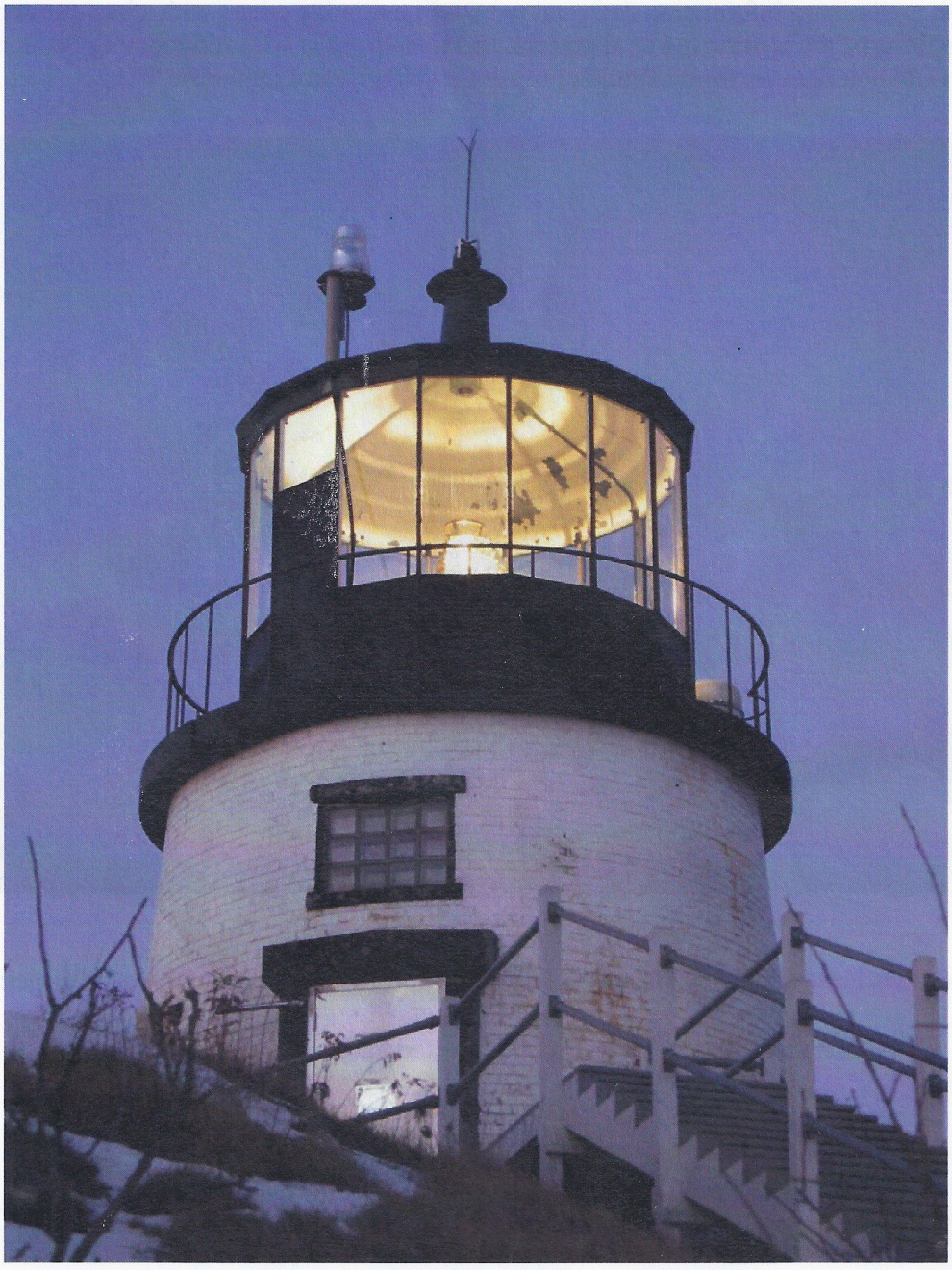
Owls Head Lighthouse

2009 Inspection Report



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The process of inspecting Owls Head Lighthouse and identifying preservation, safety and housekeeping needs occurred over a series of visits to the historic site during 2008.

The purpose of this report is to provide the American Lighthouse Foundation, its local chapter – Friends of Rockland Breakwater Lighthouse, as well as the Maine Historic Preservation Commission and the United States Coast Guard (owners of the lighthouse), with preliminary information designed to better familiarize others with a basic structural condition of the historic tower at present, and to help assist with forthcoming Section 106 consultation reviews for restoration projects at Owls Head Lighthouse.



The Owls Head Lighthouse 2009 Inspection Report is separated into three main sections:

- Exterior Observations related to Preservation
- Interior Observations related to Preservation
- Safety Observations related to Public Access & Education

Historic Overview:

Owls Head Lighthouse was built in 1825; however, there is strong indication that the structure was extensively modified or rebuilt in the 1850s.

The light tower is 30 feet tall, with a focal plane of 100 feet above sea level.

The lighthouse retains its historic fourth order Fresnel lens, which was originally installed in 1856, and remains an active aid to navigation. The lens shows a fixed white light and is maintained by United States Coast Guard Aids to Navigation Team Southwest Harbor.

Owls Head Lighthouse was automated in 1989.

The lighthouse is located in Owls Head, Maine, overlooking West Penobscot Bay, including Muscle Ridge Channel to the south and Rockland Harbor to the northwest.

The U.S. Coast Guard leased the light tower to the nonprofit American Lighthouse Foundation in December 2007.

Exterior Observations:

Brick façade of the Lighthouse - Casual observation will reveal the tower's exterior brickwork requires cleaning and repainting.

It is worth noting at the outset that former resident Coast Guard personnel at Owls Head have indicated the present outer course of bricks on the light tower was set in the 1980s when the USCG facilitated a 'facelift' of the lighthouse.

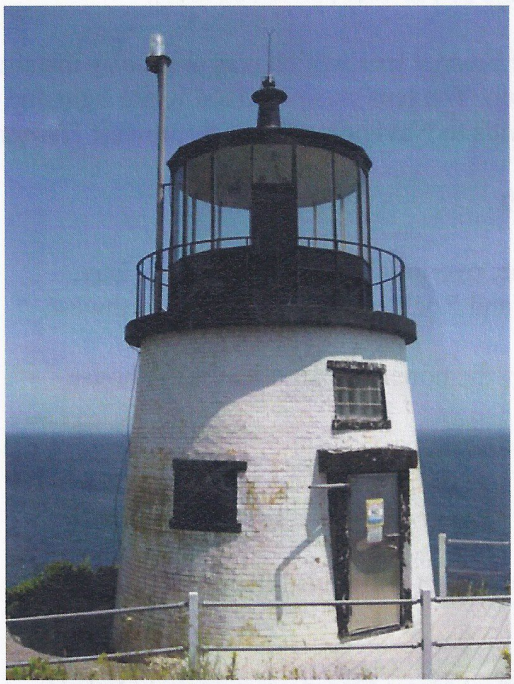
Without prior knowledge of this fact, Jim Leslie, president of J.B. Leslie Masonry Company, noted during a 2007 site visit that according to his professional opinion, Owls Head's brick façade consisted of a contemporary wire-cut brick, rather than hand-cut brick that is typically found on historic structures, and thus, the outer course of brick is not original.

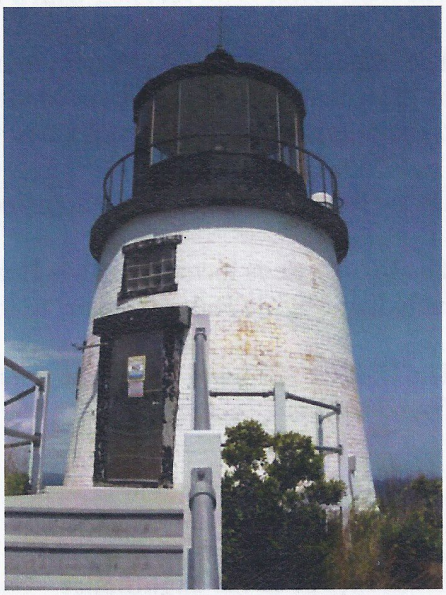
The American Lighthouse Foundation (ALF) initiated consultation with the Maine Historic Preservation Commission on July 28, 2008 in accordance with Section 106 of the National Historic Preservation Act to obtain permission for responsible ALF volunteers to properly clean and recoat the exterior of the lighthouse.

The Maine Historic Preservation Commission granted approval for this project on August 19, 2008 under the condition that there be an application of two coats of a rust-inhibitive alkyd primer to the ironwork prior to painting, as recommended by the National Park Service's *Historic Lighthouse Preservation Handbook.*

The United States Coast Guard Civil Engineering Unit Providence was provided documentation of the consultation review process and subsequent approval on August 27, 2008.

This project will be carried out in spring 2009.





(Left) West view…(above) south view of the lighthouse



A close-up view of the northwest side of the tower's brick façade

The exterior brick façade requires a professional masonry firm to repoint the structure, which is exhibiting loose, cracking and missing mortar joints at distinct locations on the exterior.

This adverse affect is most evident on the east or ocean side of the lighthouse, which is most exposed to the ferocity of the elements.

In addition to loose, cracking and missing mortar joints, the exterior brickwork is also exhibiting surface spalling at various locations on the exterior.

According to the *Historic Lighthouse Preservation Handbook*, contributing factors to these adverse affects on exterior brickwork of a structure like Owls Head Lighthouse include:

- Excessive moisture within the masonry that gives rise to the destructive crystallization action of soluble salts, as well as freeze-thaw expansion-and-contraction action
- Water flowing through walls, moisture build-up & poor ventilation
- Abrasion by the wind and wind-born solids



A close-up view of a missing mortar joint and surface spalling on the brickwork found along the east side of the lighthouse



(Above) An adult's finger can be placed in between the brickwork at this distinct location due to a missing mortar joint…(Below) additional evidence of surface spalling that is occurring on the exterior





(Above) View of the failing exterior coatings system and surface spalling to the brickwork…(Below) Mortar joints are failing and brickwork is deteriorating where it meets the granite entryway



Exterior Base of the Lighthouse – A structural concern that needs to be monitored (and eventually repaired) is the deterioration occurring along the light tower's base on the east or ocean side of the structure, which is located near where the bluff begins a gradual drop-off toward the water.

There is evidence that the developing gap at the base of the lighthouse was repaired on a couple of occasions based on the colorization of the mortar-based patches, but this repair work is failing at distinct locations.

This may be occurring in part due to the questionable strength and compatibility of the mortar patch, but also possibly because of a combination of being washed out by water action and the abrasion of wind and wind-born solids.



A view of the base of the lighthouse on the northeast side…note the different colorization of the mortar patches, which indicates more than one attempt to repair deterioration to the base

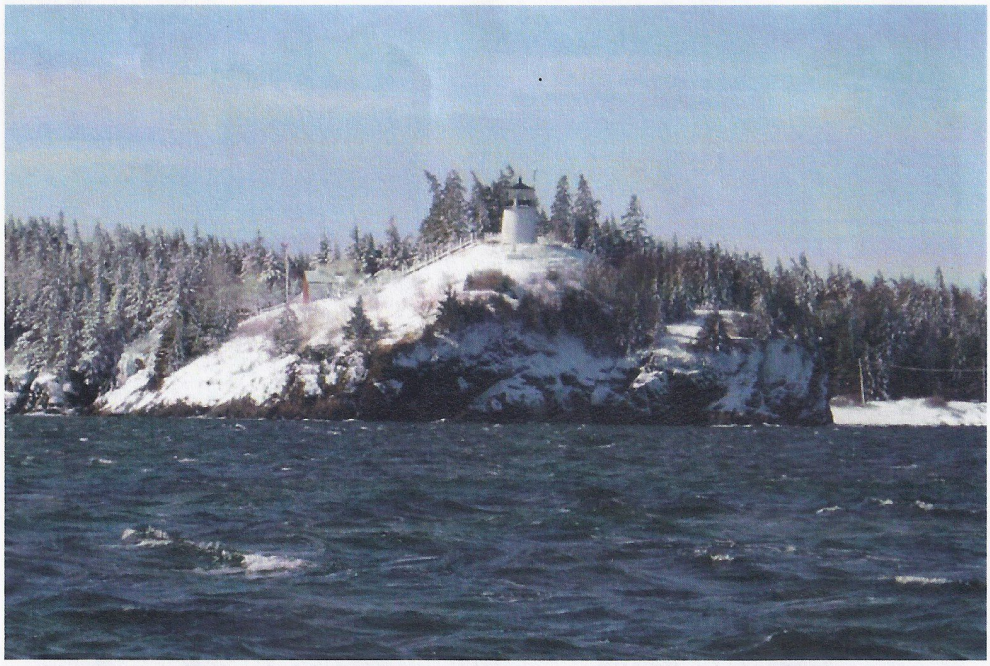


(Above) A view of the base on the east, southeast side, which is deteriorating and washing out over time…(Below) A close-up view of the underside of the east, southeast side of the base





(Above) A view of Owls Head Light from the bluff below on the east side…(Below) A water view of the lighthouse from the east



Exterior Lantern and Gallery – The exterior ironwork of the lantern is in different stages of deterioration, and the stone gallery deck on which the lantern is situated, is suffering from failing joints, cracking and deterioration caused by past ironwork modifications / intrusions.



A view of the underside of the stone gallery and lantern atop the lighthouse

Corrosion or oxidation on the exterior of the lantern is prevalent along the panel edges and joints of the parapet, along the lantern frame where the metal meets the windowpanes, at the base of the lantern where iron meets the stone gallery and on the steel railing that encircles the exterior gallery, including blistering and flaking.

According to the *Historic Lighthouse Preservation Handbook*, leading causes of deterioration to lantern exteriors that are applicable to Owls Head Lighthouse, include:

- Failed coating systems that no longer protect lantern components
- Abrasion by the wind and wind-born solids that accelerates deterioration by rapidly removing corroding or exfoliating material
- Number of freeze-thaw cycles that cause expansion and contraction of the metal
- Salt air and sea spray that accelerates corrosion of metal components



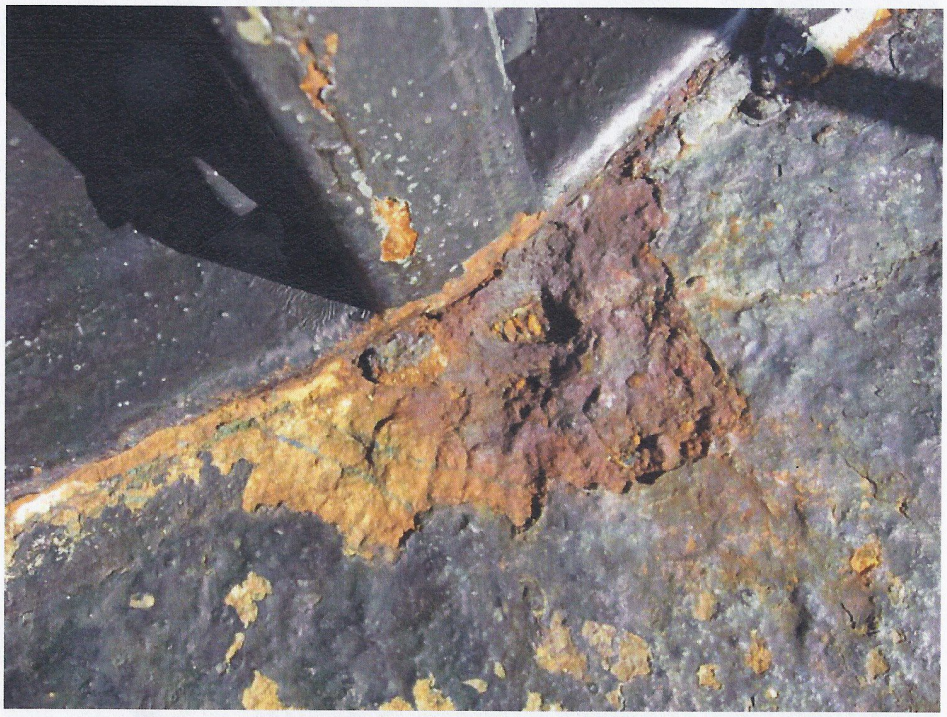
(Above) A close-up view of the oxidation that is occurring along the lantern frames where the meet the windowpanes…(Below) A view of the failing coating system and sealant on the exterior parapet where the panels join





(Above) A view of the failed seal along the base of the lantern where it meets the stone gallery…(Below) Further evidence of deterioration along the exterior of the parapet





(Above) Deterioration occurring on the stone gallery where it meets the iron lantern…(Below) View of corrosion that is occurring on various stanchions along the iron railing





The two photos on this page show cracks that exist on the stone gallery, with some similarities in their locations…running along or near the areas where the iron stanchions for the exterior railing are affixed into the granite.





View of the window on the southwest side above the entryway…ALF would eventually like to replace the block windows with historic windows



A view of cracks that have developed in the window on the west side



View of failing patch areas where the brickwork meets the granite above the entryway

Interior Observations:

The interior of Owls Head Lighthouse suffers from dampness year-round. Nearly all lighthouses have some form of dampness to contend with, but in the case of Owls Head, the problem can be traced in part to the penetration of the elements.

A casual view of the brickwork reveals damp walls, mold or mildew stains and efflorescence, which are contributing to the deterioration of the interior mortar, brickwork and ironwork.

Condensation is also a problem in the lighthouse, especially in the lantern where it often builds up on the lantern windowpanes to the point of obscuring the aid to navigation.

Common sources of water penetration such as doors, windows, lantern vents, lantern windowpanes and cracks in the brickwork should be more closely examined to determine where moisture is originating.

Most of the paint on the interior brickwork has flaked off over the years, and a determination should be made as to whether the remaining paint residuals are latex or lead.



An overview of the interior ironwork and brickwork at Owls Head Light



(Above) An unusual 'find' right after a winter 2009 snowstorm where snow found its way into the lighthouse and accumulated on the edges of the stairs…(Below) A view of the mold & mildew stains that exist within the light tower





(Above) A view of the interior showing scant residuals of paint, along with mildew and efflorescence, on the face of brickwork. Also note the seal missing between the masonry sections of the underside of the lantern gallery…(Below) A close-up view of the missing seal between sections of the masonry for the underside of the lantern gallery



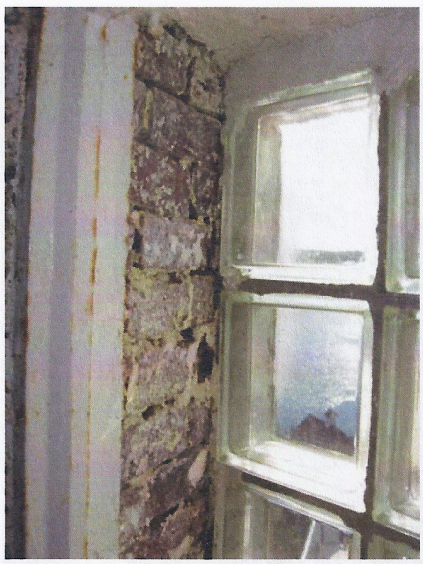


(Above) A close-up view of failing patches and deteriorating brickwork along the interior base of the lighthouse…(Below) A view of corrosion to the metalwork that supports the ladder to the lantern…the "L" bracket should be examined to determine its strength

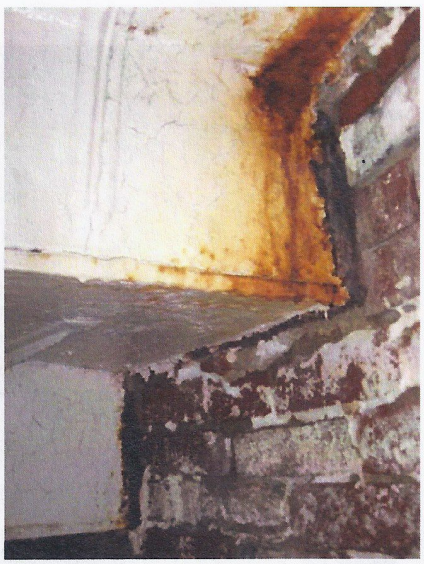




A view of a contemporary block window installed in Owls Head Light to help prevent vandalism, etc. The window frames do not appear watertight and could be a source of water penetration inside the tower



Note the iron framework that remains from prior window installations



A view of the corrosion to the underside of the staircase near the base of the tower