Township of Woolwich
Heritage Committee
Agenda

January 18, 2023
5:00 p.m. - 6:00 p.m.
Video Conference - Internal

Chair: To Be Determined

Access Details
Meeting Link
Meeting ID: 894 4250 8289
Passcode: 068142
Toll-Free: 855-703-8985

Pages

1. Land Acknowledgement

   The land on which we meet has been here from time immemorial. People have inhabited southern Ontario for about 10,000 years and we acknowledge the Neutral people also called Attawandaron, Anishinaabe, and Haudenosaunee Peoples who lived here when settlers arrived and who share this land with us. May we together learn to care for and respect each other, our flora and fauna, and the land we inhabit together.

2. Call to Order

3. Disclosure of Pecuniary Interest

4. Adoption of Minutes 1

5. Outstanding Activity List

6. New Business

   6.1 Appointment of 2023 Meeting Chair and Co-Chair

   6.2 2023 Heritage Committee Meeting Schedule 4

   (attachment for reference only)

   6.3 2023 Committee Recruitment Process

Township of Woolwich
Heritage Committee Minutes

November 9, 2022
Virtual – Zoom Meeting
From 5:00 to 5:42 p.m.

Meeting Chair:	Councillor Patrick Merlihan (Chair)
Attended:	Bonnie Bryant (Co-Chair) Colleen Willard-Holt Hans Pottkamper Karen Cummings* Kim Hodgson* Marg Drexler*
Staff Present:	David Gundrum, Planner Robyn Koutrouliotis, Licensing Officer/Administrative Assistant
Regrets:	Martin England

CALL TO ORDER at 5:00 P.M.

LAND ACKNOWLEDGEMENT

Chair Patrick Merlihan read a land acknowledgement.

DISCLOSURE OF PECUNIARY INTEREST

None.

ADOPTION OF MINUTES

Moved by Colleen Willard-Holt
Seconded by Hans Pottkamper
That the minutes of October 5, 2022 be adopted as presented.

…Carried.

OUTSTANDING ACTIVITY LIST as of November 4, 2022

The Committee reviewed the Outstanding Activity List.

Heritage Plaques

David Gundrum, Planner, provided an update on the remaining properties: one property owner confirmed interest in the plaque installation, one declined, and the remainder have not responded.

Action: D. Gundrum will send follow-up correspondence to the outstanding property owners.

Heritage Walking/Driving Tours

Chair Merlihan noted this item must be reassigned.

** Kim Hodgson entered the meeting.*

Ghost Community Signage

D. Gundrum noted the cost quote from the Region's sign shop has not yet been received.

Action: The Committee requested D. Gundrum confirm that funding for the project has been included in the Committee's 2023 budget request.

NEW BUSINESS

Committee Membership Update

Chair Merlihan noted this will be his last meeting as a member of the Committee. The Committee thanked Chair Merlihan for his service.

2023 Committee Recruitment

D. Gundrum and Robyn Koutrouliotis, Licensing Officer/Administrative Assistant, provided an overview of the application process for the Committee's next term.

* *Karen Cummings entered the meeting.*

Ghost Community Map Viewer and Research

D. Gundrum provided an update on the project. The Committee expressed appreciation for the module's layout and ease of navigation.

Action: Additional content can be circulated to Lisa Atkinson, GIS Technician, when available.

* *Marg Drexler entered the meeting.*

Heritage Registry Report

D. Gundrum outlined the items covered in the report and relevant deadlines; the report is scheduled to go before Council on December 12.

The Committee discussed the potential inclusion of comprehensive background on heritage matters as part of the report and/or a separate presentation to Council on both the Committee's role and heritage matters in the Township.

Action: D. Gundrum will circulate the draft report to the Committee.

Action: Committee members wishing to provide additional information for the background and/or preamble of the report can do so prior to November 18.

Impacts of Bill 23

D. Gundrum noted potential impacts of Bill 23, if passed.

Action: D. Gundrum will circulate a list of designated, registered, listed, and candidate properties to the Committee.

Identifying Candidate Properties

The Committee discussed the candidate property identification process.

OTHER BUSINESS

Ghost Community Map Viewer and Research, continued

The Committee discussed adding English translations for community names to the Map Viewer.

Action: The Committee requested D. Gundrum liaise with K. Hodgson and M. Drexler regarding outstanding content additions to the Map Viewer.

Action: M. Drexler will undertake additional research on the Freiburg and Weissenburg communities.

Greenhouse Road Bridge

K. Hodgson noted the Greenhouse Road Bridge content has been circulated for the Committee's feedback.

St. Boniface School

M. Drexler noted work is being done at the former St. Boniface school in Maryhill. The Committee discussed the required preservation of designated attributes.

Action: D. Gundrum will circulate the relevant designation by-law to the Committee to identify protected features.

ADJOURNMENT

Moved by K. Cummings
Seconded C. Willard-Holt

That the meeting be adjourned.

…Carried.

2023 MEETING SCHEDULE

JANUARY

S	M	T	W	T	F	S
1	(2)	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

FEBRUARY

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	(20)	21	22	23	24	25
26	27	28				

MARCH

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

APRIL

S	M	T	W	T	F	S
						1
2	3	4	5	6	(7)	8
9	(10)	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

MAY

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	(22)	23	24	25	26	27
28	29	30	31			

JUNE

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

JULY

S	M	T	W	T	F	S
						1
2	(3)	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

AUGUST

S	M	T	W	T	F	S
		1	2	3	4	5
6	(7)	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

SEPTEMBER

S	M	T	W	T	F	S
					1	2
3	(4)	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

OCTOBER

S	M	T	W	T	F	S
1	(2)	3	4	5	6	7
8	(9)	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

NOVEMBER

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

DECEMBER

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	(25)	(26)	27	28	29	30
31		Jan. 2				

LEGEND:

◯ Holiday

● AMO Conference

Committee of the Whole - 7 p.m.

Televised Council - 7 p.m.

Special Council

Council - 7 p.m.

Special Council - Budget

Special Council - Planning

From: [redacted]
To: [redacted]
Cc: [redacted]
Subject: Floradale Road Bridge and Pine Creek Bridge
Date: December 6, 2022 8:22:35 AM
Attachments: 22CH-114 Floradale Rd Bridge CHER_draft_30Nov2022.pdf
2021 OSIM Form - Structure 040106 Floradale Road.pdf
2021 OSIM Form - Structure 380164 Pine Creek Road.pdf

Good morning Members of Heritage Committee,

In September of 2022, the Township of Woolwich awarded the 2022 Bridge and Culvert Program to GM BluePlan Engineering to act as our engineering consultant.

The 2022 Bridge and Culvert Program includes two bridge replacement projects which may be of interest to the Committee.

The following is information relating to the bridge projects which are anticipated to occur in 2024 and 2025:

Structure 040106 – Floradale Road

- On Floradale Road located approximately 850 metres north of Cedar Spring Road;
- Single span cast-in-place concrete rigid frame bridge constructed approximately 1940;
- Carries traffic over an unnamed tributary of the Canagagigue Creek ;
- Currently exhibits a 15 Tonne Maximum load limit;
- Roadway at the bridge is only 6.2 metres wide – Township recommended standard is two 3.35m lanes (6.7m) with two 1.0m wide shoulders (2.0m), for a total width of 8.7m;
- Draft Cultural Heritage Evaluation Report completed by Archaeological Services Inc. (ASI) in November of 2022 determined the structure "...does not have cultural heritage value or interest and does not have physical/design, historical/associative, or contextual value in the local context". A copy of the draft report is attached – please feel free to share this with the Committee.
- Township plans to replace this structure during the 2024 construction season.

-

Structure 380164 – Pine Creek Road

- On Pine Creek Road approximately 350m east of St. Charles Street East
- Single span cast-in-place concrete rigid frame bridge constructed approximately 1938
- Carries traffic over Hopewell Creek
- Currently exhibits a 10 Tonne Maximum load limit;
- Roadway at the bridge is only 6.2 metres wide
- Project is in the preliminary stages – CHER investigation has not been completed yet
- Environmental Assessment will determine the preferred alternative – should replacement be the preferred alternative, Township would place to construct the new bridge during the 2025 construction season.

We will place these items for further discussion on our January meeting Agenda and certainly feel free to forward any questions on the projects to Township staff.

Please see the attached files for additional information.

Sincerely,

David Gundrum, RPP
Planner, Development Services
Township of Woolwich

24 Church Street West, P.O. Box 158
Elmira, Ontario N3B 2Z6

Phone: (519) 669-1647 ext. 6033
Toll Free: 1-877-969-0094 ext. 6033
Cell: 226-750-3678
Fax - (519) 669-4669
Email – [redacted]
Website - www.woolwich.ca

The Administration Office is **open to walk-in public traffic**, with staff working a mix of in office and from home. It is recommended to book an appointment before visiting the office to ensure we are available to assist you. A number of our services can be accessed through our website, by email or by telephone.

Ontario Structure Inspection Manual - Inspection Form

MTO Site Number: 040106

Structure Name: Bridge 040106 | Structure ID: 040106

Inventory Data:

Structure Name	Bridge 040106				
Hwy/Road Name	Floradale Road	Crossing Type: On:	NonNavWater	Under:	Road
MTO Site Number	040106	Main Hwy/Road #			
Structure Location	410m south of Sideroad 18				
Latitude (decimal degrees)	43.67497	Longitude (decimal degrees)	-80.57313		
Owner 1:	Township of Woolwich	100%	Owner 2:		0%
Region	Southwestern	Heritage:	Not Cons ☑	Cons Not/App ☐	List/Not Desig ☐
District	London/Stratford	Designation:		Desig Not List ☐	Desig List ☐
Old County	Waterloo	Road Class:	Freeway ☐	Arterial ☐	Collector ☐ Local ☑
Geographic Twp	Woolwich	No. of Lanes	2	Posted Speed	80 (km/h)
Structure Type	Rigid Frame, Vertical Legs	AADT	1,549	Trucks	5.00 (%)
Total Deck Length	7.3 (m)	Estimated Replacement Value:	$800,000		
Overall Str Width	6.9 (m)	Replacement Value is based on like-for-like replacement using typical costs for budget purposes only.			
Total Deck Area	50.4 (sq m)	Min. Vertical Clearance			(m)
Roadway Width	6.2 (m)	Special Routes:	Transit ☐	Truck ☐	School ☐ Bicycle ☐
Skew Angle	0.0 (deg)	Detour Length			(km)
No. of Spans	1	Direction of Structure	North/South		
Span Lengths	6.1 (m)	Fill on Structure	0.3 (m)		

Historical Data:

Year Built	1940 (yyyy)	Year of Last Rehab	2010 (yyyy)		
Last OSIM Inspection	10/25/2019 (mm/dd/yyyy)	Last Evaluation	2019 (mm/dd/yyyy)		
Last Enhanced OSIM Inspection	(mm/dd/yyyy)	Current Load Limit	15 (tonnes)		
Enhanced Access Equipment (ladder, boat, lift, etc)		Load Limit By Law			
		By Law expiry Date			
Last Condition Survey	(mm/dd/yyyy)	Last underwater Inspection	(mm/dd/yyyy)		

Rehabiliation History:

Date	Type	Description
2010	Rehab	Barrier and curb replacement, new guide rail

Ontario Structure Inspection Manual - Inspection Form

MTO Site Number: 040106

Structure Name: Bridge 040106

Structure ID: 040106

Field Inspection Information:

Date of Inspection:	10/18/2021 (mm/dd/yyyy)	Inspection Type:	OSIM
Inspector:	LF	Weather:	Overcast
Others in Party:	TQ	Temperature ^{o}C:	15
Equipment Used:	Measuring tape, hammer, camera		

Additional Investigations Required:

	Priority			Estimated Cost
	None	Normal	Urgent	
Detailed Deck Condition Survey	☑	☐	☐	$0
Non-destructive Delam. Survey of Asphalt-Covered Deck	☑	☐	☐	$0
Concrete Substructure Condition Survey	☑	☐	☐	$0
Detailed Coating Condition Survey	☑	☐	☐	$0
Detailed Timber Investigation	☑	☐	☐	$0
Post-Tensioned Strand Investigation	☑	☐	☐	$0
Underwater Investigation	☑	☐	☐	$0
Fatigue Investigation	☑	☐	☐	$0
Seismic Investigation	☑	☐	☐	$0
Structure Investigation	☑	☐	☐	$0
Monitoring Deformations, Settlements, Movements	☑	☐	☐	$0
Monitoring Crack Widths	☑	☐	☐	$0
			Total Cost:	**$0**

Investigation Notes:

Overall Structure Notes:

Overall Comments:	Structure is in overall fair condition due to its age and presence of a load limit. Replacement is recommended due to presence of load limit and narrow structure causing safety concerns for horse and buggy traffic. Maintenance work required.		
BCI:	70	Recommended Work:	Replace
Next Inspection:	2023	Recommended Work Time:	1-5yr

Suspected Performance Deficiencies

00 None
01 Load carrying capacity
02 Excessive deformations (deflections & rotations)
03 Continuing settlement
04 Continuing movements
05 Seized bearings
06 Bearing not uniformly loaded/unstable
07 Jammed expansion joint
08 Pedestrian/vehicular hazard
09 Rough riding surface
10 Surface ponding
11 Deck drainage
12 Slippery surface
13 Flooding/channel blockage
14 Undermining of foundation
15 Unstable embankments
16 Other

Maintenance Needs

01 Lift & Swing Bridge Maintenance
02 Bridge Cleaning
03 Bridge Handrail Maintenance
04 Painting Steel Bridge Structures
05 Bridge Deck Joint Repair
06 Bridge Bearing Maintenance
07 Repair to Structural Steel
08 Repair to Bridge Concrete
09 Repair to Bridge Timber
10 Bailey Bridges - Maintenance
11 Animal/Pest Control
12 Bridge Surface Repair
13 Erosion Control at Bridges
14 Concrete Sealing
15 Rout and Seal
16 Bridge Deck Drainage
17 Scaling (Loose Concrete or ACR Steel)
18 Other

Element Group:	**Abutments**	Length:	0.00
Element Name:	**Abutment Walls**	Width:	6.80
Location:	Each end	Height:	1.40
Material:	Cast-in-Place Concrete	Count:	2.0
Element Type:	Legs of Rigid Frame	Total Quantity:	19.0
Element Subtype:		Environment:	Benign
Protection System:	None	Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	sq.m.	0.0	15.1	3.5	0.4	

Comments: 3 wall drains per side; Erosion around drains; Narrow vertical stained cracks; Light to medium scaling

Maintenance Priority: | Needs: 0 | Desc.:

Recommended Work | Timing: | Details:

Element Group:	**Abutments**	Length:	3.65
Element Name:	**Wingwalls**	Width:	0.00
Location:	Each quadrant	Height:	0.90
Material:	Cast-in-Place Concrete	Count:	4.0
Element Type:	Reinforced Concrete	Total Quantity:	13.1
Element Subtype:		Environment:	Benign
Protection System:	None	Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	sq.m.	0.0	9.4	3.7	0.0	

Comments: Patched sections from rehabilitation; Light to medium honeycombing and scaling

Maintenance Priority: | Needs: 0 | Desc.:

Recommended Work | Timing: | Details:

Element Group:	**Accessories**	Length:	0.00
Element Name:	**Signs**	Width:	0.00
Location:		Height:	0.00
Material:	Steel	Count:	8.0
Element Type:	-	Total Quantity:	8.0
Element Subtype:		Environment:	Severe
Protection System:	Hot dip galvanizing	Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	Each	0.0	8.0	0.0	0.0	

Comments: 4 hazard, 2 narrow bridge, 2 load posting

Maintenance Priority: | Needs: 0 | Desc.:

Recommended Work | Timing: | Details:

Element Group:	**Approaches**	Length:	6.00
Element Name:	**Wearing Surface**	Width:	6.20
Location:	Each approach	Height:	0.00
Material:	Asphalt	Count:	2.0
Element Type:	-	Total Quantity:	74.4
Element Subtype:		Environment:	Severe
Protection System:	None	Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	sq.m.	0.0	72.4	2.0	0.0	

Comments: Light sealed cracks along centreline; SW lane has light longitudinal sealed cracks; Light settlement at north and south

Maintenance Priority: Needs: 0 Desc.:

Recommended Work Timing: Details:

Element Group:	**Barriers**	Length:	62.40
Element Name:	**Railing Systems**	Width:	0.00
Location:	Each side	Height:	0.80
Material:	Steel	Count:	2.0
Element Type:	Steel Flex Beam on Steel Post	Total Quantity:	124.8
Element Subtype:		Environment:	Severe
Protection System:	Hot dip galvanizing	Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	m	0.0	114.8	3.0	7.0	

Comments: Crooked post on NE approach; Light abrasions on NW; Three rotated offset blocks at east rail, one rotated offset block at west rail; Southeast and southwest attenuators are damaged

Maintenance Priority: 1 Year Needs: 17 Desc.: Repair southeast and southwest impact attenuators

Recommended Work Timing: Details:

Element Group:	**Decks**	Length:	7.30
Element Name:	**Deck Top**	Width:	6.90
Location:	All	Height:	0.00
Material:	Cast-in-Place Concrete	Count:	1.0
Element Type:	Cast-in-place Concrete on Supports	Total Quantity:	50.4
Element Subtype:		Environment:	Moderate
Protection System:	None	Limited Inspection:	☑

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	sq.m.	0.0	50.4	0.0	0.0	

Comments: Not visible; Assumed in good condition based on lack of bottom-up defects

Maintenance Priority: Needs: 0 Desc.:

Recommended Work Timing: Details:

Element Group:	**Decks**	Length:	6.10
Element Name:	**Soffit - Thick Slab**	Width:	1.70
Location:	Exterior	Height:	0.00
Material:	Cast-in-Place Concrete	Count:	2.0
Element Type:	-	Total Quantity:	20.7
Element Subtype:		Environment:	Moderate
Protection System:	None	Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	sq.m.	0.0	20.7	0.0	0.0	

Comments: Narrow transverse and vertical cracks; Exterior soffit fully patched at both sides

Maintenance Priority: Needs: 0 Desc.:

Recommended Work Timing: Details:

Element Group:	**Decks**	Length:	6.10
Element Name:	**Soffit - Thick Slab**	Width:	4.90
Location:	Interior	Height:	0.00
Material:	Cast-in-Place Concrete	Count:	1.0
Element Type:	-	Total Quantity:	29.9
Element Subtype:		Environment:	Benign
Protection System:	None	Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	sq.m.	0.0	22.6	5.7	1.6	

Comments: Medium to severe spalls and delamination with exposed and corroded rebar; Narrow longitudinal and transverse cracks; Hairline wet pattern cracking throughout; embedded wood forms along centerline

Maintenance Priority: Needs: 0 Desc.:

Recommended Work Replace Timing: 1-5 Years Details: Replace structure

---

Element Group:	**Decks**	Length:	7.30
Element Name:	**Wearing Surface**	Width:	6.20
Location:	Over structure	Height:	0.00
Material:	Asphalt	Count:	1.0
Element Type:	-	Total Quantity:	45.3
Element Subtype:		Environment:	Severe
Protection System:	None	Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	sq.m.	0.0	44.6	0.7	0.0	

Comments: Longitudinal sealed crack along west edge

Maintenance Priority: Needs: 0 Desc.:

Recommended Work Timing: Details:

Element Group:	**Embankments & Streams**	Length:	0.00
Element Name:	**Embankments**	Width:	0.00
Location:	Each quadrant	Height:	0.00
Material:	Soil	Count:	4.0
Element Type:	-	Total Quantity:	4.0
Element Subtype:		Environment:	Benign
Protection System:		Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	Each	0.0	4.0	0.0	0.0	

Comments:

Maintenance Priority: Needs: 0 Desc.:

Recommended Work Timing: Details:

Element Group:	**Embankments & Streams**	Length:	0.00
Element Name:	**Streams and Waterways**	Width:	0.00
Location:	All	Height:	0.00
Material:	Other	Count:	1.0
Element Type:	-	Total Quantity:	1.0
Element Subtype:		Environment:	Benign
Protection System:		Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	All	0.0	1.0	0.0	0.0	

Comments: Large slab from rehab in front of south abutment

Maintenance Priority: Needs: 0 Desc.:

Recommended Work Timing: Details:

Element Group:	**Foundations**	Length:	0.00
Element Name:	**Foundation (below ground level)**	Width:	0.00
Location:	All	Height:	0.00
Material:	Cast-in-Place Concrete	Count:	0.0
Element Type:	Unknown	Total Quantity:	0.0
Element Subtype:		Environment:	Benign
Protection System:		Limited Inspection:	☑

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	All	0.0	0.0	0.0	0.0	

Comments: Not visible; Assumed in good condition based on lack of settlement defects

Maintenance Priority: Needs: 0 Desc.:

Recommended Work Timing: Details:

Ontario Structure Inspection Manual - Inspection Form

MTO Site Number: 040106

Structure Name: Bridge 040106

Structure ID: 040106

Element Group:	**Sidewalks/Curbs**	Length:	13.20
Element Name:	**Curbs**	Width:	0.30
Location:	Each side	Height:	0.12
Material:	Cast-in-Place Concrete	Count:	2.0
Element Type:	-	Total Quantity:	11.1
Element Subtype:		Environment:	Severe
Protection System:	None	Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	sq.m.	0.0	10.1	0.6	0.4	

Comments: Narrow transverse cracks throughout; Light spalls throughout; Medium spalls at NW and SE corners; Light scaling throughout interior face

Maintenance Priority: | Needs: 0 | Desc.:

Recommended Work | Timing: | Details:

Repair / Rehabilitation Required

Element Group	Element	Repair / Rehabilitation	Priority	Const Cost
Decks	Soffit - Thick Slab	Replace structure	1-5 Years	$500,000

Total Repair/Rehabilitation Cost **$500,000**

Associated Work

	Comments	Estimated Cost
Approaches		$0
Detours		$0
Traffic Control		$0
Utilities		$0
Right-of-Way		$0
Environmental Study	*Schedule B EA*	$50,000
Other	*none*	$0

Contingencies	$110,000
Engineering	$140,000
Total Associated Work Cost	**$300,000**

Township of Woolwich	100%	$800,000
	0%	$0

Total Repair / Rehabilitation Cost	$500,000
Total Cost	**$800,000**

Justification

Inspection Photos

West elevation

Plan view looking north

Southwest guide rail end treatment

Wearing surface looking south

East guide rail showing a rotated offset block

Northwest curb showing severe spalling

North abutment looking northeast

Soffit looking east showing severe spalling

Soffit looking east showing severe spalling

South abutment wall showing narrow vertical stained cracks

Cultural Heritage Evaluation Report

Floradale Road Bridge
(Structure Identification 040106)

Township of Woolwich, Ontario

Draft Report

Prepared for:

GM BluePlan Engineering Limited
650 Woodlawn Road W, Block C, Unit 2
Guelph ON N1K 1B8

Archaeological Services Inc. File: 22CH-114

November 2022

Executive Summary

Archaeological Services Incorporated was contracted by GM BluePlan Engineering Limited on behalf of the Township of Woolwich to conduct a Cultural Heritage Evaluation Report (C.H.E.R.) for the Floradale Road Bridge (Structure Identification 040106) in the Township of Woolwich, Ontario. The C.H.E.R. is being undertaken as part of the Floradale Road Bridge Replacement Municipal Class Environmental Assessment. The subject bridge is a single-span cast-in-place concrete rigid frame bridge with vertical legs likely constructed in 1940 that carries Floradale Road over an unnamed tributary of Canagagigue Creek approximately 850 meters north of Cedar Spring Road. As the subject bridge was constructed before 1956, it requires a C.H.E.R. to determine cultural heritage value or interest as part of this Environmental Assessment (Municipal Engineers Association, 2014). The completed Municipal Heritage Bridges Cultural, Heritage and Archaeological Assessment Checklist can be found in Appendix D.

This report includes an evaluation of the cultural heritage value or interest of the structure as determined by the criteria in Ontario Regulation 9/06 of the *Ontario Heritage Act*. This evaluation determined that the bridge does not have cultural heritage value or interest (C.H.V.I.) and does not have physical/design, historical/associative, or contextual value in the local context.

Based on the results of the assessment, the following recommendations have been developed:

1. The proponent should submit this report for review and comment to planning staff at the Township of Woolwich and the Regional Municipality of Waterloo, the Ministry of Citizenship and Multiculturalism, and to any other relevant stakeholder that has an interest in the heritage of the subject bridge. Any feedback will be incorporated into this report prior to finalization.

Report Accessibility Features

This report has been formatted to meet the Information and Communications Standards under the *Accessibility for Ontarians with Disabilities Act*, 2005 (A.O.D.A.). Features of this report which enhance accessibility include: headings, font size and colour, alternative text provided for images, and the use of periods within acronyms. Given this is a technical report, there may be instances where additional accommodation is required in order for readers to access the report's information. If additional accommodation is required, please contact Annie Veilleux, Manager of the Cultural Heritage Division at Archaeological Services Incorporated, by email at aveilleux@asiheritage.ca or by phone 416-966-1069 ext. 255.

Project Personnel

- **Senior Project Manager**: Lindsay Graves, M.A., C.A.H.P., Senior Cultural Heritage Specialist, Assistant Manager - Cultural Heritage Division
- **Project Coordinator:** Katrina Thach, B.A. (Hon), Associate Archaeologist, Project Coordinator - Environmental Assessment Division
- **Project Manager**: John Sleath, M.A., Cultural Heritage Specialist, Project Manager - Cultural Heritage Division
- **Field Review**: Kirstyn Allam, B.A. (Hon), Advanced Dipl. Applied Museum Studies, Cultural Heritage Analyst, Technical Writer and Researcher - Cultural Heritage Division
- Lindsay Parsons, M.M.St., M.P.L., Cultural Heritage Technician, Technical Writer and Researcher – Cultural Heritage Division
- **Report Production**: Lindsay Parsons
- **Graphics Production**: Andrew Clish, B.E.S., Senior Archaeologist - Planning Assessment Division
- **Report Reviewer(s)**: Lindsay Graves and John Sleath

Table of Contents

List of Tables

List of Figures

1.0 Introduction

Archaeological Services Incorporated (A.S.I.) was contracted by GM BluePlan Engineering Limited on behalf of the Township of Woolwich to prepare a Cultural Heritage Evaluation Report (C.H.E.R.) for the Floradale Road Bridge (Structure Identification 040106) on Floradale Road in the Township of Woolwich, Regional Municipality of Waterloo, Ontario (Figure 1). The C.H.E.R. is being undertaken as part of the Floradale Road Bridge Replacement Municipal Class Environmental Assessment. The subject bridge is a single-span cast-in-place concrete rigid frame bridge with vertical legs likely constructed in 1940 that carries Floradale Road over an unnamed tributary of the Canagagigue Creek approximately 850 meters north of Cedar Spring Road.

1.1 Project Overview

The Floradale Road Bridge Replacement Municipal Class Environmental Assessment is being completed to address structural deficiencies in the Floradale Road Bridge and to determine a preferred alternative for the structure. The 2021 Ontario Structure Inspection Manual (O.S.I.M.) Inspection Form evaluated the bridge as being in overall fair condition given its age and presence of load limit of 15 tonnes and gave it a Bridge Condition Index (B.C.I.) of 70. However, the O.S.I.M. recommended replacement of the subject bridge within 1 to 5 years given the load limit and narrow structure width causing safety concerns for horse and buggy traffic (Township of Woolwich, 2021).

The subject bridge is not identified as a built heritage resource by the municipality and is not included on the *Ontario Heritage Bridge List* (Ministry of Transportation, 2010). The bridge is also not identified as a heritage bridge in *The Grand River Watershed Heritage Bridge Inventory* (Benjamin et al., 2013). As the subject bridge was constructed before 1956, it requires a C.H.E.R. to determine cultural heritage value or interest as part of this Environmental Assessment (Municipal Engineers Association, 2014). A completed Municipal Heritage Bridges Cultural, Heritage and Archaeological Assessment Checklist can be found in Appendix D. Research was completed to investigate, document, and evaluate the

cultural heritage value of the subject bridge. The C.H.E.R. was conducted by John Sleath, Cultural Heritage Specialist and Lindsay Parsons, Cultural Heritage Technician, under the senior project management of Lindsay Graves, Senior Project Manager, of the Cultural Heritage Division, A.S.I.

Figure 1: Location of the Floradale Road Bridge along Floradale Road, north of Cedar Springs, Township of Woolwich. Source: (c) Open Street Map contributors, Creative Commons n.d.

1.2 Legislation and Policy Context

Pursuant to the *Environmental Assessment Act* (Ministry of the Environment 1990), applicable infrastructure projects are subject to heritage assessment and/or evaluation to identify built heritage resources and cultural heritage landscapes and to determine related impacts on identified heritage properties (Ministry of Transportation, 2007). Infrastructure projects have the potential to impact built heritage resources and cultural heritage landscapes in a variety of ways such as loss or displacement of resources through removal or demolition and the disruption of resources by introducing physical, visual, audible, or atmospheric elements that are not in keeping with the resources and/or their setting.

The analysis used throughout the cultural heritage evaluation process addresses cultural heritage resources under other various pieces of legislation and their supporting guidelines. These policies form the broad context which frame this assessment, and are included as relevant to this undertaking based on professional opinion and with regard for best practices:

- *Environmental Assessment Act* (Ministry of the Environment 1990);
- *Ontario Heritage Act* (Ontario Heritage Act, R.S.O. c. O.18, 1990 [as Amended in 2021], 1990);
- *Ontario Heritage Tool Kit* (Ministry of Culture, 2006);
- *Ontario Heritage Bridge Guidelines* (Ministry of Culture and Ministry of Transportation, 2008);
- *Municipal Heritage Bridges Cultural, Heritage and Archaeological Assessment Checklist* (Municipal Engineers Association, 2014); and
- *Ontario Regulation 160/02, Standards for Bridges* (Public Transportation and Highway Improvement Act, R.S.O. 1990, c.P.50, 2002).

1.3 Approach to Cultural Heritage Evaluation Reports

The scope of a C.H.E.R. is guided by the *Ontario Heritage Tool Kit* (Ministry of Culture, 2006).

Generally, C.H.E.R.s include the following components:

- A general description of the history of the study areas as well as detailed historical summaries of property ownership and building(s) development;
- A description of the cultural heritage landscapes and built heritage resources that are under evaluation in this report;
- Representative photographs of the exterior and interior of a building or structure, and character-defining architectural details;
- A cultural heritage resource evaluation guided by the *Ontario Heritage Act* criteria;
- A summary of heritage attributes;
- Historical mapping, photographs; and
- A location plan.

Using background information and data collected during the site visits, the property is evaluated using criteria contained within Ontario Regulation 9/06 of the *Ontario Heritage Act*. The criteria require a full understanding, given the resources available, of the history, design and associations of all cultural heritage resources of the property. The criteria contained within Ontario Regulation 9/06 requires a consideration of the community context.

2.0 Community Engagement

The following section outlines the community consultation that was undertaken to gather and review information about the subject bridge.

2.1 Relevant Agencies/Stakeholders Engaged and/or Consulted

The following stakeholders were contacted with inquiries regarding the heritage status and for information concerning the subject bridge and any additional adjacent built heritage resources or cultural heritage landscapes:

- David Gundrum, Planner, Development Services, Township of Woolwich (email communication 9 and 10 November 2022). A response was outstanding at the time of report submission.
- Bridget Coady, Principal Planner, Planning and Development Services, Region of Waterloo (email communication 9 and 17 November 2022). Email correspondence confirmed that Floradale Road Bridge is not listed or designated. Regional staff noted that a potential cultural heritage resource is located at 3201 Floradale Road (a circa 1890s farmhouse), approximately 300 metres north of the subject bridge. Further, Regional staff advised that if additional land takings are required or temporary easements established, for the staging of materials/heavy machinery, then an Archaeological Assessment may be required.
- Darryl Schwartzentruber, Engineer Technologist, Infrastructure Services, Township of Woolwich (email communication 9 and 10 November 2022). Email correspondence noted that the Township of Woolwich has the original drawings for Floradale Road Bridge as well as the rehabilitation drawings of the bridge undertaken in 2010 by GM BluePlan, both of which A.S.I. had on file. No new information was available on the subject bridge in the Township's holdings.
- The Ministry of Citizenship and Multiculturalism (email communication 9 and 14 November 2022). Email correspondence confirmed that no properties have been designated by the Minister within the study area, and that Ministry staff are not aware of any provincial heritage properties within the study area.
- The Ontario Heritage Trust (O.H.T.) (email communications 9 and 22 November 2022). A response confirmed that the subject bridge is not subject to any O.H.T. heritage conservation easements and that it is not adjacent to any Trust-owned properties.

2.2 Agency Review

The draft report will be submitted for review and comment to planning staff at the Township of Woolwich, the Regional Municipality of Waterloo, the Ministry of Citizenship and Multiculturalism, and to any other relevant stakeholder that has an interest in the heritage of the subject bridge. Any feedback received will be considered and incorporated into this report as appropriate. The final cultural heritage evaluation report will be submitted to the Ministry of Citizenship and Multiculturalism and the Township of Woolwich for their information.

2.3 Indigenous Nations Engagement

At project start-up in November 2022, Archaeological Services Incorporated made a request to the proponent that any engagement with Indigenous Nations undertaken as part of this project includes a discussion about known or potential built heritage resources or cultural heritage landscapes that are of interest to the respective communities. Indigenous Nation engagement had not commenced at the time of draft report submission, but would be undertaken as the Environmental Assessment progressed (GM BluePlan email communication 1 November 2022). Any feedback received will be incorporated into the final report.

3.0 Description of the Structure and Crossing

The following section provides a description of the subject bridge and crossing.

3.1 Existing Conditions

The Floradale Road Bridge is a single-span cast-in-place concrete rigid frame bridge with vertical legs. The deck and abutments of the rigid frame bridge were constructed as a single unit. The main span carries Floradale Road over an unnamed tributary of Canagagigue Creek, a tributary of the Grand River. The subject bridge was constructed by the Township of Woolwich based on designs

of D.J. Emrey, the County of Waterloo's Engineer and Superintendent, from 1940 (Benjamin et al., 2013). Topographic mapping from 1939 shows an earlier bridge at the subject crossing, however no information could be found on previous bridges (Figure 6).

The Floradale Road Bridge is located approximately 850 meters north of Cedar Spring Road in the Township of Woolwich. The bridge is located in a rural agricultural context with active agricultural lands on all sides of the subject bridge. The subject bridge is located directly north of the historical settlement of Floradale. The tributary of Canagagigue Creek flows in a general northwest-southeast orientation in the vicinity of the bridge.

According to available documentation, the subject bridge underwent rehabilitation work in 2010, at which time the original reinforced concrete railing system was replaced with modified side mount steel beam guide rails (Township of Woolwich, 2021).

Figure 2: West elevation of the Floradale Road Bridge, looking east (A.S.I., 2022).

Figure 3: Aerial image of the subject bridge in the Township of Woolwich (Google Maps).

3.2 Heritage Recognitions

The subject bridge is not recognized as a known or potential heritage property by the municipality, region, province, or federal government.

3.3 Adjacent Lands

The subject bridge is located in a rural agricultural context and is surrounded by active farmland along Floradale Road. No adjacent properties are listed on the Municipal Heritage Register or designated under the *Ontario Heritage Act.* A nineteenth century farmhouse and farmscape are located directly to the northeast of the subject bridge.

4.0 Research

This section provides: the results of primary and secondary research; a discussion of historical or associative value; a discussion of physical and design value; a discussion of contextual value; and results of comparative analysis.

4.1 List of Key Sources, Report Limitations, and Site Visit Information

The following section describes the sources consulted and research activities undertaken for this report.

4.1.1 Key Sources

Background historical research, which includes consulting primary and secondary source documents, photos, and historic mapping, was undertaken to identify early settlement patterns and broad agents or themes of change in the study area. In addition, online historical research was undertaken through the websites of the following libraries and archives to build upon information gleaned from other primary and secondary materials:

- Region of Waterloo Library;
- Region of Waterloo Museums;
- Waterloo Historical Society;
- Region of Waterloo Archives;
- University of Waterloo Archives Database; and
- Grand River Conservation Authority Historical Documents Database.

Available federal, provincial, regional, and municipal heritage inventories and databases were also consulted to obtain information about the properties. These included:

- Township of Woolwich *Municipal Heritage Register* (Township of Woolwich, 2019);

- Region of Waterloo's *Public Building Inventory* (Region of Waterloo, 2018);
- Region of Waterloo's *Scenic Roads and Special Character Streets – Resource Document* (Region of Waterloo, 2011);
- *Arch, Truss & Beam: The Grand River Watershed Heritage Bridge Inventory* provides a list of heritage bridges within the Grand River Watershed (Benjamin et al., 2013);
- The *Ontario Heritage Act Register* (Ontario Heritage Trust, n.d.b);
- The *Places of Worship Inventory* (Ontario Heritage Trust, n.d.c);
- The inventory of Ontario Heritage Trust easements (Ontario Heritage Trust, n.d.a);
- The Ontario Heritage Trust's Ontario Heritage Plaque Guide: an online, searchable database of Ontario Heritage Plaques (Ontario Heritage Trust, n.d.d);
- Parks Canada's *Directory of Federal Heritage Designations*, an online database that identifies National Historic Sites, National Historic Events, National Historic People, Heritage Railway Stations, Federal Heritage Buildings, and Heritage Lighthouses (Parks Canada, n.d.b);
- Parks Canada's *Historic Places* website, an online register that provides information on historic places recognized for their heritage value at all government levels (Parks Canada, n.d.a); and
- Inventory of bridges included at *Historicbridges.com*.

No previous consultant reports associated with potential above-ground cultural heritage resources and archaeological resources within and/or adjacent and/or in the vicinity of the subject bridge in the Township of Woolwich were available for review as part of this assessment.

A full list of references consulted can be found in Section 7.0 of this document.

4.1.2 Research and Report Limitations

No research or reporting limitations were identified for this assessment.

4.1.3 Site Visit

A site visit to the subject bridge was conducted on 11 November 2022 by Kirstyn Allam and Lindsay Parsons of Archaeological Services Incorporated (A.S.I.). The site visit included photographic documentation of the exterior of the structure from the Floradale Road right-of-way. Permission to Enter was not required for adjacent properties, as all work was conducted from the publicly accessible right-of-way.

4.2 Discussion of Historical or Associative Value

Historically, the bridge was located on Lot 122 in the German Company Tract lands in the Township of Woolwich, Regional Municipality of Waterloo. It is now located at approximately 850 metres north of Cedar Spring Road in the Township of Woolwich.

4.2.1 Summary of Early Indigenous History in Southern Ontario

Southern Ontario has been occupied by human populations since the retreat of the Laurentide glacier approximately 13,000 years ago, or 11,000 Before the Common Era (B.C.E.) (Ferris, 2013).[1] During the Paleo period (c. 11,000 B.C.E. to 9,000 B.C.E.), groups tended to be small, nomadic, and non-stratified. The population relied on hunting, fishing, and gathering for sustenance, though their lives went far beyond subsistence strategies to include cultural practices including but not limited to art and astronomy. Fluted points, beaked scrapers, and gravers are among the most important artifacts to have been found at various sites throughout southern Ontario, and particularly along the shorelines of former glacial lakes. Given the low regional population levels at this time,

[1] While many types of information can inform the precontact settlement of Ontario, such as oral traditions and histories, this summary provides information drawn from archaeological research conducted in southern Ontario over the last century.

evidence concerning Paleo-Indian period groups is very limited (Ellis & Deller, 1990).

Moving into the Archaic period (c. 9,000 B.C.E. to 1,000 B.C.E.), many of the same roles and responsibilities continued as they had for millennia, with groups generally remaining small, nomadic, and non-hierarchical. The seasons dictated the size of groups (with a general tendency to congregate in the spring/summer and disperse in the fall/winter), as well as their various sustenance activities, including fishing, foraging, trapping, and food storage and preparation. There were extensive trade networks which involved the exchange of both raw materials and finished objects such as polished or ground stone tools, beads, and notched or stemmed projectile points. Furthermore, mortuary ceremonialism was evident, meaning that there were burial practices and traditions associated with a group member's death (Ellis et al., 2009; Ellis & Deller, 1990).

The Woodland period (c. 1,000 B.C.E. to 1600 C.E.) saw several trends and aspects of life remain consistent with previous generations. Among the more notable changes, however, was the introduction of pottery, the establishment of larger occupations and territorial settlements, incipient horticulture, more stratified societies, and more elaborate burials. Later in this period, settlement patterns, foods, and the socio-political system continued to change. A major shift to agriculture occurred in some regions, and the ability to grow vegetables and legumes such as corn, beans, and squash ensured long-term settlement occupation and less dependence upon hunting and fishing. This development contributed to population growth as well as the emergence of permanent villages and special purpose sites supporting those villages. Furthermore, the socio-political system shifted from one which was strongly kinship based to one that involved tribal differentiation as well as political alliances across and between regions (Birch et al., 2021; Dodd et al., 1990; Ellis & Deller, 1990; Williamson, 1990).

The arrival of European trade goods in the sixteenth century, Europeans themselves in the seventeenth century, and increasing settlement efforts in the

eighteenth century all significantly impacted traditional ways of life in Southern Ontario. Over time, war and disease contributed to death, dispersion, and displacement of many Indigenous peoples across the region. The Euro-Canadian population grew in both numbers and power through the eighteenth and nineteenth centuries and treaties between colonial administrators and First Nations representatives began to be negotiated.

The Study Area is within the Between the Lakes Purchase (Treaty 3) and Haldimand Grant (Treaty 4) territory. Following the American Revolutionary War, the British Crown needed to find lands on which to settle United Empire Loyalists, including approximately 2,000 members of the Six Nations confederacy who had fought alongside British troops. Due to their service to the Crown during this war and the dispossession of Indigenous lands in New York State by American forces, the English Colonial government offered to protect Six Nations peoples and give them land within the boundaries of English territory in Upper Canada. On August 8, 1783, Lord North instructed the Governor of Quebec, Sir Frederick Haldimand, to set apart land for the Six Nations people and ensure that they carried on their hunting and fur trading with the British. The Crown initially planned to provide lands for Loyalist settlers in Quebec and southeastern Ontario, including providing land in the Bay of Quinte region for Six Nations peoples. This was not suitable for many of the members of Six Nations and a contingent of approximately 1,800 community members, led by Chief Joseph Brant, requested land north of Lake Erie along the Grand River. Brant felt that the location in the Bay of Quinte was too isolated and that his followers could be better served by being closer to the Six Nations communities that chose to remain in the United States in western New York (Surtees, 1984).

Recognizing that under the terms of the Royal Proclamation the land needed to be purchased prior to settlement, Colonel John Butler was sent to negotiate with the Mississaugas of the Credit for lands east of Lake Ontario and north of Lake Erie. On May 22, 1784, the Mississaugas of the Credit agreed to cede approximately 3,000,000 acres of land containing all or part of what are now Brant, Elgin, Middlesex, Oxford, and Wellington Counties as well as the Regions of Haldimand-Norfolk, Halton, Hamilton-Wentworth, Niagara, and Waterloo. In

exchange for these lands, the Mississaugas received £1180.74 worth of trade goods (Government of Canada, 2016; Surtees, 1984). Of the 3,000,000 acres, approximately 650,000 acres were set aside for the settlement of Six Nations.

On October 25, 1784, Haldimand signed a proclamation that allotted land six miles (10 km) on either side of the Grand River from its mouth at Lake Erie to its headwaters near Dundalk, Ontario. This land was to be used solely by the people of Six Nations, who were also granted the right to sell or lease the land within this territory providing the Crown was first offered to purchase the land (Filice, 2018; Surtees, 1984). Under the terms of the Haldimand Proclamation, Six Nations people were authorized to "Settle upon the Banks of the River" and were allotted "for that Purpose six miles [10 km] deep from each Side of [its] beginning at Lake Erie, & extending in the Proportion to [its] Head" (Filice, 2016; Johnston, 1964)

Due to uncertainties with the description of the lands in the original surrender, Treaty 3 was renegotiated on December 7, 1792 to clarify what was ceded. This largely revolved around the northern boundary of the Treaty area and in particular the area set aside for Six Nations settlement along the Haldimand Tract. The signees of the treaty on the side of the British included Lieutenant Governor John Graves Simcoe, John Butler, Robert Kerr, Peter Russell, John McGill, and Davie William Smith. The signees of the treaty on the side of the Mississauga included Chiefs Wabakyne, Wabanip, Kautabus, Wabaniship, and Mottotow (Government of Canada, 2016; Surtees, 1984).

As part of the 1792 renegotiation of Treaty 3, the Crown also redefined the boundaries of the Haldimand Tract. Upon review of the Haldimand Proclamation, politician and Indian Department official Sir John Johnson noted an error involving the location of the northern boundary of the tract. Haldimand had mistakenly assumed in 1784 that the headwaters of the Grand River resided within the area negotiated under Treaty 3. However, the northern reach of the Haldimand Tract was within lands that were not negotiated until 1818 under Treaties 18 and 19 (Filice, 2016; Government of Canada, 2016; Surtees, 1984). In order to clarify the boundaries of the tract, the Crown appointed surveyor Augustus Jones to complete a survey of the Haldimand Tract in 1791. In so doing, Jones redefined the borders of the Six Nations' land parcel. This included

defining the northern limit of the Haldimand Tract as Jones Base line near the Town of Fergus in the Township of Centre Wellington. In addition, Jones established straight-lined boundaries, rather than sinuous boundaries following every curve in the river, which can still be seen in today's municipal boundaries. Six Nations and Joseph Brant were not in agreement with this new definition and petitioned the government for control over the tract. This eventually led to the 1793 Simcoe Patent which defined the rules of land ownership and leasing within the revised 30,000 acres of land provided to Six Nations. This 1793 patent did not address those lands northeast of the Jones Base line and continues to be a source of dispute between Six Nations and the Crown.

The difference between the original land grant of the Haldimand Proclamation and the Simcoe Patent was significant. Not only did the new territory remove the upper 275,000 acres of the tract north of Jones Baseline, Jones' redefinition of the boundaries along the portions of the Haldimand Tract within the Treaty 3 lands did not consistently provide 6 miles on either side of the Grand River. Six Nations of the Grand River contend that they were not involved in the renegotiation of this land and therefore the redefined territory is not consistent with the terms of the original land grant. In particular, it is the view of Six Nations of the Grand River that it was the responsibility of the Crown to provide the land that was agreed to in the Haldimand Proclamation (Six Nations of the Grand River, 2019).

Following the establishment of the Haldimand Tract, Six Nations of the Grand River began to negotiate leases within the Haldimand Tract as a means of generating income for the community. These transactions were made under the understanding that this would provide a continuous revenue stream for the Confederacy and that these represented long term leases rather than formal land sales (Six Nations of the Grand River, 2019). The Crown was responsible for administering these funds which Six Nations of the Grand River argue they never received. Many of the leases were confirmed by the Crown in 1834-5, although unauthorized sales and squatting by settlers remained a significant issue (Johnston, 1964; Lytwyn, 2005). In 1841, the Superintendent of Indian Affairs, Samuel P. Jarvis, informed the Six Nations of the Grand River that the only way to keep white intruders off their land would be for the Crown to manage these lands on behalf of the Nation, to be administered for their sole benefit. Under

this plan, the Six Nations of the Grand River would retain lands that they actually occupied and a reserve of approximately 20,000 acres near the present-day city of Brantford. This transfer of land to the Crown was made by the Six Nations in January 1841 (Johnston, 1964; Lytwyn, 2005).

This history and those surrenders are still contested by the Confederacy and there are numerous specific land claims that have been filed by the Six Nations of the Grand River with the federal government in regard to lands within the Haldimand Tract.

4.2.2 Township of Woolwich

Woolwich Township was one of the earliest townships secured for settlement in Waterloo County but was slow to be settled. It includes such settlements as Conestogo, Elmira, St. Jacobs, Winterbourne, and Floradale. The region of present-day Woolwich Township was formally part of a Crown Grant of land to Joseph Brant and First Nations in the late eighteenth century. The land was divided into three blocks, which were later incorporated into the townships of Waterloo, Woolwich and Dumfries in 1816. The first settler in the township was Captain Thomas Smith of Vermont, who arrived around 1810 and lived in a house on the east side of the Grand River, followed by George Eby, who settled on Lot 2 in 1813 near the township boundary of Waterloo and Woolwich, and later other families such as Cress, Martin, Musselman, Reist, Meyer, Kressler and Bowman. Most of these early settlers were Mennonites who tended to settle west of the Grand River, while English (many of them Methodists) and Scots-Presbyterians settled to the east of the river. In 1808, lots totalling 26,600 acres were purchased by Mennonites. In 1813 David Musselman built the first mill in the township at the site of Conestogo, which had a population of about 70 people by 1850. Meyer laid out the boundaries of Heidelberg, while Bowman and Snider began the settlement of St. Jacobs around a saw and grist mill circa 1851. Woolwich Township also includes the community of Elmira, which was founded by Edward Bristow in 1825. After 1845 a large influx of German settlers greatly increased the population, and by the 1890s the population exceeded 1000 (Mika and Mika 1983:673-674; Region of Waterloo: Planning Housing and

Community Services (PHCS) 2007; Region of Waterloo 2010; Waterloo Region Museum 2017; Woolwich Township n.d.).

As a result of early-to mid-nineteenth-century settlement in the township, cleared land led to unpredictable flooding of the Grand River. Therefore, bridges became significant in the development of the township. During this time, almost half the business conducted by Woolwich Township Council focused on the construction and improvement of roads and bridges. Due to flooding, bridges were replaced regularly. Protecting wooden bridges from damage caused by the pounding of horse hooves was a concern, and a by-law was passed stating a horse must cross walking, not running, on bridges over 30 feet long or their rider or driver would be subjected to a fine (Mika & Mika, 1983; Region of Waterloo, 2010; Region of Waterloo: Planning Housing and Community Services, 2007; Waterloo Region Museum, 2017b; Woolwich Township, n.d.).

A large Mennonite population still lives in the township, including a small number of Old Order Mennonites. In 1973, a restructuring of the municipal boundaries and organizations brought about the dissolution of Waterloo Township, and the creation of the cities of Cambridge, Kitchener, and Waterloo. As well, the western portion of the former Waterloo Township, including Breslau, was transferred to Woolwich Township (Mika & Mika, 1983; Region of Waterloo, 2010; Region of Waterloo: Planning Housing and Community Services, 2007; Waterloo Region Museum, 2017a, 2017b).

4.2.3 Community of Floradale

Floradale is a small rural community in the northwest of the Township of Woolwich. The community of Floradale began developing in the mid-eighteenth century, and many of the early settlers to the area were Mennonites. The Canagagigue Creek flows through the settlement and provided the power for small industries to develop, such as a grist and sawmill. The sawmill was built by Joseph Musselman, a local businessman, on the Canagagigue Creek and a small community developed around it. By 1876, a post office had opened followed by a store, hotel, school, and cider mill. The Floradale Mennonite Church was built

in 1896 along with two additional churches. By the end of the nineteenth century, Floradale had a population of 250. However, industries began leaving Floradale through the early twentieth century and it gradually became a primarily residential community, boasting a population of approximately 200 in the 1970s (Floradale Mennonite Church, 2022; Mika & Mika, 1981; Region of Waterloo Museums, 2022).

The community held a number of different names throughout its history, including Musselman (after Joseph Musselman), Leon, and Flora. The name Flora was changed in 1876 to Floradale to avoid confusion with nearby Elora. The subject bridge is located to the north of the centre of Floradale (Mika & Mika, 1981; Region of Waterloo Museums, 2022).

4.2.4 Grand River and Canagagigue Creek

The Grand River watershed is the largest watershed in southern Ontario at 6,800 square kilometres and includes the cities of Brantford, Cambridge, Guelph, Kitchener, and Waterloo. The Grand River Watershed includes all the land drained by the Grand River and its tributaries. It begins in Dufferin County in the Dufferin Highlands and travels south 310 kilometres before emptying into Lake Erie at Port Maitland. The Conestogo, Nith, Speed and Eramosa rivers are the major four tributaries which feed into the Grand. Roughly 70 percent of the watershed is made of intensive agricultural areas (Grand River Conservation Authority, 2020a).

The Grand River was an important transportation route and a critical resource extraction area for generations of Indigenous people. Historically, the Grand River has been utilized as a navigable waterway, as a power source (such power sites served as settlement nuclei), and above Brantford as a course for driving logs (Chapman and Putnam 1984:98). It is also the focus of the Haldimand Tract; an area of six miles (10 kilometres) on either side of the river that was awarded to the Haudenosaunee in 1784 (Filice 2016; Lytwyn 2005). The Grand River (and its tributaries the Nith, Conestogo, Speed and Eramosa Rivers) was designated as a Canadian Heritage River in 1994 for its cultural history and recreation (Canadian Heritage Rivers System, 2016).

Canagagigue Creek is one of many tributaries of the Grand River. It splits from the Grand River between West Montrose and Winterbourne and flows northwest towards Elmira and Floradale. Canagagigue Creek feeds into the Woolwich reservoir and Dam. The subject bridge spans an unnamed tributary of Canagagigue Creek (Grand River Conservation Authority, 2020b; Region of Waterloo: Planning, Housing, and Community Services, 2004a)

4.2.5 Engineer/Designer

The subject bridge was designed by D.J. Emrey (sometimes Emery) according to a review of original structural designs included in Appendix B. D.J. Emrey was the Waterloo County Engineer and Superintendent from 1932 to his death in 1953. Emrey worked on several bridges throughout the Region, including the Hartman Bridge in the Township of Wilmot and the Bridgeport Bridge in the City of Kitchener. The Shade Street Bridge in the Township of Wilmot is also known as the D.J. Emery Bridge and was built in 1953, the year of Emrey's passing (Benjamin et al., 2013).

4.2.6 Early Ontario Road Bridges

Bridges were a necessity from the earliest days of road construction and were important to economic and social life, especially as mills were situated along the rivers. Crossing rivers by bridge was easier than fording. Settlements sprang up where the mills were serviced by bridges. Construction of railways in Ontario began in the 1850s which made it necessary to have reliable bridges able to withstand the weight of locomotives. In addition, good road bridges were required so farmers could transport their produce to local railway stations (Region of Waterloo: Planning, Housing, and Community Services, 2004b). Most road bridge designs that evolved were based on principles derived from railroad construction. In Ontario, the timber bridge dominated the landscape in rural areas from 1780 to 1880, and persisted into the early twentieth century (Cuming, 1983). Most nineteenth-century bridges in southern Ontario were built of timber. Short spans were beam structures, and longer spans employed simple trusses, such as King and Queen Post trusses. Stone and wrought iron materials were also employed, but due to higher costs and a lack of skilled craftsmen such

structures were generally restricted to market towns (TRCA, 2011). By the 1890s, steel and concrete were becoming the materials of choice when constructing bridges given that both were less expensive and more durable than their wood and wrought iron predecessors (TRCA, 2011). Steel truss structures were very common by 1900, as were steel girder bridges. After the First World War, the increase in personal vehicles meant that stronger bridges were necessary. The Pratt truss and the Warren truss dominated the early twentieth century and were typically used for spans up to 400 feet (Comp & Jackson, 1977). The use of concrete in bridge construction was introduced at the beginning of the twentieth century, and by the 1930s, it was challenging steel as the primary bridge construction material in Ontario. Today, concrete is the primary bridge building material on Ontario roads (TRCA, 2011).

4.2.7 Concrete Rigid Frame with Vertical Legs Bridges

The rigid frame bridge design was first pioneered by German engineers and the Brazilian Emilia Baumgart and then introduced to the United States by engineer Arthur G. Hayden in the early 1920s (Troyano, 2003). Hayden is credited with developing the rigid frame design for the construction of the Bronx River Parkway. In 1921, he presented the rigid frame design, distinguished by its monolithic construction technique with a rigid connection between vertical posts and horizontal beams. It would become the bridge of choice on parkways and highways. In Canada during the 1920s, the rigid frame design had not yet been widely adopted, as it employed “a complex design that was beyond the resources, or inclination of many engineers” (Andreae, 1997). By the 1930s, a Canadian engineer, Hardy Cross, standardized the rigid frame design, then becoming widely used, as it provided several financial and engineering advantages. Rigid frame bridges were first constructed in Canada in 1931 by the Ontario Department of Highways (D.H.O.) (Historica Research Limited & Archaeologix Inc., 2005). This type of bridge quickly gained popularity through the 1930s.

Introduction of the rigid frame bridge allowed for the construction of a thinner, lower deck, and required less earth piling to build up the embankments. Unlike

truss style bridges, this type of bridge presented a flexible construction design that could be widened with comparative ease. The rigid frame design presented a cost-effective yet attractive bridge design that would be able to respond to the new designs and demands of highway construction throughout the 1920s and 1930s in North America. The hollow concrete box beam form became a popular choice for rigid frame bridges with longer spans and was introduced in the late 1940s and early 1950s (Ministry of Culture and Ministry of Transportation, 2008).

4.2.8 Historical Chronology and Setting of the Subject Crossing

The 1861 *Tremaine's Map of Waterloo County* (Tremaine, 1861), and the 1881 *Illustrated Historical Atlas of the County of Waterloo* (Parsell & Co., 1881), were examined to determine the presence of historical features within the study area during the nineteenth century (Figure 4 and Figure 5). Historically, the subject bridge is located on Lot 122, German Tract Company in the former Township of Woolwich, Waterloo County.

It should be noted, however, that not all features of interest were mapped systematically in the Ontario series of historical atlases. For instance, they were often financed by subscription limiting the level of detail provided on the maps. Moreover, not every feature of interest would have been within the scope of the atlases. The use of historical map sources to reconstruct or predict the location of former features within the modern landscape generally begins by using common reference points between the various sources. The historical maps are geo-referenced to provide the most accurate determination of the location of any property on a modern map. The results of this exercise can often be imprecise or even contradictory, as there are numerous potential sources of error inherent in such a process, including differences of scale and resolution, and distortions introduced by reproduction of the sources.

The nineteenth-century maps depict the subject crossing within a rural setting. In the 1861 *Tremaine Map* Floradale Road is depicted as a historically surveyed

common road (Figure 4). The surrounding lot patterns are irregular in shape and size, and Floradale Road is depicted as running through the lot owned by Michael Ash. The unnamed tributary of Canagagigue Creek is illustrated crossing Floradale Road in a northwest-southeast direction through the rural landscape. Presumably a bridge would carry the road over the watercourse; however, no bridge is depicted on the mapping. The boundary of the Township of Woolwich and Waterloo County is depicted to the west of the subject bridge.

The 1881 *Historical Atlas* depicts a change in the surrounding lot patterns with a more regular grid (Figure 5). Residences (black squares) are depicted to the southeast and southwest of the subject bridge. A church is depicted along present-day Arthur Street North to the east of the subject bridge. A number of new common roads are depicted to the south and west of Floradale Road. A bridge is still not depicted on the mapping.

In addition to nineteenth-century mapping, historical topographic mapping and aerial photographs from the twentieth century were examined. This report presents maps and aerial photographs from 1939, 1954, and 1996 (Figure 6 to Figure 8).

The 1939 topographical map indicates that the area surrounding the subject bridge remained a sparsely settled area in the early twentieth century (Figure 6). The map shows the location of a number of structures dotting the landscape. These structures are likely farmhouses with barns. An orchard is depicted to the northeast of the subject bridge and deciduous woods are depicted to the west and east of the subject bridge. A number of bridges are depicted in the map, including a bridge of unknown type or material in the location of the subject bridge. As the current Floradale Road Bridge was likely constructed in 1940, this is likely an earlier structure.

Few changes to the area surrounding the subject bridge occurred through the middle of the twentieth century and it remains largely rural into the late twentieth century as captured in the 1954 aerial photograph and the 1996 topographic mapping (Figure 7 and Figure 8). The 1954 aerial image depicts the

area as still sparsely settled with visible farmsteads to the northwest and northeast of the subject bridge. The tributary of Canagagigue Creek continues to meander through the agricultural landscape in a northwest-southeast direction. The surrounding area remains generally unchanged as depicted by the 1996 topographic map. The subject bridge is depicted in this map, however, no construction material is noted.

The construction of the subject bridge is described in Section 4.2.9.

Figure 4: The location of the subject bridge overlaid on the 1861 *Tremaine's Map of Waterloo County*. Source: (Tremaine, 1861).

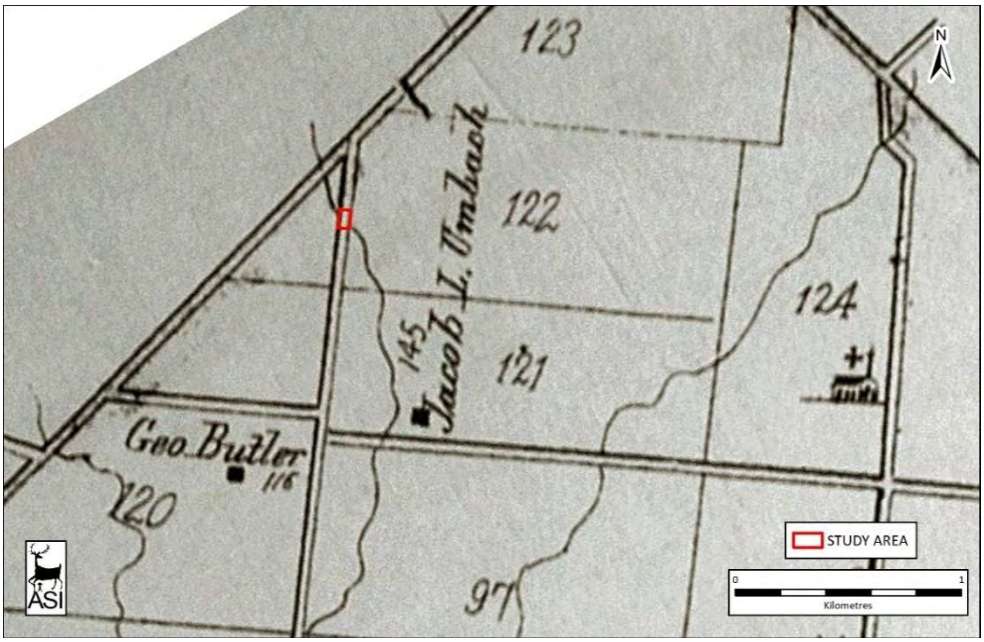

Figure 5: The location of the subject bridge overlaid on the 1881 *Illustrated Historical Atlas of the County of Waterloo*. Source: (Parsell & Co., 1881).

Figure 6: The location of the subject bridge overlaid on the 1939 topographical map of Waterloo County. Source: (Department of National Defence, 1939).

Figure 7: The location of the subject bridge overlaid on the 1954 aerial photograph of Southern Ontario. Source: (Hunting Survey Corporation Limited, 1954).

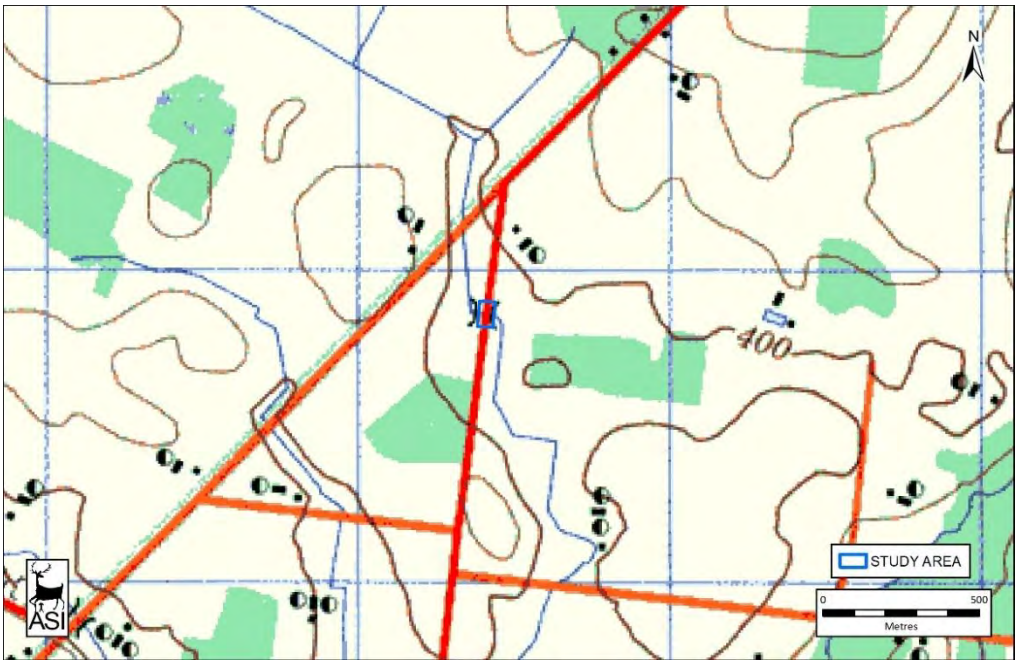

Figure 8: The location of the subject bridge overlaid on the 1996 topographic map of Waterloo. Source: (Natural Resources Canada, 1996).

4.2.9 Bridge Construction, Evolution, and Alterations

The subject bridge was likely constructed in 1940 based on the designs of D.J. Emrey, the County of Waterloo's Engineer and Superintendent. Emrey's signature is visible on the original structural drawings of the subject bridge which are dated May 18, 1940 (Township of Woolwich, 1940, 2021).

Topographic mapping of the area from 1939 (Figure 6) shows a bridge at the site of the crossing, however no other information about the former bridge, including the construction material, was available at the time of report preparation.

To construct the subject bridge circa 1940, the previous bridge would have been removed, a wooden framework would have been constructed in-situ, and concrete poured in around reinforcing steel. Once cast, the wooden formwork would be removed. The bridge span, abutments, wingwalls, and original railing would have all been constructed in this way. The asphalt wearing surface would then be applied on the deck.

According to available documentation, the subject bridge was rehabilitated in 2010, when the existing reinforced concrete railing system was removed and replaced with modified side mount steel beam guide rails on either side of the bridge (Township of Woolwich, 2021).

4.3 Discussion of Physical and Design Value

Original structural drawings, rehabilitation drawings, and the 2021 Ontario Structure Inspection Manual (O.S.I.M.) Inspect Report of the subject bridge were reviewed as part of this assessment to evaluate and describe the physical and design value of the subject bridge (GM BluePlan Engineering Ltd., 2010; Township of Woolwich, 2021). A field review was undertaken to conduct photographic documentation of the bridge crossing and to collect data relevant for completing a heritage evaluation of the structure. The following description of the structure, including the dates of interventions, and existing conditions is based on a combination of the results of the field review and historical

background research on the subject bridge. A selection of original structural and rehabilitation drawings are provided in Appendix B and photographic documentation of the current conditions of the bridge is provided in Figure 9 to Figure 17. Further, photographs of comparative cast-in-place concrete rigid frame structures in Southern Ontario are also provided in Section 4.5.1.

4.3.1 Physical Characteristics

The Floradale Road Bridge is a single-span cast-in-place concrete rigid frame bridge with vertical legs with an overall length of 7.3 metres, a span length of 6.1 metres, and an overall width of 6.9 metres (Township of Woolwich, 2021).

The substructure of the subject bridge is made up of conventional closed cast-in-place concrete abutments and reinforced cast-in-place-concrete abutments with wingwalls. The two abutments measure 6.80 metres in width and 1.40 metre in height. The four abutment wingwalls measure 3.65 metres in length and 0.90 metre in height (Township of Woolwich, 2021).

The deck of the subject bridge is cast-in-place concrete overlaid by an asphalt wearing surface with a road travel width of 6.90 metres and carries two lanes of traffic. The subject bridge features a steel flex beam on steel post railing barrier system on either side. The steel railings measure 62.40 metres in length and 0.80 metre in height. Cast-in-place concrete curbs are on both sides measuring 0.30 metres in width and 0.12 metres in height (Township of Woolwich, 2021). Signs on both sides of the bridge on both approaches note a maximum loading of 15 tonnes, two narrow bridge signs, and four hazard signs.

An unnamed tributary of Canagagigue Creek, a tributary of the Grand River, passes under the Floradale Road bridge in a northwest-southeast direction.

The bridge crossing's surrounding context is primarily rural-agricultural. There are two nineteenth-century farmscapes (3201 Floradale Road and 6970 5 Township Road) to the northwest and northeast of the subject bridge. The banks of the unnamed tributary are lined with tall grasses.

4.3.2 Existing Conditions Photographs

Figure 9: East elevation of the Floradale Road Bridge, looking west (A.S.I., 2022).

Figure 10: West elevation of the Floradale Road Bridge, looking northeast (A.S.I., 2022).

Figure 11: Detail view of bridge soffit and watercourse, looking west (A.S.I., 2022).

Figure 12: Detail view of soffit and north face of south abutment, looking south. Note the board formwork casting marks on the soffit (A.S.I., 2022).

Figure 13: Detail view of north abutment showing cracks in concrete on underside, looking northwest (A.S.I., 2022).

Figure 14: Detail view of the concrete abutment and wingwall connection on the southwest quadrant, looking east (A.S.I., 2022).

Figure 15: Detail view of modified side mount steel beam guide rail, which replaced the original concrete barriers in 2010, looking northeast. (A.S.I., 2022).

Figure 16: Detail view of bridge deck showing concrete curbs and cracks in the asphalt, looking northeast (A.S.I., 2022).

Figure 17: Northern approach to subject bridge and view of object marker signs and steel guardrails, looking south (A.S.I., 2022).

4.4 Discussion of Contextual Value

The following section discusses the contextual value of the subject bridge.

4.4.1 Setting and Character of the Bridge and Surroundings

The subject bridge carries Floradale Road in a general north-south orientation over an unnamed tributary of Canagagigue Creek in a rural agricultural portion of the small community of Floradale in the Township of Woolwich. The community of Floradale grew around Joseph Musselman's sawmill built on the Canagagigue Creek located to the south of the subject bridge at the intersection of Floradale Road and Ruggles Road. This intersection continues to be the commercial centre of the otherwise primarily residential community of Floradale. The subject bridge is located approximately 4.5 kilometres north of the Floradale community centre and does not have a strong connection to the development of the community. Further, the subject bridge, likely built in 1940, is not an original or early structure at the crossing and is not directly tied to the rural-agricultural context.

The subject bridge is one of several bridges in the area to cross the Canagagigue Creek and its tributaries. The subject bridge and surrounding bridges carry vehicular and farm equipment traffic over the tributaries, and support the local agricultural context. However, as an altered mid-twentieth century bridge, the subject bridge does not reflect the early nineteenth century rural-agricultural character of the surroundings.

4.4.2 Community Landmark

Floradale Road Bridge is not considered to be a significant community landmark. The subject bridge has a fairly low traffic volume of 1549 vehicles per day (Township of Woolwich, 2021), and is not viewed on a daily basis by a large number of motorists. The bridge is small in scale and lacks ornamentation, which results in low visibility to motorists from road level. Further, the bridge is not a gateway feature in the community and does not serve as a significant contextual division between neighbourhoods or distinct areas.

4.5 Comparative Analysis

The Floradale Road Bridge is a single-span, cast-in-place concrete rigid frame bridge with vertical legs. It measures 7.3 metres in length and 6.9 metres in width and was likely constructed in 1940 to carry Floradale Road over an unnamed tributary of Canagagigue Creek (Township of Woolwich, 2021). For the purposes of this comparative analysis, similar rigid frame cast-in-place concrete bridges in the Ministry of Transportation (M.T.O.) Bridge Inventory (West Region) (Ministry of Transportation, 2017), the Township of Woolwich Structure Inventory (Township of Woolwich, 2020), and *Arch, Truss and Beam: The Grand River Watershed Heritage Bridge Inventory* (Benjamin et al., 2013) were reviewed. According to this comparative sample, there are 157 comparable structures in the Township of Woolwich, along the Grand River Watershed, and in Southwestern Ontario in general. A list of bridges used in this comparative analysis is provided in Appendix C.

It should be noted that the year built for Floradale Road Bridge is listed as 1945 in the Township of Woolwich Structure Inventory. However, the original

structural drawings for the subject bridge are dated 1940. The reason for the discrepancy in dates is unknown. For this report, it is assumed that the bridge was likely constructed in 1940. If the bridge was however constructed in 1945, this would only minimally impact the comparative analysis below and the outcomes of the analysis and this report, in general, would remain the same.

4.5.1 Comparable Cast-in-Place Concrete Rigid Frame Structures

The 157 comparative cast-in-place concrete rigid frame structures reviewed as part of this analysis have construction dates ranging from 1920 to 2009, with a median construction date of 1960. The subject bridge, likely constructed in 1940, ranks 15th in terms of date of construction, and is therefore not significant in terms of age. The East Luther Grand Valley (E.L.G.V.) Bridge #7, constructed in circa 1920, is the oldest bridge of this type in this comparative analysis sample (Figure 18).

Comparative structures in this analysis have lengths of between 3.6 metres and 50.1 metres, with a median length of 16.30 metres. The subject bridge, with a length of 7.3 metres, ranks 8th in terms of length, and is therefore not significant in terms of overall length. The Drumbo Road Underpass, with a length of 50.1 metres, is the longest cast-in-place concrete rigid frame structure in this comparative analysis (Figure 19).

Comparative structures in this analysis have between one and three spans, with a median of one span. It should be noted that span data was not included in the Township of Woolwich inventory, making this portion of the analysis 142 comparative structures rather than 157. The subject bridge has a single span, the same as 122 comparative structures, and is therefore not significant in this respect. The Grand River Bridge, Blair Bridge, Mackenzie Creek Bridge, and Rockwood Bridge (Eramosa) are tied for the greatest number of spans at three (Figure 20).

Additionally, the subject bridge is not the strongest example of a cast-in-place concrete rigid frame bridge in the area. Located only slightly to the east of the subject bridge on Sideline 18, the Spies Bridge (Structure Identification 010105) was built in 1945 and is also a single-space cast-in-place concrete rigid frame bridge. Spies Bridge is in better condition than the subject bridge and the original concrete barriers have been retained (Figure 21).

Figure 18: East Luther Grand Valley Bridge #7 in the Town of Grand Valley (Google Streetview).

Figure 19: Drumbo Road Underpass as viewed from Highway 401 (Google Streetview).

Figure 20: Grand River Bridge carrying Highway 109 over the Grand River (Benjamin et al., 2013).

Figure 21: Nearby Spies Bridge (010105) on Sideline 18 with the original concrete barriers (A.S.I., 2022).

4.5.2 Summary

Based on the inventory of cast-in-place concrete rigid frame structures above, the subject bridge is one of 157 similar structures in this sample. In the comparative analysis, Floradale Road Bridge is ranked 15th oldest, tied with two other bridges; ranked 8th in terms of length; and has the same number of spans as 122 other structures. The subject bridge is not significant in the local context in terms of age of construction, overall length, or number of spans.

5.0 Heritage Evaluation

The evaluation of the Floradale Road Bridge using the criteria set out in Ontario Regulation 9/06 is presented in the following section (Section 5.1). The following evaluation has been prepared in consideration of data regarding the physical/design, historical/associative, and contextual values in the Township of Woolwich, Region of Waterloo, and in southern Ontario in general.

5.1 Ontario Regulation 9/06

Evaluation of the Floradale Road Bridge using Ontario Regulation 9/06 of the *Ontario Heritage Act.*

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:
- Floradale Road Bridge is a single span, cast-in-place concrete, rigid frame structure that carries Floradale Road over an unnamed tributary of Canagagigue Creek. It measures 7.3 metres in length with an overall width of 6.9 metres. The bridge was likely constructed in 1940. According to the comparative analysis, the subject bridge is a common example of a structure type that was popular in the mid twentieth century that continues to be constructed into the twenty-first century. The subject bridge is not significant in terms of date of construction, length, or number of spans. Further, it is not considered to be unique, rare, or an outstanding representative example of this bridge type or construction method.
- The subject bridge does not meet this criterion.

ii. displays a high degree of craftsmanship or artistic merit:
- The subject bridge is constructed with common materials and is a simple, single-span structure that lacks ornamentation or decoration. It exhibits a low degree of artistic merit and was not constructed with a greater than industry standard degree of craftsmanship.
- The subject bridge does not meet this criterion.

iii. demonstrates a high degree of technical or scientific achievement:
- The subject bridge exhibits a low degree of technical or scientific achievement given its short span, common construction materials, common bridge type, and the easy access and gentle flow of the watercourse below.

- The subject bridge does not meet this criterion.

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:
   - The subject bridge is historically associated with D.J. Emrey, the Engineer and Superintendent for the County of Waterloo from 1932 to 1953. Emrey was responsible for overseeing the design and construction of a number of bridges throughout the Region and has a bridge named after him. While Emrey played an important role in the growth of the Region of Waterloo and designed the subject bridge, the subject bridge is not of a caliber that would be reflective of Emrey's more prominent engineering projects, such as the Bridgeport Bridge in the City of Kitchener, and instead reflects a common design.
   - The subject bridge does not meet this criterion.

ii. yields, or has the potential to yield, information that contributes to an understanding of a community or culture:
   - The subject bridge does not contribute information to an understanding of a community or culture and does not meet this criterion at this time.
   - The subject bridge does not meet this criterion.

iii. demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community:
   - The subject bridge is historically associated with D.J. Emrey, the Engineer and Superintendent for the County of Waterloo from 1932 to 1953. Emrey was responsible for overseeing the design and construction of a number of bridges throughout the Region and has a bridge named after him. While Emrey played an important role in the growth of the Region of Waterloo and designed the subject bridge, the subject bridge is not of a caliber that would be reflective of Emrey's

more prominent engineering projects and instead reflects a common design.
- The subject bridge does not meet this criterion.

3. The property has contextual value because it:

i. is important in defining, maintaining or supporting the character of an area:
- The subject bridge carries Floradale Road over an unnamed tributary of Canagagigue Creek in the Township of Woolwich, Region of Waterloo. The twentieth-century bridge is not an original crossing at this location and does not contribute to or maintain the original nineteenth-century rural settlement context of the area.
- The subject bridge does not meet this criterion.

ii. is physically, functionally, visually or historically linked to its surroundings:
- The location of the subject bridge is physically associated with Floradale Road, a historically surveyed road. However, the subject bridge is not an original structure at this crossing and is not representative of the nineteenth-century settlement of the area, and as such, it is not significantly linked to its surroundings.
- The subject bridge does not meet this criterion.

iii. is a landmark:
- The bridge is small in scale and lacks ornamentation, which results in low visibility to motorists from road level. Further, the bridge is not a gateway feature in the community and does not serve as a significant contextual division between neighbourhoods or distinct areas.
- The subject bridge does not meet this criterion.

Based on available information, it has been determined that the Floradale Road Bridge does not meet the criteria contained in Ontario Regulation 9/06 of the *Ontario Heritage Act* for design and physical, historical and associative, or contextual value.

6.0 Conclusions and Recommendations

This evaluation was prepared in consideration of data regarding the physical/design, historical/associative, and contextual values within the Township of Woolwich and Region of Waterloo. This evaluation determined that the Floradale Road Bridge does not meet the criteria outlined in Ontario Regulation 9/06 of the *Ontario Heritage Act*, and therefore does not have cultural heritage value or interest at the local level.

The following recommendations are proposed:

1. The proponent should submit this report for review and comment to planning staff at the Regional Municipality of Waterloo, the Township of Woolwich, the Ministry of Citizenship and Multiculturalism, and to any other relevant stakeholder that has an interest in the heritage of the subject bridge. Any feedback will be incorporated into this report prior to finalization.

7.0 List of Resources Consulted

Andreae, C. (1997). *Lines of Country: An Atlas of Railway and Waterway History in Canada*. Boston Mills Press.

A.S.I. (2010). *Addendum Stage 1 Archaeological Assessment. Contestogo Wind Farm, Wellington County, Ontario.* (FIT # FF91BTO and FIT # FL69V8J).

Benjamin, L., Veale, Dr. B., Shipley, Dr. R., Galvin, K. J., & Davies, M. (2013). *Arch, Truss & Beam: The Grand River Watershed Heritage Bridge Inventory*. Heritage Resource Centre. https://www.grandriver.ca/en/our-watershed/resources/Documents/CHRS/CHRS_2013_BridgeInventory.pdf

Birch, J., Manning, S. W., Sanft, S., & Conger, M. A. (2021). Refined Radiocarbon Chronologies for Northern Iroquoian Site Sequences: Implications for Coalescence, Conflict, and the Reception of European Goods. *American Antiquity*, *86*(1), 61–89.

Canadian Heritage Rivers System. (2016). *Grand River*. http://chrs.ca/the-rivers/grand/

Comp, T. A., & Jackson, D. (1977). *Bridge Truss Types: A Guide to Dating and Identifying*. American Associated for Stage and Local History.

Cuming, D. (1983). *Discovering Heritage Bridges on Ontario's Roads*. Boston Mills Press.

Department of National Defence. (1939). *Guelph Sheet* [Map].

Dodd, C. F., Poulton, D. R., Lennox, P. A., Smith, D. G., & Warrick, G. A. (1990). The Middle Ontario Iroquoian Stage. In C. J. Ellis & N. Ferris (Eds.), *The Archaeology of Southern Ontario to A.D. 1650* (pp. 321–360). Ontario Archaeological Society Inc.

Ellis, C. J., & Deller, D. B. (1990). Paleo-Indians. In C. J. Ellis & N. Ferris (Eds.), *The Archaeology of Southern Ontario to A.D. 1650* (pp. 37–64). Ontario Archaeological Society Inc.

Ellis, C. J., Timmins, P. A., & Martelle, H. (2009). At the Crossroads and Periphery: The Archaic Archaeological Record of Southern Ontario. In T. D. Emerson, D. L. McElrath, & A. C. Fortier (Eds.), *Archaic Societies: Diversity and Complexity across the Midcontinent.* (pp. 787–837). State University of New York Press.

Ferris, N. (2013). Place, Space, and Dwelling in the Late Woodland. In M. K. Munson & S. M. Jamieson (Eds.), *Before Ontario: The Archaeology of a Province* (pp. 99–111). McGill-Queen's University Press. http://www.jstor.org/stable/j.ctt32b7n5.15

Filice, M. (2016, June 3). *Haldimand Proclamation*. Canadian Encyclopedia. https://www.thecanadianencyclopedia.ca/en/article/haldimand-proclamation

Floradale Mennonite Church. (2022). *Our History*. http://floramc.org/who-we-are/our-history/

GM BluePlan Engineering Ltd. (2010). *Floradale Road Bridge Rehabilitation, Structure No. 040106, Township of Woolwich*.

Grand River Conservation Authority. (2020a). *Our Watershed*. Grand River Conservation Authority. https://www.grandriver.ca/en/our-watershed/Our-Watershed.aspx

Grand River Conservation Authority. (2020b). *The Grand River Watershed* [Map]. https://www.grandriver.ca/en/our-watershed/Our-Watershed.aspx

Historica Research Limited, & Archaeologix Inc. (2005). *Inventory of Highway 400 and 401 Bridges: Central Region, Ontario Ministry of Transportation* (Report Prepared for the Planning and Environmental Office, Central Region, Ontario Ministry of Transportation). On file with the author.

Hunting Survey Corporation Limited. (1954). *Digital Aerial Photographs, Southern Ontario 1954*. http://maps.library.utoronto.ca/data/on/AP_1954/index.html

Johnston, C. E. (1964). *The Valley of the Six Nations: A Collection of Documents on the Indian Lands of the Grand River*. The Champlain Society.

Lytwyn, V. P. (2005). *Historical research report: Aboriginal Settlement and Use of the North Pickering Development Planning Area and Adjacent Lands, 1690-1923*.

Mika, N., & Mika, H. (1981). *Places In Ontario: Their Name Origins and History, Part II, F-M* (Vol. 2). Mika Publishing Company.

Mika, N., & Mika, H. (1983). *Places In Ontario: Their Name Origins and History, Part III, N-Z*. Mika Publishing Company.

Ontario Heritage Act, R.S.O. c. O.18, 1990 [as amended in 2021], (1990).

Ministry of Culture. (2006). *Ontario Heritage Tool Kit*.

Ministry of Culture and Ministry of Transportation. (2008). *Ontario Heritage Bridge Guidelines (OHBG) (Interim – January 11 2008)*.

Environmental Assessment Act, R.S.O., (1990).

Ministry of Tourism, Culture and Sport. (2016). *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes, A Checklist for the Non-Specialist*. http://www.mtc.gov.on.ca/en/heritage/tools.shtml

Ministry of Transportation. (2007). *Environmental Guide for Built Heritage and Cultural Heritage Landscapes*. http://www.raqsb.mto.gov.on.ca/techpubs/eps.nsf/0/0c286507a82cde53852572d70059fdf9/$FILE/FINAL_MTO%20Env%20Guide%20BHCHL%20Final%202007%20ACC.pdf

Ministry of Transportation. (2010). *The Ontario Heritage Bridge List—December 2010*. On file with the author.

Ministry of Transportation. (2017). *MTO Bridge Inventory*.

Public Transportation and Highway Improvement Act, R.S.O. 1990, c.P.50, Ontario Regulation 160/02, Standards for Bridges. (2002). https://www.ontario.ca/laws/regulation/r02160

Municipal Engineers Association. (2014). *Municipal Heritage Bridges Cultural, Heritage and Archaeological Resources Assessment Checklist*. http://www.municipalclassea.ca/files/Clarifications/Bridges%20Check%20List%20april%202014.pdf

Natural Resources Canada. (1996). *Waterloo Sheet* [Map].

Ontario Heritage Trust. (n.d.a). *Easement Properties*. Ontario Heritage Trust. https://www.heritagetrust.on.ca/en/property-types/easement-properties

Ontario Heritage Trust. (n.d.b). *Ontario Heritage Act Register*. https://www.heritagetrust.on.ca/en/pages/tools/ontario-heritage-act-register

Ontario Heritage Trust. (n.d.c). *Places of Worship Inventory*. Ontario Heritage Trust. https://www.heritagetrust.on.ca/en/places-of-worship/places-of-worship-database

Ontario Heritage Trust. (n.d.d). *Provincial Plaque Program*. Ontario Heritage Trust. https://www.heritagetrust.on.ca/en/pages/programs/provincial-plaque-program

Parks Canada. (n.d.a). *Canadian Register of Historic Places*. https://www.historicplaces.ca/en/home-accueil.aspx

Parks Canada. (n.d.b). *Directory of Federal Heritage Designations*. https://www.pc.gc.ca/apps/dfhd/search-recherche_eng.aspx

Parsell & Co., H. (1881). *Illustrated Historical Atlas of the County of Waterloo* [Map].

Region of Waterloo. (2010). *History*. http://www.regionofwaterloo.ca/en/discoveringTheRegion/history.asp

Region of Waterloo. (2011). *Scenic Roads and Special Character Streets, Resource Document*.

Region of Waterloo. (2018). *Region of Waterloo Public Building Inventory—Educational Buildings – Part 2*. https://www.regionofwaterloo.ca/en/exploring-the-region/resources/Documents/Public_Building_Inventory_Part_2_-_Educational_Buildings-access.pdf

Region of Waterloo Museums. (2022). *History of Woolwich Township*. https://regionofwaterloomuseums.ca/en/collections-and-research/woolwich-township.aspx#floradale

Region of Waterloo: Planning, Housing, and Community Services. (2004a). *Spanning the Generations: A Study of Old Bridges in Waterloo Region, Phase 1: Inventory*.

Region of Waterloo: Planning, Housing, and Community Services. (2004b). *Spanning the Generations—Phase 2: Heritage Assessment*. Heritage Planning Advisory Committee. https://www.regionofwaterloo.ca/en/exploring-the-region/resources/Documents/BridgePhase21.pdf

Region of Waterloo: Planning Housing and Community Services. (2007). *Spanning the Generations: A Study of Old Bridges in Waterloo Region, Phase 3: Heritage Assessment of Truss Bridges*. Heritage Planning Advisory Committee. https://www.regionofwaterloo.ca/en/exploring-the-region/resources/Documents/BridgePhase3.pdf

Township of Woolwich. (1940). *Original Drawings for Floradale Bridge (040106)*.

Township of Woolwich. (2019). *Township of Woolwich Municipal Heritage Register*. https://www.woolwich.ca/en/discover-us/resources/Heritage-Commitee/Heritage---Municipal-Heritage-Register.pdf

Township of Woolwich. (2020). *Township of Woolwich Bridge Inventory*. On file with the author.

Township of Woolwich. (2021). *Ontario Structure Inspection Manual*.

TRCA, (Toronto and Region Conservation Authority). (2011). *Crossing the Humber: The Humber River Heritage Bridge Inventory*. http://trca.on.ca/dotAsset/134187.pdf

Tremaine, G. C. (1861). *Tremaine's Map of Waterloo County* [Map]. George C. Tremaine.

Troyano, L. F. (2003). *Bridge Engineering: A Global Perspective*. Thomas Telford Publishing.

Waterloo Region Museum. (2017a). *Woolwich Township*. http://www.waterlooregionmuseum.ca/en/collections-and-research/woolwich-township.aspx

Waterloo Region Museum. (2017b, August 15). *History of Waterloo Township*. http://www.waterlooregionmuseum.ca/en/collections-and-research/waterloo-township.aspx

Williamson, R. F. (1990). The Early Iroquoian Period of Southern Ontario. In C. J. Ellis & N. Ferris (Eds.), *The Archaeology of Southern Ontario to A.D. 1650* (pp. 291–320). Ontario Archaeological Society Inc.

Woolwich Township. (n.d.). *Bridges*. http://www.woolwich.ca/en/discover-us/Bridges.aspx

Appendix A: Qualified Persons Involved in the Project

Lindsay Graves, M.A., C.A.H.P.
Senior Cultural Heritage Specialist, Assistant Manager - Cultural Heritage Division

The Senior Project Manager for this Cultural Heritage Evaluation Report is **Lindsay Graves** (M.A., Heritage Conservation), Senior Cultural Heritage Specialist and the Environmental Assessment Coordinator for the Cultural Heritage Division. She was responsible for: overall project scoping and approach; development and confirmation of technical findings and study recommendations; application of relevant standards, guidelines and regulations; and implementation of quality control procedures. Lindsay is academically trained in the fields of heritage conservation, cultural anthropology, archaeology, and collections management and has over 15 years of experience in the field of cultural heritage resource management. This work has focused on the assessment, evaluation, and protection of above ground cultural heritage resources. Lindsay has extensive experience undertaking archival research, heritage survey work, heritage evaluation and heritage impact assessment. She has also contributed to cultural heritage landscape studies and heritage conservation plans, led heritage commemoration and interpretive programs, and worked collaboratively with multidisciplinary teams to sensitively plan interventions at historic sites/places. In addition, she is a leader in the completion of heritage studies required to fulfil Class Environmental Assessment processes and has served as Project Manager for over 100 heritage assessments during her time at Archaeological Services Incorporated (A.S.I.). Lindsay is a member of the Canadian Association of Heritage Professionals.

John Sleath, M.A.
Cultural Heritage Specialist, Project Manager - Cultural Heritage Division

The Project Manager for this Cultural Heritage Evaluation Report is **John Sleath** (MA), who is a Cultural Heritage Specialist and Project Manager within the

Cultural Heritage Division with A.S.I. He was responsible for the day-to-day management activities, including scoping of research activities and site surveys and drafting of study findings and recommendations. John has worked in a variety of contexts within the field of cultural heritage resource management for the past 14 years, as an archaeologist and as a cultural heritage professional. An exposure to both land-based and underwater archaeology and above ground cultural heritage assessments has provided John with a holistic understanding of heritage in a variety of contexts. In 2015 John began working in the Cultural Heritage Division researching and preparing a multitude of cultural heritage assessment reports and for which he was responsible for a variety of tasks including: completing archival research, investigating built heritage and cultural heritage landscapes, report preparation, historical map regression, and municipal consultation. Since 2018 John has been a project manager responsible for a variety of tasks required for successful project completion. This work has allowed John to engage with stakeholders from the public and private sector, as well as representatives from local municipal planning departments, government agencies, and museums. John has conducted hundreds of cultural heritage assessments across Ontario, with a focus on transit and rail corridor infrastructure including bridges and culverts.

Lindsay Parsons, M.P.L., M.M.St.
Cultural Heritage Technician, Technical Writer and Researcher - Cultural Heritage Division

The Cultural Heritage Technician for this Cultural Heritage Evaluation Report is **Lindsay Parsons** (M.P.L., M.M.St.), who is a Cultural Heritage Technician and Technical Writer and Researcher within the Cultural Heritage Division. She was responsible for preparing and contributing to research and technical reporting. Lindsay's work as a cultural heritage professional has focused on historical and archival research, interpreting the built environment, and cultural heritage landscape studies. Lindsay holds a M.P.L. from Toronto Metropolitan University, where she focused her studies on understanding the values that guide heritage conservation practices and how these values influence what and whose heritage is conserved. Lindsay also graduated with an M.M.St., where she focused her studies on collections management, as well as interpretation and story-telling

with a particular focus on the built environment. Lindsay's experience in and understanding of both the museum and planning worlds has given her a holistic understanding of cultural heritage resources, the many challenges they face in ever-evolving environments, and best practices in their conservation and interpretation.

Appendix B: Select Structural Drawings

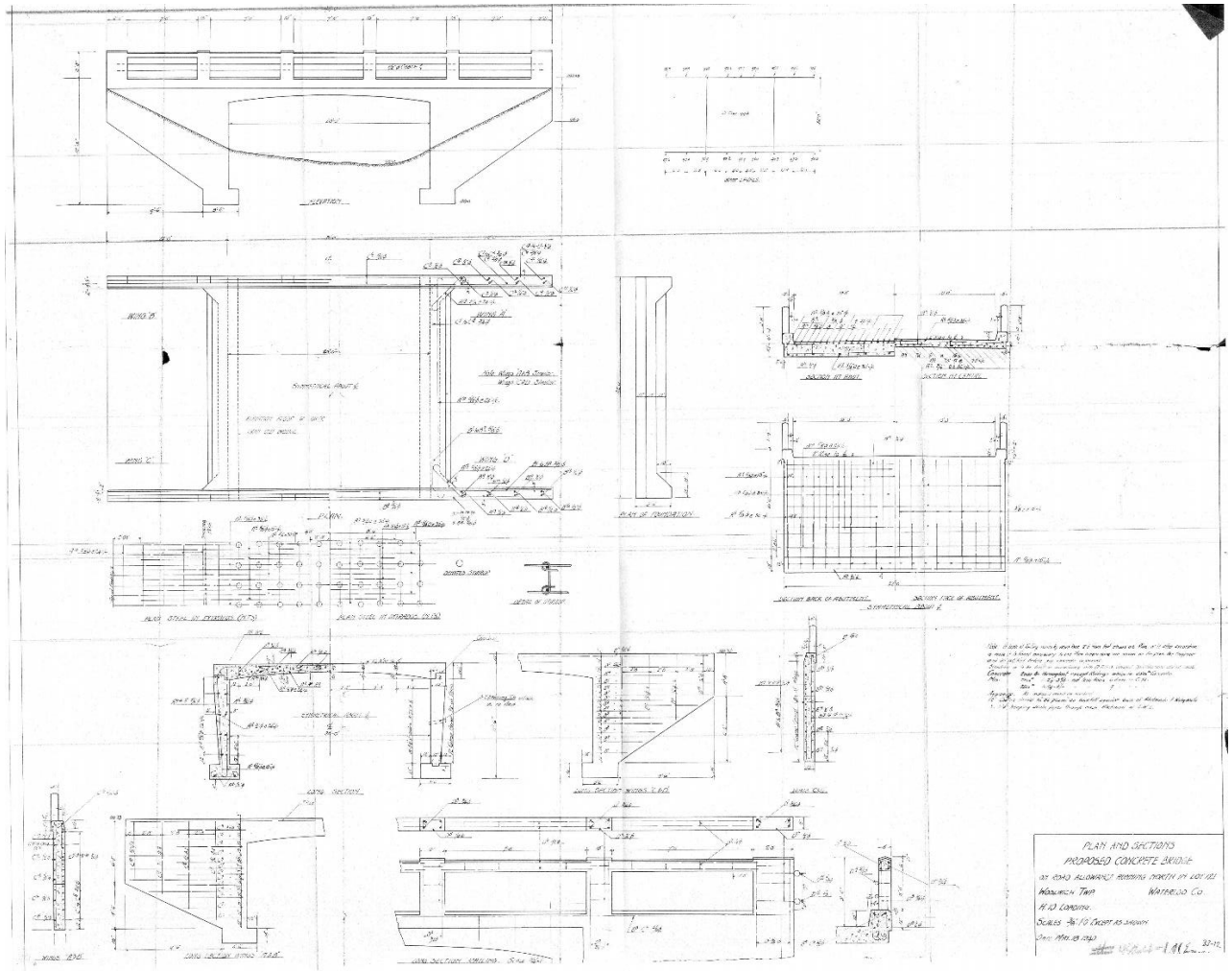

Figure 22: Original drawings for Floradale Road Bridge (Township of Woolwich, 1940).

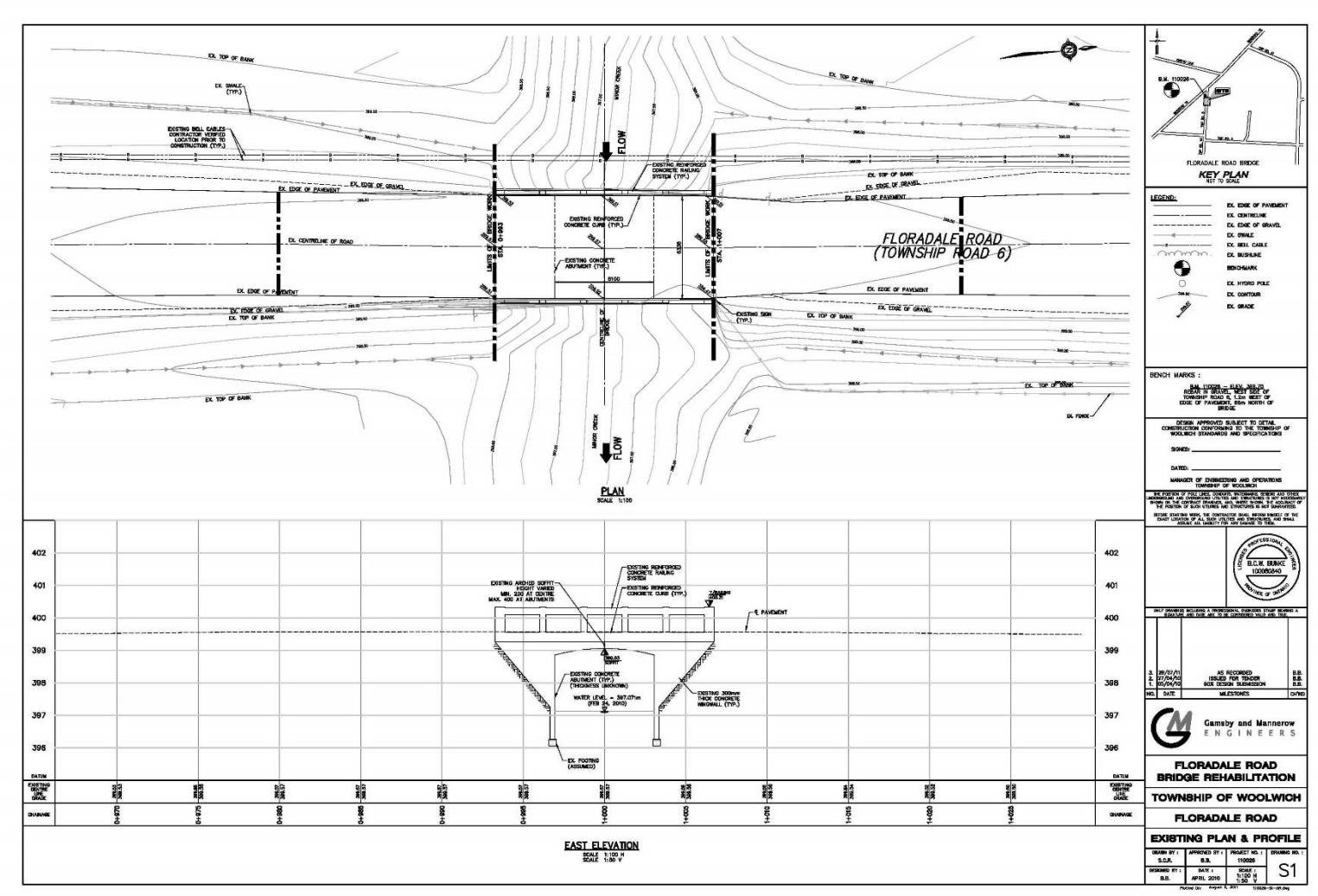

Figure 23: Drawings for Floradale Road Bridge rehabilitation work in 2010 showing the original structure (GM BluePlan Engineering Ltd., 2010).(Township of Woolwich, 1940)

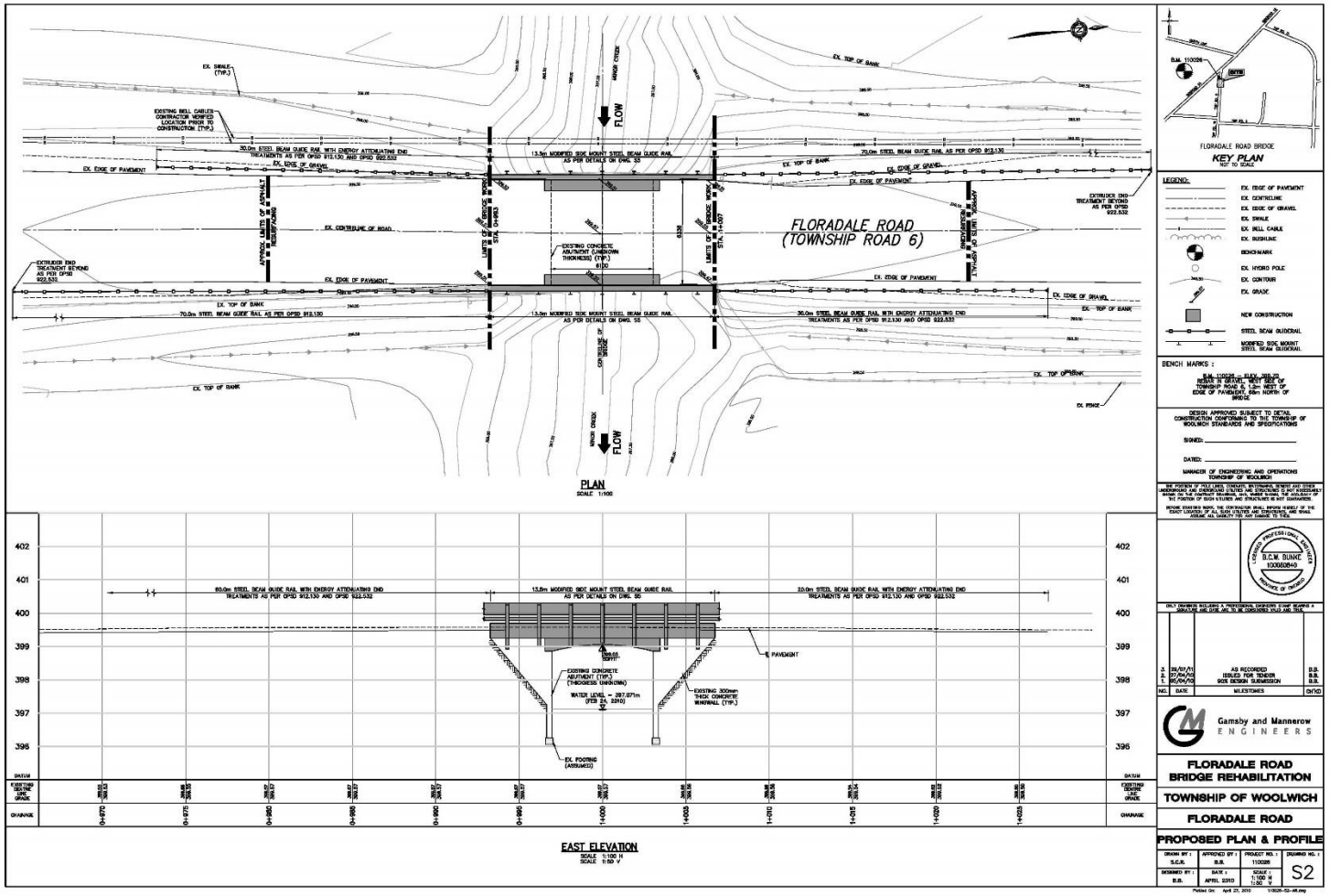

Figure 24: Drawings for Floradale Road Bridge rehabilitation work in 2010 showing the new steel barriers (GM BluePlan Engineering Ltd., 2010).

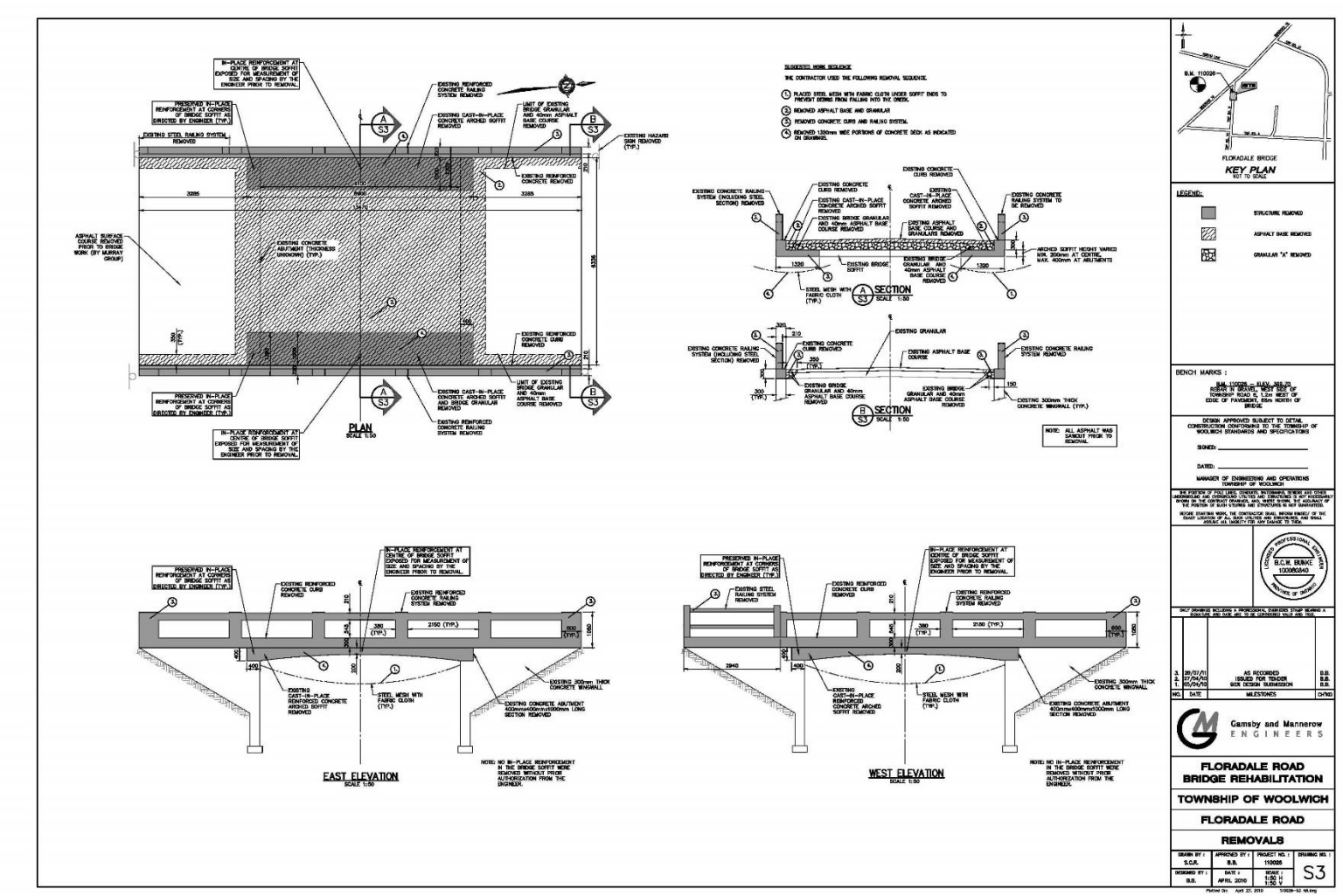

Figure 25: Drawings for Floradale Road Bridge rehabilitation work in 2010 showing the original concrete barriers (GM BluePlan Engineering Ltd., 2010).

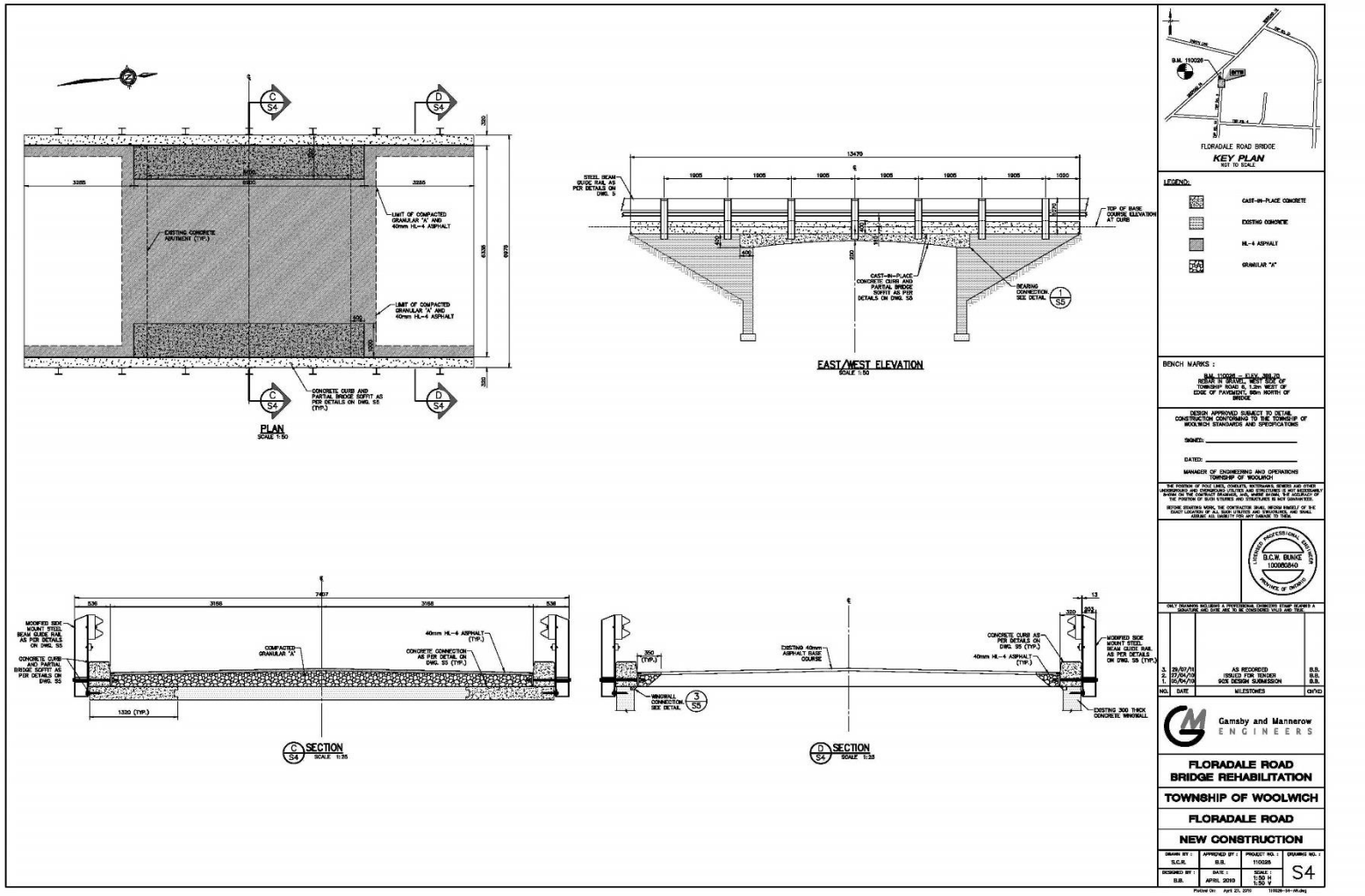

Figure 26: Drawings for Floradale Road Bridge rehabilitation work in 2010 showing the new steel barriers (GM BluePlan Engineering Ltd., 2010).

Appendix C: Comparable Cast-in-Place Concrete Rigid Frame Structures

Compiled by Archaeological Services Inc. based on the Ministry of Transportation (M.T.O.) Bridge Inventory (West Region) (Ministry of Transportation, 2017), the Township of Woolwich Structure Inventory (Township of Woolwich, 2020), and *Arch, Truss, and Beam: The Grand River Watershed Heritage Bridge Inventory* (Benjamin et al., 2013).

It should be noted that the year built for Floradale Road Bridge is listed as 1945 in the Township of Woolwich Structure Inventory. However, the original structural drawings for the subject bridge are dated 1940. The reason for the discrepancy in dates is unknown. For this report, it is assumed that the bridge was likely constructed in 1940. If the bridge was however constructed in 1945, this would only minimally impact the comparative analysis below and the outcomes of the analysis and this report, in general, would remain the same.

Table 1: Concrete Rigid Frame Bridges in the M.T.O. Inventory

STRUCTURE	TYPE 1	MATERIAL 1	YEAR BUILT	# OF SPANS	DECK LENGTH
HIGHWAY #19 UNDERPASS.....	Rigid Frame, T Beam	Reinforced Cast-In-Place Concrete	1955	1	35.2
GLANWORTH DRIVE UNDERPASS	Rigid Frame, Box Girder	Reinforced Cast-In-Place Concrete	1958	1	41.5
WESTMINSTER DRIVE UNDERPASS	Rigid Frame, Box Girder	Reinforced Cast-In-Place Concrete	1959	1	30.8
FLAT CREEK BRIDGE #1	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1937	1	19.5
ROYAL OAK CREEK BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1941	1	13.3
GRAND RIVER BRIDGE (KELDON)	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1942	2	22.6
KIPPEN RIVER BRIDGE #2	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1947	1	10.9
CHRISTINA STREET UNDERPASS	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1951	2	44.3
SMOKEY CREEK BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1952	1	10.1
Nine Mile River Bridge	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1953	1	20.5

STRUCTURE	TYPE 1	MATERIAL 1	YEAR BUILT	# OF SPANS	DECK LENGTH
DUCK CREEK BR.	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1953	1	10.4
NANTICOKE CREEK BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1953	1	17.2
BIG CREEK BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1953	2	25.8
PUTNAM ROAD & CNR OVERPASS	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1955	2	37.3
CEDAR CREEK BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1955	1	20.7
Shallow Lake Bridge	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1955	1	10
PINE RIVER BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1957	1	19.5
BLACK CREEK BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1957	1	10.4
Hopewell Creek Bridge	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1957	1	14
ERAMOSA R BR (ROCKWOOD)	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1958	3	33.5
STOKES RIVER BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1958	1	19
FAIRBANK CREEK BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1958	1	17.2
STYX RIVER BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1958	1	17.4
PUSLINCH #10 U'PASS	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1959	2	41.5
Bear Creek Bridge	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1959	2	23.7
Maxwell Creek Bridge	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1959	2	23.8
Big Creek Bridge #2	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1959	1	13.9
Big Creek Bridge #4	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1959	1	14.2
Big Creek Bridge #1	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1959	1	13.9
Big Creek Bridge #3	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1959	1	13.9
Grand River Electric R. R. Overpass	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1960	1	18.6
C.N.R. Overpass	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1960	1	10.1
LITTLE BAPTISTE CREEK BRIDGE EBL.	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1960	1	12.4

STRUCTURE	TYPE 1	MATERIAL 1	YEAR BUILT	# OF SPANS	DECK LENGTH
East Quarter Road Overpass (Blenheim Road).	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1960	1	11
BIG CREEK # 5. HWY #40	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1960	1	14.2
BAPTISTE CREEK BRIDGE, EBL	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1960	1	20.3
BAPTISTE CREEK BRIDGE, WBL	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1960	1	20.3
LITTLE BAPTISTE CREEK BRIDGE WBL	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1960	1	12.1
Nottawasaga River Bridge - Hwy #10	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1960	1	15.8
MACKENZIE CREEK BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1960	3	38.7
OXFORD COUNTY ROAD #3 UNDERPASS	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1960	2	38.3
Wolverton Road Overpass	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1960		
Proctor Drain Bridge	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	8.2
FLOOK & HINTON DRAIN BRIDGE WBL	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	20.4
GOVERNMENT DRAIN #1 BRIDGE WBL	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	18.9
GOVERNMENT DRAIN #3 BRIDGE E.B.L.	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	18.9
GOVERNMENT DRAIN #3 BRIDGE W.B.L.	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	18.9
MCGREGOR CREEK BRIDGE	Rigid Frame, Slab	Post-Tensioned Cast-In-Place Concrete	1961	1	42.7
GOVERNMENT DRAIN #2 BRIDGE EBL	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	18.9
MCGREGOR CREEK BRIDGE, W.B.L.	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	10.7
DODD CREEK BRIDGE (EBL)	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	17.3
DODD CREEK BRIDGE (WBL)	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	17.3
McGregor Creek Drain Bridge	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	11
Taff Creek Drain Bridge W.B.L.	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	9.1
RALEIGH PLAINS DRAIN BRIDGE EBL	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	14.9
RALEIGH PLAINS DRAIN BRIDGE WBL	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	14.9

STRUCTURE	TYPE 1	MATERIAL 1	YEAR BUILT	# OF SPANS	DECK LENGTH
MCDOUGALL DRAIN BRIDGE, E.B.L.	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	10.4
Taff Creek Drain Bridge E.B.L.	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	9.1
MCDOUGALL DRAIN BRIDGE, W.B.L.	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	10.1
GOVERNMENT DRAIN #1 BRIDGE EBL	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	18.9
GOVERNMENT DRAIN #2BRIDGE WBL	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	18.9
FLOOK & HINTON DRAIN BRIDGE EBL	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	20.4
MCGREGOR CREEK BRIDGE E.B.L.	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	10.7
QUEEN STREET OVERPASS (EBL)	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	18.9
QUEEN STREET OVERPASS (WBL)	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	18.9
TILBURY CREEK BRIDGE #2 (EBL)	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	17.4
TILBURY CREEK BRIDGE #2 (WBL)	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	1	17.4
DRUMBO ROAD UNDERPASS.....	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1961	2	50.1
AUSABLE RIVER BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1962	1	9.3
CATFISH CREEK BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1962	1	21
OTTER CREEK (NORTH) BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1962	1	18.9
FLEMING CREEK BRIDGE EBL	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1962	1	8.7
FLEMMING CREEK BRIDGE WBL	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1962	1	8.7
OTTER CREEK (SOUTH) BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1962	1	12
MEDWAY CREEK BRANCH BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1963	1	17
MEDWAY CREEK BRANCH BRIDGE (BIRR)	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1963	1	16.9
SANDUSK CREEK BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1963	1	13.4
LITTLE MAITLAND RIVER BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1964	1	13.8
Guelph Street Overpass NBL	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1967	1	22.6

STRUCTURE	TYPE 1	MATERIAL 1	YEAR BUILT	# OF SPANS	DECK LENGTH
DODDS CREEK BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1967	1	11.3
Guelph Street Overpass SBL	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1967	1	22.6
PINE RIVER BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1968	1	18.3
SILVER CREEK BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1969	1	9.1
INDIAN BROOK BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1973	1	16.2
CLAY CREEK BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1974	1	10.3
PERCH (COW) CREEK BR (EBL)	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1976	1	10.5
PERCH (COW) CREEK BR (WBL)	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1976	1	10.5
POTTAWATOMI RIVER BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1978	1	10.4
DOMTAR ACCESS RD. OVERPASS	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1981	1	9.8
SANDUSK CREEK HWY. 3	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1984	1	17.5
CREENOCK CREEK BRIDGE (RIVERSDALE)	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1986	1	10
KENNY CREEK BRIDGE EBL	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1987	1	13.6
KENNY CREEK BRIDGE WBL	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1987	1	13.6
Mitchell's Creek	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1989	1	11
PENETANGORE RIVER BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1992	1	8.8
Medway Creek Bridge	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1995	1	12.4
BELLS CREEK BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1997	1	17
MAITLAND RIVER BRIDGE #3	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	2003	1	20.5
LIFFEY DRAIN BRIDGE (DUBLIN)	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	2003	1	13.7
FISH CREEK BRIDGE #3	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	2003	1	14
New Dundee Direct Access Road Bridge	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	2006	1	16.3
MAITLAND RIVER BRIDGE (TRIBUTARY)	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	2007	1	13.8

STRUCTURE	TYPE 1	MATERIAL 1	YEAR BUILT	# OF SPANS	DECK LENGTH
DREDGE CREEK BRIDGE (HARRISTON)	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	2007	1	10.5
FARLEY'S CREEK BRIDGE	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	2008	1	14.7
Camp Creek Bridge	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	2009		
Kemp Creek Bridge	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	2009		
RUSCOM RIVER BRIDGE	Rigid Frame, T Beam	Reinforced Cast-In-Place Concrete	1953	1	24
BELLE R. BR.	Rigid Frame, T Beam	Reinforced Cast-In-Place Concrete	1953	1	29
HIGHWAY #59 UNDERPASS.....	Rigid Frame, T Beam	Reinforced Cast-In-Place Concrete	1955	1	34.4
DORCHESTER ROAD UNDERPASS	Rigid Frame, T Beam	Reinforced Cast-In-Place Concrete	1955	1	35.2
COUNTY ROAD #46 OVERPASS	Rigid Frame, T Beam	Reinforced Cast-In-Place Concrete	1955	1	20.2
WESTCHESTER BOURNE (HWY#74) UNDERPASS	Rigid Frame, T Beam	Reinforced Cast-In-Place Concrete	1956	1	38
HIGHWAY #4 UNDERPASS	Rigid Frame, T Beam	Reinforced Cast-In-Place Concrete	1956	1	38.6
HIGHWAY #3 UNDERPASS	Rigid Frame, T Beam	Reinforced Cast-In-Place Concrete	1956	2	41
NORTH TALBOT ROAD UNDERPASS	Rigid Frame, T Beam	Reinforced Cast-In-Place Concrete	1956	1	35
SWEABURG ROAD OVERPASS.....	Rigid Frame, T Beam	Reinforced Cast-In-Place Concrete	1956	1	17.3
ELGIN ROAD (HWY #73) UNDERPASS	Rigid Frame, T Beam	Reinforced Cast-In-Place Concrete	1957	1	35
WHIRL CREEK BRIDGE	Rigid Frame, T Beam	Reinforced Cast-In-Place Concrete	1959	1	26.8
Waterloo Regional Road #8 Overpass	Rigid Frame, T Beam	Reinforced Cast-In-Place Concrete	1960	2	38.6
BOSTON CREEK BRIDGE	Rigid Frame, T Beam	Reinforced Cast-In-Place Concrete	1960	1	26.2
BLACK CREEK BRIDGE (SEBRINGVILLE)	Rigid Frame, T Beam	Reinforced Cast-In-Place Concrete	1984	1	21
BELLE RIVER RD. O/P	Rigid Frame, T Beam	Reinforced Cast-In-Place Concrete	2009	1	13
CNR Overhead WBL	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1968	1	9.5
CNR Overhead EBL	Rigid Frame, Slab	Reinforced Cast-In-Place Concrete	1968	1	9.5

Table 2: Concrete Rigid Frame Bridges in Township of Woolwich Structure Inventory

STRUCTURE TYPE	DECK LENGTH (M)	ROAD NAME	YEAR BUILT
Concrete rigid frame, vertical legs	10.70	Sideroad 18	1945
Concrete rigid frame, vertical legs	9.40	Sideroad 18	1958
Rigid frame-arched soffit	**7.30**	**Floradale Road**	**1945**
Concrete rigid frame, vertical legs	4.30	Sandy Hills Drive	1950
Concrete rigid frame, vertical legs	4.90	Reid Woods Drive	1930
Concrete rigid frame, vertical legs	4.40	Reid Woods Drive	1950
Concrete rigid frame, vertical legs	5.70	Gravel Laneway	N.A.
Concrete rigid frame	3.60	Middlebrook Place	1932
Concrete rigid frame-arched soffit	20.70	Woolis Road	1990
Two Span concrete rigid frame	14.10	New Jerusalem Road	1988
Concrete rigid frame, vertical legs	6.80	New Jerusalem Road	1927
Concrete rigid frame, vertical legs	17.00	Cox Creek Road	1987
Concrete rigid frame	6.90	Apple Grove Road	1945
Concrete rigid frame, vertical legs	8.10	Pine Creek Road	1920
Concrete rigid frame, vertical legs	19.90	Woolwich Street South	1955

Table 3: Concrete Rigid Frame Bridges in The Grand River Watershed Heritage Bridge Inventory

BRIDGE NAME	YEAR BUILT	TYPE	SPANS	DECK LENGTH (M)	MATERIALS
Blanford-Blenheim Bridge #5	1960	Rigid Frame	Single	15.1	Concrete
Blandford-Blenheim Bridge #8	1960	Rigid Frame	Single	10.5	Concrete
Site Number 71 Bridge	c. 1930	Rigid Frame	Single	20.2	Reinforced concrete
Site Number 72 Bridge	c. 1940	Rigid Frame	Single	18.8	Reinforced concrete
Site Number 74 Bridge	c. 1940	Rigid Frame	Single	16.2	Reinforced concrete
Site Number 75 Bridge (Private Access)	c. 1940	Rigid Frame	Single	16	Reinforced concrete

BRIDGE NAME	YEAR BUILT	TYPE	SPANS	DECK LENGTH (M)	MATERIALS
Millbank Bridge (Site Number 88)	c. 1970	Rigid Frame	Single	21.3	Reinforced concrete
Blair Bridge	1957	Rigid Frame	3	Unknown	Reinforced concrete
Conestogo River Bridge #4	1931	Rigid Frame	Single	16	Reinforced Concrete
Conestogo River Bridge #5	1931	Rigid Frame with Arch	Single	Unknown	Reinforced Concrete
Conestogo River Bridge #6	1931	Rigid Frame	Single	18.5	Reinforced Concrete
Conestogo River Bridge #10	1934	Rigid Frame	Single	13.5	Reinforced Concrete
Dewar Bridge (Wellesley Bridge No. 5)	1934	Rigid Frame	Single	16.4	Reinforced Concrete
Grand River Bridge	1953	Rigid Frame	3	43.1	Concrete
ELGV Bridge #7	c. 1920	Rigid Frame	Single	15.2	Reinforced Concrete
ELGV Bridge #10	c. 1930	Rigid Frame	Single	9.8	Reinforced Concrete
G. Anderson Bridge (Melancthon Bridge #11)	c. 1960	Rigid Frame	Single	22	Reinforced Concrete

Appendix D: Municipal Heritage Bridges Cultural, Heritage and Archaeological Assessment Checklist for Floradale Road Bridge

Municipal Heritage Bridges
Cultural, Heritage and Archaeological Resources Assessment Checklist

Project Name: Floradale Road Bridge Replacement Municipal Class Environmental Assessment

Location: Regional Municipality of Waterloo

Municipality: Township of Woolwich

Project Engineer: GM BluePlan Engineering Limited

Checklist completed by: Lindsay Parsons, Archaeological Services Inc.

Date: November 25, 2022

NOTE: Complete all sections of Checklist. Both Cultural Heritage and Archaeological Sections must be satisfied before proceeding.

Part A - Municipal Class EA Activity Selection

Description	Yes	No
Will the proposed project involve or result in construction of new water crossings? This includes ferry docks.	☐ Schedule B or C	☑ Next
Will the proposed project involve or result in construction of new grade separation?	☐ Schedule B or C	☑ Next
Will the proposed project involve or result in construction of new underpasses or overpasses for pedestrian recreational or agricultural use?	☐ Schedule B or C	☑ Next
Will the proposed project involve or result in construction of new interchanges between any two roadways, including a grade separation and ramps to connect the two roadways?	☐ Schedule B or C	☑ Next
Will the proposed project involve or result in reconstruction of a water crossing where the structure is less than 40 years old and the reconstructed facility will be for the same purpose, use, capacity and at the same location? (Capacity refers to either hydraulic or road capacity.) This include ferry docks.	☐ Schedule A+	☑ Next

Description	Yes	No
Will the proposed project involve or result in reconstruction of a water crossing, where the reconstructed facility will not be for the same purpose, use, capacity or at the same location? (Capacity refers to either hydraulic or road capacity). This includes ferry docks.	☐ Schedule B or C	☑ Next
Will the proposed project involve or result in reconstruction or alteration of a structure or the grading adjacent to it when the structure is over 40 years old where the proposed work will alter the basic structural system, overall configuration or appearance of the structure?	☑ Next	☐ Assess Archaeological Resources

Part B - Cultural Heritage Assessment

Description	Yes	No
Does the proposed project involve a bridge construction in or after 1956?	☐ Next	☑ Prepare CHER Undertake HIA
Does the project involve one of these three bridge types?	☑ Rigid frame Next ☐ Simple Support Next ☐ Structural Steel Next	☐ Prepare CHER Undertake HIA
Does the bridge or study area contain a parcel of land that is subject of a covenant or agreement between the owner of the property and a conservation body or level of government?	☐ Prepare CHER Undertake HIA	☑ Next
Does the bridge or study area contain a parcel of land that is listed on a register or inventory of heritage properties maintained by the municipality?	☐ Prepare CHER Undertake HIA	☑ Next

Description	Yes	No

Does the bridge or study area contain a parcel of land that is designated under Part IV of the Ontario Heritage Act?	☐ Prepare CHER Undertake HIA	☑ Next
Does the bridge or study area contain a parcel of land that is subject to a notice of intention to designate issued by a municipality?	☐ Prepare CHER Undertake HIA	☑ Next
Does the bridge or study area contain a parcel of land that is located within a designated Heritage Conservation District?	☐ Prepare CHER Undertake HIA	☑ Next
Does the bridge or study area contain a parcel of land that is subject to a Heritage Conservation District study area by-law?	☐ Prepare CHER Undertake HIA	☑ Next
Does the bridge or study area contain a parcel of land that is included in the Ministry of Tourism, Culture and Sport's list of provincial heritage properties?	☐ Prepare CHER Undertake HIA	☑ Next
Does the bridge or study area contain a parcel of land that is part of a National Historic Site?	☐ Prepare CHER Undertake HIA	☑ Next
Does the bridge or study area contain a parcel of land that is part of a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?	☐ Prepare CHER Undertake HIA	☑ Next
Does the bridge or study area contain a parcel of land that is designated under the Heritage Railway Station Protection Act?	☐ Prepare CHER Undertake HIA	☑ Next
Does the bridge or study area contain a parcel of land that is identified as a Federal Heritage Building by the Federal Heritage Building Review Office (FHBRO)	☐ Prepare CHER Undertake HIA	☑ Next

Description	Yes	No
Does the bridge or study area contain a parcel of land that is the subject of a municipal, provincial or federal commemorative or interpretive plaque that speaks to the Historical significance of the bridge?	☐ Prepare CHER Undertake HIA	☑ Next
Does the bridge or study area contain a parcel of land that is in a Canadian Heritage River watershed?	☑ Prepare CHER Undertake HIA	☐ Next
Will the project impact any structures or sites (not bridges) that are over forty years old, or are important to defining the character of the area or that are considered a landmark in the local community?	☐ Prepare CHER Undertake HIA	☑ Next
Is the bridge or study area adjacent to a known burial site and/or cemetery?	☐ Prepare CHER Undertake HIA	☑ Next
Is the bridge considered a landmark or have a special association with a community, person or historical event in the local community?	☐ Prepare CHER Undertake HIA	☑ Next
Does the bridge or study area contain or is it part of a cultural heritage landscape?	☐ Prepare Cher Undertake HIA	☑ Assess Archaeological Resources

PART C - HERITAGE ASSESSMENT

Description	Yes	No
Does the Cultural Heritage Evaluation Report identify any Heritage Features on the project?	☐ Undertake HIA	☑ Part D - Archaeological Resources
Does the Heritage Impact Assessment determine that the proposed project will impact any of the Heritage Features that have been identified?	☐ Schedule B or C	☑ Part D - Archaeological Resources

PART D - ARCHAEOLOGICAL RESOURCES ASSESSMENT

Description	Yes	No
Will any activity, related to the project, result in land impacts/significant ground disturbance?	☑ Next	☐ Schedule A - proceed
Have all areas, to be impacted by ground disturbing activities, been subjected to recent extensive and intensive disturbances and to depths greater than the depths of the proposed activities?	☐ Schedule A - proceed	☑ Next
Has an archaeological assessment previously been carried out that includes all of the areas to be impacted by this project?	☐ Next	☑ Archaeological Assessment
Does the report on that previous archaeological assessment recommend that no further archaeological assessment is required within the limits of the project for which that assessment was undertaken, and has a letter been issued by the Ministry of Tourism, Culture and Sport stating that the report has been entered into the Ontario Public Register of Archaeological Reports?	☐ Schedule A - proceed	☑ Obtain satisfaction letter - proceed

** Include Documentation Summary in Project File**

Ontario Structure Inspection Manual - Inspection Form

MTO Site Number: 380164

Structure Name: Bridge 380164 | Structure ID: 380164

Inventory Data:

Structure Name	Bridge 380164		
Hwy/Road Name	Pine Creek Road	Crossing Type: On: NonNavWater	Under: Road
MTO Site Number	380164	Main Hwy/Road #	
Structure Location	335m northeast of St. Charles Street East		
Latitude (decimal degrees)	43.54945	Longitude (decimal degrees)	-80.37506
Owner 1:	Township of Woolwich	100%	Owner 2: 0%
Region	Southwestern	Heritage:	Not Cons ☑ Cons Not/App ☐ List/Not Desig ☐
District	London/Stratford	Designation:	Desig Not List ☐ Desig List ☐
Old County	Waterloo	Road Class:	Freeway ☐ Arterial ☐ Collector ☐ Local ☑
Geographic Twp	Woolwich	No. of Lanes: 2	Posted Speed: 80 (km/h)
Structure Type	Rigid Frame, Vertical Legs	AADT: 190	Trucks: 2.00 (%)
Total Deck Length	8.1 (m)	Estimated Replacement Value:	$900,000
Overall Str Width	6.9 (m)	Replacement Value is based on like-for-like replacement using typical costs for budget purposes only.	
Total Deck Area	55.9 (sq m)	Min. Vertical Clearance	(m)
Roadway Width	6.2 (m)	Special Routes:	Transit ☐ Truck ☐ School ☐ Bicycle ☐
Skew Angle	0.0 (deg)	Detour Length	(km)
No. of Spans	1	Direction of Structure	East/West
Span Lengths	7.0 (m)	Fill on Structure	0.0 (m)

Historical Data:

Year Built	1938 (yyyy)	Year of Last Rehab	(yyyy)
Last OSIM Inspection	10/04/2019 (mm/dd/yyyy)	Last Evaluation	2009 (mm/dd/yyyy)
Last Enhanced OSIM Inspection	(mm/dd/yyyy)	Current Load Limit	10 (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc)		Load Limit By Law	
		By Law expiry Date	
Last Condition Survey	(mm/dd/yyyy)	Last underwater Inspection	(mm/dd/yyyy)

Rehabiliation History:

Ontario Structure Inspection Manual - Inspection Form

MTO Site Number: 380164

Structure Name: Bridge 380164

Structure ID: 380164

Field Inspection Information:

Date of Inspection:	10/12/2021 (mm/dd/yyyy)	Inspection Type:	OSIM
Inspector:	LF	Weather:	Sunny
Others in Party:	TQ	Temperature ^{o}C:	15
Equipment Used:	Measuring tape, hammer, camera		

Additional Investigations Required:

	Priority			Estimated Cost
	None	Normal	Urgent	
Detailed Deck Condition Survey	☑	☐	☐	$0
Non-destructive Delam. Survey of Asphalt-Covered Deck	☑	☐	☐	$0
Concrete Substructure Condition Survey	☑	☐	☐	$0
Detailed Coating Condition Survey	☑	☐	☐	$0
Detailed Timber Investigation	☑	☐	☐	$0
Post-Tensioned Strand Investigation	☑	☐	☐	$0
Underwater Investigation	☑	☐	☐	$0
Fatigue Investigation	☑	☐	☐	$0
Seismic Investigation	☑	☐	☐	$0
Structure Investigation	☑	☐	☐	$0
Monitoring Deformations, Settlements, Movements	☑	☐	☐	$0
Monitoring Crack Widths	☑	☐	☐	$0
			Total Cost:	**$0**

Investigation Notes:

Overall Structure Notes:

Overall Comments:	Structure is overall in poor condition. Replacement of structure is recommended.		
BCI:	45	Recommended Work:	Replace
Next Inspection:	2023	Recommended Work Time:	1-5yr

Suspected Performance Deficiencies

00 None
01 Load carrying capacity
02 Excessive deformations (deflections & rotations)
03 Continuing settlement
04 Continuing movements
05 Seized bearings
06 Bearing not uniformly loaded/unstable
07 Jammed expansion joint
08 Pedestrian/vehicular hazard
09 Rough riding surface
10 Surface ponding
11 Deck drainage
12 Slippery surface
13 Flooding/channel blockage
14 Undermining of foundation
15 Unstable embankments
16 Other

Maintenance Needs

01 Lift & Swing Bridge Maintenance
02 Bridge Cleaning
03 Bridge Handrail Maintenance
04 Painting Steel Bridge Structures
05 Bridge Deck Joint Repair
06 Bridge Bearing Maintenance
07 Repair to Structural Steel
08 Repair to Bridge Concrete
09 Repair to Bridge Timber
10 Bailey Bridges - Maintenance
11 Animal/Pest Control
12 Bridge Surface Repair
13 Erosion Control at Bridges
14 Concrete Sealing
15 Rout and Seal
16 Bridge Deck Drainage
17 Scaling (Loose Concrete or ACR Steel)
18 Other

Element Group:	**Abutments**	Length:	0.00
Element Name:	**Abutment Walls**	Width:	6.88
Location:	Each end	Height:	1.11
Material:	Cast-in-Place Concrete	Count:	2.0
Element Type:	Legs of Rigid Frame	Total Quantity:	15.3
Element Subtype:		Environment:	Benign
Protection System:	None	Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	sq.m.	0.0	11.3	2.0	2.0	

Comments: Wet stains; Severe honeycombing on each; Narrow to medium stained vertical cracks throughout

Maintenance Priority: | Needs: 0 | Desc.:

Recommended Work | Timing: | Details:

Element Group:	**Abutments**	Length:	3.05
Element Name:	**Wingwalls**	Width:	0.00
Location:	Each quadrant	Height:	1.10
Material:	Cast-in-Place Concrete	Count:	4.0
Element Type:	Reinforced Concrete	Total Quantity:	13.4
Element Subtype:		Environment:	Moderate
Protection System:	None	Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	sq.m.	0.0	11.9	1.0	0.5	

Comments: Light to medium scaling and honeycombing throughout; Narrow to medium stained cracks

Maintenance Priority: | Needs: 0 | Desc.:

Recommended Work | Timing: | Details:

Element Group:	**Accessories**	Length:	0.00
Element Name:	**Signs**	Width:	0.00
Location:		Height:	0.00
Material:	Steel	Count:	6.0
Element Type:	-	Total Quantity:	6.0
Element Subtype:		Environment:	Severe
Protection System:	Hot dip galvanizing	Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	Each	0.0	6.0	0.0	0.0	

Comments: 4 hazard markers, 2 load limit signs; Load limit sign installed at east approach prior to 2021 inspection

Maintenance Priority: | Needs: | Desc.:

Recommended Work | Timing: | Details:

Ontario Structure Inspection Manual - Inspection Form

MTO Site Number: 380164

Structure Name: Bridge 380164

Structure ID: 380164

Element Group:	**Accessories**	Length:	0.00
Element Name:	**Utilities**	Width:	0.00
Location:	South face	Height:	0.00
Material:		Count:	1.0
Element Type:	-	Total Quantity:	1.0
Element Subtype:		Environment:	Moderate
Protection System:		Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	Each	0.0	1.0	0.0	0.0	

Comments:

Maintenance Priority: Needs: 0 Desc.:

Recommended Work Timing: Details:

Element Group:	**Approaches**	Length:	6.00
Element Name:	**Wearing Surface**	Width:	5.00
Location:	Each end	Height:	0.00
Material:	Asphalt	Count:	2.0
Element Type:	-	Total Quantity:	60.0
Element Subtype:		Environment:	Severe
Protection System:	None	Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	sq.m.	0.0	51.0	2.0	7.0	

Comments: Transverse and longitudinal cracks; Light settlement

Maintenance Priority: Needs: 0 Desc.:

Recommended Work Timing: Details:

Element Group:	**Decks**	Length:	8.10
Element Name:	**Deck Top**	Width:	6.20
Location:	All	Height:	0.00
Material:	Cast-in-Place Concrete	Count:	1.0
Element Type:	-	Total Quantity:	50.2
Element Subtype:		Environment:	Moderate
Protection System:	None	Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	sq.m.	0.0	0.0	44.2	6.0	

Comments: Not visible; Assumed in fair condition based on condition of soffit

Maintenance Priority: Needs: 0 Desc.:

Recommended Work Timing: Details:

Element Group:	**Decks**	Length:	7.00
Element Name:	**Soffit - Thick Slab**	Width:	1.00
Location:	Exterior	Height:	0.70
Material:	Cast-in-Place Concrete	Count:	2.0
Element Type:	-	Total Quantity:	23.8
Element Subtype:		Environment:	Moderate
Protection System:	None	Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	sq.m.	0.0	3.1	10.7	10.0	

Comments: Severe spall with exposed corroded rebar; Severe honeycombing; Efflorescence; Narrow to wide cracks; Light scaling

Maintenance Priority: Needs: 0 Desc.:

Recommended Work Timing: Details:

Element Group:	**Decks**	Length:	7.00
Element Name:	**Soffit - Thick Slab**	Width:	4.90
Location:	Interior	Height:	0.00
Material:	Cast-in-Place Concrete	Count:	1.0
Element Type:	-	Total Quantity:	34.3
Element Subtype:		Environment:	Benign
Protection System:	None	Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	sq.m.	0.0	8.1	13.2	13.0	

Comments: Light to severe honeycombing; Narrow cracks with efflorescence; Severe spalls, delamination and disintegration with exposed corroded rebar

Maintenance Priority: Needs: 0 Desc.:

Recommended Work Replace Timing: 1-5 Years Details: Replace structure

---

Element Group:	**Decks**	Length:	8.10
Element Name:	**Wearing Surface**	Width:	5.20
Location:	Over structure	Height:	0.00
Material:	Asphalt	Count:	1.0
Element Type:	-	Total Quantity:	42.1
Element Subtype:		Environment:	Severe
Protection System:	None	Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	sq.m.	0.0	41.1	1.0	0.0	

Comments: Transverse cracks; Light settlement

Maintenance Priority: Needs: 0 Desc.:

Recommended Work Timing: Details:

Ontario Structure Inspection Manual - Inspection Form

MTO Site Number: 380164

Structure Name: Bridge 380164

Structure ID: 380164

Element Group:	**Embankments & Streams**	Length:	0.00
Element Name:	**Embankments**	Width:	0.00
Location:	Each quadrant	Height:	0.00
Material:	Soil	Count:	4.0
Element Type:	-	Total Quantity:	4.0
Element Subtype:		Environment:	Benign
Protection System:		Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	Each	0.0	4.0	0.0	0.0	

Comments: Scour at SW

Maintenance Priority: | Needs: 0 | Desc.:

Recommended Work | Timing: | Details:

Element Group:	**Embankments & Streams**	Length:	0.00
Element Name:	**Streams and Waterways**	Width:	0.00
Location:	All	Height:	0.00
Material:	Other	Count:	1.0
Element Type:	-	Total Quantity:	1.0
Element Subtype:		Environment:	Benign
Protection System:		Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	All	0.0	1.0	0.0	0.0	

Comments: Structure is out of alignment with stream

Maintenance Priority: | Needs: 0 | Desc.:

Recommended Work | Timing: | Details:

Element Group:	**Foundations**	Length:	0.00
Element Name:	**Foundation (below ground level)**	Width:	0.00
Location:	All	Height:	0.00
Material:	Cast-in-Place Concrete	Count:	0.0
Element Type:	Unknown	Total Quantity:	0.0
Element Subtype:		Environment:	Benign
Protection System:		Limited Inspection:	☑

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	All	0.0	0.0	0.0	0.0	

Comments: Not visible; Assumed in fair condition based on condition of rest of structure

Maintenance Priority: | Needs: 0 | Desc.:

Recommended Work | Timing: | Details:

Ontario Structure Inspection Manual - Inspection Form

MTO Site Number: 380164

Structure Name: Bridge 380164

Structure ID: 380164

Element Group:	**Sidewalks/Curbs**	Length:	13.10
Element Name:	**Curbs**	Width:	0.35
Location:	Each side	Height:	0.26
Material:	Cast-in-Place Concrete	Count:	2.0
Element Type:	-	Total Quantity:	16.0
Element Subtype:		Environment:	Severe
Protection System:	None	Limited Inspection:	☐

Condition Data:	Units:	Exc.:	Good:	Fair:	Poor:	Performance Deficiencies:
	sq.m.	0.0	5.5	7.0	3.5	

Comments: Medium to severe scaling; Severe delamination and spalling on top of both curbs; Light honeycombing on faces; Wide transverse/vertical cracks

Maintenance Priority: | Needs: 0 | Desc.:

Recommended Work | Timing: | Details:

Repair / Rehabilitation Required

Element Group	Element	Repair / Rehabilitation	Priority	Const Cost
Decks	Soffit - Thick Slab	Replace structure	1-5 Years	$600,000

Total Repair/Rehabilitation Cost **$600,000**

Associated Work

	Comments	Estimated Cost
Approaches		$0
Detours		$0
Traffic Control		$0
Utilities		$0
Right-of-Way		$0
Environmental Study	*Environmental assessment*	$30,000
Other	*none*	$0

Contingencies	$126,000
Engineering	$144,000
Total Associated Work Cost	**$300,000**

Township of Woolwich	100%	$900,000
	0%	$0

Total Repair / Rehabilitation Cost	$600,000
Total Cost	**$900,000**

Justification

Inspection Photos

North elevation

Plan view looking west

South curb showing severe scaling and spalling

North curb showing severe scaling and spalling

North face showing severe scaling, spalling and cracking with efflorescent staining

Soffit looking southwest

Soffit looking west showing severe spalling with exposed and corroded reinforcing steel

Soffit looking east showing narrow cracks with efflorescence staining and stalactite formation

South soffit exterior showing severe spalling with exposed and corroded reinforcing steel

South soffit exterior showing severe spalling with exposed and corroded reinforcing steel