



ARCHITECTURAL CONSERVANCY OF ONTARIO

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Dave Auger
Executive Director
Beach Canal Lighthouse Group
964 Lakeshore Rd.
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Dear Sir:

We are pleased to present herewith an outline conservation study of the Burlington Canal Lighthouse.

As requested , we have worked with the Beach Canal Lighthouse Group (BCLG) to identify the conservation challenges that the group will face as they take over ownership of this important heritage asset from the Federal Government.

We wish you all the best success in developing this important resource and appreciate your use of the ACO PreservationWorks! program.

Yours truly

Gillian Haley
Acting Director
PreservationWorks!

1. Historic Overview:

Extensive research has been done on the history of the lighthouse and keeper's cottage which was made available to us by the Beach Canal Lighthouse Group (BCLG).

The first Hamilton Beach lighthouse was constructed in 1838 of wood in a manner similar to many others constructed in the 1800s to meet Britain's desire to improve navigation and enhance development in her Canadian colonies after the Napoleonic wars. Many early and mid-19th century lighthouses remain on the East Coast of Canada as well as in Georgian Bay. On completion, a lighthouse keeper was hired to maintain the light and building. The keeper worked in conjunction with the ferryman and both resided in homes near the Canal.

Although the usual problem with lighthouses on the Great Lakes was water spray freezing in the stone mortar, untypically the flaw of the first Burlington lighthouse and the pier was that they were of wood¹. This proved to be a flaw as they were susceptible to the random spray of embers from the smokestacks of passing steamers. On several occasions, it was reported that the ferryman and lighthouse keeper had to rip off pieces of the pier and throw them into the Canal because they had caught fire. On 18 July 1856, the steamship Ranger was passing through the Canal when sparks strayed and caused a major fire that destroyed the lighthouse, a ferry, a house, and a local log house in the vicinity. A temporary lighthouse was built and was eventually replaced in 1858 by the current structure.

John Brown, who also constructed the six Imperial Towers on Lake Huron and Georgian Bay in the mid 1850's, was hired to build the 1858 lighthouse. It was constructed of white dolomite limestone (over five feet thick at chest height) and about 55 feet high. It is almost identical to the lighthouse built by Brown on Christian Island in Georgian Bay, and similar to the recently restored Chantry Island light in Southampton or the Point Clark light north of Goderich.

On completion of the stonework, an interior staircase was installed which was typical of 1850's lights (earlier lighthouses, such as the one constructed c. 1845 at Presqu'île and the 1818 Thames River light at Lighthouse Cove, near Windsor, had similar stairs). Then the lantern room was added with the light at the top. This lighthouse was one of the first to use coal oil, rather than the traditional whale oil². This began a new trend in preferred energy sources, which angered many whalers, since it threatened their livelihood – although since Kerosene was invented in Nova Scotia a few years earlier, it still had the net effect of supporting Canadian producers. The lighthouse was maintained without major repairs until 1958 which is a time frame not dissimilar

¹ Ironically, the Presqu'île Light, constructed of stone c1845, was subject to freezing such that a massive crack formed on the south (lake) side of the stone tower within a few years of construction. To prevent collapse, the tower was banded with tripled planks of 2x6 framing staggered up the exterior (to allow ventilation of the stone) and then covered with wood shingles – a stone tower which became a wooden one, which is how it is to the present day.

² The hatch at the ground floor gave access to the oil storage cellar which still smells of coal oil. Of interest is that, for safety reasons, lighthouses in the U.S. typically had a separate building for storage of the oil while the British American sites used the space under the entrance in the main tower.

to that of the Bonavista light in Newfoundland which was in continuous operation from c1845 to 1962.

In 1958, a powerful storm swept through the region and the lighthouse that was thought to be invulnerable sustained water damage with water penetrating the lighthouse and damaging its structure and lantern. A few months after the storm, timber planks were bedded in concrete to make the foundation of the lighthouse stronger so that it could withstand the exterior elements. In 1961, the lighthouse was replaced with a more modern beacon located at the end of the south Canal pier. The new lighthouse is powered by electricity and the beam of light can be seen approximately 15 miles from the Canal. The old stone lighthouse officially ceased operations in 1968, marking the end of manned lighthouses at the Burlington Canal.

The stone lighthouse was not torn down because the cost was too high. The lighthouses on the Burlington Canal have been a symbol of Hamilton Harbour's growth and development. Since the Canal was first opened to vessels over one hundred years ago, it has helped to develop the areas of Burlington, Dundas and Hamilton and it remains a significant symbol of our history of industrialization and development.

2. The Conservationists

The Beach Canal Lighthouse Group is a group of local folks determined to acquire, restore and preserve the 1858 Lighthouse (and the 1857 Keeper's House) beside the lift bridge at the Burlington Bay Canal. The group is raising funds and building local partnerships to restore the limestone tower and brick house in time for their 150th Anniversary in 2008. Both buildings are in remarkable condition for their age.

Pete Coletti, the last keeper of The Burlington Light, has been elected a honorary member of The Lighthouse Group. Pete held the position of keeper for 25 years and is now retired down east.

3. Survey Methods:

Two site visits were made to the site by the Consultants:

- In the first visit, only the lower portion of the tower was accessed via the internal stair. Many treads are missing on the stair and it is generally in an unsafe conditions. The top hatch in the floor of the lantern level is locked closed from the interior.
- The City of Hamilton provided a snorkel lift which allowed access to the platform at the lantern level from the exterior. The lantern was not entered due to fungal hazards posed by pigeon excrement contamination.

4. Condition Report:

4.1 Foundations:

The foundations appear to be performing very well on both buildings. No significant cracking or settlement was noted.

4.2 Superstructure:

Lighthouse:

The masonry tower shaft is stable and is not showing any serious deformations and cracking. A number of masonry joints are open, particularly on the east side facing Lake Ontario. The joints have opened due to weathering, causing freeze/thaw action in the joints which eventually leads to their deterioration and failure. Thus the observation of greatest deterioration occurring toward Lake Ontario makes sense as this is where precipitation borne on the east wind off the lake occurs.

Deteriorated or inadequate mortar joints must be replaced by a qualified heritage mason in accordance with good conservation practices. All loose joints made with inappropriate materials must be rebuilt. The deterioration of masonry will continue unabated in this environment. The pace of deterioration will accelerate exponentially from this point on and restoration work should proceed without delay.

The interior surface of the masonry is in much better condition, reflecting its protected location.

The wood stairs are unsafe and must be rebuilt and should be done so to conform with the original details, including the beaded stringers which are very typical of 19th century sites.

There are broken windows in the lantern which must be replaced. Originally, these windows would have been of plate glass which is heavy and expensive. A suitable alternative would be the use of laminated glass which can withstand weather and vandals and which does not look substantially different from the original.

An environmental clean up of the pigeon guano must be done by a licensed hazardous waste contractor. After that is done, it is very important that the buildings be secured to prevent re-contamination. In addition, original coatings of lead-based paint should be removed, particularly from the lantern, and replaced with rust-stabilizing coatings (based on Tannic acid or other similar compounds).

The structure of the lantern appears to be stable and sound. This can only be confirmed after the environmental clean-up is completed. The usual clean up and painting tasks will be required. Access is difficult and this will be the largest cost item related to the lantern.

It must be noted that while the lantern is unusually complete when compared with other lighthouses in Eastern Canada, the handrail at the lantern level is not secure. Some repair to metalwork and to the supporting deck must be done to make this level safe.

Access for masonry repairs must be coordinated with the repairs to the lantern to minimize access costs. We assume that the shaft will have to be scaffolded in order to get good access for masonry repairs.

Light Keeper's Cottage.

This building was originally a 2 story 2 unit residential structure. The structure itself is sound and no major structural repairs are required.

Minor structural repairs are required in the basement where a post is not adequately supported and some beams may need reinforcing due to inappropriate modifications that have weakened them.

The Wooden shed at the back has settled, perhaps due to rot in the supporting timbers. The presence of split lath, the appearance of a similar (though differently clad) rear addition in early photographs, and the general arrangement suggest that this was a frame summer kitchen for the building. A frame addition would reduce the amount of heat generated by cooking activities in the main house during the summer. This addition is therefore an important part of the main house.

Masonry restoration is required. There are several areas of loose bricks, near the foundations, and at the top of the gable walls.

The original coping on the top of the gable walls has been removed and not replaced. This allows water to enter the middle of the brick wall. Of note are the small chimneys at the roof which sit on "shoulders" formed by the truncated remains of the original chimneys. There is sufficient photographic and in situ information to permit a complete restoration of these elements.

We were not able to check the condition of wood members framing into foundation walls or upper exterior walls. This should be done at every opportunity where exterior walls are opened.

There are signs of water infiltration into the building at the gable ends of the second floor ceiling as evidenced by failing plaster. This may be due to the lack of copings on the gable walls.

5. Architectural Assessment:

The composition of the lighthouse together with the keeper's house is remarkable for its completeness and its proximity to a major urban area. Both the house and the lighthouse, while modified since original construction, sufficiently complete in their details, or remnants of details, that a good quality restoration can be undertaken.

Lighthouse

The details of the lighthouse include the masonry generally, the entrance door, the interior wood landings, floors and stair (which requires considerable repair and restoration), and the cupola/lantern. The latter is very complete and includes the vent from the last fitted light source (presumably carbon arc).

It is noted that the lantern house does not conform to images published as late as the 1870's and it is suggested that the existing may be a replacement. Early lantern houses of European manufacture typically had rounded tops. Further research is recommended.

Keeper's House

The exterior masonry of the Keeper's House is multiple-wythe masonry in excellent condition, and of a high order (Flemish Bond on the front wall with English bond on the sides and rear). Although some changes were done to the windows, notably on the south elevation, these are easily discernable due to the manner in which the brick is cut and detailed (notably at the voussoirs) and these interventions can be reversed if deemed to be in the best interests of a restoration.

Interior trim is sufficiently intact and original to be able to deduce earlier arrangements of doors and changes. This is particularly the case around the trim at the door at the bottom of the main stair where at least one significant change occurred as is evidenced by cut and modified trim.

The fireplace is original as is the base course of pressed brick which would have backed up the original hearth.

Of interest, too, is the rear shed which is of frame construction with wood siding to the exterior and lath and plaster at the interior. The lath is hand-split, dating to no later than the mid-1800's which suggests strongly that this addition is original to the house and most likely served as a summer kitchen. Early photos do show a wood addition, albeit with a different arrangement of siding. Therefore, some siding removal is recommended with a view to researching the original cladding arrangement and verifying the originality of this wing.

A prime feature of the original house would have been the chimneys which are currently too small in relation to the original. However, the bases of the original chimneys are clearly visible on the peak of each gable forming a “shoulder” under the current units. Using this evidence and early photographs, an entirely appropriate restoration is possible.

6. Budgets and Schedule:

Budgeting for the recommended conservation work is beyond the scope of this assignment. We recommend that you contact Ms. Laurie Wells at Summit Restoration, Burlington (Tel. (905) 332-5169)

Environmental clean up work should be done under the supervision of an environmental consultant . We recommend Mr. Robert Lovegrove of Simcoe (Tel (519) 426-7019).

We recommend that work be started on a phased and prioritized basis starting this season.

7. Summary and Conclusions

The two main structures at this site are in very good condition considering their lack of maintenance in recent years.

Restoration to a reasonable level to secure the future of the structures is entirely feasible and reasonable.

The restoration should proceed without delay. Repairs should be prioritized and specified by an experienced heritage conservation consultant team.

This site is of great importance for the community and is somewhat unique in being a complete lighthouse complex from the mid-19th century in such close proximity to a major urban area. Examples of recent citizen-led restorations abound in North America and each effort typically attracts great attention and enthusiasm from their local communities. Recent examples in Ontario include the Chantry Island lighthouse off Southampton.

We trust this brief report is of use in the continuation of this important work. We eagerly look forward to seeing the results.

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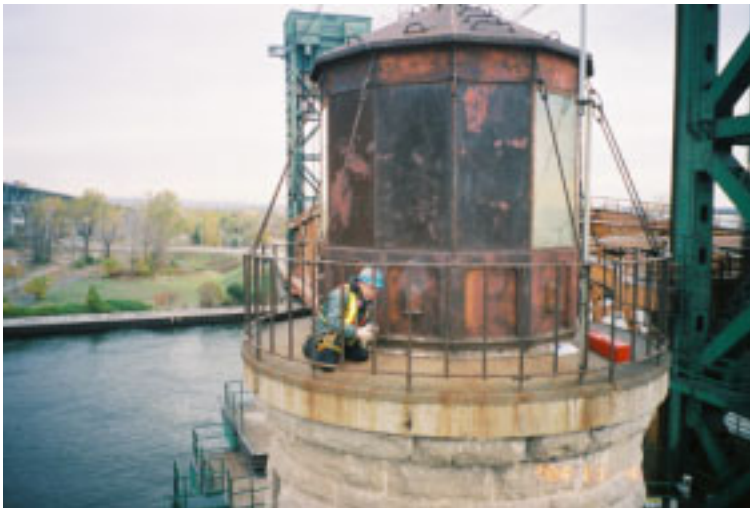


Appendix A

Site Photos - November 2004 Site Survey



Detail of cut stone walk around lantern



Lantern. Dating of the lantern should be done to determine if this is the original or a change dating to the early 20th century.

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Detail of catwalk



Image of last beacon mounted inside the lantern. This beacon is electric and is a mid-20th century replacement for the earlier lights

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Detail of the underside of the roof of the lantern. The details suggest an early 20th century design which would have replaced an earlier 1850's assembly. Further research should be done.



Detail of temporary repairs.

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Detail of floor of lantern. Note the depth of guano on the floor. This material contains fungus and can be toxic to humans.



Detail of top of lantern showing ventilator with windvane which keeps the vent pointing downwind.



Detail of stone inside tower



Detail of exterior of barrel of tower

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Tower as seen from the south



Keeper's house from the south

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Gable wall – note the absence of a cap on the parapet and the small masonry chimney



Detail of north gable. Note the shoulder under the chimney which is the base of the original chimney.