



## **2.0 PURPOSE:**

The purpose of this report is to update Committee on the status of the Brant Street Pier project. This report should be read in conjunction with confidential legal report L-54/09.

## **3.0 BACKGROUND AND RELATIONSHIP TO STRATEGIC PLAN:**

Committee may recall that this matter was last reported at the Community Development Committee (CDC) meeting held June 24, 2009 (Report E41/09). An update was also recently provided to the public at a public information meeting on September 1, 2009 which was attended by approximately 200 residents.

## **4.0 DISCUSSION:**

The Brant Street Pier project has experienced three challenges. Specifically:

- 1) Twisted beams were observed shortly after the first concrete deck pour which occurred on or about July 25, 2008. As a result of the twisted beams, the concrete deck settled in the vicinity of the twisted beam. In addition, some of the concrete finish in the first pour included deficiencies.
- 2) A crane accident occurred on August 22, 2008.
- 3) Replacement of a significant amount of the steel substructure has been directed by AECOM, the City's consulting engineer for this project.

A brief update on these items follows.

### **4.1 First Concrete Pour**

Report E41/09 noted that remedial works were required to deal with the twisted beams and other deficiencies in the area of the first concrete deck pour. On April 17, 2009 the contractor was instructed to remove and replace the defective concrete deck and structural steel and re-execute the work. Removing the first pour requires saw cutting the concrete deck into sections, lifting the sections out via crane, and jack-hammering the concrete out directly over the steel beams. Removal of the deck commenced in late May and was complete in June.

Upon removal of the first concrete deck pour the steel substructure was inspected after the concrete formwork was removed. Report E41/09 advised that after the steel substructure was inspected that the City's consultant, AECOM, would decide whether the steel substructure is reusable or whether some steel replacement is required.

Results from various steel inspections are discussed further under "4.3 Steel Inspections."

## **4.2 Crane Accident**

The crane accident occurred when a crane on the temporary work platform became unstable and rolled over onto the pier. The crane involved in the accident belonged to Craneway Equipment, a subcontractor retained by the General Contractor.

Following the crane accident City staff, the City's consultants and the General Contractor met regularly in a special series of meetings regarding the crane accident. Other parties that participated in the meetings included Lombard Canada (insurance provider to the General Contractor); insurance adjuster for Craneway Equipment and various consultants retained by either Lombard Canada or Craneway's insurance company.

It should be noted that as a result of the crane accident it was necessary to dismantle a considerable portion of the Brant Street Pier for inspection. The crane accident occurred between the shore and the beacon node. As a result of the crane accident, it became necessary to remove the following pier components that had been assembled over several prior months to allow for initial investigations of the underlying steel structure:

- Concrete reinforcing steel;
- Wooden concrete formwork; and
- Temporary construction support system.

At the time that report E21/09 was written on January 23, 2009, it was determined that at least three (3) of the underlying steel beams required replacement. Subsequently the contractor decided that an additional six (6) beams will be replaced (i.e. 9 beams total). Some smaller steel components will be replaced as well.

Nine (9) new steel beams, and the smaller steel components, arrived on site on or about May 20, 2009. The nine (9) new steel beams, and the smaller steel components, were also inspected by AECOM and Acuren (inspection company) at the manufacturing plant prior to galvanizing. Removal of the original beams, and installation of the new replacement beams, commenced on May 20, 2009. Installation of the new replacement beams was completed in mid June at which time an alignment survey of the beams was undertaken.

As outlined in Report E41/09, once installation is complete, all steel will be re-inspected. Results from various steel inspections are discussed further under "Steel Inspections."

## **4.3 Steel Inspections**

The contractor is required to construct the pier structure as per the contract documents. Accordingly, the contractor is responsible for conducting whatever tests necessary to ascertain that their work is in accordance with the contract.

As a check on the contractor's work, the City undertakes Quality assurance (QA) testing. For the pier contract the City's professional engineering consultant, AECOM, determines what QA

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testing is required. AECOM arranges for all testing and interprets all results. Results are often interpreted with testing experts from certified testing companies. The certified testing companies typically undertake visual inspections as well as non-destructive testing using specialized equipment. Destructive testing is less common.

For the pier structure, City staff themselves do not undertake any testing or interpret testing results.

A variety of steel QA tests have been undertaken since project initiation. For example, metal shavings from several beams have been analysed to check overall steel properties. Since May 2009, several QA tests have been undertaken on the steel substructure. As a result of the crane accident, an opportunity arose to undertake some destructive testing on one of the main steel beams that had to be replaced. The destructive testing was focussed on the area where the “Nelson Studs” are welded onto the top of the beam. As a result of the destructive testing of the beam, and based on AECOM’s review of other steel QA inspections reports, AECOM has determined that, as the engineer of record for this contract, that they cannot certify the steel. Accordingly, AECOM has directed the contractor to “replace all stringers (i.e. beams) including the centre node steel.” Excluded from this direction are the nine (9) beams that were replaced due to the crane accident. As the three main beams that run along the length of the pier consist of 36 smaller beams, 27 smaller steel beams require replacement (i.e.  $36-9=27$ ). In addition, other steel components may also require replacement and this will be determined once the steel substructure is dismantled. Figures 1 and 2 in Appendix A illustrate the basic steel components and the areas requiring steel replacement.

It should be noted that there are no concerns at this time with the caissons or the concrete pier caps that provide the foundation for the pier.

AECOM has also been implementing an expanded QA testing protocol for all new structural steel to help ensure the pier structure is constructed to meet contract specifications.

### 4.3 Schedule

A fall 2010 completion date for the pier has been estimated by the Contractor, though installation of the fair weather boating facility is under review and may be in spring 2011. This schedule assumes that the project proceeds from herein in a co-operative fashion with all parties working together to complete the contract in a timely manner. An approximate schedule is as follows:

Steel ordering and fabrication	- Oct – Feb 2010
Steel installation	- Mar - Apr
Installation of temporary construction supports, concrete formwork, re-bar	- Apr - Aug
Concrete deck pours	- Jun – Jul
Upper deck concrete pour	- Aug
Removal of formwork, railing installation, lighting installation, etc	- Jul - Sept
Demobilization and final site work	- Oct

## 5.0 FINANCIAL MATTERS:

### 5.1 Funding

Funding for the pier project is outlined in Table 1.

**Table 1 – Brant Street Pier Project Funding**  
(rounded to nearest \$100,000)

Canada Ontario Infrastructure Program	\$4.4 M
Region of Halton	\$2.5 M
City of Burlington (excludes contingency)	\$1.2 M
<b>Total</b> (original budget, excludes contingency)	<b>\$8.1 M</b>
Council Approved Contingency (CC-7-08, Jan 2008)	<u>\$0.4 M</u>
<b>Sub-Total</b> (excludes remaining contingency funds)	<b>\$8.5 M</b>
<u>Remaining Contingency</u>	<u>\$0.5 M</u>
<b>Total</b>	<b>\$9.0 M</b>

### 5.2 Project Costs

The above noted budget was established to cover all project costs for the Brant Street Pier project. In general, project costs may be categorized into the following general groups:

- **Construction Contract:** The construction contract includes the tender award for the Brant Street Pier project to Harm Schilthuis & Sons Limited with a value of \$6.5M as outlined in report CC-147-06.
- **Contingency Expenses & Contract Adjustments:** As per Report DI-9/06 it was originally decided that the total value of the contingency would remain confidential. Subsequently, in January 2008 Council approved an estimated expenditure of \$415,000 from the contingency for the beacon re-design and other items. The full amount of the contingency is now disclosed in Table 1. Contract adjustments include contract savings/expenses based on actual quantities used as well as additional costs for design changes.
- **Engineering/Inspection Fees:** This category includes fees for the following items:
  - Class Environmental Assessment study to review pier alternatives and select the preferred pier configuration.
  - Detail design fees

- Fees for approvals and permits prior to construction commencing (permits required from Conservation Halton, Department of Fisheries and Oceans and Transport Canada)
- Tendering related costs;
- Contract administration; and
- Testing and inspection costs associated with administration of the contract.

As per the contract documents, some testing/inspection costs are the responsibility of the contractor and hence there are recoveries on some inspections.

- **Fish Habitat Compensation:** To ensure no net loss in fish habitat as a result of the construction of the pier it was necessary to provide some fish habitat compensation. Accordingly, fish habitat compensation was completed in Sherwood Forest Park in cooperation with the Parks and Recreation Department.
- **Waterlot Costs:** Upon completion of pier construction, a waterlot is required for the pier from the Ontario Ministry of Natural Resources (MNR). Exact value subject to future negotiations with MNR.
- **Other Expenses:** This category includes other project expenses including but not limited: to public meeting expenses; costs for external advisers during pier re-design; and costing analysis.

Table 2 provides a summary of actual expenses to date, as well as projected expenditures and recoveries to project completion.

Included in Table 2 are the charges to the contractor for Liquidated Damages (LD's). LD's are intended to offset additional contract administration costs due to delays in project completion.

In summary, total project expenditures are currently estimated at approximately \$8,847,000 which is within the project budget of \$9,000,000. Although the project is currently under budget, excluding legal expenses, a provision for contingency needs to be carried to reflect uncertainties as the balance of the work is completed. Although it is possible the project could be under budget, given the challenges faced to date we believe that prospect to be unlikely. Accordingly, staff are seeking additional funding of \$247,200 and propose that funding be provided from the Capital Purposes Reserve Fund.

City costs associated with the crane accident are addressed in Confidential Legal Report L54-09. City costs associated with the crane accident will be submitted for reimbursement to the proper parties.

TABLE 2  
PIER FINANCIAL SUMMARY

rounded (\$000)

DESCRIPTION	Actual Expenditures/Recoveries to Date	Projected Expenditure/Recoveries to Complete Project	Total
<b>Total Project Funding</b>			9,000,000
<b>Expenditures</b>			
Construction Contract	4,446,200	2,053,400	6,499,600
Engineering Fees/Contract Administration	1,463,700	481,400	1,945,100
Less: Liquidated Damages	(53,500)	(415,500)	(469,000)
Less: Inspection Fee Recoveries	(35,800)	(72,000)	(107,800)
<b>Net</b>	1,374,400	(6,100)	1,368,300
Fish Habitat Compensation	132,000	0	132,000
Waterlot		50,000	50,000
Other	195,800	0	195,800
Project Contingency/Contract Adjustment	178,700	422,800	601,500
<b>TOTAL EXPENDITURES</b>	<b>6,327,100</b>	<b>2,520,100</b>	<b>8,847,200</b>
<b>Additional Project Requirements</b>			
Required Contengies for Project Completion		400,000	400,000
<b>Total</b>		<b>400,000</b>	<b>400,000</b>
NET			(247,200)
<b>GRAND TOTAL PROJECT COSTS ANTICIPATED</b>			<b>9,247,200</b>

Note: Excludes potential litigation exposure and legal expense in accordance with City policy.

## **6.0 ENVIRONMENTAL MATTERS:**

A Class Environmental Assessment was completed for the pier project prior to the commencement of detail design. In addition, permits have been obtained from the necessary regulatory agencies. Fish habitat compensation works completed in Sherwood Forest Park will ensure that the pier project will result in no net loss in fish habitat.

## **7.0 COMMUNICATION MATTERS:**

The City acknowledges that there have significant challenges during the construction of the Brant Street Pier. Burlington residents and community partners have asked that they be kept well-informed about the project, including regarding circumstances that impact the opening of the pier.

As part of the August 2009 announcement that 27 of 36 steel beams of the pier's substructure would need to be replaced, the City:

- Hosted a public information meeting on Sept. 1, attended by 200 people and initiated by Ward 2 Councillor Peter Thoem
- Advertised the public information meeting
- Updated the City's pier web pages at [www.burlington.ca](http://www.burlington.ca) to reflect current information
- Provided update information to the community through Burlington and Hamilton media and through the City's community partners
- Posted on-site signage to indicate that the pier project is delayed
- Created a dedicated e-mail address for pier inquiries: [pier@burlington.ca](mailto:pier@burlington.ca)
- Continued to work with Ward 2 Councillor Peter Thoem to provide information to the pier's residential neighbours
- Continues to publish information updates in City Talk
- Continues to respond to inquiries from residents

The City recognizes the high level of interest in the Brant Street Pier and will continue to provide open, two-way communication with residents.

## **8.0 CONCLUSION:**

This report provides Committee with an update on the status of the Brant Street Pier project.

Respectfully submitted,

Philip Kelly, M.Sc., P.Eng.  
Manager of Development, Environmental  
& Transportation Engineering

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**Appendices:**

Appendix A – Figure 1 – Stringers / Beams / Nelson Studs Figure 2 – Overview of Steel Replacement
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