Appendix D

Cultural Heritage Evaluation Report and Heritage Impact Assessment

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Cultural Heritage Evaluation Report & Heritage Impact Assessment Blacks Bridge, West Corner Drive Municipality of North Middlesex, Middlesex County, Ontario

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Project No: 2021-286
Final Dated: March 18, 2022

EXECUTIVE SUMMARY

Dillon Consulting Limited (Dillon) engaged TMHC Inc. (TMHC) to produce a Cultural Heritage Evaluation Report (CHER) and Heritage Impact Assessment (HIA) that considers the potential heritage value or interest of Blacks (West Corner Drive) Bridge in the Municipality of North Middlesex, Middlesex County (the "Subject Site") and the potential heritage impacts of the bridges proposed replacement.

Section 3.3.6 of the North Middlesex Official Plan identifies the following relevant heritage objectives[1]:

a) Preserve and enhance the significant built heritage resources and significant cultural heritage landscapes…; and,
d) Protect and conserve key cultural, archaeological and built heritage resources in the Municipality through the appropriate use of available planning tools including the evaluation of development proposed on lands adjacent to protected heritage property.

Section 2.2.5 of the Middlesex County Official Plan states:

> This Plan supports the conservation of the County's archaeological cultural and built heritage resources. Development and site alteration on or adjacent to lands containing archaeological resources and/or significant built heritage resources shall maintain the heritage integrity of the site.[2]

This CHER/HIA was triggered through the completion of the *Municipal Heritage Bridges Cultural, Heritage and Archaeological Resources Assessment Checklist* (revised April 11, 2014) as part of ongoing bridge evaluation conducted under O.Reg. 160/02 and O.Reg. 104/97. This CHER/HIA is intended to provide a heritage evaluation of the Subject Site against the criteria set out by the *Ontario Heritage Act* (OHA)'s O.Reg. 9/06, an assessment of the proposed development's impact on identified heritage attributes, and strategies for mitigating that impact. The HIA portion of this report follows the general format set out in the Ministry of Heritage, Sport, Tourism and Culture Industries' (MHSTCI) *InfoSheet #5: Heritage Impact Assessments and Conservation Plans*, which is included in the resource *Heritage Resources in the Land Use Planning Process* within the Ontario Heritage Toolkit.

The Subject Site is a seven-panel, riveted through-truss bridge with a painted superstructure and replacement railings. It carries West Corner Drive across the Ausable River in the Municipality of North Middlesex, Middlesex County. Blacks Bridge is one of two through-truss bridges over the Ausable in former McGillivray Township.

Neither North Middlesex nor Middlesex County maintains a municipal heritage register or inventory. Blacks Bridge has not been municipally listed or designated under either Part IV or Part V of the OHA. There are no National Historic Sites or Provincial Heritage Properties present on or adjacent to the Subject Site. The bridge does not appear on the Ontario Heritage Bridge List.

Evaluation of the Subject Site against the O.Reg. 9/06 criteria concluded Blacks Bridge meets the criteria on the basis of its physical/design value and historical/associative value.

[1] Municipality of North Middlesex 2003, Consolidated 2018
[2] Middlesex County 1997, latest amendment 2006

In order to address structural deterioration, Dillon considered five alternatives as part of the environmental assessment process which included consultation with local stakeholders:

- Alternative 1 – Do Nothing
- Alternative 2 – Rehabilitate for Single-Lane Vehicular Use
- Alternative 3 – Rehabilitate for Active Transportation Only
- Alternative 4 – Replace with a New Bridge (preferred alternative)
    - Option 1 – Replace with a New Bridge (52 m single span)
    - Option 2 – Replace with a New Bridge (41.0 m single span)
    - Option 2A – Replace with a New Bridge (44.0 m single span) (preferred option)
    - Option 3 – Replace with a New Bridge (51 m three-span)
- Alternative 5 – Remove the Bridge

Dillon has indicated that the preferred approach is Alternative 4 – Replacement with a New Bridge. Of the options provided within this alternative, Option 2A is preferred. This option includes a new 44.0m span slab-on-girder bridge with integral (false) abutments including RSS walls at each abutment. The new bridge will be constructed on the same alignment as the existing bridge, and will accommodate two lanes of traffic on West Corner Drive over the Ausable River. A profile grade raise on West Corner Drive is required to accommodate the new structure. The new bridge soffit will maintain the existing vertical clearance.

The proposed replacement bridge includes integral abutments founded on a single row of Steel H piles. The bridge deck will consist of a 225mm thick reinforced concrete deck supported on steel I-girders. The deck will be waterproofed and paved, including a paved deck width of 8.5m and an overall deck width of 9.1m. Concrete parapet walls will be constructed on each side of the bridge deck.

All alternatives were considered using the *Ontario Heritage Bridge Guidelines* (OHBG) and the following mitigation strategies were recommended based on the preferred alternative:

1) In keeping with OHBG Option 8a, TMHC recommends that the final design for the replacement bridge considers and, where possible and appropriate, incorporates the scale, massing, materials, and finishes of the original through-truss bridge in its original location.

2) In keeping with OHBG Option 8b, TMHC recommends that sufficient documentation of the bridge be undertaken prior to demolition. This CHER/HIA represents much of the documentation envisioned by MTO's *Environmental Guide for Built Heritage and Cultural Heritage Landscapes* (section 6.3.1.4) including representative images, local histories, and images of character-defining details. Additional photography, accompanied by a photographic key plan is recommended prior to demolition. In the absence of original engineering drawings, TMHC recommends the production of plan, elevation, and detail drawings with dimensions.[3]

3) All documentation will be submitted to the North Middlesex Historical Society, copying MHSTCI on the accompanying cover letter.

4) In consultation with local stakeholders and Indigenous communities, the County will install a commemorative plaque or interpretive sign at the site of the replacement bridge within one year of

[3] Reference the Historic American Engineering Record (HAER) guidelines specific to engineering structures for more information: https://www.nps.gov/hdp/standards/HAER/HAERHistoryGuidelines.pdf#page=5.

completion. Interpretive content should reference the current bridge's through-truss design, history of bridges at this location, The Sarnia Bridge Company, and historic photographs. If possible, salvaged components of the original bridge could be incorporated into the commemoration.

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PROJECT PERSONNEL

Principal	Holly Martelle, Ph.D.
Cultural Heritage Specialist	Elise Geschiere, MSc
Project Administrator	Kellie Theaker
Health and Safety Coordinator	Amanda DiLoreto-Bendek, M.A.
GIS Mapping	David Gostick, B.A.
	John Moody, Ph.D.

ACKNOWLEDGEMENTS

Ministry of Heritage, Sport, Tourism and Culture Industries	Karla Barboza
Ontario Heritage Trust	Kevin DeMille
Middlesex County	Stephanie Poirier
North Middlesex (municipality)	Jackie Tiedeman
North Middlesex Historical Society	Ron Walker

TERRITORIAL ACKNOWLEDGEMENT

The Subject Site is located on the traditional territory of the Anishinaabe and Haudenosaunee (Iroquois), peoples. This territory is covered by the Huron Tract Purchase (Treaty No. 29). This land continues to be home to diverse Indigenous peoples (e.g., First Nations, Métis and Inuit) whom we recognize as contemporary stewards of the land and vital contributors of our society.

ABOUT TMHC

Established in 2003, with a head office in London, Ontario, TMHC provides a broad range of archaeological assessment, heritage planning, and consultation services throughout the Province of Ontario, founded on over forty years of progressive and responsible experience. We provide consulting services for First Nations communities, municipal heritage planning and training, public outreach and educational programs, and have established specialties in community engagement, cemetery investigations, faunal analysis and ground penetrating radar surveys. Since TMHC's inception, we have evolved with the needs of our clients, the demands of the regulatory environment, and the growth in the industry.

Since 2004, TMHC has held retainers with Infrastructure Ontario (formerly the Ontario Realty Corporation), Hydro One and the Ministry of Transportation (Southwest and Central regions) and the City of Hamilton. In 2011, TMHC was awarded five-year Vendor of Record contracts with Infrastructure Ontario for Central Region and Southwest Region. In 2016, TMHC was successful in renewing this contract for the entire province and for an additional five years. In 2013, TMHC earned the Ontario Archaeological Society's award for Excellence in Cultural Resource Management.

KEY STAFF BIOS

Holly Martelle, PhD., Principal

Holly Martelle earned a Ph.D. from the University of Toronto for her research on Iroquoian populations in southern Ontario. In addition to 16 years of experience in the road building and aggregate industries, Holly has worked as a Heritage Planner at the now MHSTCI and has taught at several universities throughout the province. Over her career Holly has managed the archaeology for a number of high-profile projects on behalf of various municipalities, ministries and their agencies in Ontario.

Holly is an active member of the heritage community in Ontario and a Past-President of the Ontario Archaeological Society.

Joshua Dent, PhD., Project Manager & Community Relations Coordinator

Joshua (Josh) Dent received a Ph.D. in Anthropology from Western University under a Joseph-Bombardier CGS Scholarship in 2016, and specializes in heritage resource management, archival research and heritage regulations. Since relocating to London, Ontario after experience conducting built heritage assessments in Western Canada, Josh has participated in both the not-for-profit advocacy for and municipal oversight of built heritage resources and cultural landscapes. His role as a resource member of the London Advisory Committee on Heritage (LACH) provided significant insight into municipal heritage review processes and the composition of successful built heritage assessments and research. With TMHC, he has participated in the background research for and field assessment of cultural heritage assessment projects across Southwestern Ontario. With extensive field and archival research experience and a broad personal network of urban planners, historians and institutions, Josh is well-equipped to produce comprehensive land-use histories and field assessments.

Elise Geschiere, MSc – Cultural Heritage Specialist

Elise Geschiere received a BA in Sociology with a minor in Public History from Western University in 2019 and went on to complete an MSc in Planning and Development with a concentration in Indigenous Planning at

the University of Guelph in 2021. Elise joined TMHC in 2021 as a Cultural Heritage Specialist and is involved in the creation of cultural heritage evaluation reports, heritage impact assessments, and related studies.

Elise's research background is multidisciplinary and involves projects related to affordable housing and social development, the role of planning in the historical production of underserved communities, and the relationship between aggregates and agriculture. Public history and cultural heritage have been an undercurrent through her undergraduate and graduate career, where she has pursued research looking at the role of material culture in elevating diverse historic narratives, the evolution of Canadian conservation ethos and practice, and the intersections of heritage conservation and sustainable development. Recently, Elise's research interests have focused on Indigenous perspectives of cultural heritage and opportunities for decolonization and empowering Indigenous voices in the heritage sector.

Elise also worked as the heritage research and planning student for the Corporation of the Town of Essex and led efforts to conserve and interpret local cultural heritage sites. She has experience with archival and community-based research, public engagement, and policy development and review.

Elise is a student member of Ontario Professional Planners Institute, Canadian Association of Heritage Professionals, and the provincial branch of Architectural Conservancy of Ontario.

STATEMENT OF QUALIFICATIONS AND LIMITATIONS

The attached Report (the "Report") has been prepared by Timmins Martelle Heritage Consultants Inc. (TMHC) for the benefit of the Client (the "Client") in accordance with the agreement between TMHC and the Client, including the scope of work detailed therein (the "Agreement").

The information, data, recommendations and conclusions contained in the Report (collectively, the "Information"):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the "Limitations");
- represents TMHC's professional judgment in light of the Limitation and industry standards for the preparation of similar reports;
- may be based on information provided to TMHC which has not been independently verified;
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
- must be read as a whole and section thereof should not be read out of such context;
- was prepared for the specific purposes described in the Report and the Agreement.

TMHC shall be entitled to rely upon the accuracy and completeness of information that was provided to it and has no obligation to update such information. TMHC accepts no responsibility for any events or circumstances that may have occurred since the date on which the Report was prepared and, in the case of subsurface, environmental or geotechnical conditions, is not responsible for any variability in such conditions, geographically or over time.

TMHC agrees that the Report represents its professional judgement as described above and that the Information has been prepared for the specific purpose and use described in the Report and the Agreement, but TMHC makes no other representations, or any guarantees or warranties whatsoever, whether express or implied, with respect to the Report, the Information or any part thereof.

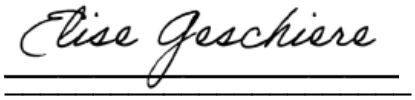
Except (1) as agreed to in writing by TMHC and Client; (2) as required by-law; or (3) to the extent used by governmental reviewing agencies for the purpose of obtaining permits or approvals, the Report and the Information may be used and relied upon only by Client.

TMHC accepts no responsibility, and denies any liability whatsoever, to parties other than Client who may obtain access to the Report or the Information for any injury, loss or damage suffered by such parties arising from their use of, reliance upon, or decisions or actions based on the Report or any of the Information ("improper use of the Report"), except to the extent those parties have obtained the prior written consent of TMHC to use and rely upon the Report and the Information. Any injury, loss or damages arising from improper use of the Report shall be borne by the party making such use.

This Statement of Qualifications and Limitations is attached to and forms part of the Report and any use of the Report is subject to the terms hereof.

QUALITY INFORMATION

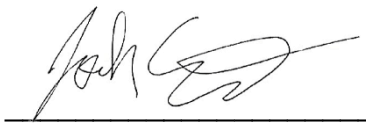
Report prepared by:



Elise Geschiere, MSc

Cultural Heritage Specialist

Report reviewed by:



Joshua Dent, Ph.D., CAHP

Project Manager

Report reviewed by:

Holly Martelle, Ph.D.

Principal

1 INTRODUCTION

1.1 Report Scope and Purpose

Dillon Consulting Limited (Dillon) engaged TMHC Inc. (TMHC) to produce a Cultural Heritage Evaluation Report (CHER) and Heritage Impact Assessment (HIA) that considers the potential heritage value or interest of Blacks (West Corner Drive) Bridge in the Municipality of North Middlesex, Middlesex County (the "Subject Site") and the potential heritage impacts of the bridges proposed replacement.

Section 3.3.6 of the North Middlesex Official Plan identifies the following relevant heritage objectives[4]:

- Preserve and enhance the significant built heritage resources and significant cultural heritage landscapes; and,
- Protect and conserve key cultural, archaeological and built heritage resources in the Municipality through the appropriate use of available planning tools including the evaluation of development proposed on lands adjacent to protected heritage property.

Section 2.2.5 of the Middlesex County Official Plan states, "This Plan supports the conservation of the County's archaeological cultural and built heritage resources. Development and site alteration on or adjacent to lands containing archaeological resources and/or significant built heritage resources shall maintain the heritage integrity of the site."[5]

This CHER/HIA was triggered through the completion of the *Municipal Heritage Bridges Cultural, Heritage and Archaeological Resources Assessment Checklist* (revised April 11, 2014) as part of ongoing bridge evaluation conducted under O.Reg. 160/02 and O.Reg. 104/97. This CHER/ HIA is intended to provide a heritage evaluation of the Subject Site against the criteria set out by the *Ontario Heritage Act* (OHA)'s O.Reg. 9/06, an assessment of the proposed development's impact on identified heritage attributes, and strategies for mitigating that impact. The HIA portion of this report follows the general format set out in the Ministry of Heritage, Sport, Tourism and Culture Industries' (MHSTCI) *InfoSheet #5: Heritage Impact Assessments and Conservation Plans*, which is included in the resource *Heritage Resources in the Land Use Planning Process* within the Ontario Heritage Toolkit.

1.2 Methodology

This CHER/HIA was prepared in accordance with the Ontario Heritage Toolkit's guide to Heritage Property Evaluation and the OHA's O.Reg. 9/06. The HIA portion of this report follows the general format set out in the MHSTCI *InfoSheet #5: Heritage Impact Assessments and Conservation Plans*, which is included in the resource *Heritage Resources in the Land Use Planning Process* within the Ontario Heritage Toolkit.

A full list of sources is included in Section 12.0 of this CHER/HIA.

[4] Municipality of North Middlesex 2003, Consolidated 2018
[5] Middlesex County 1997, latest amendment 2006

1.3 Client Contact Information

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2 SITE DESCRIPTION

2.1 Location and Physical Description

The Subject Site is a seven-panel, riveted through-truss bridge with a painted superstructure and replacement railings. It carries West Corner Drive across the Ausable River in the Municipality of North Middlesex, Middlesex County. West Corner Drive is the concession road between the Concession 6 and 7 East of Centre Road (ECR) of the former McGillivray Township. The Subject Site is located at the western edge of Lots 26 of Concession 6 and 7 ECR.5 The nearest community is Ailsa Craig, approximately 1.83 km south southwest of the bridge.

Blacks Bridge is one of two through-truss bridges over the Ausable in former McGillivray Township, the other being located on Mooresville Drive. Another through-truss bridge is located on New Ontario Road in Middlesex County. Several Warren Pony Truss bridges over the Ausable and located in Middlesex County include Adare Drive, Ausable Road, and Springbank Road.

2.2 Heritage Status

Neither North Middlesex nor Middlesex County maintains a municipal heritage register or inventory. Blacks Bridge has not been municipally listed or designated under either Part IV or Part V of the OHA. There are no National Historic Sites or Provincial Heritage Properties present on or adjacent to the Subject Site. The bridge does not appear on the Ontario Heritage Bridge List.

Map 1: Location of Blacks Bridge on a 2015 Aerial Photograph

3 HISTORICAL RESEARCH & ANALYSIS

This section includes a historical overview for the Subject Site. As McGillivray Township and the Subject Site were originally part of Huron County until 1865, the early historical context refers to this county.

3.1 Historic Context: Indigenous Settlement and Treaties

Indigenous peoples have used the lands that are now known as Huron and Middlesex Counties for thousands of years. Prior to the displacement caused by early European settlement, this area was actively used for hunting and camping by a number of Anishinaabe peoples. The area that became McGillivray Township was subject to Provisional Treaty No. 27 ½ between the Chippewas and the British Crown in 1825, through which the Chippewas transferred most of this land to the Crown but maintained their rights to four reserve lands. The agreement was formalized in 1827 through Treaty No. 29, concerning what was known as the Huron Tract.[6]

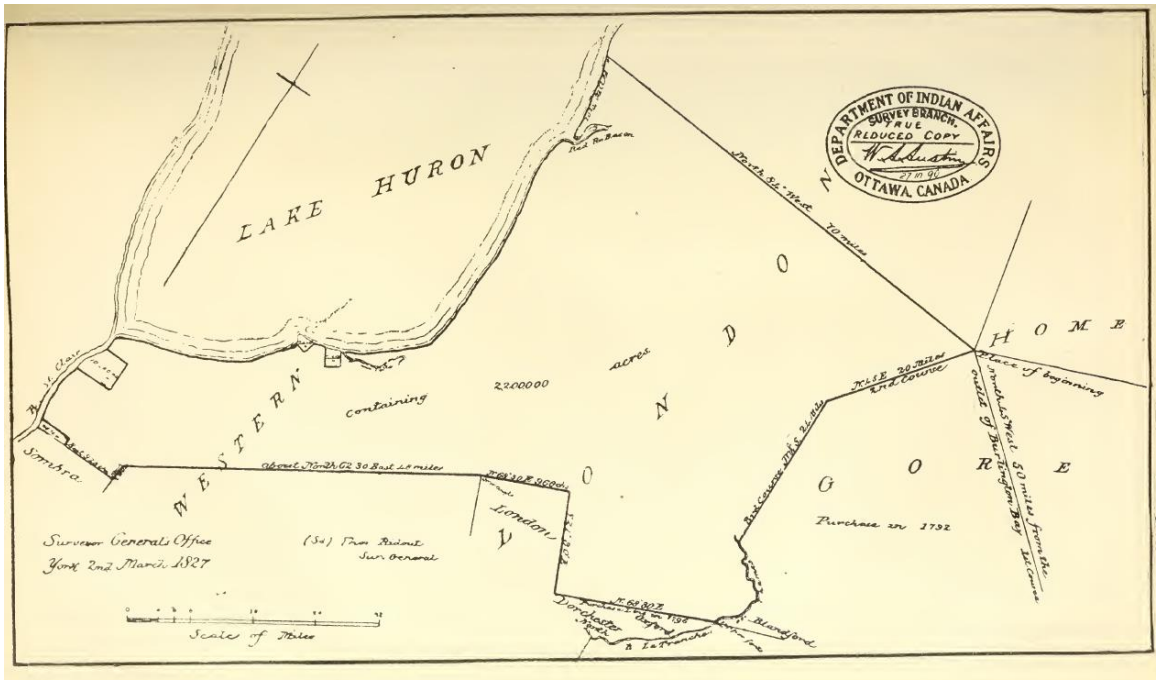


Image 1: Map of the Huron Tract Treaty

(Canada 1891:73)

3.2 Historic Context: Early Municipal Settlement

Early municipal settlement in Huron County came with the creation of the Huron Tract, established through the efforts of John Galt and the Canada Company. Incorporated in 1824, the company was organized by Galt and a number of wealthy investors who wished to wrest some control from Clergy and Crown, who held reserves amounting to two sevenths of lands in Upper Canada in the early-19th century. These lands were largely vacant, which served to impede any sustained settlement efforts in the area. Galt's plans were vehemently opposed by Church of England officials, and the church's considerable influence prevented the sale of its

[6] Canadian Legal Information Institute 1984; Duern 2017

designated lands.[7] In May of 1826, the Canada Company purchased lands from the British Government that included all of the fifteen townships comprising Huron County. Nine of these townships would form part of the Huron Tract.

Huron County at this time was covered by dense forest that had to be cleared, and access to these areas was an obvious necessity. In 1827, William Dunlop and Mahlon Burwell were contracted to undertake a preliminary survey for a colonization road into the tract. The official survey for what would become the Huron Road (now Highway 8) was carried out by John McDonald in 1828-29.[8] McDonald was responsible for surveying all of the townships in Huron County, with the exception of Goderich Township, which was undertaken by Deputy Provincial Surveyor David Gibson.[9] However, completion of the Huron Road did not initially attract settlers to the region. Five years after the road was finished there were only 385 inhabitants in all of Huron County.[10] In an attempt to remedy the situation and assist immigrants, Galt made plans for three "inns" to be erected along the course of the Huron Road. These would be placed where settlers could stay on their journey into the deeper reaches of the tract. In the following years hundreds of families utilized the inns as they made their way through Huron County.[11] The Canada Company often constructed temporary residences for the accommodation of the settlers until they were able to build their own homes.[12] Censuses for Huron County show that the population in 1837 was 385, in 1838 it was 1,168, and by 1842 it had reached 7,190.[13]

McGillivray Township was surveyed in 1835 by John MacDonald for the Canada Company as part of Huron County.[14] The township was named after Simon McGillivray, a founding director of the Canada Company. Settlement began shortly thereafter, with the influx of families of largely Scottish descent.[15]Among the earlier settlers were Patrick Flanagan, Mr. Shoultz James Barber, William Carter, and James C. Priestly.[16] Lots on the eastern concessions of the township were generally claimed and settled first because of relatively easy access from London Road (now Highway 4), one of earliest thoroughfares to be open in the area. Consequently, Concession 2 (Neil Road) and Concession 4 (Maguire Road) and their corresponding side roads were the first roads to be opened.[17] In 1858, the Grand Trunk Railroad built a line to Sarnia via Ailsa Craig to connect with the Michigan Lines.[18] The London, Huron and Bruce Railway, which ran north to south along the eastern boundary of McGillivray Township, was built in 1875 as a subsidiary of the Great Western Railway. With the advent of the railroads, villages which were fortunate enough to be located along a route grew and thrived while others dwindled and disappeared.

In 1865, McGillivray and Biddulph Townships were annexed to Middlesex County.[19]

Ailsa Craig is the closest community to the Subject Site, located two concessions south of Concession 7. The village started as a modest community of six or so households in the late 1830s. This hamlet grew into a commercial and logistical centre after 1858 with the arrival of the Grand Trunk Railway. By the late 1860s, the

[7] Beecroft 1984:20
[8] Beecroft 1984:37
[9] Lee 2004:226
[10] Scott 1966:52
[11] Scott 1966:44
[12] H. Belden & Co 1879:8
[13] Scott 1966:57
[14] McGillivray Township History Group 1992
[15] McGillivray Township History Group 1992:6
[16] H.R. Page & Co 1878:12
[17] McGillivray Township History Group 1992:108
[18] McGillivray Township History Group 1992:123
[19] Goodspeed and Goodspeed 1889:70; H. Belden and Co:12

population of Ailsa Craig had reached 400 including multiple industries, commercial establishments, a town hall, and a church. Ailsa Craig was incorporated as a village on January 1, 1875. The village was known as an important cattle shipping point, considered second to only Calgary by 1878.[20] The village's first newspaper, the North Middlesex Review started in 1866, followed by the Northern Sparks in 1869 and finally the Ailsa Craig Banner which ran from 1895-1934.[21]

Technological advances in the 20th century further contributed to the development and diversification of Mc-Gillivray's economy. Agriculture, including livestock, remained an important part of the township, however new crops were developed. Sugar beets were one notable mid-20th century crop with the township supplying sugar factories at Wallaceburg by railcar.[22] Industrial development during the 20th century was increasingly driven by the advent of electricity which first arrived in Clandeboye in 1915.[23] Local infrastructure also received significant investment with the development of the Middlesex County Roads system in 1906 and the development of the provincial highways system shortly thereafter.[24] The development and maintenance of the local system of roads and bridges has always been an integral part of local government responsibilities, including the maintenance of the Subject Site.

In 2001, Ailsa Craig amalgamated with the Town of Parkhill and McGillivray, West Williams, and East Williams Townships to form the Municipality of North Middlesex.

3.3 Local Property History

Blacks Bridge is adjacent to properties at Lots 25 and 26 Concession 6 ECR, and Lots 25 and 26 Concession 7 ECR.

3.3.1 Lot 25 Concession 6 ECR

Lot 25 Concession 6 ECR is associated with Alex Fraser on 1862 and 1878 historical maps.[25] The 1878 map records structures in the lot on the east side of the Ausable River, accessed from Queen Street.[26] Alex Fraser and the Fraser family do not appear in the Township's histories. [27]

3.3.2 Lot 26 Concession 6 ECR

Lot 26 Concession 6 ECR's most notable resident was John Morton who appears on 1862 and 1878 historical maps.[28] John Morton was a significant figure in the history of McGillivray, arriving in Canada in 1832 and first appearing on Lot 26 Concession 6 ECR in 1837.[29] He is listed as one of the earliest settlers in Ailsa Craig.[30]In 1863, he married Hellen Baker and together they had six children.[31] One of the sons, Andrew S. Morton lived

[20] McGillivray Township History Group 1992:123
[21] McGillivray Township History Group 1992:57
[22] McGillivray Township History Group 1992:79
[23] McGillivray Township History Group 1992:99
[24] McGillivray Township History Group 1992:113-114
[25] H.R. Page & Co. 1878; Herman 1862
[26] H.R. Page & Co. 1878
[27] McGillivray Township History Group 1992
[28]H.R. Page & Co. 1878.; Herman 1862
[29] McGillivray Township History Group 1992:6, 261
[30] McGillivray Township History Group 1992:56
[31] McGillivray Township History Group 1992:261

on the property into the 20th century. The 1878 map records a structure in towards the northern end of the property, making it one of the closest historical structures to the bridge location.[32]

During the Mortons' ownership, the lot played a significant role in the development of Ailsa Craig area. In the 1850s, Morton's gravel pit, likely located on this lot, provided aggregate for the township's first gravel road, now County Road 21.[33] In 1861, a new road (Queen Street) was constructed through the lot, connecting Ailsa Craig and Highway 7 with West Corner Drive. The road provided the first important thoroughfare immediately east of the Ausable River and eliminated the need for a series of bridges between Concession 7 and Ailsa Craig. In 1913, Andrew Morton opened the house to schoolchildren from S.S. #7 located on neighbouring Lot 27 Concession 6 ECR after the third iteration of that school blew down during Easter.[34] The lot was subdivided sometime in the 20th century.

3.3.3 Lot 25 Concession 7 ECR

Lot 25 Concession 6 ECR is associated with John Drummond on 1862 and 1878 historical maps.[35] The 1878 map records a structure in the south end of the lot, likely accessed from West Corner Drive.[36] John and Alice Drummond arrived at the property in 1842.[37] John served as a township councillor in 1854 and was the uncle of the late Member of Parliament John D. Drummond, who was born on neighbouring Lot 24.[38]The lot was subsequently owned by Thomas Brown. After Brown's niece Margaret Giles inherited the lot, then known as the Brown Farm, she sold it and Lot 26 Concession 7 ECR in 1950 to Earl Rees and Martha McAdam.[39] Rees and McAdam farmed the property until 1973. Rees's great-grandfather Rees Roland Rees settled in the Township in 1847 on Lot 23 Concession 6 ECR.[40]

3.3.4 Lot 26 Concession 7 ECR

Lot 25 Concession 6 ECR is associated with William Brydon on 1862 historical maps and William Shipley on an 1878 historical map.[41] The 1878 map records no structures on this property.[42] The Shipleys were well established landowners in the Township, having owned the property south of Highway #7 in Ailsa Craig. When it was surveyed, William Shipley Sr. named the streets George, William, and Annie Ada after his children.[43] William Brydon does not appear in the Township's histories.[44] The lot was eventually owned by Thomas Brown together with Lot 25 Concession 7 ECR on the opposite bank of the Ausable River. Both properties were sold by Brown's niece, Margaret Giles in 1950 to Earl Rees and Martha McAdam.[45] There are currently no known structures on this lot.

[32] H.R. Page & Co. 1878
[33] McGillivray Township History Group 1992:109
[34] McGillivray Township History Group 1992:45
[35] H.R. Page & Co. 1878; Herman 1862
[36] H.R. Page & Co. 1878
[37] McGillivray Township History Group 1992:111
[38] McGillivray Township History Group 1992:19, 213
[39] McGillivray Township History Group 1992:274
[40] McGillivray Township History Group 1992:274
[41] H.R Page & Co. 1878; Herman 1862
[42] H.R. Page & Co. 1878
[43] McGillivray Township History Group 1992:56
[44] McGillivray Township History Group 1992
[45] McGillivray Township History Group, 1992:274

3.4 History of the Subject Site

The current Blacks Bridge is the latest of several iterations of bridges at this location dating back to the first built in 1861. Prior to 1861, three log bridges provided access over the Ausable River west to the main thoroughfare to Ailsa Craig.[46] These bridges were built and maintained by David Craig who lived on Lot 25 Concession 5 ECR. As mentioned in the Township History, Andrew Morton, who grew up on Lot 26 Concession 6 ECR, indicated that the bridges were located:[47]

> …one at a turn in the river, another across a small ravine and another halfway to Con. 7, making it seem that the latter one at least would be on the lot on Con. 6 [Lot 26] and not on David Craig's property. These bridges regularly washed away cutting off eastward travel for the people on the west side of the river.

When the road through John Morton's farm was completed in 1861, a new bridge was built across the Ausable River on Concession Road 7.[48] The Township History again references Andrew Morton when describing the original bridge:[49] "…the first large, open bridge at this spot became known as the Black Bridge, perhaps because it was painted black with tar, and was built with two bents, or sections of trusswork, resting on a centre pier." A second "wider, shorter and higher" bridge was built in the late 1880s.[50] This replacement bridge was constructed by MacKenzie of Sarnia. Though painted red, it was still known as Black Bridge.

The current iron and cement bridge replaced the red bridge in 1912. It was completed by The Sarnia Bridge Company and was notably different from the previous bridge: "[The new bridge] was higher above the water, gradually sloping east to west to make the gradient easier for drivers of loads to handle." Since its completion, Black Bridge (or Blacks Bridge – it is unclear when the possessive was added) has been maintained by the County including sandblasting, painting, and deck replacements.[51] The bridge is one of the two oldest remaining bridges on the Ausable in McGillivray according to local history.[52] The other, also described as a "steel-arch through-truss bridge," is located on Mooresville Drive between Concessions 9 and 10.[53]

[46] McGillivray Township History Group 1992:9,111
[47] McGillivray Township History Group 1992:111
[48] McGillivray Township History Group 1992:111
[49] McGillivray Township History Group 1992:111
[50] McGillivray Township History Group 1992:111
[51] McGillivray Township History Group 1992:111
[52] McGillivray Township History Group 1992:111
[53] McGillivray Township History Group 1992:111

Image 2: Second Bridge at the Subject Site's Location

(Courtesy of North Middlesex Historical Society)

Image 3: Construction of the Subject Site

(Courtesy of North Middlesex Historical Society)

3.5 Historic Context: Structural Typology

According to HistoricBridges.org, an extensive online resource that documents historic bridges and considers their relative integrity and significance, Blacks Bridge (which the author refers to as the Corner Drive Bridge) is a:

> …traditionally composed seven panel through truss [with] a coat of white paint on the bridge that looks quite nice on this attractive riveted truss bridge. Some signs of rust are starting to show, but could possibly be corrected through a low-cost spot painting. The bridge has good historic integrity with the only alteration noted being the replacement of original railings.[54]

The Sarnia Bridge Company was founded in 1907 in Sarnia, Ontario as the Jenks-Dresser Company.[55] It was renamed the Sarnia Bridge Company in 1910 and grew into a significant company supplying bridges across Canada and the United States. In 1958, the company was taken over by Anthes-Imperial Limited.[56] One the most notable projects for the Sarnia Bridge Company was the construction of the Canadian approach superstructure for the original 1938 Blue Water Bridge connecting Sarnia, Ontario, with Port Huron, Michigan. The company is remembered as a significant part of Sarnia's industrial heritage.[57]

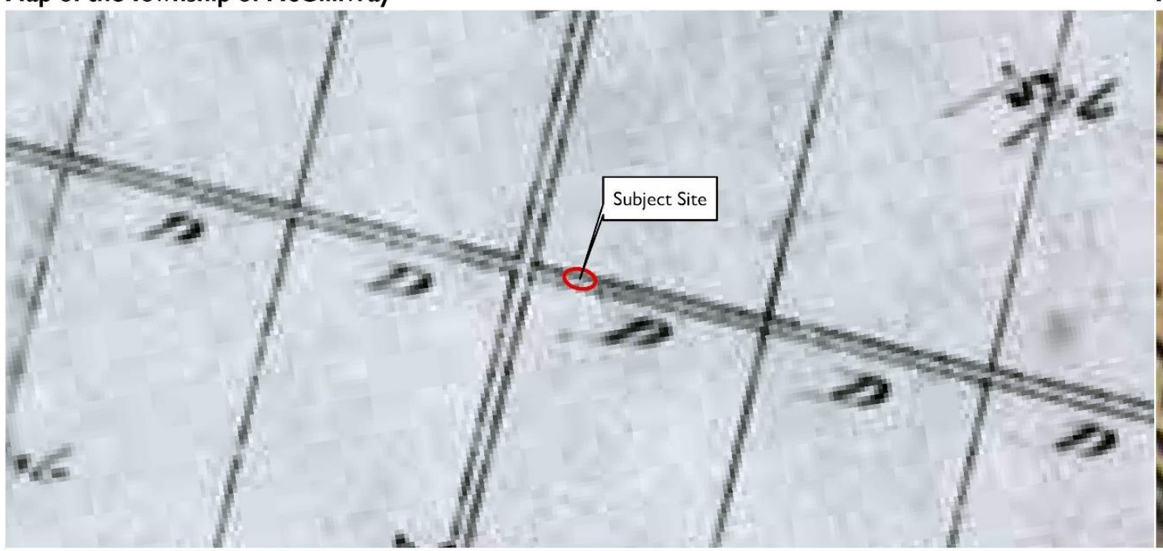
In addition to the Mooresville Drive Bridge, Blacks Bridge has physical similarities to the New Ontario Road Bridge, which is located about 5km southwest of Blacks Bridge.

Image 4: New Ontario Bridge

(Looking North)

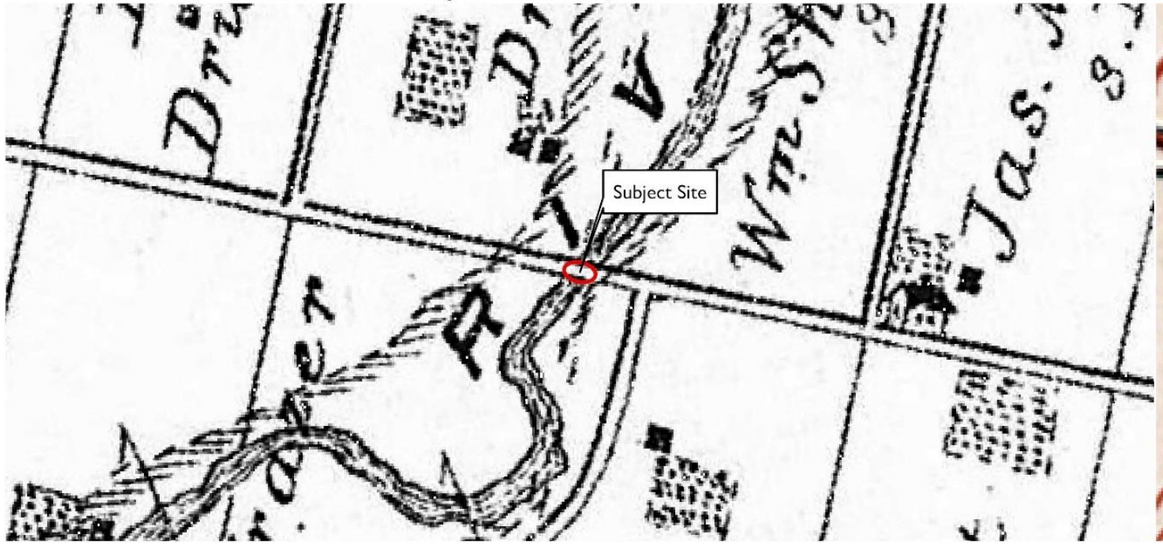
[54] HistoricBridges.org: Corner Drive Bridge
[55] Egan 2016
[56] Egan 2016
[57] Egan 2016

1835
Map of the Township of McGillivray

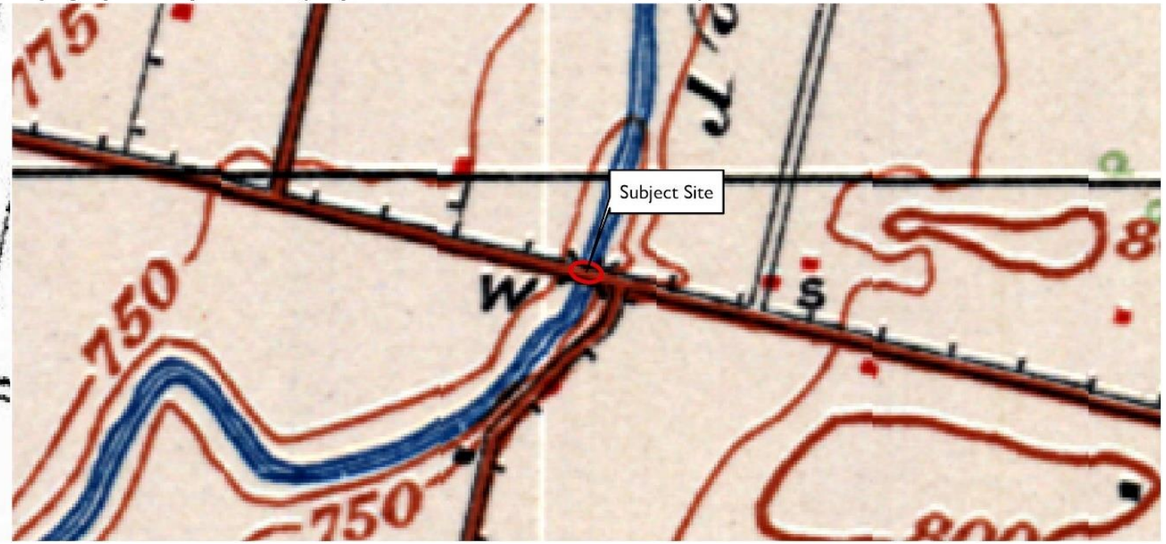


1862
Hermon's New Map of the County of Huron, Canada West

1878
Illustrated Historical Atlas of the County of Middlesex, Ont

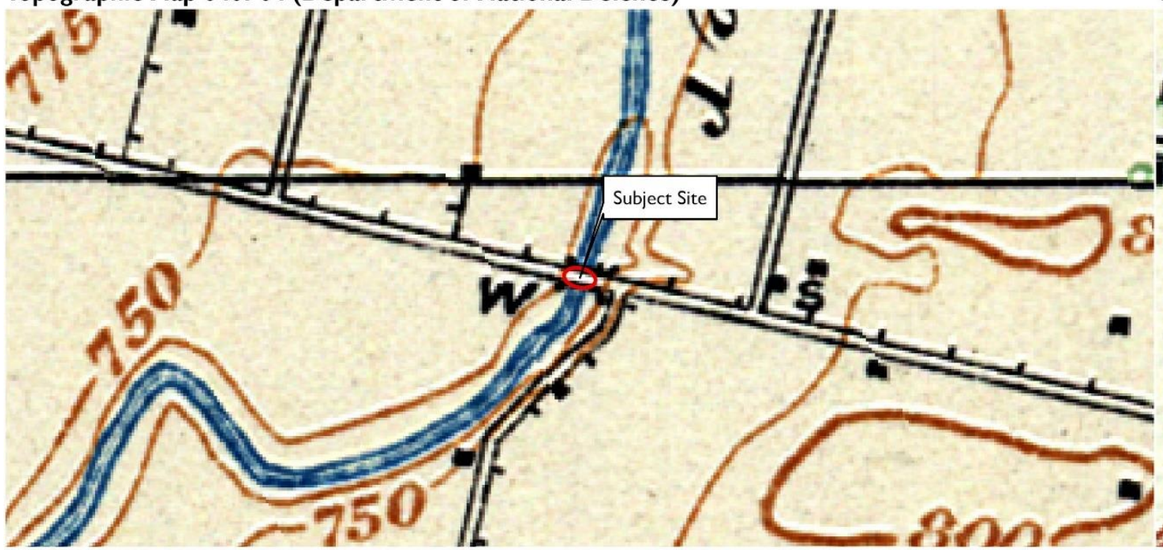


1914
Topographic Map 040P04 (Department of Militia and Defence)

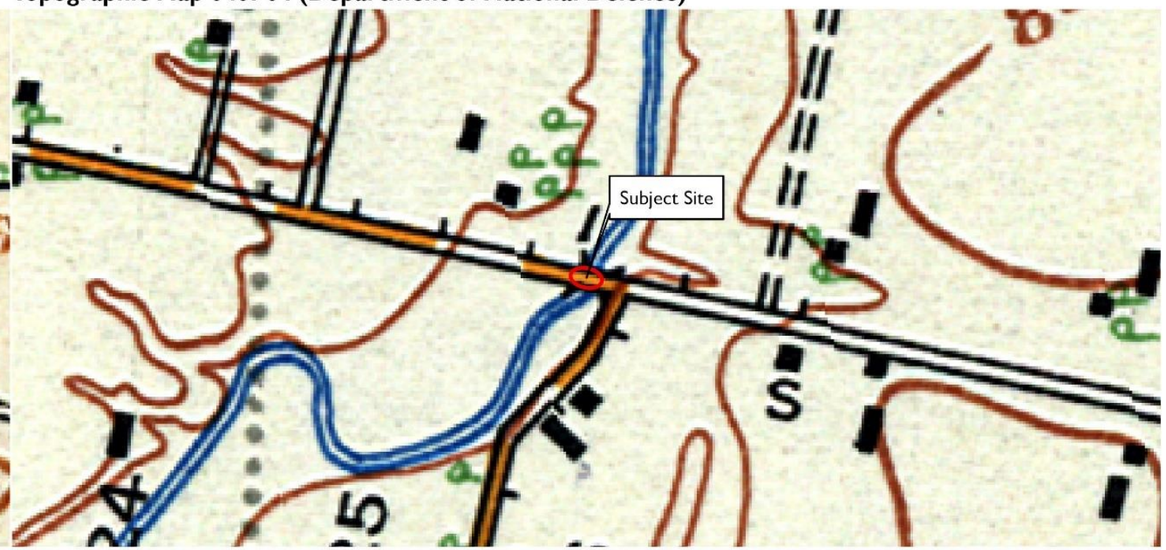


Map 2: Historic Maps and Aerial Photographs of Subject Site

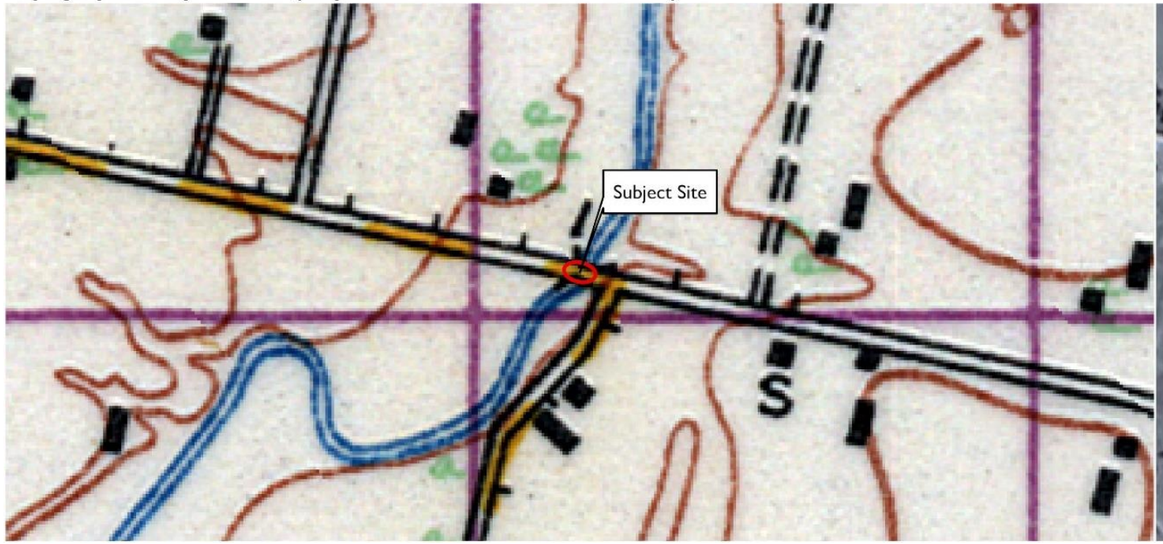
1924
Topographic Map 040P04 (Department of National Defence)



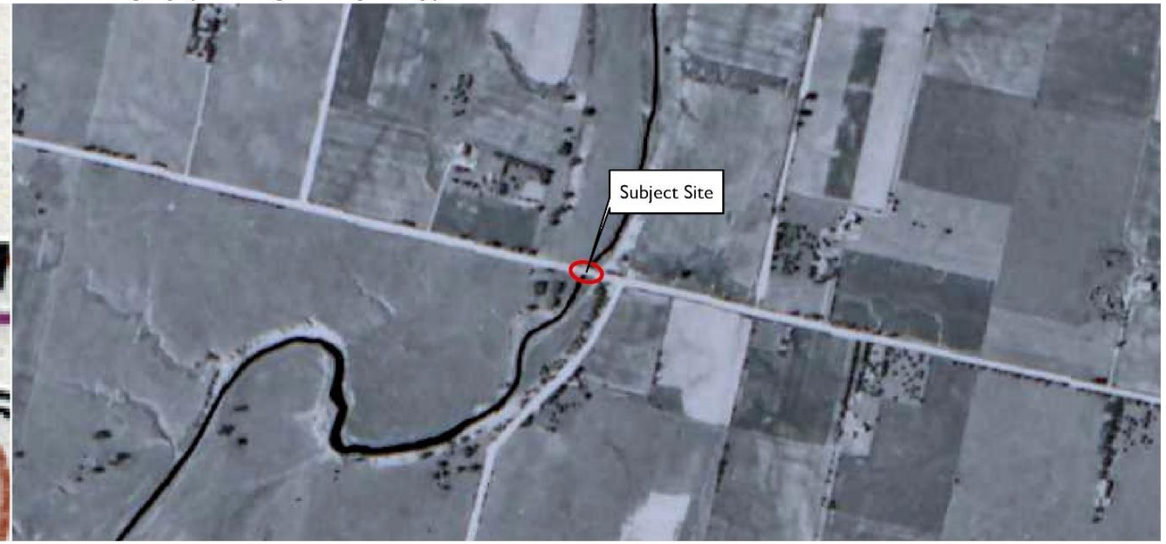
1936
Topographic Map 040P04 (Department of National Defence)



1947
Topographic Map 040P04 (Department of National Defence)



1954
Aerial Imagery (Hunting Survey Corp)



Map 3: Historic Maps and Aerial Photographs of Subject Site

4 EXISTING CONDITIONS

A site visit to Blacks Bridge was undertaken by TMHC in September 2020 for a previous standalone CHER. The images and information collected during that visit are sufficient for the purposes of this report. The images in this section document the site's current conditions and nearby areas of interest. Field observations of the bridge structure noted a concrete bridge deck and seven-panel, street through truss design with concrete abutments (Images 7, 8, 15, 19, 21). The bridge is currently closed to vehicular and pedestrian traffic due to structural deficiencies noted during an earlier visual inspection in 2019. Key findings of the structural inspections included light to very severe deterioration, corrosion, and rust jacking as well as a bent diagonal member on the north truss. The site visit by TMHC confirmed these findings (Images 9, 11, 12, 13, 17, 18).

Current bridge code expects a service life of 75 years, which could be extended to 80 years with proper servicing on rural bridges such as these. Blacks Bridge is over 100 years of age suggesting replacement of this structure as a necessary consideration in the near term.

Neither North Middlesex nor Middlesex County maintains a municipal heritage register or inventory. Blacks Bridge has not been municipally listed or designated under either Part IV or Part V of the OHA. There are no National Historic Sites or Provincial Heritage Properties present on or adjacent to the Subject Site. The bridge does not appear on the Ontario Heritage Bridge List.

Image 5: West Approach to the Subject Site; Signs and Barricades Resulting from Closure to Vehicular Access

(Looking East)

Image 6: View from the Bridge

(Looking West)

Image 7: West Elevation of the Subject Site

(Looking East)

Image 8: Trusses, Guard Rails, and Railings from the West End of the Bridge

(Looking Northeast)

Image 9: Deterioration of Joints on the Superstructure

(Looking Up to the Superstructure in the Middle of the Bridge)

Image 10: Railing and End Caps on the West End of the Bridge

(Looking Southeast)

Image 11: Deterioration of Connection Points

(Looking North)

Image 12: Deterioration on the Northeast Concrete Abutment on the North Side of the Bridge, East End

(Looking West)

Image 13: Rust Evident on the Underside of the Bridge

(Looking West Along the North Bank)

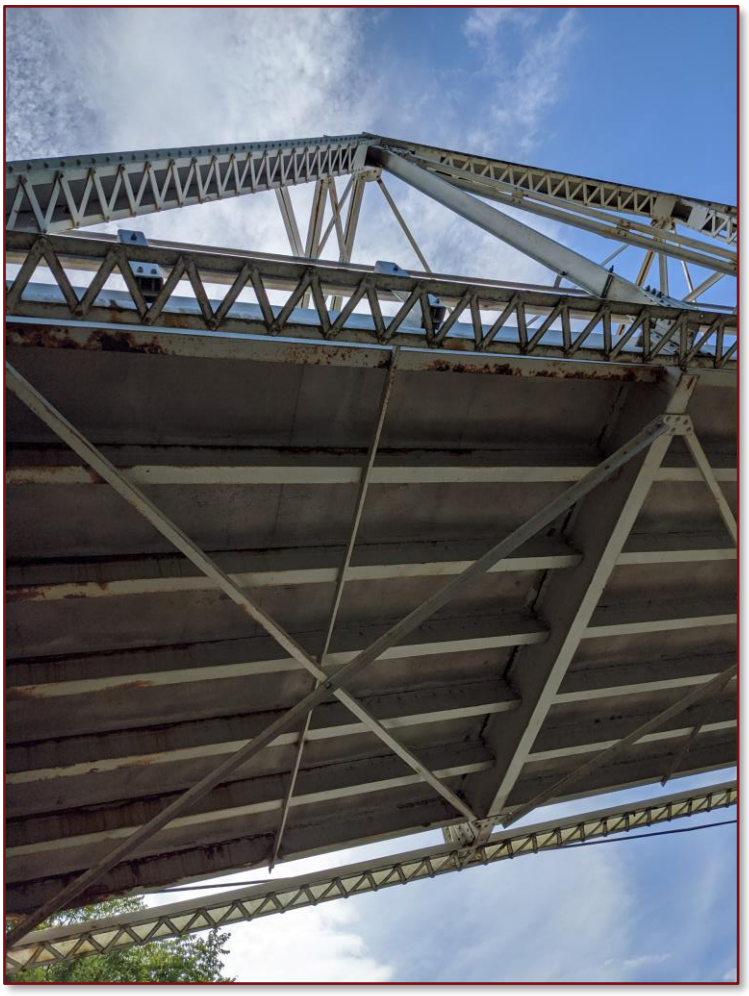


Image 14: Underside of the Bridge and the West Concrete Abutment and Wing Walls

(Looking West from the North Side)

Image 15: North Side of the Bridge

(Looking West)

Image 16: View of the Superstructure

(Looking West)

Image 17: Rust Evident on the Superstructure

(Looking Northwest)

Image 18: Corrosion of the Truss Joint

(Looking down on the south side of the bridge)

Image 19: North Elevation of the Bridge

(Looking Southeast)

Image 20: East End of the Bridge, with Adjacent Farmstead

(Looking Northwest)

Image 21: Bridge's South Elevation

(Looking East)

5 POLICY CONTEXT

5.1 The North Middlesex and Middlesex County Official Plans

The Municipality of North Middlesex adopted an Official Plan in 2003, and finalized a five-year review with corresponding updates in 2010. The consolidated Official Plan was issued in 2014.

Section 3.3.6 of the North Middlesex Official Plan identifies the following relevant heritage objectives:[58]

- Preserve and enhance the significant built heritage resources and significant cultural heritage landscapes; and,
- Protect and conserve key cultural, archaeological and built heritage resources in the Municipality through the appropriate use of available planning tools including the evaluation of development proposed on lands adjacent to protected heritage property.

Section 2.2.5 of the Middlesex County Official Plan states:

> This Plan supports the conservation of the County's archaeological cultural and built heritage resources. Development and site alteration on or adjacent to lands containing archaeological resources and/or significant built heritage resources shall maintain the heritage integrity of the site.[59]

5.2 Provincial Policy Statement (PPS)

Deriving authority from the *Planning Act*, the PPS 2020 guides planning decisions related to or affecting cultural heritage resources in several sections in stating:

> 1.7.1 Long-term economic prosperity should be supported by:
>
> e) encouraging a sense of place, by promoting well-designed built form and cultural planning and by conserving features that help define character, including built heritage resources and cultural heritage landscapes.
>
> 2.6.1 Significant built heritage resources and significant cultural heritage landscapes shall be conserved.
>
> 2.6.3 Planning authorities shall not permit development and site alteration on adjacent lands to protected heritage property except where the proposed development and site alteration has been evaluated and it has been demonstrated that the heritage attributes of the protected heritage property will be conserved.

Within the PPS, *conserved* is defined as:

> …the identification, protection, management and use of built heritage resources, cultural heritage landscapes and archaeological resources in a manner that ensures their cultural heritage value or interest is retained. This may be achieved by the implementation of recommendations set out in a conservation plan, archaeological assessment, and/or heritage

[58] Municipality of North Middlesex 2003, Consolidated 2018
[59] Middlesex County 1997, latest amendment 2006

impact assessment that has been approved, accepted or adopted by the relevant planning authority and/or decision-maker. Mitigative measures and/or alternative development approaches can be included in these plans and assessments.

5.3 Environmental Assessment Act (1990)

This CHER/HIA has been completed as part of the Class EA process in accordance with the *Environmental Assessment Act*. The Act includes within its definition of "environment" (1.1):

> (c) the social, economic and cultural conditions that influence the life of humans or a community
>
> (d) any building, structure, machine or other device or thing made by humans.

5.4 Ontario Heritage Act (OHA)

The *OHA* provides a framework for municipalities in Ontario to ensure the conservation of properties with cultural heritage value or interest, including through the capacity to designate heritage properties:

> 29 (1) The council of a municipality may, by by-law, designate a property within the municipality to be of cultural heritage value or interest if,
>
> > (a) where criteria for determining whether property is of cultural heritage value or interest have been prescribed, the property meets the prescribed criteria; and
> >
> > (b) the designation is made in accordance with the process set out in this section.

Under the OHA, O.Reg. 9/06 provides the criteria for determining a property's cultural heritage value or interest:

> (2) A property may be designated under section 29 of the Act if it meets one or more of the following criteria for determining whether it is of cultural heritage value or interest

The O.Reg. 9/06 criteria are listed and applied to the Subject Site in Section 7.0 of this report.

5.5 Standards and Guidelines for the Conservation of Historic Places in Canada (2010)

Parks Canada produced the *Standards & Guidelines for the Conservation of Historic Places in Canada* to provide guidance to governments, property owners, developers, and heritage practitioners across the country. This document outlines the conservation decision process and establishes pan-Canadian conservation principles. Section 4.4 of the *Standards & Guidelines* provides "Guidelines for Engineering Works, Including Civil, Industrial & Military Works." This section notes that, "Civil works, such as bridges, dams and canals, present a different challenge. These works often remain fully functional and so must meet stringent contemporary safety codes that did not exist at the time of their construction. Their continued use is contingent on meeting these standards, often necessitating significant rehabilitation."

6 COMMUNITY ENGAGEMENT

Dillon and Middlesex County initiated community engagement for this EA in August of 2020 with a Notice of Study Commencement shared to the public, Indigenous communities and representative organizations, and relevant stakeholders. Part of this notice included a link to a public survey that was advertised and circulated online. A Virtual Public Information Centre (PIC) was hosted on May 19, 2021 to provide an overview of the study, existing conditions, and potential alternatives and the preferred solution.[60] This event was advertised on the County of Middlesex website. The following Indigenous communities were included in the contact list for the above notices:

- Chippewas of the Thames First Nation
- Chippewas of Kettle & Stony Point First Nation
- Oneida Nation of the Thames
- Caldwell First Nation
- Delaware Nation (Moravian of the Thames)
- Chippewas of Aamjiwnaang
- Metis Nation of Ontario
- Munsee-Delaware Nation
- Walpole Island First Nation
- Southern First Nation Secretariat.

In addition to the community engagement described above, TMHC reached out to the agencies and organizations detailed below to confirm the heritage status of the Subject Site and to gather any historical information or images pertinent to the drafting of this report.

6.1 North Middlesex Historical Society

The North Middlesex Historical Society was contacted in July 2020 to help provide historical context and a sense of the significance of the site. The Society provided relevant images and confirmed the historical linkages of the bridge to the surrounding community.

6.2 North Middlesex

Planning staff with the municipality of North Middlesex were contacted in July 2020 seeking information about the municipal heritage status of the Subject Site. The municipality responded that they do not maintain a heritage inventory.

6.3 Middlesex County

Planning staff with the Middlesex County were contacted in July 2020 seeking information about the municipal heritage status of the Subject Site. The County responded that they do not maintain a heritage inventory.

[60] Blacks Bridge Environmental Assessment. Virtual Public Information Centre 2019: https://www.middlesex.ca/sites/default/files/Blacks%20Bridge%20PIC%20Display%20Materials.pdf

6.4 Ontario Heritage Trust

The Ontario Heritage Trust (OHT) was contacted in July 2020 to determine if either Subject Site or adjacent properties appeared on any OHT-maintained registers or had any heritage conservation easements placed on them. Kevin DeMille responded that there were none.

6.5 MHSTCI

Karla Barboza with MHSTCI was contacted in July 2020 to determine if the Subject Sites or adjacent properties were listed as Provincial Heritage Properties; they were not.

7 EVALUATION AGAINST O.REG. 9/06 CRITERIA

Neither North Middlesex nor Middlesex County maintain a municipal heritage register or inventory. Blacks Bridge has not been municipally listed or designated under either Part IV or Part V of the OHA. There are no National Historic Sites or Provincial Heritage Properties present on or adjacent to the Subject Site. The bridge does not appear on the Ontario Heritage Bridge List.

Based on the research summarized in Section 2.1, the following table considers the property with respect to the *OHA*'s Ontario Regulation 9/06: Criteria for Determining Cultural Heritage Value or Interest. A property may be designated under section 29 of the *OHA* if it meets one or more of the following criteria for determining cultural heritage value or interest.

1. The property has design value or physical value because it:

Criterion	Summary of Response
i. is a rare, unique, representative or early example of a style, type, expression, material or construction method,	Yes; the property is a representative example of a single-span, riveted through-truss bridge, which, despite featuring replacement railings, retains a relatively high level of integrity.
ii. displays a high degree of craftsmanship or artistic merit, or	No; while the property is a representative example of a single-span, riveted through-truss bridge, it does not demonstrate a high degree of craftsmanship or artistic merit relative to what is typical for this typology.
iii. demonstrates a high degree of technical or scientific achievement.	No; while the property is a representative example of a single-span, riveted through-truss bridge, it does not demonstrate a high degree of technical or scientific achievement relative to what is typical for this typology.

Table 1: Design or Physical Value

2. The property has historical value or associative value because it:

Criterion	Summary of Response
i. has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community,	Yes; the property represents an ongoing infrastructural need to traverse the Ausable River in this location, which since 1861 has produced a series of successive bridges, of which the extant bridge is the most recent. As such, the property has direct associations with the themes of transportation improvement related to local development in this area, and the evolving approach to bridge replacement, reflecting engineering trends over time.
ii. yields, or has the potential to yield, information that contributes to an understanding of a community or culture, or	No; the property is not known to yield information that contributes to an understanding of a community or culture.

Criterion	Summary of Response
iii. demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community	Yes; the property reflects the work of The Sarnia Bridge Company, a notable Sarnia-based supplier of bridges throughout North America during the early 20th century.

Table 2: Historical or Associative Value

3. The property has contextual value because it:

Criterion	Summary of Response
i. is important in defining, maintaining or supporting the character of an area,	No; as a relatively modest bridge in a rural setting, the property is not important in defining, maintaining, or supporting the character of the area.
ii. is physically, functionally, visually or historically linked to its surroundings, or	No; while, by its nature as a vehicular bridge, the property is integrated with the road it carries and the areas it connects, it is not physically, functionally, visually, or historically linked to its surroundings such that it meets this criterion.
iii. is a landmark.	No; as a relatively modest bridge in a rural setting, the property is not a visual landmark, and it is not currently known or believed to meet this criterion as a community landmark.

Table 3: Contextual Value

Based on the research and analysis summarized in this CHER/HIA, Blacks Bridge in North Middlesex was found to meet the O.Reg. 9/06 Criteria for its design/physical value and historical/associative value.

7.1.1 Blacks Bridge – Draft Statement of Cultural Heritage Value or Interest

The site known as Blacks Bridge in North Middlesex is a through-truss bridge that carries West Corner Drive across the Ausable River. Constructed in 1912 by The Sarnia Bridge Company, the bridge replaced at least two previous bridges in this location. The property is a representative example of a riveted through-truss bridge, which, despite featuring replacement railings, retains a relatively high level of integrity.

The property represents an ongoing infrastructural need to traverse the Ausable River in this location, which since 1861 has produced a series of successive bridges, of which the extant bridge is the most recent. As such, the property has direct associations with the themes of transportation improvement related to local development in this area, and the evolving approach to bridge replacement, reflecting engineering trends over time. The property is also associated with The Sarnia Bridge Company, a notable Sarnia-based supplier of bridges throughout North America during the early 20th century.

The character-defining elements of Blacks Bridge include the following:

- The bridge's infrastructural context, carrying West Corner Drive over the Ausable River
- The bridge's form and design as a riveted, seven-panel through-truss bridge, including its intact original structural features.

8 DESCRIPTION OF PROPOSED DEVELOPMENT

Blacks Bridge is currently closed to vehicular and pedestrian traffic due to structural deficiencies noted during a visual inspection in 2019. Key findings of the structural inspections included light to very severe deterioration, corrosion, and rust jacking as well as a bent diagonal member on the north truss.

In addition to noted structural deficiencies, Blacks Bridge was constructed in 1912 making it over 100 years old. The age of the structure suggests replacement as a necessary consideration in the near term.

Dillon has identified five practical alternatives.

8.1 Alternative 1 – Do Nothing

This alternative proposes that no improvements or changes be made to address the identified problem. As a result, this alternative has been screened out. The bridge is currently closed due to structural deficiencies and leaving it in place would not be an appropriate long-term solution.

8.2 Alternative 2 – Rehabilitate for Single-Lane Vehicular Use

This alternative would rehabilitate Blacks Bridge to its previous functionality as a two-way single lane bridge with a load restriction of 8 tonnes and a clearance restriction. While this alternative would retain the heritage value of the structure (form and functionality) and have potentially less impact on archaeological resources, it does not accommodate all vehicles (including agricultural and large emergency vehicles). This alternative will also have a higher potential impact on fish and fish habitats and may require frequent maintenance and repairs. This alternative would facilitate a service life of 30 years.

8.3 Alternative 3 – Rehabilitate for Active Transportation Only

This alternative would rehabilitate Blacks Bridge for use by pedestrians and cyclists only. Bollards and other barricades would likely be implemented to block vehicular traffic. This alternative would enhance road safety for active transportation and retain the heritage value (form only) of the structure. However, this option does not accommodate vehicular traffic of any kind, which has been the longstanding use of the existing Blacks Bridge. This alternative also poses potential impact to fish and fish habitat and would require frequent maintenance and repairs. The expected service life for this alternative would be 30 years.

8.4 Alternative 4 – Replace with a New Bridge (preferred alternative)

The preferred alternative for Blacks Bridge includes replacement of the current structure with a new two-lane bridge in the same location. Overall, Alternative 4 accommodates all vehicular traffic and is well aligned with public input received during previous community outreach. This alternative also creates potential opportunity to manage flooding concerns and has the lowest potential impact to fish and fish habitats. The anticipated service life for this alternative is 75 years. While this alternative is well aligned with key objectives for the study, it will remove the current bridge and associated heritage value.

Several options are proposed for this alternative and within those, option 2A is the preferred alternative. The following features are common to all options under Alternative 4:

- The new bridge will be constructed on the same alignment as the existing bridge, and will accommodate two lanes of traffic on West Corner Drive over the Ausable River.
- The new bridge soffit will maintain the existing vertical clearance.
- The bridge deck will consist of a 225mm thick reinforced concrete deck supported on steel I-girders.
- The deck will be waterproofed and paved, including a paved deck width of 8.5m and an overall deck width of 9.1m.
- Concrete parapet walls will be constructed on each side of the bridge deck.

8.4.1 Option 1 – Replace with a New Bridge (52 m single span)

This option includes a new 52 m span slab-on-girder bridge with integral abutments with open 2:1 embankments. A 1.9 m profile grade raise on West Corner Drive is required at the west (low) abutment to accommodate the new structure. Heritage attributes of this option include a bridge crossing over the Ausable River with a single span. This option provides the greatest profile grade raise and approach embankment reconstruction requirements on West Corner Drive due to the greatest structure depth. This option includes a longer span and greater deck area compared to other feasible single span alternatives. Due to the longer span, larger crane capacity or multiple cranes are required compared to shorter single span options to accommodate the greater pick load and radius. Construction cost is greater compared to shorter single span bridge options.

8.4.2 Option 2 – Replace with a New Bridge (41.0 m single span)

This option includes a new 41.0 m span slab-on-girder bridge with integral (false) abutments including RSS walls at each abutment. A 1.5 m profile grade raise on West Corner Drive is required at the west (low) abutment to accommodate the new structure. Heritage attributes of this option include a bridge crossing over the Ausable River with a single span, and abutment and wingwall configurations similar to the existing bridge. This option was determined to have insufficient hydraulic capacity and was dismissed.

8.4.3 Option 2A – Replace with a New Bridge (44.0 m single span) (preferred option)

This option includes a new 44.0 m span slab-on-girder bridge with integral (false) abutments including RSS walls at each abutment. A 1.6 m profile grade raise on West Corner Drive is required at the west (low) abutment to accommodate the new structure. Heritage attributes of this option include a bridge crossing over the Ausable River with a single span, and abutment and wingwall configurations similar to the existing bridge. This option includes a shorter span and smaller deck area compared to other feasible single span alternatives, and provides an opportunity for wildlife passage underneath the bridge. Girder erection using a single crane from one side of the Ausable River is feasible using commonly available crane equipment. Construction cost is lower compared to longer single span or multi-span bridge options. The proposed rendering for this preferred option can be found in Appendix A.

8.4.4 Option 3 – Replace with a New Bridge (51 m three-span)

This option includes a new 51 m long 3-span slab-on-girder bridge with integral abutments with open 2:1 embankments, including spans of 15 m - 19.5 m - 15 m. The piers are founded on spread footings within the limits of the Ausable River. A 0.9 m profile grade raise on West Corner Drive is required at the west (low) abutment to accommodate the new structure. The span configuration and substructure configuration have no resemblance to the existing structure from a heritage attribute perspective. This option provides the least

profile grade raise and approach embankment reconstruction on West Corner Drive due to the shallowest structure depth, but requires construction of temporary cofferdams and excavations in the watercourse to place new pier foundations, contributing to greater environmental and Species at Risk (SAR) impacts, construction duration, and construction cost.

8.5 Alternative 5 – Remove the Bridge

This alternative would remove Blacks Bridge without replacement. This alternative would involve potentially replacing existing abutments behind their current locations as well as property acquisition to create cul-de-sacs at the ends of the West Corner Drive. This alternative would have the lowest anticipated cost with no future maintenance, replacement or removal required. This alternative does not provide connectivity across Ausable River and does not align well with the public input received at previous community outreach.

9 IMPACT ASSESSMENT

According to the MHSTCI's InfoSheet #5: Heritage Impact Assessments and Conservation Plans:

> Any impact (direct or indirect, physical or aesthetic) of the proposed development or site alteration on a cultural heritage resource must be identified. The effectiveness of any proposed conservation or mitigative or avoidance measures must be evaluated on the basis of established principles, standards and guidelines for heritage conservation.

The following table includes an assessment of the proposed development against the types of potential impacts identified in InfoSheet #5.

Negative impact on a heritage resource	Assessment for Preferred Alternative at the Subject Site
Destruction of any, or part of any, significant heritage attributes or features	Yes; the proposed development will result in the demolition and replacement of the existing bridge. This loss of heritage fabric should be addressed by mitigation measures, as discussed in Section 10 of this report.
Alteration that is not sympathetic, or is incompatible, with the historic fabric and appearance	Yes; the proposed development will result in the demolition and replacement of the existing bridge. This loss of heritage fabric should be addressed by mitigation measures, as discussed in Section 10 of this report.
Shadows created that alter the appearance of a heritage attribute or change the viability of a natural feature or plantings, such as a garden;	No; the proposed development will not result in shadows that alter the appearance of a heritage attribute or change the viability of a natural feature or plantings.
Isolation of a heritage attribute from its surrounding environment, context or a significant relationship	No; the proposed development will result in the demolition and replacement of the existing bridge. As a result, no heritage attributes will remain. This loss of heritage fabric should be addressed by mitigation measures, as discussed in Section 10 of this report.
Direct or indirect obstruction of significant views or vistas within, from, or of built and natural features	No; no significant views or vistas within, from, or of built and natural features related to the Subject Site have been identified.
A change in land use such as rezoning a battlefield from open space to residential use, allowing new development or site alteration to fill in the formerly open spaces	No; no change in land use will occur as a result of the proposed development.
Land disturbances such as a change in grade that alters soils, and drainage patterns that adversely affect an archaeological resource	Yes; the associated land alterations have the ability to adversely affect previously undocumented archaeological resources. A Stage 1 archaeological assessment is recommended.
Other potential impacts	No other impacts identified

Table 4: Blacks Bridge Impact Assessment

10 CONSIDERED ALTERNATIVES AND MITIGATION STRATEGIES

While not directly applicable to the Subject Site, the Ministry of Transportation's (MTO) *Ontario Heritage Bridge Guidelines* (OHBG) (2008) offers a relevant and useful discussion of considerations for conservation and/or mitigation options to direct and indirect impacts to the cultural heritage value or interest of the Subject Site as identified in Section 7 of this report. The preferred alternative (Section 8, Alternative 4 Option 2A) corresponds with OHBG Option 8 in the tables below.

OHBG Option	Discussion	Result
1) Retention of existing bridge with no major modifications undertaken.	Retaining the existing bridge would avoid direct and indirect impacts to the identified heritage attributes in the short term but fail to address the primary problem triggering the EA project. Structural deterioration of the bridge, including its heritage attributes, would continue. Therefore, this is not considered a viable option.	Not viable; not selected as preferred alternative.
2) Restoration of missing or deteriorated elements where physical or documentary evidence (e.g., photographs or drawings) exists for their design.	Repairing the existing bridge with sympathetic modifications would minimize direct and indirect impacts to the identified heritage attributes. Repair would also restore certain heritage attributes, such as the trusses. Because so many of the bridge's components are at the end of their service life and because the remaining structure cannot be proven to safely support new components, the preferred alternative is to replace the bridge. Alternatives that propose the option of restoration or repair only provided service life for 30 years. For this reason, rehabilitation or repair of the bridge is not a feasible alternative.	Limited viability; not selected as preferred alternative.
3) Retention of existing bridge with sympathetic modification.	Retaining the existing bridge with sympathetic modifications would limit direct and indirect impacts to the identified heritage attributes. This option would also introduce new components to the existing bridge which may represent new interpretations of heritage attributes, such as the steel trusses. Retaining the bridge would not, however, resolve a standing deficiency related to structural deterioration and with repairs, would only offer a service life of 30 years Although a potentially viable option, this option was not preferred during the EA.	Limited viability; not selected as preferred alternative.

OHBG Option	Discussion	Result
4) Retention of existing bridge with sympathetically designed new structure in proximity.	Pairing the existing bridge with a new structure in close proximity would avoid direct and indirect impacts to the identified heritage attributes in the short term but fail to address the structural deterioration triggering the EA project. The land acquisition necessary, changes to the road alignment, deleterious effects of maintaining two crossings, potential erosion concerns, and overall costs contribute to this being a prohibitive and non-viable option.	Not viable; not selected as preferred alternative.
5) Retention of existing bridge no longer in use for vehicular purposes but adapted for a new use (e.g., pedestrian walkways, cycle paths, scenic viewing, etc.).	Retaining the existing bridge in an alternative capacity would avoid direct and indirect impacts to the identified heritage attributes in the short term but fail to address the structural deterioration triggering the EA project. Vehicular traffic has been the longstanding use of this bridge. The need for a vehicular bridge at this location would require the construction of a new bridge, including land acquisition and road realignment. Additionally, the absence of nearby pedestrian or cycling-related infrastructure negate this approach as a viable option.	Not viable; not selected as preferred alternative.
6) Retention of bridge as a heritage monument for viewing purposes only.	Retaining the existing bridge in an alternative capacity would avoid direct and indirect impacts to the identified heritage attributes in the short term but fail to address the structural deterioration triggering the EA project. The need for a vehicular bridge at this location would require the construction of a new bridge, including land acquisition and road realignment. Additionally, the rural context of the bridge on a sideroad inhibits its potential impact as a heritage monument.	Not viable; not selected as preferred alternative.
7) Relocation of smaller, lighter single span bridges to an appropriate new site for continued use (see 4) or adaptive re-use (see 5).	Blacks Bridge does not fit the criteria of being a small bridge and as a result, the relocation of the bridge to an alternative site is not possible.	Not viable; not selected as preferred alternative.

OHBG Option	Discussion	Result
8) Bridge removal and replacement with a sympathetically designed structure.	Demolishing the existing bridge would result in the loss of the identified heritage design attributes of the riveted seven-panel through-truss bridge. A new structure meeting current minimum width design requirements and accompanied by commemoration of the heritage attributes of the previous bridge possibly including salvaged components would help mitigate the loss of heritage design value. This is considered the preferred alternative (Alternative 4 Option 2A) in meeting the objectives of the EA. This alternative retains the bridge's single span configuration and the proposed vertical false abutment wall includes some resemblance to existing abutment wall and wingwall configuration.	Viable; selected as preferred alternative
a) Where possible, salvage elements/members of bridge for incorporation into new structure or for future conservation work or displays.	Incorporating potentially salvageable components of the existing bridge, especially the steel trusses, into the new structure would maintain the key heritage attributes of the riveted seven-span through-truss design. Alternatively, retaining steel truss components judged capable of being stored for future conservation of other through-truss bridges is also an option provided sufficient storage can be found and depending on the condition of the trusses. Incorporation of part of the trusses into a commemorative display, even if just as a salvaged panel demonstrating the riveting technique and materials used, should also be considered.	Viable; suggested part of mitigation strategy
b) Undertake full recording and documentation of existing structure.	Full recording of the existing bridge, with particular attention paid to the riveted seven-span through-truss design would archive the presence and form of the bridge in the absence of its physical conservation.	Viable; suggested part of mitigation strategy

Table 5: Blacks Bridge OHBG Conservation and Mitigation Options

10.1 Mitigations for Preferred Alternative

As discussed in Section 8, the preferred alternative for Blacks Bridge is more or less consistent with Option 8 of the OHBG in the previous section. Deciding factors included deterioration of bridge components, minimum design requirements, and limitations imposed by the bridge's environment contributing to cost and accessibility concerns. Option 8 will result in the loss of heritage design and historical/associative values. Mitigation options are provided below:

1) In keeping with OHBG Option 8a, TMHC recommends that the final design for the replacement bridge considers and, where possible and appropriate, incorporates the scale, massing, materials, and finishes of the original through-truss bridge in its original location.

2) In keeping with OHBG Option 8b, TMHC recommends that sufficient documentation of the bridge be undertaken prior to demolition. This CHER/HIA represents much of the documentation envisioned by MTO's *Environmental Guide for Built Heritage and Cultural Heritage Landscapes* (section 6.3.1.4) including representative images, local histories, and images of character-defining details. Additional photography, accompanied by a photographic key plan is recommended prior to demolition. In the absence of original engineering drawings, TMHC recommends the production of plan, elevation, and detail drawings with dimensions.[61]

3) All documentation will be submitted to the North Middlesex Historical Society, copying MHSTCI on the accompanying cover letter.

4) In consultation with local stakeholders and Indigenous communities, the County will install a commemorative plaque or interpretive sign at the site of the replacement bridge within one year of completion. Interpretive content should reference the current bridge's through-truss design, history of bridges at this location, The Sarnia Bridge Company, and historic photographs. If possible, salvaged components of the original bridge could be incorporated into the commemoration.

Resulting changes to this strategy should be forwarded to MHSTCI. The following schedule outlines when each recommendation should be implemented:

- Mitigation Recommendation 1 be considered as part of the detailed design of the new bridge.
- Mitigation Recommendation 2 be completed prior to demolition.
- Mitigation Recommendation 3 be completed within two months of the completion of Mitigation Recommendation 2.
- Mitigation Recommendation 4 be considered within one year of the completion of the replacement bridge.

[61] Reference the Historic American Engineering Record (HAER) guidelines specific to engineering structures for more information: https://www.nps.gov/hdp/standards/HAER/HAERHistoryGuidelines.pdf#page=5.

11 CONCLUSION

A 2019 visual inspection of Blacks Bridge found significant structural deterioration, corrosion, and rust jacking, warranting the closure of the bridge for pedestrian and vehicular traffic shortly thereafter. This CHER/HIA provided a heritage evaluation of the bridge against the criteria set out by the *Ontario Heritage Act* (OHA)'s O. Reg. 9/06, an assessment of the proposed development's impact on identified heritage attributes, and strategies for mitigating that impact.

Evaluation of the Subject Sites against the O.Reg. 9/06 criteria concluded that the Blacks Bridge meets the criteria on the basis of its physical/design value and historical/associative value.

In order to address structural deterioration, Dillon considered five alternatives as part of the environmental assessment process which included consultation with local stakeholders:

- Alternative 1 – Do Nothing
- Alternative 2 – Rehabilitate for Single-Lane Vehicular Use
- Alternative 3 – Rehabilitate for Active Transportation Only
- Alternative 4– Replace with a New Bridge (preferred alternative)
    - Option 1 – Replace with a New Bridge (52 m single span)
    - Option 2 – Replace with a New Bridge (41.0 m single span)
    - Option 2A – Replace with a New Bridge (44.0 m single span) (preferred option)
    - Option 3 – Replace with a New Bridge (51 m three-span)
- Alternative 5 – Remove the Bridge

Dillon has indicated that the preferred approach is Alternative 4 – Replacement with a new bridge. Of the options provided within this alternative, Option 2A is preferred. This option includes a new 44.0m span slab-on-girder bridge with integral (false) abutments including RSS walls at each abutment. The new bridge will be constructed on the same alignment as the existing bridge, and will accommodate two lanes of traffic on West Corner Drive over the Ausable River. A profile grade raise on West Corner Drive is required to accommodate the new structure. The new bridge soffit will maintain the existing vertical clearance.

Each abutment is founded on a single row of steel H-piles. The bridge deck will consist of a 225mm thick reinforced concrete deck supported on steel I-girders. The deck will be waterproofed and paved, including a paved deck width of 8.5m and an overall deck width of 9.1m. Concrete parapet walls will be constructed on each side of the bridge deck.

All alternatives were considered using the *Ontario Heritage Bridge Guidelines* and the following mitigation strategies were recommended based on the preferred alternative:

1) In keeping with OHBG Option 8a, TMHC recommends that the final design for the replacement bridge considers and, where possible and appropriate, incorporates the scale, massing, materials, and finishes of the original through-truss bridge in its original location.

2) In keeping with OHBG Option 8b, TMHC recommends that sufficient documentation of the bridge be undertaken prior to demolition. This CHER/HIA represents much of the documentation envisioned by MTO's *Environmental Guide for Built Heritage and Cultural Heritage Landscapes* (section 6.3.1.4) including representative images, local histories, and images of character-defining details. Additional photography,

accompanied by a photographic key plan is recommended prior to demolition. In the absence of original engineering drawings, TMHC recommends the production of plan, elevation, and detail drawings with dimensions.[62]

3) All documentation will be submitted to the North Middlesex Historical Society, copying MHSTCI on the accompanying cover letter.

4) In consultation with local stakeholders and Indigenous communities, the County will install a commemorative plaque or interpretive sign at the site of the replacement bridge within one year of completion. Interpretive content should reference the current bridge's through-truss design, history of bridges at this location, The Sarnia Bridge Company, and historic photographs. If possible, salvaged components of the original bridge could be incorporated into the commemoration.

[62] Reference the Historic American Engineering Record (HAER) guidelines specific to engineering structures for more information: https://www.nps.gov/hdp/standards/HAER/HAERHistoryGuidelines.pdf#page=5.

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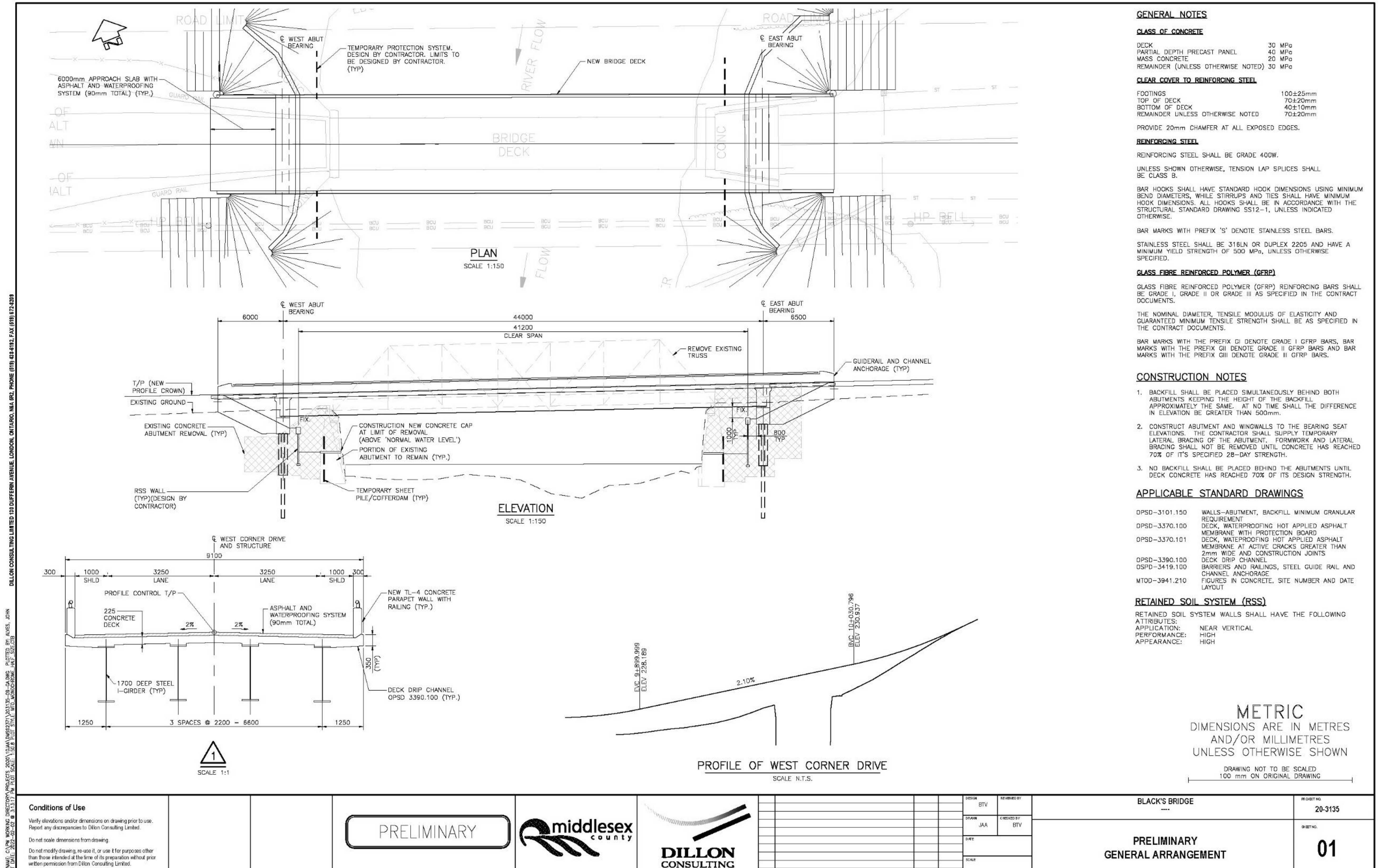
13 APPENDIX A: REPLACEMENT BRIDGE RENDERING


PLAN
SCALE 1:150
6000mm APPROACH SLAB WITH ASPHALT AND WATERPROOFING SYSTEM (90mm TOTAL) (TYP.)
WEST ABUT BEARING
TEMPORARY PROTECTION SYSTEM. DESIGN BY CONTRACTOR. LIMITS TO BE DESIGNED BY CONTRACTOR. (TYP)
NEW BRIDGE DECK
EAST ABUT BEARING
BRIDGE DECK
RIVER FLOW
ELEVATION
SCALE 1:150
6000
44000
41200
CLEAR SPAN
6500
REMOVE EXISTING TRUSS
GUIDERAIL AND CHANNEL ANCHORAGE (TYP)
T/P (NEW PROFILE CROWN)
EXISTING GROUND
EXISTING CONCRETE ABUTMENT REMOVAL (TYP)
CONSTRUCTION NEW CONCRETE CAP AT LIMIT OF REMOVAL (ABOVE 'NORMAL WATER LEVEL')
PORTION OF EXISTING ABUTMENT TO REMAIN (TYP.)
RSS WALL (TYP)(DESIGN BY CONTRACTOR)
TEMPORARY SHEET PILE/COFFERDAM (TYP)
WEST CORNER DRIVE AND STRUCTURE
9100
300
1000 SHLD
3250 LANE
3250 LANE
1000 SHLD
300
PROFILE CONTROL T/P
225 CONCRETE DECK
2%
2%
ASPHALT AND WATERPROOFING SYSTEM (90mm TOTAL)
NEW TL-4 CONCRETE PARAPET WALL WITH RAILING (TYP.)
1700 DEEP STEEL I-GIRDER (TYP)
DECK DRIP CHANNEL OPSD 3390.100 (TYP.)
1250
3 SPACES @ 2200 = 6600
1250
SCALE 1:1
EVC 9+899.999 ELEV 228.189
BVC 10+030.796 ELEV 230.937
2.10%
PROFILE OF WEST CORNER DRIVE
SCALE N.T.S.
GENERAL NOTES
CLASS OF CONCRETE
DECK 30 MPa
PARTIAL DEPTH PRECAST PANEL 40 MPa
MASS CONCRETE 20 MPa
REMAINDER (UNLESS OTHERWISE NOTED) 30 MPa
CLEAR COVER TO REINFORCING STEEL
FOOTINGS 100±25mm
TOP OF DECK 70±20mm
BOTTOM OF DECK 40±10mm
REMAINDER UNLESS OTHERWISE NOTED 70±20mm
PROVIDE 20mm CHAMFER AT ALL EXPOSED EDGES.
REINFORCING STEEL
REINFORCING STEEL SHALL BE GRADE 400W.
UNLESS SHOWN OTHERWISE, TENSION LAP SPLICES SHALL BE CLASS B.
BAR HOOKS SHALL HAVE STANDARD HOOK DIMENSIONS USING MINIMUM BEND DIAMETERS, WHILE STIRRUPS AND TIES SHALL HAVE MINIMUM HOOK DIMENSIONS. ALL HOOKS SHALL BE IN ACCORDANCE WITH THE STRUCTURAL STANDARD DRAWING SS12-1, UNLESS INDICATED OTHERWISE.
BAR MARKS WITH PREFIX 'S' DENOTE STAINLESS STEEL BARS.
STAINLESS STEEL SHALL BE 316LN OR DUPLEX 2205 AND HAVE A MINIMUM YIELD STRENGTH OF 500 MPa, UNLESS OTHERWISE SPECIFIED.
GLASS FIBRE REINFORCED POLYMER (GFRP)
GLASS FIBRE REINFORCED POLYMER (GFRP) REINFORCING BARS SHALL BE GRADE I, GRADE II OR GRADE III AS SPECIFIED IN THE CONTRACT DOCUMENTS.
THE NOMINAL DIAMETER, TENSILE MODULUS OF ELASTICITY AND GUARANTEED MINIMUM TENSILE STRENGTH SHALL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS.
BAR MARKS WITH THE PREFIX GI DENOTE GRADE I GFRP BARS, BAR MARKS WITH THE PREFIX GII DENOTE GRADE II GFRP BARS AND BAR MARKS WITH THE PREFIX GIII DENOTE GRADE III GFRP BARS.
CONSTRUCTION NOTES
1. BACKFILL SHALL BE PLACED SIMULTANEOUSLY BEHIND BOTH ABUTMENTS KEEPING THE HEIGHT OF THE BACKFILL APPROXIMATELY THE SAME. AT NO TIME SHALL THE DIFFERENCE IN ELEVATION BE GREATER THAN 500mm.
2. CONSTRUCT ABUTMENT AND WINGWALLS TO THE BEARING SEAT ELEVATIONS. THE CONTRACTOR SHALL SUPPLY TEMPORARY LATERAL BRACING OF THE ABUTMENT. FORMWORK AND LATERAL BRACING SHALL NOT BE REMOVED UNTIL CONCRETE HAS REACHED 70% OF IT'S SPECIFIED 28-DAY STRENGTH.
3. NO BACKFILL SHALL BE PLACED BEHIND THE ABUTMENTS UNTIL DECK CONCRETE HAS REACHED 70% OF ITS DESIGN STRENGTH.
APPLICABLE STANDARD DRAWINGS
OPSD-3101.150 WALLS-ABUTMENT, BACKFILL MINIMUM GRANULAR REQUIREMENT
OPSD-3370.100 DECK, WATERPROOFING HOT APPLIED ASPHALT MEMBRANE WITH PROTECTION BOARD
OPSD-3370.101 DECK, WATEPROOFING HOT APPLIED ASPHALT MEMBRANE AT ACTIVE CRACKS GREATER THAN 2mm WIDE AND CONSTRUCTION JOINTS
OPSD-3390.100 DECK DRIP CHANNEL
OSPD-3419.100 BARRIERS AND RAILINGS, STEEL GUIDE RAIL AND CHANNEL ANCHORAGE
MTOD-3941.210 FIGURES IN CONCRETE, SITE NUMBER AND DATE LAYOUT
RETAINED SOIL SYSTEM (RSS)
RETAINED SOIL SYSTEM WALLS SHALL HAVE THE FOLLOWING ATTRIBUTES:
APPLICATION: NEAR VERTICAL
PERFORMANCE: HIGH
APPEARANCE: HIGH
METRIC
DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN
DRAWING NOT TO BE SCALED
100 mm ON ORIGINAL DRAWING
Conditions of Use
Verify elevations and/or dimensions on drawing prior to use. Report any discrepancies to Dillon Consulting Limited.
Do not scale dimensions from drawing.
Do not modify drawing, re-use it, or use it for purposes other than those intended at the time of its preparation without prior written permission from Dillon Consulting Limited.
PRELIMINARY
middlesex county
DILLON CONSULTING
BLACK'S BRIDGE
PRELIMINARY GENERAL ARRANGEMENT
20-3135
01