**Heritage Impact Assessment (HIA)**

of 1925 Concrete Single Span Bowstring Arch Bridge B4
Old Shiloh Bridge, Part of Lot 20, Concession 2 (Geographic Township of Georgina),
Town of Georgina, Regional Municipality of York

Submitted to

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**Executive Summary**

This report describes the results of the 2023 Heritage Impact Assessment (HIA) of the 1925 concrete single span bowstring arch bridge B4 (hereafter referred to as Old Shiloh Road Bridge), Part of Lot 20, Concession 2 (Geographic Town of Georgina) Town of Georgina, Regional Municipality of York, conducted by AMICK Consultants Limited. The existing bridge is a single span cast-in-place concrete bowstring arch structure which carries Old Shiloh Road over a tributary of the Pefferlaw River (Pefferlaw Brook), both of which are tributaries of Lake Simcoe. The Old Shiloh Road Bridge supports vehicular and pedestrian traffic. The bridge was constructed in 1925 in the existing Town of Georgina. This investigation was undertaken to support a Municipal Class Environmental Assessment process. All work was conducted in conformity with the Ontario Heritage Act (RSO 2005).

The Old Shiloh Road Bridge is a located within the Lake Simcoe Region Conservation Authority (LSRCA) regulated area. In consideration of the significance of the Old Shiloh Road Bridge to the heritage of the Town of Georgina, the bridge is considered a local landmark as it serves to commemorate the lacustrine and terrestrial transportation history, as well as the settlement and resource management history of the community. The Old Shiloh Road Bridge meets the criteria set forth in O. Reg. 9/06: Criteria for Determining Cultural Heritage Value or Interest (CHVI) as stipulated by the Cultural Heritage Evaluation Report (CHER) completed for the structure (AMICK 2020). The CHER indicated that the bridge requires an HIA in the event that removal, rehabilitation, or modifications are proposed for this bridge, especially as they related to the cultural heritage attributes identified for the bridge.

Based on the results of research, site investigation, and application of the criteria from Ontario Regulation 9/06, the Old Shiloh Road Bridge was determined to have elements of moderate cultural heritage value or interest based on the design/physical, contextual, and historical/associative values. Maintaining an association with the bridge's current location and design will satisfy the heritage concerns. The Corporation of the Town of Georgina Municipal Class Environmental Assessment Study (2022), the Old Shiloh Road Bridge CHER (AMICK 2023), and the Old Shiloh Road Bridge HIA (AMICK 2023) must be consulted should demolition or replacement of this structure be under consideration or an option under consideration within the EA process.

A detailed visual inspection was undertaken as per the Ontario Structure Inspection Manual (OSIM) was conducted in 2020, which indicated the bridge was approaching the end of its lifecycle and recommended that planning should commence for its replacement (Georgina.ca, 2022b). The existing bridge may not meet current road or bridge safety standards and may be operating beyond its expected lifespan.

Based on the conclusions of this survey, the following recommendations are made:

1) If the existing bridge is to be replaced, it is recommended that the Town undertake full recording and documentation of the existing structure in situ prior to removal of the existing bridge structure.

2) If the existing bridge is to be replaced, it should be reinstated in the same general location to preserve the historic crossing.

3) The Cultural Heritage Value of the Bridge could be commemorated through reflection of the architectural form of the existing bridge in the design of the replacement bridge.

4) The Cultural Heritage Value of the Bridge could be remembered with a commemorative monument, memorial, or art installation.

5) The Old Shiloh Road Bridge HIA should be consulted when considering viable alternatives to maintain the function of this bridge while respecting its CHVI.

6) This report should be filed with the Town of Georgina as part of the documentation for the EA.

7) This report should be filed with the Ministry of Citizenship and Multiculturalism (MCM) for review and comment as supporting documentation for the EA.

# 1.0 INTRODUCTION AND METHODOLOGY

## *1.1 Introduction*

This report describes the results of the 2023 Heritage Impact Assessment (HIA) of the 1925 concrete single span bowstring arch bridge B4 (hereafter referred to as Old Shiloh Road Bridge), Part of Lot 20, Concession 2 (Geographic Town of Georgina) Town of Georgina, Regional Municipality of York, conducted by AMICK Consultants Limited. The existing bridge is a single span cast-in-place concrete bowstring arch structure. The Bridge is a single-lane, concrete bowstring arch structure on conventional closed abutments. There are four wing walls extending beyond the bridge to provide roadside stability. There are four concrete pilasters located at each of the four corners of the structure. The structure was built in 1925 and has a deck length of 24 metres. The travel width is 5.2 metres between barriers and the overall structure width is 6.5 m. Concrete barriers are located on each side of the structure and form part of the overall arch system. Each of the two arches is tied to the deck at each end and through the use of four evenly spaced vertical columns. It has not undergone any significant modifications since construction and shows signs of age through weathering and accumulated damage through time.

## *1.2 Previous Work and Guiding Regulations*

The Corporation of the Town of Georgina retained AMICK Consultants Limited, qualified heritage consultants, to complete a Heritage Impact Assessment under the Municipal Class EA criteria. This investigation was undertaken to support a Municipal Class Environmental Assessment process. All work was conducted in conformity with the Ontario Heritage Act (RSO 2005). In addition to the current report, previous cultural heritage assessments were undertaken for the Old Shiloh Road Bridge by AMICK. The bridge was previously rehabilitated for a triple load posting of 20, 21, and 27 tonnes in 1998 (Figure 4) and concrete repairs were done between 2011-2014 (Figure 5).

### *1.2.3 Cultural Heritage Evaluation Report of the Old Shiloh Road Bridge CHER (AMICK Consultants Limited, 2023)*

The Cultural Heritage Evaluation Report (CHER) completed for the Old Shiloh Road Bridge reviewed primary and secondary resources including maps, local histories, and regional reports, and included a site visit and photographic documentation of the Old Shiloh Road Bridge (AMICK 2023). The general character of the property is discussed in this report and those aspects of the property to which O. Reg. 9/06 applies are reviewed and a short description of the bridge is provided. Following the description, a Statement of Cultural Heritage Value or Interest conveyed why the property is important, explaining cultural meanings, associations and connections the property holds for the community

that reflected one of or more of the evaluation criteria. The Cultural Heritage Evaluation Report (CHER) completed for the Old Shiloh Road Bridge indicated that the structure will require an HIA in the event that removal and/or modifications are proposed for this structure, and that an HIA must be completed when changes are anticipated to the heritage attributes identified for the bridge (AMICK 2023: 15).

### *1.2.4 Summary*

The present report is a fulfilment of the requirement for an HIA as recommended in the AMICK (2023) reports and the Georgina Official Plan (2016). The present report was undertaken as a validation of these prior recommendations, and will serve to recommend the replacement of the Old Shiloh Road Bridge with a two-lane bridge.

## *1.3 Methodology*

The present manifestation of the Old Shiloh Road Bridge, originally built in 1925, meets the criteria of being over 40 years old, and as such, the Ontario Ministry of Citizenship and Multiculturalism (MCM) considers that the bridge may have cultural heritage value. Therefore, in light of any proposed structural modifications that would affect the appearance or cultural integrity of the Old Shiloh Road Bridge, a Heritage Impact Assessment must be prepared by a qualified heritage consultant for this project. This report has been prepared to address this requirement. The proponent is advised that they should file this report with the MCM for the purpose of review by MCM Heritage Planning Staff as part of the EA process. AMICK Consultants Limited was engaged by the proponent to undertake this study on 18 September 2023. The objectives in undertaking this study are to:

1) Describe the methodology that was employed and the legislative and policy context that guides heritage evaluations of bridges over 40 years old;
2) Provide an historical overview of the design and construction of the bridge within the broader context of the surrounding town and bridge construction generally;
3) Describe existing conditions and heritage integrity;
4) Evaluate the bridge within Regulation 9/06 of the *Ontario Heritage Act* and draw conclusions about the heritage attributes of the structure; and
5) Assess the impacts of the proposed rehabilitation or replacement, ascertaining sensitivity to change in the context of identified heritage attributes and recommend appropriate mitigation measures.

# 2.0 LOCATION AND DESCRIPTION

## *2.1 Old Shiloh Road Bridge*

The Old Shiloh Road Bridge is located in the Town of Georgina, Part of Lot 20, Concession 2 (Geographic Town of Georgina) Township of York, Regional Municipality of York. The location of the bridge is illustrated in Figure 1 of this report. This report consists of an HIA for the Old Shiloh Road Bridge as part of a bridge replacement project.

The Old Shiloh Road Bridge is single span cast-in-place concrete bowstring arch structure which carries Old Shiloh Road over a Pefferlaw Brook. There are four wing walls extending beyond the bridge to provide roadside stability. There are two concrete pilasters located at two of the corners of the structure, one at one corner of the structure, and three at the last corner of the structure. The structure was built in 1925 and has a deck length of 24 metres. The travel width is 5.2 metres between barriers and the overall structure width is 6.5 m. Concrete barriers are located on each side of the structure and form part of the overall arch system. Each of the two arches is tied to the deck at each end and through the use of four evenly spaced vertical columns.

### *2.2 Registered/Designated Heritage Sites*

The bridge is located within the Lake Simcoe Region Conservation Authority (LSRCA) regulated area.

### *2.3 Structural Inspection*

A rehabilitation and replacement evaluation was prepared by Tathum Engineering Limited, has determined that the structure is in need of replacement and the addition of another lane based of traffic volumes (2023). According to previous rehabilitation drawings from the MTO given to Tatham Engineering Limited, the bridge was previously rehabilitated for a triple load posting in 1988 and between 2011-2014.

### *2.4 Overview of Local Historical Context*

As a contributory document to the Environmental Assessment (EA) process, this report relies on contemporary studies completed as components of this EA, in addition to follow up research. The history of the area has been well researched and documented by AMICK Consultants Limited (2023) in their CHER. Their report notes the following:

#### *3.1.1 Euro-Canadian Settlement*

*North of Lake Ontario, evidence suggests that early occupation began around 9000 B.C. People probably began to move into this area as the glaciers retreated and glacial lake levels began to recede. The early occupation of the area probably occurred in conjunction with environmental conditions that would be*

> *comparable to modern Sub-Arctic conditions. Due to the great antiquity of these sites, and the relatively small populations likely involved, evidence of these early inhabitants is sparse and generally limited to tools produced from stone or to by-products of the manufacture of these implements.*
>
> *York County's boundaries were originally from Lake Ontario to Lake Simcoe, until 1834. The County of York was originally comprised of ten townships and the Town of York (now Toronto) until Toronto separated and incorporated in 1834 (Town of Whitchurch-Stouffvile 2010).*
>
> *The present-day Town of Georgina was created through the amalgamation of the Town of Georgina and the Township of North Gwillimbury in 1971. The largest of the communities now within the Town of Georgina were Keswick and Sutton. Keswick was once known as Medina and is the largest urban community within the Town of Georgina. Keswick was originally a village in the Township of North Gwillimbury before amalgamation with Sutton to form the Town of Georgina. Sutton was originally a mill site named Bouchier Mills in honour of the builder of the dam on the Black River which was constructed in 1831. In 1864 the village name was changed to Sutton (Town of Georgina 2012).*
>
> (AMICK Consultants Limited, 2023: 6)

### *2.5 Overview of Ontario Bridge Construction History*

The history of settlement in Ontario is inextricably tied to the history or the development of overland transportation. As David Cuming notes in his Discovering Heritage Bridges on Ontario Roads (n.d.: 31), "Ontario with its myriad of rivers, creeks, streams and lakes has resulted in a substantial number of minor barriers to communication". As a result, bridges have always formed a significant component of overland transportation and communication routes. The first major roads in Ontario followed settlement by the United Empire Loyalists after the American War of Independence. These early roads were built for strategic military purposes but soon attracted settlement along these routes. Subsequent road construction, whether built by government agencies or private concerns also served to attract settlement and initial settlement promoted construction of further roadways as settlement moved inland from the Great Lakes and the initial transportation corridors (Cuming n.d.: 32).

Bridges were a necessity from the earliest days of road construction. The earliest bridges consisted of nothing more than two parallel logs stretching from one bank to the other with logs overlying these at a right angle. These bridges could be easily and quickly replaced as they rotted or should they be swept away by floodwaters or ice flows (Cuming n.d.: 32). Bridges needed to cover larger spans were constructed by early settlers based on principles employed in the construction of early houses and barns.

Truss systems used in the framing of structures were employed. Two such standard bridge types emerged fairly early on: The King Truss Bridge and the Queen Truss Bridge. The King Truss was built by setting a vertical beam supported by two inclined beams midway along a horizontal beam. The King Truss Bridge could span a gap of up to sixty (60) feet. The Queen truss system was employed for wider spans. This bridge was constructed with two vertical beams supported by one inclined beam for each and joined by a horizontal top beam. The Queen Truss Bridge could span a gap of up to one hundred and twenty (120) feet (Cuming n.d.: 35).

In the years between 1841 and 1849, the Department of Public Works spent $1,300,564 on roads in Canada West, including the construction of forty-three major bridges at a total cost of $206, 928. A full third of these bridges were timber-built Queen Truss Bridges. During this same period numerous bridge designs were patented in the United States under fierce competition to increase the length and strength of bridges. As a result, bridge construction in North America began a period of transition from wood to metal structures (Cuming n.d.: 36).

Many road bridge designs that evolved were based on principles derived from railroad construction. Other designs that had a major impact on bridge engineering evolved independently. The Whipple Truss was first built in 1841. This new design consisted of a totally metal bowstring arch bridge. The arch of the bridge and the vertical supporting members were manufactured of cast iron while the diagonal bracing used wrought iron. The typical bridge built in the middle of the 19th century in the United States was entirely made of wrought iron (Cuming n.d.: 37). In Ontario the timber bridge dominated the landscape in rural areas from 1780-1880 and persisted into the early twentieth century. Wrought iron bridges were built in areas with higher population densities such as the thriving market towns of Brantford, Peterborough, London and Paris. These communities all had wrought iron bridges that were constructed during the 1870s (Cuming n.d.: 38).

Metal bridges were sold in separate components produced in factories and shipped to the location of construction and assembled on site. Bridge components were ordered through catalogues. To simplify construction, the first metal bridges were assembled using "pin connections", which were essentially threaded bolts that obviated the need for specialists or specialized equipment such as rivets required. Construction of such bridges could be completed with unskilled local labour in two to three weeks. These bridges were ideally suited to bridge construction in small communities or rural contexts (Cuming n.d.: 38).

Beginning in the 1880s designers began to replace wrought iron elements in bridges with steel. This marked the beginning of a transition from wrought iron to steel bridges (Cuming n.d.: 41). Several factors contributed to the rapid development and proliferation of steel bridges at the beginning of the twentieth century. Portable pneumatic tools allowed for the use of rivets on even rural sites of bridge construction and pin

connections rapidly disappeared. Rivets allowed for longer and sturdier construction. New production methods made steel as cheap as wrought iron. The concurrent developments in heavier vehicle and agricultural machinery required bridges capable of taking heavier loads which made construction of timber bridges impractical even in rural areas. "Through truss" style construction was employed over larger spans or in locations where traffic loads were heavy. Steel bridges were erected in quantity throughout Ontario following 1900 (Cuming n.d.: 42). The improvement in highway and bridge construction was particularly notable following the end of the First World War with massive increases in automobile traffic and the development of heavy construction machinery (Cuming n.d.: 51-53).

Experimentation with reinforced concrete bridge construction began in the 1880s in France followed by the United States. The first concrete arch bridge was constructed in Ontario in 1905 and was comprised of mass concrete. The first steel reinforced bridge was constructed in 1906. The appeal of reinforced concrete as a construction technology stemmed from its great strength, length of use and low maintenance requirements compared to steel or iron which required regular painting and rust removal (Cuming n.d.: 44). The strength of a reinforced tied concrete arch above the deck was early recognized as a design suitable for almost any location, particularly in crossings with low banks where arched construction below the deck was unsuitable (Cuming n.d.: 47). By 1914 it was clear that concrete would dominate the construction of bridges for the foreseeable future (Cuming n.d.: 49). Concrete bridge construction of two types, the tied arch and the concrete beam, boomed in the 1920s (Cuming n.d.: 51).

Beginning in the 1930s a new innovation in bridge design challenged more traditional arched designs. The rigid frame reinforced concrete bridge employed a shallow arch below the deck and could be easily widened to accommodate demands of growing traffic pressures. This was a major advantage over earlier bridge designs such as the tied arch for which such an alteration was impossible (Cuming n.d.: 52).

Conde McCullough achieved his reputation in bridge engineering largely due to his facility for recognizing cost-effective designs based on long-term maintenance costs. His Economics of Bridge Design was a well-received treatise on this subject when published in 1929. This promoted the rise of composite bridge construction during the Depression years of the 1930s. Composite design using steel, wood, and concrete arose; each material has individual strengths and weaknesses for use in bridge design. These range from weight capacity, durability, and, of course, cost.

The nature of materials often leads to their combination in bridge construction, where steel deck girders support a concrete floor or a timber bridge that rests upon a steel or concrete series of piers or abutments. These structures are referred to as "composite" design and by and large most bridges utilize more than a single material, if only for the wearing surface of the roadbed. For purposes of categorization their primary material,

usually in reference to the structural support system, classifies bridges. As a result, a steel beam bridge with laminated wood deck and concrete piers is deemed a steel beam bridge.

Slab, beam and girder bridges are essentially similar and related designs, building upon the same basic structural principle, with a single member in tension that spans a void between two fixed points. Structurally a "slab" is the simplest, relying solely upon the inherent strength of a single member for both structure and road surface. A beam bridge is, in essence, a slab (the road deck) that is additionally strengthened by some number of longitudinal members. A girder bridge is a beam bridge with additional transverse supports between the beams (Kramer 2004: 7). Beam and Girder bridge types introduced in the 1930s remained in use throughout the post WWII period (Kramer 2004: 25).

Steel as used in composite bridge construction can be divided into two basic categories that reflect temporal advances in construction technology — rolled section beams versus the later use of welded members. Rolled sections refer to "H" or "I" or other shapes that are manufactured whole (the earlier of the technologies). Welded section beams are made of flat plates, welded into various shapes.

### *2.5.1 The Old Shiloh Road Bridge*

The CHER of the Old Shiloh Road Bridge (AMICK 2023) notes the following:

> *The existing bridge is a single span cast-in-place concrete bowstring arch structure which carries Old Shiloh Road over Pefferlaw Brook. This bridge is an increasingly rare example of a concrete rainbow (through) arch bridge, often called a concrete bowstring bridge. A very beautiful and graceful structure type, a number of these bridges were built throughout Ontario. This one retains good historic integrity including original railings.*
>
> *A field review was undertaken by Michael Henry on 17 January 2023 to conduct photographic documentation of the bridge crossing and to collect data relevant for completing a heritage evaluation of the structure. Results of the field review were then utilized to describe the existing conditions of the bridge crossing. This section provides a general description of the bridge crossing and associated cultural heritage features.*
>
> *The rural context of the bridge suggests that the erection of this bridge was likely in response to the proliferation of automotive traffic and mechanized farm machinery in the early 20$^{th}$ century. The selection of a concrete arch construction in preference to a steel truss bridge was probably made on the basis of a perceived need for added strength.*

> *Historically, the bridge is situated along an early settlement road. Given the settlement history of the area and that this bridge was constructed in 1925, there was likely at least one previous crossing at this location. Figure 2 shows the bridge location today superimposed on a Historic County map of 1860 and Figure 3 shows the bridge location today superimposed on a Historic Atlas map of 1878. Research into this likelihood has not resulted in the location of further information on the history of the crossing itself.*
>
> (AMICK 2023: 7)

The Old Shiloh Road Bridge is currently owned/maintained by the Town of Georgina. Inspections have found that the Old Shiloh Road Bridge is in need of replacement or rehabilitation.

### *2.6 Heritage Legislative Requirements*

Within the Province of Ontario there are a number of legislative requirements which necessitate the consideration of potential heritage features during the planning process.

1. The provincial interest in cultural heritage and the conservation of heritage resources is articulated in the Ontario Heritage Act (RSO 2005). This legislation provides the legislative framework for the conservation of Ontario's heritage. The Ontario Heritage Act is administered by the Ontario Ministry of Culture.
2. Heritage resource conservation is also identified as a provincial interest within the Provincial Policy Statement (2014).
3. Heritage resource conservation is also identified as a provincial interest within the Planning Act (RSO 1990a).
4. Heritage resource conservation is also identified as a provincial interest within the Environmental Assessment Act (RSO 1990b). This legislation considers cultural and built components to be integral elements of the environment. The impact of proposed undertakings to cultural heritage resources must be addressed as part of the standard environmental assessment process in the Province of Ontario.
5. The Public Transportation and Highway Improvement Act (RSO 1990c) and Ontario Regulation 104/97 address the design, construction and maintenance of bridges.

In partnership with other provinces, territories and the federal government, Ontario is also a participant in the Historic Places Initiative, which is a national program to encourage heritage conservation across Canada.

### *2.7 Municipal Planning Policy Context*

The Town of Georgina and York Region encourages the protection and conservation of cultural heritage features.

### *2.7.1 Municipal Consultation*

Community engagement and consultation was undertaken as a standard procedure within the Environmental Assessment (EA) process.

## 3.0 CULTURAL HERITAGE EVALUATION

The pace of development over the past two decades and projected ongoing development, places many potential heritage bridges under threat. Although most evidence of landscape changes can be seen in the expansion of established communities, the increase in population and commercial activities in these centres results in a greater volume of traffic on regional roads which necessitates improvements to the overall road network. The need for improvements in overland communication and shipping routes has required, and will continue to require, improvements to roadways and associated water crossings.

O. Reg. 9/06: Criteria for Determining Cultural Heritage Value or Interest establishes the criteria by which all types of cultural heritage resources are evaluated:

> *"1. The property has design value or physical value because it,*
>
> *i. is a rare, unique, representative or early example of a style, type, expression, material or construction method,*
>
> *ii. displays a high degree of craftsmanship or artistic merit, or*
>
> *iii. demonstrates a high degree of technical or scientific achievement.*
>
> *2. The property has historical value or associative value because it,*
>
> *i. has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community,*
>
> *ii. yields, or has the potential to yield, information that contributes to an understanding of a community or culture, or*
>
> *iii. demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.*
>
> *3. The property has contextual value because it,*
>
> *i. is important in defining, maintaining or supporting the character of an area,*

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

*iii. is a landmark. O. Reg. 9/06, s. 1 (2).*"

### *3.1 Cultural Heritage Evaluation of the Old Shiloh Road Bridge*

A property is generally considered to be of cultural heritage value or interest if it meets one or more of the criteria set forth under O. Reg. 9/06. In the CHER (AMICK 2023), the Old Shiloh Road Bridge has been evaluated against the three main criteria and their various subsets. The current report holds no discrepancies with the cultural heritage values assigned to the Old Shiloh Road Bridge in the CHER (AMICK 2023). The results are described in the following table and descriptive sections:

**TABLE 1:**

| **Design or Physical Value** | |
|---|---|
| is a rare, unique, representative or early example of a style, type, expression, material or construction method | Yes |
| displays a high degree of craftsmanship or artistic merit | No |
| demonstrates a high degree of technical or scientific achievement | No |
| **Historical or Associative Value** | |
| has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community, | No |
| yields, or has the potential to yield information that contributes to an understanding of a community or culture, or | No |
| demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community. | Yes |
| **Contextual Value** | |
| is important in defining, maintaining or supporting the character of an area, | No |
| is physically, functionally, visually or historically linked to its surroundings, or | No |
| is a landmark. | Yes |

#### *3.1.1 Design or Physical Value*

The AMICK CHER notes the following:

> *The Old Shiloh Road bridge is a simple single span reinforced concrete bowstring arch bridge, constructed in 1925. The structure is typical of the cast in place concrete bowstring arch type. It has not undergone any significant modifications since construction and shows signs of age through weathering and accumulated damage through time. It does not demonstrate a high degree of either*

> *craftsmanship or of scientific achievement. It is the only bridge of its kind in York Region.*
>
> (2023: 13)

### *3.1.2 Historical or Associative Value*

The AMICK CHER notes the following:

> *The Old Shiloh Road bridge is a simple single span reinforced concrete bowstring arch bridge, constructed in 1925. The structure is typical of the cast in place concrete bowstring arch type. It has not undergone any significant modifications since construction and shows signs of age through weathering and accumulated damage through time. It does not demonstrate a high degree of either craftsmanship or of scientific achievement. It is the only bridge of its kind in York Region.*
>
> (2023: 13)

### *3.1.3 Contextual Value*

The AMICK CHER notes the following:

> *The bridge is physically linked to its surroundings as a bridge that was constructed in-situ at this location at a long established brooke crossing. The bridge is functionally linked to its surroundings as a component of the rural road system and road network that has existed since at least the middle of the 19th century. This does suggest that this location and the associated crossing represents a landmark feature. However, as a rare example of a once common built form, this bridge has become a landmark feature owing to its distinctive character in contrast with other local and regional bridges.*
>
> (2023: 13-14)

### *3.1.4 Cultural Heritage Value*

The revised procedures set out in the Municipal Class Environmental Assessment, October 2007 and in the amendment approved on August 17, 2023 by the Ontario Minister of the Environment and described in Section 1.2 advise that if the property meets the criteria in Ontario Regulation 9/06, pursuant to the Ontario Heritage Act, it is considered to be a cultural heritage resource.

The Old Shiloh Road Bridge meets the criteria outlined in Regulation 9/06 of the Ontario Heritage Act and the structure therefore has cultural heritage value or interest.

## *3.2 Statement of Cultural Heritage Value or Interest*

The above evaluation confirms that the Old Shiloh Road Bridge meets at least one of the criteria contained in Regulation 9/06 of the Ontario Heritage Act. In particular, the bridge is determined to retain contextual value in that they are physically and historically linked to the community.

The Old Shiloh Road Bridge is typical of the engineering capabilities of the era in which it was constructed, and there are no aesthetic embellishments upon the structure. The Old Shiloh Road Bridge is a beautiful example of a concrete bowstring bridge. The bridge itself is not considered to have any specific design or physical attributes that would lend to its significance as a unique specimen of a high degree of engineering ingenuity or merit for design value. However, in consideration of its significance to the three themes of water use, settlement, and transportation, the bridge may be considered to hold some Cultural Heritage Value or Interest (CHVI). Its heritage significance centres on its physical and historical link to the transportation industries, as well as its perseverance as the oldest remaining bridge structure in the area.

In consideration of the significance of the Old Shiloh Road Bridge to the heritage value of the Town of Georgina, the bridge is considered a local landmark as it serves to commemorate the lacustrine and terrestrial transportation history, as well as the settlement, landscape manipulation, and resource management history of the community. Accordingly, the Old Shiloh Road Bridge is found to have further Cultural Heritage Value based on criteria set forth in O. Reg. 9/06: Criteria for Determining Cultural Heritage Value or Interest.

### *3.2.1 Heritage Attributes of the Old Shiloh Road Bridge*

The Old Shiloh Road Bridge has been determined to have elements of moderate cultural heritage value or interest based on the contextual and associative values. The heritage attributes associated with the cultural heritage value of the bridge are as follows:

1. Commemorates the lacustrine and terrestrial transportation history, as well as the settlement and resource management history of the community
2. Considered a local landmark
3. Association with the concrete bowstring bridge style

## 4.0 PROPOSED UNDERTAKING AND GUIDELINES

### *4.2 Proposed Undertaking*

The Old Shiloh Road Bridge Municipal Class Environmental Assessment (EA) will examine the option to rehabilitate, replace, or twin the existing bridge by incorporating

heritage and EA requirements and confirm the need to replace components of the existing bridge in order to rehabilitate the structure to ensure its longevity.

The repair and rehabilitation of the Old Shiloh Road Bridge involves a considerable amount of structural replacement as well as some minor repairs and maintenance. The existing structure has been identified as being deficient with respect to physical condition, roadway width, load carrying capacity and barrier protection.

The Bridge is a single-lane, concrete bowstring arch structure on conventional closed abutments. There are four wing walls extending beyond the bridge to provide roadside stability. There are two concrete pilasters located at two of the corners of the structure, one at one corner of the structure, and three at the last corner of the structure. The structure was built in the early 1900s (ca. 1925) and has a deck length of 24 metres. The travel width is 5.2 metres between barriers and the overall structure width is 6.5 m. Concrete barriers are located on each side of the structure and form part of the overall arch system. Each of the two arches is tied to the deck at each end and through the use of four evenly spaced vertical columns.

This configuration classifies the structure as a single load path structure, which means that if the railings were significantly damaged it, could result in total bridge failure. Single load path structures are not encouraged in Ontario for this reason. There are no pedestrian sidewalks. The structure has been identified as being deficient with respect to structural capacity, geometry, physical condition and roadside safety.

In order to address the deteriorating condition of the bridge and its numerous deficiencies as a vehicular and pedestrian crossing, a number of alternatives are being considered.

The alternative solutions include:

1. Do nothing;
2. Rehabilitate the existing bridge;
3. Remove and replace the bridge; and
4. Construct a new bridge adjacent to the existing bridge.

### *4.1 Town of Georgina Heritage Guidelines*

The Georgina Official Plane states that reassessment or redevelopment of roads and bridges will be done in a way to minimize impact on cultural heritage resources (Georgina 2016).

## 5.0 HERITAGE IMPACT ASSESSMENT

### *5.1 Consideration of Heritage Conservation Alternatives*

As Old Shiloh Road is subject to potential replacement, all feasible options for conserving the contextual value of the structure should be considered in order to continue the historical and visual link to its surrounding landscape, which has changed little over time, while ensuring a safe and efficient structure.

The new Bridge will need to be widened to accommodate the current and future transportation needs of the surrounding communities. The current bridge is a single lane contrary to current provincial bridge design guidelines. The Bridge may also be lengthened, meaning construction outside of the existing abutments. The bridge may need to be increased in height depending on the outcome of a hydrological study which will examine how high the water level has been and what water level to plan for upstream flooding in the future.

Two mitigation options are suggested by the Ontario Heritage Bridge Guideline in the case of bridge replacement/removal:

1) Replacement/removal of existing bridge and construction of a new bridge with replication of the appearance of the heritage bridge in the new design, with allowances for the use of modern materials;
2) Replacement/removal of existing bridge and construction of a new bridge with historically sympathetic design qualities to the heritage bridge, with allowances for the use of new technologies and materials.

### *4.2 Potential Impacts to Cultural Heritage*

The alternatives listed above were then evaluated for impacts based on the document entitled, Screening for Impacts to Built Heritage and Cultural Heritage Landscapes *(MTCS 2010)* by the Ministry of Tourism, Culture and Sport.

The alternative chosen should respond directly to the heritage value or values which have been identified for the bridge, but nevertheless must address the higher order criteria for engineering values and public safety. A structure with significant heritage value but which cannot support the required traffic loads and lacks essential safety components is not a viable option. Bridges are, first and foremost, engineering works that allow for the safe and efficient flow of traffic and commerce.

For a replacement structure, the *Standards and Guidelines for the Conservation of Historic Places in Canada* emphasize preference for a sympathetically designed structure that has "the same form, appearance and material properties as the replaced element, and have adequate strength or load-bearing capabilities" (Canada's Historic Places, 2010.

p.203). Some elements such as the safety requirements of barriers will limit truly sympathetic options but can be considered. In this instance, the material properties in a replaced structure need only to replicate the above deck appearance that defines the character of Old Shiloh Road Bridge.

There are a limited number of alternatives that satisfy the requirements for safety and durability of the structure and respect the Heritage aspects of the Site. The role of the bridge within the road network supports the established culture and both historic and future development of the community. From a heritage perspective it appears that alternatives that keep a significant portion of the original fabric of the bridge do not satisfy the requirement to preserve it unaltered for a significant amount of time. The required minimum alterations to stabilize and repair a reinforced concrete structure of this age and condition in and of themselves alter and changes the original bridge to the extent very little of the original structure would remain, if any. Under such circumstances, rehabilitation is more costly and time consuming than new construction would be to achieve the same ends, namely, a new bridge. If these alternatives were pursued they would still require alterations to meet safety requirements which would adversely change the original look of the bridge and further emphasize the lack of historical integrity to the resulting form.

It would appear that from the alternatives that satisfy the minimum safety requirements, those which establish a new replica or sympathetic bridge would be favoured over alternatives that take the structure out of the road network or provide a parallel bridge as the role in the road network is important to the culture and history of the community and the views from the bridge are part of the heritage landscape. A parallel bridge would alter the alignment of the road and detract from the established connections to the surrounding landscape.

The design of this bridge has high heritage value given the relative rarity of this bridge type on the landscape of the present time. Therefore, any replicated or commemorated heritage attributes identified should emphasize the salient features of the design, namely the bowstring arch and rail system above the deck by which the bridge is most readily identified. The Heritage Impacts identified herein should be included in the evaluation of alternatives within the environmental assessment.

### *4.3 Implementation and Monitoring*

All documentation of the current bridge should be undertaken prior to construction works, including a complete photographic record, and updating any existing drawings or surveys of Old Shiloh Road with as-found annotations at the time of major rehabilitation or replacement of the bridge. Documentation should be undertaken to the standards of the Historic American Engineering Record, or equivalent, filed on record with the Ministry of Citizenship and Multiculturalism as well as local community heritage organizations

and archives, and the County of York Public Library System. Digital copies of any associated photography should be included in the documentation.

## 6.0 CONCLUSIONS & RECOMMENDATIONS

Based on the results of research, site investigation, and application of the criteria from Ontario Regulation 9/06, the Old Shiloh Bridge was determined to have elements of high cultural heritage value or interest based on the design/physical, contextual, and historical/associative values. Maintaining an association with the bridge's current location and design will satisfy the heritage concerns. The Corporation of the Town of Georgina Municipal Class Environmental Assessment Study (2022), the Old Shiloh Road Bridge CHER (AMICK 2023), and the Old Shiloh Road Bridge HIA (AMICK 2023) must be consulted should demolition or replacement of this structure be under consideration or an option under consideration within the EA process.

A detailed visual inspection was undertaken as per the Ontario Structural Inspection Manual (OSIM) was conducted in 2020, which indicated the bridge was approaching the end of its lifecycle and recommended that planning should commence for its replacement (Georgina.ca, 2022b). The existing bridge may not meet current road or bridge safety standards and may be operating beyond its expected lifespan.

Based on the conclusions of this survey, the following recommendations are made:

1) If the existing bridge is to be replaced, it is recommended that the Town undertake full recording and documentation of the existing structure in situ prior to removal of the existing bridge structure.

2) If the existing bridge is to be replaced, it should be reinstated in the same general location to preserve the historic crossing.

3) The Cultural Heritage Value of the Bridge could be commemorated through reflection of the architectural form of the existing bridge in the design of the replacement bridge.

4) The Cultural Heritage Value of the Bridge could be remembered with a commemorative monument, memorial, or art installation.

5) The Old Shiloh Road Bridge HIA should be consulted when considering viable alternatives to maintain the function of this bridge while respecting its CHVI.

6) This report should be filed with the Town of Georgina as part of the documentation for the EA.

7) This report should be filed with the Ministry of Citizenship and Multiculturalism (MCM) for review and comment as supporting documentation for the EA.

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**Figure 1 Location of the Subject Property (Google Maps 2020)**

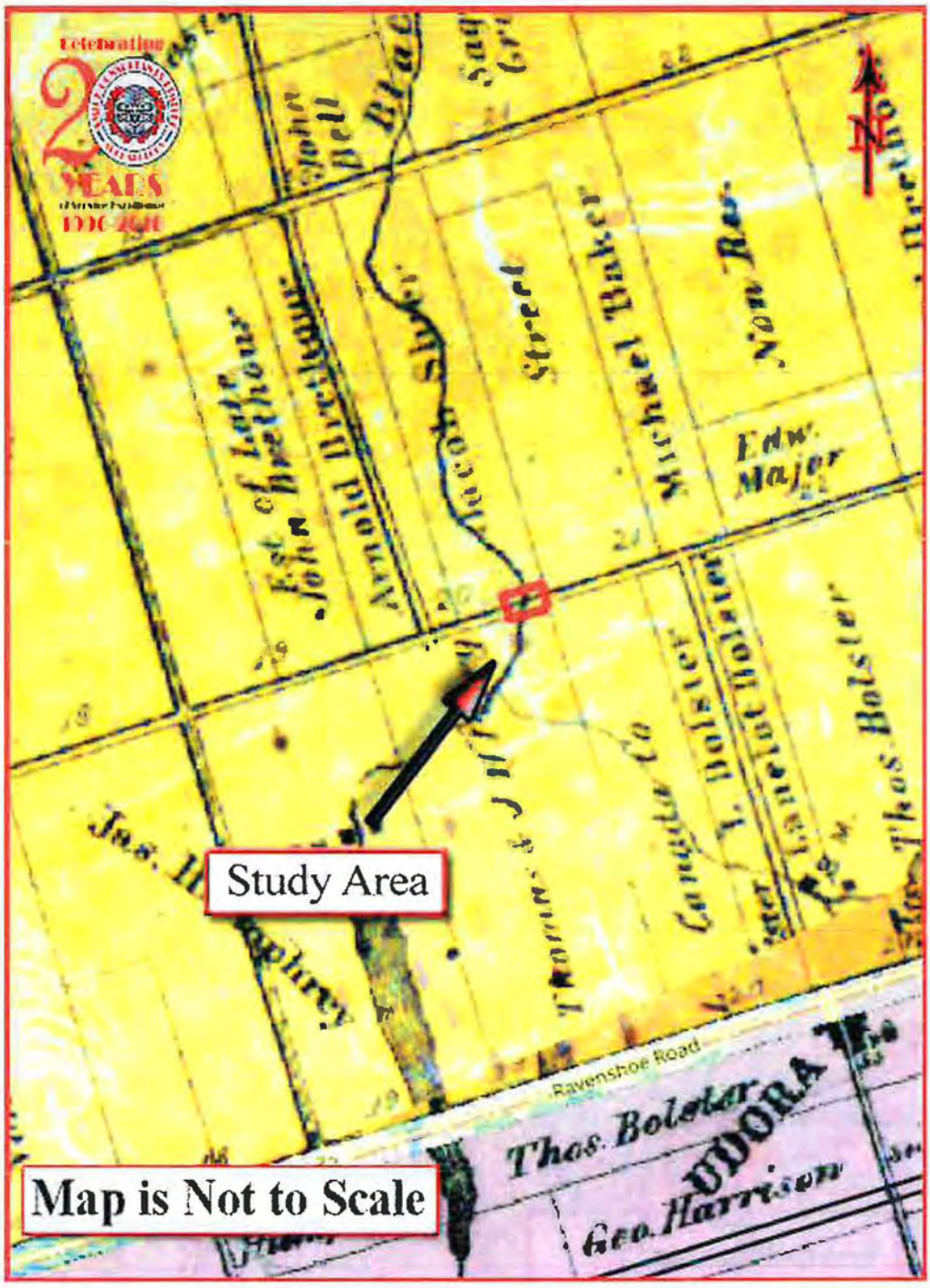


**Figure 2 Segment of Ontario Historical County Maps (Tremaine 1860)**

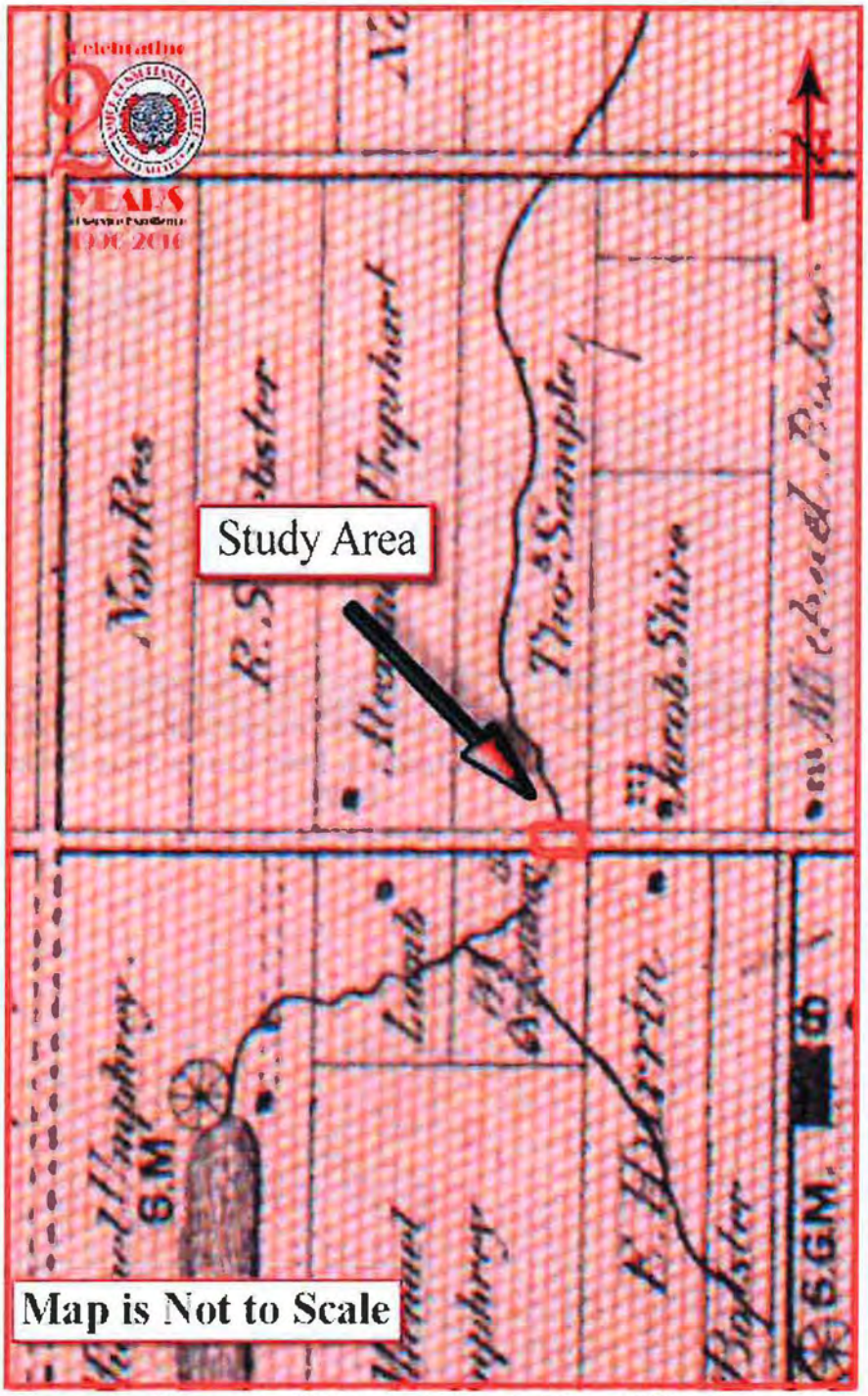


**Figure 3 Segment of Historical County Maps (Miles & Co 1878)**

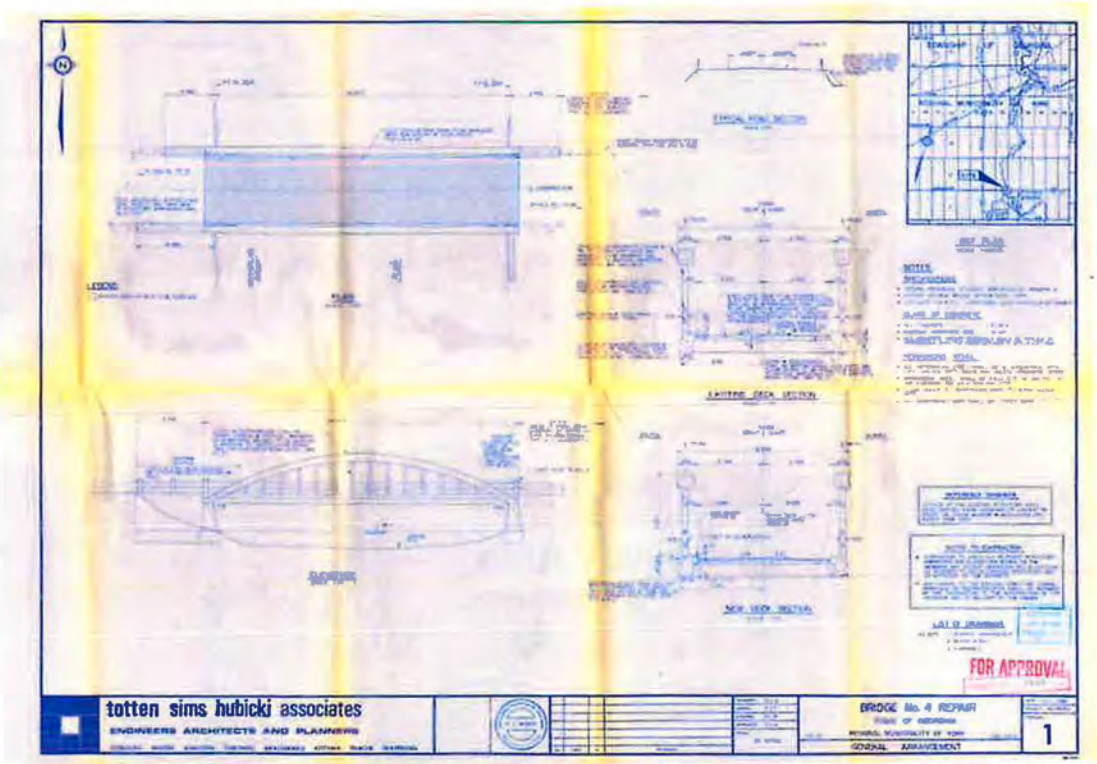


**Figure 4 Diagram of Rehabilitation in 1988 (Totten Sims Hubicki Associates 1998)**

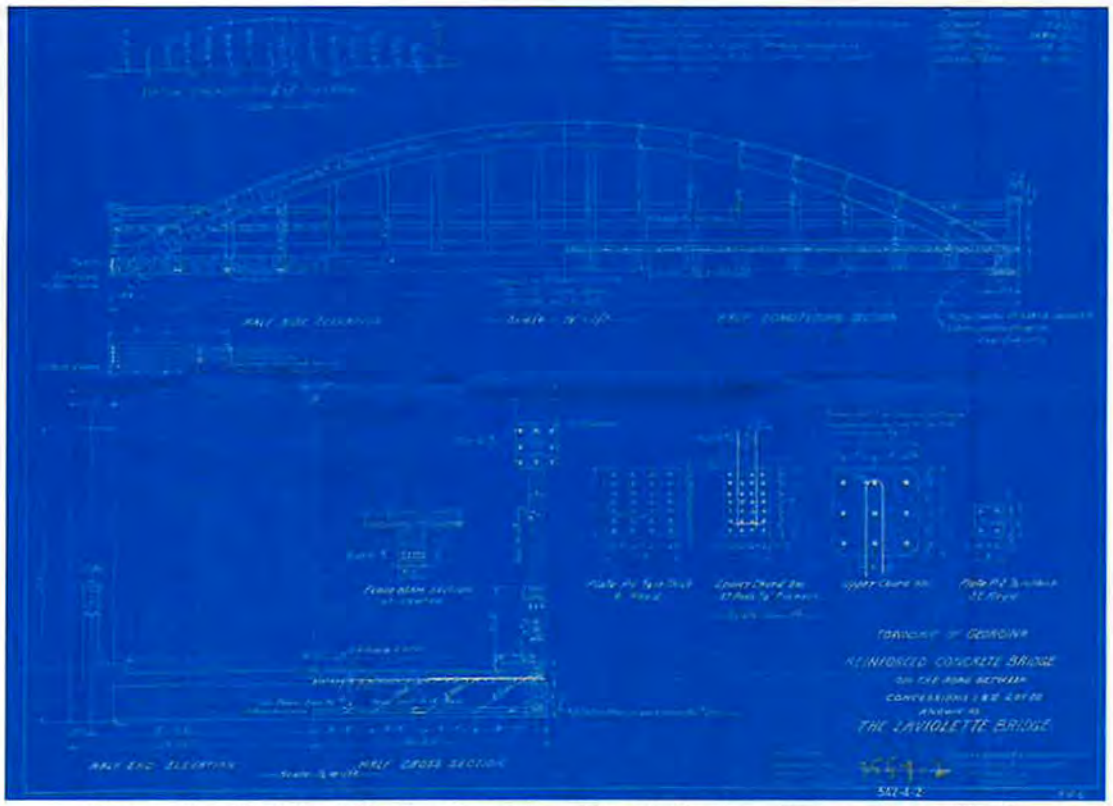


**Figure 5 Original Design Drawing (Frank Barber & Associates 1925)**

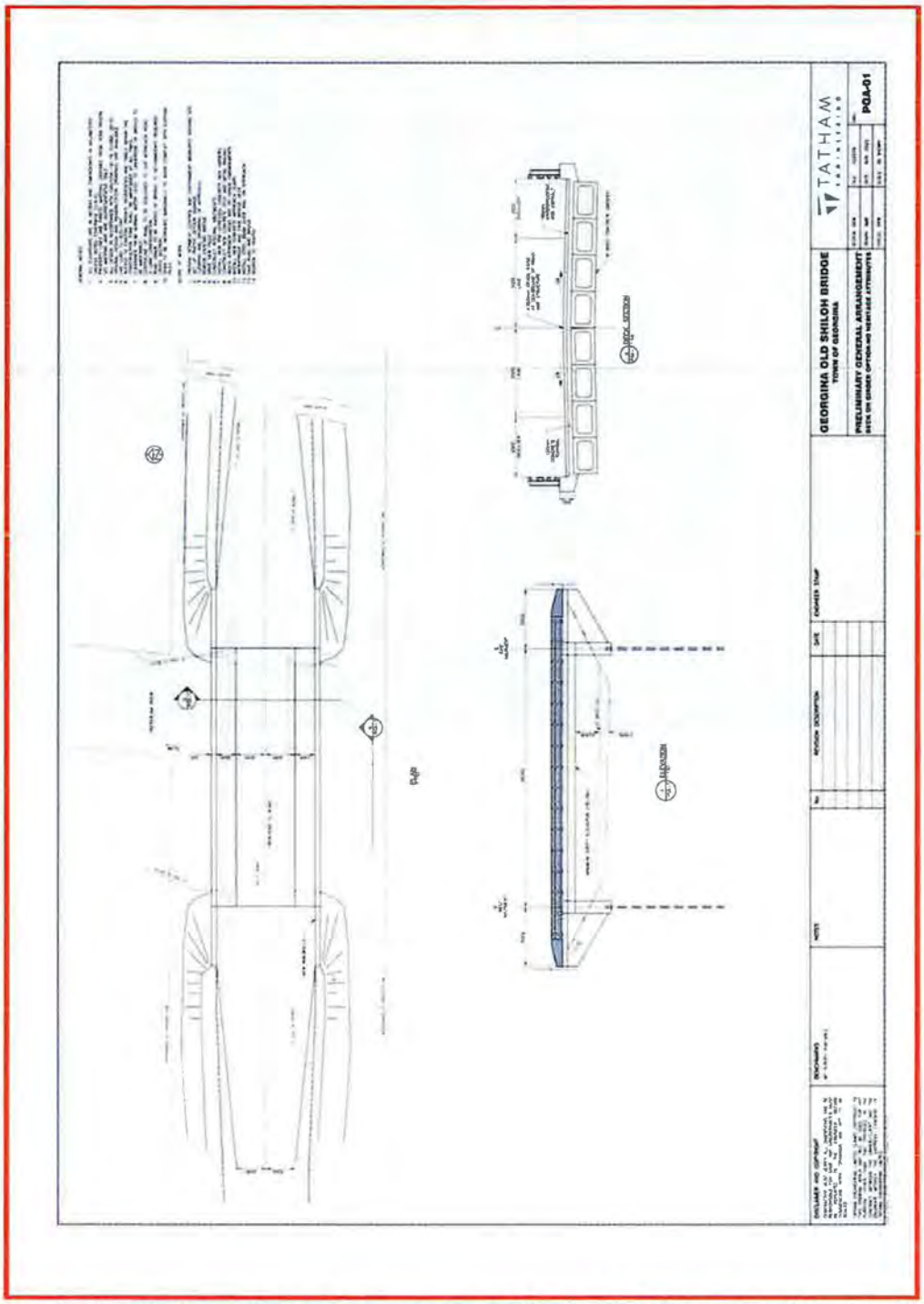


**Figure 6 Preliminary General Arrangement Option 1 (Tatham Engineering 2023)**

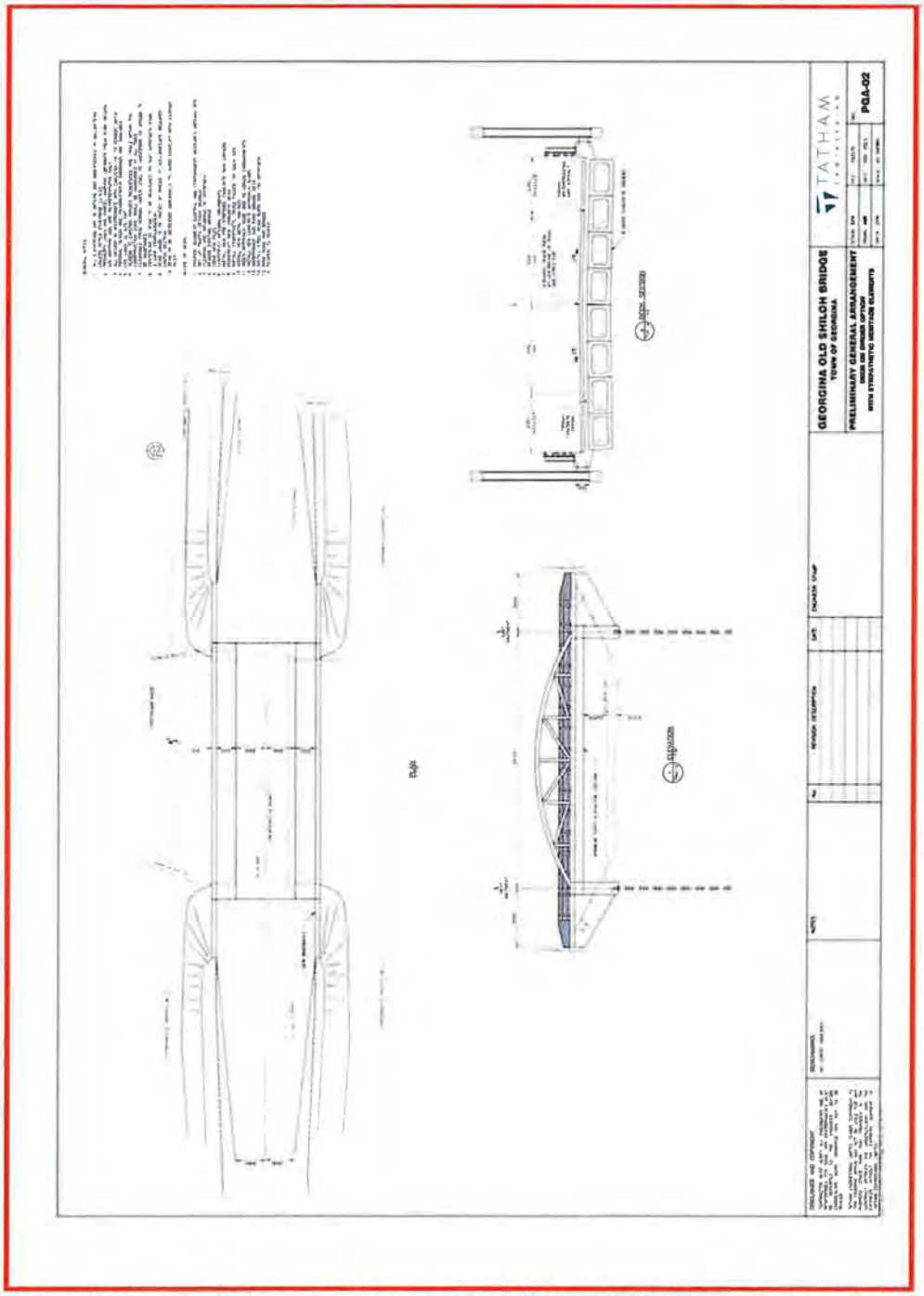


**Figure 7 Preliminary General Arrangement Option 2 (Tatham Engineering 2023)**

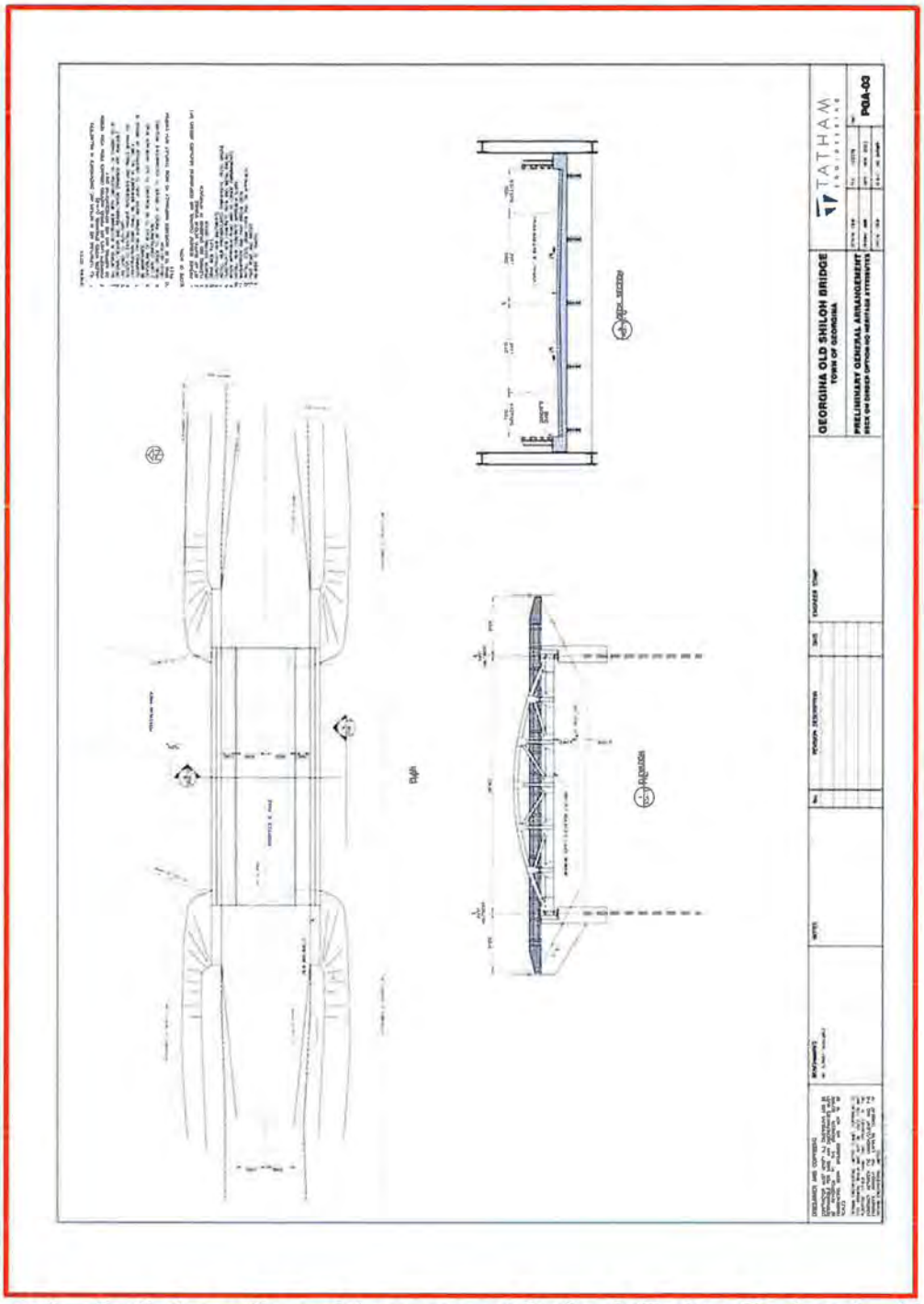


**Figure 8 Preliminary General Arrangement Option 3 (Tatham Engineering 2023)**

**Plate 1 View of West Approach (Facing East)**

**Plate 2 View of East Approach (Facing West)**

**Plate 3 View of Deck (Facing Northwest)**

**Plate 4 View of the Eastern Side (Facing Southwest)**

**Plate 5 View of Deck (Facing West)**

**Plate 6 View of Pefferlaw Brook (Facing South)**

**Plate 7 View of Eastern Approach (Facing West)**

**Plate 8 View of Western Approach (Facing East)**

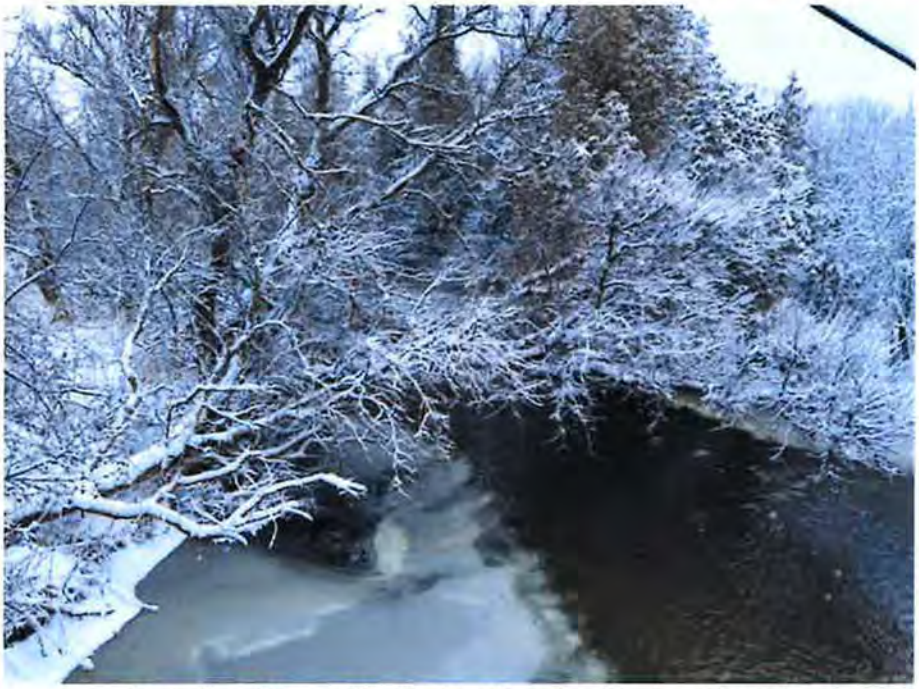

**Plate 9 View of Pefferlaw Brooke (Facing North)**