



Cultural Heritage Evaluation Report, Municipal Class Environmental Assessment, Bridges 2-WG, 3-E, 5-E and 7-E, Township of Centre Wellington, Ontario

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Executive Summary

Parslow Heritage Consultancy, Inc. (PHC) was retained by R.J. Burnside & Associates Limited (the Proponent) to undertake a Cultural Heritage Evaluation Report (CHER) for four bridges in the Township of Centre Wellington, identified as 2-WG, 3-E, 5-E, and 7-E. The four bridges are in the southeast portion of the municipality and are all located within municipally owned road right-of-ways (ROW). The CHER was completed as a component of a Municipal Class Environmental Assessment (MCEA).

The purpose of the CHER is to review relevant historical documents, evaluate the potential cultural heritage value or interest (CHVI) of each bridge, identify cultural heritage resources and provide recommendations for each bridge, as appropriate. In order to evaluate potential CHVI of the bridges and provide appropriate recommendations, provisions in the *Ontario Heritage Act* (OHA) under Ontario Regulation (O. Reg.) 9/06 (as amended by O. Reg. 569/22) and the County of Wellington *Official Plan* were applied. A site visit was conducted on April 29, 2024, to document the bridges and surrounding landscape.

While none of the bridges evaluated are provincially owned, the Ontario Ministry of Transportation (MTO) Heritage Bridge Evaluation Guidelines (HBEG) were also applied to each structure as they provide a proven and accepted bridge-specific set of evaluation criteria from which to assess the heritage value of these structures.

Of the four bridges evaluated as part of this CHER, only Bridge 3-E was found to be a candidate for Listing under Section 27 of the OHA, or Designation under Section 29 of the OHA. Bridge 3-E also exceeded the 60-point threshold for heritage value based on the MTO bridge assessment standards. Bridges 2-WG, 5-E, and 7-E did not meet any criteria for CHVI under O. Reg. 9/06, nor did they meet the 60-point threshold for heritage value based on the MTO bridge assessment standards.

The *Provincial Policy Statement* (2020) notes that CHVI is identified for cultural heritage resources by communities. Thus, the system by which heritage is administered in Ontario places emphasis on the decision-making of local municipalities in determining CHVI. It is hoped that the information presented in this report will be useful in those determinations.

Should the Township of Centre Wellington decide to exercise protection of bridge 3-E under the terms of the OHA, a Heritage Impact Assessment would be required as a next step.

Project Personnel

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Project Manager

Acknowledgements

Andrew Dawson

R.J. Burnside & Associates Limited

Project Context

Parslow Heritage Consultancy, Inc. (PHC) was retained by R.J. Burnside & Associates Limited (the Proponent) to undertake a Cultural Heritage Evaluation Report (CHER) for four bridges in the Township of Centre Wellington, identified as 2-WG, 3-E, 5-E, and 7-E. The four bridges are in the southeast portion of the municipality and are all located within municipally owned road right-of-ways (ROW). The CHER was completed as a component of a Municipal Class Environmental Assessment (MCEA).

The purpose of the CHER is to review relevant historical documents, evaluate the potential cultural heritage value or interest (CHVI) of each bridge, identify cultural heritage resources and provide recommendations for each bridge, as appropriate. In order to evaluate potential CHVI of the bridges and provide appropriate recommendations, provisions in the *Ontario Heritage Act* (OHA) under Ontario Regulation (O. Reg.) 9/06 (as amended by O. Reg. 569/22) and the County of Wellington *Official Plan* were applied.

Bridges 2-WG, 3-E, 5-E are each included in the 2013 publication “Arch, Truss & Beam: The Grand River Watershed Heritage Bridge Inventory” and have been identified as being of increased historical interest based on age, design, construction method or overall scarcity.

A site visit was conducted on April 29, 2024, to document the bridges and surrounding landscape. Documentation took the form of high-resolution photographs using a Nikon D5600 DSLR camera the collection of field notes and the production of measured drawings. The assessment strategy was derived from the National Parks and Sites Branch Canadian Inventory of Historic Buildings (Parks Canada 1980), Well Preserved: The Ontario Heritage Foundation Manual on the Principles and Practice of Architectural Conservation (Fram 2003), the Guide to Field Documentation (HABS 2011), and the Standards and Guidelines for the Conservation of Historic Places in Canada (Parks Canada 2010).

While none of the bridges evaluated are provincially owned, the Ontario Ministry of Transportation (MTO) Heritage Bridge Evaluation Guidelines (HBEG) were also applied to each structure as they provide a proven and accepted bridge-specific set of evaluation criteria from which to assess the heritage value of these structures.

This CHER was written for a project located on the Treaty lands and Territory of the Mississaugas of the Credit First Nation and the traditional territory of the Haudenosaunee and the Attiwandaronk.

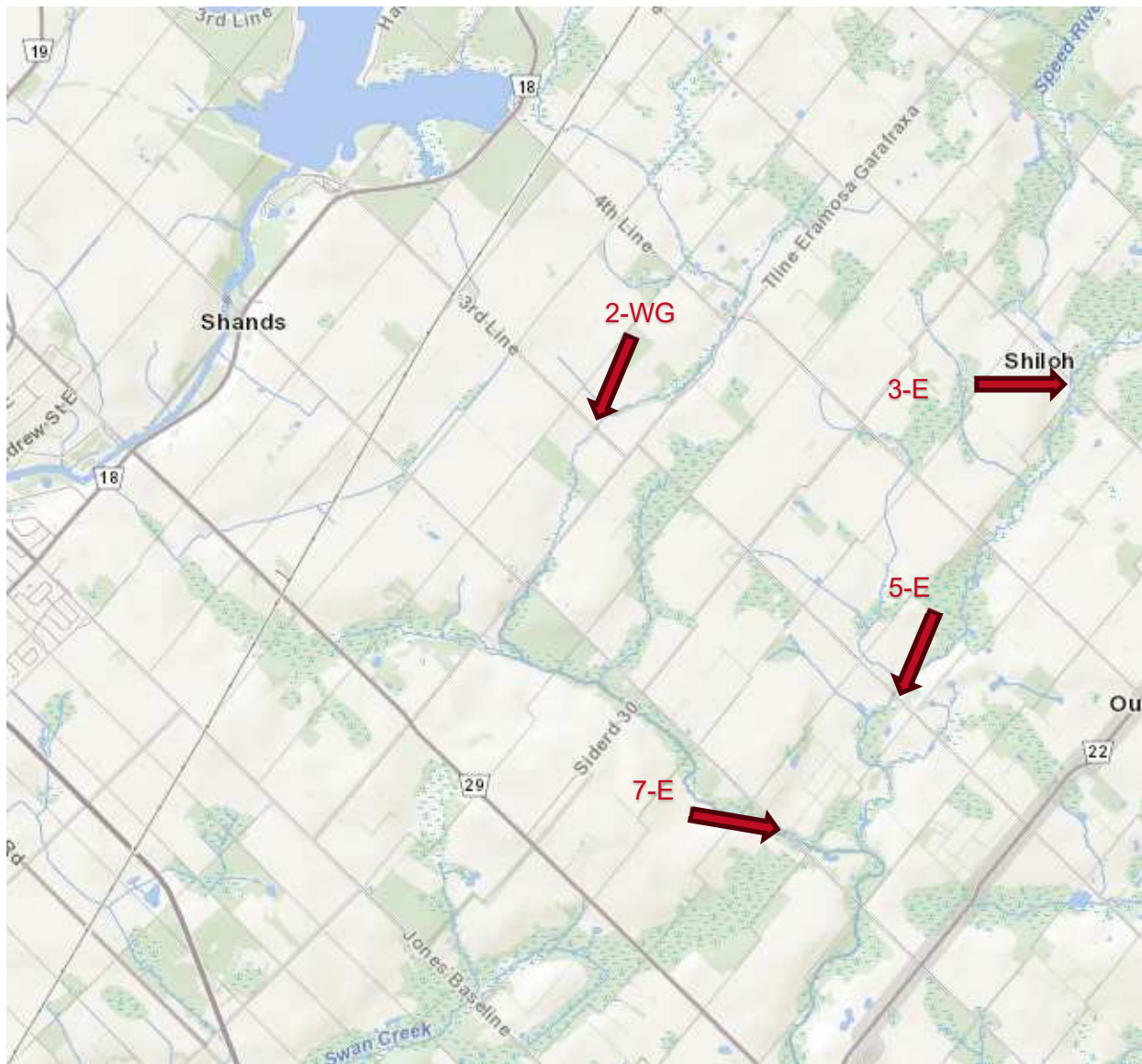
Site Description and Context

The bridges are located southeast of the Town of Fergus between Wellington Road 18, Wellington Road 22, Wellington Road 29 and Seventh Line. The five bridges assessed were constructed between 1920 and 1929. Of the four bridges 3-E, 5-E and 7-E are currently non-operable, with only bridge 2-WG remains open to vehicular traffic.

Applicant Contact Information

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Location of Bridges



Legislative and Policy Framework

The following assessment reviews provincial and municipal legislation and policies designed to protect cultural heritage resources that may be affected by development in the Township of Centre Wellington.

Provincial Legislation and Policy

Ontario Heritage Act (OHA), Revised January 1, 2023

The OHA was enacted in 1990 and since that time has been revised and amended a total of 25 times, most recently on January 1, 2023. When it comes to heritage properties, the OHA prescribes the legal requirements of municipalities and the powers municipalities have to protect and administer heritage within their jurisdiction. The OHA also prescribes the criteria by which heritage value is assessed by way of O.Reg. 569/22. Under Section 27 of the OHA, the municipal clerk is required to keep a current register of properties of cultural heritage value or interest within the municipality, including properties Designated under Part IV, Section 29 of the OHA. Heritage protections within the OHA fall into the following categories:

- ▶ Listed Properties (Part IV, Section 27), minimal protection, usually candidates for Designation
- ▶ Designated Properties (Part IV, Section 29), protection under Municipal By-law
- ▶ Heritage Conservation Districts (Part V), protection under Municipal By-law

Planning Act

The Planning Act (1990) provides the legislative framework for land use planning in Ontario. Part 1, Section 2 (d) and (r) of the Act identifies matters of provincial interest.

Part I, Section 2

The Minister, the council of a municipality, a local board, a planning board and the Tribunal, in carrying out their responsibilities under this Act, shall have regard to, among other matters, matters of provincial interest such as,

- (d) the conservation of features of significant architectural, cultural, historical, archaeological or scientific interest;
- (e) the promotion of built form that,
 - (i) is well-designed,
 - (ii) encourages a sense of place, and
 - (iii) provides for public spaces that are of high quality, safe, accessible, attractive and vibrant.

Provincial Policy Statement

The Provincial Policy Statement (PPS), issued under Section 3 of the Planning Act, came into effect on May 1, 2020. It applies to all planning decisions made on or after that date and replaced the PPS, 2014. The PPS provides direction for the appropriate regulation for land use and development while protecting resources of provincial interest, and the quality of the natural and built environment, which includes cultural heritage and archaeological resources. These policies are specifically addressed in Part V, Sections 1.7 and 2.6.

Section 1.7.1e of the PPS addresses long-term economic prosperity by “encouraging a sense of place, by promoting well-designed built form and cultural planning, and by conserving features that help define character, including built heritage resources and cultural heritage landscapes”.

Section 2.6 of the PPS addresses the protection and conservation cultural heritage and archaeological resources in land use planning and development and requires the following:

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

2.6.2 Development and site alteration shall not be permitted on lands containing archaeological resources or areas of archaeological potential unless significant archaeological resources have been conserved.

2.6.3 Planning authorities shall not permit development and site alteration on adjacent lands to protected heritage property except where the proposed development and site alteration has been evaluated and it has been demonstrated that the heritage attributes of the protected heritage property will be conserved.

2.6.4 Planning authorities should consider and promote archaeological management plans and cultural plans in conserving cultural heritage and archaeological resources.

2.6.5 Planning authorities shall engage with Indigenous communities and consider their interests when identifying, protecting and managing cultural heritage and archaeological resources.

Municipal Class Environmental Assessment (MCEA) Manual (2024)

The following excerpt is from Section C.1.1 of the MCEA Manual:

Cultural Environment refers to cultural heritage and archaeological resources in the environment. These are defined as follows:

Archaeological resources includes artifacts, archaeological sites and marine archaeological sites. The identification and evaluation of such resources are based upon archaeological fieldwork undertaken in accordance with the Ontario Heritage Act.

Areas of archaeological potential means areas with the likelihood to contain archaeological resources. Criteria for determining archaeological potential are established by the Province, but municipal approaches which achieve the same objective may be applied. Archaeological potential is confirmed through archaeological fieldwork undertaken in accordance with the Ontario Heritage Act.

Built heritage resources means one or more significant buildings, structures, monuments, installations or remains associated with architectural, cultural, social, political, economic or military history and identified as being important to a community. These resources may be identified through designation or heritage conservation easement under the Ontario Heritage Act, or listed by local, provincial or federal jurisdictions.

Cultural heritage landscape means a defined geographical area of heritage significance which has been modified by human activities and is valued by a community. It involves grouping(s) of individual heritage features such as structures, spaces, archaeological sites, and natural elements, which together form a significant type of heritage form, distinctive from that of its constituent elements or parts. Examples may include, but are not limited to, heritage conservation districts designated under the Ontario Heritage Act; and villages, parks, gardens,

battlefields, mainstreets and neighbourhoods, cemeteries, trailways, and industrial complexes of cultural heritage value.

Cultural heritage resources include built heritage, cultural heritage landscapes, and marine and other archaeological sites. The Minister of Culture (MCL) is responsible for the administration of the Ontario Heritage Act and is responsible for determining policies, priorities and programs for the conservation, protection and preservation of Ontario's heritage, which includes cultural heritage landscapes, built heritage and archaeological resources. MCL has released a series of resource guides on the Ontario Heritage Act, entitled the Ontario Heritage Tool Kit.

Significant cultural heritage and archaeological resources features should be avoided where possible. Where they cannot be avoided, then effects should be minimized where possible, and every effort made to mitigate adverse impacts, in accordance with provincial and municipal policies and procedures. Cultural heritage features should be identified early in the process in order to determine significant features and potential impacts.

Ontario Heritage Bridge Guidelines for Provincially Owned Bridges

The *Ontario Heritage Bridge Guidelines for Provincially Owned Bridges* (OHBG) were developed in 1993 by the Ontario Ministry of Transportation (MTO); the current version of the document was revised in 2008 (MTO 2008). While none of the bridges under review are provincially-owned, the established assessment guidelines provide a methodology by which to assess the potential CHVI of municipal bridges. This is accomplished by way of an evaluative scoring system derived from the criteria outlined in O. Reg. 9/06 (as amended by O. Reg. 569/22) and calibrated by the MTO (MTO 2008). The scoring system requires an overall score of 60 to be achieved before a bridge can be considered to exhibit CHVI. Appendix C provides the scoring of each assessed bridge.

Municipal Policies

Township of Centre Wellington Municipal Official Plan

Section C.2 of the Official Plan (OP) of Centre Wellington (consolidated January 2023) outlines four Goals and Objectives to the management of Cultural Heritage Resources.

1. To protect the Township's heritage resources from neglect, deterioration, demolition, alteration, redevelopment or changes in use which threaten their existence or integrity
2. To encourage and support the functional and economic use of heritage buildings
3. To identify, and protect and enhance natural areas
4. To encourage public awareness and appreciation of the heritage resources of the Township and the value of protecting these resources to both residents and visitors

County of Wellington Official Plan

Section 4.1 of the County of Wellington Official Plan deals with cultural heritage and archaeological resources:

Cultural heritage and archaeological resources form an important and in many cases highly visible part of the community fabric. These resources are a source of civic pride for the residents, a benefit to the local economy through tourism, and are important to our

understanding of the settlement of the County. The policies of this Plan, in conjunction with the Ontario Heritage Act, provide a framework for the protection and enhancement of cultural heritage resources in Wellington.

Built Heritage

Wellington has a rich history reflected in many buildings and structures, either individually or in groups, which are considered to be architecturally or historically significant to the community, county, province or country.

Cultural Heritage Landscapes

A cultural heritage landscape is a defined geographical area of heritage significance which has been modified by human activities and is valued by a community. It involves a grouping(s) of individual heritage features such as structures, spaces, archaeological sites and natural elements, which together form a significant type of heritage form, distinctive from that of its constituent elements or parts. Examples may include, but are not limited to, heritage conservation districts designated under the Ontario Heritage Act, and villages, parks, gardens, battlefields, mainstreets and neighbourhoods, cemeteries, railways and industrial complexes of cultural heritage value.

For cultural heritage landscapes to be significant, they must be valued for the important contribution they make to our understanding of a place, an event, or a people.

Section 4.1.5 provides policy direction related to cultural heritage resources:

- a) *significant built heritage resources and significant cultural heritage landscapes shall be conserved. Conserved means the identification, protection, use and/or management of heritage and archeological resources in such a way that their heritage values, attributes and integrity are retained. This may be addressed through a conservation plan or heritage impact assessment in accordance with Section 4.6.7.*
- b) *The need for a Heritage Impact Assessment and/or Conservation plan will be based on the heritage attributes or reasons for which the resource is identified as significant, and will normally be identified in pre-consultation on development applications.*
- c) *Wellington County will work with its local municipalities to identify significant cultural heritage landscapes. The identification of significant cultural heritage landscapes shall be implemented through at least one of the following options:*
 - i. *Added to an Official Plan through an Amendment that shows the resource as an overlay designation on the Schedule, and adds site-specific policies where needed;*
 - ii. *included in the municipal register of properties that Council considers to be of cultural heritage value or interest but have been designated;*
 - iii. *Designated under the Ontario Heritage Act.*
- d) *The need for a Heritage Impact Assessment.*
- e) *Wellington will encourage the conservation of significant built heritage resources through heritage designations and planning policies which protect these resources.*
- f) *The re-use of heritage buildings is often a valid means of ensuring their restoration, enhancement or future maintenance. Projects to re-use heritage buildings may be given favourable consideration if the overall results are to ensure the long term protection of a heritage resource and the project is compatible with surrounding land uses and represents an appropriate use of land.*
- g) *Where a property has been identified as a protected heritage property, development and site alteration may be permitted on adjacent lands 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. Mitigative measures and/or alternative development approaches may be required in order to conserve the heritage attributes of the protected heritage property affected by the adjacent development or site alteration.

- h) The County recognizes the important cultural significance of the Grand River as a Canadian Heritage River, and the need to conserve its inherent values.*

Assessment of Existing Conditions

Bridge 2-WG

Design and Construction

Bridge 2-WG is an example of a fixed concrete through girder bridge. The Grand River Watershed Heritage Bridge Inventory attributes the construction date to 1921 (GRCA 2013). Fixed through girder concrete bridges were utilized in the 1910's and 1920's in Canada and the United States, but never gained widespread popularity. The guard rails leading up to the main deck appear to have been cast off-site and assembled on-site.

Current Condition

Bridge 2-WG, located on 3rd Line, appears to be in fair condition. The bridge shows ample signs of degradation and exhibits signs of past structural repairs consistent with previous maintenance. The underside of the bridge presents as being in the best overall structural condition, but this may be the result of previous repairs as the concrete exhibits a different colour then the remainder of the structure. The guard rails exhibit signs of significant degradation and the walls of the superstructure of the bridge adjacent to the road deck show signs of significant degradation resulting from prolonged exposure to road salt. Bridge 2-WG is narrow and is not suited to modern two lane traffic or modern agricultural equipment. Bridge 2-WG remains open to vehicular traffic. A 2022 Ontario Structure Inspection Manual (OSIM) report recommended the bridge be replaced within 1-5 years (Appendix D).



FIGURE 1: BRIDGE 2-WG, SOUTH SIDE FACING NORTH



FIGURE 2: BRIDGE 2-WG, NORTH FACE, FACING SOUTH



FIGURE 3: BRIDGE 2-WG, SUPERSTRUCTURE ABUTTING ROADWAY



FIGURE 4: BRIDGE 2-WG, REPRESENTATIVE ABUTMENT, BRIDGE DECK AND GUARDRAIL



FIGURE 5: BRIDGE 2-WG, CLOSE UP OF SUPERSTRUCTURE



FIGURE 6: BRIDGE 2-WG, CLOSE UP OF TYPICAL GUARD RAIL DEGRADATION



FIGURE 7: BRIDGE 2-WG, CLOSEUP OF GUARD RAIL SUPPORT WITH CHAMFERED CORNERS, CAST DIAMOND INSET AND TAPERED UPPER SURFACE



FIGURE 8: BRIDGE 2-WG, UNDERSIDE OF BRIDGE



FIGURE 9: BRIDGE 2-WG, APPROACH TO BRIDGE 2-WG FACING SOUTHEAST

O. Reg. 9/06 Evaluation: Bridge 2-WG

1. **The property has design value or physical value because it is a rare, unique, representative or early example of a style, type, expression, material or construction method. (Criteria Not Met)**

Bridge 2-WG is a surviving example of a fixed concrete through girder design and represents a relatively common style of cast concrete bridge constructed in Wellington County in the early 20th century.

2. **The property has design value or physical value because it displays a high degree of craftsmanship or artistic merit. (Criteria Not Met)**

Bridge 2-WG is typical of reinforced concrete bridges of the era and does not display a high degree of craftsmanship or artistic merit.

3. **The property has design value or physical value because it demonstrates a high degree of technical or scientific achievement. (Criteria Not Met)**

Bridge 2-WG is typical of reinforced concrete bridges of the era and does not display a high degree of technical or scientific achievement.

4. **The property has historical value or associative value because it has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community. (Criteria Not Met)**

Bridge 2-WG was constructed during a period of rapid transportation growth in the Province of Ontario and represents a surviving example of an early 20th century cement bridge for which Wellington County became known.

5. **The property has historical value or associative value because it yields, or has the potential to yield, information that contributes to an understanding of a community or culture. (Criteria Not Met)**

Bridge 2-WG does not meet the criteria to have the potential to yield new information that would contribute to the understanding of a community or culture.

6. **The property has historical value or associative value because it demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community. (Criteria Not Met)**

Bridge 2-WG was unable to be attributed to a specific designer or construction contractor and as such does not meet this requirement.

7. **The property has contextual value because it is important in defining, maintaining, or supporting the character of an area. (Criteria Not Met)**

Bridge 2-WG contributes to the historic character of the larger county. The bridge reflects early 20th century concrete bridge use for which Wellington County became well known. While the bridge contributes to the legacy of 20th century cast concrete bridges in Wellington County, the contextual value of this particular bridge is not considered important in maintaining or supporting the character of the area.

8. **The property has contextual value because it is physically, functionally, visually or historically linked to its surroundings. (Criteria Not Met)**

To satisfy this criterion, the bridge needs to have a relationship to its broader context that is important to understand the meaning of the bridge and its context. Other than

providing egress over a watercourse nothing was identified to indicate Bridge 2-WG has a contextual relationship to the broader environment.

9. The property has contextual value because it is a landmark. O. Reg. 569/22, s. 1. (Criteria Not Met)

Bridge 2-WG was not identified to be a landmark.

Evaluation of Bridge 2-WG against the nine criteria outlined by O. Reg. 9/06 (as amended by O. Reg. 569/22) does not identify the bridge to meet the regulation for consideration for Listing under the Section 27 of the OHA or Designation by municipal By-law under Section 29 of the OHA. When looking at a bridge-specific evaluation, the bridge did not meet the 60-point threshold for heritage value based on the MTO bridge assessment standards (Appendix C). As the bridge did not meet any criteria under the O. Reg. 9/06 evaluation, no draft statement of significance was developed.

Bridge 3-E

Design and Construction

Bridge 3-E is an example of a bowstring through arch bridge constructed of reinforced concrete. This style of bridge is colloquially referred to as a 'rainbow arch bridge'. The Grand River Watershed Heritage Bridge Inventory attributes the construction date to 1919 (GRCA 2013). Bridge 3-E represents one of the few remaining 'rainbow arch bridges' that Wellington County was once known for. The bowstring through arch design was developed in the early 20th century and reached its height of popularity in the 1920's and 1930's. The design was popular as it required minimal material, was relatively simple to install and could easily accommodate vehicular traffic. The bowstring design was well suited to situations where riverbanks were low and there was limited room for below deck support. The bowstring design was popularized by Fergus architect Charles Mattaini. Mr. Mattaini was born in Italy and emigrated to Canada in 1892. Following his emigration to Canada, he settled in Fergus and started an engineering and construction firm where he employed the engineering skills he had developed while constructing tunnels through the Alps. Mattaini developed the bowstring design and his company eventually built close to 70 bowstring bridges in Southern Ontario, with a high number of them being constructed in Wellington and Waterloo counties (Brennan 2019).

Current Condition

At the time of the cultural heritage evaluation, Bridge 3-E had been permanently closed to vehicular traffic. The bridge retains examples of all original finishes but exhibited significant degradation resulting in the exposure of the underlying square steel reinforcement bar. A single steel tie beam has been added to the upper limit of the arches, thereby imposing a height restriction to the structure that was not part of the original design. Visual inspection shows all components of the original structure to be present, but to be in varying degrees of degradation resulting in exfoliation of concrete structure and exposure of the internal rebar. A 2022 Ontario Structure Inspection Manual (OSIM) report recommended the bridge be replaced within 1-5 years (Appendix D).

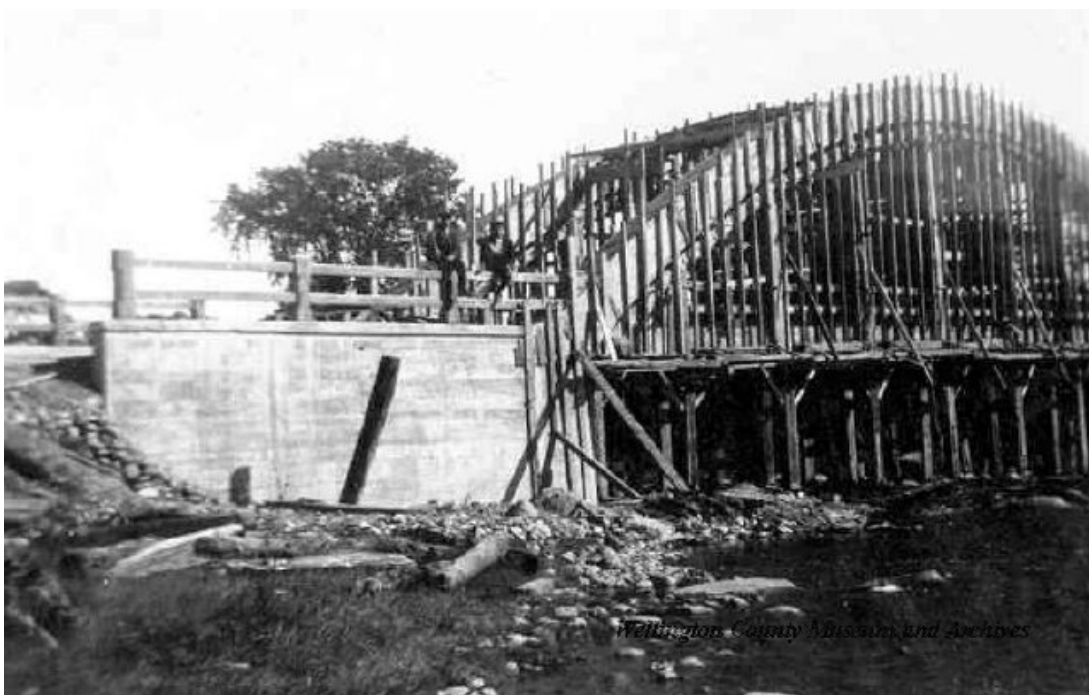


FIGURE 10: UNDATED HISTORIC IMAGE OF THE CONSTRUCTION OF A BOWSTRING BRIDGE, IMAGE 3032, PART OF THE MATTAINI FOND ON FILE WITH WELLINGTON COUNTY MUSEUM AND ARCHIVES



FIGURE 11: BRIDGE 3-E, SOUTH SIDE OF BRIDGE, FACING NORTH



FIGURE 12: BRIDGE 3-E, SOUTHSIDE OF BRIDGE, FACING NORTH



FIGURE 13: BRIDGE 3-E, TYPICAL GUARDRAIL, SOUTH SIDE



FIGURE 14: BRIDGE 3-E, TYPICAL GUARDRAIL NORTH SIDE



FIGURE 15: BRIDGE 3-E, BRIDGE DECK, FACING NORTHWEST



FIGURE 16: BRIDGE 3-E, TYPICAL EXAMPLE OF DETERIORATION, EXAMPLE IS OF SUPERSTRUCTURE CENTRAL SUPPORT



FIGURE 17: BRIDGE 3-E, UNDERSIDE OF BRIDGE DECK

O. Reg. 9/06 Evaluation: Bridge 3-E

1. **The property has design value or physical value because it is a rare, unique, representative or early example of a style, type, expression, material or construction method. (Criteria Met)**

Bridge 3-E is a fine example of a bowstring through arch bridge constructed of reinforced concrete. The design is representative of a unique style that was once prevalent in Wellington County.

2. **The property has design value or physical value because it displays a high degree of craftsmanship or artistic merit. (Criteria Met)**

Bridge 3-E represents a unique design, with the arch design displaying a high degree of artistic merit.

3. **The property has design value or physical value because it demonstrates a high degree of technical or scientific achievement. (Criteria Met)**

Bridge 3-E displays physical value as it demonstrated a deviation from typical bridge construction and reflects a technical achievement that was designed in the County and was utilized effectively in the County and on select and recognizable bridges in surrounding counties.

4. **The property has historical value or associative value because it has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community. (Criteria Met)**

Bridge 3-E was designed by local Fergus architect Charles Mattaini and likely constructed by his construction firm. The arch design was once widespread in the County and this surviving example is significant to the people of Central Wellington and the larger bridge engineering community.

5. **The property has historical value or associative value because it yields, or has the potential to yield, information that contributes to an understanding of a community or culture. (Criteria Not Met)**

Bridge 3-E does not meet the criteria to have the potential to yield new information that would contribute to the understanding of a community or culture.

6. **The property has historical value or associative value because it demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community. (Criteria Met)**

Bridge 3-E has historical value as a surviving example of a bowstring through arch bridge constructed of reinforced concrete designed by Fergus architect Charles Mattaini. The bridge stands as one of a limited number of surviving examples of the design and the work of Mattaini.

7. **The property has contextual value because it is important in defining, maintaining, or supporting the character of an area. (Criteria Met)**

Bridge 3-E is important to maintaining and supporting the character of the area and reflects the once prominent use of the bowstring design in Wellington County.

8. **The property has contextual value because it is physically, functionally, visually or historically linked to its surroundings. (Criteria Met)**

Bridge 3-E reflects the once prevalent use of bowstring design in Wellington County and reflects the history and contribution to bridge design of Charles Mattaini. The bridge also visually contributes to the overall rural character of the area.

9. The property has contextual value because it is a landmark. O. Reg. 569/22, s. 1. (Criteria Met)

Given its unique design and being one of a limited number of surviving examples of the style, bridge 3-E does meet the criteria of local landmark.

Evaluation of bridge 3-E against the nine criteria outlined by O. Reg. 9/06 (as amended by O. Reg. 569/22) did identify Bridge 3-E to meet eight of the nine criteria prescribed by the regulation for consideration for Listing under the Section 27 of the OHA or Designation by municipal By-law under Section 29 of the OHA. The bridge also exceeded the 60-point threshold for heritage value based on the MTO bridge assessment standards.

Bridge 3-E Draft Statement of Cultural Heritage Value

Bridge 3-E is located on 6 Line in the road allowance between Lot 29 Concession 5 and Lot 29 Concession 6, in the former township of Eramosa, now Township of Centre Wellington, Ontario.

Bridge 3-E is an example of a bowstring through arch bridge constructed of reinforced concrete. This style of bridge is colloquially referred to as a 'rainbow arch bridge'. The Grand River Watershed Heritage Bridge Inventory attributes the construction date to 1919 (GRCA 2013). Bridge 3-E represents one of the few remaining 'rainbow arch bridges' that Wellington County was once known for. The bowstring through arch design was developed in the early 20th century and reached its height of popularity in the 1920's and 1930's. The design was popular as it required minimal material, was relatively simple to install and could easily accommodate vehicular traffic. The bowstring design was popularized by Fergus architect Charles Mattaini. Mr. Mattaini was born in Italy and emigrated to Canada in 1892. Following his emigration to Canada, he settled in Fergus and started an engineering and construction firm where he employed the engineering skills he had developed while constructing tunnels through the Alps. Mattaini developed the bowstring design and his company eventually built close to 70 bowstring bridges in Southern Ontario, with a high number of them being constructed in Wellington and Waterloo counties (Brennan 2019).

The bridge retains examples of all original finishes but exhibits significant degradation resulting in the exposure of the underlying square steel reinforcement bar. A single steel tie beam has been added to the upper limit of the arches, thereby imposing a height restriction to the structure that was not part of the original design.

Evaluation of Bridge 3-E found the bridge to be a candidate for Listing under Section 27 of the OHA, or Designation under Section 29 of the OHA. The bridge also exceeded the 60-point threshold for heritage value based on the MTO bridge assessment standards.

Defining Elements

- 'Rainbow Arch Bridge' design
- Decorative guardrail pillars
- Designed and possibly constructed by local well-known architect Charles Mattaini

Bridge 5-E

Design and Construction

Bridge 5-E is an example of a fixed through girder bridge constructed of reinforced concrete. Bridges of this age and material were often stamped with their date of construction but no such marking was identified on this example. The Grand River Watershed Heritage Bridge Inventory attributes the construction date to 1923 (GRCA 2013). It is unknown who designed the bridge or who undertook its construction. Evaluation of the bridge show it to have been cast in place and to utilize square reinforcement bars. The guard rails leading up to the main deck appear to have been cast off-site and assembled on-site. Fixed through girder concrete bridges were utilized in the 1910's and 1920's in Canada and the United States, but never gained widespread popularity.

Current Condition

Bridge 5-E shows signs of multiple previous repairs. The repairs are evident by the contrasting consistency and colour of the concrete used. The upper railing of the bridge has been capped in new material and the concrete beam on the underside of the structure appear to have been reinforced during a subsequent round of repairs. The guard rails show signs of significant degradation exhibiting significant loss of concrete at their bases resulting in the exposure of the interior rebar structure. At the time of the cultural heritage evaluation, Bridge 5-E had been permanently closed to vehicular traffic. A 2022 Ontario Structure Inspection Manual (OSIM) report recommended the bridge be subject to major rehabilitation or replacement (Appendix D).



FIGURE 18: BRIDGE 5-E, LOOKING SOUTHEAST FROM APPROACH



FIGURE 19: BRIDGE 5-E, LOOKING NORTHWEST FROM APPROACH



FIGURE 20: EAST SIDE OF BRIDGE 5-E



FIGURE 21: WEST SIDE OF BRIDGE 5-E



FIGURE 22: WEST SIDE OF BRIDGE 5-E WITH ROAD DECK



FIGURE 23: EAST SIDE OF BRIDGE 5-E SHOWING DEGRADATION OF CONCRETE

O. Reg. 9/06 Evaluation: Bridge 5-E

- 1. The property has design value or physical value because it is a rare, unique, representative or early example of a style, type, expression, material or construction method. (Criteria Not Met)**

Bridge 5-E is a surviving example of a fixed concrete through girder design and represents a relatively common style of cast concrete bridge constructed in Wellington County in the early 20th century.

- 2. The property has design value or physical value because it displays a high degree of craftsmanship or artistic merit. (Criteria Not Met)**

Bridge 5-E is typical of reinforced concrete bridges of the era and does not display a high degree of craftsmanship or artistic merit.

- 3. The property has design value or physical value because it demonstrates a high degree of technical or scientific achievement. (Criteria Not Met)**

Bridge 5-E is typical of reinforced concrete bridges of the era and does not display a high degree of technical or scientific achievement.

- 4. The property has historical value or associative value because it has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community. (Criteria Not Met)**

Bridge 5-E was constructed during a period of rapid transportation growth in the Province of Ontario and represents a surviving example of an early 20th century cement bridge for which Wellington County became known.

5. The property has historical value or associative value because it yields, or has the potential to yield, information that contributes to an understanding of a community or culture. (Criteria Not Met)

Bridge 5-E does not meet the criteria to have the potential to yield new information that would contribute to the understanding of a community or culture.

6. The property has historical value or associative value because it demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community. (Criteria Not Met)

Bridge 5-E was not identified to be of historical or associative value based on a connection to an architect, artist, designer, builder or theorist who is significant to a community.

7. The property has contextual value because it is important in defining, maintaining, or supporting the character of an area. (Criteria Not Met)

Bridge 5-E contributes to the historic character of the larger county. The bridge reflects early 20th century concrete bridge use for which Wellington County became well known. While the bridge contributes to the legacy of 20th century cast concrete bridges in Wellington County, the contextual value of this particular bridge is not considered important in maintaining or supporting the character of the area.

8. The property has contextual value because it is physically, functionally, visually or historically linked to its surroundings. (Criteria Not Met)

To satisfy this criterion, the bridge needs to have a relationship to its broader context that is important to understand the meaning of the bridge and its context. Other than providing egress over a watercourse nothing was identified to indicate Bridge 5-E has a contextual relationship to the broader environment.

9. The property has contextual value because it is a landmark. O. Reg. 569/22, s. 1. (Criteria Not Met)

Bridge 5-E was not identified to be a landmark.

Evaluation of Bridge 5-E against the nine criteria outlined by O. Reg. 9/06 (as amended by O. Reg. 569/22) did not identify the bridge to meet the regulation for consideration for Listing under Section 27 of the OHA or Designation by municipal By-law under Section 29 of the OHA (two or more criteria met under O. Reg. 569/22). The bridge also did not meet the 60-point threshold for heritage value based on the MTO bridge assessment standards. As the bridge did not meet any criteria under the O. Reg. 9/06 evaluation, no draft statement of significance was developed.

Bridge 7-E

Design and Construction

Bridge 7-E represents the remains of a fixed through girder bridge constructed of reinforced concrete. The bridge is believed to have been constructed c.1920. Bridges of this age and material were often stamped with their date of construction but no such marking was identified on the remains of this example. It is unknown who designed the bridge or who undertook its construction. Evaluation of the bridge shows it to have been cast in place and to utilize square reinforcement bars.

Current Condition

Bridge 7-E is in poor overall condition, showing signs of multiple previous repairs and alterations. The repairs are evident by the contrasting consistency and colour of the concrete used. The upper guard rails and approach railings are in very poor condition with all approach railings having been removed and replaced with modern galvanized material. The superstructure of the bridge is also in very poor condition with approximately 50% of the cast walls of the bridge having disintegrated. The underside of the bridge shows signs of past reinforcement of the girders and shows signs of significant exfoliation resulting in exposure of the underlying rebar system. At the time of the cultural heritage evaluation Bridge 5-E had been permanently closed to vehicular traffic. A 2022 Ontario Structure Inspection Manual (OSIM) report recommended the bridge be replaced within 1-5 years (Appendix D).



FIGURE 24: BRIDGE 7-E, NORTH APPROACH TO BRIDGE, FACING SOUTH



FIGURE 25: BRIDGE 7-E, DETERIORATED UPPER SUPPORT WALLS OF EAST SIDE OF STRUCTURE



FIGURE 26: BRIDGE 7-E, DETERIORATED UPPER SUPPORT WALLS, WEST SIDE OF STRUCTURE



FIGURE 27: BRIDGE 7-E, OVERVIEW OF THE WEST SIDE OF BRIDGE, FACING NORTH



FIGURE 28: BRIDGE 7-E, EXAMPLE OF THE UNDERSIDE OF STRUCTURE, SHOWING EXPOSED AND UNSUPPORTED REBAR IN BOTH THE BRIDGE DECK AND THE ABUTMENT WALL



FIGURE 29: BRIDGE 7-E, EVIDENCE OF PAST RECONDITIONING OF THE BRIDGE, WHICH IS SHOWING SIGNS OF DEGRADATION

O. Reg. 9/06 Evaluation: Bridge 7-E

- 1. The property has design value or physical value because it is a rare, unique, representative or early example of a style, type, expression, material or construction method. (Criteria Not Met)**

Bridge 7-E is typical of early 20th century bridges constructed of reinforced concrete. The overall design is constant with other area example and is judged to be typical of the era and area.

- 2. The property has design value or physical value because it displays a high degree of craftsmanship or artistic merit. (Criteria Not Met)**

Bridge 7-E is typical of reinforced concrete bridges of the era and does not display a high degree of craftsmanship or artistic merit.

- 3. The property has design value or physical value because it demonstrates a high degree of technical or scientific achievement. (Criteria Not Met)**

Bridge 7-E is typical of reinforced concrete bridges of the era and does not display a high degree of technical or scientific achievement.

- 4. The property has historical value or associative value because it has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community. (Criteria Not Met)**

Bridge 7-E was constructed during a period of rapid transportation growth in the Province of Ontario and is not identified as being of particular significance to the surrounding community.

5. The property has historical value or associative value because it yields, or has the potential to yield, information that contributes to an understanding of a community or culture. (Criteria Not Met)

Bridge 7-E does not meet the criteria to have the potential to yield new information that would contribute to the understanding of a community or culture.

6. The property has historical value or associative value because it demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community. (Criteria Not Met)

Bridge 7-E was not identified to be of historical or associative value based on a connection to an architect, artist, designer, builder or theorist who is significant to a community.

7. The property has contextual value because it is important in defining, maintaining, or supporting the character of an area. (Criteria Not Met)

Bridge 7-E is not key to defining, maintaining or supporting the character of the area; while the scale of the bridge contributes to the rural character of the area, the specific bridge does not meet the intent of the criteria for identifying CHVI.

8. The property has contextual value because it is physically, functionally, visually or historically linked to its surroundings. (Criteria Not Met)

Bridge 7-E is not key to defining maintaining or supporting the character of the area and based on its level of decay does not visually contributes to the overall rural character of the area.

9. The property has contextual value because it is a landmark. O. Reg. 569/22, s. 1. (Criteria Not Met)

Bridge 7-E was not identified to be a landmark.

Evaluation of Bridge 7-E against the nine criteria outlined by O. Reg. 9/06 (as amended by O. Reg. 569/22) does not identify the bridge to meet the regulation for consideration for Listing under Section 27 of the OHA or for Designation by municipal By-law under Section 29 of the OHA. The bridge also did not meet the 60-point threshold for heritage value based on the MTO bridge assessment standards. As the bridge did not meet any criteria under the O. Reg. 9/06 evaluation, no draft statement of significance was developed.

Summary

Table 1 provides a summary of the heritage evaluations for bridges 2-WG, 3-E, 5-E, and 7-E.

TABLE 1: BRIDGE EVALUATIONS

Bridge	O. Reg. 9/06	MTO HBEG Threshold Met
2-WG	0 of 9 criteria	No
3-E	8 of 9 criteria	Yes
5-E	0 of 9 criteria	No
7-E	0 of 9 criteria	No

While none of the bridges evaluated are provincially owned, the Ontario Ministry of Transportation (MTO) Heritage Bridge Evaluation Guidelines (HBEG) were also applied to each structure as they provide a proven and accepted bridge-specific set of evaluation criteria from which to assess the heritage value of these structures.

Of the four bridges evaluated as part of this CHER, only Bridge 3-E was found to be a candidate for Listing under Section 27 of the OHA, or Designation under Section 29 of the OHA. Bridge 3-E also exceeded the 60-point threshold for heritage value based on the MTO bridge assessment standards. Bridges 2-WG, 5-E, and 7-E did not meet any criteria for CHVI under O. Reg. 9/06, nor did they meet the 60-point threshold for heritage value based on the MTO bridge assessment standards.

The *Provincial Policy Statement* (2020) notes that CHVI is identified for cultural heritage resources by communities. Thus, the system by which heritage is administered in Ontario places emphasis on the decision-making of local municipalities in determining CHVI. It is hoped that the information presented in this report will be useful in those determinations.

Should the Township of Centre Wellington decide to exercise protection of Bridge 3-E under the terms of the OHA, a Heritage Impact Assessment would be required as a next step.

While Bridges 2-WG, 5-E and 7-E did not meet the thresholds for CHVI established by O. Reg. 9/06 (as amended by O. Reg. 569/22), or the minimum threshold of the MTO HBEG, each bridge still contributes to the history of reinforced concrete bridge construction in Wellington County and further considerations regarding the fate of these structures should aim to incorporate styling cues of the existing structures into any future designs.

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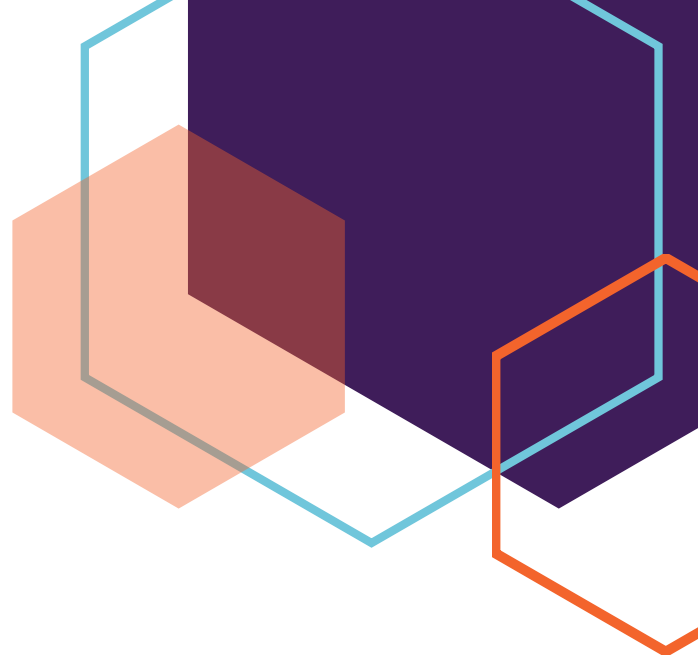
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Appendix A



Qualifications

Senior Heritage Specialist – Carla Parslow, PhD, CAHP Member in Good Standing: Dr. Carla Parslow has over 20 years of experience in the cultural heritage resource management (CHRM) industry in Canada. As the President of PHC Inc., Dr. Parslow is responsible for the management of CHRM projects, as well as the technical review and quality assurance of all archaeological and cultural heritage projects completed by PHC. Throughout her career, Carla has managed both large and small offices of CHRM professionals and has mobilized both large (50+) and small (4+) teams of CHRM and Environmental projects offices throughout the province of Ontario. Dr. Parslow has served as either Project Manager or Project Director on hundreds of Archaeological and Cultural Heritage Assessments. Dr. Parslow is a professional member of the Canadian Association of Heritage Professionals (CAHP).

Dr. Parslow is responsible for the overall quality assurance.

Project Manager – Jamie Lemon, MA: Jamie Lemon is a Senior Archaeologist and Project Manager with PHC and is responsible for managing archaeological and heritage projects across Ontario. She is the primary or secondary author of numerous heritage and archaeological license reports and is proficient at artifact and archaeobotanical analysis. In addition, she is a former field technician and field director with experience on precontact Indigenous and historical Euro-Canadian sites. She has worked on archaeological and heritage projects for mining, land development, transportation, aggregates, and energy sectors. Jamie received a BA in Anthropology from the University of Waterloo in 2007, an MA from Trent University in 2014, and has been active in Cultural Resource Management in Ontario for 17 years. Jamie holds a valid professional license with the Ontario Ministry of Citizenship and Multiculturalism (MCM). Jamie regularly assists clients with navigating the life cycle of archaeological and heritage assessments as it relates to their Project, including interpretation of MCM Standards and Guidelines and engaging with Indigenous communities and other stakeholder groups.

Ms. Lemon is responsible for project management and client relations.

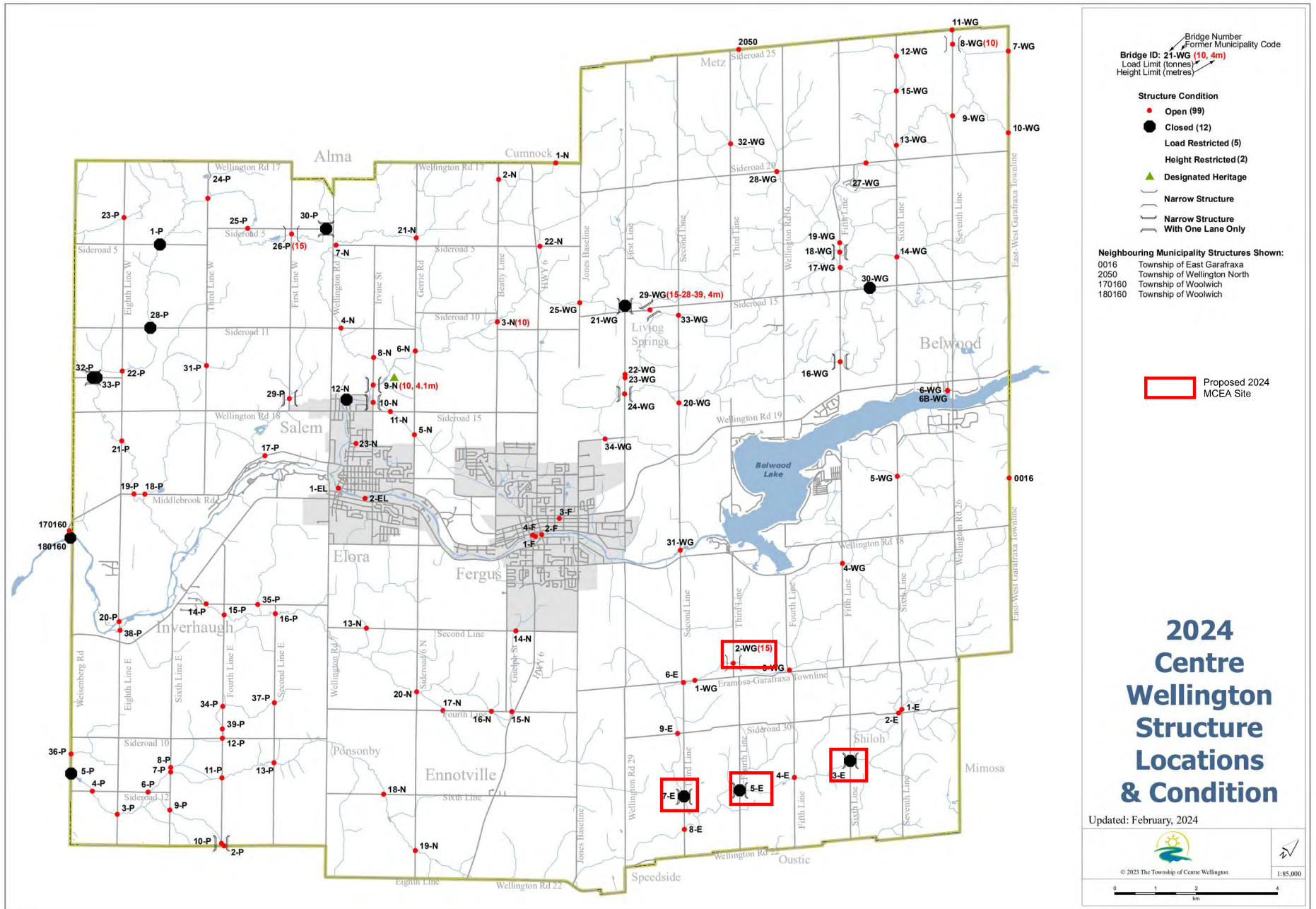
Heritage Specialist – Chris Lemon, B.Sc., Dip. CAHP Member in Good Standing: Chris Lemon is a Cultural Heritage Specialist and Licensed Archaeologist (R289) with 18 years' experience. He received an Honours B.Sc. in Anthropology from the University of Toronto and has completed course work towards an M.A. from the University of Western Ontario. Mr. Lemon has a Diploma in Heritage Carpentry and Joinery and a Certificate in Heritage Planning from Algonquin College. During his career Mr. Lemon has participated in cultural heritage assessments across Ontario as both a Senior Field Director in archaeology and as a Built Heritage Practitioner. Chris's previous experience includes representation on Joint Health and Safety Committees; he is dedicated to maintaining a safety-first focus on all job sites. Chris is a professional member of the Canadian Association of Heritage Professionals (CAHP).

Mr. Lemon is responsible for research, reporting and analysis.

Appendix B



Key Plan



Appendix C



MTO Bridge Evaluations

Ontario Heritage Bridge Evaluation: 2-WG

Criteria	Details	Max. Score	Assigned Score	Comments
Design/ Physical Value (Total marks 50)				
Functional Design (Maximum score 20)	Excellent	20		
	Very Good	16		
	Fair	12	12	Historically a common style of bridge in Wellington County Relatively few examples of the style left in the area
	Common	0		
Visual Appeal (Maximum score 20)	Excellent	20		
	Very Good	12		
	Fair	4	4	Bridge that is appropriate to the landscape and visually unobtrusive
	Common	0		
Materials (Maximum score 10)	Excellent	10		
	Very Good	8		
	Fair	5	5	Constructed of reinforced concrete, which was in widespread use at the time of construction and continues to be in widespread use to the present day
	Common	0		
Contextual Value (Total marks 25)				
Landmark (Maximum score 15)	Excellent	15		
	Very Good	9		

	Fair	3	3	Bridge is typical of area bridge construction of the era and reflects the high number of reinforced concrete bridges that were constructed in Wellington County in the early 20 th century
	Common	0		
Character Contribution (Maximum score 10)	Excellent	10		
	Very Good	6	6	Bridge contributes to the overall aesthetic and character of the area
	Common	0		
Historical/ Associative Value (Total marks 25)				
Designer/ Construction Firm (Maximum score 15)	Excellent	15		
	Good	9		
	Fair	3		
	Unknown	0	0	Bridge designer and constructor is unknown
Association with a historical theme, person or event (Maximum score 10)	Excellent	10		
	Good	6	6	Bridge is connected to the early expansion of automotive transportation in the early 20 th century. Has connection to the history of transportation in the area
	Common	0		
TOTAL			36/100	Does not meet heritage value threshold of 60 points

Ontario Heritage Bridge Evaluation: 3-E

Criteria	Details	Max. Score	Assigned Score	Comments
Design/ Physical Value (Total marks 50)				
Functional Design (Maximum score 20)	Excellent	20	20	Design was developed by local Fergus architect Charles Mattaini. Historically a common style of bridge construction in Wellington County. Relatively few examples of the style left in the area.
	Very Good	16		
	Fair	12		
	Common	0		
Visual Appeal (Maximum score 20)	Excellent	20		
	Very Good	12	12	Well proportioned bridge that is appropriate to the landscape with unique visual appeal
	Fair	4		
	Common	0		
Materials (Maximum score 10)	Excellent	10		
	Very Good	8		
	Fair	5	5	Constructed of reinforced concrete, which was in widespread use at the time of construction and continues to be in widespread use to the present day
	Common	0		
Contextual Value (Total marks 25)				
Landmark (Maximum score 15)	Excellent	15		
	Very Good	9	9	Bridge is visually distinctive and identifiable in the surrounding landscape.

	Fair	3		
	Common	0		
Character Contribution (Maximum score 10)	Excellent	10	10	Bridge contributes to the overall aesthetic and character of the area and represents one of few remaining bowstring bridges still in existence in the county
	Very Good	6		
	Common	0		
Historical/ Associative Value (Total marks 25)				
Designer/ Construction Firm (Maximum score 15)	Excellent	15		
	Good	9		Bridge has unique history and has a connection to the history of transportation in the area, bridge was designed by local Fergus architect Charles Mattaini and was likely constructed by the construction firm owned by Charles Mattaini.
	Fair	3		
	Unknown	0		
Association with a historical theme, person or event (Maximum score 10)	Excellent	10	10	Bridge has unique history and has a connection to the history of transportation in the area, bridge was designed by local Fergus architect Charles Mattaini. Marttaini designed the bowstring bridge as part of a tender to construct a bridge over the Grand River, this design was then used on approximately 70 stylistically similar bridges
	Good	6		
	Common	0		
TOTAL			66/100	Exceeds the heritage value threshold of 60 points

Ontario Heritage Bridge Evaluation: 5-E

Criteria	Details	Max. Score	Assigned Score	Comments
Design/ Physical Value (Total marks 50)				
Functional Design (Maximum score 20)	Excellent	20		
	Very Good	16		
	Fair	12	12	Historically a common style of bridge in Wellington County Relatively few examples of the style left in the area
	Common	0		
Visual Appeal (Maximum score 20)	Excellent	20		
	Very Good	12		
	Fair	4	4	Bridge that is appropriate to the landscape and visually unobtrusive
	Common	0		
Materials (Maximum score 10)	Excellent	10		
	Very Good	8		
	Fair	5	5	Constructed of reinforced concrete, which was in widespread use at the time of construction and continues to be in widespread use to the present day
	Common	0		
Contextual Value (Total marks 25)				
Landmark (Maximum score 15)	Excellent	15		
	Very Good	9		

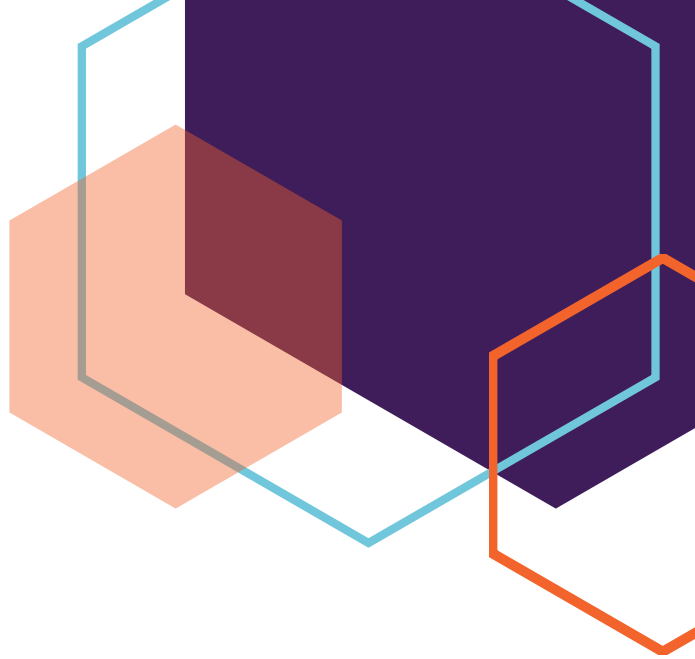
	Fair	3	3	Bridge is typical of area bridge construction of the era and reflects the high number of reinforced concrete bridges that were constructed in Wellington County in the early 20 th century
	Common	0		
Character Contribution (Maximum score 10)	Excellent	10		
	Very Good	6	6	Bridge contributes to the overall aesthetic and character of the area
	Common	0		
Historical/ Associative Value (Total marks 25)				
Designer/ Construction Firm (Maximum score 15)	Excellent	15		
	Good	9		
	Fair	3		
	Unknown	0	0	Bridge designer and constructor is unknown
Association with a historical theme, person or event (Maximum score 10)	Excellent	10		
	Good	6	6	Bridge is connected to the early expansion of automotive transportation in the early 20 th century. Has connection to the history of transportation in the area
	Common	0		
TOTAL			36/100	Does not meet heritage value threshold of 60 points

Ontario Heritage Bridge Evaluation: 7-E

Criteria	Details	Max. Score	Assigned Score	Comments
Design/ Physical Value (Total marks 50)				
Functional Design (Maximum score 20)	Excellent	20		
	Very Good	16		
	Fair	12	12	Historically a common style of bridge in Wellington County Relatively few examples of the style left in the area
	Common	0		
Visual Appeal (Maximum score 20)	Excellent	20		
	Very Good	12		
	Fair	4	4	Bridge design was appropriate to the landscape and visually unobtrusive
	Common	0		
Materials (Maximum score 10)	Excellent	10		
	Very Good	8		
	Fair	5	5	Constructed of reinforced concrete, which was in widespread use at the time of construction and continues to be in widespread use to the present day
	Common	0		
Contextual Value (Total marks 25)				
Landmark (Maximum score 15)	Excellent	15		
	Very Good	9		

	Fair	3	3	Bridge is typical of area bridge construction of the era and reflects the high number of reinforced concrete bridges that were constructed in Wellington County in the early 20 th century
	Common	0		
Character Contribution (Maximum score 10)	Excellent	10		
	Very Good	6	6	Bridge contributes to the overall aesthetic and character of the area
	Common	0		
Historical/ Associative Value (Total marks 25)				
Designer/ Construction Firm (Maximum score 15)	Excellent	15		
	Good	9		
	Fair	3		
	Unknown	0	0	Bridge designer and constructor is unknown
Association with a historical theme, person or event (Maximum score 10)	Excellent	10		
	Good	6	6	Bridge is connected to the early expansion of automotive transportation in the early 20 th century. Has connection to the history of transportation in the area
	Common	0		
TOTAL			36/100	Does not meet heritage value threshold of 60 points

Appendix D



OSIM Inspection Reports

Structure Condition Summary Form

Structure Name THIRD LINE
 Structure Number 2-WG
 Date of Inspection May 05, 2022
 Project No. 18015
 Consultant HP Engineering Inc.

Element Group	Element Name	Unit (Qty.)	Unit Price (MTO)	Total Element Quantity	Element Qty. in Excellent Condition (1.00)	Element Quantity in Good Condition (0.75)	Element Quantity in Fair Condition (0.4)	Element Quantity in Poor Condition (0)	Total Replacement Value (TRV)	Current Element Value (CEV)	Element Condition Index	Performance Deficiency	Maintenance Need
Approaches	Wearing Surface	Sq.m	6.00	66.00	0.00	33.00	19.80	13.20	396	196	50	00	00
Barriers	Barrier/ Parapet Walls (interior)	Sq.m	100.00	20.88	0.00	14.88	3.00	3.00	2088	1236	59	00	08
	Barrier/ Parapet Walls (exterior)	Sq.m	100.00	20.88	0.00	18.88	1.00	1.00	2088	1456	70	00	08
Decks	Wearing Surface	Sq.m	25.00	60.50	0.00	30.50	18.00	12.00	1513	752	50	00	00
	Deck Top - Thin Slab	Sq.m	120.00	70.40	0.00	70.40	0.00	0.00	8448	6336	75	00	00
	Soffit - Thin Slab	Sq.m	120.00	67.84	0.00	51.84	10.00	6.00	8141	5146	63	01	00
Beams/ Main Longitudinal	Girders	Sq.m	200.00	113.30	0.00	78.30	20.00	15.00	22660	13345	59	01	00
Elements	Floor Beams - Concrete	Sq.m	200.00	45.92	0.00	43.92	1.00	1.00	9184	6668	73	00	08
Abutment	Wingwalls	Sq.m	350.00	17.40	0.00	7.40	5.00	5.00	6090	2643	43	00	00
	Abutment Walls	Sq.m	900.00	24.32	0.00	2.32	11.00	11.00	21888	5526	25	01	00
									82495	43303			
Bridge Condition Index (BCI)	52												

Municipal Structure Inspection Form
TOWNSHIP OF CENTRE WELLINGTON

Structure Name 2-WG

THIRD LINE

Field Inspection Information:

Date of Inspection:	May 05, 2022
Inspector:	Tashi Dwivedi, P.Eng., (H.P. Engineering)
Others in Party:	Charlemagne Charles and Sagar Chhayani, (H.P. Engineering)
Equipment Used:	Hammer, Tape, Camera, Chest waders
Weather	Rainy
Temperature	11°C

Additional Investigations Required		Priority			Estimated Cost
		None	Normal	Urgent	
Detailed Deck Condition Survey:			X		\$10,000.00
DART Survey:					
Detailed Coating Condition Survey:					
Underwater Investigation					
Fatigue Investigation:					
Seismic Investigation:					
Replacement/Rehabilitation Study:			X		\$20,000.00
Load Posting - Estimated Load	0	Total Cost			\$30,000.00

Special Notes:

The current approach guiderails are not code compliant. It is recommended that the existing approach guiderails be replaced with a code compliant approach guiderail system and end treatments. The current deck barrier is not code compliant. It is recommended that the existing deck barrier be replaced with a code compliant deck barrier.

Several potholes observed on top of deck and approach wearing surface. Several areas of apparent delamination was noted on the inside face of the girders. Severe spalling with exposed corroded reinforcement was also noted along the underside of the girders for the entire length of the beams. Delamination and spalls with exposed corroded reinforcement were also observed on the floor beams and the soffit. A wide horizontal crack with disintegration and erosion was also observed at the west corner of the North abutment.

Next Detailed Inspection: May 2024

Municipal Structure Inspection Form

MTO Site Number

35-219

Element Data

Element Group	900	Abutments					Length	
Element Name	901	Abutment Walls					Width	6.40
Location	North and south side of structure							
Material	Cast-in-place concrete							
Element Type	Conventional closed					Element code		
Environment	Moderate							
Protection System	None							
Condition Data	Units	Ex.	Good	Fair	Poor			
	Sq. m.	0	2.32	11	11			
Comments: Severe scaling and severe erosion was noted at the base of abutments. A wide horizontal crack with disintegration and erosion was also observed at the west corner of the North abutment. Large areas of spalls and scaling with cracks noted at both walls.								
Recommended Work:		Rehab	☐	Replace	☒	Maint. Needs	-	-
		Urgent	☐	1-5 yrs	☒	Urgent	☐	1 year ☐
				6-10 yrs	☐			

Element Group	900	Abutments					Length	2.90
Element Name	903	Wingwalls					Width	
Location	NE, NW, SE & SW of structure							
Material	Cast-in-place concrete							
Element Type	Reinforced concrete					Element code	6	
Environment	Moderate							
Protection System	None							
Condition Data	Units	Ex.	Good	Fair	Poor			
	Sq. m.	0	7.4	5	5			
Comments: Concrete disintegration and spalls at SW, NW and NE wingwalls. Light scaling noted throughout.								
Recommended Work:		Rehab	☐	Replace	☒	Maint. Needs	-	-
		Urgent	☐	1-5 yrs	☒	Urgent	☐	1 year ☐
				6-10 yrs	☐			

Element Group	1500	Signs					Length	
Element Name	1501	Sign					Width	
Location	NE, NW, SE & SW of structure							
Material	Steel							
Element Type	Hazard Signs					Element code	N/A	
Environment	Severe							
Protection System	None							
Condition Data	Units	Ex.	Good	Fair	Poor			
	Each	0	1	3	2			
Comments: All signs observed appeared to be leaning. Load posting sign at southeast ia also leaning. Light corrosion notes at all bolts.								
Recommended Work:		Rehab	☐	Replace	☐	Maint. Needs	-	-
		Urgent	☐	1-5 yrs	☐	Urgent	☐	1 year ☐
				6-10 yrs	☐			

Municipal Structure Inspection Form

MTO Site Number

35-219

Element Data

Element Group	1600	Approaches				Length	2.50	
Element Name	1606	Barriers				Width	0.25	
Location	East & West side of structure						Height	1.20
Material	Cast-in-place concrete						Count	4
Element Type	N/A				Element code	N/A	Total Qty.	26.50
Environment	Severe						Limited Insp.	
Protection System	None						Suspected Performance Deficiencies	
Condition Data	Units	Ex.	Good	Fair	Poor	08 Pedestrian/ Vehicular hazard		
	Sq. m.	0	17.0	5.0	4.5			

Comments:

The current approach barriers are not code compliant. Numerous spalls with exposed corroded reinforcement was noted on the concrete posts. Approach barrier should be replaced with a code complaint barrier and end treatments. Large spalls with exposed corroded reinforcement was noted on the bottom section of top railing.

Recommended Work:	Rehab	☐	Replace	☒	Maint. Needs	-	-
	Urgent	☐	1-5 yrs	☒	Urgent	☐	1 year ☐
			6-10 yrs	☐			

Element Group	1600	Approaches				Length	6.00	
Element Name	1601	Wearing surface (app)				Width	5.50	
Location	North & south side of structure						Height	
Material	Gravel						Count	2
Element Type	N/A				Element code	N/A	Total Qty.	66
Environment	Severe						Limited Insp.	
Protection System	None						Suspected Performance Deficiencies	
Condition Data	Units	Ex.	Good	Fair	Poor	- -		
	Sq. m.	0	33.0	19.8	13.2			

Comments:

Numerous potholes observed on the approach wearing surface with some loose gravels throughout.

Recommended Work:	Rehab	☐	Replace	☐	Maint. Needs	-	-
	Urgent	☐	1-5 yrs	☐	Urgent	☐	1 year ☐
			6-10 yrs	☐			

Element Group	500	Beams/MLE's				Length	5.60	
Element Name	502	Floor Beams (Intermediate)				Width	0.35	
Location	Underside of structure						Height	0.50
Material	Cast-in-place concrete						Count	4
Element Type	Rectangular-solid				Element code	4	Total Qty.	45.92
Environment	Moderate						Limited Insp.	
Protection System	None						Suspected Performance Deficiencies	
Condition Data	Units	Ex.	Good	Fair	Poor	- -		
	Sq. m.	0	38.42	5.0	2.5			

Comments:

Several areas of apparent delamination noted on floor beams. Medium to severe horizontal cracks also observed at bottom and end sections section of floor beams. Severe spalls with exposed corroded reinforcement at the end sections of beams.

Recommended Work:	Rehab	☐	Replace	☐	Maint. Needs	8	Repair of bridge concrete
	Urgent	☐	1-5 yrs	☐	Urgent	☐	1 year ☒
			6-10 yrs	☐			

Element Data

Element Group	500	Beams/MLE's					Length	11.00
Element Name	501	Girders					Width	0.45
Location	Underside of structure					Height	1.90	
Material	Cast-in-place concrete					Count	2	
Element Type	Rectangular-solid	Element code	4	Total Qty.				113.3
Environment	Severe					Limited Insp.		
Protection System	Hot dip galvanizing					Suspected Performance Deficiencies		
Condition Data	Units	Ex.	Good	Fair	Poor	1	Load Carrying capacity	
	Sq. m.	0	78.3	20	15			

Comments:

Several areas of apparent delamination noted on the inside face of girders. Severe spalling along underside of girders with exposed corroded reinforcement for full length of the beams.

Recommended Work:	Rehab	☐	Replace	☒	Maint. Needs	-	-
	Urgent	☐	1-5 yrs	☒	Urgent	☐	1 year ☐
			6-10 yrs	☐			

Element Group	100	Decks					Length	11.00
Element Name	102	Deck top					Width	6.40
Location	Top of deck					Height		
Material	Cast-in-place concrete					Count	1	
Element Type	Cast-in-place conc on supports, composite	Element code		Total Qty.				70.4
Environment	Moderate					Limited Insp.	☒	
Protection System	None					Suspected Performance Deficiencies		
Condition Data	Units	Ex.	Good	Fair	Poor	-	-	
	Sq. m.	0	70.4	0	0			

Comments:

The deck top could not be observed due to the gravel wearing surface. Rating based on the condition of the soffit.

Recommended Work:	Rehab	☐	Replace	☐	Maint. Needs	-	-
	Urgent	☐	1-5 yrs	☐	Urgent	☐	1 year ☐
			6-10 yrs	☐			

Element Group	100	Decks					Length	10.60
Element Name	103	Soffit Thin Slab (Interior)					Width	6.40
Location	Underside of deck					Height		
Material	Cast-in-place concrete					Count	1	
Element Type	N/A	Element code	N/A	Total Qty.				67.84
Environment	Benign					Limited Insp.		
Protection System	None					Suspected Performance Deficiencies		
Condition Data	Units	Ex.	Good	Fair	Poor	01	Load carrying capacity	
	Sq. m.	0	51.84	10	6			

Comments:

Localized areas of delamination and some spalls with exposed corroded reinforcement was noted on the interior portion of the soffit.

Recommended Work:	Rehab	☐	Replace	☒	Maint. Needs	-	-
	Urgent	☐	1-5 yrs	☒	Urgent	☐	1 year ☐
			6-10 yrs	☐			

Municipal Structure Inspection Form

MTO Site Number

35-219

Element Data

Element Group	100	Decks					Length	11.00
Element Name	101	Wearing surface					Width	5.50
Location	Top of deck					Height		
Material	Gravel					Count	1	
Element Type	N/A			Element code	N/A		Total Qnty.	60.5
Environment	Severe					Limited Insp.		
Protection System	None					Suspected Performance Deficiencies		
Condition Data	Units	Ex.	Good	Fair	Poor			
	Sq. m.	0	30.5	18	12			

Comments:

Numerous potholes and loose gravel observed on bridge deck. Accumulation of vegetation on the west edges was noted.

Recommended Work:	Rehab ☐	Replace ☐	Maint. Needs	-	-
	Urgent ☐	1-5 yrs ☐	6-10 yrs ☐	Urgent ☐	1 year ☐

Element Group	1400	Embankments and Streams					Length	
Element Name	1402	Embankments					Width	
Location	NE, NW, SE & SW side of structure					Height		
Material	Native soil					Count	4	
Element Type	N/A			Element code	N/A		Total Qnty.	4
Environment	-					Limited Insp.		
Protection System	None					Suspected Performance Deficiencies		
Condition Data	Units	Ex.	Good	Fair	Poor			
	Each	0	3	0	1			

Comments:

The embankments were moderately sloped and well vegetated. Northeast embankment appeared unstable and collapsed at the time of inspection. Northwest, southeast and southwest embankments were in stable condition.

Recommended Work:	Rehab ☐	Replace ☐	Maint. Needs	13	Erosion Control at bridge
	Urgent ☐	1-5 yrs ☐	6-10 yrs ☐	Urgent ☐	1 year ☒

Element Group	1400	Embankments and Streams					Length	
Element Name	1403	Slope Protections					Width	
Location	NE, NW, SE & SW of structure					Height		
Material	Other					Count	-	
Element Type	Rock Protection			Element code	9		Total Qnty.	-
Environment	-					Limited Insp.		
Protection System	None					Suspected Performance Deficiencies		
Condition Data	Units	Ex.	Good	Fair	Poor			
	Each	0	0	0	0			

Comments:

No slope protection was present at the time of the inspection.

Recommended Work:	Rehab ☐	Replace ☐	Maint. Needs	-	-
	Urgent ☐	1-5 yrs ☐	6-10 yrs ☐	Urgent ☐	1 year ☐

Municipal Structure Inspection Form

MTO Site Number

35-219

Element Data

Element Group	1400	Embankments and Streams				Length	
Element Name	1401	Streams and Waterways				Width	
Location	Under structure				Height		
Material	Other				Count	1	
Element Type	N/A		Element code	N/A		Total Qnty.	1
Environment	-				Limited Insp.		
Protection System	None				Suspected Performance Deficiencies		
Condition Data	Units	Ex.	Good	Fair	Poor		
	All	0	1	0	0		

Comments:

The stream had a low volume of water and a low flow from east to west. Vegetation appeared to be encroaching into the water upstream.

Recommended Work:	Rehab ☐	Replace ☐	Maint. Needs	-	-
	Urgent ☐	1-5 yrs ☐	Urgent	☐	1 year ☐

Element Group	1300	Foundations				Length	
Element Name	1301	Foundation (below ground level)				Width	
Location	Below abutment walls				Height		
Material	Unknown				Count		
Element Type			Element code			Total Qnty.	1
Environment	Benign				Limited Insp.	X	
Protection System	None				Suspected Performance Deficiencies		
Condition Data	Units	Ex.	Good	Fair	Poor		
	N/A	0	1	0	0		

Comments:

The foundation was not visible at the time of the inspection. No sign of instability was noted.

Recommended Work:	Rehab ☐	Replace ☐	Maint. Needs	-	-
	Urgent ☐	1-5 yrs ☐	Urgent	☐	1 year ☐

Element Group	500	Barriers				Length	11.6
Element Name	502	Barrier/Parapet Walls (Interior)				Width	0.5
Location	East & West side of structure				Height	0.9	
Material	Concrete				Count	2	
Element Type	Cast-in-Place Concrete Barrier		Element code	4		Total Qnty.	20.88
Environment	Severe				Limited Insp.		
Protection System	None				Suspected Performance Deficiencies		
Condition Data	Units	Ex.	Good	Fair	Poor		
	Sq. m.	0	13.88	3.5	3.5		

Comments:

The interior faces of the parapet walls appeared to be in generally fair condition with small spalls at the ends and mid-section of the walls. Disintegration noted at the base of east parapet wall.

Recommended Work:	Rehab ☐	Replace ☐	Maint. Needs	8	Repair of bridge concrete
	Urgent ☐	1-5 yrs ☐	Urgent	☐	1 year ☒

HP Engineering Inc.

Municipal Structure Inspection Form

MTO Site Number

35-219

Element Data

Element Group	500	Barriers				Length	11.6	
Element Name	502	Barrier/Parapet Walls (Exterior)				Width	0.5	
Location	East & West side of structure						Height	0.9
Material	Concrete						Count	2
Element Type	Cast-in-Place Concrete Barrier				Element code	4	Total Qty.	20.88
Environment	Severe						Limited Insp.	
Protection System	None						Suspected Performance Deficiencies	
Condition Data	Units	Ex.	Good	Fair	Poor			
	Sq. m.	0	18.88	1	1			

Comments:
Light scaling and damp stains throughout. Spalling noted at the base of the parapet walls.

Recommended Work:	Rehab ☐	Replace ☐	Maint. Needs	8	Repair of bridge concrete
	Urgent ☐	1-5 yrs ☐	6-10 yrs ☐	Urgent ☐	1 year ☒

MUNICIPAL STRUCTURE INSPECTION FORM

BRIDGE

SITE PHOTOGRAPHS

Site No.: 2-WG



Photo 1 Structure from north approach



Photo 2 Structure from south approach



Photo 3 North approach from centre of structure



Photo 4 South approach from centre of structure



Photo 5 East elevation



Photo 6 West elevation



Photo 7 Spalls with exposed corroded reinforcement noted on approach barrier



Photo 8 Disintegration with small spalls noted on east parapet wall



Photo 9 Interior face of west parapet wall



Photo 10 Severe scaling, damp stains and spalls with exposed corroded reinforcement noted on exterior parapet wall



Photo 11 Medium horizontal cracks with delamination with exposed corroded reinforcement noted at soffit



Photo 12 Sever scaling and erosion with horizontal cracks noted on north abutment wall



Photo 13 Severe spalls with concrete disintegration noted on south abutment wall



Photo 14 Concrete disintegration and spalls observed on wingwalls



Photo 15 Sever spalling with exposed corroded reinforcement noted over the full length of west exterior beams

Structure Condition Summary Form

Structure Name SIXTH LINE
 Structure Number 3-E
 Date of Inspection May 04, 2022
 Project No. 18015
 Consultant HP Engineering Inc.

Element Group	Element Name	Unit (Qty.)	Unit Price (MTO)	Total Element Quantity	Element Qty. in Excellent Condition (1.00)	Element Quantity in Good Condition (0.75)	Element Quantity in Fair Condition (0.4)	Element Quantity in Poor Condition (0)	Total Replacement Value (TRV)	Current Element Value (CEV)	Element Condition Index	Performance Deficiency	Maintenance Need
Approach	Wearing Surface	Sq.m	6.00	58.80	0.00	52.80	3.00	3.00	353	245	69	09	12
Barriers	Railing Systems	m	200.00	88.00	0.00	0.00	44.00	44.00	17600	3520	20	08	00
	Posts (Steel/Concrete)	Each	200.00	18.00	0.00	4.00	6.00	8.00	3600	1080	30	08	00
	Top Chords	Sq.m	300.00	64.00	0.00	56.00	4.00	4.00	19200	13080	68	00	00
Trusses/ Arches	Verticals	Sq.m	300.00	5.76	0.00	0.00	2.88	2.88	1728	346	20	01	00
	Bottom Chords	Sq.m	300.00	52.56	0.00	42.56	5.00	5.00	15768	10176	65	00	00
Decks	Deck Top - Thin Slab	Sq.m	120.00	79.80	0.00	0.00	39.90	39.90	9576	1915	20	09	02
	Soffit - Thin Slab	Sq.m	120.00	78.09	0.00	46.85	15.62	15.62	9371	4966	53	00	00
Beams/ Main Longitudinal	Floor Beams - Concrete	Sq.m	200.00	51.30	0.00	41.30	5.00	5.00	10260	6595	64	01	00
Abutment	Wingwalls	Sq.m	350.00	22.40	0.00	18.40	2.00	2.00	7840	5110	65	00	08
	Abutment Walls	Sq.m	900.00	19.38	0.00	17.38	2.00	0.00	17442	12452	71	00	00
									112738	59484			

Bridge Condition Index (BCI)

52.76

Municipal Structure Inspection Form
TOWNSHIP OF CENTRE WELLINGTON

Structure Name 3-E

SIXTH LINE

Field Inspection Information:

Date of Inspection:	May 04, 2022
Inspector:	Tashi Dwivedi, P.Eng., (H.P. Engineering)
Others in Party:	Charlemagne Charles and Sagar Chhayani, (H.P. Engineering)
Equipment Used:	Hammer, Tape, Camera and Chest waders
Weather	Sunny
Temperature	11°C

Additional Investigations Required	Priority			Estimated Cost
	None	Normal	Urgent	
Detailed Deck Condition Survey:	☐	☒	☐	\$ 10,000.00
DART Survey:	☒	☐	☐	
Detailed Coating Condition Survey:	☒	☐	☐	
Underwater Investigation	☒	☐	☐	
Fatigue Investigation:	☒	☐	☐	
Seismic Investigation:	☒	☐	☐	
Structure Evaluation:	☐	☒	☐	\$ 10,000.00
Load Posting - Estimated Load	0	Total Cost		\$ 20,000.00

Special Notes:

Bridge was closed at the time of the inspection. Superstructure is generally in poor condition should be replaced. A rehabilitation / replacement study is recommended (\$5,000.00). Existing deck barrier is substandard and should be replaced. Light to moderate scaling at water level. Medium diagonal crack at upper northwest corner of north abutment wall.

Medium vertical cracks with heavy efflorescence noted at south abutment wall. Stained cracks, localized delaminations, and light to moderate localized disintegration noted at wingwalls. Medium and wide horizontal cracks, large delaminations, and medium to severe spalls with exposed corroded reinforcement noted throughout floor beam. Numerous damp stains, medium & wide cracks, medium & large delaminations, large spalls noted at soffit. Light to moderate scaling with spalls and concrete disintegration observed on truss/ arches throughout.

Next Detailed Inspection: May 2024

Repair and Rehabilitation Required		Priority				Estimated Construction Cost
Element	Repair and Rehabilitation Required	6-10 years	1 - 5 years	Within 1 year	Urgent	
	Replace Structure	☐	☒	☐	☐	\$967,000.00
		☐	☐	☐	☐	
		☐	☐	☐	☐	
		☐	☐	☐	☐	
		☐	☐	☐	☐	
		☐	☐	☐	☐	
		☐	☐	☐	☐	
		☐	☐	☐	☐	
		☐	☐	☐	☐	
						\$967,000.00

Associated Work:	Comments	Estimated Cost
Approaches		
Detours		\$ 100,000.00
Traffic Control		\$60,000.00
Utilities		
Right of Way		
Environmental Study		\$ 100,000.00
Other		
Contingencies		
Total Cost		\$ 260,000.00

Justification

Construction Cost \$967,000.00
 Associated Costs \$ 260,000.00
 TOTAL Estimated Cost \$1,227,000.00

Municipal Structure Inspection Form

MTO Site Number

35-224

Element Data

Element Group	900	Abutments			
Element Name	901	Abutment Walls			
Location	North and south underside of structure				
Material	Cast-in-place concrete				
Element Type	Conventional closed	Element code	1		
Environment	Moderate				
Protection System	None				
Condition Data	Units	Ex.	Good	Fair	Poor
	Sq. m.	0	17.38	2.00	0

Length	
Width	5.70
Height	1.70
Count	2
Total Qnty.	19.38
Limited Insp.	
Suspected Performance Deficiencies	
-	-

Comments:
Light to moderate scaling at water level. Medium diagonal crack at upper northwest corner of north abutment wall. Medium vertical cracks with heavy efflorescence noted at south abutment wall.

Recommended Work:

Rehab	☐	Replace	☐	Maint. Needs	-	-
Urgent	☐	1-5 yrs	☐	6-10 yrs	☐	Urgent ☐ 1 year ☐

Element Group	900	Abutments			
Element Name	903	Wingwalls			
Location	NE, NW, SE & SW side of structure				
Material	Cast-in-place concrete				
Element Type	Reinforced concrete	Element code	6		
Environment	Moderate				
Protection System	None				
Condition Data	Units	Ex.	Good	Fair	Poor
	Sq. m.	0	18.40	2.00	2.00

Length	4.00
Width	
Height	1.40
Count	4
Total Qnty.	22.40
Limited Insp.	
Suspected Performance Deficiencies	
-	-

Comments:
Stained cracks, localized delaminations, and light to moderate localized disintegration observed.

Recommended Work:

Rehab	☐	Replace	☒	Maint. Needs	-	-
Urgent	☐	1-5 yrs	☒	6-10 yrs	☐	Urgent ☐ 1 year ☐

Element Group	1500	Signs			
Element Name	1501	Sign			
Location	NW, NE, SW, & SW of Structure				
Material	Steel				
Element Type	Hazard Signs x 4 Load Posting Signs x 2	Element code	N/A		
Environment	-				
Protection System	None				
Condition Data	Units	Ex.	Good	Fair	Poor
	Each	0	3	1	2

Length	
Width	
Height	
Count	6
Total Qnty.	6
Limited Insp.	
Suspected Performance Deficiencies	
-	-

Comments:
Small abrasions noted throughout. Southeast hazard sign leaning slightly. Northwest sign is damaged and north closing bridge sign is tilted.

Recommended Work:

Rehab	☐	Replace	☐	Maint. Needs	-	-
Urgent	☐	1-5 yrs	☐	6-10 yrs	☐	Urgent ☐ 1 year ☐

Municipal Structure Inspection Form

MTO Site Number

35-224

Element Data

Element Group	1600	Approaches				Length	6.00
Element Name	1601	Wearing surface (app)				Width	4.90
Location	North & South of Structure						
Material	Gravel						
Element Type	N/A	Element code	N/A				
Environment	Severe						
Protection System	None						
Condition Data	Units	Ex.	Good	Fair	Poor		
	Sq. m.	0	52.8	3.0	3.0		

Limited Insp.	
Suspected Performance Deficiencies	
9	Rough riding surface

Comments:
Several small potholes noted throughout both approaches.

Recommended Work:

Rehab	☐	Replace	☐	Maint. Needs	12	Bridge surface repair
Urgent	☐	1-5 yrs	☐	Urgent	☐	1 year ☒

Element Group	400	Barriers				Length	0.25
Element Name	403	Posts				Width	0.25
Location	East & West Sides of Deck & Wingwalls						
Material	Cast-in-place concrete						
Element Type	N/A	Element code	N/A				
Environment	Severe						
Protection System	None						
Condition Data	Units	Ex.	Good	Fair	Poor		
	Each	0	4	6	8		

Limited Insp.	
Suspected Performance Deficiencies	
08	Pedestrian / Vehicular Hazard

Comments:
Two missing posts at southeast and southwest. Other posts exhibit wide cracks and spalls with exposed corroded reinforcement. Barrier is substandard and should be replaced with code compliant barrier. Localized moderate scaling and spalls noted throughout.

Recommended Work:

Rehab	☐	Replace	☒	Maint. Needs	-	-
Urgent	☐	1-5 yrs	☒	Urgent	☐	1 year ☐

Element Group	400	Barriers				Length	22.00
Element Name	402	Railing Systems				Width	0.15
Location	East & west side of structure						
Material	Cast-in-place concrete						
Element Type	Concrete Post and Railing	Element code	6				
Environment	Severe						
Protection System	None						
Condition Data	Units	Ex.	Good	Fair	Poor		
	m.	0	0	44	44		

Limited Insp.	
Suspected Performance Deficiencies	
08	Pedestrian / Vehicular Hazard

Comments:
Numerous rails with wide cracks and spalls with exposed corroded reinforcement. Missing rails at south end. Barrier is substandard and should be replaced. Severe scaling also noted throughout.

Recommended Work:

Rehab	☐	Replace	☒	Maint. Needs	-	-
Urgent	☐	1-5 yrs	☒	Urgent	☐	1 year ☐

Municipal Structure Inspection Form

MTO Site Number

35-224

Element Data

Element Group	500	Beams/ML'E's				Length	5.70					
Element Name	502	Floor Beams (Intermediate)				Width	0.30					
Location	Underside of structure											
Material	Cast-in-place concrete											
Element Type	Rectangular-solid	Element code	4									
Environment	Moderate											
Protection System	None											
Condition	Units	Ex.	Good	Fair	Poor							
Data	Sq. m.	0	41.3	5.0	5.0							
<table border="1"> <tr> <td>Limited Insp.</td><td></td></tr> <tr> <td colspan="2">Suspected Performance Deficiencies</td></tr> <tr> <td>1</td><td>Load Carrying capacity</td></tr> </table>							Limited Insp.		Suspected Performance Deficiencies		1	Load Carrying capacity
Limited Insp.												
Suspected Performance Deficiencies												
1	Load Carrying capacity											
Comments: Medium and wide horizontal cracks, large delaminations, and medium to severe spalls with exposed corroded reinforcement noted throughout. Concrete patchwork noted at some beam ends. One beam has been externally post tensioned.												
Recommended Work: Rehab ☐ Replace ☒ <table border="1"> <tr> <td>Maint. Needs</td><td>-</td></tr> <tr> <td>Urgent</td><td>☐ 1 year ☐</td></tr> </table>							Maint. Needs	-	Urgent	☐ 1 year ☐		
Maint. Needs	-											
Urgent	☐ 1 year ☐											

Element Group	100	Decks				Length	14.00					
Element Name	102	Deck top (exposed)				Width	5.70					
Location	Top of deck											
Material	Cast-in-place concrete											
Element Type	Cast-in-place conc on supports, composite	Element code	1									
Environment	Severe											
Protection System	None											
Condition	Units	Ex.	Good	Fair	Poor							
Data	Sq. m.	0	0	39.9	39.9							
<table border="1"> <tr> <td>Limited Insp.</td><td></td></tr> <tr> <td colspan="2">Suspected Performance Deficiencies</td></tr> <tr> <td>9</td><td>Rough riding surface</td></tr> </table>							Limited Insp.		Suspected Performance Deficiencies		9	Rough riding surface
Limited Insp.												
Suspected Performance Deficiencies												
9	Rough riding surface											
Comments: Moderate scaling and small spalls noted throughout. Deck partially covered in gravel. Severe concrete disintegration and spalls with exposed corroded reinforcement on bridge deck.												
Recommended Work: Rehab ☐ Replace ☒ <table border="1"> <tr> <td>Maint. Needs</td><td>02</td></tr> <tr> <td>Urgent</td><td>☐ 1 year ☒</td></tr> </table>							Maint. Needs	02	Urgent	☐ 1 year ☒		
Maint. Needs	02											
Urgent	☐ 1 year ☒											

Element Group	100	Decks				Length	13.70					
Element Name	103	Soffit Thin Slab (Interior)				Width	5.70					
Location	Underside of deck											
Material	Cast-in-place concrete											
Element Type	N/A	Element code	N/A									
Environment	Benign											
Protection System	None											
Condition	Units	Ex.	Good	Fair	Poor							
Data	Sq. m.	0	46.85	15.62	15.62							
<table border="1"> <tr> <td>Limited Insp.</td><td></td></tr> <tr> <td colspan="2">Suspected Performance Deficiencies</td></tr> <tr> <td>-</td><td>-</td></tr> </table>							Limited Insp.		Suspected Performance Deficiencies		-	-
Limited Insp.												
Suspected Performance Deficiencies												
-	-											
Comments: Numerous damp stains, medium & wide cracks, medium & large delaminations, and medium & large spalls with exposed corroded reinforcement noted throughout.												
Recommended Work: Rehab ☐ Replace ☒ <table border="1"> <tr> <td>Maint. Needs</td><td>-</td></tr> <tr> <td>Urgent</td><td>☐ 1 year ☐</td></tr> </table>							Maint. Needs	-	Urgent	☐ 1 year ☐		
Maint. Needs	-											
Urgent	☐ 1 year ☐											

Municipal Structure Inspection Form

MTO Site Number

35-224

Element Data

Element Group	1400	Embankments and Streams				Length	
Element Name	1402	Embankments				Width	
Location	NE, NW, SE & SW of structure						
Material	Other						
Element Type	N/A	Element code	N/A				
Environment	-						
Protection System	None						
Condition	Units	Ex.	Good	Fair	Poor		
Data	Each	0	4	0	0		
Comments: Embankments are moderately sloped, well vegetated. Minor erosion noted at northeast & northwest embankments. Sediment build up at northwest embankment.							
Recommended Work:		Rehab	☐	Replace	☐	Maint. Needs	13
		Urgent	☐	1-5 yrs	☐	6-10 yrs	☐
				Urgent	☐	1 year	☒
				Erosion Control			

Element Group	1400	Embankments and Streams				Length	
Element Name	1401	Streams and Waterways				Width	
Location	Under structure						
Material	Native						
Element Type	N/A	Element code	N/A				
Environment	-						
Protection System	None						
Condition	Units	Ex.	Good	Fair	Poor		
Data	All	0	1	0	0		
Comments: Moderate volume and low flow from west to east with no visible obstructions noted at the time of inspection.							
Recommended Work:		Rehab	☐	Replace	☐	Maint. Needs	-
		Urgent	☐	1-5 yrs	☐	6-10 yrs	☐
				Urgent	☐	1 year	☐
				-			

Element Group	1300	Foundations				Length	
Element Name	1301	Foundation (below ground level)				Width	
Location	Below abutment walls						
Material	Unknown						
Element Type	Foundation	Element code					
Environment	-						
Protection System	None						
Condition	Units	Ex.	Good	Fair	Poor		
Data	N/A	0	1	0	0		
Comments: Foundations not visible; no signs of instability noted at time of inspection.							
Recommended Work:		Rehab	☐	Replace	☐	Maint. Needs	-
		Urgent	☐	1-5 yrs	☐	6-10 yrs	☐
				Urgent	☐	1 year	☐
				-			

Municipal Structure Inspection Form

MTO Site Number

35-224

Element Data

Element Group	600	Trusses/Arches				Length	14.60	
Element Name	602	Bottom chords				Width	0.40	
Location	East & West sides of structure					Height	0.50	
Material	Cast-in-place concrete					Count	2	
Element Type	Rectangular-solid		Element code	4		Total Qty.	52.56	
Environment	Severe					Limited Insp.		
Protection System	None					Suspected Performance Deficiencies		
Condition Data	Units	Ex.	Good	Fair	Poor			
	Sq. m.	0	42.56	5.00	5.00			

Comments: Light to moderate scaling throughout all exposed faces. Wide cracks at underside of west chord near south end. Large spall / disintegration at exterior vertical face at east chord. Large spall with exposed corroded reinforcement at interior vertical roadway face - east edge of deck.

Recommended Work: Rehab ☐ Replace ☒ Urgent ☐ 1-5 yrs ☒ 6-10 yrs ☐ Maint. Needs ☐ - Urgent ☐ 1 year ☐

Element Group	600	Trusses/Arches				Length	16.00	
Element Name	601	Top chords				Width	0.45	
Location	East & west sides of structure					Height	0.55	
Material	Cast-in-place concrete					Count	2	
Element Type	Rectangular-solid		Element code	4		Total Qty.	64.00	
Environment	Severe					Limited Insp.		
Protection System	None					Suspected Performance Deficiencies		
Condition Data	Units	Ex.	Good	Fair	Poor			
	Sq. m.	0	56.0	4.0	4.0			

Comments: Light to moderate scaling at bases of arches and at top of west arch. Spalls noted on north side of west arch.

Recommended Work: Rehab ☐ Replace ☒ Urgent ☐ 1-5 yrs ☒ 6-10 yrs ☐ Maint. Needs ☐ - Urgent ☐ 1 year ☐

Element Group	600	Trusses/Arches				Length	0.20	
Element Name	603	Verticals/diagonals				Width	0.20	
Location	East & west sides of structure					Height	1.20 (avg.)	
Material	Cast-in-place concrete					Count	6	
Element Type	Rectangular-solid		Element code	4		Total Qty.	5.76	
Environment	Severe					Limited Insp.		
Protection System	None					Suspected Performance Deficiencies		
Condition Data	Units	Ex.	Good	Fair	Poor			
	Sq. m.	0	0	2.88	2.88			

Comments: Severe spalls noted throughout, completely exposing corroded reinforcement. Some members have almost no concrete remaining over their entire height.

Recommended Work: Rehab ☐ Replace ☒ Urgent ☐ 1-5 yrs ☒ 6-10 yrs ☐ Maint. Needs ☐ - Urgent ☐ 1 year ☐

MUNICIPAL STRUCTURE INSPECTION FORM

BRIDGE

SITE PHOTOGRAPHS

Site No.: 3-E



Photo 1 Structure from north approach



Photo 2 Structure from south approach

MUNICIPAL STRUCTURE INSPECTION FORM

BRIDGE

SITE PHOTOGRAPHS

Site No.: 3-E



Photo 3 North approach from centre of structure



Photo 4 South approach from centre of structure



Photo 5 East elevation



Photo 6 West elevation



Photo 7 Concrete disintegration with exposed corroded rebar at northwest of deck barrier post



Photo 8 Severe spalling with exposed corroded rebar at rail in deck barrier



Photo 9 Spalls in exposed concrete deck top



Photo 10 Spall with exposed corroded rebar and sheared railing in deck barrier at southeast corner



Photo 11 Spalls with exposed corroded rebar and delamination at soffit



Photo 12 Large spalls with exposed corroder reinforcement at underside of floor beams and post tensioning system



Photo 13 Large spalls with exposed corroded rebar noted at soffit in between girders

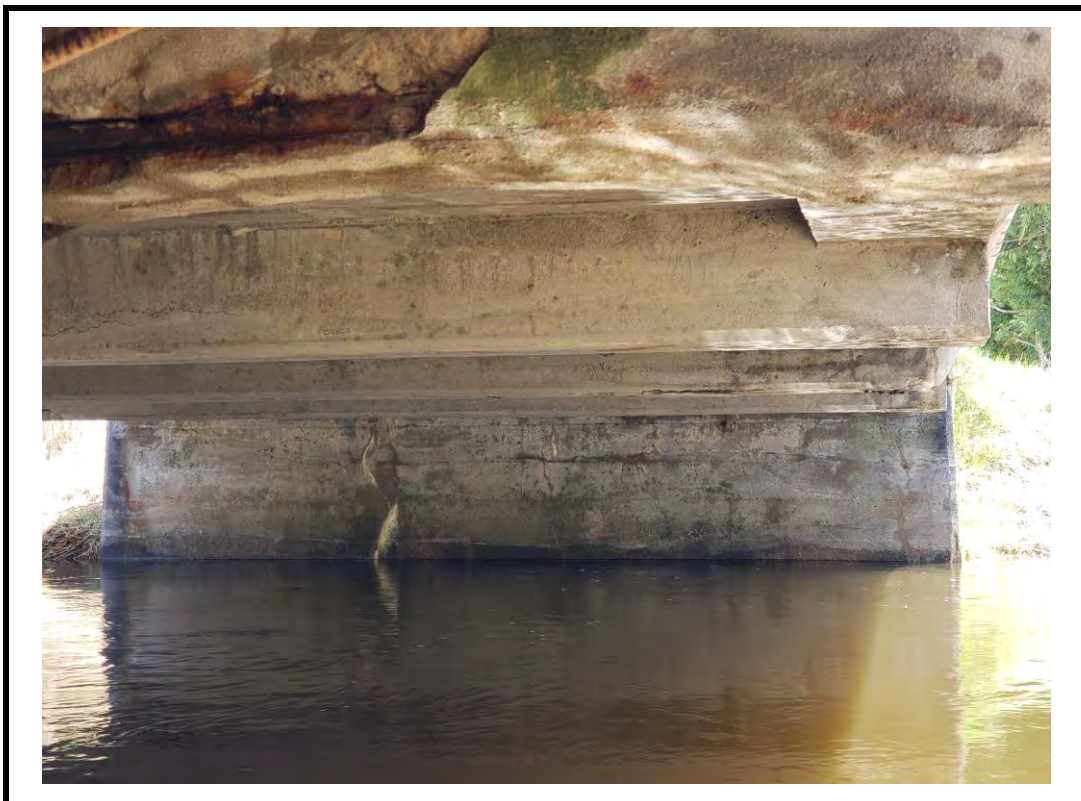


Photo 14 Moderate erosion and scaling were noted at and below the waterline on north abutment wall



Photo 15 Moderate erosion and scaling were noted at and below the waterline on south abutment wall

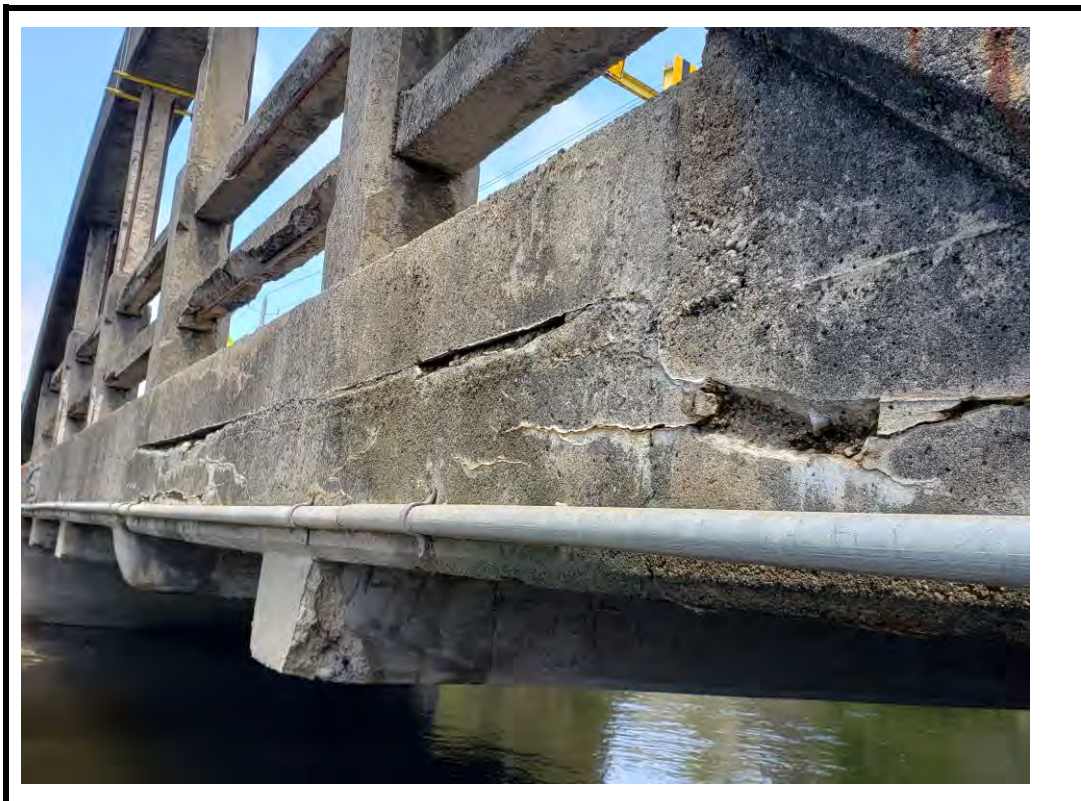


Photo 16 Wide cracks noted at underside of west chord near south end

Structure Condition Summary Form

Structure Name 5-E
 Structure Number TS-BR-00057
 Date of Inspection May 04, 2022
 Project No. 18015
 Consultant HP Engineering Inc.

Element Group	Element Name	Unit (Qty.)	Unit Price (MTO)	Total Element Quantity	Element Qty. in Excellent Condition (1.00)	Element Quantity in Good Condition (0.75)	Element Quantity in Fair Condition (0.4)	Element Quantity in Poor Condition (0)	Total Replacement Value (TRV)	Current Element Value (CEV)	Element Condition Index	Performance Deficiency	Maintenance Need
Barriers	Barrier/ Parapet Walls (interior)	Sq.m	100.00	100.00	0.00	40.00	40.00	20.00	10000	4600	46	00	00
Decks	Deck Top - Thin Slab	Sq.m	120.00	100.00	0.00	10.00	50.00	40.00	12000	3300	28	00	00
	Soffit - Thin Slab	Sq.m	120.00	100.00	0.00	10.00	50.00	40.00	12000	3300	28	00	00
Beams/ Main Longitudinal Elements	Girders	Sq.m	200.00	100.00	0.00	10.00	50.00	40.00	20000	5500	28	00	00
	Floor Beams - Concrete	Sq.m	200.00	100.00	0.00	75.00	20.00	5.00	20000	12850	64	00	00
Abutment	Wingwalls	Sq.m	350.00	100.00	0.00	0.00	50.00	50.00	35000	7000	20	00	00
	Abutment Walls	Sq.m	900.00	100.00	0.00	70.00	20.00	10.00	90000	54450	61	00	00
									199000	91000			

Bridge Condition Index (BCI)

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Municipal Structure Inspection Form

Structure Name: 5-E

Structure No: TS-BR-00057

MTO Site No:

Inventory Data

Structure Name:	5-E	Hwy No.		Key Photo  Eramosa <NONE> 3&4 <NONE>
Crossing Over:	Road	Crossing Under:	Road	
Road Name:	Fourth Line			
Location:	Fourth Line			
Owner:	TCW, Township of Centre Wellington (100 %)			
		Heritage Status:	N	
Latitude/Northing:		Longitude/Easting:		
MTO Region:		Road Class:	5	
MTO District:		Lane Type:		
Old County:		Posted Speed:		
Geo Twp.:	Eramosa	AADT:		
Structure Type:	Through Girders	Min Vert. Clear.:	m	
Material:	C - Cast In Place	No. of Spans:	1	
Articulation:				
Deck Length:	13.3 m	Special Routes:	☐ Transit ☐ Truck ☐ School ☐ Bicycle	
Deck Width:	6.4 m			
Deck Area:	85.1 m ²	Detour Length:	9.00 km	
Trav Deck Wdt	5.5 m		m	

Historical Data

Year Built: 1923	Superstruct. Year:	Year of Last Major Rehab:
Last OSIM Inspection:		Contract No. When Built:
Last Enhanced OSIM:		Last Evaluation:
Last Enhanced Access:		Current Load Limit: t t t
Last Underwater Insp.		Bylaw No.:
Last Condition Survey:		Bylaw Exp. Date:

Municipal Structure Inspection Form

Structure Name: 5-E

Structure No: TS-BR-00057

MTO Site No:

Field Inspection Information

Inspection Date: May 04, 2022 Inspection Type: ☒ OSIM ☐ Enhanced OSIM BCI: 0.0
 Inspector: Tashi Dwivedi, P.Eng., (H.P. Engineering) Eng. Responsible:
 Others in Party: Charlemagne Charles and Sagar Chhayani, (H.P. Engineering)
 Access Equip: ☐ Lift ☐ Ladder ☐ Boat ☐ Bridge Master Other:
 Other Equipment: Hammer, Tape, Camera, Chest waders
 Weather: Sunny Temperature: 18 °C

Additional Investigations Required

Investigation	----- Priority -----			Estimated Cost
	None	Normal	Urgent	
Detailed Deck Condition Survey	☒	☐	☐	0.00
Delamination Survey of Asphalt-Covered Deck	☒	☐	☐	0.00
Concrete Substructure Condition Survey	☒	☐	☐	0.00
Detailed Coating Condition Survey	☒	☐	☐	0.00
Detailed Timber Investigation	☒	☐	☐	0.00
Post-Tension Strand Investigation	☒	☐	☐	0.00
Underwater Investigation	☒	☐	☐	0.00
Fatigue Investigation	☒	☐	☐	0.00
Seismic Investigation	☒	☐	☐	0.00
Structure Evaluation	☒	☐	☐	0.00
Monitoring of Deformations, Movements and Settlements	☒	☐	☐	0.00
Monitoring of Crack Widths	☒	☐	☐	0.00
Total Cost:				0.00

Overall Structure Notes

Recommended Work On Structure: Major Rehab / replacement

Timing of Recommended Work: ADEQ

Next Inspection Date: May 2024 Estimated Load Limit: 0 t 0 t 0 t

Overall**It is recommended that a rehabilitation /replacement study (\$20,000.00)****BCI Change****Justification**

The inspection was conducted on May 04, 2022 by Charlemagne Charles (HP Engineering), Sagar Chhayani (HP Engineering). The bridge was closed at the time of the inspection. The following was noted during the inspection:

- The current approach barriers are substandard, severely damaged and should be replaced. Severe concrete desintegration, severe spalls with exposed corroded reinforcement.
- Some post are detached from railings.
- Severe concrete deterioration was observed at the base of both deck barriers.
- Moderate to severe scaling throughout the deck top with multiple medium spalls.
- A wide crack was noted at the north abutment.
- Spalls with exposed corroded reinforcement observed at both ends of the concrete girders.
- Areas of apparent delamination with wide horizontal cracks noted at both ends of the concrete floor beams.
- Several large spalls with exposed corroded rebar noted at the soffit; scaling, delamination, cracks and spalls noted throughout.
- Spalls, scaling and concrete disintegration and severe honeycombing at NE and NW wingwalls.
- Post missing at southwest approach.
- Conduit on west side of the structure observed broken at the time of inspection.
- Large spall with exposed corroded rebar noted on top of southwest concrete barriers
- Abutments: two wide cracks at mid-section and 1 vertical caral at northeast cornet of north abutment.

Municipal Structure Inspection Form

Structure Name: 5-E

Structure No: TS-BR-00057

MTO Site No:

Element Data
Repair/Rehabilitation Required
Associated Work

	Comments	Estimated Cost
Approaches		0.00
Detours		100,000.00
Traffic Control		60,000.00
Utilities		0.00
Right-of-Way		0.00
Environmental Study		100,000.00
Other		0.00
Contingencies	10%	0.00
Engineering		0.00

Total Associated Work Cost	260,000.00
Total Repair/Rehabilitation Cost	979,000.00
Total Cost	1,239,000.00

MUNICIPAL STRUCTURE INSPECTION FORM

BRIDGE

SITE PHOTOGRAPHS

Site No.: 5-E



Photo 1 Structure from north approach



Photo 2 Structure from south approach



Photo 3 North approach from centre of structure



Photo 4 South approach from centre of structure



Photo 5 East elevation



Photo 6 West elevation



Photo 7 Severe concrete deterioration at base of deck barrier



Photo 8 Full depth disintegration of concrete post in approach barrier system



Photo 9 Underside of structure



Photo 10 Severe spalling with exposed corroded rebar at underside of girder



Photo 11 Spalling with exposed corroded rebar at soffit



Photo 12 Severe concrete disintegration at NE wingwall



Photo 13 Wide crack, scaling and spall at north abutment wall



Photo 14 South abutment wall

Structure Condition Summary Form

Structure Name THIRD LINE
 Structure Number 7-E
 Date of Inspection May 04, 2022
 Project No. 18015
 Consultant HP Engineering Inc.

Element Group	Element Name	Unit (Qty.)	Unit Price (MTO)	Total Element Quantity	Element Qty. in Excellent Condition (1.00)	Element Quantity in Good Condition (0.75)	Element Quantity in Fair Condition (0.4)	Element Quantity in Poor Condition (0)	Total Replacement Value (TRV)	Current Element Value (CEV)	Element Condition Index	Performance Deficiency	Maintenance Need
Approaches	Wearing Surface	Sq.m	6.00	60.00	0.00	60.00	0.00	0.00	360	270	75	00	00
	Wearing Surface	Sq.m	25.00	50.00	0.00	47.00	0.00	3.00	1250	881	71	00	12
Decks	Deck Top - Thin Slab	Sq.m	120.00	50.00	0.00	23.00	15.00	12.00	6000	2790	47	08	00
	Soffit - Thin Slab	Sq.m	120.00	53.94	0.00	35.94	10.00	8.00	6473	3715	57	01	00
Beams/ Main Longitudinal	Girders	Sq.m	200.00	82.00	0.00	0.00	41.00	41.00	16400	3280	20	01	00
Elements	Floor Beams - Concrete	Sq.m	200.00	28.71	0.00	18.71	5.00	5.00	5742	3207	56	01	00
Abutment	Abutment Walls	Sq.m	900.00	19.72	0.00	10.72	5.00	4.00	17748	9036	51	00	00
									53973	23178			

Bridge Condition Index (BCI)

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Municipal Structure Inspection Form
TOWNSHIP OF CENTRE WELLINGTON

Structure Name 7-E

THIRD LINE

Inventory Data:

Structure Name:	7-E										
Main Hwy/Road #			On Under	☒ ☐	Crossing Type:	Navig. Water	☒	Non-Navig Water	☐		
						Rail	☐	Ped.	☐		
						Road	☐	Other	☐		
Road Name	Third Line										
Structure Location	1.6 km South of Sideroad 30										
Latitude	N 43° 41' 14.7"				Longitude	W 80° 17' 22.7"					
Owner(s)	Township of Centre Wellington				Heritage Designation	Not Cons.	☐	Cons. /not App	☐		
						List/not Desig.	☐	Desig./not List	☐		
								Desig. & List	☐		
MTO Region *	- -		Road Class	Freeway	☐	Collector	☐				
					Arterial	☐	Local	☒			
MTO District *	- -		Posted Speed	80	No. of Lanes:	1					
Current County*	- -		AADT	1533	% Trucks	2.00%					
Geographic Twp. *	Eramosa		Special Routes:	Transit	☐	School	☐				
				Truck	☐	Bicycle	☐				
Structure Type*	5 Half-through Beams of Girders				Detour Length	9	(km)				
Total Deck Length	10				(m)	Fill on Structure		(m)			
Overall Str. Width	5.8				(m)	Skew Angle		(degrees)			
Total Deck Area	58				(sq. m)	Direction of Structure	N-S				
Roadway Width	4.8				(m)	No. of Spans	1				
Span Lengths.	8.5 (m)										

Historical Data:

Year Built	1920	Last Biennial Inspection	30/07/2018
Current Load Limit	10 (tonnes)	Last BridgeMaster Inspection	
Load Limit By-Law #		Last Evaluation	
By-Law Expiry Date		Last Underwater Inspection	
Min. Vertical Clearance	(m)	Last Condition Survey	

Rehab History : (Date/description)

Field Inspection Information:

Date of Inspection:	May 04, 2022
Inspector:	Tashi Dwivedi, P.Eng., (H.P. Engineering)
Others in Party:	Charlemagne Charles and Sagar Chhayani, (H.P. Engineering)
Equipment Used:	Hammer, tape, Camera, Chest waders
Weather	Sunny
Temperature	19 °C

Additional Investigations Required		Priority			Estimated Cost	
		None	Normal	Urgent		
Detailed Deck Condition Survey:						
DART Survey:						
Detailed Coating Condition Survey:						
Underwater Investigation						
Fatigue Investigation:						
Seismic Investigation:						
Rehabilitation/Replacement Study:						
Load Posting - Estimated Load		0	Total Cost			\$20,000.00

Special Notes:

Spalls with exposed corroded reinforcement noted at ends of girders. Several areas of delamination noted at underside of girders. Delamination was noted throughout soffit, and a large spall with exposed corroded reinforcement was observed at the south end of the soffit. It is recommended that this structure be replaced within 1 to 5 years.

Next Detailed Inspection:

May 2024

Municipal Structure Inspection Form

MTO Site Number

35-282

Element Data

Element Group	900	Abutments					Length		
Element Name	901	Abutment Walls					Width	5.80	
Location	North & south sides of structure								
Material	Cast-in-place concrete								
Element Type	Conventional closed	Element code	1					Height	1.70
Environment	Moderate							Count	2
Protection System	None							Total Qnty.	19.72
Condition Data	Units	Ex.	Good	Fair	Poor	Limited Insp.			
	Sq. m.	0	10.72	5	4	Suspected Performance Deficiencies			
							-	-	

Comments:
Medium vertical cracks on bottom portion of abutment wall. Medium cracks and map cracks with efflorescence at SE abutment. Northeast, southwest and northwest wingwall could not be inspected due to vegetation grown around it.

Recommended Work:	Rehab	☐	Replace	☒	Maint. Needs	-	-
	Urgent	☐	1-5 yrs	☒	Urgent	☐	1 year ☐

Element Group	1500	Signs					Length		
Element Name	1501	Sign					Width		
Location	NE, NW, SE & SW of structure								
Material	Steel								
Element Type	N/A	Element code	N/A					Height	
Environment	-							Count	10
Protection System	None							Total Qnty.	10
Condition Data	Units	Ex.	Good	Fair	Poor	Limited Insp.			
	Each	0	8	0	2	Suspected Performance Deficiencies			
							-	-	

Comments:
All signs appeared to be in generally good condition with hazard signs at SE and NW corners leaning. 4 new signs added for road closure.

Recommended Work:	Rehab	☐	Replace	☐	Maint. Needs	-	-
	Urgent	☐	1-5 yrs	☐	Urgent	☐	1 year ☐

Element Group	1600	Approaches					Length	15.00	
Element Name	1606	Barriers (app)					Width		
Location	East & west sides of structure								
Material	Steel								
Element Type	N/A	Element code	N/A					Height	
Environment	Severe							Count	4
Protection System	None							Total Qnty.	60
Condition Data	Units	Ex.	Good	Fair	Poor	Limited Insp.			
	m.	0	0	40	20	Suspected Performance Deficiencies			
							-	-	

Comments:
Light to medium checks and splits noted throughout. Severe rot noted on 16 posts. Severe impact damage at southwest and southeast, near end treatment. End treatments and barriers are substandard and should be replaced.

Recommended Work:	Rehab	☐	Replace	☒	Maint. Needs	-	-
	Urgent	☐	1-5 yrs	☒	Urgent	☐	1 year ☐

Municipal Structure Inspection Form

MTO Site Number

35-282

Element Data

Element Group	1600	Approaches					Length	6.00
Element Name	1601	Wearing surface (app)					Width	5.00
Location	North & south sides of structure							
Material	Gravel							
Element Type	N/A	Element code	N/A					
Environment	Severe							
Protection System	None							
Condition Data	Units	Ex.	Good	Fair	Poor			
	Sq. m.	0	60	0	0			
Total Qnty.	60							
Limited Insp.								
Suspected Performance Deficiencies								
-								

Comments:

The gravel wearing surface appeared to be in generally good condition with some vegetation growing along the side of roadway.

Recommended Work:	Rehab ☐	Replace ☐	Maint. Needs	-
	Urgent ☐	1-5 yrs ☐	Urgent ☐	1 year ☐

Element Group	500	Beams/MLE's					Length	5.80
Element Name	502	Floor Beams					Width	0.35
Location	Underside of structure							
Material	Cast-in-place concrete							
Element Type	Rectangular-solid	Element code	4					
Environment	Moderate							
Protection System	None							
Condition Data	Units	Ex.	Good	Fair	Poor			
	Sq. m.	0	18.71	5	5			
Total Qnty.	28.71							
Limited Insp.								
Suspected Performance Deficiencies								
1 Load Carrying capacity								

Comments:

Spalls with exposed corroded reinforcement noted at ends of girders. Several areas of delamination noted at underside of girders. Medium horizontal cracks noted at the bottom section of floor beams.

Recommended Work:	Rehab ☐	Replace ☒	Maint. Needs	-
	Urgent ☐	1-5 yrs ☒	Urgent ☐	1 year ☐

Element Group	1600	Barrier					Length	10
Element Name	1601	Deck barrier					Width	
Location	East & west sides of structure							
Material	Concrete							
Element Type	Concrete barrier wall	Element code	#N/A					
Environment	Severe							
Protection System	None							
Condition Data	Units	Ex.	Good	Fair	Poor			
	Sq. m.	0	0	0	8.5			
Total Qnty.	8.5							
Limited Insp.								
Suspected Performance Deficiencies								
8 Pedestrian & vehicular hazard								

Comments:

Severe disintegration noted throughout with exposed corroded reinforcement. Top concrete walls are severely disintegrated with exposed corroded reinforcement. Steel beam railing is placed in front of concrete wall.

Recommended Work:	Rehab ☐	Replace ☒	Maint. Needs	-
	Urgent ☐	1-5 yrs ☒	Urgent ☐	1 year ☐

Municipal Structure Inspection Form

MTO Site Number

35-282

Element Data

Element Group	500	Beams/ML's					Length	10.00
Element Name	501	Girders					Width	0.40
Location	Underside of structure					Height	1.45	
Material	Cast-in-place concrete					Count	2	
Element Type	Rectangular-solid	Element code	4			Total Qty.	82	
Environment	Severe					Limited Insp.		
Protection System	None					Suspected Performance Deficiencies		
Condition Data	Units	Ex.	Good	Fair	Poor	1	Load Carrying capacity	
	Sq. m.	0	0	41	41			

Comments:

Severe concrete deterioration noted throughout. Reinforcing steel is exposed for entire length. Localized spalls noted at underside.

Recommended Work:	Rehab	☐	Replace	☒	Maint. Needs	-	-
	Urgent	☐	1-5 yrs	☒	Urgent	☐	1 year ☐
			6-10 yrs	☐			

Element Group	100	Decks					Length	10.00
Element Name	102	Deck top					Width	5.00
Location	Top of deck					Height		
Material	Cast-in-place concrete					Count	1	
Element Type	Cast-in-place conc on supports, composite	Element code	1			Total Qty.	50	
Environment	Severe					Limited Insp.	☒	
Protection System	None					Suspected Performance Deficiencies		
Condition Data	Units	Ex.	Good	Fair	Poor	08	Pedestrian/ Vehicular Hazard	
	Sq. m.	0	23	15	12			

Comments:

The concrete deck top could not be observed at the time of the inspection due to the gravel wearing surface. Condition data is based on the condition of the deck soffit.

Recommended Work:	Rehab	☒	Replace	☐	Maint. Needs	-	-
	Urgent	☐	1-5 yrs	☒	Urgent	☐	1 year ☐
			6-10 yrs	☐			

Element Group	100	Decks					Length	9.30
Element Name	103	Soffit Thin Slab					Width	5.80
Location	Underside of deck					Height		
Material	Concrete					Count	1	
Element Type	N/A	Element code	N/A			Total Qty.	53.94	
Environment	Benign					Limited Insp.		
Protection System	None					Suspected Performance Deficiencies		
Condition Data	Units	Ex.	Good	Fair	Poor	1	Load Carrying capacity	
	Sq. m.	0	35.94	10	8			

Comments:

Several wide longitudinal cracks at corners of deck soffit. Delamination was noted throughout. A large spall with exposed corroded reinforcement was observed at the south end of the soffit.

Recommended Work:	Rehab	☐	Replace	☒	Maint. Needs	-	-
	Urgent	☐	1-5 yrs	☒	Urgent	☐	1 year ☐
			6-10 yrs	☐			

Municipal Structure Inspection Form

MTO Site Number

35-282

Element Data

Element Group	100	Decks					Length	10.00
Element Name	101	Wearing surface					Width	5.00
Location	Top of deck							
Material	Gravel							
Element Type	N/A				Element code	N/A		
Environment	Severe							
Protection System	None							
Condition Data	Units	Ex.	Good	Fair	Poor			
	Sq. m.	0	47	0	3			
Total Qnty.	50							
Limited Insp.								
Suspected Performance Deficiencies								
-								

Comments:

The gravel wearing surface was in good condition with small potholes noted throughout. Accumulation of debris / sand along the edge of roadway.

Recommended Work:	Rehab ☐	Replace ☐	Maint. Needs	12	Bridge Surface Repair
	Urgent ☐	1-5 yrs ☐	6-10 yrs ☐	Urgent ☐	1 year ☒

Element Group	1400	Embankments and Streams					Length	
Element Name	1403	Slope Protections					Width	
Location	NE, NW, SE & SW sides of structure							
Material	Other							
Element Type	Vegetation				Element code	11		
Environment	-							
Protection System	None							
Condition Data	Units	Ex.	Good	Fair	Poor			
	Each	0	0	0	0			
Total Qnty.	0							
Limited Insp.								
Suspected Performance Deficiencies								
-								

Comments:

No slope protection was observed at the time of the inspection.

Recommended Work:	Rehab ☐	Replace ☐	Maint. Needs	-	-
	Urgent ☐	1-5 yrs ☐	6-10 yrs ☐	Urgent ☐	1 year ☐

Element Group	1400	Embankments and Streams					Length	
Element Name	1401	Streams and Waterways					Width	
Location	Under structure							
Material	Other							
Element Type	N/A				Element code	N/A		
Environment	-							
Protection System	None							
Condition Data	Units	Ex.	Good	Fair	Poor			
	All	0	1	0	0			
Total Qnty.	1							
Limited Insp.								
Suspected Performance Deficiencies								
-								

Comments:

The stream flowed from west to east with low flow and a medium volume of water. No flow obstructions noted.

Recommended Work:	Rehab ☐	Replace ☐	Maint. Needs	-	-
	Urgent ☐	1-5 yrs ☐	6-10 yrs ☐	Urgent ☐	1 year ☐

Municipal Structure Inspection Form

MTO Site Number

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Element Data

Element Group	1400	Embankments and Streams				Length	
Element Name	1402	Embankments				Width	
Location	NE, NW, SE & SW of structure						
Material	Other						
Element Type	N/A	Element code	N/A				
Environment	-						
Protection System	None						
Condition Data	Units	Ex.	Good	Fair	Poor		
	Each	0	0	4	0		
						Total Qnty.	4
						Limited Insp.	
						Suspected Performance Deficiencies	
						-	-

Comments:

The embankments were very steep, well vegetated and eroded.

Recommended Work:	Rehab	☐	Replace	☐	Maint. Needs	-	-
	Urgent	☐	1-5 yrs	☐	6-10 yrs	☐	Urgent ☐ 1 year ☐

Element Group	1300	Foundations				Length	
Element Name	1301	Foundation (below ground level)				Width	
Location	Below structure						
Material	Unknown						
Element Type	Spread	Element code	4				
Environment	-						
Protection System	None						
Condition Data	Units	Ex.	Good	Fair	Poor		
	N/A	0	1	0	0		
						Total Qnty.	1
						Limited Insp.	☒
						Suspected Performance Deficiencies	
						-	-

Comments:

The foundation could not be observed at the time of the inspection. No sign of instability was noted.

Recommended Work:	Rehab	☐	Replace	☐	Maint. Needs	-	-
	Urgent	☐	1-5 yrs	☐	6-10 yrs	☐	Urgent ☐ 1 year ☐

MUNICIPAL STRUCTURE INSPECTION FORM

BRIDGE

SITE PHOTOGRAPHS

Site No.: 7-E



Photo 1 Structure from north approach



Photo 2 Structure from south approach

MUNICIPAL STRUCTURE INSPECTION FORM

BRIDGE

SITE PHOTOGRAPHS

Site No.: 7-E



Photo 3 North approach from centre of structure



Photo 4 South approach from centre of structure



Photo 5 East elevation



Photo 6 West elevation



Photo 7 Collision damage noted at west approach barrier



Photo 8 Traffic Barrier Disintegration with exposed corroded reinforcing



Photo 9 Delamination and spalls with exposed corroded reinforcing on soffit



Photo 10 Medium cracks and map cracks with efflorescence



Photo 11 Spall with exposed corroded reinforcing and efflorescence on girder & floor beam



Photo 12 Exposed corroded reinforcement with severe scaling noted at ballast wall



Photo 13 Spalls noted at south abutment and southeast wingwall interface.

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