

Appendix F

Heritage Impact Assessment

Heritage Impact Assessment

Blatchford Bridge (Structure Number B032085)

County of Wellington, Ontario

Draft Report

Prepared for:

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Archaeological Services Inc. File: 24CH-122

August 2024



Executive Summary

Archaeological Services Incorporated (A.S.I.) was contracted by Gannett Fleming Canada ULC on behalf of the County of Wellington to conduct a Heritage Impact Assessment (H.I.A.) for the Blatchford Bridge (Structure Number B032085) in the Township of Guelph/Eramosa and the Township of Puslinch, in the County of Wellington, Ontario. The H.I.A. is being undertaken as part of the Schedule B Municipal Class Environmental Assessment Study for the replacement or rehabilitation of the Blatchford Bridge. The structure is a single-span half-through (pony) truss bridge with exposed concrete deck constructed in 1949 and carries one traffic lane per direction of Wellington Road 32 over the Speed River. The structure is owned and maintained by the County of Wellington.

A Cultural Heritage Evaluation Report (C.H.E.R.) completed by A.S.I. determined that the Blatchford Bridge meets three criteria outlined in Ontario Regulation 9/06 of the *Ontario Heritage Act*, and therefore retains cultural heritage value or interest at the local level (Archaeological Services Inc., 2024). In particular, the subject bridge has physical and design value as the only surviving half-through truss bridge in the Townships of Guelph/Eramosa and Puslinch. The Blatchford Bridge has historical or associative value as it was designed by W.H. Keith, Wellington County Engineer. As the bridge was determined to have cultural heritage value or interest, the C.H.E.R. recommended that an H.I.A. be completed to provide an assessment of how the proposed work will impact the subject bridge's cultural heritage value or interest. This report fulfils that recommendation.

The property requires a Heritage Impact Assessment (H.I.A.) to provide an assessment of how the proposed work will impact the property's cultural heritage value. The recommended preferred alternative includes the complete removal of the subject bridge and replacement with a new bridge at the crossing. The subject bridge is being assessed as a requirement of the *Municipal Bridges Criteria for Evaluating Potential for Cultural Heritage Resources* (Municipal Engineers Association, 2023) and *Ontario Regulation 160/02, Standards for Bridges* (Public Transportation and Highway Improvement Act, R.S.O. 1990, c.P.50, 2002).



The recommended preferred alternative is anticipated to result in direct, permanent, negative impacts to the cultural heritage attributes of the extant structure through the complete removal of the bridge and its replacement with a reinforced precast concrete girder structure at the crossing. Mitigation measures outlined in this report have been prepared to further minimize these impacts and should be implemented as appropriate to the extent practicable to ensure impacts to the cultural heritage value of the crossing are reduced. The recommended preferred alternative is also considered to result in positive impacts by providing continued use of Wellington County Road 32 as a crossing point by allowing vehicular travel over the Speed River.

The following recommendations and mitigation measures have been developed and should be implemented:

1. Where feasible, the proposed undertaking should be designed and executed to ensure the fewest direct and permanent, non-reversible impacts to the identified heritage attributes of the subject bridge. As the proposed undertakings will result in the removal and replacement of the subject bridge, the proposed undertakings are anticipated to result in direct, permanent, non-reversible impacts to the subject bridge.
2. As rehabilitating and retaining the subject bridge was determined to be infeasible as the bridge has exceeded its service life, replacement should be carried forward with an emphasis on sympathetic design in all elements. A sympathetically-designed replacement structure at the crossing is preferred from a cultural heritage perspective, as it would reduce impacts to the historical/associative and contextual values of the crossing over the Speed River. Consideration should be given to incorporating visual elements that are representative or sympathetic with a half-through truss in the replacement superstructure. Consideration should also be given to employing concrete finishes on the parapet wall of the replacement bridge that are representative of the geometric designs of a truss, or to incorporating pedestrian railings



- that are sympathetic to the steel lattice railings, and implemented where feasible. This could be achieved through the use of a form liner with geometric patterns to evoke a truss pattern as a way to incorporate some of the Blatchford Bridge design elements into the proposed replacement bridge.
3. Prior to removal, consideration should be given to relocating the subject bridge for adaptive re-use as a pedestrian or cycling bridge at another crossing. If relocating the superstructure for re-use is determined to be infeasible based on an evaluation of the structural condition of steel elements, consideration should be given to salvaging select structural elements of the superstructure for use in rehabilitating a similar structure at another crossing or use in commemorative or interpretive displays. In this respect, the County of Wellington should investigate the feasibility of salvaging select structural elements in the superstructure including truss panels or sections with riveted connections for incorporation in a commemorative interpretation at the bridge site or in another appropriate location. The County of Wellington should also investigate the feasibility of salvaging the existing plaques to be incorporated into a future commemorative installation.
 4. To reduce negative impacts to the cultural heritage value of the crossing, suitable commemoration should be implemented. In this respect, consideration should be given to developing a commemorative installation at a suitable area near the bridge featuring information panels and photographs of the 1949 subject bridge. Consultation should be completed with the County of Wellington regarding requirements for any potential commemorative interpretation.
 5. Where interventions are undertaken that will result in alterations to construction material and fabric, documentation should be undertaken in advance of construction activities. The purpose of documentation is to record existing conditions of the structure at a level of detail for the purposes of implementing a program to reverse impacts in the future



- due to changes in technology or operational priorities. The C.H.E.R. (Archaeological Services Inc., 2024) and this H.I.A. are considered to be sufficient documentation in this regard.
6. The proposed intervention is anticipated to result in some positive impacts to the subject crossing. A replacement bridge with the inclusion of modern materials to meet modern design codes will improve the functionality and safety of the crossing for local residents while maintaining the continued crossing of the Speed River to the north of the historic rural settlement of Puslinch.
 7. The proponent should submit this report to staff at the Township of Guelph/Eramosa, the Township of Puslinch, the County of Wellington, and to the Ministry of Citizenship and Multiculturalism for review. The C.H.E.R. and this report should also be shared with the Guelph Eramosa Heritage Committee, and the Township of Puslinch Heritage Advisory Committee, Indigenous communities, and other stakeholders with an interest in this project. Any feedback will be considered and incorporated into the report, where appropriate. The final report should be submitted to the County of Wellington for future reference.

Report Accessibility Features

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



Project Personnel

- **Senior Project Manager:** Lindsay Graves, M.A., C.A.H.P., Senior Cultural Heritage Specialist, Assistant Manager - Cultural Heritage Division
- **Project Coordinator:** Jessica Bisson, B.F.A. (Hon), Cultural Heritage Technician, Division Coordinator – Cultural Heritage Division
- **Project Manager:** Kirstyn Allam, B.A. (Hon), Advanced Dipl. Applied Museum Studies, Cultural Heritage Analyst, Project Manager - Cultural Heritage Division
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- **Report Production:** Becca Clark
- **Graphics Production:** Andrew Clish, B.E.S., Senior Archaeologist - Planning Assessment Division
- **Report Reviewer(s):** Lindsay Graves, Kirstyn Allam

Additional information about Qualified Persons Involved in the Project is located in Appendix A.

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1.0 Introduction

Archaeological Services Incorporated (A.S.I.) was contracted by Gannett Fleming Canada ULC on behalf of the County of Wellington to conduct a Heritage Impact Assessment (H.I.A.) for the Blatchford Bridge (Structure Number B032085) in the Township of Guelph/Eramosa and the Township of Puslinch, in the County of Wellington, Ontario (Figure 1). The H.I.A. is being undertaken as part of the Schedule B Municipal Class Environmental Assessment Study for the replacement or rehabilitation of the Blatchford Bridge. The structure is a single-span half-through (pony) truss bridge with exposed concrete deck constructed in 1949 and carries one traffic lane per direction of Wellington Road 32 over the Speed River. The structure is owned and maintained by the County of Wellington.

A Cultural Heritage Evaluation Report (C.H.E.R.) completed by A.S.I. determined that the Blatchford Bridge meets three criteria outlined in Ontario Regulation 9/06 of the *Ontario Heritage Act*, and therefore retains cultural heritage value or interest at the local level (Archaeological Services Inc., 2024). In particular, the subject bridge has physical and design value as the only surviving half-through truss bridge in the Townships of Guelph/Eramosa and Puslinch. The Blatchford Bridge also has historical or associative value as it was designed by W.H. Keith, Wellington County Engineer. As the bridge was determined to have cultural heritage value or interest, the C.H.E.R. recommended that an H.I.A. be completed to provide an assessment of how the proposed work will impact the subject bridge's cultural heritage value or interest. This report fulfils that recommendation.

The recommended preferred alternative includes the complete removal of the subject bridge and replacement with a new bridge at the crossing. The subject bridge is being assessed as a requirement of the *Municipal Bridges Criteria for Evaluating Potential for Cultural Heritage Resources* (Municipal Engineers Association, 2023) and *Ontario Regulation 160/02, Standards for Bridges* (Public Transportation and Highway Improvement Act, R.S.O. 1990, c.P.50, 2002).



The recommended preferred alternative is anticipated to result in direct, permanent, negative impacts to the cultural heritage attributes of the extant structure through the complete removal and replacement with a reinforced precast concrete girder structure at the crossing. Mitigation measures outlined in this report have been prepared to further minimize these impacts and should be implemented as appropriate to the extent practicable to ensure impacts to the cultural heritage value of the crossing are reduced. The recommended preferred alternative is also considered to result in positive impacts by providing continued use of Wellington County Road 32 as a crossing point by allowing vehicular travel over the Speed River.

1.1 Description of Property

The Blatchford Bridge (Structure Number B032085) is a single-span half-through truss structure that carries two lanes of vehicular traffic on Wellington Road 32 over the Speed River on the border of the Township of Guelph/Eramosa and the Township of Puslinch (Figure 1 and Figure 2). The structure measures 32.4 metres in overall length and an overall width of 8.1 metres. The subject bridge was constructed in 1949 and underwent rehabilitations in 1992 and 2010. The subject structure is not identified as a listed or designated structure either township. A 2023 Ontario Structure Inspection Manual (O.S.I.M.) evaluated the bridge with a Bridge Condition Index (B.C.I.) of 62.08 and recommended rehabilitation or replacement of the bridge within one to five years (Gannett Fleming Canada ULC, 2023).

Blatchford Bridge carries two lanes of traffic on Wellington Road 32 over the Speed River. The structure is considered to be in a north-south direction and is located on the border of the Township of Guelph/Eramosa and Township of Puslinch, 0.8 kilometres south of Wellington Road 124.

During a recent inspection, the structure was found to be in poor condition with major elements showing signs of significant deterioration. Specifically, there are several significant deficiencies located on the structures' bottom chords, vertical and diagonal truss members, railings, barriers, and bearings. The County of



Wellington initiated this Municipal Class Environmental Assessment Study (Class E.A. Study) in May 2024 to document the existing structural deficiencies and identify alternative solutions, including rehabilitation or replacement of the bridge, and evaluate associated environmental impacts.

The subject bridge is adjacent to rural wooded and agricultural properties and is within a rural, agricultural landscape with industrial and commercial facilities to the north of the Speed River. The Speed River flows in a general northeast-southwest orientation at the location of the crossing.



Figure 1: Blatchford Bridge, looking west (A.S.I. 2024).



Figure 2: Location of Blatchford Bridge. Source: (c) Open Street Map contributors, Creative Commons n.d.

2.0 Draft Statement of Cultural Heritage Value

The Blatchford Bridge on the border of the Township of Guelph-Eramosa and the Township of Puslinch, within the County of Wellington meets three out of nine criteria outlined in Ontario Regulation 9/06, which considers the bridge within the local context. As such, the subject bridge should be considered to have cultural heritage value or interest at the local level. The following Statement of Cultural Heritage Value was prepared by Archaeological Services Incorporated for the Cultural Heritage Evaluation Report (C.H.E.R.) (Archaeological Services Inc., 2024). This section provides the description of the property, a description of its cultural heritage value or interest, and a list of associated heritage attributes. The bridge's location is provided in Figure 2 and Figure 3.

Description of Property

The Blatchford Bridge is a single-span half-through truss structure resting on cast-in-place concrete abutments and wingwalls. The bridge measures 32.4

metres in overall length with a width of 8.1 metres and carries vehicular traffic over the Speed River in a north-south alignment. The bridge is located on the border of the Township of Guelph-Eramosa and the Township of Puslinch, along Wellington County Road 32 between Wellington County Road 124 and Laird Road West. The Blatchford Bridge was constructed in 1949 and underwent rehabilitation in 1992 and 2010 (Gannett Fleming Canada ULC, 2023; McCormick Rankin Consulting Engineers, 1992; WSP Canada Inc., 2021).

Cultural Heritage Value

The Blatchford Bridge has physical and design value as a good representative example of an altered mid-twentieth century half-through truss bridge in the local context. Repairs and alterations made in 1992 and 2010 are sympathetic to the original design and therefore do not detract from the design value of the bridge.

Half-through (pony) truss bridges were commonly constructed in the late nineteenth and early twentieth centuries to carry roadways due to their durability, low cost, ease of construction, and readily-available construction materials. Further, their modular design meant that construction could also largely be completed by the manufacturer and delivered to site with many elements prefabricated, greatly speeding up construction. While popular in the late nineteenth and early twentieth centuries, these structures are increasingly becoming a rare feature in the Ontario landscape as they are replaced by more cost-effective concrete or steel girder structures when they reach the end of their useful service life.

The subject bridge has historical and associative value as it was designed by Wellington County Engineer W.H. Keith who contributed greatly to bridge construction and repair in the twentieth century locally.



Heritage Attributes

Physical attributes of Blatchford Bridge that express the design value of the structure include:

- The 1949 single-span half-through truss structure including truss chords, diagonals, verticals with lattice railings, date plaques, and featuring riveted connections.
- Location along Wellington Road 32 allowing vehicular traffic over the Speed River.



Figure 3: Satellite image of the subject bridge on the border of the Township of Guelph/Eramosa and the Township of Puslinch (Google Maps)

3.0 Assessment of Existing Condition

Rehabilitation drawings and the 2021 and 2023 Ontario Structure Inspection Manual (O.S.I.M.) inspection report of the subject bridge were reviewed as part of this assessment (Gannett Fleming Canada ULC, 2023; WSP Canada Inc., 2021). A field review was undertaken in May 2024 to conduct photographic documentation of the bridge crossing and to collect data relevant for completing the Cultural Heritage Evaluation Report (C.H.E.R.) of the structure. The following description of the construction, including the dates of interventions, and existing conditions is based on a combination of the results of the field review and historical background research on the subject bridge. Available rehabilitation drawings are provided in Appendix D of the C.H.E.R. (Archaeological Services Inc., 2024) along with photographic documentation of the bridge provided in Figure 9 to Figure 18 of the C.H.E.R., neither of which is duplicated in this report.

The Blatchford Bridge is a single-span half-through truss structure that carries two lanes of vehicular traffic over the Speed River on the border of the Township of Guelph-Eramosa and the Township of Puslinch. The Blatchford Bridge is located between Wellington County Road 124 and Laird Road West. The subject bridge measures 32.4 metres in overall deck length with a width of 8.1 metres (Gannett Fleming Canada ULC, 2023).

The substructure of the bridge features cast-in-place concrete abutments, ballast walls, and wingwalls. The bridge rests on steel roller bearings.

The superstructure of the subject bridge features a steel half-through truss with steel stringers; riveted plate girders; and steel riveted truss connections with rusting/perforation on top of all four supports, diagonals and verticals with corrosion at the connection plates of the railings, corrosion at the bracing panels, impact damage at the northeast and south sides, and rusting with perforation at the northeast side; as well as two plaques commemorating the date of construction and the builder of the bridge, the Dominion Bridge Company, located at the northwest and southeast corners of the bridge and a Suburban Road Commission commemoration plaque at the southeast corner.



The approaches are at grade with an asphalt wearing surface and steel flex beam on steel post guard rails. Along the north and south approaches to the bridge the maximum load allowed is marked. Signage on the south approach indicates that the bridge is prone to icing over and that the road curves ahead. There are hazard signs at the ends of both approaches (Gannett Fleming Canada ULC, 2023).

The following conditions summary of the bridge is provided in the 2023 O.S.I.M. (Gannett Fleming Canada ULC, 2023):

- The steel riveted truss connections have rusting/perforation on top of all four supports;
- Diagonals and verticals show corrosion at the connection plates of the railings, corrosion at the bracing panels, impact damage at the northeast and south sides, and rusting with perforation at the northeast side;
- Steel roller bearings with light to medium corrosion and spall near the northeast bearing;
- Cast-in-place concrete abutment walls measuring 2.45 metres high with a large spall with exposed rebars at the south abutment, a spall with exposed rebar at the east end of the south ballast wall, light scaling on the north abutment, and spall near the northeast bearing;
- Cast-in-place reinforced concrete wingwalls measuring 1.63 metres high and 4.7 metres wide with medium scaling, spalling, delamination and map cracks with efflorescence at the southwest side, spalling, delamination and cracks with efflorescence at the northwest side, and horizontal cracking and scaling at the southwest side;
- The steel lattice barriers show corrosion over approximately 50% of the railings, numerous areas of impact damage (~30% replaced), and traffic impact damage to the railing at the northeast and northwest corners; and,
- The curbs show delamination on the west curb at the south end, medium vertical cracks at the east curb, and spalls at the exterior connection with diagonal chords at the northeast and southeast sides.

According to the 2021 O.S.I.M. report, the bridge underwent a partial replacement of the lattice railing in 1992, and partial bottom chord replacement



at the northwest and southeast ends, diagonal member replacement, deck replacement, new expansion joints, structural steel coating, and rock protection in 2010 (WSP Canada Inc., 2021).

4.0 Description and Purpose of Proposed Activity

The proposed replacement of the subject bridge is being undertaken as part of the Schedule B Municipal Class Environmental Assessment Study for the replacement or rehabilitation of the Blatchford Bridge.

The preferred alternative is the complete replacement of the Blatchford Bridge at this crossing. Email communications with Gannett Fleming Canada ULC on 13 August 2024 noted that during a recent inspection, the structure was found to be in poor condition with major elements showing signs of significant deterioration. Specifically, there are several significant deficiencies located on the structures' bottom chords, vertical and diagonal truss members, railings, barriers, and bearings.

The proposed replacement structure design is for a precast concrete girder bridge with one lane in each direction of traffic with shoulders along each side. The replacement structure will have a similar span and capacity and will be in generally the same location as the subject bridge. A preliminary design drawing is included in Appendix B.

The proposed replacement bridge is anticipated to be 50 metres in overall length, which is an increase from the 38 metre overall length of the existing bridge (Gannett Fleming Canada ULC, 2024). The proposed total width is 12.6 metres, which is an increase from the 8.1 metre total width of the existing bridge. These changes are not anticipated to affect the hydraulic capacity of the structure.

The proposed replacement substructure will be a precast reinforced concrete girder bridge with concrete abutments. The abutments will be further reinforced with thick rock protection. The replacement structure will maintain the existing



alignment of Wellington Road 32 with a new, lower steel railing to replace the truss system.

5.0 Impact Assessment

5.1 Approach to Impact Assessment

To assess the potential impacts of the proposed works on the cultural heritage value of the Blatchford Bridge, the identified heritage attributes outlined in Section 2.0 were considered against a range of possible impacts. The scope of this Heritage Impact Assessment (H.I.A.) is provided by the Ministry of Citizenship and Multiculturalism's *Ontario Heritage Toolkit* (Ministry of Culture, 2006). An H.I.A. is a useful tool to help identify cultural heritage value and provide guidance in supporting environmental assessment work. As part of an H.I.A., proposed site alterations and project alternatives are analysed to identify impacts of the undertaking on the heritage resource and its heritage attributes. The impact of the proposed development on the built heritage resource (B.H.R.) or cultural heritage landscape (C.H.L.) is assessed, with attention paid to identifying potential negative impacts, which may include, but are not limited to:

- Destruction of any, or part of any, significant heritage attributes or features;
- Alteration that is not sympathetic, or is incompatible, with the historic fabric and appearance;
- Shadows created that alter the appearance of a heritage attribute or change the viability of an associated natural feature or plantings, such as a garden;
- Isolation of a heritage attribute from its surrounding environment, context or a significant relationship;
- Direct or indirect obstruction of significant views or vistas within, from, or of built and natural features;
- A change in land use (such as rezoning a church to a multi-unit residence) where the change in use negates the property's cultural heritage value;



- Land disturbances such as a change in grade that alters soils, and drainage patterns that adversely affect a cultural heritage resource, including archaeological resources.

Where negative impacts of the development on the B.H.R. or C.H.L. and/or attributes are identified, mitigative or avoidance measures or alternative development or site alteration approaches are considered.

Indirect adverse impacts are identified where activities on or near the structure may adversely affect its cultural heritage value or interest and/or heritage attributes. Positive impacts may also result where a structure's cultural heritage value or interest and/or heritage attributes is conserved or enhanced. As the subject bridge was determined to have cultural heritage value or interest, the proposed structure replacement should be planned in a manner that is visually, physically, and functionally sympathetic to the original structure at the crossing.

5.2 Impact Assessment Analysis

The results of the impact assessment are based on the information provided in the Blatchford Bridge Cultural Heritage Evaluation Report (C.H.E.R.) (Archaeological Services Inc., 2024), the 2023 and 2021 Ontario Structure Inspection Manual Inspection Report (O.S.I.M.) (Gannett Fleming Canada ULC, 2023; WSP Canada Inc., 2021), and the preliminary structural drawings provided by Gannett Fleming Canada ULC (Gannett Fleming Canada ULC, 2024). It considers possible direct adverse impacts, indirect adverse impacts, and positive impacts. See Section 2.0 for a description of the cultural heritage attributes identified for the subject bridge.

The C.H.E.R. determined the subject bridge has physical, design, and historical and associative value as the only surviving half-through truss bridge in Townships of Guelph/Eramosa and Puslinch and as a structure that was designed by Wellington County Engineer W. H. Keith. The proposed alterations to the structure involve the complete removal of the bridge, including the original 1949 half-through truss structure and the cast-in-place concrete substructure. The complete removal of the subject bridge is considered to be a direct, permanent,



negative impact to the identified cultural heritage value or interest of the structure. All physical heritage attributes which include the truss chords, diagonals, verticals with lattice webbing, date plaques, and featuring rivetted connections are anticipated to be completely removed.

While the proposed removal of the subject bridge will negatively impact the physical, design, and historical/associative value of the subject bridge, a sympathetically-designed replacement bridge with suitable commemoration and interpretation highlighting the physical design of the bridge and its connection to W.H. Keith, would lessen some of the impacts of the loss of the structure and provide an opportunity to highlight Keith's significance in Wellington County. Currently the proposed replacement reinforced precast concrete girder structure is not considered to be sympathetically designed.

The proposed replacement substructure will be cast-in-place reinforced concrete girder bridge with concrete abutments with thick rock protection. This is a significant change from the 1949 structure, which features concrete abutments that are perpendicular to the watercourse and appear to lack thick rock protection or other bank stabilization. The replacement cast-in-place concrete abutments are not considered to be sympathetic to the 1949 structure.

6.0 Considered Alternatives and Mitigation Measures

Where feasible, the preferred alternative for any bridge with identified cultural heritage value or interest should involve rehabilitating and retaining the structure in situ to maintain the physical/design value, historical, and contextual values of the bridge and crossing. Retention and sympathetic rehabilitation with allowances made for inclusion of modern materials to meet current design and safety codes is the preferred option from a heritage perspective as it would retain the heritage attributes identified in Section 2.0 and retain the physical and design value of the subject bridge.



As the subject bridge has exceeded its intended service life, continued rehabilitation is not considered to be a cost-effective long-term solution due to the number of elements in need of replacement to ensure public safety. As such, the option to rehabilitate or repurpose has been eliminated from consideration as it does not suitably fulfil the problem statement. The preferred alternative including replacement with a new structure was determined to be the preferred option when weighted against all evaluation criteria (email communication with Gannett Fleming Canada ULC 13 August 2024).

The preferred alternative will result in direct, negative, permanent impacts to the cultural heritage value of the structure through the removal of the 1949 half-through truss structure and the cast-in-place concrete substructure, as well as all physical heritage attributes which include the truss chords, diagonals, verticals with lattice webbing, and featuring rivetted connections. A sympathetically-designed replacement bridge would maintain this historical bridging point over the Speed River and provide the crossing that is required in the rural agricultural context.

As the retention of the subject bridge following rehabilitation was demonstrated to be infeasible, complete removal with construction of a replacement structure should be considered as a suitable means of reducing the impacts to the historical/associative value of the crossing. A sympathetic replacement superstructure should be considered to be compatible with the style and character of the subject bridge, be based on physical and documentary evidence such as photographs and original structural drawings, and be mindful of the context, scale, massing, and material of the original structure (Ministry of Culture and Ministry of Transportation, 2008). In this respect, the proposed replacement with a concrete girder bridge with a larger scale and massing than the original bridge, on the same alignment, is not considered to be a sympathetic replacement structure type. Consideration should be given to incorporating visual elements that are representative or sympathetic with a half-through truss in the replacement superstructure. Consideration should also be given to employing concrete finishes on the parapet wall of the replacement bridge that are representative of the geometric designs of a truss, or to incorporating pedestrian

railings that are sympathetic to the steel lattice railings, and implemented where feasible. This could be achieved through the use of a form liner with geometric patterns to evoke a truss pattern as a way to incorporate some of the Blatchford Bridge design elements into the proposed replacement bridge.

To reduce negative impacts to the cultural heritage value of the crossing, the development of suitable commemoration should be considered. A replacement bridge featuring suitable commemoration and interpretation would sufficiently reduce negative impacts to the historical and associative value of the crossing as it will continue to serve as a crossing point over the Speed River to the north of the historic rural settlement of Puslinch. Consultation should be completed with the County of Wellington regarding commemorative interpretation.

Prior to removal, consideration should be given to relocating the subject bridge for adaptive re-use as a pedestrian or cycling bridge at another crossing. If relocating the superstructure for re-use is determined to be infeasible based on an evaluation of the structural condition of steel elements, consideration should be given to salvaging select structural elements of the superstructure for use in rehabilitating a similar structure at another crossing or use in commemorative or interpretive displays. In this respect, the County of Wellington should investigate the feasibility of salvaging select structural elements in the superstructure including truss panels or sections with riveted connections for incorporation in a commemorative interpretation at the bridge site or in another appropriate location. The County of Wellington should also investigate the feasibility of salvaging the existing plaques to be incorporated into a future commemorative installation.

Prior to removal, full recording of the structure would ensure proper documentation for archival purposes and ensure suitable material is available for inclusion with a commemoration strategy. The C.H.E.R. (Archaeological Services Inc., 2022) and this H.I.A. are considered to be sufficient documentation.



7.0 Summary of Background Information Gathering

Information gathering and engagement with municipal and provincial authorities, Indigenous Nations, and other stakeholders was completed as part of the Blatchford Bridge (Structure Number B032085) Cultural Heritage Evaluation Report (C.H.E.R.) in June 2024, and included email communications with planning staff at the Township of Guelph/Eramosa, the Township of Puslinch, planning staff at the County of Wellington, the Ministry of Citizenship and Multiculturalism, and the Ontario Heritage Trust (see Section 2.1 of the C.H.E.R. for a full record of consultation). Information gathering determined that the subject bridge was not listed by the municipality, designated under Part IV of the *Ontario Heritage Act*, or subject to any other level of heritage recognition. Further, no properties directly adjacent to the bridge have any heritage recognition.

The Notice of Commencement for this project was submitted by Gannett Fleming Canada ULC to Indigenous Nations that have an interest in the subject bridge. No feedback had been received by Gannett Fleming Canada ULC regarding the cultural heritage component of this project at the time of report submission. Any feedback received from Indigenous groups during the anticipated public engagement will be incorporated into this report as appropriate.

Additional community engagement will be undertaken through submission of this report for review and comment to municipal planning staff, the Ministry of Citizenship and Multiculturalism, and any other relevant stakeholders with an interest in this project. Engagement will also be undertaken through public meetings conducted as part of the. This report should also be shared with the Township of Guelph Eramosa Historical Society, the Puslinch Heritage Committee, Indigenous communities, and other stakeholders with an interest in this project. This section will be updated following receipt of any feedback, and the report updated as appropriate.



8.0 Recommendations

The recommended preferred alternative is anticipated to result in direct, permanent, negative impacts to the cultural heritage attributes of the extant structure through the complete removal of the bridge and its replacement with a reinforced precast concrete girder structure at the crossing. As the retention of the subject bridge following rehabilitation was demonstrated to be infeasible, complete removal with construction of a sympathetically-designed replacement structure and the development of suitable commemoration or interpretation, including the salvage of the existing plaques, should be carried forward.

Mitigation measures outlined in this report have been prepared to further minimize these impacts and should be implemented as appropriate to the extent practicable to ensure impacts to the cultural heritage value of the crossing are reduced. The recommended preferred alternative is also considered to result in positive impacts by providing continued use of Wellington County Road 32 as a crossing point by allowing vehicular travel over the Speed River.

The following recommendations and mitigation measures have been developed and should be implemented:

1. Where feasible, the proposed undertaking should be designed and executed to ensure the fewest direct and permanent, non-reversible impacts to the identified heritage attributes of the subject bridge. As the proposed undertakings will result in the removal and replacement of the subject bridge, the proposed undertakings are anticipated to result in direct, permanent, non-reversible impacts to the subject bridge.
2. As rehabilitating and retaining the subject bridge was determined to be infeasible as the bridge has exceeded its service life, replacement should be carried forward with an emphasis on sympathetic design in all elements. A sympathetically-designed replacement structure at the crossing is preferred from a cultural heritage perspective, as it would reduce impacts to the historical/associative and contextual values of the



- crossing over the Speed River. In this respect, the proposed replacement concrete girder bridge is not considered to be a suitably sympathetic replacement. Consideration should be given to incorporating visual elements that are representative or sympathetic with a half-through truss in the replacement superstructure. Consideration should also be given to employing concrete finishes on the parapet wall of the replacement bridge that are representative of the geometric designs of a truss, or to incorporating pedestrian railings that are sympathetic to the steel lattice railings, and implemented where feasible. This could be achieved through the use of a form liner with geometric patterns to evoke a truss pattern as a way to incorporate some of the Blatchford Bridge design elements into the proposed replacement bridge.
3. Prior to removal, consideration should be given to relocating the subject bridge for adaptive re-use as a pedestrian or cycling bridge at another crossing. If relocating the superstructure for re-use is determined to be infeasible based on an evaluation of the structural condition of steel elements, consideration should be given to salvaging select structural elements of the superstructure for use in rehabilitating a similar structure at another crossing or use in commemorative or interpretive displays. In this respect, the County of Wellington should investigate the feasibility of salvaging select structural elements in the superstructure including truss panels or sections with riveted connections for incorporation in a commemorative interpretation at the bridge site or in another appropriate location. The County of Wellington should also investigate the feasibility of salvaging the existing plaques to be incorporated into a future commemorative installation.
 4. To reduce negative impacts to the cultural heritage value of the crossing, suitable commemoration should be implemented. In this respect, consideration should be given to developing a commemorative installation at a suitable area near the bridge featuring information panels and photographs of the 1949 subject bridge. Consultation should



be completed with the County of Wellington regarding requirements for any potential commemorative interpretation.

5. Where interventions are undertaken that will result in alterations to construction material and fabric, documentation should be undertaken in advance of construction activities. The purpose of documentation is to record existing conditions of the structure at a level of detail for the purposes of implementing a program to reverse impacts in the future due to changes in technology or operational priorities. The C.H.E.R. (Archaeological Services Inc., 2024) and this H.I.A. are considered to be sufficient documentation in this regard.
6. The proposed intervention is anticipated to result in some positive impacts to the subject crossing. A replacement bridge with the inclusion of modern materials to meet modern design codes will improve the functionality and safety of the crossing for local residents while maintaining the continued crossing of the Speed River to the north of the historic rural settlement of Puslinch.
7. The proponent should submit this report to staff at the Township of Guelph/Eramosa, the Township of Puslinch, the County of Wellington, and to the Ministry of Citizenship and Multiculturalism for review. The Cultural Heritage Evaluation Report and this report should also be shared with the Guelph Eramosa Heritage Committee, and the Township of Puslinch Heritage Advisory Committee, Indigenous communities, and other stakeholders with an interest in this project. Any feedback will be considered and incorporated into the report, where appropriate. The final report should be submitted to the County of Wellington for future reference.

9.0 References

Archaeological Services Inc. (2022). Cultural Heritage Evaluation Report Indian River Bridge (Structure 099017) Township of Douro-Dummer and Township of Otonabee-South Monaghan County of Peterborough, Ontario.

Archaeological Services Inc. (2024). Cultural Heritage Evaluation Report: Blatchford Bridge (Structure Number B032085) [C.H.E.R.].

Gannett Fleming Canada ULC. (2023). Wellington County Blatchford Bridge B032085 2023 OSIM Inspection.

Gannett Fleming Canada ULC. (2024). Structural Drawings, Blatchford Bridge Structure No. B032085.

McCormick Rankin Consulting Engineers. (1992). Blatchford Bridge Repair Rehabilitation Drawings [Architectural Drawings].

Ministry of Culture. (2006). Property Evaluation.
http://www.mtc.gov.on.ca/en/publications/Heritage_Tool_Kit_HPE_Eng.pdf

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

Municipal Engineers Association. (2023, April 27). Municipal Bridges Criteria for Evaluating Potential for Cultural Heritage Resources (revised April 27, 2023).

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

WSP Canada Inc. (2021). Blatchford Bridge Municipal Structure Inspection Form.



Appendix A: Qualified Persons Involved in the Project

Lindsay Graves, M.A., C.A.H.P.

Senior Cultural Heritage Specialist, Assistant Manager - Cultural Heritage Division

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

Kirstyn Allam, B.A. (Hon), Advanced Dipl. in Applied Museum Studies

Cultural Heritage Analyst - Cultural Heritage Division

The Project Manager for this Cultural Heritage Evaluation Report is **Kirstyn Allam** (B.A. (Hon.), Advanced Diploma in Applied Museum Studies), who is a Cultural Heritage Analyst and Project Manager within the Cultural Heritage



Division. She was responsible for the day-to-day management activities, including scoping of research activities and site surveys and drafting of study findings and recommendations. Kirstyn Allam's education and experience in cultural heritage, historical research, archaeology, and collections management has provided her with a deep knowledge and strong understanding of the issues facing the cultural heritage industry and best practices in the field. Kirstyn has experience in heritage conservation principles and practices in cultural resource management, including three years' experience as a member of the Heritage Whitby Advisory Committee. Kirstyn also has experience being involved with Stage 1-4 archaeological excavations in the Province of Ontario. Kirstyn is an intern member of the Canadian Association of Heritage Professionals (C.A.H.P.).

Becca Clark, B.A. (Hons)

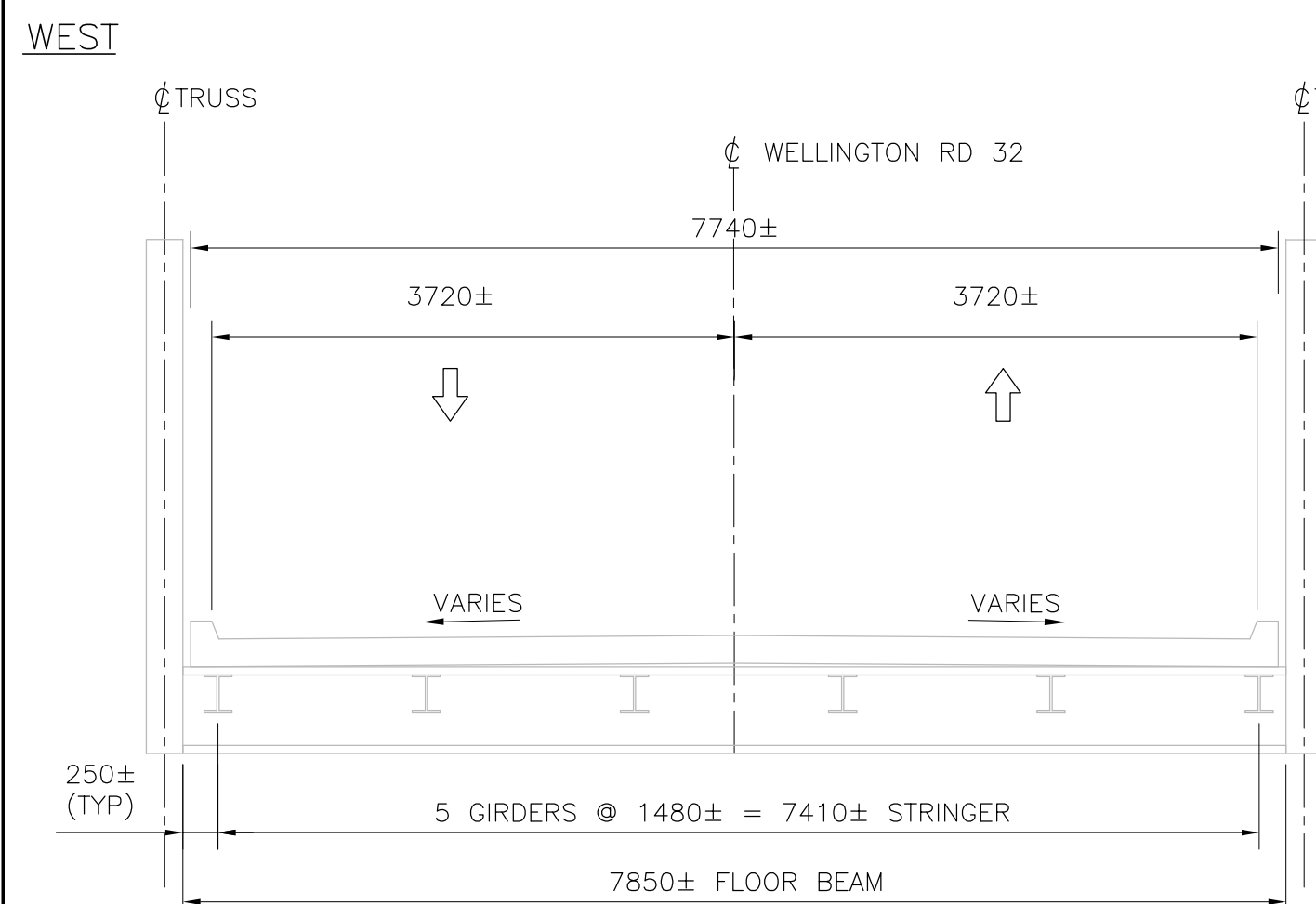
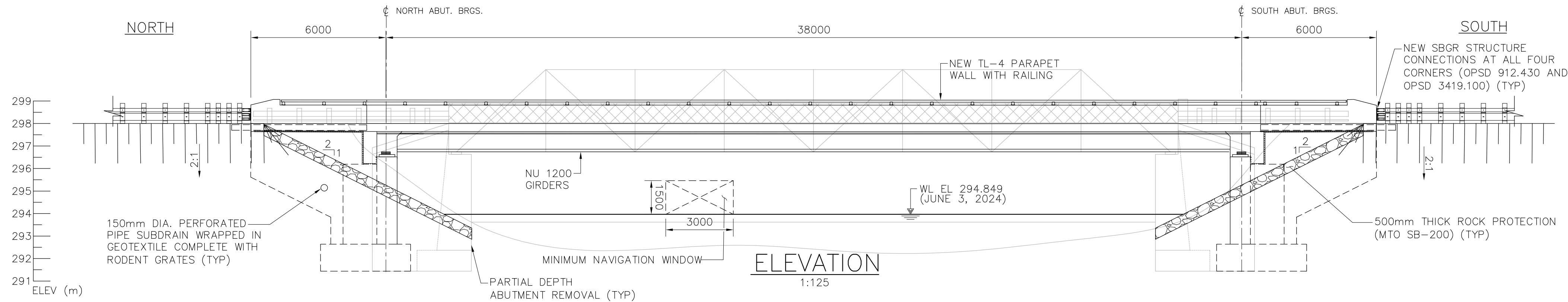
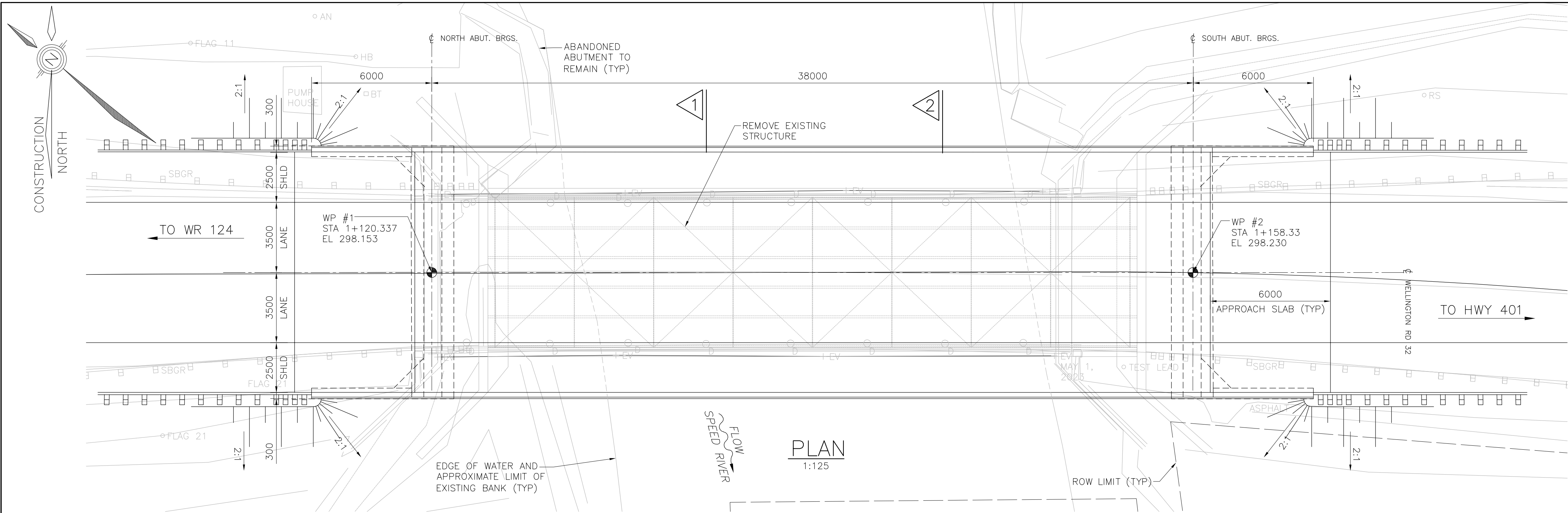
Cultural Heritage Technical Writer and Researcher - Cultural Heritage Division

The Cultural Heritage Technician for this project is Becca Clark (B.A. Hons, Adv. Diploma Applied Museum Studies), who is a Cultural Heritage Technical Writer and Researcher and Project Administrator within the Cultural Heritage Division. She was responsible for preparing research and technical reporting. With her educational and working background, Becca provides an understanding of Ontario history and built heritage as well as skilled research and analysis. Her time as a museum professional focused on local history in Southern Ontario and how it may be represented by objects and built heritage. In 2021, Becca researched, designed, and produced the Guelph Civic Museum's exhibition "The Origin of Fan: Folding Form and Function". She has since translated her knowledge of Southern Ontario's history into built heritage research. In 2023, she joined ASI's Cultural Heritage team as a Cultural Heritage Technician.

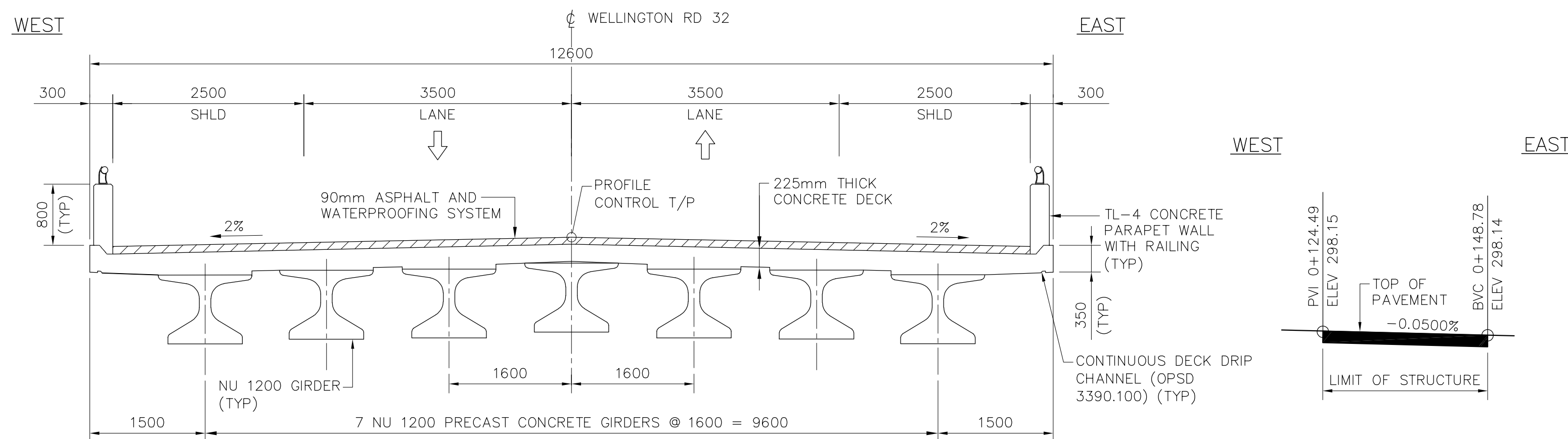


Appendix B: Preliminary Design for Replacement Bridge





1 TYPICAL EXISTING SECTION
1:50



2 TYPICAL PROPOSED SECTION
1:50

PROFILE OF COUNTY RD 32
N.T.S.

GENERAL NOTES:

DESIGN CODE:

CHBDC 2019 CAN/CSA S6-19 LIVE LOAD: CL-625-ONT

CLASS OF CONCRETE:

ALL CONCRETE UNLESS OTHERWISE NOTED 35 MPa.
CLASS C-1 PER CSA 23.1

CLEAR COVER TO REINFORCING STEEL:

DECK:	TOP	70 ±	20
	BOTTOM	40 ±	10
REMAINDER, UNLESS OTHERWISE NOTED:		70 ±	20

REINFORCING STEEL:

- REINFORCING STEEL SHALL BE WELDABLE GRADE 500W.
- UNLESS SHOWN OTHERWISE, TENSION LAP SPLICES FOR REINFORCING STEEL BARS SHALL BE CLASS B.
- STAINLESS REINFORCING STEEL SHALL BE TYPE 316LN OR DUPLEX 2205 AND HAVE A MINIMUM YIELD STRENGTH OF 500MPa, UNLESS OTHERWISE SPECIFIED.
- BAR MARKS WITH PREFIX 'S' DENOTE STAINLESS STEEL BARS.
- BAR MARKS WITH PREFIX 'G' DENOTE GRADE III GLASS FIBRE REINFORCED POLYMER BARS (E=60GPa).
- GLASS FIBRE REINFORCED POLYMER REINFORCING BARS SHALL BE GRADE I, GRADE II, OR GRADE III AS SPECIFIED IN THE CONTRACT DRAWINGS. THE NOMINAL DIAMETER, TENSILE MODULUS OF ELASTICITY AND GUARANTEED MINIMUM TENSILE STRENGTH SHALL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS.
- BAR HOOKS SHALL HAVE STANDARD HOOK DIMENSIONS USING MINIMUM BEND DIAMETERS, WHILE STIRRUPS AND TIES SHALL HAVE MINIMUM HOOK DIMENSIONS. ALL HOOKS SHALL BE IN ACCORDANCE WITH THE STRUCTURAL STANDARD DRAWINGS SS12-1 AND SS12-2, UNLESS INDICATED OTHERWISE.

CONSTRUCTION NOTES:

- THE CONTRACTOR SHALL ESTABLISH THE BEARING SEAT ELEVATIONS BY DEDUCTING THE ACTUAL BEARING THICKNESSES FROM THE TOP OF BEARING ELEVATIONS. IF THE ACTUAL BEARING THICKNESSES ARE DIFFERENT FROM THOSE GIVEN WITH DRAWINGS, THE CONTRACTOR SHALL ADJUST THE REINFORCING STEEL TO SUIT.
- NO BACKFILL SHALL BE PLACED BEHIND END OF DECK UNTIL DECK SLAB IS IN PLACE AND HAS REACHED 70% OF ITS DESIGN STRENGTH
- BACKFILL SHALL BE PLACED SIMULTANEOUSLY BEHIND BOTH ABUTMENTS KEEPING THE HEIGHT OF THE BACKFILL APPROXIMATELY THE SAME. AT NO TIME SHALL THE DIFFERENCE IN ELEVATION BE GREATER THAN 500mm.
- CONSTRUCT ABUTMENTS AND WINGWALLS TO THE BEARING SEAT ELEVATIONS. THE CONTRACTOR SHALL SUPPLY TEMPORARY LATERAL BRACING FOR THE ABUTMENTS. FORMWORK AND LATERAL BRACING SHALL NOT BE REMOVED UNTIL CONCRETE HAS REACHED 70% OF ITS SPECIFIED STRENGTH
- SUBDRAINS SHALL BE EXTENDED TO THE LIMIT OF GRADING FROM SLOPE TO SLOPE AND INSTALLED COMPLETE WITH RODENT GRATING (TYPICAL).
- ROCK PROTECTION (MTO WB-200) TO BE PLACED TO A MINIMUM DEPTH OF 500mm AS SHOWN. WB-200 LAYER TO BE TOP DRESSED WITH A 100mm THICK LAYER OF TABLE A SUBSTRATE.

LIST OF DRAWINGS:

- GENERAL ARRANGEMENT

LIST OF ABBREVIATIONS:

BRGS DENOTES BEARINGS
WP DENOTES WORKING POINT
T/P DENOTES TOP OF PAVEMENT
T/FTG. DENOTES TOP OF FOOTING
HWL DENOTES HIGH WATER LEVEL
SBGR DENOTES STEEL BEAM GUIDE RAIL
SHLD DENOTES SHOULDER

APPLICABLE STANDARD DRAWINGS:

OPSD - 0219.130 HEAVY DUTY SILT FENCE BARRIER
OPSD - 0219.180 STRAW BALE FLOW CHECK DAM
OPSD - 0219.240 DEWATERING TRAP
OPSD - 0219.260 TURBIDITY CURTAIN
OPSD - 0219.261 TURBIDITY CURTAIN, SEAM DETAIL
OPSD - 0912.430 GUIDE RAIL SYSTEM, STEEL BEAM STRUCTURE CONNECTION
OPSD - 3101.150 WALLS, ABUTMENT, BACKFILL MINIMUM GRANULAR REQUIREMENT
OPSD - 3102.100 WALLS, ABUTMENT, BACKFILL DRAIN
OPSD - 3190.100 WALLS, RETAINING AND ABUTMENT WALL DRAIN
OPSD - 3370.100 DECK, WATERPROOFING HOT APPLIED ASPHALT MEMBRANE WITH PROTECTION BOARD
OPSD - 3390.100 DECK DRIP CHANNEL
OPSD - 3419.100 BARRIERS AND RAILINGS STEEL GUIDE RAIL AND CHANNEL ANCHORAGE
OPSD - 3950.100 CONCRETE EXPANSION AND CONSTRUCTION JOINT ON STRUCTURE.

THESE DESIGN DOCUMENTS ARE PREPARED SOLELY FOR THE USE BY THE PARTY WITH WHOM THE DESIGN PROFESSIONAL HAS ENTERED INTO A CONTRACT AND THERE ARE NO REPRESENTATIONS OF ANY KIND MADE BY THE DESIGN PROFESSIONAL TO ANY PARTY WITH WHOM THE DESIGN PROFESSIONAL HAS NOT ENTERED INTO A CONTRACT.



SCALE	SCALE	DESIGNED	DESIGNED BY
DATE	DATE	CHECKED	WVR
DRAFTING	SC	DESIGN CODE	CAN/CSA S6-19
CHECKED	WVR		Project
FIELD BK.	PAGE	PROJECT	
BENCH M	297.058, 301.051		

COUNTY OF WELLINGTON
REPLACEMENT OF
BLATCHFORD BRIDGE
STRUCTURE NO. B032085

GENERAL ARRANGEMENT

CW2024-0XX

PROJECT NO.

DRAWING NO.

S1