

REGION OF WATERLOO

CULTURAL HERITAGE EVALUATION REPORT

GRANTHAM RAIL BRIDGE

JANUARY 11, 2021

FINAL





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REGION OF WATERLOO

FINAL

PROJECT NO.: 161-07859-01.

DATE: JANUARY 11, 2021

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EXECUTIVE SUMMARY

WSP Canada Inc. was retained by the Region of Waterloo to complete a Cultural Heritage Evaluation Report as part of the Transit Project Assessment (TPA) Process for the proposed Cambridge Stage 2 ION Light Rail Transit (LRT) system to determine the cultural heritage value of the Grantham Rail Bridge in the City of Cambridge.

The subject structure consists of three plate-girder single-span structures on stone and concrete abutments that transports the Canadian Pacific Railway (previously it transported the Canadian National Railway which was formerly the Credit Valley Railway) over the former Great Western Railway right-of-way in the City of Cambridge, Ontario.

This report has been completed in partial fulfillment of the cultural heritage requirements of the Ministry of Heritage, Sport, Tourism and Culture Industries and the Ministry of the Environment, Conservation and Parks (MECP) under the TPA Process as defined in Ontario Regulation 231/08 (O. Reg. 231/08) Transit Projects and Metrolinx Undertakings under the *Environmental Assessment Act*. According to the TPA Process, an objection can be submitted to the MECP about a matter of provincial importance that relates to the natural environment or has Cultural Heritage Value or Interest. The MECP requires transit projects to make reasonable efforts to avoid, prevent, mitigate or protect matters of provincial importance.

The Grantham Rail Bridge was identified in the Cultural Heritage Existing Conditions and Preliminary Impact Assessment Report: Stage 2 ION LRT from Kitchener to Cambridge (February 2020) as being a directly impacted potential cultural heritage property. The Cultural Heritage Report was completed as part of the TPA Process for Stage 2 of the proposed rapid transit system.

The purpose of this report is to evaluate the property using Ontario Regulation 9/06 (O. Reg. 9/06) to determine if the property retains cultural heritage value or interest. Based on the results of research, site investigation, and application of the criteria in O. Reg. 9/06 it was determined that Grantham Rail Bridge does retain cultural heritage value or interest. Accordingly, a Heritage Impact Assessment is recommended.

The completion of this report has resulted in the following recommendations:

- 1 The Grantham Rail Bridge was determined to have cultural heritage value or interest. Therefore, a Heritage Impact Assessment is required for this resource to identify appropriate mitigation measures.**



1	INTRODUCTION.....	1
1.1	Objectives	1
1.2	Project Description	1
2	LEGISLATION AND POLICY CONTEXT	3
2.1	Provincial and Municipal Context and Policies.....	3
2.1.1	Environmental Assessment Act and the Transit Project Assessment Process	3
2.1.2	Guide to Environmental Assessment Requirements for Transit Projects	3
2.1.3	Ontario Heritage Act (2005)	3
2.1.4	Ontario Regulation 9/06	4
2.1.5	The Planning Act and Provincial Policy Statement	5
2.1.6	Municipal Official Plan Policies	5
2.2	Methodology	6
2.3	Consultation.....	6
2.3.1	Stage 2 ION Public Consultation Centres.....	7
3	HISTORICAL CONTEXT.....	8
3.1	Local Context and Settlement History	8
3.1.1	Physiographic Context	8
3.1.2	Indigenous Context	8
3.2	Euro-Canadian Context	10
3.2.1	Waterloo County.....	10
3.2.2	Township of North Dumfries	10
3.2.3	Bridge Construction History in Ontario.....	11
3.2.4	Historical Rail Lines Associated With The study Area	11
3.3	Land Use History: Grantham Rail bridge	12
3.3.1	City of Cambridge.....	12
3.3.2	1784-1810.....	13
3.3.3	1811 - 1853.....	13
3.3.4	1855-1915.....	14
3.3.5	1916-Present	15



4	EXISTING CONDITIONS	16
4.1	Description of Structure	16
4.1.1	Design and Construction	19
4.2	Description of Study Area and Landscape Context	20
5	CULTURAL HERITAGE EVALUATION	21
5.1	Comparative Analysis	21
5.2	Ontario Regulation 9/06 Evaluation.....	23
5.3	Evaluation under the City of Cambridge’s Criteria ..	24
5.4	Discussion of Integrity.....	26
6	CONCLUSIONS	27
6.1	Statement of Cultural Heritage Value or Interest.....	27
6.1.1	Description of Resource.....	27
6.1.2	Cultural Heritage Value or Interest	27
6.2	Description of Heritage Attributes.....	27
7	RECOMMENDATIONS	28
	BIBLIOGRAPHY	29

TABLES

TABLE 1 – CONSULTATION RECORD7
 TABLE 2: COMPARATIVE BRIDGE EXAMPLES21
 TABLE 3 – ONTARIO REGULATION 9/06
 EVALUATION23
 TABLE 4 – EVALUATION UNDER THE CITY OF
 CAMBRIDGE’S CRITERIA FOR
 CULTURAL HERITAGE VALUE OR
 INTEREST25

FIGURES

FIGURE 1: PROJECT LOCATION2
 FIGURE 2: TREMAINE’S MAP OF THE COUNTY OF
 WATERLOO, CANADA WEST (1861)
33
 FIGURE 3: ILLUSTRATED ATLAS OF THE COUNTY
 OF WATERLOO (1881).....34
 FIGURE 4: DEPARTMENT OF DEFENCE, SHEET
 040908 ONTARIO COUNCIL OF
 UNIVERSITY LIBRARIES (1916).....35
 FIGURE 5: DEPARTMENT OF DEFENCE, SHEET
 040P08 ONTARIO COUNCIL OF
 UNIVERSITY LIBRARIES (1938).....36
 FIGURE 6: DIGITAL HISTORICAL AIR PHOTOS OF
 SOUTHERN ONTARIO, UNIVERSITY
 OF TORONTO LIBRARIES (1954) ...37
 FIGURE 7: DEPARTMENT OF ENERGY, MINES AND
 RESOURCES, SHEET 040P08C,
 ONTARIO COUNCIL OF UNIVERSITY
 LIBRARIES (1968).....38
 FIGURE 8: DEPARTMENT OF ENERGY, MINES AND
 RESOURCES, SHEET 040P08C,
 ONTARIO COUNCIL OF UNIVERSITY
 LIBRARIES (1975).....39

APPENDICES

A HISTORICAL MAPPING

1 INTRODUCTION

1.1 OBJECTIVES

WSP Canada Inc. (WSP) was retained to complete a Cultural Heritage Evaluation Report (CHER) as part of the Transit Project Assessment (TPA) Process for Stage 2 of the proposed Cambridge Stage 2 ION Light Rail Transit (LRT) system to determine the cultural heritage value of the Grantham Rail Bridge in the City of Cambridge (Figure 1).

This report has been completed to fulfil the cultural heritage requirements of the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) and the Ministry of the Environment, Conservation and Parks (MECP) under the TPA Process as defined in Ontario Regulation 231/08 Transit Projects and Metrolinx Undertakings (O. Reg. 231/08) under the *Environmental Assessment Act* (EAA). Under the TPA Process, an objection can be submitted to the MECP about a matter of provincial importance that relates to the natural environment or has Cultural Heritage Value or Interest (CHVI). The MECP requires transit projects to make reasonable efforts to avoid, prevent, mitigate or protect matters of provincial importance.

The structure known as the Grantham Rail Bridge was identified in the Cultural Heritage Existing Conditions and Preliminary Impact Assessment Report: Stage 2 ION LRT from Kitchener to Cambridge (Cultural Heritage Report) (WSP, 2020) as being a directly impacted potential cultural heritage property. The Cultural Heritage Report was completed as part of the TPA Process for Stage 2 of the proposed rapid transit system.

The purpose of this report is to evaluate the subject bridge using Ontario Regulation 9/06 (O. Reg. 9/06) and evaluation criteria outlined by the City of Cambridge to determine if the structure retains CHVI.

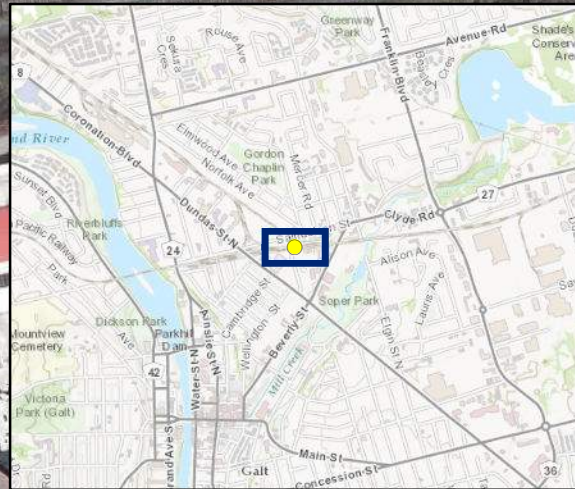
1.2 PROJECT DESCRIPTION

WSP was retained by the Region of Waterloo to conduct a Cultural Heritage Existing Conditions and Preliminary Impact Assessment as part of the TPA Process for Stage 2 of the proposed Cambridge Stage 2 ION LRT. The study area consists of the proposed preferred route for the Stage 2 ION LRT that falls within the municipal boundaries of the City of Kitchener and the City of Cambridge (Figure 1).


The Cultural Heritage Report was completed as a component of the Environmental Project Report (EPR) in support of the TPA Process, specifically addressing the cultural heritage component of the EPR. This CHER has been completed based on the recommendations of the Cultural Heritage Report and to fulfill the requirements of MHSTCI 2019 TPA Process Draft Guidance.

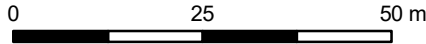
Stage 1 of the rapid transit project in the Region of Waterloo consisted of the completion of LRT infrastructure between Conestoga Mall in the City of Waterloo and Fairview Park Mall in the City of Kitchener (19 km), as well as bus rapid transit (BRT) between Fairview Park Mall in the City of Kitchener and Ainslie Street Terminal in the City of Cambridge (17 km). The TPA Process for Stage 1 was completed in 2012 and BRT service opened in late 2015. The LRT opened in June of 2019.

Stage 2 of the rapid transit project will consist of the replacement of the current BRT with LRT along a modified route alignment. Once finished, passengers will have the ability to travel between the Cities of Waterloo, Kitchener and Cambridge's urban centres.



LEGEND

 Study Area

TITLE: FIGURE 1: PROJECT LOCATION	SCALE: 1:1,000	PROJECT NO: 161-07859-01	DATE: APRIL 2020
PROJECT: GRANTHAM RAIL BRIDGE CHER	DRAWN BY: AST	CLIENT: REGIONAL MUNICIPALITY OF WATERLOO	
0  25 50 m		CREDITS: LAND INFORMATION ONTARIO	

2 LEGISLATION AND POLICY CONTEXT

2.1 PROVINCIAL AND MUNICIPAL CONTEXT AND POLICIES

2.1.1 ENVIRONMENTAL ASSESSMENT ACT AND THE TRANSIT PROJECT ASSESSMENT PROCESS

The purpose of the EAA 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” (EAA 2009, Part I-Section 2). The EAA defines environment broadly to include built environment and cultural environment. The EAA outlines a planning and decision-making process to ensure that potential environmental effects are considered before a project begins. The EAA applies to provincial ministries and agencies, municipalities, and other public bodies. Certain “classes” of projects can follow streamlined EA processes, such as the TPA Process, as defined in O. Reg. 231/08 under the EAA.

The TPA Process is a focused impact assessment process that includes consultation and engagement, an assessment of potential positive and negative effects, a recommendation of measures to mitigate negative effects, and documentation of the process. The proponent must complete the prescribed steps of the TPA Process within a pre-determined time limit.

Transit projects, including the construction of new stations and facilities as well as widening or expansion of linear components of the transit system, can directly or indirectly affect cultural heritage resources. The TPA Process identifies CHVI as a matter of provincial importance and ensures that steps must be taken to consider the effects to these resources. As such, part of the TPA Process is to identify and assess impacts to cultural heritage resources and provide mitigation recommendations.

2.1.2 GUIDE TO ENVIRONMENTAL ASSESSMENT REQUIREMENTS FOR TRANSIT PROJECTS

The MECP's *Guide to Environmental Assessment Requirements for Transit Projects* (Transit Guide) provides direction to proponents on how to meet the requirements of O. Reg 231/08. The Transit Guide encourages proponents to obtain information and input from appropriate government agency technical representatives before starting the TPA Process to assist in meeting the timelines specified in the regulation, including the submission of a draft EPR for review and comment prior to issuing a Notice of Commencement.

Among the pre-planning activities outlined in Section 4.1 of the Transit Guide, a proponent is advised to conduct studies to:

- identify existing baseline environmental conditions;
 - identify project-specific location or alignment (including construction staging, land requirements); and,
 - identify expected environmental impacts and proposed measures to mitigate potential negative impacts.
-

2.1.3 ONTARIO HERITAGE ACT (2005)

The *Ontario Heritage Act* (OHA) gives municipalities and the provincial government powers to conserve Ontario's cultural heritage, with a focus on protecting heritage properties and archaeological sites. The OHA grants the authority to municipalities and to the province to identify and designate properties of CHVI, provide standards and guidelines for the preservation of heritage properties, and enhance protection of heritage conservation districts, marine heritage sites and archaeological resources.

The protection of heritage properties is achieved through designation, using Sections 33, 34 and 42 of the OHA that prohibit the owner of the property from altering, demolishing or removing a building or structure on the

property unless an application to the council of the municipality is filed and written consent received to proceed with the alteration, demolition or removal. Properties can be designated individually (Part IV of the OHA) or as part of a larger group of properties, known as a Heritage Conservation District (HCD) (Part V of the OHA).

The OHA recommends municipalities maintain a Heritage Register with both designated properties and properties that have potential CHVI.

In the Region of Waterloo, Listed properties are those for which the Municipal Council has adopted a resolution for inclusion on the Register as a non-designated property. This makes Listed properties subject to Section 27 of the OHA. An owner of a Listed heritage property must provide the municipality with 60 days' notice of their intention to demolish buildings on the property.

Pursuant to the OHA, the Ontario Heritage Trust (OHT) was established as a trustee and steward of heritage resources in Ontario and has a broad, province-wide mandate to identify, protect, promote and conserve Ontario's heritage in all its forms. In this capacity, it is empowered to conserve provincially significant cultural and natural heritage, to interpret Ontario's history, to educate Ontarians of its importance in our society, and to celebrate the province's diversity.

The MHSTCI is charged under Section 2 of the OHA with the responsibility to determine policies, priorities and programs for the conservation, protection and preservation of the cultural heritage of Ontario and has published guidelines to assist in assessing cultural heritage resources as part of an environmental assessment. The following guidelines have informed the preparation of this Report:

- Guideline for Preparing the Cultural Heritage Resource Component of Environmental Assessments (1992)
- Guidelines on the Man-Made Heritage Component of Environmental Assessments (1981)
- The Ontario Heritage Toolkit (2006)
- MHSTCI Standards & Guidelines for Conservation of Provincial Heritage Properties (2010)
- Environmental Guide for Built Heritage and Cultural Heritage Landscapes (2007)

2.1.4 ONTARIO REGULATION 9/06

O. Reg. 9/06 outlines the criteria for determining CHVI under the OHA. This regulation was created to ensure a consistent approach to the designation of heritage properties under Ontario under the act. All designations under the OHA after 2006 must meet the minimum criteria outlined in the regulation.

A property may be designated under section 29 of the *Ontario Heritage Act* if it meets one or more of the following criteria for determining whether it is of cultural heritage value or interest:

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.

2.1.5 THE PLANNING ACT AND PROVINCIAL POLICY STATEMENT

Additionally, the *Planning Act* (1990) and related Provincial Policy Statement (PPS) (2020) provide guidance for the assessment and evaluation of potential cultural heritage resources. Subsection 2.6 of the PPS, Cultural Heritage and Archaeological Resources, states that:

2.6.1 “Significant built heritage resources and significant cultural heritage landscapes shall be conserved.”

2.1.6 MUNICIPAL OFFICIAL PLAN POLICIES

The Region of Waterloo’s *Official Plan* (2015), as approved with modifications by the Ontario Municipal Board on June 18, 2015, contains policies that support a regional transit system in Chapter 5, including policy 5.A.6 that states, “The Regional transit system will be improved on an on-going basis through the addition of rapid transit service and the preparation and implementation of the Transit Business Plan.” The Region of Waterloo’s *Official Plan* also contains policies that support the retention of significant cultural heritage resources such as policy 3.G.1 that states, “The Region and Area Municipalities will ensure that cultural heritage resources are conserved using the provisions of the Heritage Act, the Planning Act, the *Environmental Assessment Act*, the Cemeteries Act and the Municipal Act.”

Objective 2.2. j) of the City of Cambridge’s *Official Plan* (2018) encourages “the development of a range of existing and proposed corridors in this Plan to serve as key transportation linkages with areas both within and outside the city...One of the corridors will delineate the general alignment of the rapid transit system linking Cambridge with Kitchener and Waterloo...Stage 2 provides the opportunity for the BRT technology to be converted to light rapid transit (LRT) technology when funding is available and/or when warranted by ridership.” Policies encouraging the retention of cultural heritage resources are included in Chapter 4 including policy that the probable impact of road improvement and other public works projects on-site and abutting cultural heritage resources should be mitigated. Additionally, Policy 4.4.1 a) identifies criteria unique to the City of Cambridge for identifying CHVI of a property:

- a) A property shall be considered to have cultural heritage value or interest if the property has been designated by the Province to be of architectural or historical significance pursuant to the Ontario Heritage Act or, in the opinion of the City, satisfies at least two of the following criteria:
 - i. it dates from an early period in the development of the city’s communities;
 - ii. it is a representative example of the work of an outstanding local, national or international architect, engineer, builder, designer, landscape architect, interior designer, sculptor, or other artisan and is well preserved or may be rehabilitated;
 - iii. it is associated with a person who is recognized as having made an important contribution to the city’s social, cultural, political, economic, technological or physical development or as having materially influenced the course of local, regional, provincial, national or international history;
 - iv. it is directly associated with an historic event which is recognized as having local, regional, provincial, national or international importance;
 - v. it is a representative example and illustration of the city’s social, cultural, political, economic or technological development history;
 - vi. it is a representative example of a method of construction now rarely used;
 - vii. it is a representative example of its architectural style or period of building;
 - viii. it is a representative example of architectural design;
 - ix. it terminates a view or otherwise makes an important contribution to the urban composition or streetscape of which it forms a part;

- x. it is generally recognized as an important landmark;
 - xi. it is a representative example of outstanding interior design; or
 - xii. it is an example of a rare or otherwise important feature of good urban design or streetscaping.
-

2.2 METHODOLOGY

The recommendations of this CHER are based on an understanding of the physical values of the property, a documentation of its history through research, an analysis of its social and physical context, comparisons with similar properties and mapping.

This CHER is guided by key documents such as the Municipal Engineers Association's Municipal Heritage Bridges, Cultural, Heritage and Archaeological Resources Assessment Checklist (2014), the Reference Guide on Physical and Cultural Heritage Resources (Government of Canada, 1996), the Ontario Heritage Toolkit (MHSTCI, 2006), and the Guidelines for Preparing the Cultural Heritage Resource Component of Environmental Assessments (MHSTCI, 1992).

A CHER examines a property in its entirety, including its relationship to its surroundings, as well as its individual elements – engineering works, landscape etc. This report will include:

- A summary of the history of the immediate context informed by a review of archival sources and historical maps;
- A summary of the land-use history of the property including key transfers of land and milestones informed by Land Registry records and additional archival research into prominent owners of tenants such as tax assessments or City Directories;
- Thorough photographic documentation of the subject property and context;
- A written description of the existing conditions and immediate context;
- A discussion of consultation with local communities;
- A comparative analysis, using bridges of a similar age, style, typology, context and history to inform the evaluation of CHVI;
- An evaluation of whether the property satisfies criteria under O. Reg. 9/06;
- Discussion of the integrity of the property; and
- A draft statement of CHVI if appropriate.

For the purposes of this CHER the following documents were also consulted:

- The Ministry of Transportation Ontario's (MTO) bridge list; and,
 - Arch, Truss and Beam: The Grand River Watershed Heritage Bridge Inventory.
-

2.3 CONSULTATION

Canadian Pacific (CP) Railway, the Regional Municipality of Waterloo and the City of Cambridge were consulted as a part of this project for information regarding potential cultural heritage value. Details regarding the scope and timing of this consultation have been provided in Table 1.

Table 1 – Consultation Record

CONTACT	CONTACT DETAILS	RESPONSE RECEIVED	RESPONSE
Shannon Noonan City of Cambridge NoonanS@cambridge.ca	By email on March 9, 2020	April 24, 2020.	Shannon provided some research and contemporary photographs of the subject structure.
Bridget Coady Region of Waterloo BCoady@regionofwaterloo.ca	By email on March 9, 2020	March 19, 2020.	No information for Grantham Rail Bridge.
CP Rail	Request for additional information on the Grantham Rail Bridge was made in a project team meeting with CP on May 8, 2019	No response yet received.	NA

2.3.1 STAGE 2 ION PUBLIC CONSULTATION CENTRES

Public Consultation Centres (PCCs) for Stage 2 ION are being held throughout the preliminary stages of the project. PCCs often consist of multiple meetings and are used to present details about the project to the public and facilitate conversation, answer inquiries, and record suggestions the public may have about the project. PCC No. 1 was undertaken in November 2015 and included more than 100 community members who took part in two events providing their input on the alternative routes for this network.

PCC No. 2 was held between February – March 2017 and consisted of more than 350 residents attending three events to provide feedback on the preliminary preferred route. Many comments were received from the public at these events, including several suggested alternative routes.

PCC No. 3 was held from November 2017 – January 2018 at which time the Region presented localized route alternatives and refinements to the preliminary preferred route and a methodology for evaluating the routes. PCC No. 4 presented the evaluation results of the new localized route alternatives and refinements and the resulting Project Team Preliminary Proposed Route.

In June 2018, Region of Waterloo Council endorsed the Project Team Preliminary Proposed Route (Preferred Route) for the Stage 2 ION project, subject to further evaluation of the portion of the route between Shantz Hill Road and Eagle Street North at William Street. The Region has further considered local route and station location options between Hamilton Street and the Eagle Street Canadian Pacific Rail crossing. The evaluated refinements were presented to the public at PCC No. 4b in March 2019 along with the evaluation results, and the Project Team Preferred Refinement based on these results.

3 HISTORICAL CONTEXT

3.1 LOCAL CONTEXT AND SETTLEMENT HISTORY

3.1.1 *PHYSIOGRAPHIC CONTEXT*

The study area is in the Waterloo Hill physiographic region which is located within the centre of the Grand River Watershed. It occupies approximately 192,000 acres predominantly across the Region of Waterloo and extends into both Brant and Perth counties. The surface of this region is composed primarily of sandy hills and kames. The sandy soils of these hills and kames provide areas of good drainage and consist of grey-brown podzolic sands (Chapman and Putnam, 1984). The study area contains the Grand River, Speed River and Mill Creek of the Grand River Watershed. The Grand River is one of the oldest in Ontario; the present river and its valley began with the retreat of the Wisconsin ice approximately 12,000 before present (BP) (Heritage Resources Centre, 1989: 8). In the central basin which encompasses the study area, hummocky interlobate and recessional or retreat moraines provide evidence of the effects of ancient ice advance and retreat (Heritage Resources Centre, 1989: 8).

The study area lies in the Mixed-wood Plains Ecozone, within the Lake Simcoe-Rideau Ecoregion (Ecoregion 6E). Lake Simcoe-Ecoregion encompasses 6.4% of Ontario (6, 311, 957 ha) of Ontario. The climate is mild and moist, with a mean annual temperature range of 4.9 to 7.8 degrees Celsius. The land cover is/was predominantly cropland, pasture and abandoned fields. Forested areas include deciduous, coniferous and mixed forest types (Crins et al., 2009).

The study area is also within the Great Lakes-St. Lawrence Forest Region. The deciduous trees characterizing this region include sugar maple, beech, red maple, yellow birch, basswood, white ash, large-toothed aspen, red and burr oak, white eastern hemlock, eastern white pine, white spruce and balsam fir are among the coniferous species (Rowe, 1972).

3.1.2 *INDIGENOUS CONTEXT*

Paleoindian period populations were the first to occupy what is now southern Ontario, moving into the region following the retreat of the Laurentide Ice Sheet approximately 11,000 years BP. The first Paleoindian period populations to occupy southern Ontario are referred to by archaeologists as Early Paleoindians (Ellis and Deller, 1990).

Early Paleoindian period groups are identified by their distinctive projectile point morphologies, exhibiting long grooves, or 'flutes', that likely functioned as a hafting mechanism (method of attaching the point to a wooden stick). These Early Paleoindian group projectile morphologies include Gainey (ca. 10,900 BP), Barnes (ca. 10,700), and Crowfield (ca. 10,500) (Ellis and Deller, 1990). By approximately 10,400 BP, Paleoindian projectile points transitioned to various unfluted varieties such as Holcombe (ca. 10,300 BP), Hi Lo (ca. 10,100 BP), and Unstemmed and Stemmed Lanceolate (ca. 10,400 to 9,500 BP). These morphologies were utilized by Late Paleoindian period groups (Ellis and Deller, 1990). Both Early and Late Paleoindian period populations were highly mobile, participating in the hunting of large game animals. Paleoindian period sites often functioned as small campsites where stone tool production and maintenance occurred (Ellis and Deller, 1990).

Climatic warming, approximately 8,000 BP, was accompanied by the arrival of the deciduous forest in southern Ontario. With this shift in flora came new faunal resources, resulting in a change in cultural adaptations in the region. This change is reflected in new tool-kits and associated subsistence strategies referred to archaeologically as the Archaic period. The Archaic period in southern Ontario is divided into three phases: the Early Archaic (ca. 10,000 to 8,000 BP), the Middle Archaic (ca. 8,000 to 4,500 BP), and the Late Archaic (ca. 4,500 to 2,800 BP) (Ellis et al. 1990).

The Archaic period is differentiated from earlier Paleoindian populations by a number of traits such as: 1) an increase in tool stone variation and reliance on local tool stone sources, 2) the emergence of notched and stemmed projectile point morphologies, 3) a reduction in extensively flaked tools, 4) the use of native copper, 5) the use of bone tools for hooks, gorges, and harpoons, 6) an increase in extensive trade networks, and 7) the production of ground stone tools. Also noted is an increase in the recovery of large woodworking tools such as chisels, adzes (a tool similar to an axe with an arched blade, used for cutting or shaping large pieces of wood), and axes (Ellis et al., 1990). The Archaic period is also marked by population growth. Archaeological evidence suggests that by the end of the Middle Archaic period (ca. 4,500 BP) populations were steadily increasing in size (Ellis et al., 1990). Over the course of the Archaic period, populations began to rely on more localized hunting and gathering territories. By the end of the Archaic period, populations were utilizing more encampments that are seasonal. From spring to fall, the archaeological record shows populations were shifting their settlement patterns on a regular, seasonal basis. From spring to fall, settlements would exploit lakeshore/riverine locations where a broad-based subsistence strategy could be employed, while the late fall and winter months would be spent at interior sites where deer hunting was likely a primary focus with some wild edibles likely being collected (Ellis et al. 1990:114). The steady increase in population size and adoption of a localized seasonal subsistence strategy eventually evolved into what is termed the Woodland period.

The beginning of the Woodland period is identified by archaeologists by the emergence of ceramic technology for the manufacture of pottery. Similar to the Archaic period, the Woodland period is separated into three primary timeframes: the Early Woodland (approximately 2,800 to 2,000 BP), the Middle Woodland (approximately 2,000 to 1,200 BP), and the Late Woodland (approximately 1,200 to 350 BP) (Spence et al., 1990; Fox, 1990).

The Early Woodland period is represented in southern Ontario by two different cultural complexes: the Meadowood Complex (ca. 2,900 to 2,500 BP), and the Middlesex Complex (ca. 2,500 to 2,000 BP). During this period, the life ways of Early Woodland populations differed little from that of the Late Archaic with hunting and gathering representing the primary subsistence strategies. The pottery of this period is characterized by its relatively crude construction and lack of decorations. These early ceramics exhibit cord impressions, likely resulting from the techniques used during manufacture (Spence et al., 1990).

While evidence of both complexes is present, the Meadowood complex is more prominent within Southern Ontario, and consequently within the study area. It is characterised by Meadowood cache blades, Meadowood side notched points, trapezoidal gorgets and a marked preference for Onondaga chert (Spence et al., 1990).

The Middle Woodland period is differentiated from the Early Woodland period by changes in lithic tool morphologies (e.g. projectile points, expedient tools) and the increased elaboration of ceramic vessels (Spence et al., 1990). In southern Ontario, the Middle Woodland is observed in three different cultural complexes: the Point Peninsula Complex to the north and northeast of Lake Ontario, the Couture Complex near Lake St. Clair, and the Saugeen Complex throughout the remainder of southern Ontario. These groups can be identified by their use of either dentate or pseudo scalloped ceramic decorations. It is by the end of the Middle Woodland period that archaeological evidence begins to suggest the rudimentary use of maize (corn) horticulture (Warrick, 2000).

The Saugeen Complex lies in south-central Ontario, but is best known for material culture found along the east shores of Lake Huron. Vinette 2 ceramics are characterized by their thick walls, wide necks, coil construction, poorly defined shoulders and conoidal bases. Typically, the majority of the vessel is decorated with pseudo-scallop stamps or dentate impressions, with the latter occurring more frequently at later dates (Spence et al., 1990).

Early contact with European settlers at the end of the Late Woodland period resulted in an extensive change to the traditional lifestyles of most populations inhabiting southern Ontario. Trade with the Europeans led to dependency on European goods and incited conflict between the Indigenous communities in southern Ontario (Warrick, 2000). Neutral Territory was situated between the Wendat (Huron) territory to the north, and the League of the Haudenosaunee (Five Nations Iroquois) to the south. Their unfortunate placement between these two territories resulted in their disbandment as a distinct nation when the Haudenosaunee began their campaign against the Wendat from 1649-1650. This disbandment was largely a product of intensification of the fur trade, resource scarcity, and European rivalries that carried out by their Indigenous trade partners.

The League of the Haudenosaunee continued their offensive northward to Anishinabek territory where they were faced with fierce opposition by the Mississauga and their allies (Six Nations of the Grand River, 2015).

The Mississauga were able to drive the Haudenosaunee back south of Lake Ontario and inhabited the newly vacant territory including the Grand River area. After the American Revolutionary War, Haudenosaunee loyal to the British Crown lost their homes fighting against the newly established American republic. Land around the Grand River was granted to these loyalists through the Haldimand Treaty of 1784. In 1798 Col. Joseph Brant, acting for the Six Nations, sold 94, 012 acres known as Block No.2 to Richard Beasley, James Wilson, and Jean Baptiste Rosseau. In 1800 Beasley began to sell land within the study area to immigrants of German descent from Pennsylvania.

Today the study area is located within the traditional territories of the Six Nations, as well as the Mississauga's of the Credit, part of the Anishinaabe peoples, and is within lands included the Crown Grant to the Six Nations. These communities are represented today by Reserve 40, belonging to Six Nations of the Grand River and Reserve 40A, belonging to the Mississaugas of the Credit, both located in Brant County.

3.2 EURO-CANADIAN CONTEXT

3.2.1 WATERLOO COUNTY

In 1788 the Province of Quebec created the first districts to serve administrative needs at the local level – Hesse, Nassau, Mecklenburg and Lunenburg. The study area was in the Nassau District that included as far south as the current Fort Erie and Thunder Bay to the north. After the creation of Upper Canada in 1791, The Nassau District was renamed the Home District. By way of an Act of Parliament in 1798 the Home and Western Districts were realigned with a portion of these districts becoming London and Niagara Districts. The study area remained part of the Home District.

At the turn of the nineteenth century, Crown Land was granted to arriving settlers on conditions, such as the requirement to clear at least 2.02 ha of their lot and the adjacent road allowance as well as to build a house and shingle it within 18 months.

In 1816 the Home District was divided and the majority of what would become Waterloo County was reorganized into the Gore District (Pope, 1877:76). The first settlers of the Gore District were almost exclusively United Empire Loyalists (Pope, 1877: 76). Initially Halton County included the Townships of Beverley, Dumfries, Esquesing, Flamboro West and Flamboro East, Nassagaweya, Nelson and Trafalgar (Pope, 1877:76) and was expanded to include the townships of Guelph, Puslinch, Nassagaweya, Esquesing, Eramosa, Erin and Garafraxa in 1822 (Cumming, 1971:2).

The District of Wellington was created in 1837/1838 and included the counties of Wellington, Waterloo, Grey and parts of Dufferin County (Archives of Ontario, 2011; Wellington County, n.d.). The United Counties of Waterloo, Wellington and Grey was formed in 1852, but only two years later Wellington County became its own entity and consisted of the Townships and Towns of Amarantha, Arthur, Eramosa, Erin, Guelph, Garafraxa, Maryborough, Nichol, Peel, Pilkington, and Puslinch (Wellington County, n.d.).

On February 1841 Wellington District became part of Canada West in the new United Province of Ontario. Only eight years later in 1849, the District system was eliminated. Wellington District was divided into Grey, Wellington, Perth and Waterloo Counties. Waterloo County included the Townships of Waterloo, Woolwich, Wilmot, Wellesley and North Dumfries. Waterloo County was dissolved in 1973 and replaced with the Region of Waterloo.

3.2.2 TOWNSHIP OF NORTH DUMFRIES

Originally united and known simply as Dumfries, the township was split between Waterloo County and Brant County when the District system was eliminated in 1849 creating North and South Dumfries.

European settlement began in North Dumfries with Joseph Brant's sale of Block 1 of the Haldimand Tract to Philip Stedman on February 5, 1798. Stedman died shortly after and the land passed to his sister, Mrs. John Sparkman who sold it to Thomas Clarke of Stamford, Lincoln County. On July 3, 1816 Clarke sold Block 1 to William Dickson who named the area the Township of Dumfries (Smith 1846:48)

At Dickson's request the Deputy Provincial Surveyor Adrian Marlett divided the township into lots. Absalom Shade arrived in 1816 and established a grist mill at the intersection of Mill Creek and the Grand River which was later to become the Town of Galt. By 1818 the population was 1673, and in the 1820s Dickson invited fellow Scotsmen to purchase land. Early Scottish families included the surnames Webster, Rankin, Wyllie and Dalgleish (Janusas 1988a:31).

The larger settlement areas in the Township were the Towns of Ayr and Galt, and the smaller communities included the towns of Nithvale, Jedburgh, Wrigley's Corners, Branchton, Clyde, Riverview, Greenfield (formerly Greenfield Mills), Reidsville, Black Horse Corners, Roseville, Whistlebare and Orr's Lake (Janusas 1988a:31).

The Town of Galt was amalgamated to form the City of Cambridge in 1973. In 1973, the Township of North Dumfries' current municipal limits were established.

3.2.3 BRIDGE CONSTRUCTION HISTORY IN ONTARIO

The history of bridge construction in Ontario coincided roughly with the spread of Euro-Canadian settlers and surveyors and the expansion of Ontario's road systems (Bradford 2015, MTO 2016). These earliest bridges were rudimentary in construction, utilizing the abundance of large trees available to span waterways and covering the bridge top with a corduroy log cover and dirt flooring. With the decline of suitable large lumber came the introduction of wooden truss bridges.

Wooden truss bridges benefitted from the construction knowledge of early settlers, utilizing King and Queen trusses common in barn construction. The wooden truss bridge enjoyed a long-lived popularity in southern Ontario, being commonly used until the 1890's.

Stone arch bridge construction began during the same period as the wooden truss bridges, being used throughout the 1850's to 1880's. However, stone bridges were never as common, due largely to the expensive and time-consuming nature of quarrying, transporting, and crafting the raw material (Bradford 2015, MTO 2016). As such, stone bridges are more common for larger important bridge crossings and wealthier economic centres.

With the arrival of the railway came the use of iron in bridge construction. Introduced in the 1850's, early iron bridges were constructed using cast iron and were brittle. Later development of wrought iron bridges improved on the tensile strength of the material, thus improving its longevity (Bradford 2015, MTO 2016). However, iron's use in bridge construction was limited to the 1870's and 1880's, as the introduction of steel replaced it as the standard bridge material in the 1870s.

Numerous bridge technologies were used in the construction of wooden, iron, and steel bridges in the 1800's. These included the truss (1820's), suspension (1848), and cantilever (1883).

With the reintroduction of concrete as a building material in the twentieth century came a more efficient and effective way to build bridges. Concrete's malleability meant that the construction of slab and arch bridges could be produced relatively quickly and easily to span the many smaller waterways of Ontario. This resulted in the decline of steel in bridge construction, with concrete soon becoming the dominant material. The introduction of steel reinforcing concrete further improved its versatility, allowing for its use in larger building projects (Bradford 2015, MTO 2016). The result is the increased use of concrete in major roadworks throughout the 1940's and 1950's.

The most recent innovation to the use of concrete is the development of pre-stressed concrete, which provides better resistance to cracking and failure and can be either cast in place or pre-formed off site. This versatility has resulted in pre-stressed concrete's dominance in modern bridge construction.

3.2.4 HISTORICAL RAIL LINES ASSOCIATED WITH THE STUDY AREA

Credit Valley Railway

The Grantham Rail bridge carries the former Credit Valley Railway (CVR), now CP Railway, over the former Great Western Railway (GWR) in the City of Cambridge. The CVR was incorporated to build a rail line from Toronto to Orangeville, via the Credit River Valley and Streetsville, with branches to Galt, Berlin, Waterloo, and

Milton (Cooper, n.d.). To obtain Government of Ontario grants, the railway had to be built with the new 4'8½" Standard Gauge (Cooper, n.d.). The railway work was aided financially by the province as well as counties, cities, towns and villages along the line (Old Time Trains, n.d.). The Milton line was formally opened in 1879 by the Marquis of Lorne, Governor General of Canada (Mika & Mika, 1981, Cooper, n.d.). In June of 1882, the CVR had 19 engines, 29 pieces of passenger equipment, freight equipment including a 250 box and 195 flat cars, and grain elevators were constructed at Orangeville, Fergus and Wolverton (Old Time Trains, n.d.). By 1881, the CVR was in financial difficulty, as were many other fledgling railways at the time, and in 1883, the Credit Valley Railroad was amalgamated with the Ontario & Quebec Railway (O&Q) (Cooper, n.d.) By 1884 Canadian Pacific Railways (CPR) had taken over O&Q through a perpetual lease (Old Time Trains, n.d.). The study area encompasses this historical rail line, which is now referred to as the Milton rail corridor.

Great Western Railway

The Great Western Railway (GWR) was established in 1834 as the London and Gore Railroad, though changed its name to the GWR in 1845 (Old Time Trains, 2013). The original line between Niagara Falls and Windsor was opened in 1854, with additional branch lines added thereafter. The Galt Branch was opened from Harrisburg to Galt later in 1854 and then extended to Preston in 1855. In 1882, the GWR amalgamated with the Grand Trunk Railway (GTR) (Old Time Trains, 2013).

In 1861, the GTR had accumulated a large amount of debt due to a lack of rail traffic, and although the debt continued to grow, the company expanded their rail line network through the purchasing of other rail companies. This continual growth without the ability to sustain its existing expenses resulted in the GTR filing for bankruptcy in 1919 (Library and Archives Canada, 2005). As a result, the federal government took control of the railway, and in 1923, the company was amalgamated with the Canadian National Railways, now Canadian National (CN) (Canadian National Railway Company, 2018).

3.3 LAND USE HISTORY: GRANTHAM RAIL BRIDGE

The Euro-Canadian land use history for Grantham Rail Bridge was produced using census returns, land registry records, assessment and/or collector rolls, historical mapping, and other primary and secondary sources, where available. The following land use history was completed during the COVID-19 pandemic when local area archives were closed to the public. Accordingly, research was limited to online resources. This section has generally been divided into periods of property ownership, separated by significant changes in tenure. The subject property is located within part of Lots 7, Concession 11 in the former geographic Township of North Dumfries in the City of Cambridge.

3.3.1 CITY OF CAMBRIDGE

The study area is located in the former Town of Galt, within the City of Cambridge.

Galt

In 1816, William Dickson, a lawyer from Niagara, purchased land along the Grand River from Thomas Clarke, naming the land Settlement of Dumfries after his birthplace in Dumfries, Scotland (Beers & Co. 1883: 433) He then hired Absalom Shade to develop the area, who in turn founded Shade's Mills. Shade and Dickson had met when Dickson was a prisoner of war during the War of 1812. Shade, a Pennsylvanian, helped manage Dickson's escape from the Americans (Beers & Co., 1883: 434).

Absalom Shade repaired and opened the mill in 1816 and the community grew around it, reaching 163 people in 1817. By 1820 there were also three mills, a distillery and a blacksmith shop. The area was named Galt in 1827 after John Galt the Scottish novelist and Commissioner of the Canada Company (Mika & Mika, 1981).

Dickson commissioned John Telfer to recruit settlers from Scotland and the resulting influx in population during the 1830s was substantial. By 1851 the population had reached 2,213 (Janusas, 1988a:135-139). The arrival of the Galt & Guelph Railway in 1855, later taken over by the Great Western Railway brought additional industrial growth. Galt was incorporated as a Town in 1857, and in 1861 had a population of 3041, a population of 4737 in 1875 and a population of 5000 in 1880.

In 1908 a by-law was passed in favor of purchasing power from Ontario Hydro, ending the reliance on water power. This facilitated new roads and precipitated the automobile industry to locate away from railway lines and waterways (Janusas 1988a:139-141). Galt was incorporated as a city in 1915 with a population of 11,852 (Bray, 2008).

In 1973 the City of Galt and Towns of Preston and Hespeler were amalgamated to form the City of Cambridge. Shortly after amalgamation many of the industrial buildings along the river in the former City of Galt were lost due to remediation efforts that followed the floods of 1974 (Bray, 2008).

3.3.2 1784-1810

The Township of Dumfries, in which the Town of Galt is situated, was originally part of the lands granted by the British Crown to the Iroquois or 'Six Nation Indians', properly named Haudenosaunee, after the American Revolutionary War (Young, 1880). After the American Revolution (1775–83), the Haudenosaunee lost much of their ancestral homeland in upper New York, an area now formally recognized as American territory. Mohawk leader Thayendanegea (Joseph Brant), and representatives of the Six Nations Confederacy pressured the Crown to provide them with a land grant in Canada to replace the territory that they had lost as a result of the war. Thayendanegea selected the valley of the Grand in 1784, and the governor of Québec, Frederick Haldimand, agreed to Thayendanegea's request and made arrangements for the land grant (Filice, 2016).

Land around the Grand River was granted to these loyalists through the Haldimand Treaty of 1784. On the 5th of February, 1798, Col. Joseph Brant, acting for the Six Nations as their legal attorney, sold Block No. 1, comprising 94,305 acres which became known as the Township of Dumfries to Philip Stedman of the Niagara district for £8,841 (Young, 1880).

From the start, the Haudenosaunee and the British Crown disagreed over the meaning of the Haldimand Proclamation and who held title to the Haldimand Tract (Filice, 2016). The Crown understood the Haldimand Proclamation as prohibiting the Haudenosaunee from leasing or selling the land to anyone but the Crown. In 1791 surveyor Augustus Jones completed a survey of the Haldimand Tract.

By 1796, the Haudenosaunee began selling and leasing land to settlers, despite the Crown's initial objections. Thayendanegea reached a compromise agreement with Simcoe's successor, Peter Russell, whereby the Haudenosaunee could sell and lease the land, so long as they offered it to the Crown first (Filice, 2016). Thayendanegea sold approximately 350,000 acres of land to the Crown, who then distributed it to private owners, according to arrangements made by Thayendanegea. On 5 February 1798, this land was parcelled out in six large blocks to specific purchasers.

On the 5th of February, 1798, Colonel Brant, on behalf of the Six Nations, and acting as their legal attorney, sold to one Philip Stedman of the Niagara district, that portion of their lands known as Block number one, comprising 94,305 acres, and which, by an Act of the Legislature of the Province, became known as the Township of Dumfries (Young, 1880). The stipulated price was £8,841.

3.3.3 1811 - 1853

Shortly after his purchase of Block No. 1, Phillip Stedman passed away and his sister, Susannah Stackman, inherited the property (Capron, 1866). In 1811 she sold the property to the Honourable Thomas Clarke, who was, in 1816, unable to continue payments. In 1816 the land was bought by Honourable William Dickson for £24,000 pounds.

William Dickson, who immigrated to Niagara from Dumfries, Scotland in 1792, intended to use the land and build a settlement community. He hired Absalom Shade, a carpenter from Upstate New York to help him establish the community, including surveying the land, building mills, and building bridges. (Waterloo Region Generations, n.d.). In payment for his services, William Dickson transferred a substantial amount of land to Absalom Shade, including the subject property. Shade was born c. 1793 in Wyoming County, Pennsylvania and trained as a carpenter in Buffalo, N.Y., until 1816. In that year he submitted a tender for the contract to build a court house and jail at Niagara-on-the-Lake, Upper Canada. Although Shade's tender was rejected, he impressed William Dickson, who was overseeing the tender as a member of the Legislative Council.

When Shade arrived in Dumfries Township he owned \$100 and a chest of carpenter's tools. He soon amassed a large fortune. Due to his friendship with Dickson, he enjoyed a monopoly over a wide spectrum of business activities (Waterloo Region Generations, n.d.). With Dickson's financial backing, Shade built up a large credit business at his store, where he charged a mark-up of 50 to 100 per cent on credit sales. When Dickson built the "Dumfries Mill" in 1818, Shade became its manager. In 1820 Shade built a distillery adjacent to this mill and operated both businesses.

Dickson's successful campaigns to recruit settlers in Scotland and the United States resulted in an influx of people to the area (Waterloo Region Generations, n.d.). As the population grew Shade's many businesses flourished. In 1824 he erected a large general store and grain handling depot on the banks of the Grand River. In 1827 when a post office was established at Shade's Mills, the village was renamed Galt. Shade became the postmaster and retained that position for 25 years.

As Shade's fortunes grew and his business interests broadened, he became associated with the Hamilton business community in the founding of the Gore Bank in 1835. In 1852, in company with his Hamilton associates, he became an incorporator and shareholder in the Galt and Guelph Railway. He was also an active promoter of both the Preston and Berlin Railway and the Berlin and Stratford Gravel Road Company (Waterloo Region Generations, n.d.).

During the rebellion of 1837 he acted on the local commission of the peace to examine suspected rebels and helped organize a detachment of militia for service on the Niagara frontier (Waterloo Region Generations, n.d.). After local government was organized in Dumfries Township in 1819, Shade frequently served as chairman of the township meetings, as well as holding such offices as pound keeper and assessor. In 1828 he was named a magistrate for Gore District and ably represented Dumfries' interests at the Gore District quarter sessions. When elective municipal government was established in 1841, Shade was elected a township councillor, and in 1852 was elected as the second reeve of the newly incorporated village of Galt. After his tenure as reeve he retired from public life and devoted his time to managing his estate and numerous local charities. He died in 1862 after a short illness.

3.3.4 1855-1915

The abstract index records that Shade sold a small portion of lot 7 to the Galt and Guelph Railway Company in October 1855 (WRLO 518). The Galt and Guelph Railway Company was promoted by Absalom Shade, Andrew Elliott, William Dickson Jr. and Jacob Hespeler and intended to build a rail line from Galt to Guelph that would then be leased to the GWR. The Galt and Guelph Railway Company began construction of the line in 1854, but encountered financial difficulties and the GWR stepped in and completed the line. Tremaine's *Map of the County of Waterloo* (1861) confirms that the study area of the subject bridge is located on the property owned by Absalom Shade along the Galt Branch of the GWR (Figure 2).

In 1872 part of lot 7 was sold from the trustee of Shade's estate to James D. Geddes (WRLO 2726). The 1878 City Directory confirms James D. Geddes living on lot 7 of Concession 11. In August and October of 1879 the CVR purchased part of lot 7 from Geddes for the rail line for the Milton line running from Milton to Galt that opened in 1879, passing over the GWR via the proposed Grantham Rail Bridge (WLRO 3840 and 3875). The oldest portion of the Grantham Bridge, which includes the stone abutments, likely dates back to 1879. However, it is unlikely that the current plate girder bridge deck is also original given plate girder bridges were not commonly used in railway construction until 1900 (Holth, n.d.) and the deck displays use of bolts which were not used in bridge construction until the 1960s (Debruler, 2018). The *Illustrated Historical Atlas of the County of Waterloo* (1881) (Figure 3) does not indicate owners of the surrounding properties, however it does depict the road alignment to the north of the location of the subject bridge and the GWR line through the bridge's current footprint. While records indicate that the CVR line from Milton to Galt opened in 1879 (Cooper, 2014; Stelter & Artibise, 1982:55), the *Illustrated Historical Atlas of the County of Waterloo* does not identify the line through the study area; there is a rail line that dips south of the subject bridge and this may reflect an improper recording of the CVR line.

3.3.5 1916-PRESENT

Topographic mapping produced by the Department of Militia and Defence for the years 1916 and 1938 (Figures 4 and 5) depict a bridge footprint at the intersection of the GWR line and the former CVR line (now CPR). The topographic mapping from 1916 and 1938 also appears to identify two tracks along the CP line through the study area. As such, the second phase of the bridge holding the second track was likely constructed prior to 1916. South of the subject bridge and parallel to the GWR line, Grantham Avenue is recorded in 1916 mapping. In the 1938 Topographic Map several building footprints are depicted surrounding Grantham Avenue.

Aerial mapping produced by the Ontario Ministry of Natural Resources in 1954 depicts further development of the area surrounding the subject bridge, however, the resolution is not clear enough to identify the number of rail lines passing through the study area (Figure 6). Topographic mapping produced by the Department of Energy, Mines and Resources in 1968 and 1975 record the CRP rail line consisting of three tracks as it travels over the subject bridge (Figure 7 and 8). As such, the third phase the bridge which added the third track was likely constructed between 1938 and 1968.

4 EXISTING CONDITIONS

4.1 DESCRIPTION OF STRUCTURE

The following descriptions of the structure are based on a site visit conducted on March 21, 2020, by Lauren Walker, Cultural Heritage Specialist. Access to the bridge deck was not possible due to safety concerns. However, the bridge was observed and recorded from the former GWR corridor.

The visual inspection of the bridge confirmed that the Grantham Rail Bridge is a plate girder bridge constructed in three sections as evident by the three different decks and differing abutment materials.

The west and east approach are elevated from the average grade around the bridge, but level with the elevated rail line.



Image 1: View towards the southwest corner of the bridge and west approach.

The abutments are built into the tall earth embankments that raise the bridge to the elevated grade of the rail corridor. The southern portion of the bridge is constructed of coursed ashlar as the cut stones are lined up in rows. The middle and north portions of the abutments are cast-in-place concrete that continue to demonstrate the wood pattern from their molds. An expansion joint demonstrates the concrete abutment was constructed into two phases.

A low ashlar wingwall extends from the east abutment on the south side and acts as a retaining wall.



Image 2: View of the east stone and concrete abutment.



Image 3: View of the east stone abutment and retaining wall, looking north.



Image 4: View of the west stone abutment.



Image 5: Full view of the east abutment.



Image 6: View of the west abutment, note the expansion joint under the bridge deck.



Image 7: View of the east concrete abutment, looking south.



Image 8: View of the stone wingwall attached to the east abutment.



Image 9: View of the stone wingwall.

The south deck structure consists of a steel plate girder deck with steel beams largely obscured on the south side by an extended railing and on the north side by another bridge deck. The stringers are visible underneath the deck and run perpendicularly to the beams.

The middle and north decks are less obscured and consist of individual through plate girder design. The bridge deck is supported between two main plate girders that are rounded at the top corners. Underneath the bridge additional girders and cross girders with bracing in a criss-cross pattern are visible.

A painted metal railing is also attached to the concrete abutments along the approaches to the bridge.



Image 10: View of the bridge decks.

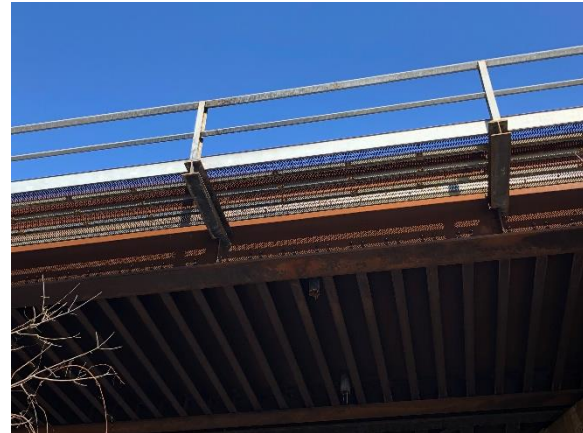


Image 11: Detail of the southern bridge deck and railing.

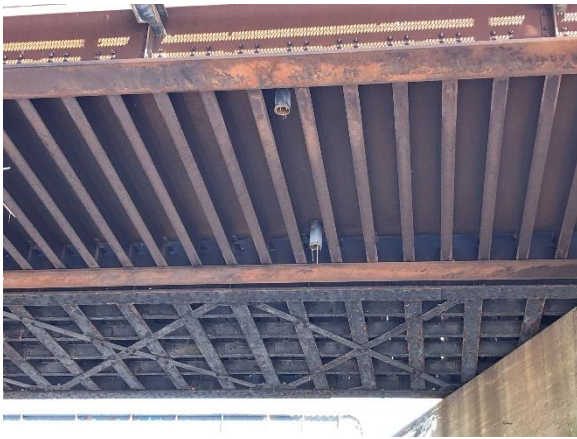


Image 12: View of the soffits of the southern (foreground) and middle (background) bridge decks.



Image 13: View of the middle (foreground) and south (background) bridge decks, looking south.



Image 14: Detail of soffit of middle bridge deck.



Image 15: View of north bridge deck.

4.1.1 DESIGN AND CONSTRUCTION

Structure Name	Grantham Rail Bridge	Road Name	N/A
Municipality	City of Cambridge	Road Type	N/A
Bridge or Culvert	Bridge	Owner	CPR
Structure Type	Plate Girder	Overall Structure Width (m)	Unknown
Span (m)	Unknown	Roadway Width (m)	Unknown
Height (M)	Unknown	Total Deck Length (m)	Unknown
		Total Deck Area (s.m)	Unknown

Direction of Structure	West/East	Heritage Description	None
Year Built/Rehabilitated	Built c.1879 Addition built prior to 1916 Addition built between 1938-1968	Designer/Construction Firm	Unknown
Current Load Limit	Unknown		
Waterway	N/A		

4.2 DESCRIPTION OF STUDY AREA AND LANDSCAPE CONTEXT

The Grantham Rail Bridge is located in the City of Cambridge, Region of Waterloo. The study area consists of the current bridge, approaches to the bridge, and grading associated with the structure and is located just north of Grantham Avenue. The bridge is located along the CP rail line and situated in a small wooded area surrounded by residential properties along Samuelson Street and commercial properties along Grantham Avenue in the former Town of Galt in the City of Cambridge.

5 CULTURAL HERITAGE EVALUATION



5.1 COMPARATIVE ANALYSIS

A comparative analysis was undertaken to establish a baseline understanding of similar bridges in the general vicinity of the subject bridge, and to determine if the materials, bridge type, or size is uncommon within the region. As the Grantham Rail was constructed by the CVR and is owned by CP, a comparative list of examples from CP's bridge inventory is preferred, however, at the time of writing no response was received to the data request sent to CP (see Section 2.3). As such, the five closest bridges along the same original CVR Milton line as the subject bridge were used for comparative analysis (Table 2).

Of the five structures reviewed, three are plate girder bridges although one is specifically a half-through plate girder bridge, one includes a plate girder section two spans long and a truss section five spans long and the remaining bridge is a box girder structure. Four of the five structures have ashlar stone abutments and one has concrete abutments. The four structures with ashlar stone abutments all display a similar coursed stone construction method. Four of the five structures also have decks primarily constructed of steel using the riveted construction method.

The comparative analysis suggests that plate girder bridges with stone abutments are not rare in the City of Cambridge, nor does the Grantham Rail bridge display a unique interpretation of this design. However, the analysis does reveal a uniform construction method for the ashlar stone abutments used for the rail bridges constructed c.1879 along the Milton CVR line. Furthermore, it demonstrates the historical connection of these bridges that remain as a collection from the original Milton CVR line.




Table 2: Comparative Bridge Examples

BRIDGE LOCATION	PHOTO	STRUCTURE TYPE	MATERIAL	AGE
		Box girder bridge	- Reinforced Concrete	Unknown
		Half through plate girder bridge	- Steel - Ashlar stone abutments and wingwalls - Riveted construction	c.1879

BRIDGE
LOCATION PHOTO

STRUCTURE
TYPE

MATERIAL AGE

		<p>Plate girder bridge (two spans) and truss bridge (5 spans)</p>	<ul style="list-style-type: none"> - Steel deck - Ashlar stone abutments - Riveted construction 	<p>c. 1879</p>
		<p>Plate girder bridge</p>	<ul style="list-style-type: none"> - Steel - Ashlar stone abutments - Riveted or bolted construction 	<p>c.1879</p>
		<p>Plate girder bridge</p>	<ul style="list-style-type: none"> - Steel deck - Ashlar stone abutments - Riveted construction 	<p>c.1879</p>

5.2 ONTARIO REGULATION 9/06 EVALUATION

O. Reg. 9/06 of the OHA provides criteria for determining whether a property has cultural heritage value or interest. If a property meets one or more of the criteria in O. Reg. 9/06, a property is eligible for designation under the OHA. Table 3 presents the evaluation of the subject structure using O. Reg. 9/06.

Table 3 – Ontario Regulation 9/06 Evaluation

CATEGORY	CRITERIA	Y/N	COMMENTS
Design/Physical Value	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	Y	The subject structure is a single span plate girder bridge carrying three rail tracks over the former GWR rail line in the City of Cambridge. The oldest portion of the bridge dates back to c.1879, but the deck was replaced, likely after the 1960s given its bolted construction. The comparative analysis revealed that the Grantham Rail Bridge does not demonstrate a representative example of a plate girder bridge built for the CVR c.1879 given the other examples displayed not only have stone abutments but steel plate girder decks using the riveted construction method. The analysis does, however, reveal that the Grantham Rail Bridge provides a representative example of the construction method for the stone abutments that was used for original bridges across the CVR's Milton line. The stone abutments are of ashlar stone, arranged in rows and demonstrate a slight taper upwards. Lastly, the comparative analysis revealed that the subject bridge is neither a rare, unique or early example of a plate girder bridge, nor of an expression, material or construction method. Therefore, the Grantham Rail Bridge meets this criterion.
	Displays a high degree of craftsmanship or artistic merit	N	The subject structure does not have any elements that display a high degree of craftsmanship or artistic merit. Therefore, the Grantham Rail Bridge does not meet this criterion.
	Demonstrates a high degree of technical or scientific achievement	N	The structure does not demonstrate a high degree of technical or scientific achievement. Therefore, the Grantham Rail Bridge does not meet this criterion.

Historical/ Associative Value	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community	N	The Grantham Rail Bridge is associated with the construction of the CVR's Milton line constructed c.1879. However, the subject structure is one of many bridges along the rail line and is not considered more significant than any of these other bridges. Therefore, the Grantham Rail Bridge does not meet this criterion.
	Yields, or has the potential to yield, information that contributes to an understanding of a community or culture	N	The structure does not contribute to the understanding of a community or culture. Therefore, the Grantham Rail Bridge does not meet this criterion.
	Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community	N	The subject structure is not associated with a designer. Therefore, the Grantham Rail Bridge does not meet this criterion.
Contextual Value	Is important in defining, maintaining or supporting the character of an area	N	The subject structure is not visible from the nearby streets, and therefore is not important in defining, maintaining or supporting the character of the area. Therefore, the Grantham Rail Bridge does not meet this criterion.
	Is physically, functionally, visually or historically linked to its surroundings	Y	The subject structure is not physically, functionally, visually linked to its surroundings, however, it is considered historically linked to its surroundings. The Grantham Rail Bridge is one of at least four remaining original bridges constructed along the CVR's Milton line c.1879. Therefore, the Grantham Rail Bridge does meet this criterion.
	Is it a landmark	N	The Grantham Rail Bridge is not considered a landmark.

5.3 EVALUATION UNDER THE CITY OF CAMBRIDGE'S CRITERIA

Under Section 4.4(1) of the City of Cambridge's Official Plan, the City adopted specific evaluation criteria to determine whether a property has cultural heritage value or interest. If a property satisfies at least two of the criteria it shall be considered to have cultural heritage value or interest. Table 4 identifies how the subject property is evaluated in accordance with the City's criteria.

Table 4 – Evaluation under the City of Cambridge’s Criteria for Cultural Heritage Value or Interest

CRITERIA	Y/N	COMMENTS
i) it dates from an early period in the development of the city’s communities;	N	Early development in Galt began in the 1810s and 1820s with the arrival of William Dickson. As such, the subject bridge does not date from an early period in the development of Galt.
ii) it is a representative example of the work of an outstanding local, national or international architect, engineer, builder, designer, landscape architect, interior designer, sculptor, or other artisan and is well preserved or may be rehabilitated;	N	The Grantham Rail Bridge is not associated with the design of any engineer or builder. As such, this criterion is not satisfied.
iii) it is associated with a person who is recognized as having made an important contribution to the city’s social, cultural, political, economic, technological or physical development or as having materially influenced the course of local, regional, provincial, national or international history;	N	The subject bridge is not associated with any significant person whom has made a lasting contribution to the city or influenced the course of local, regional, provincial, national or international history.
iv) it is directly associated with an historic event which is recognized as having local, regional, provincial, national or international importance;	N	The subject bridge is not associated with any recognized historic event. As such, this criterion is not satisfied.
v) it is a representative example and illustration of the city’s social, cultural, political, economic or technological development history;	N	The subject bridge is not known to represent any social, cultural, political, economic or technological development history. As such, this criterion is not satisfied.
vi) it is a representative example of a method of construction now rarely used;	Y	The Grantham Rail Bridge’s use of stone ashlar abutments is a representative example of early bridge construction which is now rarely used.
vii) it is a representative example of its architectural style or period of building;	Y	The comparative analysis revealed that the Grantham Rail Bridge demonstrates the same construction method for its stone abutments as at least four other bridges originally constructed along the CVR Milton line. As such, the construction of the abutments does provide a representative example of railway construction in the late nineteenth century. As such, this criterion is satisfied.

viii) it is a representative example of architectural design;	N	The subject bridge is not known to be of a specific architectural or bridge design. As such, this criterion is not satisfied.
ix) it terminates a view or otherwise makes an important contribution to the urban composition or streetscape of which it forms a part;	Y	The bridge is one of several original bridges along the former CVR's Milton line, as such it makes an important historical contribution not to the streetscape, but rather to the former CVR's Milton line that crosses through the City of Cambridge. As such, this criterion is satisfied.
x) it is generally recognized as an important landmark;	N	The subject bridge is not known as a landmark. As such, this criterion is not satisfied.
xi) it is a representative example of outstanding interior design; or	N/A	
xii) it is an example of a rare or otherwise important feature of good urban design or streetscaping.	N	The subject bridge is not considered a rare or important feature of good urban design or streetscaping.

5.4 DISCUSSION OF INTEGRITY

According to the Ontario Heritage Toolkit, Heritage Property Evaluation (MHSTCI, 2006), *“Integrity is a question of whether the surviving physical features (heritage attributes) continue to represent or support the cultural heritage value or interest of the property.”* The following discussion of integrity was prepared to consider the ability of the property to represent and retain its cultural heritage value over time. It does not consider the structural integrity of the building, or the overall condition of the building. Structural integrity, should it be identified as a concern, should be determined by a qualified heritage engineer, building scientist, or architect.

The subject bridge retains the original stone abutments constructed c.1879, however, the bridge deck supported by the stone abutments was replaced sometime after 1960 given its bolted construction. The bridge was added to at least twice. A concrete abutment and a half-through plate girder deck were added immediately north of the original structure sometime prior to 1916 to allow a second rail track to cross. A third rail track was added immediately north of the earlier pre-1916 addition between 1938 and 1968 which required the construction of another concrete abutment and a half through plate girder deck. While the original bridge has been added onto and the original bridge deck replaced, the bridge is still considered to retain the integrity of its original built character given that the stone abutments remain intact and with the understanding that replacement of bridge decks when they reach the end of their usable life is common practice.

6 CONCLUSIONS

Based on the results of research, site investigation, and application of the criteria in O. Reg. 9/06, the Grantham Rail Bridge has cultural heritage value or interest. Accordingly, the following Statement of Cultural Heritage Value or Interest and list of Attributes has been prepared.

6.1 STATEMENT OF CULTURAL HERITAGE VALUE OR INTEREST

6.1.1 DESCRIPTION OF RESOURCE

The Grantham Rail Bridge is located along the historic Credit Valley Milton line just north of the north end of Grantham Avenue in the former Town of Galt, in the City of Cambridge. The bridge's substructure is considered to possess cultural heritage value or interest.

6.1.2 CULTURAL HERITAGE VALUE OR INTEREST

Originally constructed c.1879 by Credit Valley Railway along their Milton line, the Grantham Rail Bridge crossed over the Great Western Railway's Galt Branch. As one of at least four remaining original bridges built for the Credit Valley Railway, the Grantham Rail Bridge has a historical connection with the former rail line and the original bridges along the former CVR rail line.

In addition, the remaining bridges along the former CVR rail demonstrate similar construction methods with ashlar abutments supporting plate girder decks. The Grantham Rail Bridge provides a representative example of the stone abutment construction that was used across the former CVR's Milton Line. The original portions of the abutment on the Grantham Rail Bridge are of ashlar stone arranged in rows with a slight upwards taper.

6.2 DESCRIPTION OF HERITAGE ATTRIBUTES

The heritage attributes that reflect the cultural heritage value of the subject structure include:

- Single span length;
- Ashlar stone abutments constructed c.1879 with the stones arranged in rows and a slight upwards taper; and,
- Intact alignment of the of the former CVR's Milton line established c.1879.

7 RECOMMENDATIONS

The Grantham Rail Bridge is a plate girder bridge that was built in three phases for three rail tracks to cross over a former GWR line traveling north-south. The original portion of the bridge was constructed c.1879 and includes the original stone abutments; later additions to the bridge include concrete abutments and plate girder decks.

Based on the results of the research, site investigation and application of the criteria in O. Reg. 9/06 it was determined that Grantham Rail Bridge does have cultural heritage value or interest. As such a Heritage Impact Assessment is required.

The completion of this study has resulted in the following recommendations:

- 1 The Grantham Rail Bridge was determined to have cultural heritage value or interest. Therefore, a Heritage Impact Assessment is required for this resource to identify appropriate mitigation measures.

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APPENDIX


A HISTORICAL MAPPING

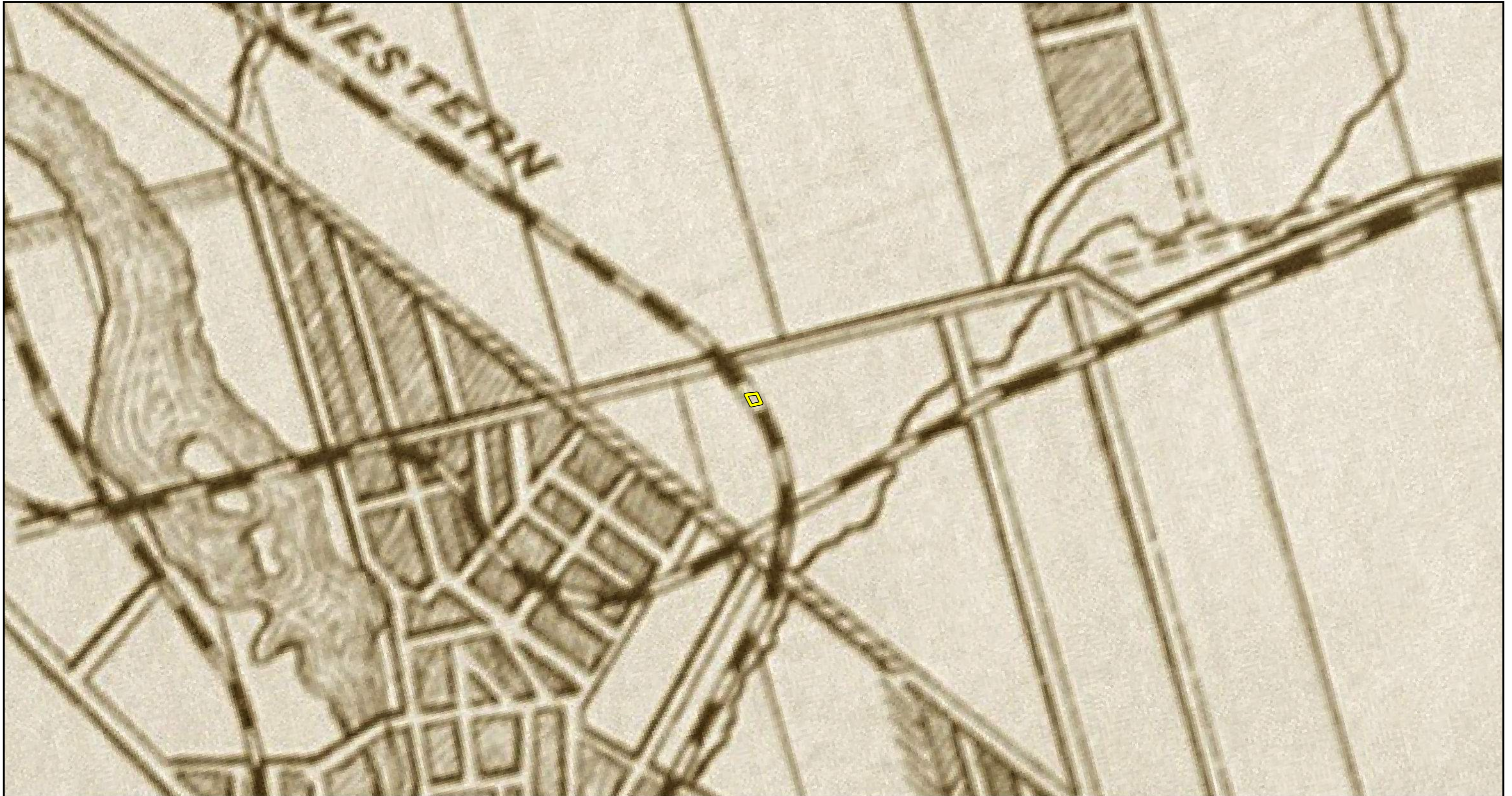





LEGEND

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 Study Area

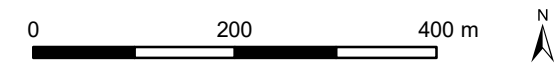
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FIGURE 3: 1881 HISTORICAL MAPPING

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DRAWN BY: AST	CLIENT: REGIONAL MUNICIPALITY OF WATERLOO
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PROJECT:
GRANTHAM RAIL BRIDGE CHER


CREDITS:
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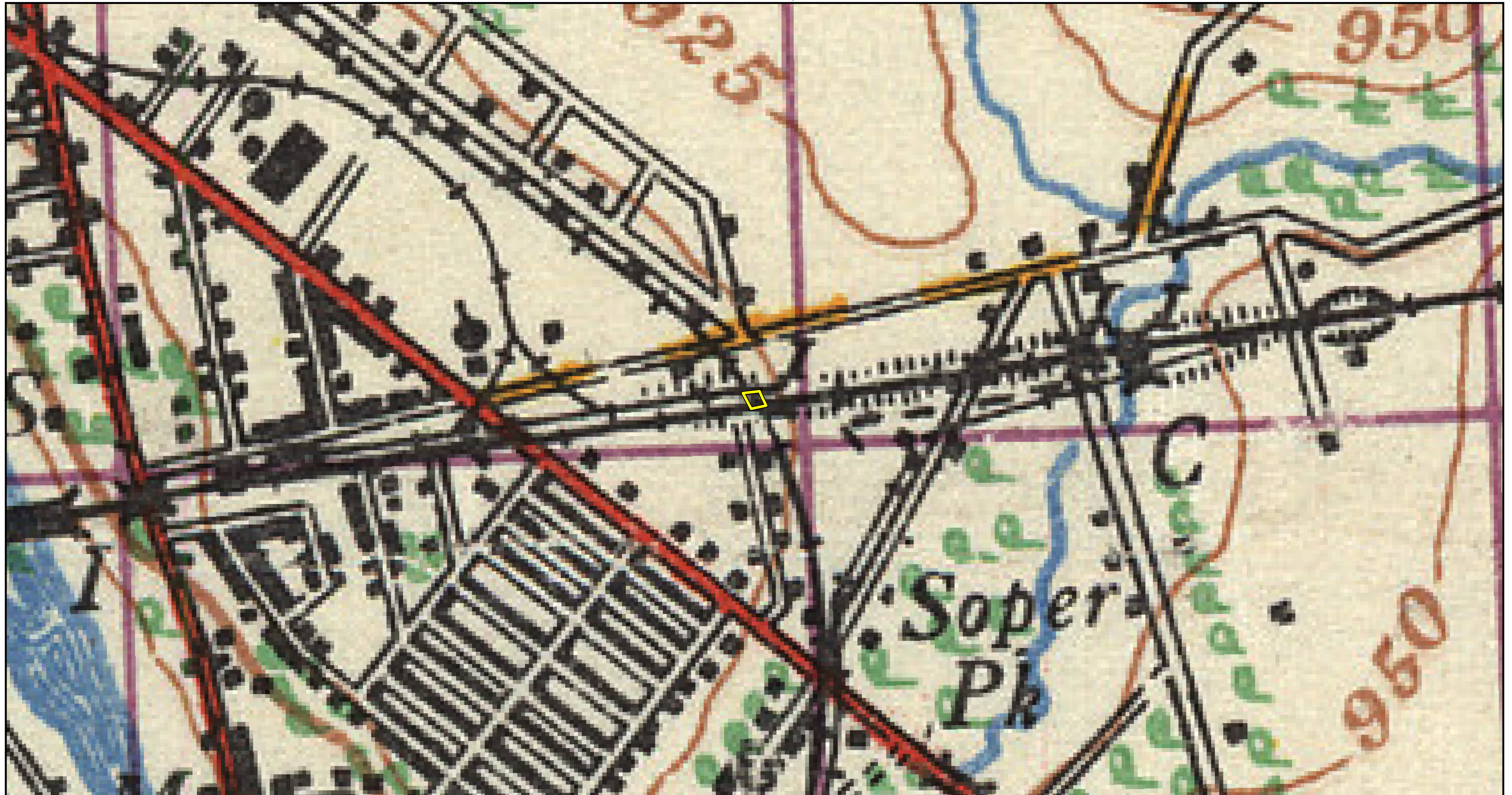





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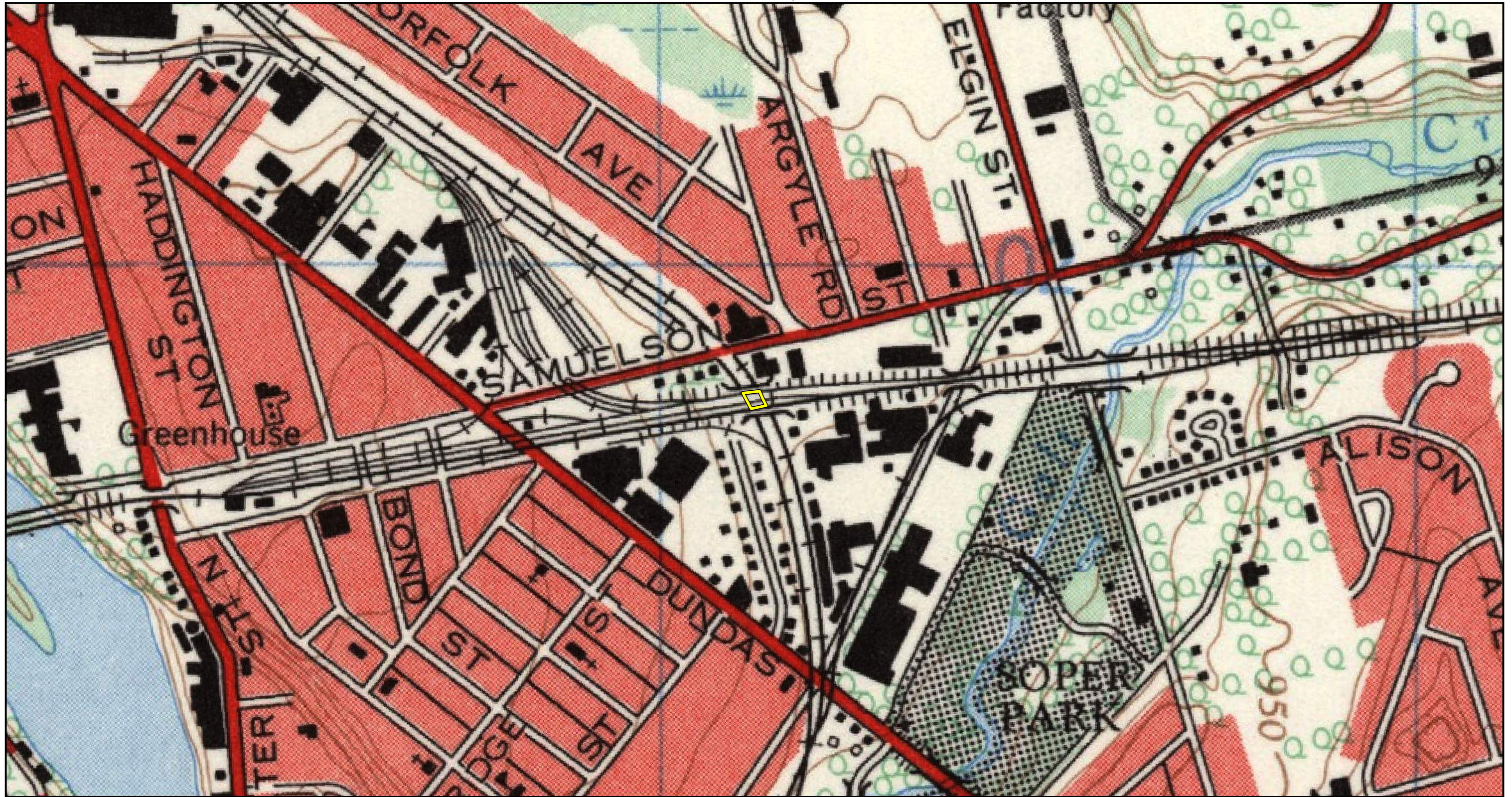
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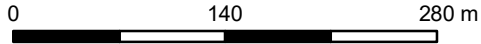
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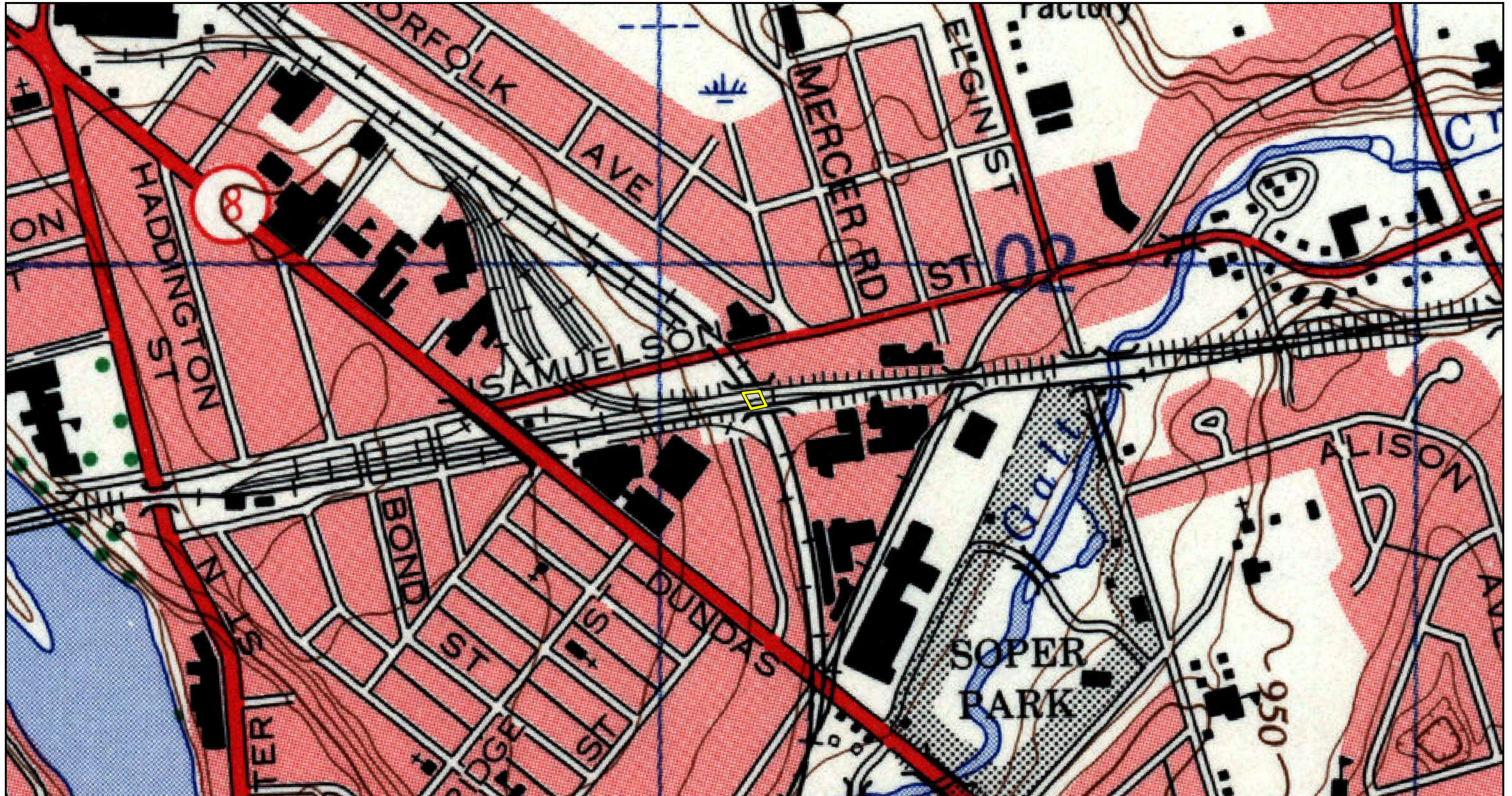
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LEGEND

 Study Area

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LEGEND

 Study Area

TITLE:
FIGURE 8: 1975 TOPOGRAPHIC MAP, GALT

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PROJECT:
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CREDITS:
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AND RESOURCES, 1975, SHEET
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