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<b>TO:</b>	<b>CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON MARCH 5, 2012</b>
<b>FROM:</b>	<b>JOHN BRAAM, P. ENG. ACTING EXECUTIVE DIRECTOR, PLANNING, ENVIRONMENTAL AND ENGINEERING SERVICES &amp; CITY ENGINEER</b>
<b>SUBJECT</b>	<b>THE MEADOWLILY BRIDGE RESTORATION AND CULTURAL HERITAGE EVALUATION STUDY REPORT</b>

<b>RECOMMENDATION</b>
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That, on the recommendation of the Acting Executive Director, Planning, Environmental and Engineering Services the following actions **BE TAKEN** with respect to the Meadowlily Pedestrian Bridge:

- a) The Meadowlily Bridge Restoration and Cultural Heritage Evaluation Study Report **BE ACCEPTED**, it being noting that it will form the basis of detailed design and rehabilitation of the bridge; and,
- b) The Meadowlily Bridge Restoration and Cultural Heritage Evaluation Study Report **BE REFERRED** to the London Advisory Committee on Heritage for its review and further recommendations on Heritage Designation; it being noted that the LACH has previously recommended the designation of the bridge.

<b>PREVIOUS REPORTS PERTINENT TO THIS MATTER</b>
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- September 14, 2009 – ETC, Item 15 – Meadowlily Bridge Environmental Assessment
- February 8, 2010 - ETC, Item 4 – Appointment of Consulting Engineers. Bridge Rehabilitation Program and Traffic Studies. Meadowlily Bridge Evaluation and Blackfriar’s Bridge Risk Assessment

<b>BACKGROUND</b>
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**Purpose:**

To recommend approval of the *Meadowlily Bridge Restoration and Cultural Heritage Evaluation Study Report* and the technical recommendations contained therein on project design. The report executive summary is attached as Appendix “A”; the full report is available for viewing from the Transportation Planning & Design Division. It is also recommended that this report be referred to the London Advisory Committee on Heritage (LACH) to continue the process of determining the heritage status of the Meadowlily Bridge for the City’s *Inventory of Heritage Resources*.

**Context:**

The City of London engaged AECOM Canada Ltd. to prepare a report that:

- 1) catalogues the heritage importance of the Meadowlily Bridge;
- 2) summarizes structural analyses; and,
- 3) provides a condition assessment and rehabilitation recommendations.

This study was initiated to respond to the following directions that the Civic Administration received from the Municipal Council:

- May 4, 2009 – The request to add Meadowlily Bridge to the Inventory of Heritage Resources as a Priority 1 listing Be Referred to staff to review in conjunction with the studies being undertaken in relation to the Meadowlily Area Plan.

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- June 15, 2009 - Staff requested to add Meadowlily Bridge to the 2006 Inventory of Heritage Resources, noting that its priority rating will be determined in the future.
- July 27, 2009 – Council determined that Meadowlily Bridge Be Recognized as an important cultural heritage resource that should be protected. Also that Meadowlily Bridge Be Recognized, in perpetuity as a footbridge.
- July 27, 2009 - Staff Be Requested to investigate funding sources available to preserve and restore the bridge as a Centennial Project, including stimulus funds or FCM grants and report back.
- September 21, 2009 - The initiation of an EA study of the Meadowlily Bridge Be Deferred pending a structural assessment of the bridge and a report back to Committee.
- October 5, 2009 – The Friends of Meadowlily Woods are permitted to have a consultant peer review any completed structural analysis (at the cost of the Friends of Meadowlily Woods).

**Discussion:**

The Meadowlily Bridge Restoration and Cultural Heritage Evaluation Study Report was created to catalogue the heritage importance of the bridge as well as to provide recommendations on how to restore the bridge as a pedestrian and bicycle facility. The final report accomplishes this and includes the following findings and recommendations:

- The Bridge is of significant heritage value and is eligible to be designated under Part IV of the Ontario Heritage Act. Part, but not all of the rationale for this designation is that it is a rare survivor of a particular type of truss bridge, it has historic associations with Isaac Crouse and the Hamilton Bridge Company, and it has a contextual value with respect to the Meadowlily cultural heritage landscape.
- The bridge is eligible for the Ontario Heritage Bridge List.
- The Heritage Bridge Evaluation Criteria (MTO system) is significant, scoring 74 out of 100.
- The structure can be readily rehabilitated using conventional restoration techniques and materials that are available in the London area.
- The bridge is currently not being used to its full potential as the deck width is bisected by a chain link fence. Local concerns have been raised regarding illegal activities at the site. Rehabilitation, including improved lighting and access could be implemented while still restricting the use of the bridge to pedestrian and bicycle activities.
- In order to bring the bridge up to current code requirements, minor sympathetic design alterations can be made to existing structural elements resulting in minor variance in shape, size and silhouette of the bridge. Notwithstanding this desire to match as closely as possible to the existing members, a significant number of “like for like” replacements are required. The overall visual styling of the structure will not be changed.
- Additionally, significant structural alterations are required to increase the usability of the bridge, decrease deadload, increase reliability of the structures’ strength, and decrease project cost. These alterations include the placement of hand rails that meet Canadian Highway Bridge Design Code height regulation, removal of the chain link fence, removal of the concrete deck, placement of a wooden deck, utilization of round head bolts instead of rivets and use of slightly different shapes for the repair/replacement of some steel members.
- The preferred rehabilitation technique is a sympathetic restoration using modern materials and construction techniques with minor variances in shape of members (similar to King Street Bridge in 2010).
- The cost of the rehabilitation is approximately \$1,900,000 which is about 2-3 times lower than the cost of replacing the bridge with a new one of the same width. The recommended alternative is the lowest cost with the lowest risk of cost escalation.
- There have previously been external private and public funding sources for the restoration of heritage bridges in Ontario. However, at the time of this report, no opportunities for external funding exist for the Meadowlily Bridge restoration project. This should be examined further as the project progresses through the detailed design.

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- The bridge can be restored in one construction season. However, painting will be required; therefore it is recommended that the bridge work be tendered in early spring. Closure and enclosure of the bridge during the painting operation will be required.
- Work should be undertaken within the 1-4 year time period in order to preserve as much of the bridge's integrity as possible, thereby reducing the number and severity of repairs. Should the site not be rehabilitated in 6 years, then a follow-up evaluation of its structural integrity will be required.

**Next Steps:**

Rehabilitation of the Meadowlily Bridge was included in the 2012 Capital Works Budget. The next steps in the project will involve:

- Setting a scope for adjacent drainage, erosion and access work;
- engaging an engineering consultant to complete the detailed design;
- tender a rehabilitation contract (in 2013).

Referral of the heritage component of the study to the London Advisory Committee on Heritage (LACH) will allow that committee and the City's Heritage Planner to make further recommendations to the Municipal Council on Heritage Designation of the bridge.

**Conclusion:**

The Meadowlily Bridge Restoration and Cultural Heritage Evaluation Study Report addresses a number of directions from the Municipal Council on the Meadowlily Bridge, and lays out a plan for rehabilitation so it can continue to serve as a community asset. Alternative approaches were considered and evaluated. The recommended approach is to strengthen and repair the bridge in a heritage sympathetic fashion, thereby bringing it up to present Bridge Code requirements while maintaining its visual character.

Background research on the site and structure heritage provided a context for the engineering study. This can also be used by LACH for their consideration and future recommendations on heritage designation.

**Acknowledgements:**

This report was prepared within the Transportation Planning & Design Division by Aaron Rozentals, P.Eng., and reviewed by Don Menard, Heritage Planner.

<b>SUBMITTED BY:</b>	<b>RECOMMENDED BY:</b>
<b>JOHN LUCAS, P. ENG. DIVISION MANAGER TRANSPORTATION PLANNING &amp; DESIGN</b>	<b>JOHN BRAAM, P. ENG. ACTING EXECUTIVE DIRECTOR, PLANNING, ENVIRONMENTAL &amp; ENGINEERING SERVICES &amp; CITY ENGINEER</b>

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- cc:      J. Braam  
          J. Lucas  
          D. Menard  
          T. Fediw, AECOM

**Attachments:**

Appendix "A": Meadowlily Bridge Restoration and Cultural Heritage Evaluation Study Report Executive Summary

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**Appendix "A"**

Transportation



The Corporation of the City of London

**Meadowlily Bridge Restoration and Cultural  
Heritage Evaluation Study Report**

**Prepared by:**

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519 673 0510 tel  
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**Project Number:**

60150277

**Date:**

January 2012  
Final

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## Executive Summary

### 1. Introduction

The City of London engaged AECOM Canada Ltd. to prepare a report to catalogue the heritage importance of the Meadowlily Bridge and provide rehabilitation recommendations to restore the bridge as a pedestrian and bicycle facility. The work plan included:

- Solicitation of public participation that was incorporated with the on-going Meadowlily Area Plan, engaging bridge enthusiasts, and local environmental groups as well as other stakeholders;
- Cataloguing the Meadowlily Bridge historical significance through completion of a Cultural Heritage Evaluation Report (CHER), and ranking using the Ontario Ministry of Transportation Heritage Bridge Evaluation and Rating System;
- Preparation of rehabilitation/ restoration rationales to restore the bridge's full cross-sectional width;
- Performing an in-depth structural inspection of all load carrying members;
- Reviewing all pertinent standards, codes and design details in order to recommend necessary upgrades to allow the site to continue usage as a pedestrian bridge;
- Preparing an economic feasibility of several rehabilitation alternatives and confirming the preferred option;
- Providing a list of follow up issues and items that may be required outside of the bridge's footprint to improve the user's experience and reduce the impact on the local community. (These opportunities for improvement are noted in this report but are to be addressed in future detailed designs.)

### 2. Work program

AECOM performed the work as listed in the work program and adhered to all standards, codes, and general best management practices in the preparation of the report.

The Cultural Heritage research was extensive, and uncovered new materials that had not previously been known to exist. Facts and stories about the bridge site, its designers, and builders have been submitted by area expert residents and bridge enthusiasts. Some of this material suggests plausible events that cannot be independently verified by academic records, or used in the evaluation of the scoring of the bridge. Nonetheless, it is important to collect this material, catalogue it and keep it for later use at an interpretive center of tourist information. Additionally, verification of this folklore may occur at a later date.

Preliminary cost estimates were generated utilizing past experience working with similar heritage truss and concrete bridges in the London area. Detailed cost estimates and approvals shall have to be obtained in the detailed design phase of a subsequent phase of this project. The cost estimates used to rationalize the best rehabilitation option were prepared to similar levels of detail.

The study process selected the best alternative by reviewing cost, heritage, risk, environmental impact, hydraulic issues, aesthetics, and user impacts. This work will guide future detailed design work.

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### 3. Findings and Recommendations

- The Bridge is of significant heritage value and is eligible to be designated under Part IV of the Ontario Heritage Act.
- The bridge is eligible for listing in the Ontario Bridge List.
- The Heritage Bridge Evaluation Criteria (MTO system) is significant, scoring is 74.
- The site can be readily rehabilitated using conventional restoration techniques and materials that are available in the London area.
- The bridge is currently not being used to its full potential as the deck width is bisected by a chain link fence. Local concerns have been raised regarding illegal activities at the site. Rehabilitation, including improved lighting and access could be implemented while still restricting the use of the bridge to pedestrian and bicycle activities.
- In order to bring the bridge up to current code requirements, minor sympathetic design alterations will be made to existing structural elements resulting in minor variance in shape, size and silhouette of the bridge. Notwithstanding this desire to match as closely as possible to the existing members, a significant number of "like for like" replacements are required. The overall visual styling of the structure will not be changed.
- Additionally, significant structural alterations are required to increase the usability of the bridge, decrease deadload, and increase reliability of the structure's strength and decrease project cost. These alterations include the placement of hand rails that meet CHBDC height regulation, removal of the chain link fence, removal of the concrete deck, placement of a wooden deck, utilization of round head bolts instead of rivets and use of slightly different shapes for the repair/ replacement of some members.
- The preferred rehabilitation technique is a sympathetic restoration using modern materials and construction techniques with minor variances in shape of members.
- This alternative is the lowest cost and has the lowest risk of cost escalation.
- The cost of the rehabilitation is approximately \$1,900,000 which is approximately 2-3 times lower than the cost of replacement.
- The bridge can be restored in one construction season. However, painting will be required, therefore it is recommended that the bridge work be tendered in early spring. Closure and enclosure of the bridge during the painting operation will be required.
- Work should be undertaken within the 1-4 year time period in order to preserve as much of the bridge's integrity, thereby reducing the number and severity of repairs. Should the site not be rehabilitated in 6 years then a follow up evaluation of its structural integrity will be required.