

To: Economic and Development Services Committee

From: Warren Munro, HBA, MCIP, RPP, Commissioner,
Economic and Development Services Department

Report Number: ED-23-155

Date of Report: September 6, 2023

Date of Meeting: September 11, 2023

Subject: Farewell Park and Knights of Columbus Pedestrian Structure
MS-4-2023

Ward: Ward 3

File: 03-05

1.0 Purpose

On May 5, 2023, the Economic and Development Services Committee considered Item ED-23-113 and passed the following motion:

“Whereas the pedestrian bridge over the Harmony Creek on the east side of the Knights of Columbus Park was inspected in 2021 and it the structural deficiencies noted that it would need replacement within the next five years; and,

Whereas based on the 2021 Inspection Report the replacement was identified in the Capital Forecast as Project 71-0076 to request design approval funding in the 2024 budget and replacement in the 2025 budget; and,

Whereas during maintenance activities Parks staff have found accelerated deterioration of the substructure and have now closed the bridge; and,

Whereas this bridge is the only direct access to the Knights of Columbus Park for residents and visitors on the east side of the Park and from the Harmony Creek Trail located between the Harmony Creek and Riverside Drive;

Therefore be it resolved that staff be directed to investigate the cost and timelines to have this bridge replaced as soon as possible through a Design Build process and report back to Committee no later than the September 11th, 2023 meeting.”

The purpose of this Report is to respond to the above noted direction.

Attachment 1 to this Report is an air photo showing the location of the pedestrian bridge over the Harmony Creek in the Knights of Columbus Park.

Attachment 2 is a copy of the Structural Integrity Assessment (the Assessment) dated July 26, 2023 and prepared by TSI Inc. for the pedestrian bridge over the Harmony Creek in the Knights of Columbus Park.

2.0 Recommendation

That the Economic and Development Services Committee recommend to City Council that Report ED-23-155 dated September 6, 2023 concerning the infrastructure needs for the Pedestrian Bridge MS-4-2023 located in Knights of Columbus Park be recommended to the Mayor for consideration in the 2024 Budget deliberations.

3.0 Executive Summary

The Farewell Park and Knights of Columbus Pedestrian Footbridge over Harmony Creek provides an Active Transportation link from Riverside Drive South to Farewell Street.

The structure was closed in 2023 due to safety concerns.

The structure is currently forecasted for replacement in 2025 based on information from the 2021 Biennial inspection report.

The estimated cost of replacement is \$630,000 plus H.S.T.

4.0 Input From Other Sources

The following have been consulted in the preparation of this Report:

- Chief Administrative Officer
- Commissioner, Corporate and Finance Services

5.0 Analysis

5.1 Background

The City owns and maintains bridges and culverts to support the service of transportation and the movement of goods and people throughout the City.

The City manages a variety of assets including 71 road bridges and 41 pedestrian bridges as defined by the *Bridges Act, R.S.O., c. B.12* all of which are referred to as structures within this Report.

The City's structures inventory is collected and tracked through the City's corporate Geographic Information System (G.I.S.).

5.2 Regulatory Requirements

Ontario Regulation 104/97 made under the *Public Transportation and Highway Improvement Act, R.S.O. 1990, c. P.50* requires that:

“The structural integrity, safety and condition of every bridge shall be determined through the performance of at least one inspection in every second calendar year under the direction of a professional engineer and in accordance with the Ontario Structure Inspection Manual. O. Reg. 472/10, s. 2.”

Bridges and culverts with a span greater than 3.0 metres (32.29 ft.) are classified as structures and must be inspected once every two years, in accordance with Ontario Regulations 104/97. The pedestrian bridge over the Harmony Creek in the Knights of Columbus Park (Pedestrian Structure MS-4-2023) has a span of 17.7 metres (68.07 ft.) and is consequently inspected every two years as part of the Biennial Structural Inspection Program.

5.3 Parks Operations

In addition to the Biennial Structural Inspection Program, Parks Operations performs the operations and maintenance activities listed below:

- Trail and bridge visually inspected every 30 days.
- No Winter Control Operations on the bridge. Winter Control Operations is performed on the Harmony Creek Trail adjacent to pedestrian bridge.
- Pedestrian bridges are visually inspected and maintained as part of the trail system.

As a result of the visual inspection of the bridge in March 2023, the pedestrian bridge was closed on March 28, 2023.

5.4 Infrastructure Planning

The City applies a systematic process that facilitates decision-making in regards to the construction, acquisition, operation, maintenance, renewal, replacement, and disposition of assets in the most cost-effective manner. Considering whole life costs, climate change and adaptation, and risk.

The City currently uses the Bridge Condition Index (B.C.I.) system to assess the condition and state of repair of structures. The B.C.I. as prescribed by the Ministry of Transportation (M.T.O.) is shown below:

- $B.C.I. = (Current\ Residual\ Value) / (Replacement\ Value) \times 100$

The Biennial Structure Inspection Program assesses condition and aides in the development of both maintenance and capital reinvestment programs. The last biennial inspection for Pedestrian Structure MS-4-2023 was undertaken in 2021 and recommended replacement in 2025. The 2023 Biennial Structure Inspection Program report will not be

ready until after the September 11, 2023 Economic and Development Services Committee meeting.

The B.C.I. does not directly indicate if a structure is safe but indicates the general state of repair or condition of a structure.

5.5 2023 Biennial Structural Inspection Program and Structural Integrity Assessment

The purpose of the 2023 Biennial Structural Inspection Program is to provide an updated assessment of the City's bridges and culverts and provide data and information for both infrastructure planning and asset management consistent with the requirements of Ontario Regulation 104/97.

However, as noted earlier, the City's 2023 Biennial Structural Inspection Program will not be concluded until after the September 11, 2023 Economic and Development Services Committee meeting.

Accordingly, in advance of the 2023 Biennial Structural Inspection Program report, City staff retained TSI Inc. to prepare the Assessment of the pedestrian bridge over the Harmony Creek in the Knights of Columbus Park. The Assessment has confirmed that:

- the bridge has an overall poor condition with severe corrosion, perforation and localized failure of certain elements;
- the bridge should remain closed until it is replaced;
- the existing bridge superstructure should be removed from the site to reduce liability; and,
- the existing foundation is in a good overall condition and may be in good enough condition to support a new bridge superstructure.

5.6 Pedestrian Structure MS-4-2023

Pedestrian Structure MS4-2023 is an important/crucial asset that connects the east and west communities that are segregated by the Harmony Creek and provides easier access for residents west of Farewell Street to the Harmony Creek Trail.

There are multiple active transportation facilities along the west side of Harmony Creek. Structure MS-4-2023 facilitates a connection between these facilities and the Harmony Creek Trail. Furthermore, it completes the only east-west connection between the Joseph Kolodzie Oshawa Creek Bike path and Harmony Creek Trail via the Athol Street cycle track.

The bridge also provides the residents west of Farewell Street with easier and shorter access to both transit services along Harmony Road and the Donevan Recreation complex.

Infrastructure details:

- Pedestrian Structure MS4-2023 (pedestrian bridge over Harmony Creek at Knights of Columbus Park);
- Originally constructed in 1970;
- Span 17.7 metres (58.07 ft.);
- Structure width 2.0 metres (6.56 ft.); and,
- Replacement Value \$630,000 plus H.S.T. (2023 dollars, Class D estimate).

Based on current 2021 Biennial Structural Inspection Report, Structure MS-4-2023 is generally in fair to poor condition. Evidence of severe corrosion and perforation was noted on floor beams, truss bottom chords, and stringers. Moreover, severe corrosion and section loss was noted on bracings.

Based on current 2021 Biennial Structural Inspection Report, the pedestrian bridge at Farewell Park and Knights of Columbus Park is forecasted to be replaced in 2025 at a cost of \$630,000 plus H.S.T. (Class D Estimate), with design forecasted in 2024 at a cost of \$60,000.

- From a simple condition perspective using the B.C.I. rating, the structure is ranked 16 out of 112.
- The sum of the structures ahead in priority is estimated to be \$14,485,000.00 of needs combined based on the current forecast.

6.0 Financial Implications

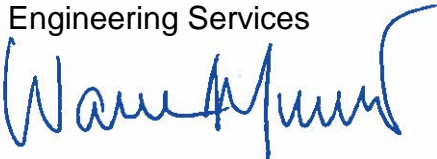
There are no financial implications as a result of this Report.

7.0 Relationship to the Oshawa Strategic Plan

The Recommendation in this Report advances the goal of Economic Prosperity and Financial Stewardship goal of the Oshawa Strategic Plan.



Anthony Ambra, P.Eng., Director,
Engineering Services




Warren Munro, HBA, MCIP, RPP, Commissioner,
Economic and Development Services Department

Subject: Farewell Park and Knights of Columbus Pedestrian Structure MS-4-2023
Address: 725 King Street East
Ward: Ward 3
File: 03-05

Item: ED-23-155
Attachment 1

 Pedestrian Bridge

City of Oshawa
Economic and Development Services 



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MEMORANDUM

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July 26, 2023

**Item: ED-23-155
Attachment 2**

**City of Oshawa
50 Centre St. S.
Oshawa, ON L1H 3Z7**

**Attn: Mark Taylor
Infrastructure Program Technologist
(Via Email: mttaylor@oshawa.ca)**

**Re: Structural Integrity Assessment of Farewell Park Pedestrian Footbridge Over Harmony Creek
(Site # MS-4-2023)**

Dear Mark,

At the request of the City, a detailed site assessment of Farewell Park Pedestrian Footbridge Over Harmony Creek (Site # MS-4-2023) was undertaken by a Senior Bridge Engineer from TSI Inc. to examine the bridge's current condition and structural integrity. This technical memorandum outlines the major findings of the noted inspection.

1. INTRODUCTION:

The pedestrian bridge subject of this technical memorandum (Site # MS-4-2023) is located at Farewell Park/Knights of Columbus Park at the exact geographic coordinates of (43.90092707, -78.8364724) (See **Figure 1: Key Plan**)

The bridge has recently been closed to the public due to safety concerns (exact date of closure is unknown) (**Figure 2**). At the time of previous biennial inspection (2021) the bridge was open to the public. Nonetheless, the findings of the OSIM inspection report (TSI Inc, 2021) highlighted the urgent need for bridge replacement (proposed time frame 1-5 year) due to the overall poor condition of the bridge and severe corrosion, perforation and localized failure of certain bridge deck elements at the time.

At the request of the City, and subsequent to the completion of the 2023 biennial inspection, a close-up (enhanced) inspection of the bridge was completed by a Senior Bridge Engineer, to examine its current condition and the status of its structural integrity in order to provide a "professional" opinion on the feasibility of temporary re-opening the bridge to the public until the bridge is replaced.



Figure 1: Key Plan: Fawcett Park Pedestrian Footbridge Over Harmony Creek (Site # MS-4-2023)



Figure 2: Bridge Closed to the Public

2. MAJOR FINDINGS

Upon completion of the close-up (enhanced) inspection of the bridge, it was noted that certain areas of the deck (full width) have completely failed due to severe corrosion of steel superstructure elements (main beams, transverse beams, diagonal bracings). It was further noted that the plank insert section of the peripheral stringers are also fully perforated, thus resulting in a lack of any support for certain planks and unsafe support for the rest. **Figures 3 to 7** below further illustrate some of the noted deficiencies.



Figure 3: Localized Failure of Bridge Deck Framing and Loss of Planks due to Severe Corrosion- Deck-top View



Figure 4: Localized Failure of Bridge Deck Framing and Loss of Planks due to Severe Corrosion- Soffit View



Figure 5: Severe Corrosion and Failure of Plank Insert Support at Peripheral Stringers



Figure 6: Medium Erosion along Riverbank



Figure 7: Medium to Severe Erosion along Riverbank (Abutment Embankment)



MEMORANDUM

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3. RECOMMENDATIONS

Based on the noted current condition of the bridge, its re-opening to the public is NOT recommended.

Further, the barriers installed in place may not be deemed sufficiently deterrent for certain public deciding to cross the bridge ignoring the restrictive railings and posting installed and hence may result in further liability facing the City. Ongoing deterioration of the bridge superstructure may also result in deleterious debris entering the waterway. It is highly recommended that the existing bridge superstructure should be removed from the site to mitigate any further liability towards the City.

The existing foundation system (side abutments) were found to be in an overall good condition and the new bridge superstructure could therefore be designed (in theory) to be installed on the existing foundation system. Having said that, the City may need to retain a Consulting Engineer to design the new structure based on the implications of the new Code released by CSA. The new design may require undertaking a drainage study and topographic/bathymetric survey to ensure new structure will be compliant with the new Code requirements and the noted medium embankment erosion at the site is addressed properly at the time.

Given the urgency of the need, TSI Inc. would be pleased to assist the City with this design, if deemed necessary.

Respectfully Submitted,

Ramin Rameshni, PhD, P.Eng.

Lead Bridge Engineer

TSI Inc.



Encl.: 2021 & 2023 OSIM Inspection Reports