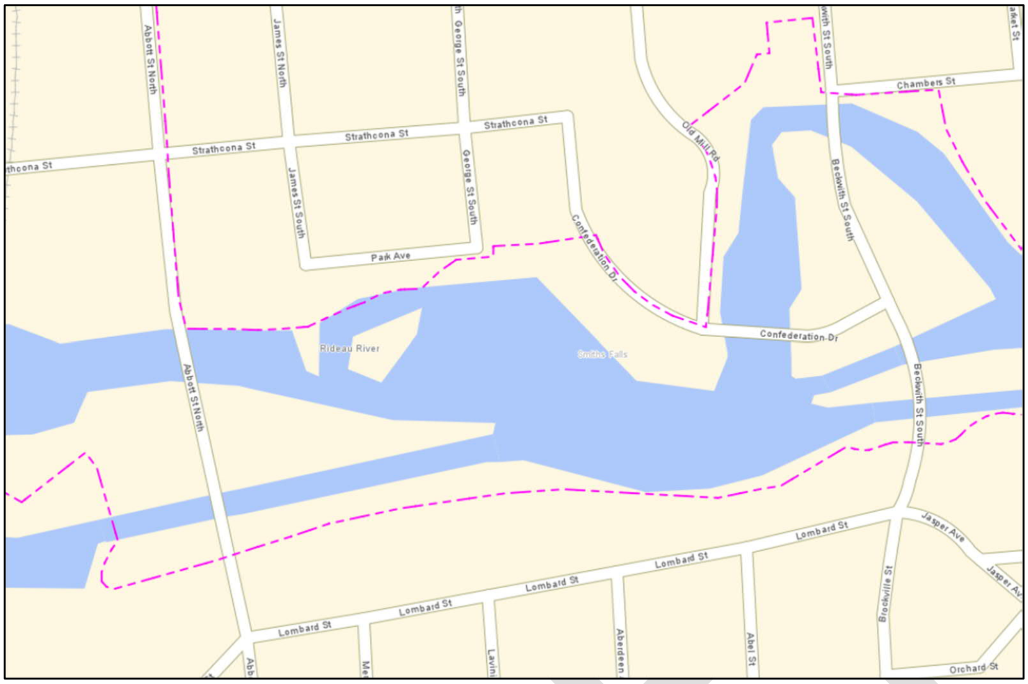


Figure 4.3 Multi-use Trails

Currently there are two multi use trails, within the vicinity of the Confederation Drive River Crossing. One MUP is on the south of the rideau river going east-west along the river adjacent to Lombard Street. The other is to the north of the river going from east-west traveling along the river, then connecting to Confederation Drive and following it to the intersection of Old Mill Road (before the Confederation Drive River Crossing) and then continuing northbound on Old Mill Road and continuing to the east along Beckwith Street to Chambers Street and then back following the Rideau River. There is shown to be a clear disconnect between the northern and southern Multi-Use Path.

5.0 LEVEL OF SERVICE

Existing Conditions were analyzed in Synchro 10 software to determine a baseline for traffic operations. The existing condition models for the AM and PM peaks were developed using the turning moving counts acquired from the Town of Smiths Falls. Signal timings were calculated using Synchro 10's built in optimization tool for both signal timing and splits. Synchro output reports can be found in Appendix B. The following is a list of assumptions used when modelling the scenarios:

- Amber times were calculated based on OTM Book 12 based on the speed of the roadways (50 km/h)
- All red times were calculated based on OTM Book 12 based on the speed and length of intersections.
- Signal Cycle lengths were found by using Synchro's built-in optimization tool, which found the signalized intersections within the study area to have a cycle length of 70 s.
- Signal timing splits were developed using Synchro's built-in optimization tool.
- As there is street parking present on Beckwith Street and Main Street. Parking maneuvers were calculated and estimated by the total number of parking spaces by the max time allowed to be parked.

- At the intersection of Beckwith Street and Chambers Street, no pedestrian data was available. So as an estimate MP included 8 pedestrians utilizing the pedestrian crossing during the peak hours. This was done by looking at the location of the intersection (southern intersection of the downtown core), the available pedestrian infrastructure, and the developments in the area such as the Giant Tire and Matty O'Shea's Pub and Restaurant. This was then compared to the intersection of Beckwith Street and Main Street to then include a value for pedestrians at the intersection of Beckwith Street and Chambers Street.

Table 5.1 summaries the LOS, v/c and delay of the study area for the existing conditions.

Table 5.1 Existing Conditions

Movements	AM			PM		
	LOS	V/C	Delay	LOS	V/C	Delay
Beckwith Street and Main Street						
EBL	C	0.08	20.7	C	0.09	20.8
EBTR	B	0.13	15	B	0.22	12.7
WBL	C	0.05	20.2	C	0.15	21.6
WBTR	B	0.17	15.2	B	0.2	12
NBL	A	0.07	2.9	A	0.08	4.4
NBTR	A	0.56	5.1	A	0.49	6.1
SBL	A	0.07	7.3	A	0.08	7.4
SBTR	B	0.45	10.4	B	0.67	15.1
Beckwith Street and Chambers Street						
WBL	B	0.29	20	C	0.59	28.2
WBR	A	0.09	6.5	A	0.14	6.8
NBT	B	0.52	12.8	A	0.4	9.4
NBR	A	0.23	2	A	0.35	1.9
SBL	A	0.07	5	A	0.09	4.2
SBT	A	0.47	6.8	A	0.71	8.5
Beckwith Street and Confederation Drive						
EBLR	C	0.04	17.9	D	0.07	28.8
NBL	A	0.01	8.5	A	0.01	9.8
Confederation Drive and Old Mill Road						
**No conflicts when Confederation Drive River Crossing is closed. Acts as free flowing elbow in road.						
Note: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, T = Through, R = Right-turn						

As seen in the table above all movements operate at an LOS of D or better, a v/c of 0.71 or less and a delay of 28.8 seconds or less during both the am and pm peak hours at all intersections.

Table 5.2 summarizes the 2032 conditions with the Confederation Drive River Crossing closed to vehicular traffic.

Table 5.2 2032 - Confederation Drive River Crossing Closed

Movements	AM			PM		
	LOS	V/C	Delay	LOS	V/C	Delay
Beckwith Street and Main Street						
EBL	C	0.14	21.4	C	0.16	21.9
EBTR	B	0.19	13.7	B	0.35	11.2
WBL	C	0.07	20.5	C	0.19	22.3
WBTR	B	0.2	15.4	B	0.24	12.1
NBL	A	0.12	4	A	0.25	6.5
NBTR	A	0.68	7.5	A	0.6	7.1
SBL	A	0.11	7.9	A	0.12	7.9
SBTR	B	0.56	12.2	C	0.86	26.6
Beckwith Street and Chambers Street						
WBL	C	0.41	24.2	D	0.75	36.4
WBR	A	0.13	7	A	0.18	6.7
NBT	B	0.6	12.4	B	0.49	10.1
NBR	A	0.26	1.7	A	0.41	2
SBL	A	0.11	4.2	A	0.17	5.1
SBT	A	0.54	6.1	B	0.87	17.7
Beckwith Street and Confederation Drive						
EBLR	C	0.05	23.8	E	0.12	44.5
NBL	A	0.01	8.9	B	0.01	10.8
Confederation Drive and Old Mill Road						
**No conflicts when Confederation Drive River Crossing is closed. Acts as free flowing elbow in road.						
Note: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, T = Through, R = Right-turn						

As seen in the table above all movements operate at an LOS of D or better, a v/c of 0.87 or less and a delay of 36.4 seconds or less during both the am and pm peak hours at all intersections with the exception of the eastbound left-right turn at the intersection of Confederation Drive and Beckwith Street that operates at an LOS of E with a v/c of 0.12 and a delay of 44.5 seconds.

Table 5.3 summarizes the 2032 conditions with the Confederation Drive River Crossing open to vehicular traffic.

Table 5.3 2032 - Confederation Drive River Crossing Open

Movements	AM			PM		
	LOS	V/C	Delay	LOS	V/C	Delay
Beckwith Street and Main Street						
EBL	C	0.13	21.3	C	0.15	21.7
EBTR	B	0.18	14.3	B	0.31	11.8
WBL	C	0.07	20.5	C	0.19	22.3
WBTR	B	0.2	15.4	B	0.24	12.1
NBL	A	0.11	4	A	0.2	6
NBTR	A	0.68	7.6	A	0.6	7.2
SBL	A	0.11	7.9	A	0.12	7.9
SBTR	B	0.56	12.2	C	0.86	26.4
Beckwith Street and Chambers Street						
WBL	C	0.41	24.2	D	0.75	36.4
WBR	A	0.13	7	A	0.18	6.7
NBT	B	0.6	12.4	B	0.49	10
NBR	A	0.26	1.7	A	0.41	2
SBL	A	0.11	4.2	A	0.17	5
SBT	A	0.53	5.9	B	0.86	16.2
Beckwith Street and Confederation Drive						
EBLR	C	0.1	22.2	E	0.27	41.8
NBL	A	0.02	8.9	B	0.04	10.9
Confederation Drive and Old Mill Road						
EBL	A	0.01	7.3	A	0.03	7.4
SBL	A	0.03	8.7	A	0.06	9
Note: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, T = Through, R = Right-turn						

As seen in the table above all movements operate at an LOS of D or better, a v/c of 0.86 or less and a delay of 36.4 seconds or less during both the am and pm peak hours at all intersections with the exception of the eastbound left-right turn at the intersection of Confederation Drive and Beckwith Street that operates at an LOS of E with a v/c of 0.27 and a delay of 41.8 seconds.

When both the scenarios with the bridge open to vehicular traffic versus closed to vehicular traffic we see minimal changes to the impact on the road network through the study area. The left turn at Confederation Drive and Beckwith Street continues to have an LOS of E with a relatively low v/c meaning the capacity of the roadway far from being met and the vehicles experience a large delay.

MP performed a traffic signal warrant for the intersection of Confederation Drive and Beckwith Street during the existing 2022 scenario and the 2032 Confederation Drive River Crossing open to vehicular traffic scenario. During both scenarios the signal warrant threshold was not met and is such is not warranted. However, consideration should be given based on the operation delay experienced at the intersection if it were to be open to vehicular traffic.

As it is anticipated that some of the traffic from the development will travel to Abbott Street to the east of the proposed development, MP performed HCS Capacity analysis on Abbott Street as only ATR counts were provided Along Abbott Street. Table 5.4 summarizes the HCS Capacity Analysis.

Table 5.4 HCS Capacity Analysis

Scenario	AM		PM	
	LOS	V/C	LOS	V/C
Existing Conditions	C	0.17	C	0.26
2032 Confederation Bridge Closed	C	0.21	D	0.36
2032 Confederation Bridge Open	C	0.27	D	0.37

As shown above Abbott Street operates at an LOS of C during all AM peak periods with a v/c of 0.27 or less. During the PM peak periods Abbott Street operates at an LOS of C and a v/c of 0.26 during the 2022 existing conditions and then a LOS of D and a v/c of 0.36 and 0.37 during the 2032 scenario with the Confederation Drive River Crossing Bridge closed to Vehicular Traffic and Open to vehicular traffic respectively.

6.0 SUMMARY AND RECCOMENDATIONS

The following is a summary of the work done by MP and the recommendations and conclusions drawn from the analysis:

- MP reviewed the traffic operations for the following roads and intersections:
  - Beckwith Street, Main Street, Chambers Street, Confederation Drive, Old Mill Road and Abbott Street;
  - Beckwith Street at Main Street, Beckwith Street at Chambers Street, Beckwith Street at Confederation Drive, and Old Mill Road at Confederation Drive.
- Based on the analysis done it was found all intersections operate at an LOS of D or better at all scenarios during both the am and pm peak hour with the exception of the eastbound left-right turn at the intersection of Confederation Drive and Beckwith Street that operates at an LOS of E during the pm peak hour of both of the 2032 scenarios.
- A signal warrant was done for the intersection of Confederation Drive and Beckwith Street as there are operational concerns for the left-turn onto Beckwith Street, however the signal did not meet the threshold for the warrant.
- Active transportation facilities were reviewed for both cyclists and pedestrians, it was found that there are multiple MUP, bicycle facilities, and trails throughout the area; however, there are missing connections between Confederation Drive and Chambers Street along Beckwith Street, as well as further south along Beckwith Street crossing the Rideau River.

It should be noted that the data received from the Town of Smiths Falls was up to 10 years old with the most recent being from 2016. Between the age of the available data and the type of data, mainly ATR counts with limited TMC data there is potential for changes in traffic patterns, changes to the roadway network and developments to influence the traffic within the study area. MP saw a trend of depopulation within the Town of Smiths Falls but used a 2% growth rate keep the traffic volume estimate conservative.

Based on the LOS / Capacity analysis, it was shown that whether the Confederation bridge is open or closed to vehicular traffic, there are minimal changes to the network traffic operations. There are no concern with capacity or degrading levels of service throughout the network based on the analysis competed.

The eastbound left turn volumes from Confederation Drive onto Beckwith Street were found to experience significant delays and LOS E. This was found to be the case regardless of whether the bridge was open or closed to vehicle traffic and is likely the result of traffic volume growth on Beckwith Street. As such, signalization of the intersection should be considered and investigated further in the future. Other options such as turn restrictions may also be considered; however, would require input from Parks Canada / locks operators.

Based on figures 4.1 and 4.2, the bridge is shown to be included in the active transportation network. If the bridge were to be completely closed to pedestrians / cyclists, this may result in a gap in the active transportation network. Consideration should be given to keeping the confederation bridge as an active transportation link. However, to ensure better connectivity throughout the study area, it is recommended that a cycling facility be extended along Beckwith Street to the intersection of Confederation Drive from Chambers Street.

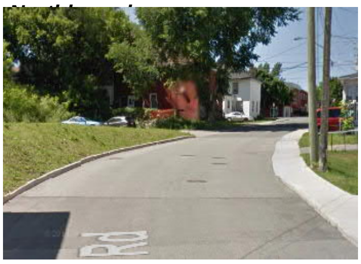
With Smiths Falls only having three crossing of the Rideau River; Abbot Street, Beckwith Street, and Old Slys Road, keeping the connection of Confederation Drive, as an automobile bridge, may help to alleviate some of the stress should one of the crossings be closed temporarily. The analysis completed here was limited and did not consider such eventualities; however, based on local experience and anecdotal information the Abbott Street crossing is highly used. Consideration could be given to an expanded traffic study and assessment of the Smiths Falls crossings.

APPENDIX A – AVAILABLE TRAFFIC DATA

SMITHS FALLS TRAFFIC COUNT
DATA INFORMATION SHEET

Location	Old Mill
Reference Point	Main & Confederation
Starting Date	Monday July 13, 2015
Finishing Date	Monday July 20, 2015
Weather	Clear
Count taken by	Gabriel Brown & Jesse Labrecque

Northbound



Southbound

Daily Total Count

Monday	207	Friday	248
Tuesday	232	Saturday	163
Wednesday	297	Sunday	192
Thursday	396		

Total Count	1735	Northbound	857
		Southbound	878

Note:

Actual Daily Average Count

Mon. to Fri.	276	Mon. to Sat.	257

Vehicle Data

Day	Class #1	Class #2	Class #3	Class #4	Class #5	Class #6 30	Class #7	Class #8	Class #9 13	Class #10	Class #11	Class #12
Mon.	8	172	27	0	0	0	0	0	0	0	0	0
Tues.	6	175	47	2	0	2	0	0	0	0	0	0
Wed.	8	218	58	4	7	0	2	0	0	0	0	0
Thurs.	12	285	95	0	4	0	0	0	0	0	0	0
Fri.	1	205	41	1	0	0	0	0	0	0	0	0
Sat.	14	109	40	0	0	0	0	0	0	0	0	0
Sun.	3	157	30	0	2	0	0	0	0	0	0	0
Total	52	1321	338	7	13	2	2	0	0	0	0	0

Speed Data

Km/hr	Class #1	Class #2	Class #3	Class #4	Class #5	Class #6	Class #7	Class #8	Class #9	Class #10	Class #11	Class #12
10-20	10	119	49	5								
20-30	21	513	154	2	2							
30-40	21	568	107		3	2	2					
40-50		115	25		7							
50-60		6	3		1							
60-70												
70-80												
80-90												
90-100												
100-110												
110-120												
120-130												
130-140												
140-150												
150-160												
Total	52	1321	338	7	13	2	2	0	0	0	0	0

Annual Average Daily Traffic.

Item/Day	Sunday
Cars	392
Comm. trucks X2	8
24hr.Vol.factor	400
Weekly factor	1.096
Seasonal Factor	0.97

Speeding (50 km/h zone)	
50-60	0.58 %
60-70	0.00 %
70-80	0.00 %
80-90	0.00 %
90+	0.00 %

% Vehicle Speeding	Average
0.58 %	29.9

Total A.A.D.T. for this location is 425

Daily Total
207
232
297
396
248
163
192
1735

Speed Total
183
692
703
147
10
0
0
0
0
0
0
0
0
0
0
1735

Speed
km/h

SMITHS FALLS TRAFFIC COUNT
DATA INFORMATION SHEET

Location	Main St.
Reference Point	Maple Ave. & Becwith St.
Starting Date	Mon June 27/11 10:19 am
Finishing Date	Mon July 04/11 10:02 pm
Weather	Clear
Count taken by	Mason & Eldon

Westbound

Eastbound

Daily Total Count

Monday	2001	Friday	2327
Tuesday	2729	Saturday	1703
Wednesda	2692	Sunday	1036
Thursday	3459		
Total Count	**15387**		

Westbound	6720
Eastbound	8667

Note:

Actual Daily Average Count

Mon. to Fri.	2436	Mon. to Sat.	2346

Vehicle Data

Day	Class #1	Class #2	Class #3	Class #4	Class #5	Class #6	Class #7	Class #8	Class #9	Class #10	Class #11	Class #12
Mon.	14	1541	3	256	41	4	1	7	0	0	0	0
Tues.	10	1967	10	366	59	8	7	4	1	1	1	0
Wed.	7	1968	6	376	58	4	1	6	3	1	0	0
Thurs.	13	2705	11	346	66	5	1	6	2	1	0	0
Fri.	12	2048	10	195	13	8	4	3	0	0	0	0
Sat.	9	1556	13	261	45	2	3	4	1	0	0	0
Sun.	5	1106	1	172	27	2	0	0	0	0	0	0
Total	**70**	**12891**	**54**	**1972**	**309**	**33**	**17**	**30**	**7**	**3**	**1**	**0**

Speed Data

Km/hr	Class #1	Class #2	Class #3	Class #4	Class #5	Class #6	Class #7	Class #8	Class #9	Class #10	Class #11	Class #12
10-20	32	2571	8	251	170	22	2	2	3	3	0	0
20-30	13	3480	15	430	117	10	3	6	3	0	0	0
30-40	15	4371	29	763	21	1	6	17	0	0	1	0
40-50	8	2160	2	414	1	0	6	5	1	0	0	0
50-60	1	288	0	104	0	0	0	0	0	0	0	0
60-70	0	17	0	9	0	0	0	0	0	0	0	0
70-80	1	4	0	1	0	0	0	0	0	0	0	0
80-90	0	0	0	0	0	0	0	0	0	0	0	0
90-100	0	0	0	0	0	0	0	0	0	0	0	0
100-110	0	0	0	0	0	0	0	0	0	0	0	0
110-120	0	0	0	0	0	0	0	0	0	0	0	0
120-130	0	0	0	0	0	0	0	0	0	0	0	0
130-140	0	0	0	0	0	0	0	0	0	0	0	0
140-150	0	0	0	0	0	0	0	0	0	0	0	0
150-160	0	0	0	0	0	0	0	0	0	0	0	0
Total	**70**	**12891**	**54**	**1972**	**309**	**33**	**17**	**30**	**7**	**3**	**1**	**0**

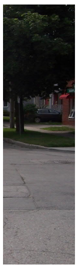
Annual Average Daily Traffic.

Item/Day	Wed
Cars	3075
Comm. trucks X2	162
24hr.Vol.factor	3237
Weekly factor	1.096
Seasonal Factor	0.94

Total A.A.D.T. for this location is **3334.9**

Typical 24 Vol. Factor Chart	
Day	Factor
Mon.	1.072
Tue	1.121

Wed	1.108
Thu	1.096
Fri	1.015
Sat	0.899
Sun	0.789



Daily Total
1867
2434
2430
3156
2293
1894
1313
15387

Speed Total
3064
4077
5224
2597
393
26
6
0
0
0
0
0
0
0
0
15387

SMITHS FALLS TRAFFIC COUNT
DATA INFORMATION SHEET

Location	Abbott Street
Reference Point	Strathcona & William
Starting Date	Monday July 13, 2015
Finishing Date	Monday July 20, 2015
Weather	Clear
Count taken by	Gabriel Brown & Jesse Labrecque

Northbound

Southbound

Daily Total Count

Monday	7808	Friday	9377
Tuesday	8726	Saturday	8115
Wednesda	9022	Sunday	7372
Thursday	9145		
Total Count	59565		

Northbound	30331
Southbound	29234

Note:

Actual Daily Average Count

Mon. to Fri.	8816	Mon. to Sat.	8699

Vehicle Data

Day	Class #1	Class #2	Class #3	Class #4	Class #5	Class #6	Class #7	Class #8	Class #9	Class #10	Class #11	Class #12	Daily Total
Mon.	70	6007	1428	46	124	62	15	0	37	7	0	12	7808
Tues.	56	6639	1659	61	142	81	27	2	39	7	0	13	8726
Wed.	77	6863	1687	60	156	85	13	1	49	19	0	12	9022
Thurs.	84	7007	1718	60	118	65	14	2	52	10	0	15	9145
Fri.	49	7337	1611	65	147	70	16	2	49	16	0	15	9377
Sat.	61	6374	1507	26	92	26	10	1	14	4	0	0	8115
Sun.	39	5865	1318	14	86	16	7	0	24	2	0	1	7372
Total	436	46092	10928	332	865	405	102	8	264	65	0	68	59565

Speed Data

Km/hr	Class #1	Class #2	Class #3	Class #4	Class #5	Class #6	Class #7	Class #8	Class #9	Class #10	Class #11	Class #12	Speed Total
10-20	25	906	123	21	7	18	10	1	1				1112
20-30	33	2214	433	14	30	22	7		8				2761
30-40	65	7273	1515	56	107	70	18		58	11		14	9187
40-50	175	23268	5234	175	421	199	42	3	152	39		36	29744
50-60	112	11002	3165	62	261	95	23	4	37	12		16	14789
60-70	22	1327	421	3	32	1	2		8	3		2	1821
70-80	2	91	33	1	5								132
80-90		7	3		2								12
90-100	2	4	1										7
100-110													0
110-120													0
120-130													0
130-140													0
140-150													0
150-160													0
Total	436	46092	10928	332	865	405	102	8	264	65	0	68	59565

Annual Average Daily Traffic.

Item/Day	Thursday
Cars	8869
Comm. trucks X2	552
24hr.Vol.factor	9421
Weekly factor	1.096
Seasonal Factor	0.91

Speeding (50 km/h zone)	
50-60	24.83 %
60-70	3.06 %
70-80	0.22 %
80-90	0.02 %
90+	0.01 %

% Vehicle Speeding	Average Speed
28.14 %	45.1 km/h

Total A.A.D.T. for this location is 9396

SMITHS FALLS TRAFFIC COUNT
DATA INFORMATION SHEET

Location	*Beckwith*
Reference Point	*Confederation & Chambers*
Starting Date	*Monday May 30th, 2016*
Finishing Date	*Monday June 6th, 2016*
Weather	*Clear*
Count Taken By	*Ruairidh MacKenzie* *Nick Street*

Southbound

Northbound

Monday	*12586*
Tuesday	*17430*
Wednesday	*17996*
Thursday	*18331*
Friday	*19398*
Saturday	*15879*
Sunday	*5955*

Actual Daily Average Counts	
Monday to Friday	*17148*
Monday to Saturday	*16937*
Monday to Sunday	*15368*

Total Count	*107575*
Northbound	*54884*
Southbound	*52690*

Notes:

Vehicle Data

Day	Class #1	Class #2	Class #3	Class #4	Class #5	Class #6	Class #7	Class #8	Class #9	Class #10	Class #11	Class #12
Mon.	53	7445	29	4829	63	29	34	45	26	21	9	3
Tues.	43	9903	42	7072	85	42	66	86	47	26	12	6
Wed.	46	11471	43	5967	156	70	53	70	52	39	13	16
Thurs.	38	10939	38	6895	138	50	41	84	49	40	16	3
Fri.	87	12235	56	6615	97	45	73	94	45	35	8	8
Sat.	43	10080	54	5424	84	18	70	63	21	16	1	5
Sun.	20	2489	10	3307	40	8	52	16	7	6	0	0
Total	**330**	**64562**	**272**	**40109**	**663**	**262**	**389**	**458**	**247**	**183**	**59**	**41**

Speed Data

Km/hr	Class #1	Class #2	Class #3	Class #4	Class #5	Class #6	Class #7	Class #8	Class #9	Class #10	Class #11	Class #12
10-20	15	162	2	56	1	3	1	1				
20-30	21	852	15	351	15	19	5	19	2	2	1	1
30-40	53	3357	31	915	119	69	11	40	60	31	15	11
40-50	126	32498	149	9267	234	129	128	227	125	114	31	22
50-60	**91**	**23813**	**66**	**19366**	**112**	**39**	**182**	**143**	**48**	**28**	**12**	**5**
60-70	**23**	**3214**	**9**	**8733**	**176**	**3**	**55**	**27**	**12**	**8**		**1**
70-80	**1**	**266**		**1264**	**6**		**5**					
80-90		**167**		**120**			**1**					
90-100		**186**		**21**			**1**					
100-110		**35**		**7**				**1**				
110-120		**3**		**5**								
120-130		**4**		**2**								
130-140		**4**		**2**								
140-150												
150-160		**1**		**1**								
Total	**330**	**64562**	**272**	**40110**	**663**	**262**	**389**	**458**	**247**	**183**	**59**	**40**

Annual Average Daily Traffic.

Item/Day	*Wednesday*
Cars	*17910*
Comm. trucks X2	*842*
24hr.Vol.factor	*18752*
Weekly factor	*1.108*
Seasonal Factor	*0.91*

Speeding (50 km/h zone)		
50-60	*40.81*	*%*
60-70	*11.40*	*%*
70-80	*1.43*	*%*
80-90	*0.27*	*%*
90+	*0.25*	*%*

Vehicle Speeding (%)	
54.17	
Average Speed (km/hr)	
51.3	
85th% Speed (km/hr)	59.0
Location Total A.A.D.T.	
18907	

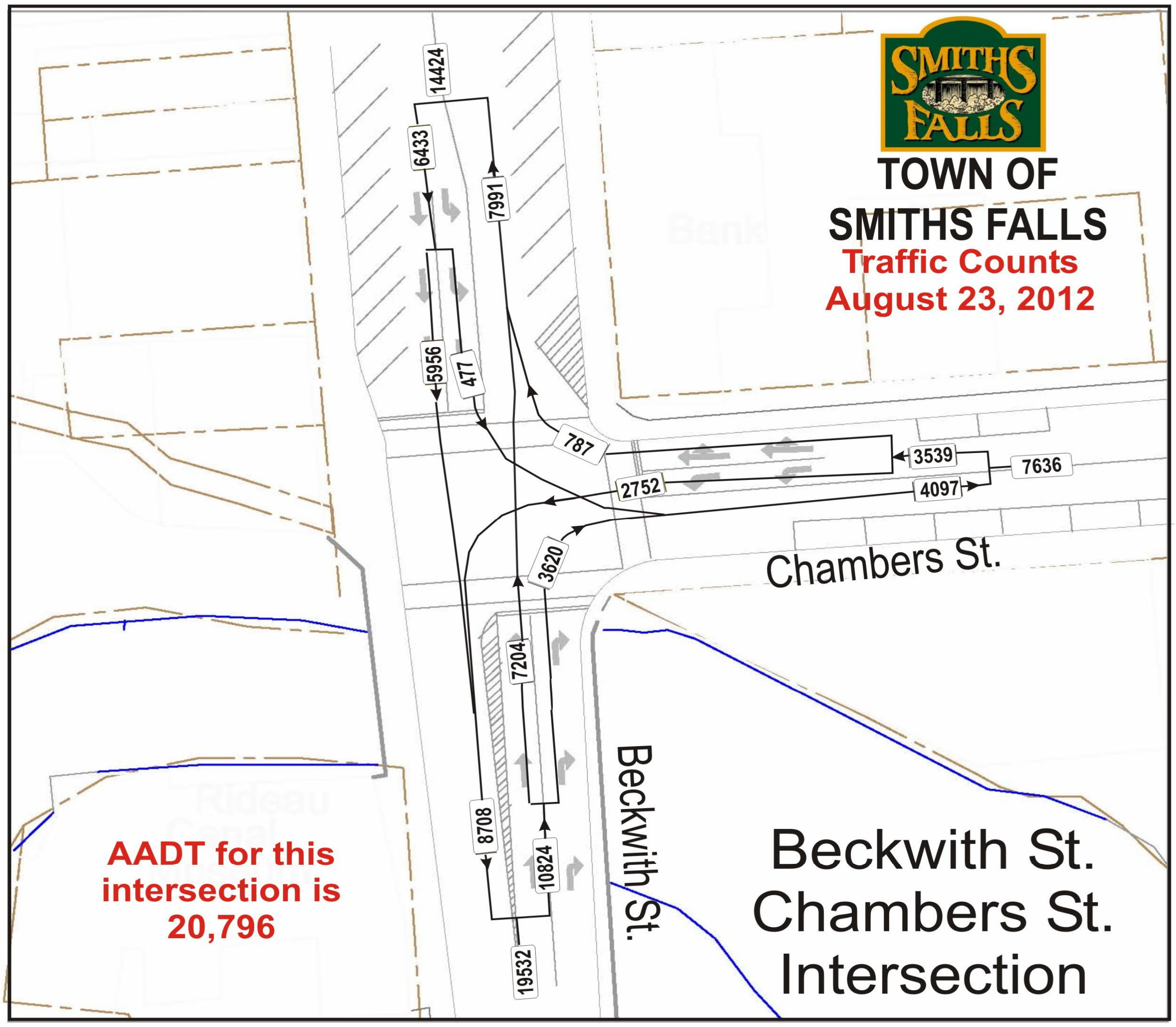
Daily Total
12586
17430
17996
18331
19398
15879
5955
107575

Speed Total
241
1303
4712
43050
43905
12261
1542
288
208
43
8
6
6
0
2
107575

Town of Smiths Falls
Engineering Department
Traffic Count Summary

Time: 6:00 a.m. - 9:00 a.m.
11:00 a.m. - 2:00 p.m.
3:00 p.m. - 6:00 p.m.

Count Location Beckwith St & Chambers St
Data Compiled By Mason Fischer & Colin Widdis



Date: Thurs. Aug. 23/12	Weather: Sunny warm								
Item:	Beckwith St Northbound			Beckwith St Southbound			Chambers St Westbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Cars	X	3196	1741	226	2608	X	1330	X	376
Comm. Trucks X 2 (factor)	X	336	34	8	312	X	34	X	14
% Commercial Traffic	X	10%	2%	3%	11%	X	2%	X	4%
24 Hour Factor	X	2.02	2.02	2.02	2.02	X	2.02	X	2.02
24 Volume Factor	X	7134.64	3585.50	472.68	5898.40	X	2755.28	X	787.80
Weekly Factor	X	1.1096	1.1096	1.1096	1.1096	X	1.1096	X	1.1096
Seasonal Factor	X	0.91	0.91	0.91	0.91	X	0.90	X	0.90
A.A.D.T	X	7204	3620	477	5956	X	2752	X	787

Beckwith onl
total cars
total trucks
Average truck

Total A.A.D.T for this insection is 20796

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Typical 24 Hour Factor Chart

* add factors for hour of count taken to come up with 24 Hour Factor than divide into 100

Typical 24 Vol. Factor Chart

* pick the day of the week and submit the factor in the chart

eg. (100/48) = 24 Hour Factor

Hour	Factor
6:00 - 7:00 a.m.	2.53
7:00 - 8:00 a.m.	3.69
8:00 - 9:00 a.m	4.42
9:00 - 10:00 a.m.	5.34
10:00 - 11:00 a.m.	5.73
1100 - 12:00	5.42
12:00 - 1:00 p.m.	5.34
1:00 - 2:00 p.m.	6.18
2:00 - 3:00 p.m.	6.56
3:00 - 4:00 p.m.	6.88
4:00 - 5:00 p.m.	7.71
5:00 - 6:00 p.m.	7.3
6:00 - 7:00 p.m.	6.12
7:00 - 8:00 p.m.	5.72
8:00 - 9:00 p.m.	4.74
9:00 - 10:00 p.m.	3.85
10:00 - 11:00 p.m.	3.18
11:00 - 12:00	2.61
12:00 - 1:00 a.m.	1.89
1:00 - 2:00 a.m.	1.32
2:00 - 3:00 a.m.	0.9
3:00 - 4:00 a.m.	0.76
4:00 - 5:00 a.m.	0.76
5:00 - 6:00 a.m.	1.05

Day	Factor
Monday	1.072
Tuesday	1.121
Wednesday	1.108
Thursday	1.096
Friday	1.015
Saturday	0.899
Sunday	0.789

Typical Seasonal Factor Chart

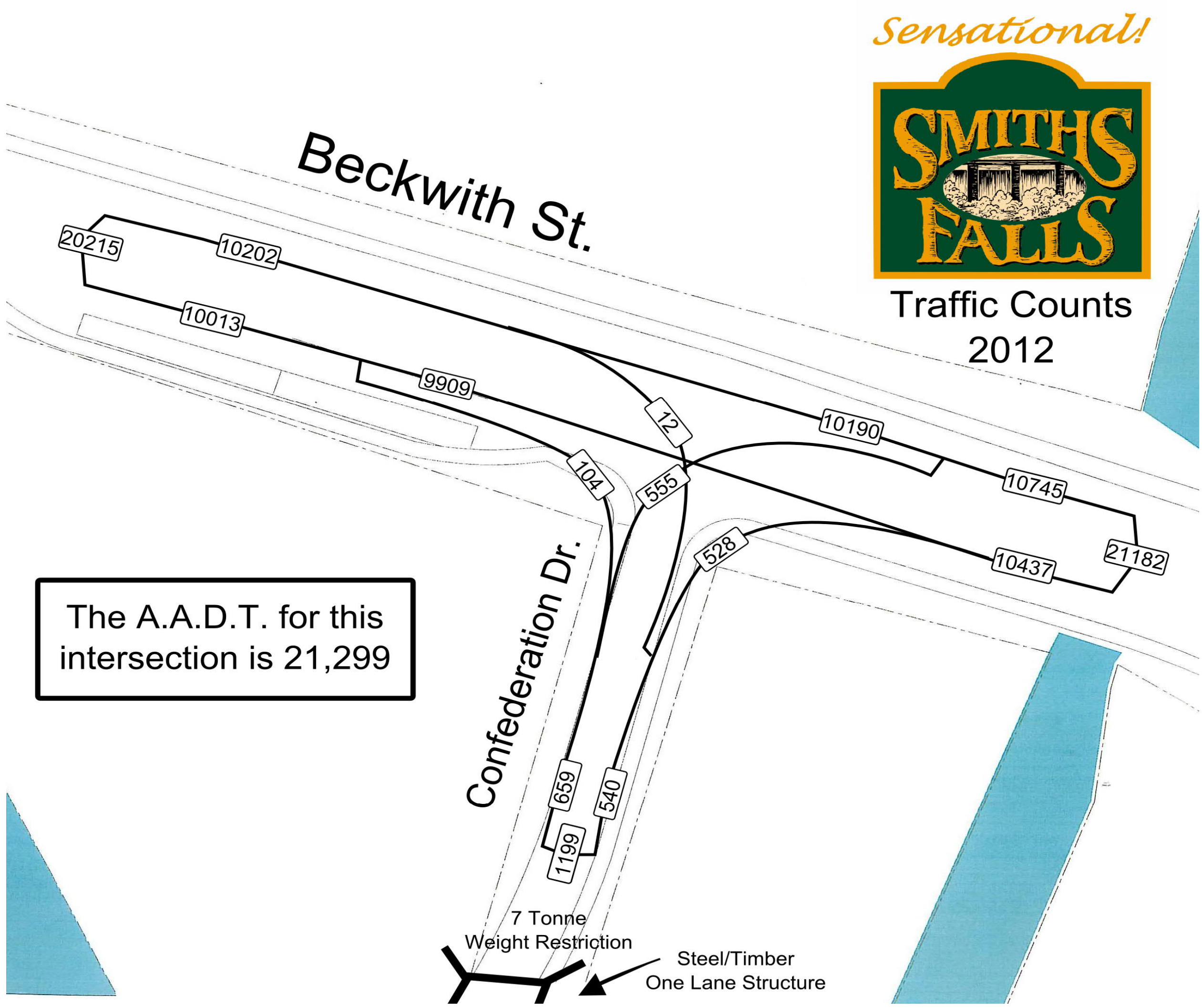
* pick the month of count and class of road and submit the factor in the chart

Month	Arteria	Collect	Local
January	1.15	1.1	1.13
February	1.09	1.07	1.1
March	1.05	1.03	1.03
April	1	0.99	1
May	0.95	0.99	0.95
June	0.91	0.94	0.89
July	0.91	0.95	0.97
August	0.91	0.9	0.89
September	0.97	0.96	0.93
October	0.99	0.98	0.96
November	1.02	1.01	1.01
December	1.06	1.13	1.25.

Town of Smiths Falls
Engineering Department
Traffic Count Summary

Time: 8:00 a.m. - 10:00 a.m.
11:00 a.m. - 2:00 p.m.
3:00 p.m. - 6:00 p.m.

Count Location: Beckwith St & Confederation Dr
Data Compiled By: Consultant



Date: Wed Feb 8, 2012	Weather: Sunny warm								
Item:	Beckwith St Northbound			Beckwith St Southbound			Confederation Dr Eastbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Cars	223	3920	X	X	3821	42	5	X	216
Comm. Trucks X 2 (factor)	0	176	X	X	162	0	0	X	0
% Commercial Traffic	0%	4%	X	X	4%	0%	0%	X	0%
24 Hour Factor	2.06	2.06	X	X	2.06	2.06	2.06	X	2.06
24 Volume Factor	459.38	8437.76	X	X	8204.98	86.52	10.30	X	444.96
Weekly Factor	1.11	1.11	X	X	1.11	1.11	1.11	X	1.11
Seasonal Factor	1.09	1.09	X	X	1.09	1.09	1.07	X	1.07
A.A.D.T	555	10190	X	X	9909	104	12	X	528

Total A.A.D.T for this insection is 21299

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Typical 24 Hour Factor Chart

* add factors for hour of count taken to come up with 24 Hour Factor than divide into 100

Typical 24 Vol. Factor Chart

* pick the day of the week and submit the factor in the chart

eg. (100/48) = 24 Hour Factor

Hour	Factor
6:00 - 7:00 a.m.	2.53
7:00 - 8:00 a.m.	3.69
8:00 - 9:00 a.m	4.42
9:00 - 10:00 a.m.	5.34
10:00 - 11:00 a.m.	5.73
1100 - 12:00	5.42
12:00 - 1:00 p.m.	5.34
1:00 - 2:00 p.m.	6.18
2:00 - 3:00 p.m.	6.56
3:00 - 4:00 p.m.	6.88
4:00 - 5:00 p.m.	7.71
5:00 - 6:00 p.m.	7.3
6:00 - 7:00 p.m.	6.12
7:00 - 8:00 p.m.	5.72
8:00 - 9:00 p.m.	4.74
9:00 - 10:00 p.m.	3.85
10:00 - 11:00 p.m.	3.18
11:00 - 12:00	2.61
12:00 - 1:00 a.m.	1.89
1:00 - 2:00 a.m.	1.32
2:00 - 3:00 a.m.	0.9
3:00 - 4:00 a.m.	0.76
4:00 - 5:00 a.m.	0.76
5:00 - 6:00 a.m.	1.05

Day	Factor
Monday	1.072
Tuesday	1.121
Wednesday	1.108
Thursday	1.096
Friday	1.015
Saturday	0.899
Sunday	0.789

Typical Seasonal Factor Chart

* pick the month of count and class of road and submit
  the factor in the chart

Month	Arteria	Collect	Local
January	1.15	1.1	1.13
February	1.09	1.07	1.1
March	1.05	1.03	1.03
April	1	0.99	1
May	0.95	0.99	0.95
June	0.91	0.94	0.89
July	0.91	0.95	0.97
August	0.91	0.9	0.89
September	0.97	0.96	0.93
October	0.99	0.98	0.96
November	1.02	1.01	1.01
December	1.06	1.13	1.25.

Geospace Research Associates

Urban and Regional Geographers 491 Edgeworth Avenue, Ottawa, Ontario. K2B5L2

VEHICLE VOLUME FIELD SHEET
COMBINED VOLUMES AND
PEAK/OFF PEAK HOURS

Street 1 Beckwith **Street 2** Main

Road Conditions dry **Date** 08/2/12 **Day Name** Wednesday

Start Time 0800

Number of Hours 8

TIME	NORTHBOUND APPROACH ON BECKWITH			SOUTHBOUND APPROACH ON BECKWITH			EASTBOUND APPROACH ON MAIN			WESTBOUND APPROACH ON MAIN		
	LT	ST	RT	LT	ST	RT	LT	ST	RT	LT	ST	RT
0800-0900	27	334	13	19	280	18	15	20	13	15	29	20
0900-1000	31	294	14	21	243	28	23	20	19	18	30	18
SUB TOTAL	**58**	**628**	**27**	**40**	**523**	**46**	**38**	**40**	**32**	**33**	**59**	**38**
1100-1200	27	354	19	36	313	21	24	19	21	33	19	35
1200-1300	39	321	25	30	321	29	21	33	36	30	26	35
1300-1400	21	305	20	27	302	20	21	31	28	36	42	38
SUB TOTAL	**87**	**980**	**64**	**93**	**936**	**70**	**66**	**83**	**85**	**99**	**87**	**108**
1500-1600	35	354	13	18	325	32	25	33	30	32	26	26
1600-1700	23	316	13	32	431	25	23	31	38	38	24	35
1700-1800	30	282	25	32	362	19	22	27	24	29	17	19
SUB TOTAL	**88**	**952**	**51**	**82**	**1118**	**76**	**70**	**91**	**92**	99	67	80
TOTAL	**233**	**2560**	**142**	**215**	**2577**	**190**	**174**	**214**	**209**	**231**	**213**	**226**
GRAND TOTAL		**2935**			**2982**			**597**			**670**	

Geospace Research Associates

Urban and Regional Geographers 491 Edgeworth Avenue, Ottawa, Ontario. K2B5L2

VEHICLE VOLUME FIELD SHEET
COMBINED VOLUMES AND
PEAK/OFF PEAK HOURS

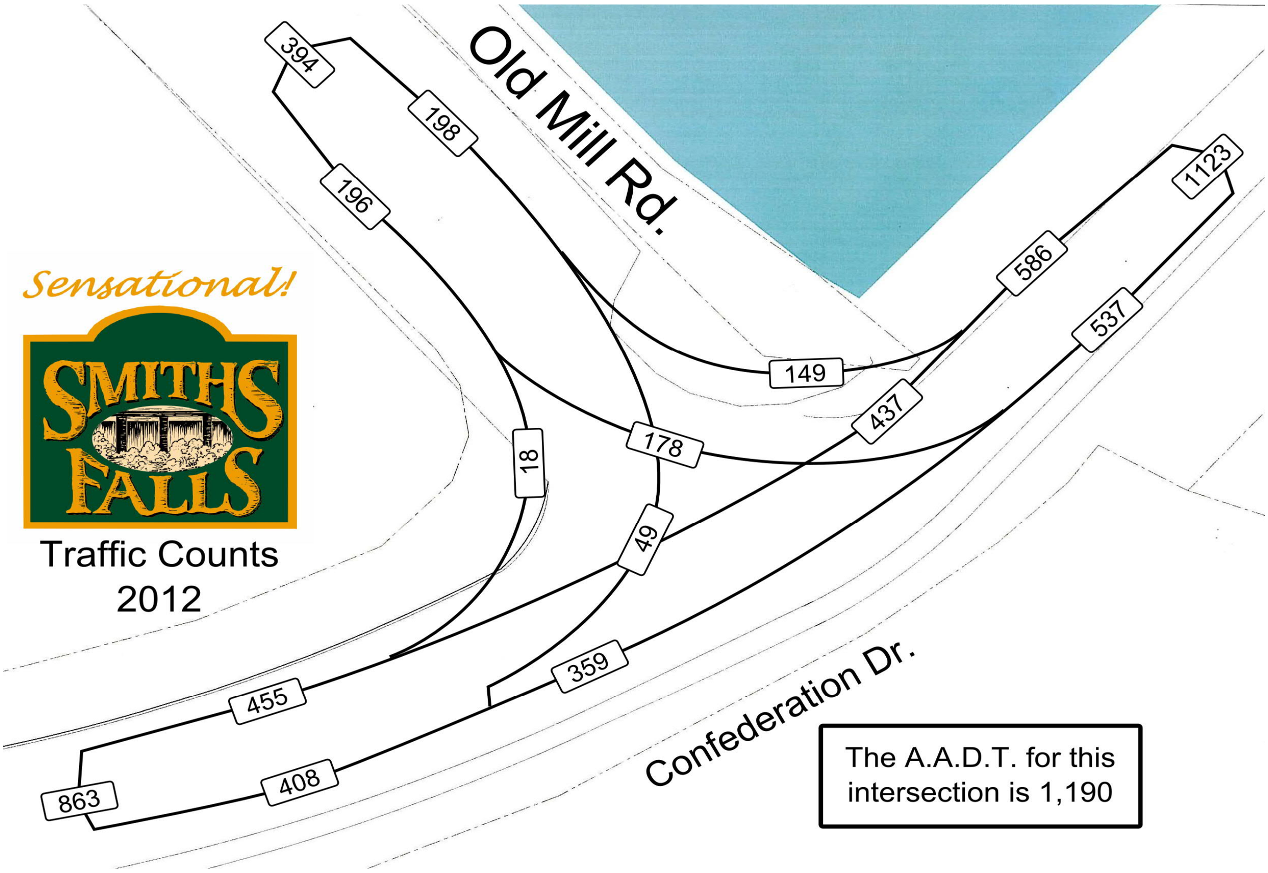
Date 08/2/12 **Day Name** Wednesday

TIME	NORTHBOUND APPROACH ON BECKWITH			SOUTHBOUND APPROACH ON BECKWITH			EASTBOUND APPROACH ON MAIN			WESTBOUND APPROACH ON MAIN		
	LT	ST	RT	LT	ST	RT	LT	ST	RT	LT	ST	RT
AM PEAK												
0830-0930	26	330	13	25	278	25	21	24	15	14	32	20
TOTAL	**369**			**328**			**60**			**66**		
OFF PEAK												
1130-1230	27	358	18	35	366	29	25	26	33	31	19	38
TOTAL	**403**			**430**			**84**			**88**		
PM PEAK												
1600-1700	23	316	13	32	431	25	23	31	38	38	24	35
TOTAL	**352**			**488**			**92**			**97**		

Town of Smiths Falls
Engineering Department
Traffic Count Summary

Time: 8:00 a.m. - 10:00 a.m.
11:00 a.m. - 2:00 p.m.
3:00 p.m. - 6:00 p.m.

Count Location: Confederation Dr & Old Mill Rd
Data Compiled By: Consultant



Date: Wed Feb 8, 2012	Weather: Sunny warm								
Item:	Old Mill Rd Southbound			Confederation Dr Eastbound			Confederation Dr Westbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Cars	71	X	7	20	147	X	X	179	61
Comm. Trucks X 2 (factor)	0	X	0	0	0	X	X	0	0
% Commercial Traffic	0%	X	0%	0%	0%	X	X	0%	0%
24 Hour Factor	2.06	X	2.06	2.06	2.06	X	X	2.06	2.06
24 Volume Factor	146.26	X	14.42	41.20	302.82	X	X	368.74	125.66
Weekly Factor	1.11	X	1.11	1.11	1.11	X	X	1.11	1.11
Seasonal Factor	1.1	X	1.1	1.1	1.1	X	X	1.1	1.1
A.A.D.T	178	X	18	49	359	X	X	437	149

Total A.A.D.T for this insection is 1190

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Typical 24 Hour Factor Chart

* add factors for hour of count taken to come up with 24 Hour Factor than divide into 100

Typical 24 Vol. Factor Chart

* pick the day of the week and submit the factor in the chart

eg. (100/48) = 24 Hour Factor

Hour	Factor
6:00 - 7:00 a.m.	2.53
7:00 - 8:00 a.m.	3.69
8:00 - 9:00 a.m	4.42
9:00 - 10:00 a.m.	5.34
10:00 - 11:00 a.m.	5.73
1100 - 12:00	5.42
12:00 - 1:00 p.m.	5.34
1:00 - 2:00 p.m.	6.18
2:00 - 3:00 p.m.	6.56
3:00 - 4:00 p.m.	6.88
4:00 - 5:00 p.m.	7.71
5:00 - 6:00 p.m.	7.3
6:00 - 7:00 p.m.	6.12
7:00 - 8:00 p.m.	5.72
8:00 - 9:00 p.m.	4.74
9:00 - 10:00 p.m.	3.85
10:00 - 11:00 p.m.	3.18
11:00 - 12:00	2.61
12:00 - 1:00 a.m.	1.89
1:00 - 2:00 a.m.	1.32
2:00 - 3:00 a.m.	0.9
3:00 - 4:00 a.m.	0.76
4:00 - 5:00 a.m.	0.76
5:00 - 6:00 a.m.	1.05

Day	Factor
Monday	1.072
Tuesday	1.121
Wednesday	1.108
Thursday	1.096
Friday	1.015
Saturday	0.899
Sunday	0.789

Typical Seasonal Factor Chart

* pick the month of count and class of road and submit the factor in the chart

Month	Arteria	Collect	Local
January	1.15	1.1	1.13
February	1.09	1.07	1.1
March	1.05	1.03	1.03
April	1	0.99	1
May	0.95	0.99	0.95
June	0.91	0.94	0.89
July	0.91	0.95	0.97
August	0.91	0.9	0.89
September	0.97	0.96	0.93
October	0.99	0.98	0.96
November	1.02	1.01	1.01
December	1.06	1.13	1.25.

SMITHS FALLS TRAFFIC COUNT
DATA INFORMATION SHEET

Location	Strathcona Street
Reference Point	George & James
Starting Date	Monday July 13, 2015
Finishing Date	Monday July 20, 2015
Weather	Clear
Count taken by	Gabriel Brown & Jesse Labrecque

Eastbound

Westbound

Daily Total Count

Monday	1034	Friday	1233
Tuesday	1038	Saturday	870
Wednesda	1127	Sunday	777
Thursday	1318		
Total Count	7397		

Eastbound	3247
Westbound	4150

Note:

Actual Daily Average Count

Mon. to Fri.	1150	Mon. to Sat.	1103

Vehicle Data

Day	Class #1	Class #2	Class #3	Class #4	Class #5	Class #6	Class #7	Class #8	Class #9	Class #10	Class #11	Class #12
Mon.	12	853	145	8	15	1	0	0	0	0	0	0
Tues.	18	862	139	3	11	5	0	0	0	0	0	0
Wed.	23	895	189	5	12	2	1	0	0	0	0	0
Thurs.	15	979	283	3	34	0	2	0	2	0	0	0
Fri.	13	971	222	5	18	1	1	0	1	1	0	0
Sat.	20	712	127	1	10	0	0	0	0	0	0	0
Sun.	15	499	216	6	34	6	1	0	0	0	0	0
Total	**116**	**5771**	**1321**	**31**	**134**	**15**	**5**	**0**	**3**	**1**	**0**	**0**

Speed Data

Km/hr	Class #1	Class #2	Class #3	Class #4	Class #5	Class #6	Class #7	Class #8	Class #9	Class #10	Class #11	Class #12
10-20	38	257	51	1	4	2						
20-30	36	1702	319	4	20	6	3		3	1		
30-40	28	2544	445	13	35	1	1					
40-50	11	1126	354	7	47	2	1					
50-60	**1**	**135**	**128**	**3**	**20**	**4**						
60-70	**1**	**5**	**23**	**2**	**7**							
70-80	**1**	**2**			**1**							
80-90			**1**	**1**								
90-100												
100-110												
110-120												
120-130												
130-140												
140-150												
150-160												
Total	**116**	**5771**	**1321**	**31**	**134**	**15**	**5**	**0**	**3**	**1**	**0**	**0**

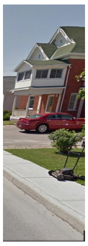
Annual Average Daily Traffic.

Item/Day	Sunday
Cars	1280
Comm. trucks X2	76
24hr.Vol.factor	1356
Weekly factor	1.096
Seasonal Factor	0.89

Speeding (50 km/h zone)	
50-60	3.93 %
60-70	0.51 %
70-80	0.05 %
80-90	0.03 %
90+	0.00 %

% Vehicle Speeding	Average
4.53 %	34.3

Total A.A.D.T. for this location is 1323



Daily Total
1034
1038
1127
1318
1233
870
777
7397

Speed Total
353
2094
3067
1548
291
38
4
2
0
0
0
0
0
0
0
7397

Speed
km/h

APPENDIX B – SYNCHRO 10 OUTPUT REPORTS

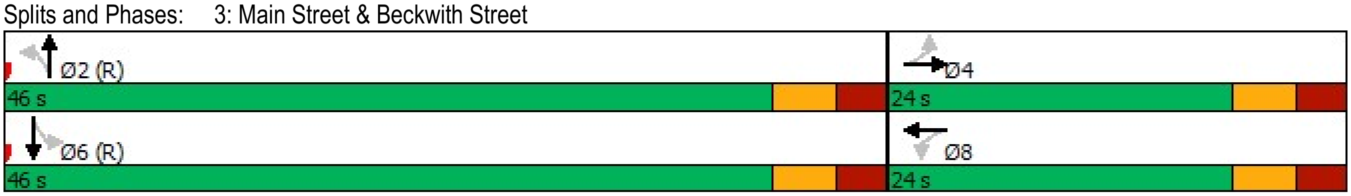
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	29	18	17	39	24	32	436	22	30	339	30
Future Volume (vph)	26	29	18	17	39	24	32	436	22	30	339	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	25.0		0.0	25.0		0.0	25.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.96	0.98		0.97	0.98		0.99	1.00		0.99	1.00	
Frt		0.942			0.943			0.993			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1518	0	1805	1524	0	1805	1553	0	1805	1560	0
Flt Permitted	0.713			0.723			0.492			0.415		
Satd. Flow (perm)	1307	1518	0	1334	1524	0	922	1553	0	780	1560	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			26			6			11	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.8			416.7			96.8			157.9	
Travel Time (s)		17.0			30.0			7.0			11.4	
Confl. Peds. (#/hr)	20		16	16		20	13		13	13		13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	7%	0%	0%	6%	0%
Parking (#/hr)		7			6			4			4	
Adj. Flow (vph)	28	32	20	18	42	26	35	474	24	33	368	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	52	0	18	68	0	35	498	0	33	401	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.20	1.00	1.00	1.19	1.00	1.00	1.18	1.00	1.00	1.18	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	24.0	24.0		24.0	24.0		46.0	46.0		46.0	46.0	
Total Split (%)	34.3%	34.3%		34.3%	34.3%		65.7%	65.7%		65.7%	65.7%	
Maximum Green (s)	18.0	18.0		18.0	18.0		40.0	40.0		40.0	40.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)	16	16		20	20		13	13		13	13	
Act Effct Green (s)	18.0	18.0		18.0	18.0		40.0	40.0		40.0	40.0	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.57	0.57		0.57	0.57	
v/c Ratio	0.08	0.13		0.05	0.17		0.07	0.56		0.07	0.45	
Control Delay	20.7	15.0		20.2	15.2		2.9	5.1		7.3	10.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	20.7	15.0		20.2	15.2		2.9	5.1		7.3	10.4	
LOS	C	B		C	B		A	A		A	B	
Approach Delay		17.0			16.3			5.0			10.1	
Approach LOS		B			B			A			B	
Queue Length 50th (m)	2.9	3.4		1.9	4.4		0.5	7.1		1.8	27.8	
Queue Length 95th (m)	8.8	11.3		6.5	13.7		m1.3	13.0		5.5	47.1	
Internal Link Dist (m)		211.8			392.7			72.8			133.9	
Turn Bay Length (m)	25.0			25.0			25.0			25.0		
Base Capacity (vph)	336	405		343	411		526	890		445	896	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.08	0.13		0.05	0.17		0.07	0.56		0.07	0.45	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 55
Control Type: Pretimed
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 8.7 Intersection LOS: A
Intersection Capacity Utilization 51.6% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Main Street & Beckwith Street



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	148	42	448	195	24	350
Future Volume (vph)	148	42	448	195	24	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	0.0		100.0	25.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	0.96		0.96	0.99	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1553	1727	1583	1752	1506
Flt Permitted	0.950				0.399	
Satd. Flow (perm)	1742	1498	1727	1528	731	1506
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		46		212		
Link Speed (k/h)	50		50			50
Link Distance (m)	413.8		147.1			96.8
Travel Time (s)	29.8		10.6			7.0
Confl. Peds. (#/hr)	8	8		8	8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	4%	10%	2%	3%	11%
Parking (#/hr)						4
Adj. Flow (vph)	161	46	487	212	26	380
Shared Lane Traffic (%)						
Lane Group Flow (vph)	161	46	487	212	26	380
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.18
Turning Speed (k/h)	25	15		15	25	
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Minimum Split (s)	23.1	23.1	23.1	23.1	23.1	23.1
Total Split (s)	27.0	27.0	43.0	43.0	43.0	43.0
Total Split (%)	38.6%	38.6%	61.4%	61.4%	61.4%	61.4%
Maximum Green (s)	21.9	21.9	37.9	37.9	37.9	37.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	5.1	5.1	5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	21.9	21.9	37.9	37.9	37.9	37.9
Actuated g/C Ratio	0.31	0.31	0.54	0.54	0.54	0.54
v/c Ratio	0.29	0.09	0.52	0.23	0.07	0.47
Control Delay	20.0	6.5	12.8	2.0	5.0	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	20.0	6.5	12.8	2.0	5.0	6.8
LOS	B	A	B	A	A	A
Approach Delay	17.0		9.5			6.7
Approach LOS	B		A			A
Queue Length 50th (m)	16.6	0.0	39.5	0.0	0.9	12.2
Queue Length 95th (m)	31.2	6.6	63.8	8.5	m1.9	18.0
Internal Link Dist (m)	389.8		123.1			72.8
Turn Bay Length (m)	25.0			100.0	25.0	
Base Capacity (vph)	553	500	935	924	395	815
Starvation Cap Reductn	0	0	0	0	0	70
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.09	0.52	0.23	0.07	0.51

Intersection Summary	
Area Type: Other	
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 50	
Control Type: Pretimed	
Maximum v/c Ratio: 0.52	
Intersection Signal Delay: 9.8	Intersection LOS: A
Intersection Capacity Utilization 47.1%	ICU Level of Service A
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 6: Beckwith Street & Chambers Street

Intersection						
Int Delay, s/veh	0.2					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	5	5	638	493	5
Future Vol, veh/h	5	5	5	638	493	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	450	-	-	1000
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	10	11	0
Mvmt Flow	5	5	5	693	536	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1242	271	541	0	-	0
Stage 1	539	-	-	-	-	-
Stage 2	703	-	-	-	-	-
Critical Hdwy	6.6	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	182	733	1038	-	-	-
Stage 1	555	-	-	-	-	-
Stage 2	495	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	181	733	1038	-	-	-
Mov Cap-2 Maneuver	181	-	-	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	495	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.9	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1038	-	290	-	-
HCM Lane V/C Ratio	0.005	-	0.037	-	-
HCM Control Delay (s)	8.5	-	17.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

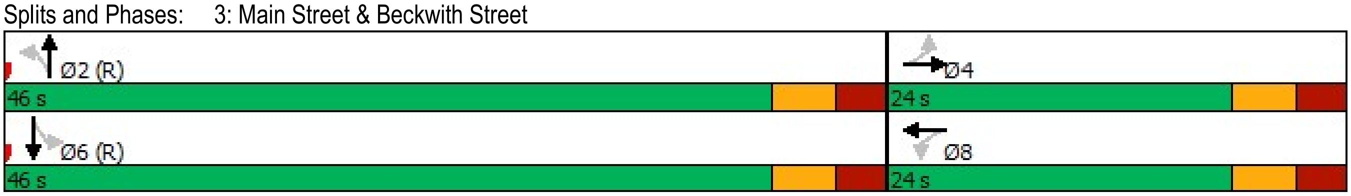
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	38	46	46	29	43	28	385	16	39	525	30
Future Volume (vph)	28	38	46	46	29	43	28	385	16	39	525	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	25.0		0.0	25.0		0.0	25.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94	0.98		0.98	0.95		0.98	1.00		0.99	0.99	
Frt		0.918			0.911			0.994			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1472	0	1805	1428	0	1805	1555	0	1805	1562	0
Flt Permitted	0.706			0.698			0.336			0.464		
Satd. Flow (perm)	1260	1472	0	1297	1428	0	623	1555	0	872	1562	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50			47			5			7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.8			416.7			96.8			157.9	
Travel Time (s)		17.0			30.0			7.0			11.4	
Confl. Peds. (#/hr)	35		13	13		35	38		11	11		38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	7%	0%	0%	6%	0%
Parking (#/hr)		7			6			4			4	
Adj. Flow (vph)	30	41	50	50	32	47	30	418	17	42	571	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	91	0	50	79	0	30	435	0	42	604	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.20	1.00	1.00	1.19	1.00	1.00	1.18	1.00	1.00	1.18	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	24.0	24.0		24.0	24.0		46.0	46.0		46.0	46.0	
Total Split (%)	34.3%	34.3%		34.3%	34.3%		65.7%	65.7%		65.7%	65.7%	
Maximum Green (s)	18.0	18.0		18.0	18.0		40.0	40.0		40.0	40.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)	17	17		35	35		11	11		38	38	
Act Effct Green (s)	18.0	18.0		18.0	18.0		40.0	40.0		40.0	40.0	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.57	0.57		0.57	0.57	
v/c Ratio	0.09	0.22		0.15	0.20		0.08	0.49		0.08	0.67	
Control Delay	20.8	12.7		21.6	12.0		4.4	5.9		7.4	15.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.2		0.0	0.0	
Total Delay	20.8	12.7		21.6	12.0		4.4	6.1		7.4	15.1	
LOS	C	B		C	B		A	A		A	B	
Approach Delay		14.7			15.7			6.0			14.6	
Approach LOS		B			B			A			B	
Queue Length 50th (m)	3.1	4.3		5.3	3.4		0.7	9.9		2.4	51.8	
Queue Length 95th (m)	9.5	15.1		13.5	13.3		m2.3	18.3		6.5	87.8	
Internal Link Dist (m)		211.8			392.7			72.8			133.9	
Turn Bay Length (m)	25.0			25.0			25.0			25.0		
Base Capacity (vph)	324	415		333	402		356	890		498	895	
Starvation Cap Reductn	0	0		0	0		0	71		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	2	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.09	0.22		0.15	0.20		0.08	0.53		0.08	0.68	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 11.8 | Intersection LOS: B
Intersection Capacity Utilization 57.4% | ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Main Street & Beckwith Street



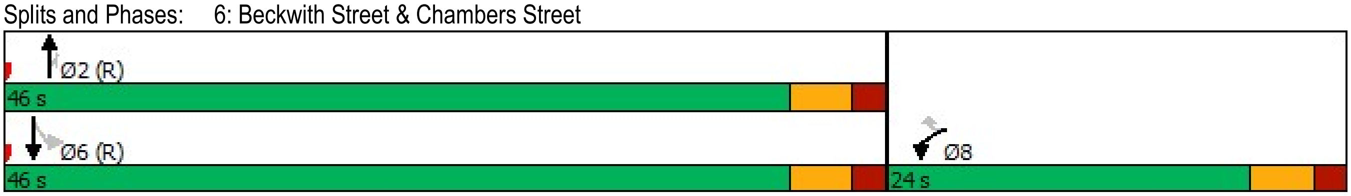
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	259	59	370	340	45	572
Future Volume (vph)	259	59	370	340	45	572
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	0.0		100.0	25.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	0.96		0.96	0.99	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1553	1727	1583	1752	1506
Flt Permitted	0.950				0.484	
Satd. Flow (perm)	1742	1498	1727	1528	886	1506
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		64		370		
Link Speed (k/h)	50		50			50
Link Distance (m)	413.8		147.1			96.8
Travel Time (s)	29.8		10.6			7.0
Confl. Peds. (#/hr)	8	8		8	8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	4%	10%	2%	3%	11%
Parking (#/hr)						4
Adj. Flow (vph)	282	64	402	370	49	622
Shared Lane Traffic (%)						
Lane Group Flow (vph)	282	64	402	370	49	622
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.18
Turning Speed (k/h)	25	15		15	25	
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Minimum Split (s)	23.1	23.1	23.1	23.1	23.1	23.1
Total Split (s)	24.0	24.0	46.0	46.0	46.0	46.0
Total Split (%)	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
Maximum Green (s)	18.9	18.9	40.9	40.9	40.9	40.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	5.1	5.1	5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Pedestrian Calls (#/hr)	8	8	8	8	8	8
Act Effct Green (s)	18.9	18.9	40.9	40.9	40.9	40.9
Actuated g/C Ratio	0.27	0.27	0.58	0.58	0.58	0.58
v/c Ratio	0.59	0.14	0.40	0.35	0.09	0.71
Control Delay	28.2	6.8	9.4	1.9	4.2	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	28.2	6.8	9.4	1.9	4.2	8.5
LOS	C	A	A	A	A	A
Approach Delay	24.2		5.8			8.2
Approach LOS	C		A			A
Queue Length 50th (m)	33.6	0.0	26.9	0.0	1.5	19.5
Queue Length 95th (m)	57.3	8.3	44.4	9.6	m2.5	27.5
Internal Link Dist (m)	389.8		123.1			72.8
Turn Bay Length (m)	25.0			100.0	25.0	
Base Capacity (vph)	477	451	1009	1046	517	879
Starvation Cap Reductn	0	0	0	0	0	36
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.14	0.40	0.35	0.09	0.74

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 10.2 | Intersection LOS: B
Intersection Capacity Utilization 53.6% | ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Beckwith Street & Chambers Street



Intersection						
Int Delay, s/veh	0.2					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	5	5	705	826	5
Future Vol, veh/h	5	5	5	705	826	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	450	-	-	1000
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	10	11	0
Mvmt Flow	5	5	5	766	898	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1677	452	903	0	-	0
Stage 1	901	-	-	-	-	-
Stage 2	776	-	-	-	-	-
Critical Hdwy	6.6	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	96	560	761	-	-	-
Stage 1	362	-	-	-	-	-
Stage 2	457	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	95	560	761	-	-	-
Mov Cap-2 Maneuver	95	-	-	-	-	-
Stage 1	359	-	-	-	-	-
Stage 2	457	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.8	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	761	-	162	-	-
HCM Lane V/C Ratio	0.007	-	0.067	-	-
HCM Control Delay (s)	9.8	-	28.8	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

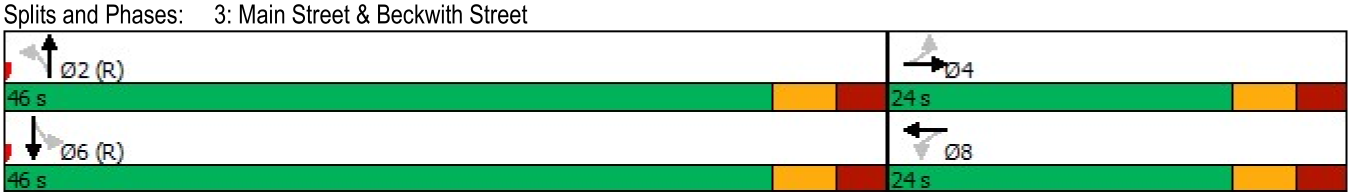
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	38	36	21	48	30	48	532	27	37	416	44
Future Volume (vph)	42	38	36	21	48	30	48	532	27	37	416	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	25.0		0.0	25.0		0.0	25.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.97	0.98		0.97	0.98		0.99	1.00		0.99	1.00	
Frt		0.927			0.942			0.993			0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1486	0	1805	1522	0	1805	1553	0	1805	1557	0
Flt Permitted	0.702			0.705			0.414			0.334		
Satd. Flow (perm)	1288	1486	0	1302	1522	0	778	1553	0	629	1557	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		39			33			6			13	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.8			416.7			96.8			157.9	
Travel Time (s)		17.0			30.0			7.0			11.4	
Confl. Peds. (#/hr)	20		16	16		20	13		13	13		13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	7%	0%	0%	6%	0%
Parking (#/hr)		7			6			4			4	
Adj. Flow (vph)	46	41	39	23	52	33	52	578	29	40	452	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	80	0	23	85	0	52	607	0	40	500	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.20	1.00	1.00	1.19	1.00	1.00	1.18	1.00	1.00	1.18	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	24.0	24.0		24.0	24.0		46.0	46.0		46.0	46.0	
Total Split (%)	34.3%	34.3%		34.3%	34.3%		65.7%	65.7%		65.7%	65.7%	
Maximum Green (s)	18.0	18.0		18.0	18.0		40.0	40.0		40.0	40.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)	16	16		20	20		13	13		13	13	
Act Effct Green (s)	18.0	18.0		18.0	18.0		40.0	40.0		40.0	40.0	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.57	0.57		0.57	0.57	
v/c Ratio	0.14	0.19		0.07	0.20		0.12	0.68		0.11	0.56	
Control Delay	21.4	13.7		20.5	15.4		4.0	7.5		7.9	12.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.4	13.7		20.5	15.4		4.0	7.5		7.9	12.2	
LOS	C	B		C	B		A	A		A	B	
Approach Delay		16.5			16.5			7.3			11.9	
Approach LOS		B			B			A			B	
Queue Length 50th (m)	4.9	4.3		2.4	5.5		1.1	12.6		2.3	38.1	
Queue Length 95th (m)	12.7	14.3		7.8	16.0		m2.3	20.6		6.7	64.4	
Internal Link Dist (m)		211.8			392.7			72.8			133.9	
Turn Bay Length (m)	25.0			25.0			25.0			25.0		
Base Capacity (vph)	331	411		334	415		444	890		359	895	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.14	0.19		0.07	0.20		0.12	0.68		0.11	0.56	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 10.5 Intersection LOS: B
Intersection Capacity Utilization 63.9% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Main Street & Beckwith Street



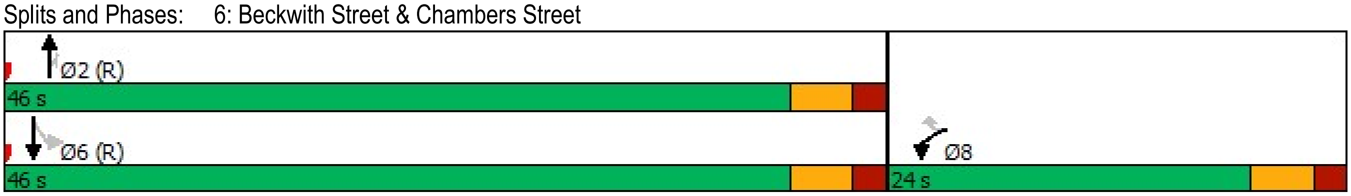
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	181	53	554	238	35	435
Future Volume (vph)	181	53	554	238	35	435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	0.0		100.0	25.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	0.96		0.96	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1553	1727	1583	1752	1506
Flt Permitted	0.950				0.335	
Satd. Flow (perm)	1742	1498	1727	1528	615	1506
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		58		259		
Link Speed (k/h)	50		50			50
Link Distance (m)	413.8		147.1			96.8
Travel Time (s)	29.8		10.6			7.0
Confl. Peds. (#/hr)	8	8		8	8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	4%	10%	2%	3%	11%
Parking (#/hr)						4
Adj. Flow (vph)	197	58	602	259	38	473
Shared Lane Traffic (%)						
Lane Group Flow (vph)	197	58	602	259	38	473
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.18
Turning Speed (k/h)	25	15		15	25	
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Minimum Split (s)	23.1	23.1	23.1	23.1	23.1	23.1
Total Split (s)	24.0	24.0	46.0	46.0	46.0	46.0
Total Split (%)	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
Maximum Green (s)	18.9	18.9	40.9	40.9	40.9	40.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	5.1	5.1	5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	18.9	18.9	40.9	40.9	40.9	40.9
Actuated g/C Ratio	0.27	0.27	0.58	0.58	0.58	0.58
v/c Ratio	0.41	0.13	0.60	0.26	0.11	0.54
Control Delay	24.2	7.0	12.4	1.7	4.2	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	24.2	7.0	12.4	1.7	4.2	6.1
LOS	C	A	B	A	A	A
Approach Delay	20.3		9.2			5.9
Approach LOS	C		A			A
Queue Length 50th (m)	22.2	0.0	47.6	0.0	1.0	13.2
Queue Length 95th (m)	40.2	7.9	76.9	8.3	m2.0	19.5
Internal Link Dist (m)	389.8		123.1			72.8
Turn Bay Length (m)	25.0			100.0	25.0	
Base Capacity (vph)	477	446	1009	1000	359	879
Starvation Cap Reductn	0	0	0	0	0	56
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.13	0.60	0.26	0.11	0.57

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 9.9 Intersection LOS: A
Intersection Capacity Utilization 52.7% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Beckwith Street & Chambers Street



Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	5	5	786	609	5
Future Vol, veh/h	5	5	5	786	609	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	450	-	-	1000
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	10	11	0
Mvmt Flow	5	5	5	854	662	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1529	334	667	0	-	0
Stage 1	665	-	-	-	-	-
Stage 2	864	-	-	-	-	-
Critical Hdwy	6.6	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	120	668	932	-	-	-
Stage 1	478	-	-	-	-	-
Stage 2	416	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	119	668	932	-	-	-
Mov Cap-2 Maneuver	119	-	-	-	-	-
Stage 1	476	-	-	-	-	-
Stage 2	416	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.8	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	932	-	202	-	-
HCM Lane V/C Ratio	0.006	-	0.054	-	-
HCM Control Delay (s)	8.9	-	23.8	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

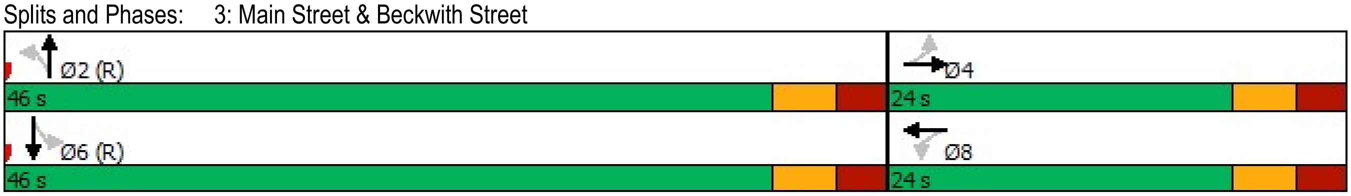
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	49	93	56	37	52	54	470	19	48	640	63
Future Volume (vph)	48	49	93	56	37	52	54	470	19	48	640	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	25.0		0.0	25.0		0.0	25.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94	0.97		0.98	0.95		0.99	1.00		0.99	0.99	
Frt		0.902			0.912			0.994			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1439	0	1805	1431	0	1805	1555	0	1805	1552	0
Flt Permitted	0.694			0.659			0.224			0.389		
Satd. Flow (perm)	1240	1439	0	1227	1431	0	420	1555	0	733	1552	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		101			57			5			12	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.8			416.7			96.8			157.9	
Travel Time (s)		17.0			30.0			7.0			11.4	
Confl. Peds. (#/hr)	35		13	13		35	38		11	11		38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	7%	0%	0%	6%	0%
Parking (#/hr)		7			6			4			4	
Adj. Flow (vph)	52	53	101	61	40	57	59	511	21	52	696	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	154	0	61	97	0	59	532	0	52	764	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.20	1.00	1.00	1.19	1.00	1.00	1.18	1.00	1.00	1.18	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	24.0	24.0		24.0	24.0		46.0	46.0		46.0	46.0	
Total Split (%)	34.3%	34.3%		34.3%	34.3%		65.7%	65.7%		65.7%	65.7%	
Maximum Green (s)	18.0	18.0		18.0	18.0		40.0	40.0		40.0	40.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)	17	17		35	35		11	11		38	38	
Act Effct Green (s)	18.0	18.0		18.0	18.0		40.0	40.0		40.0	40.0	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.57	0.57		0.57	0.57	
v/c Ratio	0.16	0.35		0.19	0.24		0.25	0.60		0.12	0.86	
Control Delay	21.9	11.2		22.3	12.1		6.5	7.1		7.9	24.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	1.9	
Total Delay	21.9	11.2		22.3	12.1		6.5	7.1		7.9	26.6	
LOS	C	B		C	B		A	A		A	C	
Approach Delay		13.9			16.1			7.1			25.4	
Approach LOS		B			B			A			C	
Queue Length 50th (m)	5.6	5.6		6.6	4.2		1.5	13.3		3.0	78.8	
Queue Length 95th (m)	14.0	19.6		15.9	15.2		m3.8	23.1		7.9	#157.0	
Internal Link Dist (m)		211.8			392.7			72.8			133.9	
Turn Bay Length (m)	25.0			25.0			25.0			25.0		
Base Capacity (vph)	318	445		315	410		240	890		418	892	
Starvation Cap Reductn	0	0		0	0		0	1		0	0	
Spillback Cap Reductn	0	3		0	0		0	0		0	47	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.16	0.35		0.19	0.24		0.25	0.60		0.12	0.90	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Pretimed
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 17.1 Intersection LOS: B
Intersection Capacity Utilization 79.0% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Main Street & Beckwith Street

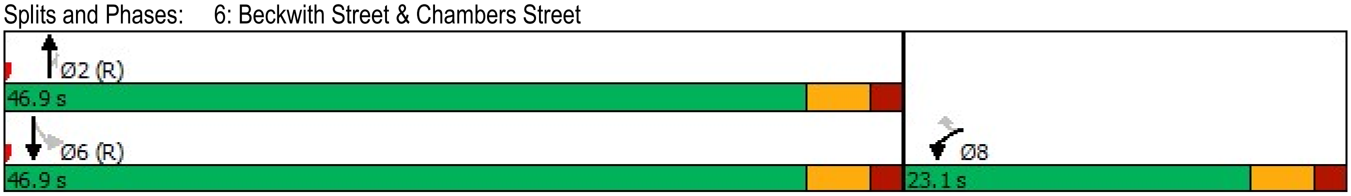


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	315	75	466	415	69	719
Future Volume (vph)	315	75	466	415	69	719
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	0.0		100.0	25.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	0.96		0.96	0.99	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1553	1727	1583	1752	1506
Flt Permitted	0.950				0.409	
Satd. Flow (perm)	1739	1495	1727	1528	750	1506
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		82		451		
Link Speed (k/h)	50		50			50
Link Distance (m)	413.8		147.1			96.8
Travel Time (s)	29.8		10.6			7.0
Confl. Peds. (#/hr)	8	8		8	8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	4%	10%	2%	3%	11%
Parking (#/hr)						4
Adj. Flow (vph)	342	82	507	451	75	782
Shared Lane Traffic (%)						
Lane Group Flow (vph)	342	82	507	451	75	782
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.18
Turning Speed (k/h)	25	15		15	25	
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Minimum Split (s)	23.1	23.1	23.1	23.1	23.1	23.1
Total Split (s)	23.1	23.1	46.9	46.9	46.9	46.9
Total Split (%)	33.0%	33.0%	67.0%	67.0%	67.0%	67.0%
Maximum Green (s)	18.0	18.0	41.8	41.8	41.8	41.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	5.1	5.1	5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	9.0	9.0	11.0	11.0	11.0	11.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Pedestrian Calls (#/hr)	8	8	8	8	8	8
Act Effct Green (s)	18.0	18.0	41.8	41.8	41.8	41.8
Actuated g/C Ratio	0.26	0.26	0.60	0.60	0.60	0.60
v/c Ratio	0.75	0.18	0.49	0.41	0.17	0.87
Control Delay	36.4	6.7	10.1	2.0	5.1	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.7
Total Delay	36.4	6.7	10.1	2.0	5.1	17.7
LOS	D	A	B	A	A	B
Approach Delay	30.7		6.3			16.6
Approach LOS	C		A			B
Queue Length 50th (m)	43.4	0.0	35.4	0.0	2.3	25.6
Queue Length 95th (m)	#81.2	9.6	57.6	10.2	m4.1	m#59.8
Internal Link Dist (m)	389.8		123.1			72.8
Turn Bay Length (m)	25.0			100.0	25.0	
Base Capacity (vph)	455	445	1031	1094	447	899
Starvation Cap Reductn	0	0	0	0	0	52
Spillback Cap Reductn	0	0	4	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.18	0.49	0.41	0.17	0.92

Intersection Summary
Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Pretimed
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 14.9 Intersection LOS: B
Intersection Capacity Utilization 63.8% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Beckwith Street & Chambers Street



Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	6	5	874	1028	5
Future Vol, veh/h	5	6	5	874	1028	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	450	-	-	1000
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	10	11	0
Mvmt Flow	5	7	5	950	1117	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2080	561	1122	0	-	0
Stage 1	1120	-	-	-	-	-
Stage 2	960	-	-	-	-	-
Critical Hdwy	6.6	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	53	476	630	-	-	-
Stage 1	278	-	-	-	-	-
Stage 2	375	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	53	476	630	-	-	-
Mov Cap-2 Maneuver	53	-	-	-	-	-
Stage 1	276	-	-	-	-	-
Stage 2	375	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	44.5	0.1	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	630	-	103	-	-
HCM Lane V/C Ratio	0.009	-	0.116	-	-
HCM Control Delay (s)	10.8	-	44.5	-	-
HCM Lane LOS	B	-	E	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

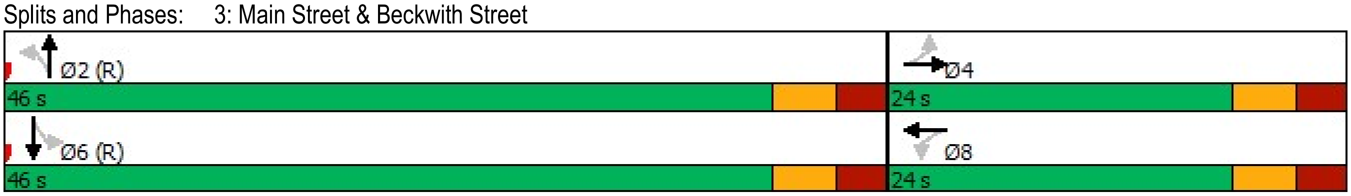
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	38	30	21	48	30	44	534	27	37	416	42
Future Volume (vph)	39	38	30	21	48	30	44	534	27	37	416	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	25.0		0.0	25.0		0.0	25.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.97	0.98		0.97	0.98		0.99	1.00		0.99	1.00	
Frt		0.933			0.942			0.993			0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1499	0	1805	1522	0	1805	1553	0	1805	1557	0
Flt Permitted	0.702			0.709			0.415			0.333		
Satd. Flow (perm)	1288	1499	0	1309	1522	0	780	1553	0	628	1557	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			33			6			12	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.8			416.7			96.8			157.9	
Travel Time (s)		17.0			30.0			7.0			11.4	
Confl. Peds. (#/hr)	20		16	16		20	13		13	13		13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	7%	0%	0%	6%	0%
Parking (#/hr)		7			6			4			4	
Adj. Flow (vph)	42	41	33	23	52	33	48	580	29	40	452	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	74	0	23	85	0	48	609	0	40	498	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.20	1.00	1.00	1.19	1.00	1.00	1.18	1.00	1.00	1.18	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	24.0	24.0		24.0	24.0		46.0	46.0		46.0	46.0	
Total Split (%)	34.3%	34.3%		34.3%	34.3%		65.7%	65.7%		65.7%	65.7%	
Maximum Green (s)	18.0	18.0		18.0	18.0		40.0	40.0		40.0	40.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)	16	16		20	20		13	13		13	13	
Act Effct Green (s)	18.0	18.0		18.0	18.0		40.0	40.0		40.0	40.0	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.57	0.57		0.57	0.57	
v/c Ratio	0.13	0.18		0.07	0.20		0.11	0.68		0.11	0.56	
Control Delay	21.3	14.3		20.5	15.4		4.0	7.6		7.9	12.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.3	14.3		20.5	15.4		4.0	7.6		7.9	12.2	
LOS	C	B		C	B		A	A		A	B	
Approach Delay		16.8			16.5			7.3			11.9	
Approach LOS		B			B			A			B	
Queue Length 50th (m)	4.5	4.3		2.4	5.5		1.0	12.7		2.3	37.9	
Queue Length 95th (m)	11.8	14.0		7.8	16.0		m2.1	20.7		6.7	63.8	
Internal Link Dist (m)		211.8			392.7			72.8			133.9	
Turn Bay Length (m)	25.0			25.0			25.0			25.0		
Base Capacity (vph)	331	409		336	415		445	890		358	894	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.13	0.18		0.07	0.20		0.11	0.68		0.11	0.56	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 10.5 Intersection LOS: B
Intersection Capacity Utilization 61.6% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Main Street & Beckwith Street



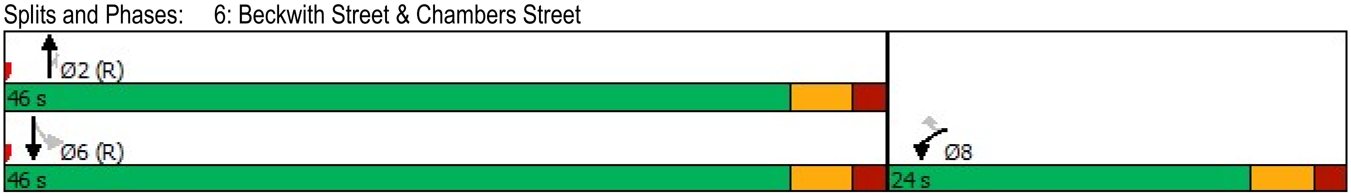
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	181	53	553	238	35	432
Future Volume (vph)	181	53	553	238	35	432
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	0.0		100.0	25.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	0.96		0.96	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1553	1727	1583	1752	1506
Flt Permitted	0.950				0.336	
Satd. Flow (perm)	1742	1498	1727	1528	617	1506
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		58		259		
Link Speed (k/h)	50		50			50
Link Distance (m)	413.8		147.1			96.8
Travel Time (s)	29.8		10.6			7.0
Confl. Peds. (#/hr)	8	8		8	8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	4%	10%	2%	3%	11%
Parking (#/hr)						4
Adj. Flow (vph)	197	58	601	259	38	470
Shared Lane Traffic (%)						
Lane Group Flow (vph)	197	58	601	259	38	470
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.18
Turning Speed (k/h)	25	15		15	25	
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Minimum Split (s)	23.1	23.1	23.1	23.1	23.1	23.1
Total Split (s)	24.0	24.0	46.0	46.0	46.0	46.0
Total Split (%)	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
Maximum Green (s)	18.9	18.9	40.9	40.9	40.9	40.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	5.1	5.1	5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	18.9	18.9	40.9	40.9	40.9	40.9
Actuated g/C Ratio	0.27	0.27	0.58	0.58	0.58	0.58
v/c Ratio	0.41	0.13	0.60	0.26	0.11	0.53
Control Delay	24.2	7.0	12.4	1.7	4.1	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	24.2	7.0	12.4	1.7	4.1	5.9
LOS	C	A	B	A	A	A
Approach Delay	20.3		9.2			5.8
Approach LOS	C		A			A
Queue Length 50th (m)	22.2	0.0	47.4	0.0	1.0	12.6
Queue Length 95th (m)	40.2	7.9	76.8	8.3	m2.0	18.6
Internal Link Dist (m)	389.8		123.1			72.8
Turn Bay Length (m)	25.0			100.0	25.0	
Base Capacity (vph)	477	446	1009	1000	360	879
Starvation Cap Reductn	0	0	0	0	0	53
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.13	0.60	0.26	0.11	0.57

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 9.9 Intersection LOS: A
Intersection Capacity Utilization 52.6% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Beckwith Street & Chambers Street



Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	13	17	755	597	15
Future Vol, veh/h	9	13	17	755	597	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	450	-	-	1000
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	10	11	0
Mvmt Flow	10	14	18	821	649	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1514	333	665	0	-	0
Stage 1	657	-	-	-	-	-
Stage 2	857	-	-	-	-	-
Critical Hdwy	6.6	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	122	669	934	-	-	-
Stage 1	483	-	-	-	-	-
Stage 2	419	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	120	669	934	-	-	-
Mov Cap-2 Maneuver	120	-	-	-	-	-
Stage 1	474	-	-	-	-	-
Stage 2	419	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.2	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	934	-	233	-	-
HCM Lane V/C Ratio	0.02	-	0.103	-	-
HCM Control Delay (s)	8.9	-	22.2	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	5	12	20	10	14
Future Vol, veh/h	13	5	12	20	10	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	5	13	22	11	15

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	35	0	-	0	57	24
Stage 1	-	-	-	-	24	-
Stage 2	-	-	-	-	33	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1576	-	-	-	950	1052
Stage 1	-	-	-	-	999	-
Stage 2	-	-	-	-	989	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1576	-	-	-	941	1052
Mov Cap-2 Maneuver	-	-	-	-	941	-
Stage 1	-	-	-	-	990	-
Stage 2	-	-	-	-	989	-

Approach	EB	WB	SB
HCM Control Delay, s	5.3	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1576	-	-	-	1003
HCM Lane V/C Ratio	0.009	-	-	-	0.026
HCM Control Delay (s)	7.3	0	-	-	8.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

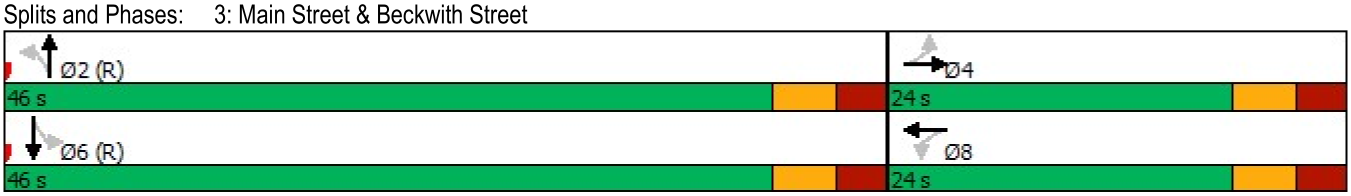
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	49	76	56	37	52	45	471	19	48	649	55
Future Volume (vph)	44	49	76	56	37	52	45	471	19	48	649	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	25.0		0.0	25.0		0.0	25.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94	0.97		0.98	0.95		0.99	1.00		0.99	0.99	
Frt		0.908			0.912			0.994			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1452	0	1805	1431	0	1805	1555	0	1805	1554	0
Flt Permitted	0.694			0.670			0.224			0.389		
Satd. Flow (perm)	1240	1452	0	1246	1431	0	420	1555	0	733	1554	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		83			57			5			10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.8			416.7			96.8			157.9	
Travel Time (s)		17.0			30.0			7.0			11.4	
Confl. Peds. (#/hr)	35		13	13		35	38		11	11		38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	7%	0%	0%	6%	0%
Parking (#/hr)		7			6			4			4	
Adj. Flow (vph)	48	53	83	61	40	57	49	512	21	52	705	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	136	0	61	97	0	49	533	0	52	765	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.20	1.00	1.00	1.19	1.00	1.00	1.18	1.00	1.00	1.18	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	24.0	24.0		24.0	24.0		46.0	46.0		46.0	46.0	
Total Split (%)	34.3%	34.3%		34.3%	34.3%		65.7%	65.7%		65.7%	65.7%	
Maximum Green (s)	18.0	18.0		18.0	18.0		40.0	40.0		40.0	40.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)	17	17		35	35		11	11		38	38	
Act Effct Green (s)	18.0	18.0		18.0	18.0		40.0	40.0		40.0	40.0	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.57	0.57		0.57	0.57	
v/c Ratio	0.15	0.31		0.19	0.24		0.20	0.60		0.12	0.86	
Control Delay	21.7	11.8		22.3	12.1		6.0	7.2		7.9	24.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	1.7	
Total Delay	21.7	11.8		22.3	12.1		6.0	7.2		7.9	26.4	
LOS	C	B		C	B		A	A		A	C	
Approach Delay		14.4			16.0			7.1			25.3	
Approach LOS		B			B			A			C	
Queue Length 50th (m)	5.1	5.6		6.6	4.2		1.2	13.3		3.0	79.2	
Queue Length 95th (m)	13.2	18.9		15.9	15.2		m3.3	23.1		7.9	#157.4	
Internal Link Dist (m)		211.8			392.7			72.8			133.9	
Turn Bay Length (m)	25.0			25.0			25.0			25.0		
Base Capacity (vph)	318	435		320	410		240	890		418	892	
Starvation Cap Reductn	0	0		0	0		0	1		0	0	
Spillback Cap Reductn	0	2		0	0		0	0		0	42	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.15	0.31		0.19	0.24		0.20	0.60		0.12	0.90	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Pretimed
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 17.2 Intersection LOS: B
Intersection Capacity Utilization 74.1% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Main Street & Beckwith Street



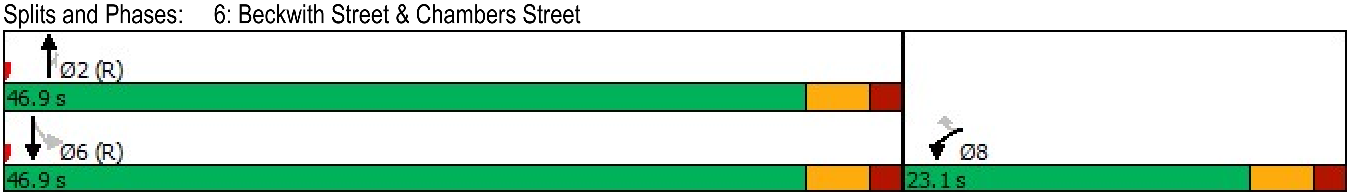
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	315	75	463	415	69	711
Future Volume (vph)	315	75	463	415	69	711
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	0.0		100.0	25.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	0.96		0.96	0.99	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1553	1727	1583	1752	1506
Flt Permitted	0.950				0.412	
Satd. Flow (perm)	1742	1498	1727	1528	755	1506
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		82		451		
Link Speed (k/h)	50		50			50
Link Distance (m)	413.8		147.1			96.8
Travel Time (s)	29.8		10.6			7.0
Confl. Peds. (#/hr)	8	8		8	8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	4%	10%	2%	3%	11%
Parking (#/hr)						4
Adj. Flow (vph)	342	82	503	451	75	773
Shared Lane Traffic (%)						
Lane Group Flow (vph)	342	82	503	451	75	773
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.18
Turning Speed (k/h)	25	15		15	25	
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Minimum Split (s)	23.1	23.1	23.1	23.1	23.1	23.1
Total Split (s)	23.1	23.1	46.9	46.9	46.9	46.9
Total Split (%)	33.0%	33.0%	67.0%	67.0%	67.0%	67.0%
Maximum Green (s)	18.0	18.0	41.8	41.8	41.8	41.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	5.1	5.1	5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Pedestrian Calls (#/hr)	8	8	8	8	8	8
Act Effct Green (s)	18.0	18.0	41.8	41.8	41.8	41.8
Actuated g/C Ratio	0.26	0.26	0.60	0.60	0.60	0.60
v/c Ratio	0.75	0.18	0.49	0.41	0.17	0.86
Control Delay	36.4	6.7	10.0	2.0	5.0	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.2
Total Delay	36.4	6.7	10.0	2.0	5.0	16.2
LOS	D	A	B	A	A	B
Approach Delay	30.7		6.2			15.2
Approach LOS	C		A			B
Queue Length 50th (m)	43.4	0.0	35.1	0.0	2.2	24.2
Queue Length 95th (m)	#81.2	9.6	56.9	10.2	m3.9	m#40.4
Internal Link Dist (m)	389.8		123.1			72.8
Turn Bay Length (m)	25.0			100.0	25.0	
Base Capacity (vph)	455	446	1031	1094	450	899
Starvation Cap Reductn	0	0	0	0	0	50
Spillback Cap Reductn	0	0	4	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.18	0.49	0.41	0.17	0.91

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Pretimed
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 14.3 Intersection LOS: B
Intersection Capacity Utilization 63.4% ICU Level of Service B
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Beckwith Street & Chambers Street



Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	23	22	868	1002	25
Future Vol, veh/h	10	23	22	868	1002	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	450	-	-	1000
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	10	11	0
Mvmt Flow	11	25	24	943	1089	27

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2094	558	1116	0	-	0
Stage 1	1103	-	-	-	-	-
Stage 2	991	-	-	-	-	-
Critical Hdwy	6.6	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	52	478	633	-	-	-
Stage 1	284	-	-	-	-	-
Stage 2	362	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	50	478	633	-	-	-
Mov Cap-2 Maneuver	50	-	-	-	-	-
Stage 1	273	-	-	-	-	-
Stage 2	362	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	41.8	0.3	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	633	-	133	-	-
HCM Lane V/C Ratio	0.038	-	0.27	-	-
HCM Control Delay (s)	10.9	-	41.8	-	-
HCM Lane LOS	B	-	E	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	40	10	18	29	21	34
Future Vol, veh/h	40	10	18	29	21	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	0	0	0	0	1
Mvmt Flow	43	11	20	32	23	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	52	0	-	0	133	36
Stage 1	-	-	-	-	36	-
Stage 2	-	-	-	-	97	-
Critical Hdwy	4.11	-	-	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.209	-	-	-	3.5	3.309
Pot Cap-1 Maneuver	1560	-	-	-	866	1039
Stage 1	-	-	-	-	992	-
Stage 2	-	-	-	-	932	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1560	-	-	-	842	1039
Mov Cap-2 Maneuver	-	-	-	-	842	-
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	932	-

Approach	EB	WB	SB
HCM Control Delay, s	5.9	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1560	-	-	-	954
HCM Lane V/C Ratio	0.028	-	-	-	0.063
HCM Control Delay (s)	7.4	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	
Agency/Co.	
Date Performed	2022-03-07
Analysis Time Period	
Highway	Abott Street
From/To	Strathcona to William Street
Jurisdiction	Township of Smiths Falls
Analysis Year	2022 AM
Description	Confederation Drive River Crossing

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.92	
Shoulder width	5.0	ft	% Trucks and buses	10	%
Lane width	15.0	ft	% Trucks crawling	0.0	%
Segment length	0.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	227	veh/h
Opposing direction volume, Vo	237	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.5		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.952		0.962	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	259	pc/h	268	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	45.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	1.3	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	39.7	mi/h
Adjustment for no-passing zones, fnp	3.6	mi/h
Average travel speed, ATSd	32.1	mi/h
Percent Free Flow Speed, PFFS	80.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.990	0.990
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	249 pc/h	260 pc/h

Base percent time-spent-following,(note-4) BPTSFd	27.1	%
Adjustment for no-passing zones, fnp	60.3	
Percent time-spent-following, PTSFd	56.6	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.17	
Peak 15-min vehicle-miles of travel, VMT15	6	veh-mi
Peak-hour vehicle-miles of travel, VMT60	23	veh-mi
Peak 15-min total travel time, TT15	0.2	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	3146	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	32.1	mi/h
Percent time-spent-following, PTSFd (from above)	56.6	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	30
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	246.7
Effective width of outside lane, We	25.00
Effective speed factor, St	3.39
Bicycle LOS Score, BLOS	3.32
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	
Agency/Co.	
Date Performed	2022-03-07
Analysis Time Period	
Highway	Abott Street
From/To	Strathcona to William Street
Jurisdiction	Township of Smiths Falls
Analysis Year	2022 PM
Description	Confederation Drive River Crossing

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.92	
Shoulder width	5.0	ft	% Trucks and buses	10	%
Lane width	15.0	ft	% Trucks crawling	0.0	%
Segment length	0.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	396	veh/h
Opposing direction volume, Vo		veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.971		0.962	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	443	pc/h	268	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	45.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	1.3	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	39.7	mi/h
Adjustment for no-passing zones, fnp	3.6	mi/h
Average travel speed, ATSd	30.6	mi/h
Percent Free Flow Speed, PFFS	77.1	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		0.990	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	430	pc/h	260	pc/h

Base percent time-spent-following,(note-4) BPTSFd	41.3	%
Adjustment for no-passing zones, fnp	46.9	
Percent time-spent-following, PTSFd	70.5	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.26	
Peak 15-min vehicle-miles of travel, VMT15	11	veh-mi
Peak-hour vehicle-miles of travel, VMT60	40	veh-mi
Peak 15-min total travel time, TT15	0.4	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2728	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	30.6	mi/h
Percent time-spent-following, PTSFd (from above)	70.5	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	30
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	430.4
Effective width of outside lane, We	25.00
Effective speed factor, St	3.39
Bicycle LOS Score, BLOS	3.61
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS 2010: Two-Lane Highways Release 6.1

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	
Agency/Co.	
Date Performed	2022-03-07
Analysis Time Period	
Highway	Abott Street
From/To	Strathcona to William Street
Jurisdiction	Township of Smiths Falls
Analysis Year	2032 AM NO BRIDGE
Description	Confederation Drive River Crossing

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.92	
Shoulder width	5.0	ft	% Trucks and buses	10	%
Lane width	15.0	ft	% Trucks crawling	0.0	%
Segment length	0.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	286	veh/h
Opposing direction volume, Vo		veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.962		0.971	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	323	pc/h	463	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	45.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	1.3	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	39.7	mi/h
Adjustment for no-passing zones, fnp	2.4	mi/h
Average travel speed, ATSd	31.2	mi/h
Percent Free Flow Speed, PFFS	78.5	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.990		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	314	pc/h	450	pc/h

Base percent time-spent-following,(note-4) BPTSFd	37.4	%
Adjustment for no-passing zones, fnp	44.1	
Percent time-spent-following, PTSFd	55.5	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.27	
Peak 15-min vehicle-miles of travel, VMT15	8	veh-mi
Peak-hour vehicle-miles of travel, VMT60	29	veh-mi
Peak 15-min total travel time, TT15	0.3	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2885	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	31.2	mi/h
Percent time-spent-following, PTSFd (from above)	55.5	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	30
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	310.9
Effective width of outside lane, We	25.00
Effective speed factor, St	3.39
Bicycle LOS Score, BLOS	3.44
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS 2010: Two-Lane Highways Release 6.1

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	
Agency/Co.	
Date Performed	2022-03-07
Analysis Time Period	
Highway	Abott Street
From/To	Strathcona to William Street
Jurisdiction	Township of Smiths Falls
Analysis Year	2032 PM NO BRIDGE
Description	Confederation Drive River Crossing

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.92	
Shoulder width	5.0	ft	% Trucks and buses	10	%
Lane width	15.0	ft	% Trucks crawling	0.0	%
Segment length	0.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	511	veh/h
Opposing direction volume, Vo	534	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.990		0.990	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	561	pc/h	586	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	45.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	1.3	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	39.7	mi/h
Adjustment for no-passing zones, fnp	1.9	mi/h
Average travel speed, ATSd	28.9	mi/h
Percent Free Flow Speed, PFFS	72.9	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	555	pc/h	580	pc/h
Base percent time-spent-following,(note-4) BPTSFd	55.3	%		
Adjustment for no-passing zones, fnp	36.2			
Percent time-spent-following, PTSFd	73.0	%		

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.37	
Peak 15-min vehicle-miles of travel, VMT15	14	veh-mi
Peak-hour vehicle-miles of travel, VMT60	51	veh-mi
Peak 15-min total travel time, TT15	0.5	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	3131	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	28.9	mi/h
Percent time-spent-following, PTSFd (from above)	73.0	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	30
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	555.4
Effective width of outside lane, We	25.00
Effective speed factor, St	3.39
Bicycle LOS Score, BLOS	3.73
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	
Agency/Co.	
Date Performed	2022-03-07
Analysis Time Period	
Highway	Abott Street
From/To	Strathcona to William Street
Jurisdiction	Township of Smiths Falls
Analysis Year	2032 AM BRIDGE OPEN
Description	Confederation Drive River Crossing

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.92	
Shoulder width	5.0	ft	% Trucks and buses	10	%
Lane width	15.0	ft	% Trucks crawling	0.0	%
Segment length	0.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd 517 veh/h
Opposing direction volume, Vo 529 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.990		0.990	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	568	pc/h	581	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	45.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	1.3	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	39.7	mi/h
Adjustment for no-passing zones, fnp	1.9	mi/h
Average travel speed, ATSd	28.9	mi/h
Percent Free Flow Speed, PFFS	72.8	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	562	pc/h	575	pc/h

Base percent time-spent-following,(note-4) BPTSFd	56.2	%
Adjustment for no-passing zones, fnp	36.3	
Percent time-spent-following, PTSFd	74.1	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.36	
Peak 15-min vehicle-miles of travel, VMT15	14	veh-mi
Peak-hour vehicle-miles of travel, VMT60	52	veh-mi
Peak 15-min total travel time, TT15	0.5	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	3164	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	28.9	mi/h
Percent time-spent-following, PTSFd (from above)	74.1	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	30
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	562.0
Effective width of outside lane, We	25.00
Effective speed factor, St	3.39
Bicycle LOS Score, BLOS	3.74
Bicycle LOS	D

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	
Agency/Co.	
Date Performed	2022-03-07
Analysis Time Period	
Highway	Abott Street
From/To	Strathcona to William Street
Jurisdiction	Township of Smiths Falls
Analysis Year	2032 PM BRIDGE OPEN
Description	Confederation Drive River Crossing

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.92	
Shoulder width	5.0	ft	% Trucks and buses	10	%
Lane width	15.0	ft	% Trucks crawling	0.0	%
Segment length	0.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	287	veh/h
Opposing direction volume, Vo	299	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.962		0.962	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	324	pc/h	338	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	45.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	1.3	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	39.7	mi/h
Adjustment for no-passing zones, fnp	3.1	mi/h
Average travel speed, ATSd	31.5	mi/h
Percent Free Flow Speed, PFFS	79.2	%

```
_________________________Percent Time-Spent-Following_________________________

Direction                                     Analysis(d)        Opposing (o)
PCE for trucks, ET                                1.1                1.1
PCE for RVs, ER                                   1.0                1.0
Heavy-vehicle adjustment factor, fHV              0.990              0.990
Grade adjustment factor,(note-1) fg               1.00               1.00
Directional flow rate,(note-2) vi                 315    pc/h        328     pc/h
Base percent time-spent-following,(note-4) BPTSFd  34.7   %
Adjustment for no-passing zones, fnp                       54.3
Percent time-spent-following, PTSFd                        61.3   %

________________Level of Service and Other Performance Measures_______________

Level of service, LOS                                      C
Volume to capacity ratio, v/c                              0.21
Peak 15-min vehicle-miles of travel, VMT15                 8        veh-mi
Peak-hour vehicle-miles of travel, VMT60                   29       veh-mi
Peak 15-min total travel time, TT15                        0.3      veh-h
Capacity from ATS, CdATS                                   1700     veh/h
Capacity from PTSF, CdPTSF                                 1700     veh/h
Directional Capacity                                       3133     veh/h

_____________________________Passing Lane Analysis____________________________

Total length of analysis segment, Lt                                 0.1      mi
Length of two-lane highway upstream of the passing lane, Lu          -        mi
Length of passing lane including tapers, Lpl                         -        mi
Average travel speed, ATSd (from above)                              31.5     mi/h
Percent time-spent-following, PTSFd (from above)                     61.3
Level of service, LOSd (from above)                                  C

___________________Average Travel Speed  with Passing Lane____________________

Downstream length of two-lane highway within effective
    length of passing lane for average travel speed, Lde             -        mi
Length of two-lane highway downstream of effective
    length of the passing lane for average travel speed, Ld          -        mi
Adj. factor for the effect of passing lane
    on average speed, fpl                                            -
Average travel speed including passing lane, ATSpl                   -

________________Percent Time-Spent-Following with Passing Lane________________

Downstream length of two-lane highway within effective length
    of passing lane for percent time-spent-following, Lde            -        mi
Length of two-lane highway downstream of effective length of
    the passing lane for percent time-spent-following, Ld            -        mi
Adj. factor for the effect of passing lane
    on percent time-spent-following, fpl                             -
Percent time-spent-following
    including passing lane, PTSFpl                                   -        %

______Level of Service and Other Performance Measures with Passing Lane ______

Level of service including passing lane, LOSpl             -
Peak 15-min total travel time, TT15                        -        veh-h

__________________________ Bicycle Level of Service __________________________
```

Posted speed limit, Sp	30
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	312.0
Effective width of outside lane, We	25.00
Effective speed factor, St	3.39
Bicycle LOS Score, BLOS	3.44
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

APPENDIX C – SIGNAL WARRANTS

Signal Warrant Calculation

MAJOR STREET:	Beckwith Street				
MINOR STREET:	Confederation Drive				
COMMENT	Base Year 2022 Conditions				
NUMBER OF APPROACH LANES:	1 [x]	2 [ ]			
TEE INTERSECTION CONFIGURATION	YES [x]	NO [ ]			
FLOW CONDITIONS:	FREE FLOW (RURAL) [x]	RESTRICTED FLOW (URBAN) [ ]			

VOLUME	AM	PM	FACTOR *	
1A - All	1,141	1,541	n/a	1,234
1B - Minor	10	10	92%	9
2A - Major	1,131	1,531	92%	1,225
2B - Crossi	5	5	92%	5

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

	YES	NO	
150% SATISFIED:	[ ]	[X]	Warrant for new intersection with forecast traffic
120% SATISFIED:	[ ]	[X]	Warrant for existing intersection with forecast traffic
100% SATISFIED:	[ ]	[X]	Warrant for existing intersection with existing traffic *
COMBO 80% SATISFIED:	[ ]	[X]	Warrant for existing intersection with existing traffic
80% SATISFIED:	[ ]	[X]	

* Consider full underground provisions if 100% for forecast trafi

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
	X				
ALL APPROACHES	480	720	600	900	1234
	% FULFILLED				257%

	YES	NO
150% SATISFIED:	[ ]	[X]
120% SATISFIED:	[ ]	[X]
100% SATISFIED:	[ ]	[X]
80% SATISFIED:	[ ]	[X]

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
	X				
MINOR STREET APPROACHES	180	255	180	255	9
	% FULFILLED				5%

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
	X				
MAJOR STREET APPROACHES	480	720	600	900	1225
	% FULFILLED				255%

	YES	NO
150% SATISFIED:	[ ]	[X]
120% SATISFIED:	[ ]	[X]
100% SATISFIED:	[ ]	[X]
80% SATISFIED:	[ ]	[X]

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
	X				
TRAFFIC CROSSING MAJOR STREET	50	75	50	75	5
	% FULFILLED				9%

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation

MAJOR STREET:	Beckwith Street
MINOR STREET:	Confederation Drive
COMMENT	Total 2032 Conditions - Bridge Open

VOLUME	AM	PM	FACTOR *	
1A - All	1,426	1,940	n/a	1,548
1B - Minor	22	33	92%	25
2A - Major	1,404	1,907	92%	1,523
2B - Crossi	9	10	92%	9

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

NUMBER OF APPROACH LANES: 1 [x] 2 [ ]

TEE INTERSECTION CONFIGURATION YES [x] NO [ ]

FLOW CONDITIONS: FREE FLOW (RURAL) [x] RESTRICTED FLOW (URBAN) [ ]

OVERALL WARRANT				
150% SATISFIED:	YES [ ]	NO [X]	Warrant for new intersection with forecast traffic
120% SATISFIED:	YES [ ]	NO [X]	Warrant for existing intersection with forecast traffic
100% SATISFIED:	YES [ ]	NO [X]	Warrant for existing intersection with existing traffic *
COMBO 80% SATISFIED:	YES [ ]	NO [X]	Warrant for existing intersection with existing traffic
80% SATISFIED:	YES [ ]	NO [X]	

* Consider full underground provisions if 100% for forecast trafi

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
	X				
ALL APPROACHES	480	720	600	900	1548
	% FULFILLED				323%

150% SATISFIED:	YES [ ]	NO [X]
120% SATISFIED:	YES [ ]	NO [X]
100% SATISFIED:	YES [ ]	NO [X]
80% SATISFIED:	YES [ ]	NO [X]

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
	X				
MINOR STREET APPROACHES	180	255	180	255	25
	% FULFILLED				14%

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
	X				
MAJOR STREET APPROACHES	480	720	600	900	1523
	% FULFILLED				317%

150% SATISFIED:	YES [ ]	NO [X]
120% SATISFIED:	YES [ ]	NO [X]
100% SATISFIED:	YES [ ]	NO [X]
80% SATISFIED:	YES [ ]	NO [X]

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
	X				
TRAFFIC CROSSING MAJOR STREET	50	75	50	75	9
	% FULFILLED				17%

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

APPENDIX F – HERITAGE IMPACT ASSESSMENT REPORT (PENDING)

APPENDIX G: CONSULTATION MATERIAL

Consultation Contact List

Title	First Name	Last Name	Position	Organization	Address	City	Prov	Postal Code	Telephone	Email
Provincial & Federal Agency										
Sir/Madam			Class EA Form	Ministry of Environment, Conservation and Parks						eanotification.eregion@ontario.ca
Mr.	Scott	Lee	Resource Operations Supervisor	Ministry of Norther Development, Mines, Natural Resources and Forestry	Unit 1, 10 Campus Drive	Kemptville	ON	K0G 1J0	613-258-8230	scott.lee@ontario.ca
Ms.	Karla	Barboza	Team Lead - Heritage (Acting) Heritage Planning Unit	Ministry of Heritage, Sport, Tourism and Culture Industries	401 Bay Street	Toronto	ON	M7A 0A7	416-660-1027	karla.barboza@ontario.ca
Mr.	Jack	Mallon	Heritage Planner, Heritage Planning Unit	Ministry of Heritage, Sport, Tourism and Culture Industries	400 University Avenue, 5th Floor	Toronto	ON	M7A 2R9	437-552-6582	jack.mallon@ontario.ca
Ms.	Jessica	Hill	Senior Advisor - Indigenous Relations Unit	Ministry of Indigenous Affairs	160 Bloor Street, Suite 400	Toronto	ON	M7A 2E6	416-326-4744	jessica.hill2@ontario.ca
Ms.	Susan	Millar	Planner / Planificatrice	Parks Canada Agency	34-A Beckwith Street South	Smiths Falls	ON	K7A 2B8	613-283-7199 x 203	Susan Millar <susan.millar@pc.gc.ca
	Hillary	Knack		Parks Canada Agency	34-A Beckwith Street South	Smiths Falls	ON	K7A 2B8	613-283-7199 x 203	hillary.knack@pc.gc.ca
Sir/Madam				Fisheries and Oceans Canada Centre for Inland Waters	867 Lakeshore Road	Burlington	ON	L7S 1A1	905-336-4999	info@dfo-mpo.gc.ca
Municipal Agency										
Mr.	Shawn	Pankow	Mayor	Town of Smiths Falls	77 Beckwith Street North	Smiths Falls	ON	K7A 2B8	613-283-4124 x 1101	mayor@smithsfalls.ca
Ms.	Nadine	Bennett	Deputy Clerk	Town of Smiths Falls	77 Beckwith Street North	Smiths Falls	ON	K7A 2B8	613-283-4124 x 1130	nbennett@smtihsfalls.ca
Mr.	Malcolm	Morris	Chief Administrative Officer	Town of Smiths Falls	77 Beckwith Street North	Smiths Falls	ON	K7A 2B8	613-283-4124 x1104	mmorris@smithsfalls.ca
Mr.	Paul	McMunn	Director, Public Works & Utilities	Town of Smiths Falls	77 Beckwith Street North	Smiths Falls	ON	K7A 2B8	613-283-4124 x 1152	pmcmunn@smithsfalls.ca
Mr.	Jason	Dalgleish	Supervisor of Public Works	Town of Smiths Falls	77 Beckwith Street North	Smiths Falls	ON	K7A 2B8	613-283-4124 x 3301	jdalgleish@smithsfalls.ca
Mr.	Jamie	Wilkinson	Public Works and Utilties Foreman	Town of Smiths Falls	77 Beckwith Street North	Smiths Falls	ON	K7A 2B8	613-283-4124 x 3303	jwilkinson@smithsfalls.ca
Ms.	Mary	Remmig	Planning Coordinator	Town of Smiths Falls	77 Beckwith Street North	Smiths Falls	ON	K7A 2B8	613-283-4124 X 1136	mremmig@smithsfalls.ca
Mr.	Karl	Grenke	Senior Planner	Town of Smiths Falls	77 Beckwith Street North	Smiths Falls	ON	K7A 2B8	613-283-4124 x 1116	kgrenke@smithsfalls.ca
Ms	Julia	Crowder	Economic Development & Tourism Manager	Town of Smiths Falls	77 Beckwith Street North	Smiths Falls	ON	K7A 2B8	613-283-4124 x 1107	jcrowder@smithsfalls.ca
Mr.	Peter	McKenna	Councillor	Town of Smiths Falls	77 Beckwith Street North	Smiths Falls	ON	K7A 2B8	613-859-4798	pmckenna@smithsfalls.ca
Mr.	Matthew	Linton	Asset & Capital Project Management Coordinator	Town of Smiths Falls	77 Beckwith Street North	Smiths Falls	ON	K7A 2B8	613-283-4124 x 1146	mlinton@smithsfalls.ca
Ms.	Emilie	Richardson	Public Works & Utilities Administrative Coordinator	Town of Smiths Falls	77 Beckwith Street North	Smiths Falls	ON	K7A 2B8	613-283-4124 x 3302	erichardson@smithsfalls.ca
Mr.	Terry	McCann	Director of Public Works	County of Lanark	99 Christie Lake Road	Perth	ON	K7H 3C6	613-267-1353 x 3190	roads@lanarkcounty.ca
Mr.	Sean	Derouin	Public Works Manager	County of Lanark	99 Christie Lake Road	Perth	ON	K7H 3C6	613-267-4200	roads@lanarkcounty.ca
Ms.	Julie	Stewart	Planner	County of Lanark	99 Christie Lake Road	Perth	ON	K7H 3C6	613-267-4200 x 1520	jstewart@lanarkcounty.ca or plan@lanarkcounty.ca
Mr.	Kurt	Greaves	CAO	County of Lanark	99 Christie Lake Road	Perth	ON	K7H 3C6	613-267-4200 x 1101	kgreaves@lanarkcounty.ca
Ms.	Jasmin	Ralph	Clerk/Deputy CAO	County of Lanark	99 Christie Lake Road	Perth	ON	K7H 3C6	613-267-4200 x 1502	jralph@lanarkcounty.ca
Ms.	Christa	Lowry	Warden	County of Lanark	99 Christie Lake Road	Perth	ON	K7H 3C6	613-267-4200 x 1100	clowry@mississippimills.ca
			Municipal Heritage Committee	Town of Smiths Falls	77 Beckwith Street North	Smiths Falls	ON	K7A 2B8		mhc@smithsfalls.ca
Emergency Services										
Mr.	Rick	Chesebrough	Fire Chief	Smiths Fall Fire Department	77 Beckwith Street North	Smiths Falls	ON	K7A 2B8	613-283-5869 x 1302	rchesebrough@smithsfalls.ca
Mr.	Travis	Mellema	Paramedic Chief	Lanark County Paramedic Service	84 Lorne Street	Smiths Falls	ON	K7A 3K8	613-205-1021	info@lcps.care
Mr.	Mark	MacGillivray	Police Chief	Smiths Falls Police Service	7 Hershey Drive, P.O Box 818	Smiths Falls	ON	K7A 4W7	613-283-0357	inquiries@sfps.ca
Ms.	Casey	Whiticar	Deputy Clerk/CEMC	County of Lanark	99 Christie Lake Road	Perth	ON	K7H 3C6	613-267-4200 x 1102	cwhiticar@lanarkcounty.ca
Mr.	Karuna	Padiachi	Detchment Commander	Lanark County OPP	75 Dufferin Road, P.O Box 160	Perth	ON	K7H 3A5	613-267-2626	Karuna.Padiachi@opp.ca
Indigenous Communities										
Ms.	Janet	Stavinga	Executive Director	Algonquins of Ontario	31 Riverside Drive, Suite 101	Pembroke	ON	K8A 8R6	613-735-3759	jstavinga@tanakiwin.com
Chief	Wendy	Jocko	Chief	Algonquins of Pikwakanagan First Nation	1657A Mishomis Inamo	Pikwakanagan	ON	K0J 1X0	613-625-2800	chiefcouncil@pikwakanagan.ca
Sir/Madam				Pasapkedjawaong Algonquin First Nation	2379 Pinery Road	Smiths Falls	ON	K7A 4S7		
Sir/Madam			Consultation Unit	Métis Nation of Ontario	Suite 1100 - 66 Slater Street	Ottawa	ON	K1P 5H1		consultations@metisnation.org
Conservation Authority										
Mr.	Sarah	MacLeod-Neilson	Planner	Rideau Valley Conservation Authority	3889 Rideau Valley Drive	Manotick	ON	K4M 1A5	613-692-3571 x1181	sarah.macleod-neilson@rvca.ca
Mr.	Ferdous	Ahmed	Senior Water Resources Engineer	Rideau Valley Conservation Authority	3889 Rideau Valley Drive	Manotick	ON	K4M 1A5	613-692-3571 x1170	ferdous.ahmed@rvca.ca
Mr.	Terry	Davidson	Director, Engineering and Regulations	Rideau Valley Conservation Authority	3889 Rideau Valley Drive	Manotick	ON	K4M 1A5	613-692-3571 x1107	terry.davidson@rvca.ca
School Boards & Student Transportation										
Mr.	Ron	Ferguson	Director of Education	Upper Canada District School Board	225 Central Avenue West	Brockville	ON	K6V 5X1	613-342-0371	ron.ferguson@ucdsb.on.ca
Mr.	John	Cameron	Director of Education	Catholic District School Board of Eastern Ontario	2755 Highway 43	Kemptville	ON	K0G 1J0	613-258-7757	director@cdsbeo.on.ca
Mr.	Marc	Bertrand	Director of Education and Secretary-Treasurer	Le Conseil des ecoles catholiques du Centre-Est	4000, rue Labelle	Ottawa	ON	K1J 1A1	613-744-2555	bertrma@ecolecatholique.ca
Ms.	Janet	Murray	General Manager / CAO	Student Transportation of Eastern Ontario	104 Commerce Drive, P.O. Box 1179	Prescott	ON	K0E 1T0	613-925-0022	transportation@steo.ca janet.murray@steo.ca
Mr.	Patrick	Pharand	Transportation Director	Ottawa School Transport Consortium	210-700 Industrial Avenue	Ottawa	ON	K1G 0Y9	613-746-3654	transportscolaire@ctso.ca
Businesses										
* As per the Freedom of Information and Protection of Privacy Act., personal information has not been provided.										
Public/Residents										
* As per the Freedom of Information and Protection of Privacy Act., personal information has not been provided.										
Utilities										
Ms.	Mary	Steele	Access Network Coordinator	Bell Canada Municipal Operations Centre			ON		613-213-1536	mary.steele@bell.ca
Ms.	Robyn	Elliott	Access Network Coordinator	Bell Canada Municipal Operations Centre			ON		613-345-3763	robyn.elliott@bell.ca
Sir/Madam				G-Tel Engineering Inc.	1150 Frances Street, 2nd Floor	London	ON	N5W 5N5		

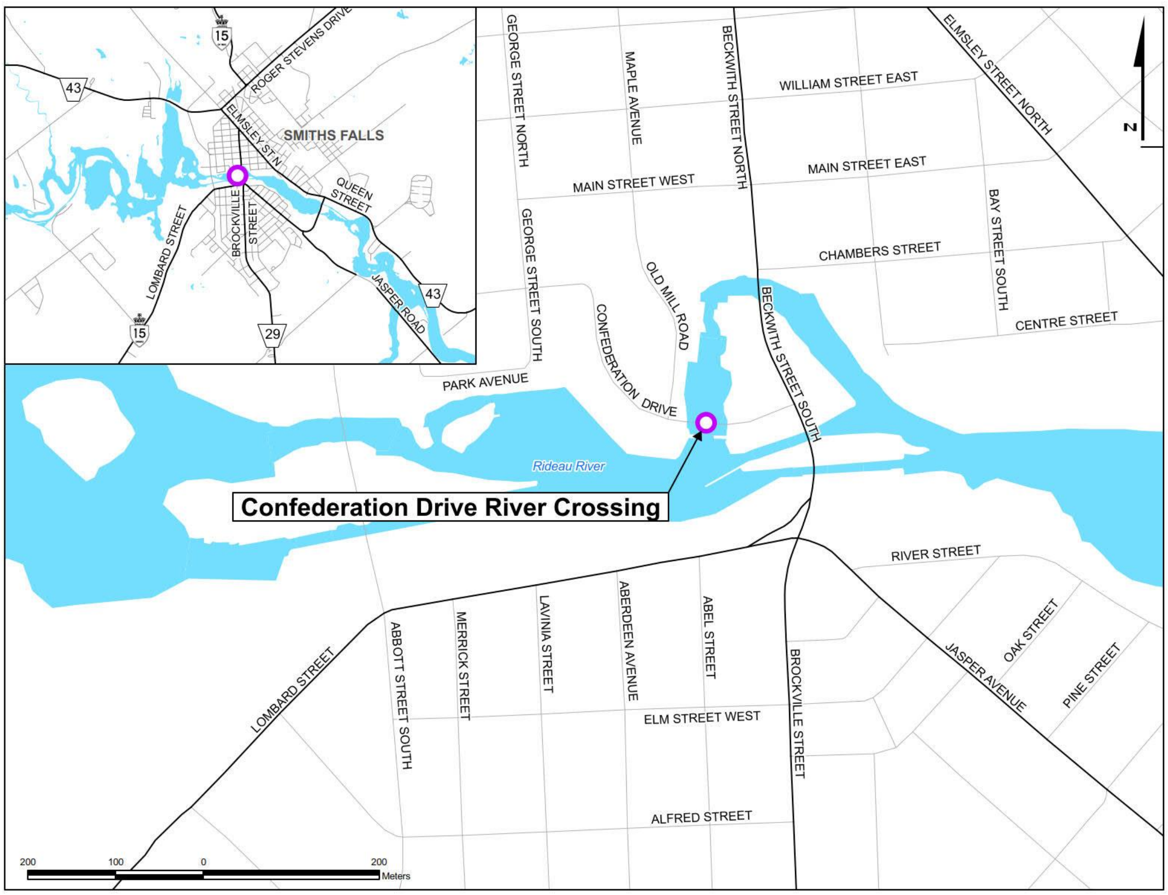
Notices

Notice of Study Commencement

Municipal Class Environmental Assessment Study for
Confederation Drive River Crossing

The Project

The Town of Smiths Falls is conducting a review of a bridge to address its advanced state of deterioration. The Confederation Drive River Crossing is located within the Town of Smiths Falls and is illustrated on the key plan below. Confederation Drive River Crossing is located on Confederation Drive over the Rideau Canal and can be accessed from Confederation Drive, that leads to Centennial Park or Canal Street off Highway 15 (Beckwith Street South), at Veterans' Memorial Park (Cenotaph) and the Smiths Falls Combined Lockstation Lock 29a.



Key Plan

Confederation Drive River Crossing is a single lane, twin span Warren type pony truss with a pedestrian pathway on the upstream side over the Rideau Canal that was constructed circa 1904. At this time, due to poor condition, Confederation Drive River Crossing is closed for public use.

The Study Process

The study is being conducted in accordance with Schedule B of the Municipal Class Environmental Assessment (EA) (October 2000, as amended) process. This notice signals the commencement of the Class EA. The study will confirm and document the existing structural deficiencies and identify alternative solutions, including rehabilitation or replacement of the structure. The environmental impacts of each alternative will be evaluated and in consultation with the public and external agencies, a technically preferred alternative will be selected.

How to Participate
A key component of this study is public and agency consultation. An Online Public Information Centre is planned for early spring of 2022 and will be held to present the study findings and obtain public input. Details of the Online Public Information Centre will be advertised in The Smiths Falls Record News, the Town of Smiths Falls Facebook page, and on **www.smithsfalls.ca** closer to the date under a separate notice.

We Want to Hear from You!
Public input and comments will be considered in developing the preferred design alternative. If you have any questions or comments regarding the study, or would like to be included on the mailing list to receive future notices and study updates, please contact one of the Project Team members below:

Paul McMunn
Director of Public Works & Utilities
Town of Smiths Falls
77 Beckwith Street North, Smiths Falls K7A 2B8
613-283-4124 x 1152
pmcmunn@smithsfalls.ca

Lisa Marshall, P. Eng.
Consultant Project Manager
McIntosh Perry Consulting Engineers Ltd.
115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0
613-714-0815
l.marshall@mcintoshperry.com

Comments submitted to the Town of Smiths Falls for the purpose of providing feedback regarding this Municipal Class Environmental Assessment are collected under the authority of the Environmental Assessment Act. Information will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record. Questions relating to the collection, use and disclosure of this information may be addressed to Paul McMunn, Director of Public Work and Utilities, at 613-283-4124 x1152 or pmcmunn@smithsfalls.ca

This notice was first issued on January 20st and 27th, 2022

SMITHS FALLS

Notice of Study Commencement

Municipal Class Environmental Assessment Study for Confederation Drive River Crossing

The Project

The Town of Smiths Falls is conducting a review of a bridge to address its advanced state of deterioration. The Confederation Drive River Crossing is located within the Town of Smiths Falls and is illustrated on the key plan below. Confederation Drive River Crossing is located on Confederation Drive over the Rideau Canal and can be accessed from Confederation Drive, that leads to Centennial Park or Canal Street off Highway 15 (Beckwith Street South), at Veterans' Memorial Park (Cenotaph) and the Smiths Falls Combined Lockstation Lock 29a.

Key Plan

Confederation Drive River Crossing is a single lane, twin span Warren type pony truss with a pedestrian pathway on the upstream side over the Rideau Canal that was constructed circa 1904. At this time, due to poor condition, Confederation Drive River Crossing is closed for public use.

The Study Process

The study is being conducted in accordance with Schedule B of the Municipal Class Environmental Assessment (EA) (October 2000, as amended) process. This notice signals the commencement of the Class EA. The study will confirm and document the existing structural deficiencies and identify alternative solutions, including rehabilitation or replacement of the structure. The environmental impacts of each alternative will be evaluated and in consultation with the public and external agencies, a technically preferred alternative will be selected.

How to Participate

A key component of this study is public and agency consultation. An Online Public Information Centre is planned for early spring of 2022 and will be held to present the study findings and obtain public input. Details of the Online Public Information Centre will be advertised in The Smiths Falls Record News, the Town of Smiths Falls Facebook page, and on www.smithsfalls.ca closer to the date under a separate notice.

We Want to Hear from You!

Public input and comments will be considered in developing the preferred design alternative. If you have any questions or comments regarding the study, or would like to be included on the mailing list to receive future notices and study updates, please contact one of the Project Team members below:

Paul McMunn
Director of Public Works & Utilities
Town of Smiths Falls
77 Beckwith Street North, Smiths Falls K7A 2B8
613-283-4124 x 1152
pmcmunn@smithsfalls.ca

Lisa Marshall, P. Eng.
Consultant Project Manager
McIntosh Perry Consulting Engineers Ltd.
115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0
613-714-0815
l.marshall@mcintoshperry.com

Comments submitted to the Town of Smiths Falls for the purpose of providing feedback regarding this Municipal Class Environmental Assessment are collected under the authority of the Environmental Assessment Act. Information will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record. Questions relating to the collection, use and disclosure of this information may be addressed to Paul McMunn, Director of Public Work and Utilities, at 613-283-4124 x1152 or pmcmunn@smithsfalls.ca.

This notice was first issued on January 20st and 27th, 2022.

Notice of Study Commencement

Municipal Class Environmental Assessment Study for Confederation Drive River Crossing

The Project

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Notice of Public Information Centre

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The Project

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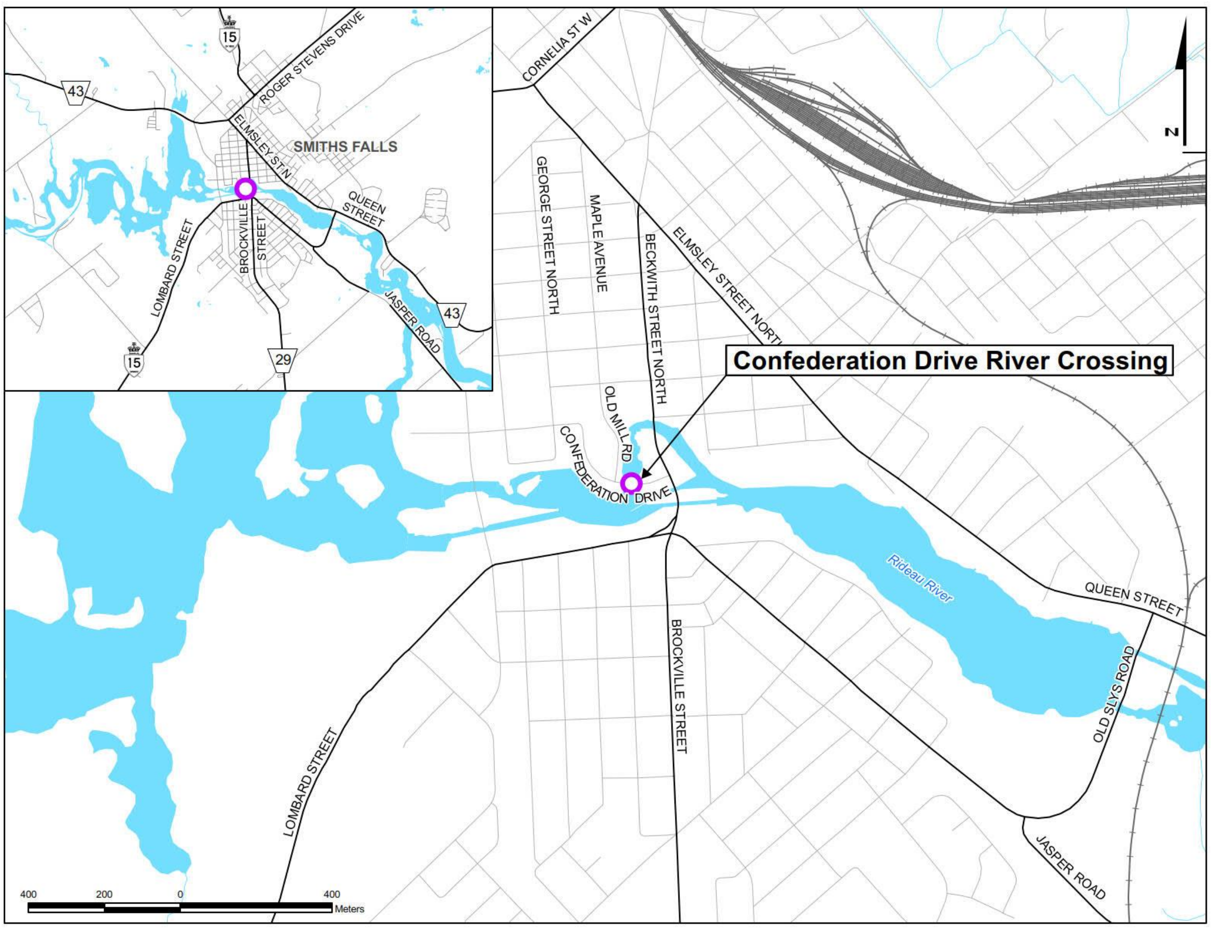

Key Plan

Confederation Drive River Crossing is a single lane, twin span Warren type pony truss with a pedestrian pathway on the upstream side over the Rideau Canal that was constructed circa 1904. Confederation Drive River Crossing crosses the Rideau River, a Canadian Heritage River and is adjacent to the Rideau Canal World Heritage Site (WHS) and National Historic Site of Canada (NHSC). Through a heritage evaluation, the existings bridge meets three of the criteria from O. Reg. 9/06 and is eligible for designation under Part IV Section 29 of the Ontario Heritage Act (OHA). At this time, due to poor condition, Confederation Drive River Crossing is closed for public use.

The Study Process
This study is being conducted in accordance with Schedule B of the Municipal Class Environmental Assessment (MCEA) (October 2000, as amended) process in order to identify and develop a technically preferred alternative solution for addressing concerns related to the Confederation Drive River Crossing.

Online Public Information Centre
The purpose of this notice is to invite you to participate in the Online Public Information Centre (PIC) for this project. The Online PIC will present the study process, existing conditions, alternative solutions, identify the recommend Technically Preferred Alternative and provide opportunity for public input and comments.

The Online PIC can be accessed through Speak Up Smiths Falls at:
https://speakupsmithsfalls.com/confederation-drive

Public input and comments will be considered in developing the preferred design alternative. If you have any questions, comments, require additional information, require a printout of the PIC or wish to be added to the project contact list for future updates on the study, please contact one of the following Project Team members below:

Paul McMunn
Director of Public Works & Utilities
Town of Smiths Falls
77 Beckwith Street North, Smiths Falls K7A 2B8
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Consultant Project Manager
McIntosh Perry Consulting Engineers Ltd.
115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0
1-613-714-0815
l.marshall@mcintoshperry.com

The Online PIC will be available from **May 26th to June 23rd, 2022.**

As per the requirements of the Schedule B MCEA, a draft Project File Report is being maintained throughout the Class EA Study and is now available for viewing on Speak Up Smiths Falls. The final Project File Report will be made available for a 30-day public review period at the conclusion of the study. An advertisement will be published at that time in The Smiths Falls Record News, Town of Smiths Falls Facebook page, Speak Up Smiths Falls and at www.smithsfalls.ca to indicate where the Study Report can be viewed.

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This notice was first issued on May 26th and June 2nd, 2022.

McINTOSH PERRY

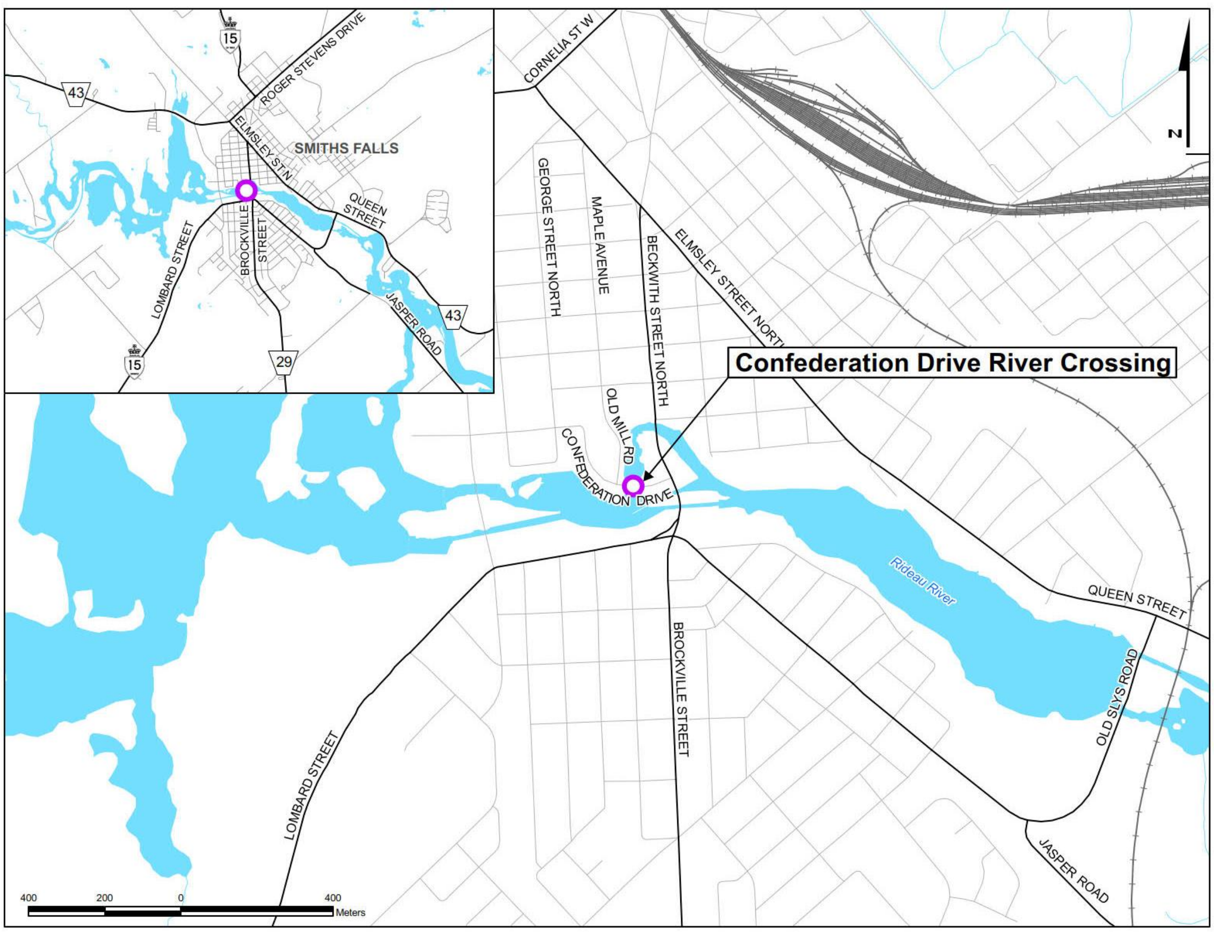
May 25, 2022

Algonquin of Ontario Consultation Office
31 Riverside Drive, Suite 101,
Pembroke, ON
K8A 8R6

Dear Janet Stavinga, Executive Director:

Re: Town of Smiths Falls Municipal Class Environmental Assessment Study for Confederation Drive River Crossing
Notice of Online Public Information Centre – May 26th to June 23rd, 2022

The Town of Smiths Falls is conducting a review of a bridge to address its advanced state of deterioration. The Confederation Drive River Crossing is located within the Town of Smiths Falls and is illustrated on the key plan below. Confederation Drive River Crossing is located on Confederation Drive over the Rideau Canal and can be accessed from Confederation Drive, that leads to Centennial Park or Canal Street off Highway 15 (Beckwith Street South), at Veterans' Memorial Park (Cenotaph) and the Smiths Falls Combined Lockstation Lock 29a.



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This study is being conducted in accordance with Schedule B of the Municipal Class Environmental Assessment (MCEA) (October 2000, as amended) process in order to identify and develop a technically preferred alternative solution for addressing concerns related to the Confederation Drive River Crossing.

The purpose of this notice is to invite you to participate in the Online Public Information Centre (PIC) for this project. The Online PIC will present the study process, existing conditions, alternative solutions, identify the recommend Technically Preferred Alternative and provide opportunity for public input and comments. The Online PIC can be accessed through Speak Up Smiths Falls at:

https://speakupsmithsfalls.com/confederation-drive

Public input and comments will be considered in developing the preferred design alternative. If you have any questions, comments, require additional information, require a printout of the PIC or wish to be added to the project contact list for future updates on the study, please contact one of the following Project Team members below:

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Director of Public Works & Utilities
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Consultant Project Manager
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115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0
1-613-714-0815
l.marshall@mcintoshperry.com

The Online PIC will be available from May 26th to June 23rd, 2022. Questions or Comments will be received until June 23rd, 2022, and can be provided directly online, via email or by phone.

We recognize the importance of consultation with the Algonquin of Ontario Consultation Office as part of this MCEA Study. Should you prefer to discuss the Study findings and provide your input directly to the Project Team, a virtual meeting can be arranged by contacting the Project Team members listed above.

The Study Process – As per the requirements of the Schedule B MCEA, a draft Project File Report is being maintained throughout the Class EA Study and is now available for viewing on Speak Up Smiths Falls. The final Project File Report will be made available for a 30-day public review period at the conclusion of the study. An advertisement will be published at that time in The Smiths Falls Record News, Town of Smiths Falls Facebook page, Speak Up Smiths Falls and at www.smithsfalls.ca to indicate where the Study Report can be viewed.

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Sincerely,

Lisa Marshall, P. Eng.
Consultant Project Manager
McIntosh Perry Consulting Engineers Ltd.

McINTOSH PERRY

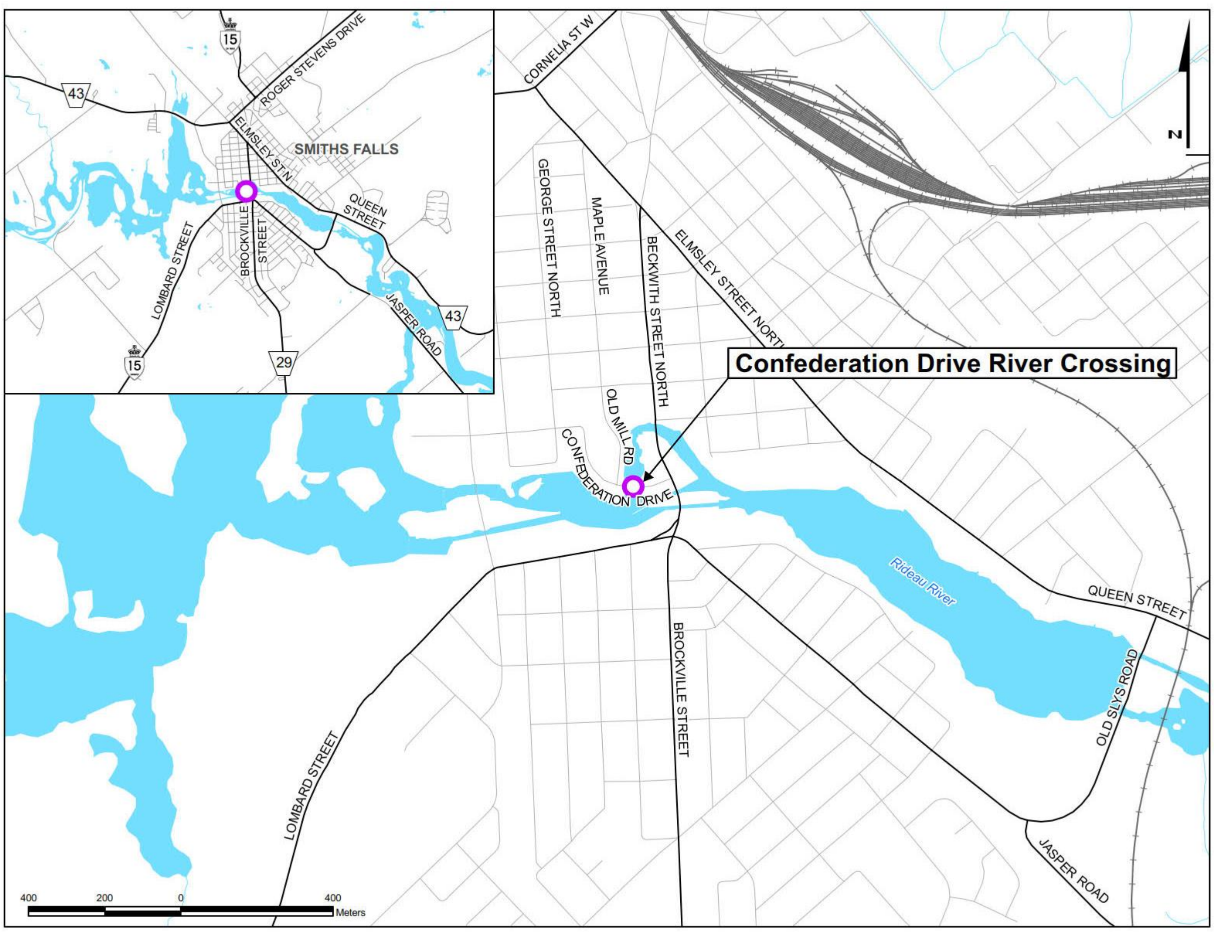
May 25, 2022

Algonquins of Pikwakanagan
1657 A Mishomis Inamo,
Pikwakanagan, ON
K0J 1X0

Dear Chief Wendy Jocko:

Re: Town of Smiths Falls Municipal Class Environmental Assessment Study for Confederation Drive River Crossing
Notice of Online Public Information Centre – May 26th to June 23rd, 2022

The Town of Smiths Falls is conducting a review of a bridge to address its advanced state of deterioration. The Confederation Drive River Crossing is located within the Town of Smiths Falls and is illustrated on the key plan below. Confederation Drive River Crossing is located on Confederation Drive over the Rideau Canal and can be accessed from Confederation Drive, that leads to Centennial Park or Canal Street off Highway 15 (Beckwith Street South), at Veterans' Memorial Park (Cenotaph) and the Smiths Falls Combined Lockstation Lock 29a.



115 Walgreen Road, R.R.3. Carp, ON K0A 1L0 | T. 613-836-2184 | F. 613-836-3742
info@mcintoshperry.com | www.mcintoshperry.com

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This study is being conducted in accordance with Schedule B of the Municipal Class Environmental Assessment (MCEA) (October 2000, as amended) process in order to identify and develop a technically preferred alternative solution for addressing concerns related to the Confederation Drive River Crossing.

The purpose of this notice is to invite you to participate in the Online Public Information Centre (PIC) for this project. The Online PIC will present the study process, existing conditions, alternative solutions, identify the recommend Technically Preferred Alternative and provide opportunity for public input and comments. The Online PIC can be accessed through Speak Up Smiths Falls at:

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77 Beckwith Street North, Smiths Falls K7A 2B8
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The Online PIC will be available from May 26th to June 23rd, 2022. Questions or Comments will be received until June 23rd, 2022, and can be provided directly online, via email or by phone.

We recognize the importance of consultation with the Algonquins of Pikwakanagan First Nation as part of this MCEA Study. Should you prefer to discuss the Study findings and provide your input directly to the Project Team, a virtual meeting can be arranged by contacting the Project Team members listed above.

The Study Process – As per the requirements of the Schedule B MCEA, a draft Project File Report is being maintained throughout the Class EA Study and is now available for viewing on Speak Up Smiths Falls. The final Project File Report will be made available for a 30-day public review period at the conclusion of the study. An advertisement will be published at that time in The Smiths Falls Record News, Town of Smiths Falls Facebook page, Speak Up Smiths Falls and at www.smithsfalls.ca to indicate where the Study Report can be viewed.

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Sincerely,

Lisa Marshall, P. Eng.
Consultant Project Manager
McIntosh Perry Consulting Engineers Ltd.

McINTOSH PERRY

May 25, 2022

Metis Nation of Ontario
500 Old St. Patrick Street, Unit 3
Ottawa, Ontario
K1N 9G4

Re: Town of Smiths Falls Municipal Class Environmental Assessment Study for Confederation Drive River Crossing
Notice of Online Public Information Centre – May 26th to June 23rd, 2022

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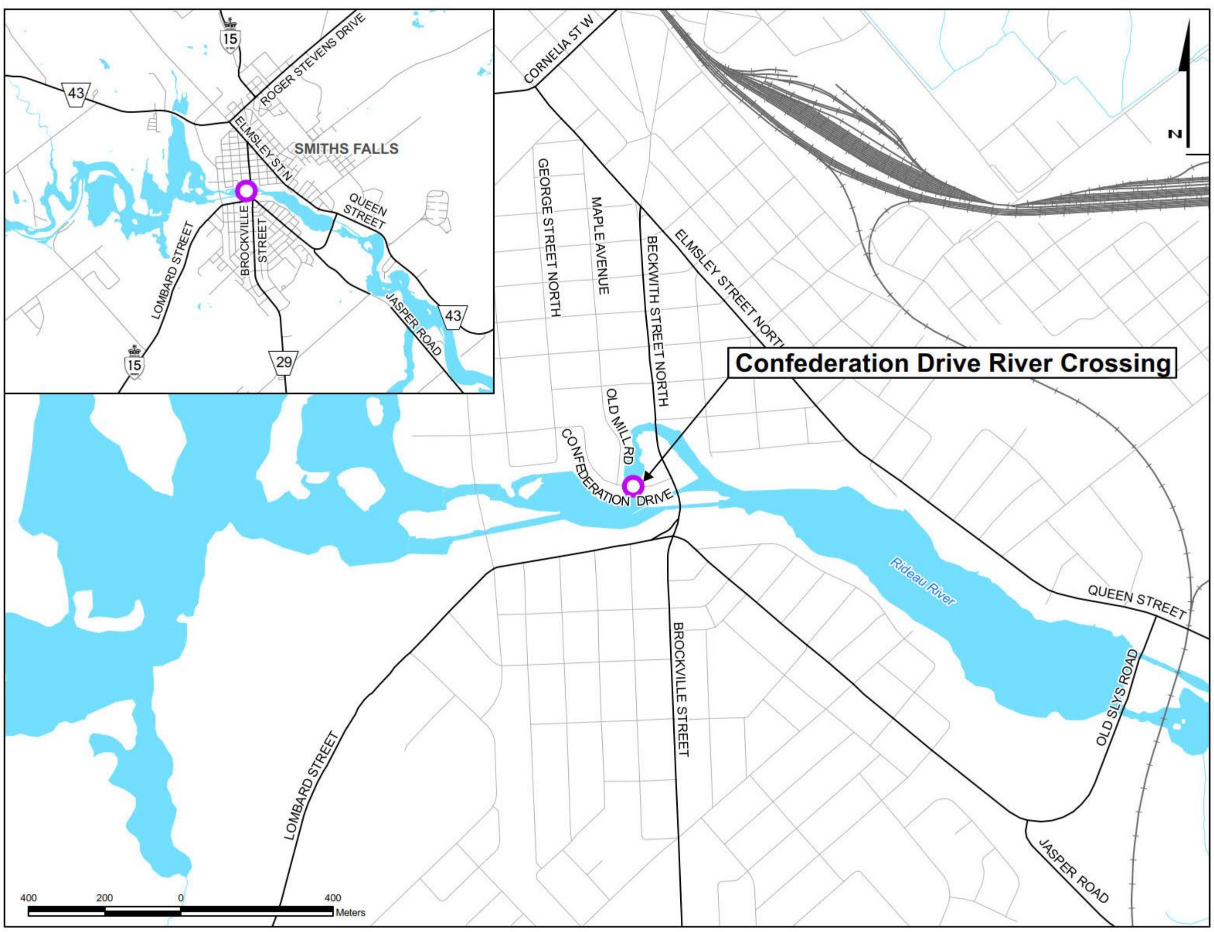

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We recognize the importance of consultation with the Métis Nation of Ontario as part of this MCEA Study. Should you prefer to discuss the Study findings and provide your input directly to the Project Team, a virtual meeting can be arranged by contacting the Project Team members listed above.

The Study Process – As per the requirements of the Schedule B MCEA, a draft Project File Report is being maintained throughout the Class EA Study and is now available for viewing on Speak Up Smiths Falls. The final Project File Report will be made available for a 30-day public review period at the conclusion of the study. An advertisement will be published at that time in The Smiths Falls Record News, Town of Smiths Falls Facebook page, Speak Up Smiths Falls and at www.smithsfalls.ca to indicate where the Study Report can be viewed.

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Sincerely,

Lisa Marshall, P. Eng.
Consultant Project Manager
McIntosh Perry Consulting Engineers Ltd.

McINTOSH PERRY

May 25, 2022

Pasapkedjawaong Algonquin
First Nation
2379 Pinery Road,
Smiths Falls, ON
K7A 4S7

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Notice of Online Public Information Centre – May 26th to June 23rd, 2022

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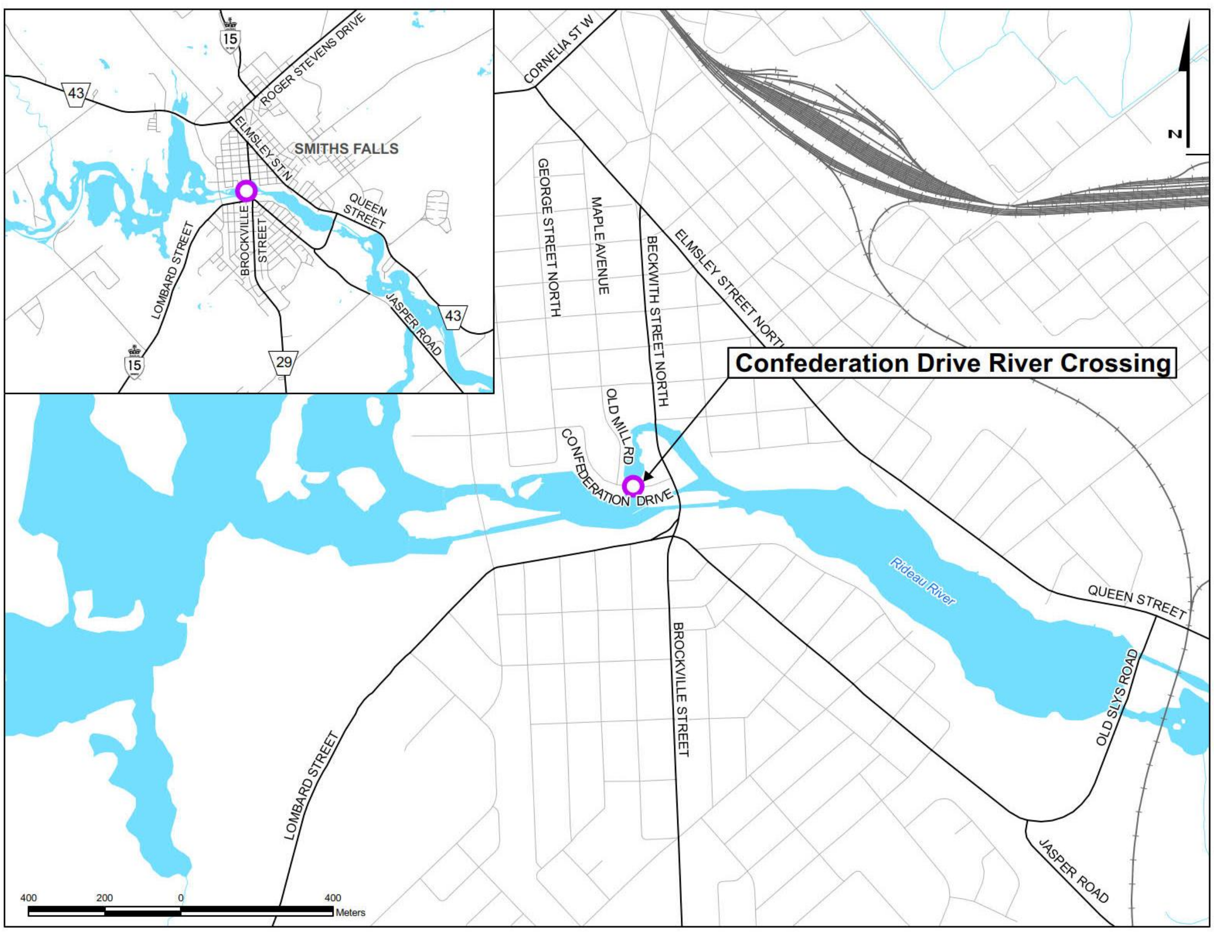

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pmcmunn@smithsfalls.ca

Lisa Marshall, P. Eng.
Consultant Project Manager
McIntosh Perry Consulting Engineers Ltd.
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l.marshall@mcintoshperry.com

The Online PIC will be available from May 26th to June 23rd, 2022. Questions or Comments will be received until June 23rd, 2022, and can be provided directly online, via email or by phone.

We recognize the importance of consultation with the Pasapkedjawaong Algonquin First Nation as part of this MCEA Study. Should you prefer to discuss the Study findings and provide your input directly to the Project Team, a virtual meeting can be arranged by contacting the Project Team members listed above.

The Study Process – As per the requirements of the Schedule B MCEA, a draft Project File Report is being maintained throughout the Class EA Study and is now available for viewing on Speak Up Smiths Falls. The final Project File Report will be made available for a 30-day public review period at the conclusion of the study. An advertisement will be published at that time in The Smiths Falls Record News, Town of Smiths Falls Facebook page, Speak Up Smiths Falls and at www.smithsfalls.ca to indicate where the Study Report can be viewed.

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Sincerely,

L. Marshall

Lisa Marshall, P. Eng.
Consultant Project Manager
McIntosh Perry Consulting Engineers Ltd.

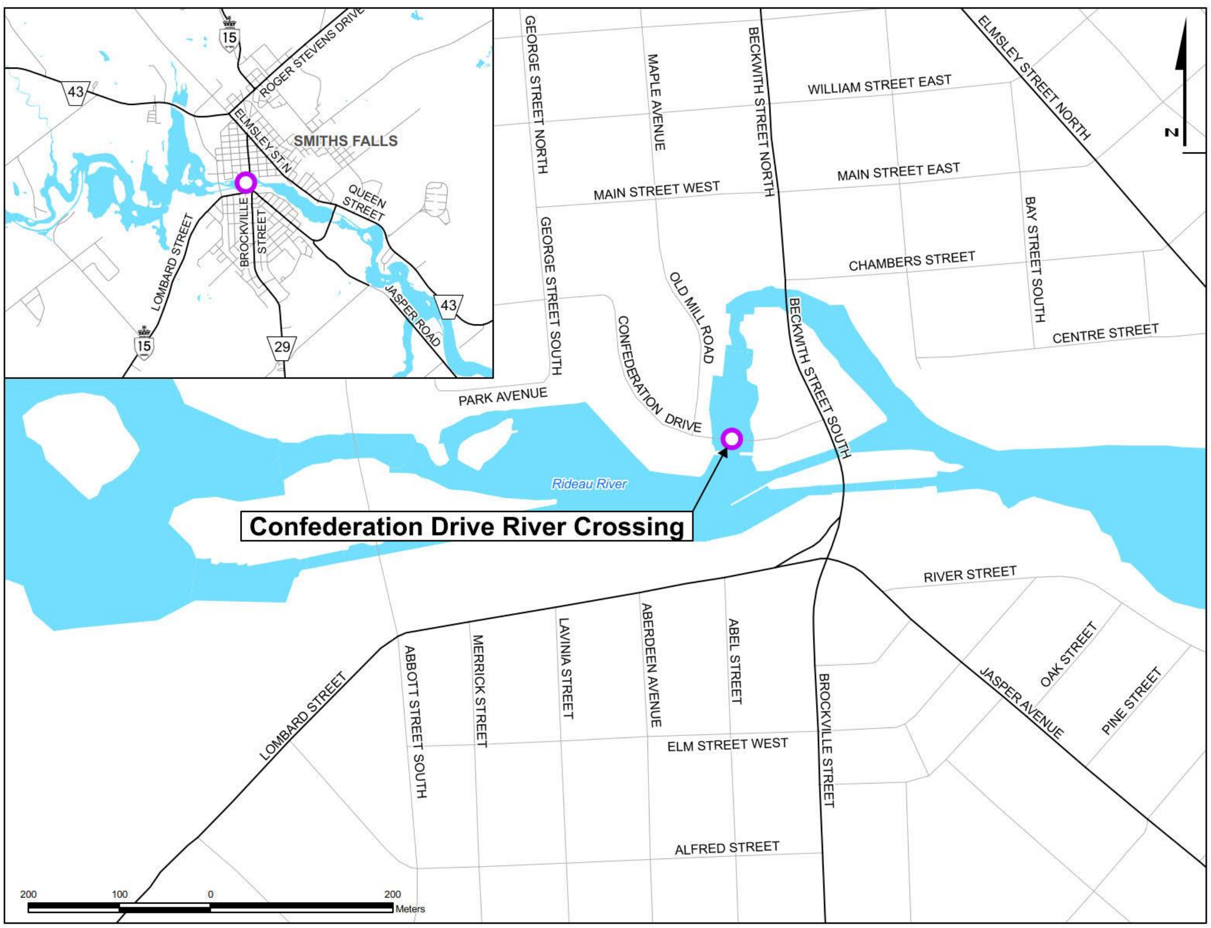
Notice of Study Completion

Municipal Class Environmental Assessment Study for
Confederation Drive River Crossing

The Project

The Town of Smiths Falls conducted a review of a bridge to address its advanced state of deterioration. The Confederation Drive River Crossing is located within the Town of Smiths Falls and is illustrated on the key plan below. Confederation Drive River Crossing is located on Confederation Drive over the Rideau Canal and can be accessed from Confederation Drive, that leads to Centennial Park or Canal Street off Highway 15, at Veterans' Memorial Park and the Smiths Falls Combined Lockstation Lock 29a. The study was conducted in accordance with Schedule B of the Municipal Class Environmental Assessment (MCEA) process (October 2000, as amended).

Through consultation with Agencies, Members of the Public, and Indigenous Communities, the preferred solution for the Confederation Drive River Crossing is **Technically Preferred Alternative**.



Key Plan

Project File Report

A Project File Report (PFR) has been prepared to document the planning and decision-making process for this study. By this Notice, the PFR is being placed on the public record for a 30-day review period from **MONTH, DAY, 2022 to MONTH, DAY, 2022.** The PFR is available for review through Speak Up Smiths Falls at: https://speakupsmithsfalls.com/confederation-drive

If you have any questions, comments or concerns regarding this study, please contact one of the Project Team members below by **MONTH, DAY, 2022**:

Paul McMunn
Director of Public Works & Utilities
Town of Smiths Falls
77 Beckwith Street North, Smiths Falls K7A 2B8
613-283-4124 x 1152
pmcmunn@smithsfalls.ca

Lisa Marshall, P. Eng.
Consultant Project Manager
McIntosh Perry Consulting Engineers Ltd.
115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0
613-715-0815
l.marshall@mcintoshperry.com

In addition, a request may be made to the Ministry of Environment, Conservation and Parks for an order requiring a higher level of study, or that conditions may be imposed, only on the grounds that the requested order may prevent, mitigate or remedy adverse impacts on constitutionally protected Aboriginal and treaty rights. Request on other grounds will not be considered. Requests should include the requesters contact information and full name for the ministry.

Requests should specify what kind of order is being requested, how an order may prevent, mitigate or remedy those potential adverse impacts, and any information in support of the statements in the request. The request should be sent in writing or by email to the project contacts noted above and the following:

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

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

Comments submitted to the Town of Smiths Falls for the purpose of providing feedback regarding this Municipal Class Environmental Assessment are collected under the authority of the Environmental Assessment Act. Information will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record. Questions relating to the collection, use and disclosure of this information may be addressed to Paul McMunn, Director of Public Work and Utilities, at 613-283-4124 x1152 or pmcmunn@smithsfalls.ca

This notice was first issued on MONTH, DAY, 2022

Online Public Information Center Presentation Boards

ONLINE PUBLIC INFORMATION CENTRE

SCHEDULE “B” MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT CONFEDERATION DRIVE RIVER CROSSING

May 26, 2022 to June 23, 2022

SMITHS FALLS

McINTOSH PERRY

ONLINE PUBLIC INFORMATION CENTRE OBJECTIVES

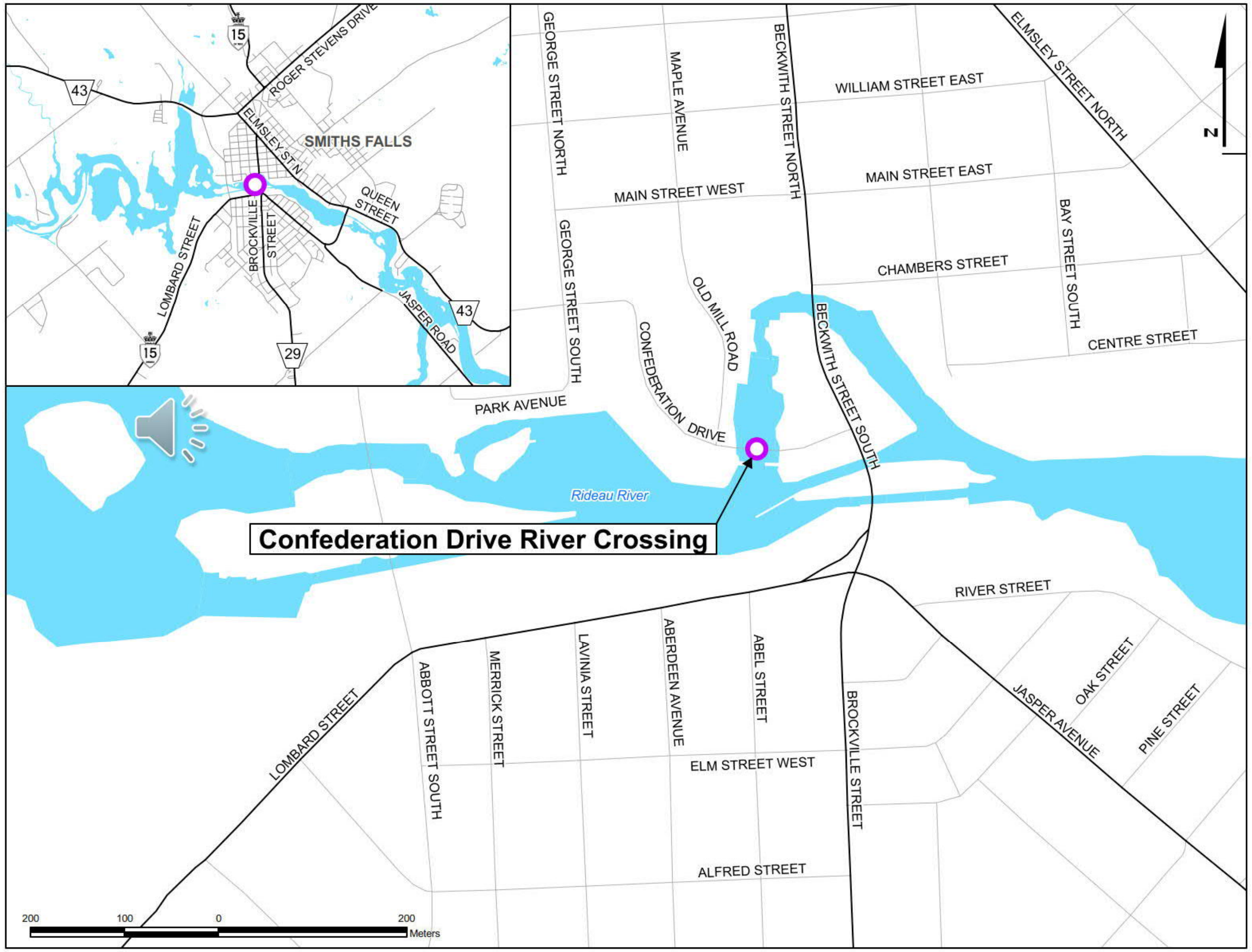
Thank you for your interest in this project. The purpose of this Online Public Information Centre is to provide the public and stakeholders with an introduction to the study process, existing conditions, proposed alternative solutions and an opportunity to provide input and comments.

Once you have reviewed the materials, please submit any comments or questions directly online, via email or by phone to one of the contacts listed at the end of the presentation by June 23, 2022. A member of the project team will respond to you directly.

1. Project Location and Description
2. Purpose of the Study
3. Municipal Class Environmental Assessment Process
4. Problem and Opportunity Statement
5. Alternative Solutions
6. Project Studies
7. Existing Conditions
8. Evaluation and Recommended Alternative Solution
9. Upcoming Consultation Opportunities

PROJECT STUDY AREA

Confederation Drive River Crossing is located in the former Townships of Montague and Elmsley, now the Town of Smiths Falls, Lanark County, Ontario. Confederation Drive River Crossing spans over the Rideau River and can be accessed from Confederation Drive, that leads to Centennial Park or Canal Street off Highway 15, at Veterans' Memorial Park and the Smiths Falls Combined Lockstation Lock 29a.



STUDY PURPOSE

As per the Ontario Structural Inspection Manual (OSIM) biennial inspection in 2015, and the Confederation Drive River Crossing Assessment and Options Report in 2020, it was determined that overall, the bridge is in poor condition with advanced deterioration.

The existing Confederation Drive River Crossing is currently closed for public use due to public safety concerns. The bridge serves as a connection for traffic on Confederation Drive over the Rideau River between Confederation Drive and Canal Street.

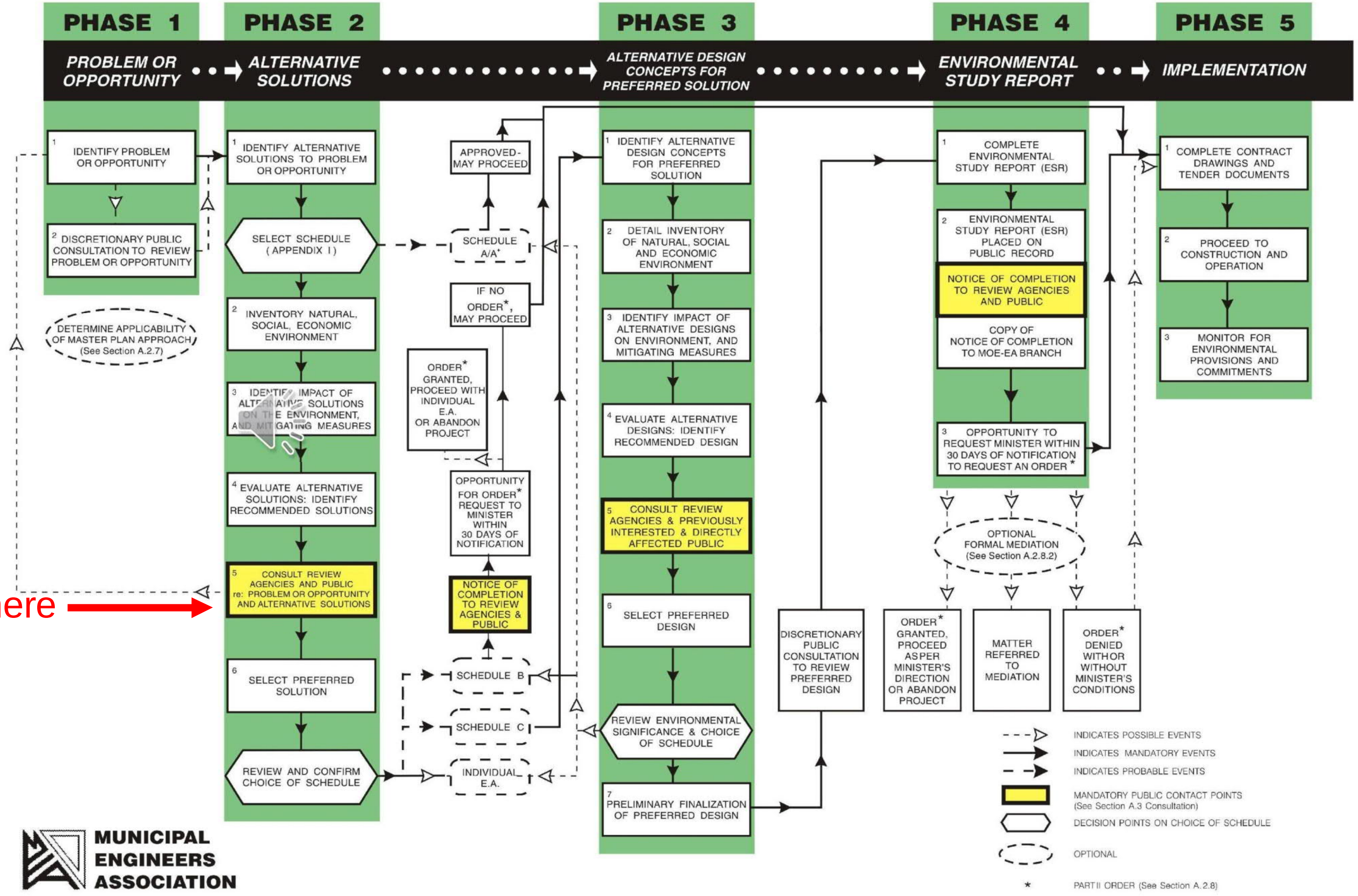
The Town of Smiths Falls is undertaking this Schedule “B” Municipal Class Environmental Assessment Study to identify and evaluate alternative solutions to address the aging infrastructure.

MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT PROCESS

The Municipal Class Environmental Assessment Process (MCEA) is a process by which municipal infrastructure projects are planned in accordance with the Environmental Assessment Act. The MCEA gives due regard to protect the environment, impacts, and includes the involvement of affected stakeholders in the decision-making process.

Please visit: https://municipalclassea.ca for more information on the Municipal Class Environmental Assessment Process.

We are here



Source: The process flow chart was adapted from the Municipal Class Environment Assessment documentation at www.municipalclassea.ca.

Note: The current step of the Class EA process is highlighted in red.

PHASE 1 – PROBLEM/OPPORTUNITY STATEMENT

Confederation Drive River Crossing is in an advanced state of deterioration and has been closed for public use at this time. The existing bridge is single lane with functional and operational deficiencies. Therefore, the Town of Smiths Falls has an opportunity to identify and evaluate alternative solutions and determine a preferred bridge solution in accordance with the MCEA Process.

PHASE 2 – ALTERNATIVE SOLUTIONS TO THE PROBLEM/OPPORTUNITY STATEMENT

To address the Problem/Opportunity Statement, the following preliminary Alternative Solutions have been developed, which will be evaluated after appropriate studies and consultation have been completed:

Alternative 1: - Do Nothing

Involves leaving the existing bridge in place, in its deteriorating condition and continuing to restrict public access. Through the MCEA process this alternative acts as a benchmark for the other Alternative Solutions.

Alternative 2: Removal of the Existing Bridge

Removal of the existing bridge and provide new turn around areas on either side of the river crossing. This alternative would consist of not reinstating the Confederation Drive River Crossing.

Alternative 3: Rehabilitate the Existing Bridge

Rehabilitate the existing bridge to meet engineering and public safety standards, reinstate as a new vehicle crossing and/or pedestrian bridge.

Alternative 4: Replace the Existing Bridge

Remove the existing Confederation Drive River Crossing and replace with a new vehicle and/or pedestrian bridge.

PROJECT STUDIES

The following project studies have been undertaken within the Confederation Drive River Crossing study area as part of this MCEA Study:

Natural Environment

Terrestrial Ecosystem Review
Aquatic Ecosystem Review

Socio Economic Environment

Public Consultation
Land Use Review

Structural Assessment

Desktop Review of Structural Evaluation Report

Traffic Study

Traffic Impact Assessment Report

Archaeological Assessment

Stage 1 Archaeological Assessment

Cultural Heritage Landscapes and Built Heritage Resources

Cultural Heritage Resource Evaluation
Cultural Heritage Impact Assessment (Pending)

EXISTING STRUCTURAL CONDITION

1904 – The bridge was built in 1904 (118 years old) and is well beyond the end of its service life. Typical bridge life span built in 1900's should be only 50 years based on Ontario Highway Bridge Design Code.

1986 – Confederation Drive River Crossing was rehabilitated which involved replacing timber deck, select bottom chord structural steel, select rivets, etc.

2002 – The load limit was reduced from 10 tonnes to 7 tonnes.

2011 – Significant corrosion of the structural steel was identified below the deck level.

2015 – The bridge was closed to traffic and the public due to safety concerns in the summer of 2015 and the timber deck was removed.

2018 – An inspection identified several issues with the existing bridge and high concentrations of lead in the paint system of the bridge.

2020 – A Bridge Assessment and Options Report was prepared which outlined several options to return the bridge to service and future considerations.

March 2022 – It was recommended that rehabilitation not be considered for vehicular traffic nor as an active transportation link. For rehabilitation to be considered viable, a Structural Steel Close-Up Inspection and Structural Evaluation of the existing bridge would be required to evaluate the potential for rehabilitation.

May 2022 – Town Council unanimously agreed not to proceed with any further structural evaluation of the Confederation Drive River Crossing and that the period of time when the bridge could have been saved has since passed.

NATURAL ENVIRONMENT EXISTING CONDITIONS

Vegetation

- The study area is dominated by vegetation common to the Lake Simcoe-Rideau Ecoregion (Ecoregion 6E) of the Mixedwood Plains Ecozone.
- The surrounding landscape consists of parkland with manicured/mown grass and ornamental /landscaped gardens, with a mix of native and non-native species.
- No rare species or vegetation communities were found.

Wildlife and Species at Risk

- No nests were observed on Confederation Drive River Crossing; however, the general study area provides habitat for several species of migratory birds, wildlife and potentially Species at Risk (SAR).
- No SAR are known to be present within and adjacent to the Confederation Drive River Crossing study area; however, Blanding's Turtle are known to occur northwest and east of the study area.

Fish and Fish Habitat

- The watercourse associated with Confederation Drive River Crossing is the Rideau River, which the Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF) confirmed is a warmwater watercourse and one of the largest tributaries of the Ottawa River.
- Rideau River is known to contain a variety of fish species. Bridle Shiner (Special Concern) is known to occur in the Lower Rideau Lake and its tributaries.

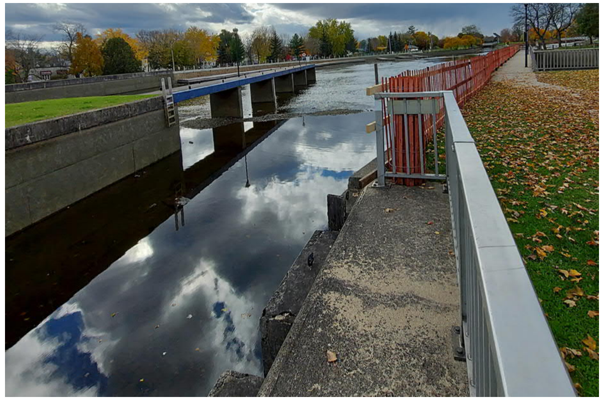
SOCIAL ENVIRONMENT EXISTING CONDITIONS

Town of Smiths Falls Land Use

- The Confederation Drive River Crossing study area and lands directly adjacent are identified on the Town of Smiths Falls' Official Plan as Open Space and Downtown Core.
- The Town of Smiths Falls owns the Confederation Drive Right-of-Way (ROW), as well as the park area in the Northeast, Northwest and Southwest quadrants of the study area.
- Confederation Drive to Old Mill Road is designated a Multi-Use Trail and the Confederation Drive River Crossing is designated as an On-Road cycling facility in the Town's Active Transportation Plan.

Parks Canada/Rideau Valley Conservation Authority

- The land adjacent to the ROW within the Southeast quadrant is titled to Parks Canada and accommodates the Rideau Canal Headquarters Office.
- Parks Canada owns and operates the dam and locks located adjacent to Confederation Drive River Crossing on the upstream side.
- The riverbed located within this study area is Parks Canada land, as well as the existing walkway along the shore of the Rideau River, south of the Confederation Drive River Crossing.
- Parks Canada is responsible for managing water levels and flows surrounding the bridge, whereas RVCA regulates development within the floodplain.



CULTURAL HERITAGE & ARCHAEOLOGICAL RESOURCES

History

The Confederation Drive River Crossing was constructed in 1904 by the Locomotive and Machine Company of Montreal (LMCM). The Bridge was constructed as a multi-span rivet-connected Warren Pony Truss Bridge sitting on a masonry pier and two concrete abutments.

In 1952, the Historic Sites and Monuments Board of Canada declared the Rideau Canal to be a site of national significance.

In 2000, the Rideau River, which forms a significant part of the Rideau Canal, was designated a Canadian Heritage River for its human heritage and recreational values.

In 2007, the Rideau Canal was inscribed as Canada's 14th and Ontario's only World Heritage Site. It is considered of universal value by the United Nations Educational, Scientific and Cultural Organization (UNESCO).

In 2015, Town Council passed a Resolution stating "THAT the Council of the Town of Smiths Falls resolve to recognize Confederation Bridge under Section 27 of the Ontario Heritage Act RSO 1990, as amended, and place the property on the municipal registry of "Properties of Interest".

CULTURAL HERITAGE & ARCHAEOLOGICAL RESOURCES

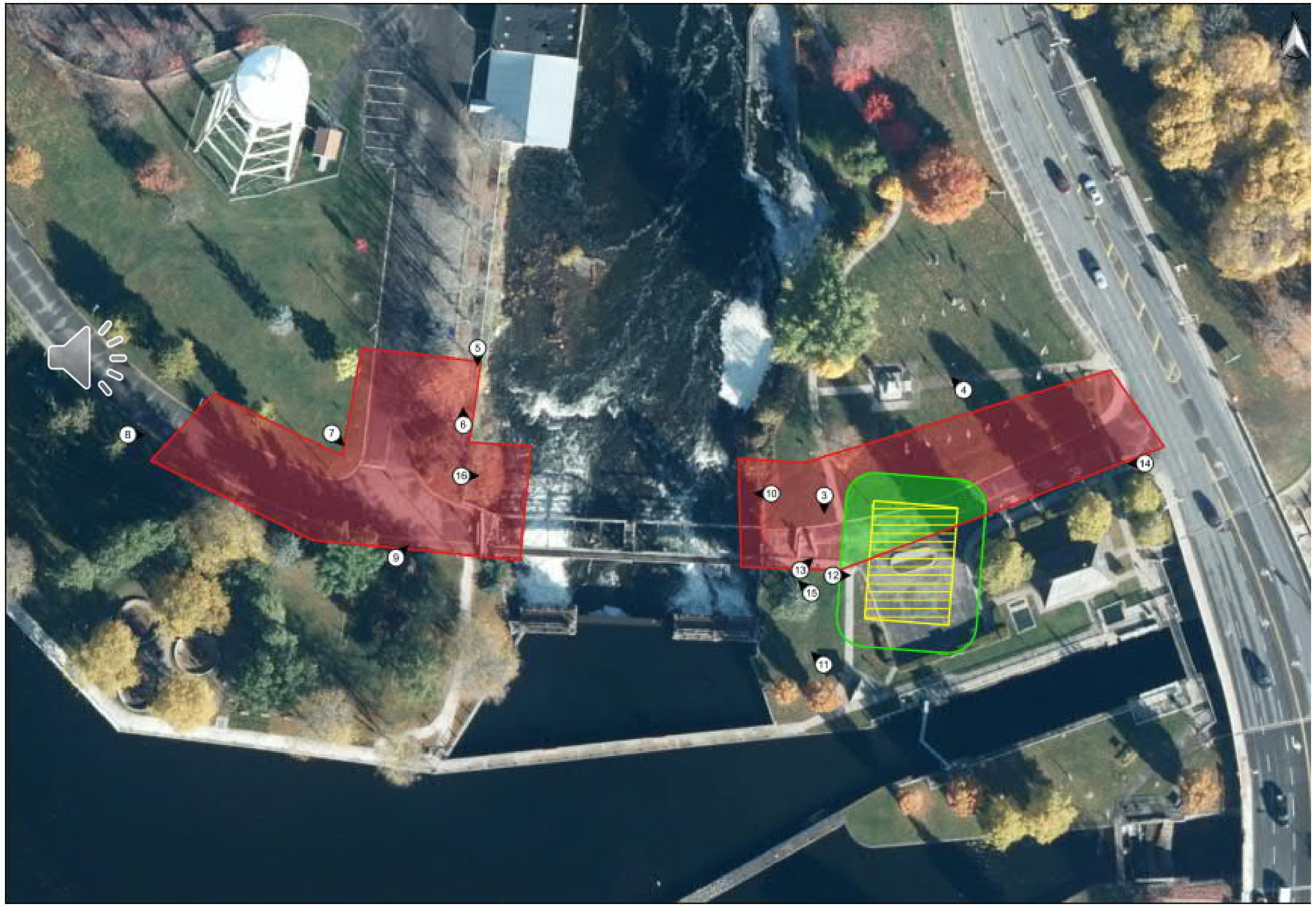
Cultural Heritage Assessment

- A Cultural Heritage Evaluation Report (CHER) was completed for the study area in December 2021 and found the bridge to meet three of the criteria for determining Cultural Heritage Value or Interest (CHIV) (under O.Reg. 9/06).
- Confederation Drive River Crossing is an important contributor to the unique variety of bridges in the Town of Smiths Falls and exhibits the following unique characteristics:
  - An uncommon example of a multi-span pony truss bridge as most constructed tend to be single span structures;
  - The bridge represents an uncommonly long bridge structure due to its nature as a multi-span bridge;
  - It is a rare surviving example of the use of rivet-connected trusses;
  - Limestone abutments and pier made of large blocks with a natural finish, and
  - A unique cantilever pedestrian walkway addition on the side of the structure.
- There are approximately 135 examples of rivet-connected Warren Pony Truss Bridges in Ontario according to the Ontario Heritage Bridge List; only 7 of these are two-span. There are only a few single-span Warren Pony Truss bridges in Eastern Ontario, one each in the Counties around Smiths Falls.
- The Confederation Drive River Crossing is the oldest of its type and is a rare survivor as many of these early bridges have been replaced due to narrow lane width, structural deterioration and to meet modern traffic needs.
- Due to these findings, a Cultural Heritage Impact Assessment (HIA) is currently being prepared to examine the potential impacts associated with each Alternative Solution and make mitigation recommendations.

CULTURAL HERITAGE & ARCHAEOLOGICAL RESOURCES

Archaeology

- A Stage 1 Archaeological Assessment indicated the study area has no archaeological potential within the shaded red area.
- However, the study area does retain potential for the presence of deeply buried archaeological resources in the form of a mid-nineteenth century storehouse (yellow rectangle) requiring monitoring in the event of below-grade excavation.
- Given the extent of previous disturbance from the road realignments and utility line construction, this feature, if still present, would be considered to be deeply buried.
- Below-grade excavations within the green foot-print of the mid-nineteenth century storehouse or a 5 m buffer within the study area should be the subject of Stage 2 archaeological monitoring.



EVALUATION CRITERIA

Transportation

- Safety Considerations
- Active Transportation
- Accessibility

Structural

- Extension of Service Life
- Durability
- Structural Engineering Risks

Natural Environment

- Environmentally Sensitive Areas
- Wildlife Habitats
- Fisheries / Aquatic Habitat
- Species at Risk (SAR)
- Ground and Surface Water Quality/Quantity
- Climate Change

Socio-Economic

- Land Use/ Socio-economic Conditions
- Archaeological, Built Heritage & Cultural Heritage Features
- Construction Impacts

Implementation

- Capital Costs
- Operational and Maintenance Costs

ALTERNATIVE 1: DO NOTHING

PRO'S

- No construction related impacts.
- No terrestrial wildlife habitat, Species-at-Risk, and groundwater impacts anticipated.
- No anticipated impacts to archaeological resources.
- Lowest capital cost due to minimal project scope.

CON'S

- Does not address safety concerns with the existing bridge (structurally and roadside safety).
- Does not extend the service life and may pose significant structural engineering risks. Bridge will continue to deteriorate and remain a liability for the Town.
- Continued deterioration of the existing bridge may pose significant impacts to the natural environment with debris (including lead paint) falling into the Rideau River and the potential for the structure to collapse into the watercourse which has the potential to impact dam operations.
- Not considered a viable alternative from a heritage perspective.
- Does not provide a connective link for the community and tourists to such attractions: UNESCO World Heritage Rideau Canal, National Historic Site of Canada, and Parks Canada locks, and two municipal parks.

ALTERNATIVE 2: REMOVE BRIDGE AND CONSTRUCT NEW TURN AROUND AREAS

PRO'S

- Permanently addresses safety concerns with Confederation Drive River Crossing by permanently removing the bridge.
- Town's liability associated with the condition of the existing bridge will be eliminated.
- Service life is unrestricted.
- No structural engineering risks.
- No long-term natural environment impacts anticipated. Care will need to be taken during removal to ensure no lead paint enters the watercourse.
- Cost is second lowest.

CON'S

- Does not provide connectivity for vehicular traffic nor Active Transportation along Confederation Drive/Canal Street over the Rideau River.
- Pedestrians and cyclists will be required to continue to detour around the bridge using surrounding multi-use pathways, as well as using the existing walkway along the shore of the Rideau River (south of the bridge) which is not designed as nor intended to be a primary pedestrian and bicycle crossing.
- By not providing connectivity on Confederation Drive, it could have potential impacts on the redevelopment of the former Water Treatment Plant and surrounding lands.
- Not considered a viable alternative from a heritage perspective as the structure will be completely removed. Would need to incorporate bridge conservation mitigation measures (i.e., prepare Cultural Heritage Resource Documentation Report, Commemorative Plaque, Sympathetic Design Elements, etc.).

ALTERNATIVE 3: REHABILITATE THE EXISTING BRIDGE AS A VEHICLE AND/OR PEDESTRIAN CROSSING

PRO'S

- Potential to reinstate connectivity for vehicular/pedestrian traffic along Confederation Drive/Canal Street over the Rideau River.
- May address safety concerns with the existing bridge for the short term and allows the structure to be reopened.
- Most preferred option from a heritage perspective as it preserves the existing bridge.

CON'S

- Rehabilitation is not considered viable from a bridge engineering perspective due to the current structural condition. Current condition of the existing abutments and pier is unknown at this time. Further extensive evaluation would be required to determine if rehabilitation is even feasible.
- Council has resolved not to pursue any further evaluation as the bridge is well passed its service life for a structure constructed in the 1900's.
- Load restrictions may still be required after rehabilitation.
- Narrow paved road width would be maintained with rehabilitation which does not provide any improvements for Active Transportation.
- Condition of structure would need to be continuously monitored to ensure safe condition is maintained after the rehabilitation works.
- Capital costs associated with this option cannot be estimated due to the amount of uncertainty of the structure's condition. High risk to incur cost overrun during construction.

ALTERNATIVE 4: REPLACEMENT WITH A NEW VEHICLE AND/OR PEDESTRIAN CROSSING

PRO'S

- Reinstates connectivity for vehicular traffic and Active Transportation along Confederation Drive/Canal Street over Rideau River, which would also be beneficial for the redevelopment of the former Water Treatment Plant and surrounding lands.
- Provides an Active Transportation route that takes advantage of historical landmark and scenic areas within the Town of Smiths Falls.
- Long-term safety concerns are addressed as new structure would meet current engineering design standards. Anticipated extension of service life to 75 years.
- Assists with Parks Canada operations.
- Minimal construction related impacts anticipated to the community as existing bridge is currently closed (i.e., detour already put in place).

CON'S

- Highest capital cost, however, this alternative is a more economical solution based on the anticipated extension of service life (i.e., 75 yrs.).
- New bridge would need to ensure no negative impacts to hydraulic function of the Parks Canada Dam immediately upstream of the bridge.
- Moderate construction related impacts to the natural environment associated with the removal and construction of the new bridge. Due to the presence of lead paint, appropriate mitigation measures will need to be implemented during construction.
- Not considered a viable alternative from a heritage perspective as the structure will be completely removed. Would need to incorporate bridge conservation mitigation measures (i.e., Sympathetic Design (replica/clone), prepare Cultural Heritage Resource Documentation Report, Commemorative Plaque etc.).

RECOMMENDED TECHNICALLY PREFERRED ALTERNATIVE

Alternative 4 – Replacement with a New Vehicle and/or Pedestrian Crossing

The key benefits of the Recommended Alternative are:

- Reinstates connectivity for vehicular and/or pedestrian traffic along Confederation Drive/Canal Street over Rideau River, which would also be beneficial for the redevelopment of the former Water Treatment Plant and surrounding lands.
- Low engineering risks as all bridge components would be new, and the anticipated extension of service life is approximately 75 years.
- Provides an Active Transportation route that takes advantage of historical landmark and scenic areas within the Town of Smiths Falls.

Anticipated impacts and mitigation are:

- During construction, local traffic detours would remain in place until work is complete.
- Any wildlife and vegetation, including SAR that may be disturbed during construction will be considered and mitigation for in-water timing windows, migratory bird timing window restrictions, reestablishment of vegetation removal areas, etc. will be included in the Contract Documents and adhered to by the Contractor.
- Impacts to Cultural Heritage Value would be mitigated through the incorporation of bridge conservation mitigation measures (i.e., Sympathetic Design (replica/clone), prepare Cultural Heritage Resource Documentation Report, Commemorative Plaque etc.).

For further information pertaining to the MCEA process, studies completed to date, alternative solution evaluation and preliminary section of the recommend Technically Preferred Alternative, please refer to the Draft MCEA Project File Report available for viewing on Speak Up Smiths Falls: https://speakupsmithsfalls.com/confederation-drive

UPCOMING CONSULTATION OPPORTUNITIES

The following consultation is being conducted as part of this MCEA Study:

Consultation	Timeline
Notice of Online Public Information Centre published in the Smiths Falls Record News Newspaper and posted on Speak Up Smiths Falls	May 26, 2022 and June 2, 2022
Online Public Information Centre	May 26, 2022 to June 23, 2022
Presentation of Technically Preferred Alternative to Committee of the Whole	July 11, 2022 (Tentative)
Advertise Project File Report for a 30-day public review and comment period	July 7, 2022 to August 4, 2022
Town Council Final Receipt of Document	August 8, 2022 (Tentative)
Project Completion	August 19, 2022

Following the Project File Report 30-day public review and comment period, if there are no outstanding comments that need to be addressed, the project will proceed to Detail Design and Construction. Timing is to be determined pending funding and approvals.

IF YOU WOULD LIKE MORE INFORMATION, PLEASE CONTACT:

Please submit any questions or comments directly online, email or by phone to the contacts listed below by June 23, 2022:

Ms. Lisa Marshall, P.Eng.
Consultant Project Manager
McIntosh Perry Consulting Engineers
Tel: 1-613-714-0815
Email: l.marshall@mcintoshperry.com

Mr. Paul McMunn
Town Project Manager
Town of Smiths Falls
Tel: 1-613-283-4124 ext. 1152
Email: pmcmunn@smithsfalls.ca

Thank you for participating in the Online Public Information Centre. Information is being collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record. If you have accessibility requirements in order to participate in this project, please contact one of the project team members listed above.

Thank you!

Your Participation is Important to Us

Consultation Comments/Responses

Lisa Marshall

From: Kerry Reed
Sent: January 25, 2022 1:27 PM
To: Kerry Reed
Subject: FW: [EXTERNAL]pony truss bridge

Kerry Reed
Environmental Planner
T. 343.925.0187 | **C.** 613.808.3464

McINTOSH PERRY
Turning Possibilities Into Reality

From: Paul McMunn
Sent: January 25, 2022 9:31 AM
To: [redacted]
Cc: Shawn J. Pankow <spankow@smithsfalls.ca>; Lisa Marshall <l.marshall@mcintoshperry.com>; Emilie Richardson <erichardson@smithsfalls.ca>
Subject: RE: [EXTERNAL]pony truss bridge

Mr. [redacted]

Thank you for your detailed email and interest in the Confederation Bridge. As I am sure you are aware, the Town has recently started to undertake a Municipal Class Environmental Assessment (MCEA) of the structure which is assigned to our consultant McIntosh Perry. As part of the Schedule 'B' MCEA there will be public, stakeholder agencies, and provincial and federal ministry consultation. There will be a Cultural Heritage Evaluation Report (CHER) and a Heritage Impact Assessment (HIA) completed as part of this assignment. As you mentioned, the structure has deteriorated to the point it was closed to vehicular traffic. The MCEA process will inform the public and other stakeholders, Town staff, and Council as to the best approach going forward. There will be a Public Information Center (PIC) hosted this coming spring, likely late March or early April. This PIC will be advertised well in advance so all interested parties can participate.
I appreciate you advising that this spring, the Municipal Heritage Committee (MHC) will be requesting designation of "significant cultural and heritage value" under the Ontario Heritage Act. I understand from Karl Grenke that there is a MHC meeting on Wednesday February 2nd which I will be attending. I look forward to meeting you and other members of the committee. In the interim, if you have any questions please do not hesitate to reach out to my office.

Kind regards,

Paul McMunn C.E.T.
Director of Public Works & Utilities
Town of Smiths Falls
77 Beckwith Street North
PO Box 695
Smiths Falls, Ontario K7A 2B8
Phone: (613) 283-4124 Ext. 1152
Fax: (613) 283-4764
pmcmunn@smithsfalls.ca
www.smithsfalls.ca

SMITHS FALLS
RISE AT THE FALLS

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Please consider the environment before printing this email

From: [redacted]
Sent: January 25, 2022 8:18 AM
To: Paul McMunn <pmcmunn@smithsfalls.ca>
Cc: Shawn J. Pankow <spankow@smithsfalls.ca>
Subject: [EXTERNAL]pony truss bridge

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Dear Sir; In reading your post this morning concerning what is referred to as Confederation Bridge, I have noted that its historical significance is not really mentioned.
I believe before coming to any judgment on this structure, the citizens and interested parties need to be apprised of its historical value.
Indeed the bridge is listed as a National Historic Bridge, it is one of five Smiths Falls bridges listed as Historic Bridges of Lanark County. It is also listed in the International Database and Gallery of Structures as bridge number 461 of 552 Pony Truss Bridges worldwide.
It is also protected under the Municipal Heritage Act as a property of interest. It is being put forward this spring to be designated under the Ontario Heritage Act as a structure of significant cultural and heritage value. Indeed this structure is part of Smiths Falls Tourism network.
While it is unfortunate that the bridge has been allowed to deteriorate through neglect it is not beyond redemption.
Consideration should be given to the positive public relations internationally Smiths Falls would be receiving on its rehabilitation.

respectfully submitted,
[redacted]

Lisa Marshall

From: Kerry Reed
Sent: February 2, 2022 10:41 AM
To: Kerry Reed
Subject: FW: [EXTERNAL]Confederation Drive River Crossing

Kerry Reed
Environmental Planner
T. 343.925.0187 | C. 613.808.3464
McINTOSH PERRY
Turning Possibilities Into Reality

From: Paul McMunn <pmcmunn@smithsfalls.ca>
Sent: February 1, 2022 5:08 PM
To: [redacted]Lisa Marshall <l.marshall@mcintoshperry.com>
Cc: Vanessa Bernicky <vbernicky@smithsfalls.ca>
Subject: RE: [EXTERNAL]Confederation Drive River Crossing

Mr. [redacted]

By way of this email I have copied Vanessa Bernicky from our office who will add you to our contact list. The Town will be hosting a Public Information Centre this spring for which I would suggest that you participate to express your concerns. We will reach out to you by email when the Public Information Centre date and time have been determined. In the interim, if you have any questions please do not hesitate to reach out to my office.

Kind regards,

Paul McMunn C.E.T.
Director of Public Works & Utilities
Town of Smiths Falls
77 Beckwith Street North
PO Box 695
Smiths Falls, Ontario K7A 2B8
Phone: (613) 283-4124 Ext. 1152
Fax: (613) 283-4764
pmcmunn@smithsfalls.ca
www.smithsfalls.ca

SMITHS FALLS
RISE AT THE FALLS

you have received this e-mail in error, please contact the sender and delete the original and any copy of the e-mail and any printout thereof, immediately. Your cooperation is appreciated.

Please consider the environment before printing this email

From: [redacted]
Sent: January 31, 2022 1:22 PM
To: Paul McMunn <pmcmunn@smithsfalls.ca>; l.marshall@mcintoshperry.com
Subject: [EXTERNAL]Confederation Drive River Crossing

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CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

My comments are as follows:

#1 – There should be a new bridge.
#2 – It should have two lanes of traffic – one each way and two sidewalks – one on each side.
#3 – When the existing bridge lasted for approximately 110 years, and with the technology of the human being today and the equipment we have today compared to then, we should be able to build a new bridge that will last between 200 and 500 years.

Thank you
[redacted]

Lisa Marshall

From:	Lisa Marshall
Sent:	February 22, 2022 8:44 AM
To:	Kerry Reed
Subject:	FW: Confederation Drive River Crossing
Attachments:	EA_ConfederationDrive.pdf; 21-SFA-EAS-0002_floodplain.pdf
Follow Up Flag:	Follow up
Flag Status:	Flagged

Lisa Marshall, P.Eng.
Manager, Environmental Engineering
T. 613.714.0815 | **C.** 613.852.1148
McINTOSH PERRY
Turning Possibilities Into Reality

From: Sarah MacLeod-Neilson <sarah.macleod-neilson@rvca.ca>
Sent: February 18, 2022 4:01 PM
To: Paul McMunn <pmcmunn@smithsfalls.ca>; Lisa Marshall <l.marshall@mcintoshperry.com>
Subject: Confederation Drive River Crossing

Hello Mr. McMunn and Ms. Marshall,
Please find attached our office's comments regarding the subject Environmental Assessment.

Regards,

Sarah MacLeod-Neilson
Planner
sarah.macleod-neilson@rvca.ca, ext. 1109

Rideau Valley Conservation Authority

3889 Rideau Valley Drive
PO Box 599, Manotick ON K4M 1A5
T 613-692-3571 | 1-800-267-3504 F 613-692-0831 | www.rvca.ca

Rideau Valley Conservation Authority

3889 Rideau Valley Drive
PO Box 599, Manotick ON K4M 1A5
T 613-692-3571 | 1-800-267-3504
F 613-692-0831 | www.rvca.ca

February 18, 2022
22-SFA-EAS-0002

Town of Smiths Falls
77 Beckwith Street North,
Smiths Falls, ON
K7A 2B8

McInstosh Perry Consulting Engineers Ltd,
115 Walgreen Road, R.R.3
Carp, ON
K0A 1L0

Attention: Mr. Paul McMunn, Director of Public Works & Utilities, Town of Smiths Falls
Ms. Lisa Marshall, Project Manager, McIntosh Perry Consulting Engineers Ltd

Subject: Notice of Study Commencement – Municipal Class Environmental Assessment Study for Confederation Drive River Crossing, Town of Smiths Falls

Dear Mr. McMunn and Ms. Marshall,

The Rideau Valley Conservation Authority has had the opportunity to undertake a review of the subject notice Municipal Class Environmental Assessment Study for Confederation Drive River Crossing. We offer the following comments regarding the proposed works.

Regulated Features

A review of our records within the RVCA watershed reveals a mapped floodplain hazard associated with the Rideau River.

A letter of permission from our office for alteration or interference to watercourses or interference or development to and within regulatory floodplains will be required in accordance with Ontario Regulation 174/06 (Development, Interference with Wetlands and Alterations to Shorelines and Watercourses). Should any alteration, development or interference be proposed within these areas, appropriate information and studies should be determined prior to the initiation of any work. Our primary interest in regulating activities is to ensure that there will be appropriate control of flooding, protection from erosion and pollution and that the conservation of land will not be adversely impacted.

Rideau River-Smiths Falls Catchment Report.

The catchment report provides an overview of conditions, issues and opportunities within the Town of Smiths Falls, though there is limited information specific to this section of the river it may provide useful background information.

Conclusion

We formally request notice of any public open houses, public information centres, or any other required meetings that will be scheduled. In addition, we request to be provided new and updated information as available so that we may be kept informed of the project.

Thank you for the opportunity to comment on the proposal. Please keep us informed of future progress or any changes to the project.

Sincerely,

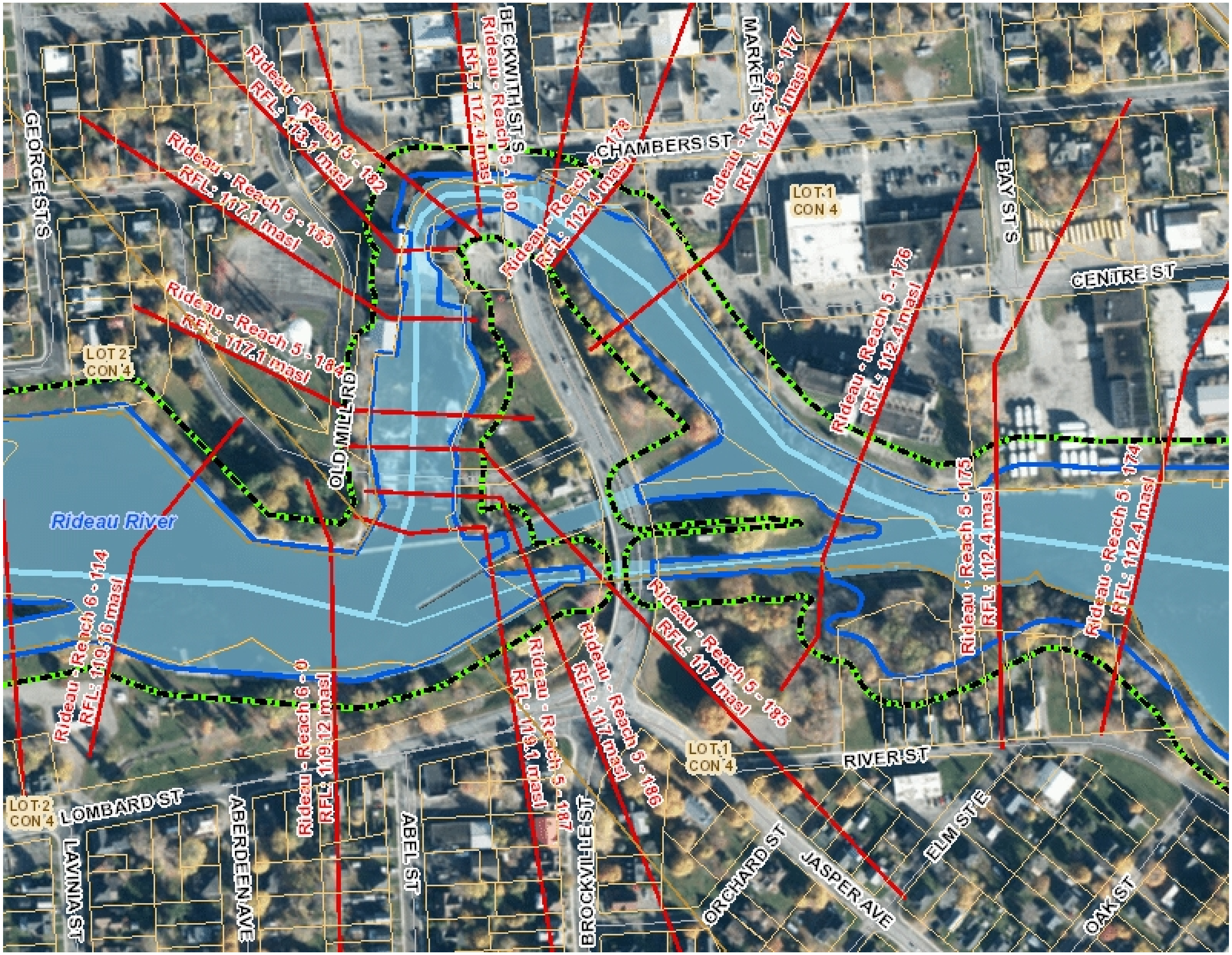
Sarah MacLeod-Neilson
Planner

Encl-mapped floodplain

Mapped flood plain

RIDEAU VALLEY CONSERVATION AUTHORITY

This map tool is for information screening purposes only. In all cases, please contact RVCA Planning Staff for confirmation: 613.692.3571 or development@rvca.ca



162.1	0	81.07	162.1

Meters

Map created: 2/8/2022

Legend

- Parcel - Assesment
- Lot
- Floodplain Cross-sections
- Area of Reduced Flood Risk
- Regulation Limit
- 100yr Floodline
  - Floodplain
  - Area of Reduced Flood Risk
  - Area of Shallow Flooding
- Reg Limit Dominant Hazard
  - Floodplain
  - Geo-technical Hazard Limit
  - Meander Belt
  - Spill Line
  - Stable-Toe Slope
  - Top of Slope
  - Unstable-Toe Slope
  - Wetland
- Regulated Wetlands
- RVCA Sub-Watersheds
- RVCA Catchments
- Issue Zones
  - Contributing Area
  - Affected Area
  - Contributing Area and Affected Area
- MNRF Wetlands

N

1: 3,191.84

Map Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes

Parcel data is owned by Teranet Enterprises Inc and its suppliers. All rights reserved. May not be reproduced without permission. The contour information on this map is an approximation of ground surface elevations and shall not be relied upon for decisions you make with respect to any interests you have in this or any other property. You should not act or refrain from acting, based upon the information without independently verifying the information and, as necessary, obtaining professional advice regarding your particular facts and circumstance. The contour information on this map shall not be used as a substitute for accurate ground surface elevations which shall be determined by an Ontario Land Surveyor or qualified Professional Engineer.

Lisa Marshall

From: Glen McDonald <glen.mcdonald@rvca.ca>
Sent: January 25, 2022 2:25 PM
To: Ferdous Ahmed
Cc: Lisa Marshall; Sarah MacLeod-Neilson
Subject: RE: Town of Smiths Falls - Municipal Class Environmental Assessment Study for Confederation Drive River Crossing - Hydrology and Hydraulic Information Request

Ferdous,

We have already received the notice of study commencement and Sarah is the RVCA lead on the file.

Sarah, please add this correspondence to the file.

Lisa, if you require any follow-up, please coordinate through Sarah.

Thank you,

Glen

Glen McDonald MCIP RPP
Director of Planning and Watershed Science
glen.mcdonald@rvca.ca ext. 1133

Rideau Valley Conservation Authority
3889 Rideau Valley Drive
PO Box 599, Manotick ON K4M 1A5
T 613-692-3571 | 1-800-267-3504 F 613-692-0831 | www.rvca.ca

From: Ferdous Ahmed <ferdous.ahmed@rvca.ca>
Sent: Tuesday, January 25, 2022 2:03 PM
To: Glen McDonald <glen.mcdonald@rvca.ca>
Cc: 'l.marshall@mcintoshperry.com' <l.marshall@mcintoshperry.com>
Subject: FW: Town of Smiths Falls - Municipal Class Environmental Assessment Study for Confederation Drive River Crossing - Hydrology and Hydraulic Information Request

Hi Glen
Please see the email below. I believe the planners will take the lead and ask engineers for input when necessary. I have already talked to Lisa and she will review pertinent flood mapping reports and advise me if she needs any of the models.
Thanks.
Ferdous

From: Lisa Marshall <l.marshall@mcintoshperry.com>
Sent: January 25, 2022 11:24 AM
To: Ferdous Ahmed <ferdous.ahmed@rvca.ca>
Subject: RE: Town of Smiths Falls - Municipal Class Environmental Assessment Study for Confederation Drive River Crossing - Hydrology and Hydraulic Information Request

Hi Ferdous,

Please see attached jpg. of bridge location. The Notice of Study Commencement also has a key plan.

Please let me know if you required any additional information.

Thank you,

Lisa Marshall, P.Eng.
Manager, Environmental Engineering
T. 613.714.0815 | **F.** 613.836.3742 | **C.** 613.852.1148
l.marshall@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

Turning Possibilities Into Reality

From: Ferdous Ahmed <ferdous.ahmed@rvca.ca>
Sent: January 25, 2022 10:39 AM
To: Lisa Marshall <l.marshall@mcintoshperry.com>
Subject: RE: Town of Smiths Falls - Municipal Class Environmental Assessment Study for Confederation Drive River Crossing - Hydrology and Hydraulic Information Request

Hi Lisa
I cannot open kmz files. C
Could you please send pdf or jpg files? Thanks.
Ferdous

From: Lisa Marshall <l.marshall@mcintoshperry.com>
Sent: January 25, 2022 10:20 AM
To: Ferdous Ahmed <ferdous.ahmed@rvca.ca>
Cc: Jane Ciszewski <j.ciszewski@mcintoshperry.com>; Alex Ploughman <a.ploughman@McIntoshPerry.com>
Subject: Town of Smiths Falls - Municipal Class Environmental Assessment Study for Confederation Drive River Crossing - Hydrology and Hydraulic Information Request

Hello Ferdous,

As per our Notice of Study Commencement circulated on January 20th, 2022, the Town of Smiths Falls has retained McIntosh Perry to complete a Municipal Class Environmental Assessment Study and Preliminary Design for the Confederation Drive River Crossing.

As part of this study, McIntosh Perry will be reviewing various alternative solutions which include rehabilitation and replacement. To assist with the analysis, would Rideau Valley Conservation Authority be able to provide any existing hydrologic or hydraulic reports, models and/or mapping for the study area? Please see attached Kmz. for bridge location. Please let us know if there are any fees associated with receiving this data?

In addition, we would appreciate any feedback from RVCA pertaining to the Municipal Class EA and criteria to be taken into consideration during the evaluation of alternatives and preliminary design.

If you have any questions, please do not hesitate to contact the undersigned.

Thank you,

Lisa Marshall, P.Eng.

Manager, Environmental Engineering
T. 613.714.0815 | **F.** 613.836.3742 | **C.** 613.852.1148
l.marshall@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

Turning Possibilities Into Reality

Lisa Marshall

From: Lisa Marshall
Sent: February 23, 2022 10:03 AM
To: Mallon, Jack (MHSTCI)
Cc: Barboza, Karla (MHSTCI); pmcmunn@smithsfalls.ca; Kerry Reed
Subject: RE: MHSTCI Letter - Notice of Commencement - Confederation Drive River Crossing EA

Hello Jack,

Thank you for your response. We will review and follow up with MHSTCI should we have any additional requests for clarifications.

Please note that we will circulate future notices to MHSTCI as we continue to follow the MCEA process.

Thank you,

Lisa Marshall, P.Eng.
Manager, Environmental Engineering
T. 613.714.0815 | **C.** 613.852.1148
McINTOSH PERRY
Turning Possibilities Into Reality

From: Mallon, Jack (MHSTCI) <Jack.Mallon@ontario.ca>
Sent: February 22, 2022 4:02 PM
To: Lisa Marshall <l.marshall@mcintoshperry.com>
Cc: Barboza, Karla (MHSTCI) <Karla.Barboza@ontario.ca>; pmcmunn@smithsfalls.ca
Subject: MHSTCI Letter - Notice of Commencement - Confederation Drive River Crossing EA

Good afternoon,

Please see attached MHSTCI's letter in response to the notice of commencement for the Confederation Drive River Crossing EA.

Do not hesitate to contact me if you have any questions.

Best,

Jack Mallon
Heritage Planner

Heritage Planning Unit | Programs and Services Branch

Heritage, Tourism and Culture Division

Ministry of Heritage, Sport, Tourism and Culture Industries

Phone: 437-522-6582

Ministry of Heritage, Sport, Tourism and Culture Industries

Programs and Services Branch
400 University Ave, 5th Flr
Toronto, ON M7A 2R9
Tel: 437.522.6582

Ministère des Industries du Patrimoine, du Sport, du Tourisme et de la Culture

Direction des programmes et des services
400, av. University, 5e étage
Toronto, ON M7A 2R9
Tél: 437.522.6582

Ontario

February 22, 2022 EMAIL ONLY

Lisa Marshall, P. Eng.
Consultant Project Manager
McIntosh Perry Consulting Engineers Ltd.
l.marshall@mcintoshperry.com

MHSTCI File	**:**	**0015961**
Proponent	**:**	**Town of Smiths Falls**
Subject	**:**	**Notice of Commencement - Municipal Class EA**
Project	**:**	**Confederation Drive River Crossing**
Location	**:**	**Town of Smiths Falls**

Dear Lisa Marshall:

Thank you for providing the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) with the Notice of Commencement for the above-referenced project. MHSTCI's interest in this environmental assessment (EA) project relates to its mandate of conserving Ontario's cultural heritage, which includes:

- archaeological resources (including land and marine)
- built heritage resources (including bridges and monuments)
- cultural heritage landscapes

Project Summary

The Town of Smiths Falls is conducting a review of the Confederation Drive River Crossing to address the bridge's advanced state of deterioration. Confederation Drive River Crossing is located on Confederation Drive over the Rideau Canal and can be accessed from Confederation Drive, that leads to Centennial Park or Canal Street off Highway 15 (Beckwith Street South), at Veterans' Memorial Park (Cenotaph) and the Smiths Falls Combined Lockstation Lock 29a. Confederation Drive River Crossing is a single lane, twin span Warren type pony truss with a pedestrian pathway on the upstream side over the Rideau Canal that was constructed circa 1904. At this time, due to poor condition, Confederation Drive River Crossing is closed for public use.

Identifying Cultural Heritage Resources

While some cultural heritage resources may have already been formally identified, others may be identified through screening and evaluation. Indigenous communities may have knowledge that can contribute to the identification of cultural heritage resources, and we suggest that any engagement with Indigenous communities includes a discussion about known or potential cultural heritage resources that are of value to these communities. Municipal Heritage Committees, historical societies and other local heritage organizations may also have knowledge that contributes to the identification of cultural heritage resources.

Municipal Heritage Bridges: Cultural, Heritage & Archaeological Resources Assessment Checklist
Under the EA process, the proponent is required to determine a project's potential impact on cultural heritage resources. The Municipal Engineers Association provides screening criteria for work on bridges that falls under the Municipal Class EA with a *checklist* and *background material* available online, developed in coordination with MHSTCI.

Part A – Municipal Class EA Activity Selection

Please use the *checklist* and *background material* to determine the Municipal Class EA schedule (A, A+, B or C) for the project. Completing the remainder of this checklist determines what technical cultural heritage studies may be required.

Part B - Cultural Heritage Assessment

If Part B of the checklist determines that the bridge or study area warrants the preparation of a Cultural Heritage Evaluation Report (CHER), and the undertaking of a Heritage Impact Assessment (HIA), our ministry's *Info Sheet #5: Heritage Impact Assessments and Conservation Plans* outlines the scope of HIAs. CHERs and HIAs are to be prepared by qualified consultants. Please send HIAs to MHSTCI for review and make copies available to local organizations or individuals who have expressed an interest in cultural heritage.

Part C – Heritage Assessment

If Part C of the checklist determines that the CHER has identified heritage features on the project and recommends that a Heritage Impact Assessment (HIA) be undertaken, our Ministry's *Info Sheet #5: Heritage Impact Assessments and Conservation Plans* outlines the scope of HIAs. CHERs and HIAs are to be prepared by qualified consultants. Please send HIAs to MHSTCI for review and make copies available to local organizations or individuals who have expressed an interest in cultural heritage.

Part D – Archaeological Resources Assessment

If Part D of the checklist establishes that an archaeological assessment is required, it is to be conducted by an archaeologist licenced under the *Ontario Heritage Act* (*OHA*), who is responsible for submitting the report directly to MHSTCI for review. MHSTCI archaeological sites data are available at *archaeology@ontario.ca*.

After completing the checklist, please update MHSTCI on the project Class EA schedule and whether any technical cultural heritage studies will be completed for the project. Please provide all technical heritage studies to MHSTCI before issuing a Notice of Completion or commencing any of work on site.

Environmental Assessment Reporting
All technical cultural heritage studies and their recommendations are to be addressed and incorporated into EA projects. If the screening has identified no known or potential cultural heritage resources, or no impacts to these resources, please include the completed checklists and supporting documentation in the EA report or file.

Thank you for consulting MHSTCI on this project. Please continue to do so through the EA process, and contact me for any questions or clarification.

Sincerely,

Jack Mallon
Heritage Planner
Jack.Mallon@Ontario.ca

Copied to: Karla Barboza, Team Lead, Heritage Planning Unit, MHSTCI – karla.barboza@ontario.ca
Paul McMunn, Director of Public Works & Utilities, Town of Smiths Falls - pmcmunn@smithsfalls.ca

It is the sole responsibility of proponents to ensure that any information and documentation submitted as part of their EA report or file is accurate. MHSTCI makes no representation or warranty as to the completeness, accuracy or quality of the any checklists, reports or supporting documentation submitted as part of the EA process, and in no way shall MHSTCI be liable for any harm, damages, costs, expenses, losses, claims or actions that may result if any checklists, reports or supporting documents are discovered to be inaccurate, incomplete, misleading or fraudulent.

Please notify MHSTCI (at archaeology@ontario.ca) if archaeological resources are impacted by EA project work. All activities impacting archaeological resources must cease immediately, and a licensed archaeologist is required to carry out an archaeological assessment in accordance with the Ontario Heritage Act and the Standards and Guidelines for Consultant Archaeologists.

If human remains are encountered, all activities must cease immediately, and the local police and coroner must be contacted. In situations where human remains are associated with archaeological resources, MHSTCI should also be notified (at archaeology@ontario.ca) to ensure that the site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act.

Lisa Marshall

From:	Lisa Marshall
Sent:	March 1, 2022 8:35 AM
To:	Kerry Reed
Subject:	FW: Confederation Drive River Crossing
Follow Up Flag:	Follow up
Flag Status:	Flagged

Lisa Marshall, P.Eng.
Manager, Environmental Engineering
T. 613.714.0815 | **C.** 613.852.1148
McINTOSH PERRY
Turning Possibilities Into Reality

From: Paul McMunn <pmcmunn@smithsfalls.ca>
Sent: February 28, 2022 2:56 PM
To: [redacted]
Cc: Vanessa Bernicky <vbernicky@smithsfalls.ca>; Lisa Marshall <l.marshall@mcintoshperry.com>
Subject: Re: Confederation Drive River Crossing

Good afternoon [redacted]

By way of this email I have copied Vanessa Bernicky from our office as well as Lisa Marshall from McIntosh Perry who will add you to our contact list. The Town will be hosting a Public Information Centre this spring for which I would suggest that you participate. We will reach out to you by email when the Public Information Centre date and time have been determined.

In the interim, if you have any questions please do not hesitate to reach out to my office.

Kind regards,

Paul McMunn C.E.T.

Director of Public Works & Utilities

Town of Smiths Falls

77 Beckwith Street North

PO Box 695

Smiths Falls, Ontario K7A 2B8

Phone: (613) 283-4124 Ext. 1152

Fax: (613) 283-4764

pmcmunn@smithsfalls.ca

www.smithsfalls.ca

SMITHS FALLS
RISE AT THE FALLS

From: [redacted]
Sent: Friday, February 25, 2022 9:57 AM
To: Paul McMunn <pmcmunn@smithsfalls.ca>
Subject: Confederation Drive River Crossing

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Dear Mr. McMunn,

As per the notice in the Smiths Falls Record News dated February 17, 2022, I would like to be included on the mailing list to receive future notices and study updates regarding the Environmental Assessment Study of the Confederation Drive River Crossing.

Thank you,

[redacted]
Smiths Falls

THE CORPORATION OF THE TOWN OF SMITHS FALLS

COMMITTEE OF THE WHOLE MEETING

MEETING MINUTES

April 25, 2022, 5:00 p.m.
Council Chamber, Town Hall

Members Present: Mayor Pankow, Councillor L Allen, W Alford, J Brennan, N Dwyer, C McGuire and P McKenna

Staff Present: Chief Administrative Officer M Morris, Deputy Clerk N Bennett, Director of Corporate Services/Clerk K Costello, Director of Public Works and Utilities P McMunn, Manager of Water and Wastewater J Barlow, Manager of Economic Development and Tourism J Crowder, Fire Chief R Chesebrough, Treasurer J Koziel, Senior Planner K Grenke and Director of Community Services A Manhire

A virtual meeting roll call was completed to confirm who was present at the meeting by video or teleconference.

Chair McKenna called the meeting to order 5:00 p.m. and read the Land Acknowledgment.

1. AMENDMENTS TO AGENDA - None

2. DISCLOSURE OF MONETARY INTEREST - None

3. DELEGATION - None

4. ADOPTION OF MINUTES - None

5. C.A.O. / DIRECTORS' REPORTS

Directors provided updates respecting their areas of responsibility.

6. CORRESPONDENCE ITEMS - None

7. IN-CAMERA ISSUES

Moved by J Brennan
Seconded by N Dwyer

THAT Council of the Corporation of the Town of Smiths Falls, as provided in Section 239 (2) (c.) of the Municipal Act 2001, as amended move into a closed meeting at 5:20 p.m. to discuss a potential disposition of land.

Carried

Moved by: N Dwyer

Seconded by: L Allen

THAT Council revert back into open session at 5:42 p.m.

RISE AND REPORT – The Chair confirmed that Council members were updated on a potential disposition of land.

Moved by: L Allen

Seconded by N Dwyer

THAT Council of the Corporation of the Town of Smiths Falls, as provided in Section 239 (2) (b.) of the Municipal Act 2001, as amended move into a closed meeting at 5:43 p.m.to discuss a Personal Issue about an Identifiable Individual.

Moved by: J Brennan

Seconded by: N Dwyer

THAT Council revert back into open session at 5:55 p.m.

RISE AND REPORT – The Chair confirmed that Council discussed Personal Information about an Identifiable Individual.

8. PRIORITY ISSUES

8.1 Confederation Bridge MCEA - Scope Change Proposal Report 2022-56 (P McMunn)

Director McMunn provided Council with Report 2022-56 respecting the Confederation Bridge MCEA. P McMunn introduced Lisa Marshall and Ghassan Zanzoul from McIntosh Perry to Council members noting that they are present to answer any questions.

Council members provided their thoughts on spending more money to rehabilitate the current bridge. Majority of Council members were not in favour of spending any more money on rehabilitating the current structure. A member suggested that the structure be cloned and that the Municipal Heritage Committee be included to ensure that it is cloned like the structure that has been there for 100 years.

ACTION – The Chair confirmed that Council is not in favour of doing additional work to the current structure at an additional expense.

Director McMunn noted that the Municipal Heritage Committee will be attending Committee of the Whole on May 9th with a recommendation to have the bridge designated. P McMunn confirmed his understanding that Council is supportive of option #2 in the report.

8.2 Library Renovations Project Report 2022-62 (M Morris)

Chief Administrative Officer Morris provided Council with Report 2022-62. M Morris referred to the presentation by the Library CEO on March 2nd, 2022.

M Morris noted that direction from that meeting was for staff to return with the financial strategy for the project.

Council members shared their support to earmark funds in the 2023 budget.

ACTION – Council to bring forward a resolution in support of incorporating the financial resources for the Library Renovations project in the 2023 capital budget.

8.3 2021 Water Pollution Control Plant Performance Report 2022-57 (J Barlow)

Manager of Water and Wastewater J Barlow provided Council with Report 2022-57.

J Barlow requested that Council receive the report for information.

ACTION - Council to bring forward a resolution to receive the report.

8.4 2022 Financial Report on Excluded Expenses Report 2022-27 (J Koziel)

Treasurer Koziel provided Council with Report 2022-27 to Council members.

ACTION - Council to bring forward a By-law adopt the PSAB Basis budget

8.5 2022 Tax Rates Report 2022-43 (J Koziel)

Treasurer Koziel confirmed that she is seeking approval from Council to set the 2022 tax rate. J Koziel noted that final Tax bills will be prepared during the first week of June.

ACTION – Council to bring forward a By-law to their next meeting of Council.

8.6 2022 Corporate Wide Fee Review Report 2022-58 (N Bennett)

Deputy Clerk N Bennett provided Council with Report 2022-58 noting that the management team is present to answer any questions respecting the recommendations from their individual departments.

A question was raised respecting table and chair rentals.

A Manhire noted that the rate is very low. A Manhire noted that there is a rental service that provides rental of these items outside of municipality facilities.

M Morris provided clarification respecting garbage tags. M Morris noted that Smiths Falls does not have a user pay system for garbage. M Morris noted that no tags are required for the first two bags but are required for the third bag of garbage.

A question was raised about the Child Development Center and if a competitive review of the fees has been completed.

A Manhire noted that the service is not at full cost recovery.

Councillor Dwyer left at 6:57 p.m. due to a technical issue and rejoined immediately.

A concern was shared respecting not providing table or chair rentals for outdoor events. It was noted that there are concerns with the fees as the municipality is encouraging people to have events. It was noted that the cost is a deterrent to organizers.

A Manhire noted that there is opportunity through the Community Grants program to capture these types of costs. A Manhire shared that they are still providing items for events but staff are trying to ensure the cost of the service is captured somewhere. A Manhire noted that staff could review this item. A Manhire noted that staff could come back with a rough business model.

A member questioned if there is a plan to consider the taking of water from the river. It was noted that tankers fill up with water and Lower Reach Parka and leave the municipality.

M Morris noted that it not something that is regulated by the municipality but that the municipality does sell treated water. M Morris shared that staff could review this request further.

The Chair sought support from Council members to have staff review the request further. Council did not support having staff do any further review.

A suggestion was shared to provide a reduced licence fee to taxi owners if they offered an electrical vehicle as part of their service.

Council did not support the suggestion.

ACTION – Council members shared their support for majority of the recommended fees and charges as included in the Report. Council requested that the Table and Chair rental recommendation be removed.

8.7 Update Banking Permissions Report 2022-31 (K Costello)

K Costello referred to Report 2022-31 noting that an updated resolution is required respecting banking permissions.

ACTION – Council members provided their support to bring forward a resolution to update the banking permissions.

8.8 Refreshment Vehicle Request - Victoria Park Report 2022-61 (K Costello)

Director Costello presented Report 2022-61 to Council members.

Leslie Richardson from the Chamber of Commerce provided a presentation to Council. L Richardson noted that the Chamber of Commerce experienced a revenue lost of 77% and that she has been tasked to find a new revenue stream that will align with their mandates. L Richardson noted that the self-contained unit will offer Mexican food and will bring new life to Victoria Park. L Richardson noted that the revenue generated will go directly back into the community.

M Morris confirmed that the next step is to reach out to Parks Canada. M Morris confirmed that the Request for Proposal to remove and replace the playground is presently being evaluated and that staff will return to Council for a decision.

ACTION – Council members provided their support. Council to bring forward a By-law and resolution to the next meeting of Council.

8.9 Compliance Audit Committee Appointments Report 2022-55 (N Bennett)

Deputy Clerk N Bennett provided Council with a recommendation to appoint the Compliance Audit Committee for the upcoming election.

ACTION – Council to bring forward a resolution to appoint Phil Hogan, Paul Howard and Richard Bennett as members of the Compliance Audit Committee.

8.10 Water By-law Amendment Report 2022-59 (P McMunn)

P McMunn provided Council with Report 2022-59.

ACTION – Council provided support for the recommendation. Council to bring forward a By-law to the next meeting of Council.

9. ADJOURNMENT

Moved by J Brennan
Seconded by L Allen

THAT the Committee adjourn its proceedings 7:42 p.m. and stand so adjourned until the next duly called Committee meeting.

Carried

____

Mayor

____

Clerk