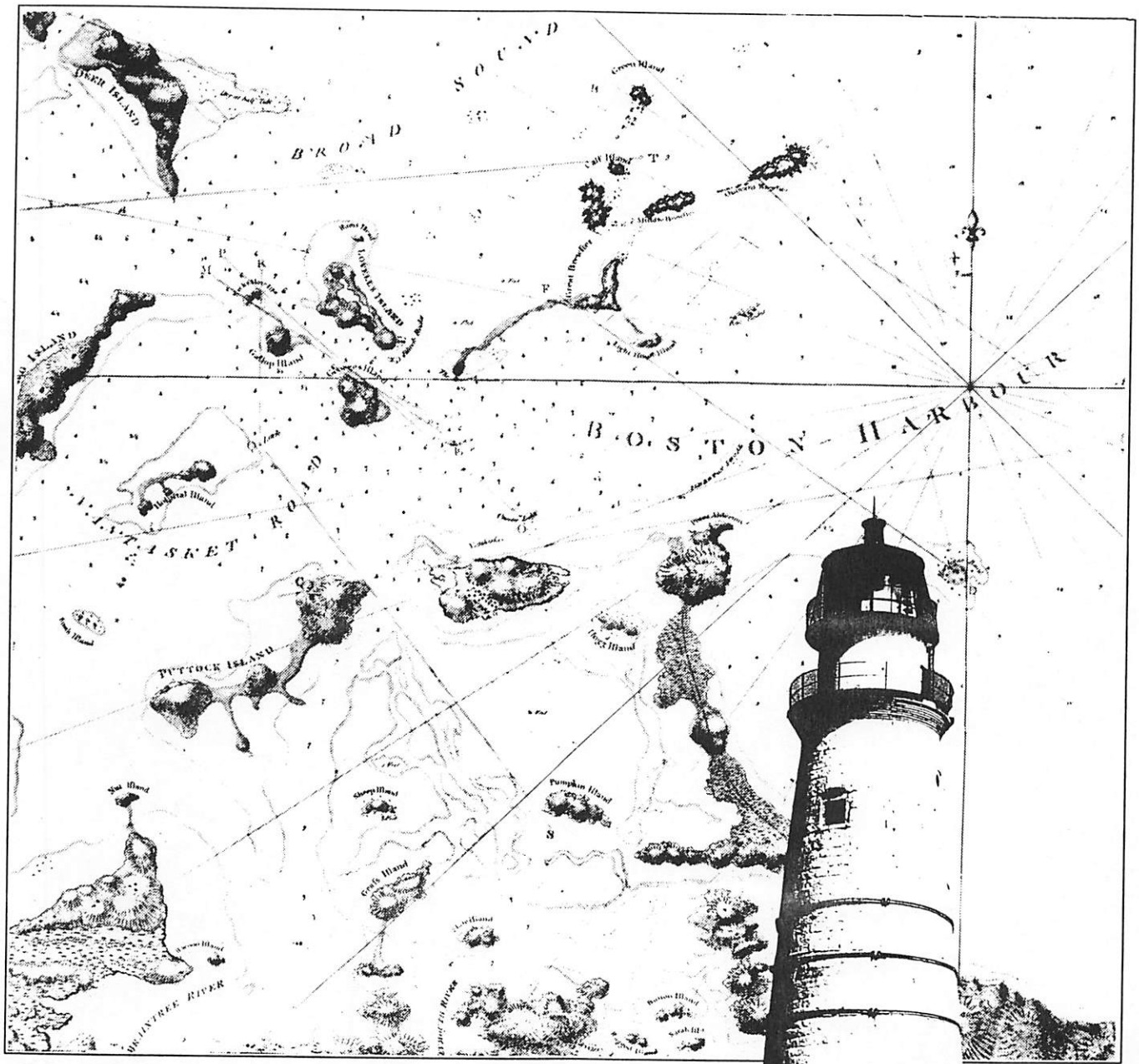


BOSTON LIGHT
Preservation Guidelines and Stewardship Plan

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL MANAGEMENT 1888

HISTORIC BOSTON INCORPORATED 1960

BOSTON LIGHT:
Preservation Guidelines and Stewardship Plan

Historic Boston Incorporated

and

Massachusetts Department of
Environmental Management

prepared by

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September 1990

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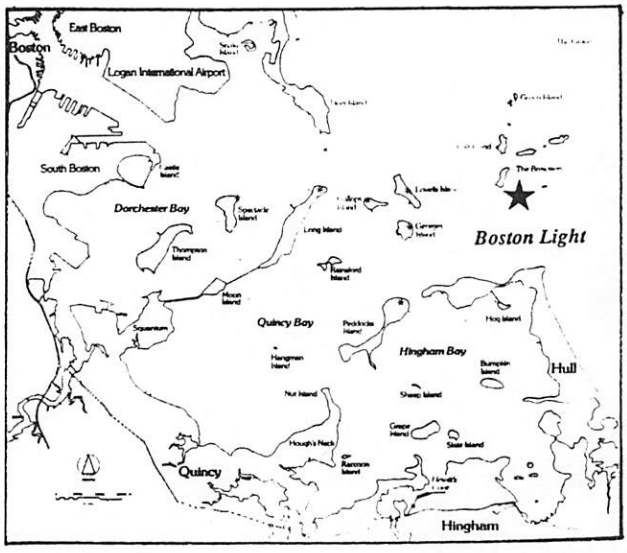
INTRODUCTION AND PROJECT GOALS

This report addresses the future of Boston Light on Little Brewster Island. First established in 1716, Boston Light is the nation's oldest lighthouse site. The existing tower, built in 1783, is the second oldest light tower in America. Boston Light is a National Historic Landmark and is listed on the National Register of Historic Places.



The Federal government has owned Boston Light since 1790. It is currently operated by the United States Coast Guard (USCG), a division of the Department of Transportation. Boston Light is the only light station in the nation which is still staffed by USCG personnel. The Light is located within the geographic boundaries of the Boston Harbor Islands State Park, which is administered jointly by the Massachusetts Department of Environmental Management (DEM) and the Metropolitan District Commission (MDC).

Historic Boston Incorporated (HBI) and DEM have undertaken this study to ensure the continued preservation of Boston Light as a unique historic resource, accessible to the public, while at the same time accommodating the needs of the USCG to maintain the Light as an aid to navigation.



I. EXECUTIVE SUMMARY

Boston Light is located on Little Brewster Island, at the entrance to Boston Harbor. The island has a total area of approximately 1.0 acres. There are six structures on the island: the light tower, the oil house, the fog signal building, the cistern building, the principal keeper's house, and the boathouse. There is a pier on the western end of the island, where shallow water makes access possible by boat for only three hours on either side of high tide. The Light is owned by the Federal government, and operated by the United States Coast Guard (USCG).

Historic Significance

First established in 1716, Boston Light is nationally significant as the nation's oldest lighthouse site, for its tower, built in 1783 – the nation's second-oldest light tower – for its intact second order Fresnel lens, for the exceptionally complete and well-preserved complex of supporting buildings, and for its role in the history of technological innovations. Boston Light has a long and rich series of associations with the history of Boston Harbor, including events of the Revolutionary War and the War of 1812, and the evolution of lighthouse management. Today, the island and its structures illustrate the special way of life of lighthouse keepers and their families.

Boston Light was declared a National Historic Landmark in 1964. Under Section 106 of the National Historic Preservation Act, a Federal agency head must, "to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to any National Historic Landmark that may be directly and adversely affected by an undertaking."

Development Approach

To preserve this unique historic resource, this study recommends a development approach based on four sets of guidelines

- **preservation guidelines:** a key goal of the guidelines is to preserve, rather than to recreate the island's significant character. The present character of the island must be seen as the product of its entire history. The general preservation standards and guidelines set out by the Secretary of the Interior have been applied to the specific elements of site, buildings, and equipment, in light of their historical significance. The guidelines stress the maintenance and stabilization of all character-defining elements. The guidelines have also been coordinated with USCG's mandate to maintain Boston Light as an aid to navigation.

- **stabilization guidelines** are designed to conserve the island and its historic and cultural resources, as well as identifying future requirements. DEM staff engineers, working with USCG, have developed cost estimates for solutions to all key issues, including extension of the pier, erosion control, new sanitary facilities for staff and visitors, repairs to the lens mechanism, repairs to the keeper's house, and safety guard rails.

- **public access guidelines** are designed to make this valuable resource accessible to the public within the broad context of the Boston Harbor Islands State Park. This study recommends that DEM take over responsibility for public interpretive services and transportation and also provide help with grounds maintenance responsibilities.

Interpretive staff might live on the island and share living quarters with USCG personnel during the visitor season, allowing USCG to reduce its on-island staffing level during that period. Given the preservation guidelines and the constraints imposed by its isolated location and small size, visitor levels on seasonal weekends should not exceed 100-200 visitors/day. This figure suggests a seasonal total in the range of 4,000-8,000 visitors.

• **navigational guidelines** meet USCG requirements to maintain the Light as an aid to navigation. This study recommends that the existing historic Fresnel lens remain in place and in use. USCG would therefore be required to retain a staff at Boston Light to maintain the historic equipment as an aid to navigation and preserve Boston Light as the last station staffed by USCG personnel. A new emergency lens, if required, could be mounted on a mast on the lantern catwalk.

Stewardship Plan

The stewardship plan identifies specific preservation guidelines and proposed improvements for the island and each individual structure, to address the needs of preservation, public access, stabilization, and navigation. A cooperative management system, similar to that found in the entire Harbor Islands State Park, will be crucial to the successful management of Boston Light in the future, since there will be a variety of different tasks to be performed, potentially with distinct or shared responsibilities for each.

II. HISTORIC SIGNIFICANCE AND PRESERVATION STANDARDS

Site Location and Description

Boston Light is located on Little Brewster Island, at the entrance to Boston Harbor, between the two shipping channels leading into the harbor. The island is part of the Brewsters, a chain of five small islands. The island is approximately 600' long, and 250' wide at its widest point, with a total area of approximately 1.0 acres above the mean high water mark.

There are currently six structures on the island: the light tower, the oil house, the fog signal building, the cistern building, the principal keeper's house, and the boathouse. The tower is stone construction, the oil house and fog signal building are brick, and the other buildings are wood frame. All of the buildings are painted white, with olive green trim and red asphalt shingle roofs. Concrete paths connect most of the buildings to one another.

Access is possible by boat to a pier on the western end of the island, a concrete slab on top of granite rip-rap construction, 180' by 12' wide. The water at the pier is 12' deep at high tide, and only 2' deep at low tide, making access possible for only three hours on either side of high tide. At low tide it is also possible to wade across to the island along a sand bar which connects it to Great Brewster Island to the north.

Historic Significance

First established in 1716, Boston Light is the nation's oldest lighthouse site. Its architectural and engineering significance derive from the importance of the existing tower, built in 1783, as the nation's second oldest light tower (after Sandy Hook in New Jersey), from its intact second order Fresnel lens, from the exceptionally complete and well-preserved complex of supporting buildings - keeper's house, fog signal building, oil house, rain shed, and boathouse – and from Boston Light's role in the history of technological innovations of illumination and fog signals. Boston Light has a long and rich series of associations with the history of Boston Harbor, including events of the Revolutionary War and the War of 1812, and the evolution of lighthouse management. The island and its structures illustrate the special way of life of lighthouse keepers and their families: isolated, self-sufficient, and dedicated to protecting the safety of mariners.

In 1713, Boston merchants petitioned the Massachusetts General Court to build a light-tower (America's first) on Little Brewster Island "for the preservation of lives and estates in Massachusetts Bay."* Boston Light went into operation on September 14, 1716. In 1719, a "great gun," the first in North America, "...answer(ed) ships in the fog."** After a series of destructive skirmishes at Boston Light during the Revolutionary War, the British, evacuating

* Mass. General Court Committee Report, March 20, 1713.

** letter from Captain John Hayes, 1719.

Boston in June 1776, succeeded in blowing up the tower.

After the war, a new 75' tower was built in 1783, at the urging of Governor John Hancock. In 1790, the Commonwealth of Massachusetts ceded the newly-rebuilt Light to the new Federal government, which in turn gave responsibility for the nation's lighthouses to the Department of the Treasury. In 1813, Boston Light served as a backdrop to the naval battle in which Captain James Lawrence of the *U.S.S. Chesapeake* gave his often misquoted command "Tell the men to fire faster and not to give up the ship." In 1844, the South Boston Iron Company made several improvements to the tower: the existing cast iron staircase, gallery, windows, and doors. By 1852, a fog bell had replaced the 1719 cannon, which is now on display at the USCG Academy in New London.

In 1851, the seafaring profession forced a thorough investigation of the nation's lighthouses. The slovenly condition of Boston Light was typical: "the new English parabolic reflectors were already damaged by improper care, the lantern was too small and dirty, the copper lightening conductors were damaged, the machinery-driven fog bell was unbalanced. The Head Keeper abandoned the night watches to assistants."* This investigation led to the creation of a new Lighthouse Board dominated by military engineers.

As a major landfall, Boston Light was completely renovated in 1856 and 1859. The tower was reinforced and raised to support a new second-order, French-made Fresnel lens (still in place and in use today). A new duplex keeper's dwelling was also constructed. The existing fog signal building and oil house were constructed in 1876. In 1884, the Principal Keeper's house was erected, as well as the existing shed to protect the cistern. Other now-demolished structures, including an auxiliary light, several fog signal buildings for scientific experiments, woodsheds, privies, and the 1859 double dwelling (extensively remodeled in 1895 and 1909) all crowded the small island. In 1898, gales carried away the boathouse and south wharf (both replaced in 1899). Erosion was a continuous problem.

After 1900, physical conditions at Boston Light changed little. In 1939, management changed, as the Bureau of Lighthouses was assigned to the USCG. In 1948, the kerosene beacon was electrified, and in 1949 a new clock mechanism was installed for the lens. Living standards remained primitive; in 1950, inspectors reported "no sewage or running water. The boathouse, piers and duplex are in poor structural condition."** Plumbing was not installed until 1953. After extended debate, the deteriorated duplex house was razed in 1960 and Boston Light became a station staffed by USCG servicemen, rather than families.

* Department of the Treasury, *Report of the Officers Constituting the Lighthouse Board,* 1852.

** USCG Inspection Report, 1950.

Boston Light as National Historic Landmark

Boston Light was declared a National Historic Landmark in 1964 by the National Park Service, within the Department of the Interior, under authority of the 1935 National Historic Sites Act (since modified by the 1966 National Historic Preservation Act). The designation applies to all of Little Brewster Island and its structures. In 1981 Little Brewster Island and all of its structures was among 51 Massachusetts lighthouse sites placed on the National Register of Historic Places, as part of a thematic nomination by the MHC. The National Register is also maintained by the Department of the Interior; it automatically includes all National Historic Landmarks.

The National Park Service has defined the criteria for designation of a property as a National Historic Landmark. The following criteria apply to Boston Light:

"The quality of national significance is ascribed to districts, sites, buildings, structures, and objects that possess exceptional value or quality in illustrating or interpreting the heritage of the United States in history, architecture, archaeology, engineering, and culture and that possess a high degree of integrity of location, design, setting, materials, workmanship, feeling, and association, and:

• "That are associated with events that have made a significant contribution to, and are identified with, or that outstandingly represent, the broad national patterns of United States history ..."	*Boston Light is the site of the first lighthouse in North America. It has associations with the history of Boston Harbor, events of the Revolutionary War, and the 275-year-long evolution of lighthouse management .*
• "That embody the distinguishing characteristics of an architectural type specimen exceptionally valuable for a study of a period, style or method of construction..."	*Boston Light is the second oldest light tower in the nation, with an intact second order Fresnel lens, an exceptionally complete and well-preserved complex of supporting buildings, and an important place in the history of technological innovations of illumination and fog signals.*
• "That are composed of integral parts of the environment ...[which] outstandingly commemorate or illustrate a way of life or culture..."	*The island and its structures illustrate the special way of life of lighthouse keepers and their families: isolated, self-sufficient, and dedicated to protecting the safety of mariners.*

General Preservation Standards

Section 106 of the National Historic Preservation Act establishes review procedures governing the actions of Federal agencies which affect historic properties. Under the regulations for a Section 106 review (36 CFR Part 800), a Federal agency head must, "to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to any National Historic Landmark that may be directly and adversely affected by an undertaking." Such an undertaking might include the sale or lease of a property to another party. The actions of the Federal Agency head would typically be reviewed by the State Historic Preservation officer, in this case the Massachusetts Historical Commission (MHC).

The Secretary of the Interior is responsible for establishing standards for all programs under Departmental authority and for advising Federal agencies on the preservation of historic properties which are designated as National Historic Landmarks. These Standards distinguish between four different approaches: preservation, rehabilitation, restoration, and reconstruction:

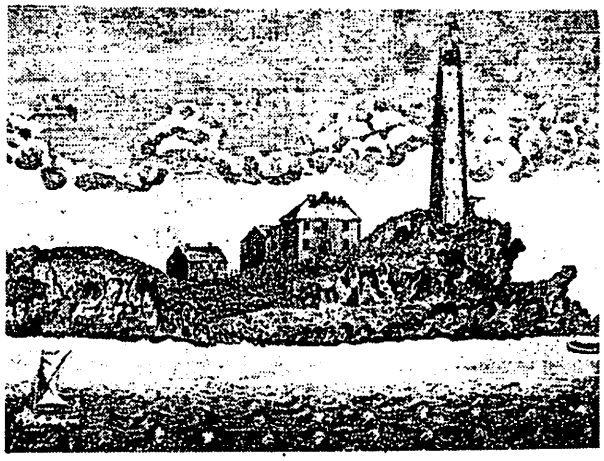
- "Preservation is defined as the act or process of applying measures to sustain the existing form, integrity, and material of a building or structure, and the existing form and vegetative cover of a site. It may include initial stabilization work, where necessary, as well ongoing maintenance of the historic building materials."

- "Rehabilitation is defined as the act or process of returning a property to a state of utility through repair or alteration which makes possible an efficient contemporary use while preserving those portions or features of the property which are significant to its historical, architectural, and cultural values."

- "Restoration is defined as the act or process of accurately recovering the forms and details of a property and its setting as it appeared at a particular period of time by means of the removal of later work or by the replacement of missing earlier work."

- "Reconstruction is defined as the act or process of reproducing by new construction the exact form and detail of a vanished building, structure, or object, or a part thereof, as it appeared at a specific period of time."

The significance of Boston Light requires that preservation standards govern planning for the island and its structures, rather than rehabilitation standards, which are more appropriate for historic commercial properties whose significance lies in their context (as part of a historic district, for example).



III. DEVELOPMENT APPROACH

To preserve this unique historic resource, this study recommends a development approach based on four sets of guidelines:

• **preservation guidelines** which are based on Boston Light's historic significance, and its status as a National Historic Landmark;

• **stabilization guidelines** which are designed to conserve the island and its historic and cultural resources, as well as identifying future requirements;

• **public access guidelines** which are designed to make this valuable resource accessible to the public within the broad context of the Boston Harbor Islands State Park; and

• **navigational requirements** which meet the USCG rmission to maintain the Light as an aid to navigation.

Having defined existing considerations in these areas, the team then identified and analyzed three potential alternatives for the future of the Light, evaluated each alternative against these considerations, recommended a preferred alternative, and developed a proposed budget.

Preservation Guidelines

To set a context for future actions and uses at Boston Light, the general preservation standards and guidelines set out by the Secretary of the Interior have been applied to the specific elements of site, buildings, and equipment, in light of their historical significance. Certain basic principles have guided the case-by-case recommendations which follow in Section IV, the Stewardship Plan.

• **The island:** Boston Light has undergone constant evolution and change throughout its history, in response to new technologies, new patterns of management and use, and the intervention of outside forces (storms, fires, war, erosion). Even the natural environment has been changed, beginning with the 17th century cutting of the trees and stone quarrying. The present character of the island must be seen as the product of its entire history, and a key goal of these guidelines is to preserve the island's significant character, rather than recreate a former state.

• **Structures:** Boston Light must be seen in its totality, as a complex of buildings, piers, and connecting walkways. Each element has been built in a specific location for a specific purpose, to support the navigational mission of the Light and its keepers. The size, shape, and orientation of each structure, its relationship to the other structures, and the remains of now-demolished structures, are all significant parts of the island's historic character. The guidelines stress the maintenance and stabilization of character-defining elements, including certain important elements which define their function, such as the cistern and the fog signal equipment. Subjective reconstruction of lost features is discouraged; restoration, based on historic documentation, should be considered only when insignificant features have deteriorated and require replacement. Any new work shall be removable.

• **The tower:** the most significant structure on the island, on historic, architectural, and

technological grounds. It is exceptional for its complete and well-preserved condition, and each part, including the Fresnel lens, must be seen as integral to its significance. At the same time, the guidelines must be coordinated with the Coast Guard's mandate to maintain Boston Light as an aid to navigation.

Stabilization Guidelines

The following section identifies current stabilization issues and proposed improvements which are beyond the scope of routine maintenance carried out by on-island USCG personnel. The information is based on field observations by DEM staff engineers, and information furnished by USCG.

Site and Utilities

• **Erosion:** the east end of the island has undergone substantial erosion as a result of its orientation to prevailing winter storms. The installation of gabions (boulders within steel mesh) in certain areas in 1985 appears to have successfully checked erosion in those locations. Additional erosion control measures are necessary in adjacent areas, particularly on the cliff below the light tower on the southeast end of the island and the cliff below the fog signal building on the east end of the island.

There is also concern about the effect of a relatively large crack in the rock cliff on the southeast side of the island. The crack appears to stop about three feet from the tower and is tangent to the base of the tower. The crack was identified in a 1984 survey and was subsequently filled with concrete to prevent water intrusion and freezing during winter months. Additional information is necessary to determine the rate of propagation of the crack and to assess its potential impact on the tower and the fog signal building.

Proposed improvements: a study of erosion problems and potential solutions, currently under preparation by the US Army Corps of Engineers for USCG, addresses the erosion conditions on the island. Upon receipt, a short term and long term strategy for erosion control should be developed. Depending upon the detail of the study, the services of a geotechnical engineer may be required. It is anticipated that, at a minimum, the installation of additional gabions on the east and southeast cliffs would be required.

• **Pier:** see discussion in the Public Access section which follows.

• **Public Safety:** the existing wooden guard rails on the island are not adequate to ensure safety during visiting by the general public.

Proposed improvements: an appropriate guard rail system should be designed and installed to protect the public and discourage access to high risk areas such as the rubble area north of the concrete pier and the steep cliffs on the east and south sides of the island. The design should be consistent with preservation standards as well as appropriate for the site. A galvanized steel post and rail system would be appropriate along the southeast cliff. A substantial system is needed along this cliff since the area will be a high traffic area as visitors queue to visit both the tower and the fog signal building. On the other hand, several rosa rugosa bushes would provide a natural barrier protecting visitors from the gully west of the oil house. The existing rail on the north side of the

island should have additional backstay braces installed to provide better horizontal support.

• **Electrical:** the island has a very high-capacity power supply, run in a cable across the harbor bottom from Hull, which serves the Graves as well as Boston Light itself. All of the buildings have 110v electric lights and power.

Proposed improvements: several electrical distribution cables show signs of insulation/cover deterioration. These should be repaired or replaced. The distribution cables outside the boathouse should be properly secured and protected from the elements and the public. The distribution cable from the fog horn building to the oil house is nailed to the guard rail and shows signs of deterioration. It should be replaced and properly routed. An operating manual for the entire electrical system should be prepared.

• **Fuel:** there are two underground diesel fuel tanks, 2,000 gallons each, buried within the foundations of the former double house. One tank feeds to the day tank for the boiler (hot water for heating and domestic hot water)in the basement of the keepers' house, which is the only heated building; the other tank feeds the emergency generator in the fog signal building. The supply inlet is at the end of the pier, with an in-ground supply pipe running from the pier to the tanks.

Proposed improvements: in-ground piping shows signs of corrosion and replacement may be required. Consideration should be given to excavating the steel supply tanks for a complete inspection. At that time the relocation of the tanks and their replacement with fiberglass tanks should be considered. A system test should be conducted to determine the operating condition of the various pumps, valves and controllers. The heating system and its operation should be fully documented for future use.

• **Water:** water for cooking, cleaning, and sanitation is supplied from the 20,000 gallon cistern in the rain shed, which is filled entirely by rain water (in very dry years USCG has occasionally brought supplemental water to the island). Water is transferred to a 2,500 gallon tank in the basement of the keepers' house by an outdoor garden hose. The house is the only building with running water (hot and cold). USCG crew now use bottled water for drinking, largely to reduce consumption from the cistern. The cistern needs to be cleaned and resealed periodically; it had a leak repaired in 1987.

Proposed improvements: the water supply system should be operationally tested to determine the condition of various pumps, valves and controllers. Operation of the system should be fully documented. Installation of an in-ground supply pipe should be considered.

• **Fire Protection:** there are now sufficient CO2 and H2O extinguishers in the buildings to deal with small fires.

Proposed improvements: a fire fighting system is required which would support fire suppression efforts at each structure on the island. The system could be a salt water system with in-ground piping and a diesel-driven prime mover.

Structures

• **Tower:** the tower underwent stabilization in 1981. It is in generally good condition.

Proposed improvements:
1) There is some cracking of the existing thoroseal application. This should be repaired along with any deteriorated mortar joints.
2) Some additional safety measures should be considered on the spiral stairs within the tower to prevent someone from slipping under the existing handrail. One solution would be to restore the original vertical stanchions on each step, install an iron scroll insert between the stanchions and utilize the existing handrail.
3) USCG, with HBI and DEM, has been awarded MHC/Bicentennial Lighthouse Fund grant assistance to stabilize the optic drive mechanism, which was last overhauled approximately twelve years ago by Mr. George Nimitz. When overhauled, sufficient spare parts should be included in the contract in order to make future overhauls possible and less costly.

• **Keepers' House:** the house is in generally good condition. The house was fully renovated in 1961, when the current plumbing, heating, and cooking facilities were installed. The interior was renovated more recently in the early '80s, when new interior finishes – carpet, wall panelling, and suspended ceilings – were installed. The heating system is a single-zone hot water baseboard system. All mechanical equipment – fuel and water tanks and hot water boilers – are in the basement.

Proposed improvements:
1) The exterior of the house needs repainting, and there is a need for repairs to wooden eaves and exterior trim, and roof shingles. USCG, with HBI and DEM, has also recently been awarded MHC/Bicentennial Lighthouse Fund grant assistance for stabilization and restoration of the front porch and rear stair, both of which are in fair to poor condition.
2) A more detailed inspection of the house should be made to insure compliance with existing codes. Waste from the kitchen and toilet in the house go into a septic tank buried to the northeast. The existing system does not meet Title V requirements; a replacement system should be installed to meet the needs of on-island staff as well as public visitors. All pipe insulation in the house, as well as elsewhere on the island, should be tested for asbestos.

• **Fog Signal building:** the building is in good condition, aside from the roof.

Proposed improvement: the roof needs to be replaced and reshingled.

• **Cistern Building:** repairs were completed to the roof and south wall last fall.

Proposed improvements: a more complete structural inspection of this building is required. Dry rot has been reported in the roof sheathing. Some of the rafters are not structurally sound and need to be replaced. The siding is not anchored at its base and some areas show signs of deterioration. The base framing for the siding needs to be replaced. At an appropriate time, the cistern should be pumped dry, inspected and the interior resealed. Documentation should be obtained which details the need and the installation of the steel I-beam support for the roof.

• **Boat house:** this building is in generally good condition.

Proposed improvement: USCG, with HBI and DEM, has been awarded MHC/Bicentennial Lighthouse Fund grant assistance to stabilize deteriorated historic windows.

• **Oil House:** this building is in generally good condition.

Public Access and Boston Harbor Islands State Park Guidelines

Little Brewster Island is located within the geographic boundaries of the Boston Harbor Islands State Park, which is administered jointly by DEM and the Metropolitan District Commission (MDC). The 1986 Master Plan for the park defines the broad context for public access and use in the harbor islands. The Plan identifies the key issue as that of balance:

> "Examples of unique resources that have been destroyed by their own 'success' are not uncommon. Surveys of Harbor Island visitors indicate that while improvements are desired,...the fragile and subtle qualities of the Islands are very much appreciated as they are. An unhappy scenario for the Islands would see inappropriate development detracting from this environment and spoiling the Islands for both human visitors and wildlife communities...
>
> "On the other hand, it is a basic goal to make the Harbor Islands experience available to more of the Commonwealth's residents. This is a goal based both in equity and in wise use of the financial resources needed to operate a state park. Can greater quantity in terms of the number of people served be provided without a loss of quality? The Plan answers that question in the affirmative."*

The chief access to the Park is by commercial ferry from Long Wharf in downtown Boston or Hewitt's Cove in Hingham out to George's Island. Capacities range from 150-600; fares are $5-6; and the boats run from May to October. From George's Island, two free water taxis operated by DEM (capacity of one 45, the other 150) take visitors to the smaller islands, including Gallop's, Lovell, Peddock's, Bumpkin, Grape, Calf, and Great Brewster. George's Island is the only island in the outer harbor with full visitor facilities – toilets, refreshments, and running water.

Currently, public access to Little Brewster is possible by boat to the pier, or by walking across the sand bar from Great Brewster at low tide. The existing pier was constructed in 1981, after the previous pier was destroyed in the 1978 blizzard. It is 12' wide and 180' long, with a concrete slab on top of granite rip-rap, and it is in good condition. Draft at the end of the pier is approximately 12' at high tide and only 2' at low tide, making it accessible for boats for approximately three hours either side of high tide. A vertical, metal rung ladder provides access from a boat to the pier. There is no fendering system on the end of the pier. The present pier configuration significantly impacts access for the public and USCG personnel. Extending the pier would improve accessibility, while other alterations would increase public safety.

* DEM, *Boston Harbor Islands State Park Master Plan*, p. 5.

In the summer of 1990 DEM ran occasional weekend trips from George's Island to Little Brewster via water taxi (tide permitting), with up to 50 people/boat. Visits were guided by a DEM ranger, and were brief (30-45 minutes) with the water taxi standing by to take visitors off again immediately.

The Friends of the Boston Harbor Islands (FBHI) has run trips to Little Brewster for several years. In 1987 FBHI ran 4 trips, with a total of 559 visitors; in 1988, 5 trips, with a total of 578; and in 1989, 7 trips, with a total of 738. The numbers on each trip ranged from 40-150. During FBHI trips visitors are on the island for 6 hours, from 10 AM to 4 PM, and they tend to disperse quite widely, with most people gravitating toward the shoreline. FBHI also gives everyone the chance to climb the tower and see the lens and the view. Visitors go up in groups of 5, with a guide at the bottom and another at the top. On the more crowded trips (100+) they are given 15 minutes/group – 5 minutes to climb, 5 minutes at the top, and 5 minutes to descend. This method permits 20 visitors/hour to the lantern, or 160 in the course of an 8 hour day.

To define appropriate and feasible visitor levels, given the constraints imposed by its isolated location and small size, Table 1 shows recent figures for other Harbor Islands. As another source of comparisons, Table 2 shows current visitor levels for some major Boston historic landmarks.

This information suggests that visitor levels on seasonal weekends should not exceed 100 to at most 200 visitors/day. In turn, seasonal totals are likely to be in the range of 4,000-8,000 visitors. Such visitor levels would be consistent with the public access goals of the Harbor Islands State Park.

TABLE 1	Size (acres)	Weekend average	Visitors/acre	Seasonal total
George's	28	2,650	95	120,000
Lovell's	62	290	5	8,000
Gallop's	16	200	13	5,800
Great Brewster	23	85	4	2,100
Little Brewster	1	50	50	2,000

The figures given for Little Brewster are informal estimates only, based on information from on-island USCG personnel.

TABLE 2	Weekend average	Seasonal total
U.S.S. Constitution	6,000	1,024,000
Paul Revere House	---	200,000
Bunker Hill Monument	1,500	131,000
Old State House	1,000	91,000

Proposed improvements

Public access will require two chief sets of improvements: work to the pier and the toilet facilities. To make the island accessible by boat regardless of the tide level, the pier needs to be extended approximately 25.' This can be done with a new wooden float attached to wooden pilings, connected to the existing stone pier by a gangway whose angle changes with the tide. The float and gangway would be removed at the end of the visitor season, to avoid damage from winter storms.

To meet the sanitary needs of increased public access, while still preserving the island's fragile natural environment, the study recommends a self-composting public toilet be installed in the keeper's house, in a first floor space adjacent to the kitchen and accessible by an exterior stair. This location would not have an adverse impact on the historic character of the structure. The existing toilet fixtures in the second floor bathroom would also be connected to the system.

Consistent with current policy for the Harbor Islands State Park, public exhibits concerning Boston Light must be made accessible to the physically handicapped at a shore-side location, such as the USCG First District office, located on the Harborwalk route on Atlantic Avenue, or the proposed DEM Visitor's Center for the park at Long Wharf. Any long-term solution must meet the requirements of the recent American Distabilities Act in providing access to the island. Piers and walkways should be designed for the physically handicapped.

Coast Guard Navigational Requirements

The USCG maintains Boston Light as an important aid to navigation for vessels entering and leaving Boston Harbor. The light is visible at a distance of 27 miles; flashes are at 10 second intervals. There is also a fog signal on the Island. The light tower itself serves as a highly visible daymark. A three-man USCG crew on the island maintains the structures and equipment. The crew rotates on a two-on, one-off basis. They perform all routine maintenance duties on the island; they also greet visitors, give daily weather reports, and provide surveillance and help for boaters in trouble in the Harbor. The Light is the only one in the nation which is still staffed by USCG personnel.

The current optic is mounted within the Fresnel lens in the lantern. There are two bulbs within the optic, with the second bulb serving as an emergency light; there is no separate emergency light. Power is supplied by a submarine electric cable from Hull, which in turn serves Graves Light as well. There is a diesel-powered emergency generator in case electrical power is lost. The optic drive mechanism which rotates the lens requires oiling on a weekly basis, and complete degreasing and relubricating on a monthly basis. USCG, with HBI and DEM, has been awarded grant assistance from the MHC/Bicentennial Lighthouse Fund to replace the worn chariot and wheels on the carriage; these, like the rest of the lens and carriage system, require specialized expertise. The glass lens itself must be carefully protected from being touched by visitors; it is wiped clean on a regular basis, as oils from fingerprints can focus the sun's rays and generate enough heat to crack the glass.

The fog signal is currently electronic, automatically activated by a fog sensor; the older, compressed-air-powered diaphragm horn is no longer in use. In providing for access, public exposure to noise over 80 dB must be prevented by mapping the affected areas on the island and forbidding access to these areas when the fog signal is in use.

There are several arguments for retaining Boston Light as the nation's only staffed lighthouse. These include the significance of the historical structures and equipment still in use, its historical status as the site of the nation's first lighthouse, its prominent location at the entrance to Boston Harbor, the need to maintain a staffed presence on Little Brewster Island to prevent deterioration and vandalism, the potential visual impacts on the Light's historic character which automation could bring, and the Coast Guard's own sense of institutional pride in this symbol of its historical mission.

Analysis of Alternative Development Approaches

Having defined existing considerations in the areas of public access, stabilization, and navigation, the study identified and analyzed three potential alternatives for the future of the Light, evaluated each alternative against these considerations, and recommended a preferred alternative.

• *Scenario 1: Preservation with limited change, public access*

This approach would maintain the island and its existing structures for the most part in their current condition. Initial work would concentrate on stabilizing and maintaining them. Once that has been completed, there might be opportunities for selective restoration or rehabilitation of areas within certain structures, for public interpretation and limited visitor facilities. USCG personnel, possibly supplemented by interpretive staff during the visitor season, would maintain the existing historic Fresnel lens in use. Virtually all of the house would be required for living quarters.

The preservation impacts of this approach would be limited and appropriate, given the Secretary of the Interior's standards and guidelines. Initial costs would be limited to stabilization, maintenance, and necessary improvements for public access and navigation. Future projects could be initiated as visitor levels, revenues, and funding sources justify.

• *Scenario 2: Period Restoration and Reconstruction, public access*

This approach entails complete restoration of the entire site to its appearance c. 1900 – the date when all of the existing structures, with the exception of the pier, had been constructed, and the island was probably at its height of development and intensity of use.

For completion, this approach would require reconstruction of the double house, based on original drawings and photographs, reconstruction of the railway from the pier (also requiring reconstruction) to the fog signal building, and restoration of the interior and exterior of the principal keeper's house. The double house would provide staff quarters (assuming more staff than current USCG crew of 3) and visitor amenities.

This approach would entail disturbance of the archaeological resources on the double house site, as well as the existing foundations of the

house itself; demolition of the existing pier; and significant changes to the existing nature of the site and the spatial relationships between the different buildings. The Secretary of the Interior's Standards for Preservation discourage this level of change in a preservation project:

> "Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken...
>
> "Preservation shall maintain the existing form, integrity, and materials of a building, structure, or site. Substantial reconstruction or restoration of lost features generally are not included in a preservation undertaking."

This approach would also require continued USCG staffing. Costs would be considerably higher than other alternatives.

• *Scenario 3: Preservation with limited change, non-profit or commercial use which limits public access*

In physical terms, this approach would be similar to Scenario 1. The chief difference would be one of access and use. Scenario 3 envisions a new use, ranging from a retreat for artists and writers, to a scholarly research and conference center, to a bed and breakfast. In each case, however, whether the Light is managed by a non-profit or a commercial entity, public access to the site would be severely limited. Use of the house for living and working quarters, and the limitations that places on potential uses, would be the key issue.

The preservation impacts of this approach would be limited and appropriate, given the Secretary of the Interior's standards and guidelines. However, this approach might require the Light to be automated, to make living quarters available for staff and/or visitors. Costs could vary widely, depending on precise use.

USE APPROACH	IMPACTS				
	Preservation	Stabilization	Public Access	Navigation	Costs
SCENARIO 1: Preservation with limited change, full public access	limited and appropriate	Stabilize in current condition, with limited improvements	full access, at appropriate low-medium levels	USCG staffing	low-medium
SCENARIO 2: Period restoration and reconstruction, full public access	high and inappropriate	Restore and reconstruct to previous appearance, with extensive improvements	full access, at inappropriate high visitor levels	USCG staffing	high
SCENARIO 3: Preservation with limited change, limited public access	limited and appropriate	Stabilize in current condition; would require more extensive improvements than Scenario 1	limited access, at low visitor levels	automation	low-high

Recommended Development Approach

Considering the four sets of guidelines and current budgetary constraints, this study recommends **Scenario 1: Preservation with limited change and full public access.** This approach, which envisions a creative partnership among public agencies and private volunteer groups, would preserve Boston Light's significant historic character and meet the need for public access and use.

The study recommends that the existing historic Fresnel lens remain in place and in use. USCG would therefore be required to retain a staff at Boston Light to maintain the historic equipment as an aid to navigation. Boston Light has been a symbol of national significance for 275 years. Its long and rich history will continue to be written, as America's first light station remains the last staffed by USCG personnel. (If required, a new emergency optic could be mounted on a light-weight mast attached to the lantern catwalk, similar to the emergency optic installed at Sandy Hook Light in New Jersey, the nation's oldest light tower, which is also a National Historic Landmark. Any such installation would be subject to MHC Section 106 review.)

Little Brewster Island should come under the administrative umbrella of the Harbor Islands State park. DEM should assume responsibility for public interpretive services and transportation, and assist with grounds maintenance duties. Planning for public access and use should stress imaginative ways of bringing the Light's history alive, both on- and off-island, in ways that do not adversely affect the island's small size, fragile environment, and historic character. Interpretive staff might live on the island and share living quarters with USCG personnel during the visitor season, allowing USCG to reduce its on-island staffing level during that period. Volunteer groups should be considered a special resource for public outreach.

Currently the visitor season runs from May to October, with peak use occurring in June, July, and August. The Harbor Islands Master Plan strongly supports extending peak use earlier into the spring and later into the fall as a way of increasing total visitor levels without overcrowding the islands, and the study recommends the same strategy for Boston Light. At the same time, there will still remain at least six months of the year when other non-profit or commercial uses could be appropriate as a source of use, enjoyment, and even revenue.

Budget

DEM staff engineers, working with USCG, have developed cost estimates for all of the work described in the preceding sections. The total estimated cost of conservation, stabilization, and limited improvements for public access is $1,249,500. The magnitude of these costs was a key factor in weighing the impacts of the alternative development approaches.

• *First Phase (year 1)*

Site and Utilities:	
Extend Pier	$150,000
Install guard rail system	10,000
Install safety signs for fog signal	2,000
Install fire-fighting system	25,000
Replace power cable to Oil House	5,000
Prepare operating manuals for systems	6,000
Subtotal	*198,000*

Structures and equipment	
Overhaul lens carriage	75,000
Install safety rail on tower stair	10,000
Keeper's house: repair front and rear porches	25,000
Connect existing toilet to new septic system	80,000
Install new public toilet in keepers' house	100,000
Inspect asbestos	1,500
Repair cistern roof and siding	40,000
Replace boathouse windows	5,000
Subtotal	*336,500*
First Phase Total	***$534,500***

• *Second Phase (years 2-3)*

Replace in-ground piping	$75,000
Repair electrical distribution cables	25,000
Install in-ground water transfer system	5,000
Repair thoroseal on tower	30,000
Second Phase Total	***$135,000***

• *Third Phase (years 4-5)*

Complete erosion control measures	$500,000
Replace in-ground fuel tanks	75,000
Reseal cistern	5,000
Third Phase Total	***$580,000***

• *Annual Staffing Budget and Maintenance Costs*

Based on information from DEM staff engineers, working with USCG, the following costs approximate anticipated annual expenses. Current preservation standards should be followed in developing a cyclical maintenance plan for Boston Light.

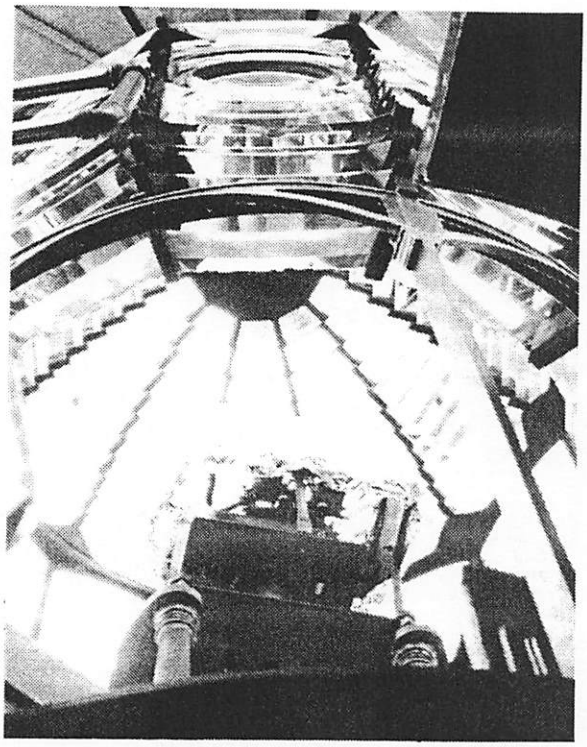
Navigational staff	$10,000
Interpretive staff	10,000
Transportation	15,000
Maintenance support	7,500
Materials	12,000
Utilities	11,000
Consumable materials	5,000
Shore support	6,000
Contingency (annual accrual)	15,000
Total	***$91,500***

IV. STEWARDSHIP PLAN

The Stewardship Plan contains specific preservation guidelines for Boston Light, in which the general preservation standards and guidelines set out by the Secretary of the Interior have been applied to the specific elements of site, buildings, and equipment, in light of their historical significance. Elements have been identified as:

- **most significant** – those which must not be changed, if Boston Light is to retain its essential character;
- **significant** – those which should not be changed; and
- **less significant** – those which can be changed.

The stewardship plan also recommends specific improvements to meet the needs of stabilization, public access, and navigation, based on the recommended development approach described in Section III. Finally, it provides a management approach for the Light.

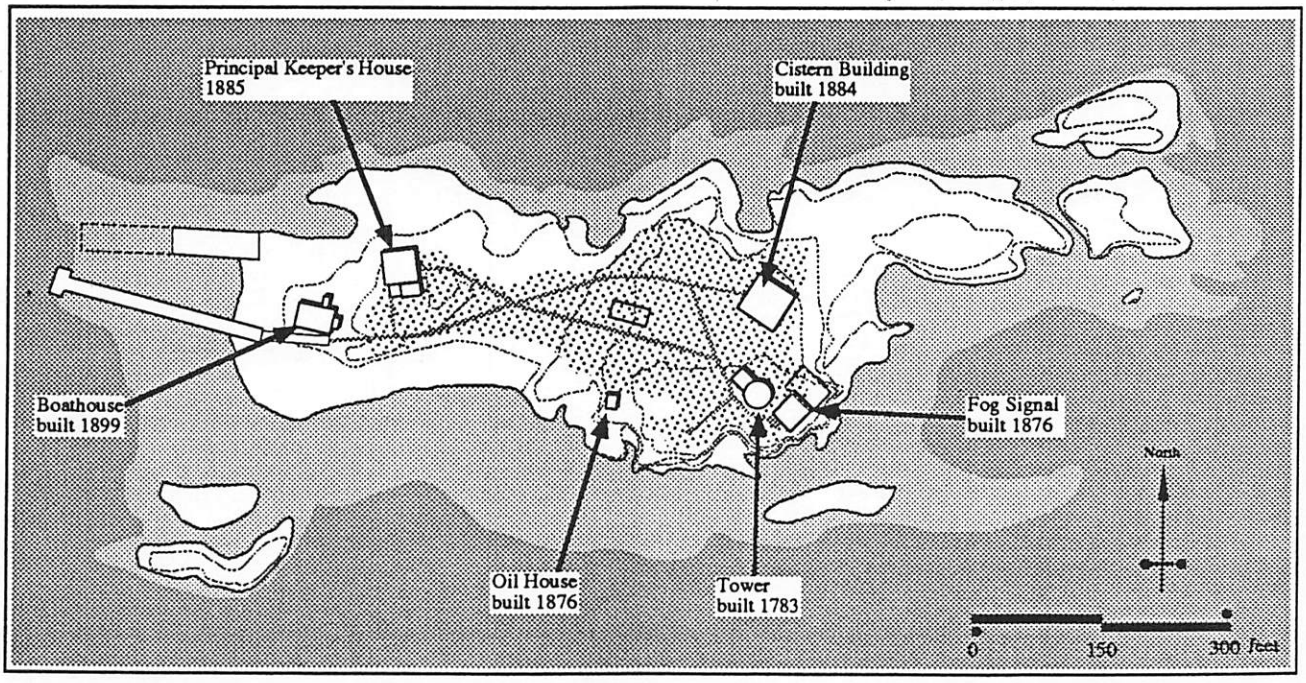


Little Brewster Island

The island is approximately 600' long, and 250' wide at its widest point, with a total area of approximately 1.0 acres above the mean high water mark. It rises to a high point at the eastern end, where the light tower is located, with elevation +31'. There is another, lower knoll at the western end, where the keeper's house is located, with elevation +25'. The central part of the island, including the two high points, has a thin layer of topsoil covered with grass. There are no trees or shrubs on the island. The rest of the island's surface is large outcroppings of rock ledge, or beaches composed of small- to medium-sized stones broken off from the ledges.



There are currently six structures on the island: the light tower, the oil house, the fog signal building, the cistern building, the principal keeper's house, and the boathouse. The tower is stone construction, the oil house and fog signal building are brick, and the other buildings are wood frame. All of the buildings are painted white, with olive green trim and red asphalt shingle roofs. Concrete paths connect most of the buildings to one another. Access is possible by boat to a pier on the western end of the island, a concrete slab on top of granite rip-rap construction, 180' by 12' wide.



PRESERVATION GUIDELINES FOR SITE	Most Significant: must be retained	Significant: should be retained	Less Significant: can be changed	Comments
Building locations	X			Address threat of erosion to tower and fog signal building
Building massings and roof-lines.	X			Maintain existing shapes and colors.
Fences			X	Address public safety requirements.
Walkways		X		Provide public access while minimizing erosion and wear.
Plantings, garden, and lawn		X		Maintain existing character.
Signs			X	Minimize visual intrusion.
Piers		X		Potential improvements for public access
Foundations of former structures	X			Protect for future archaeological opportunities and interpretation.
Other remnants – rails, septic, etc.		X		Protect for future archaeological opportunities and interpretation.
Erosion controls			X	Minimize visual intrusions.

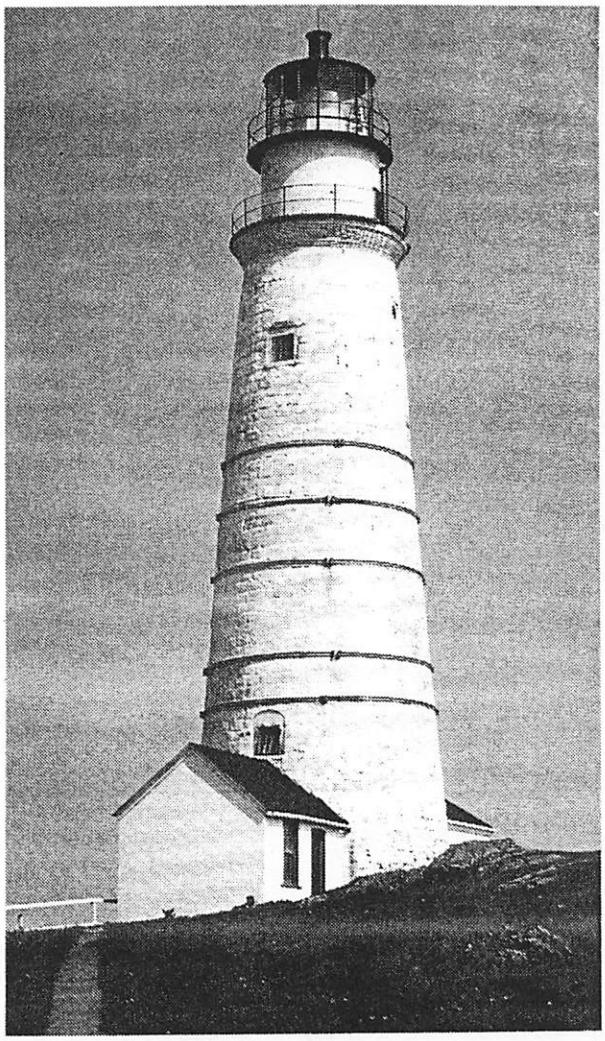
- **Proposed improvements:**

Extend pier
Install new guard rail system
Install safety signs for fog signal
Replace in-ground fuel piping and storage tanks
Undertake erosion control measures
Repair or replace exterior power cables
Install fire-fighting system
Install in-ground water piping



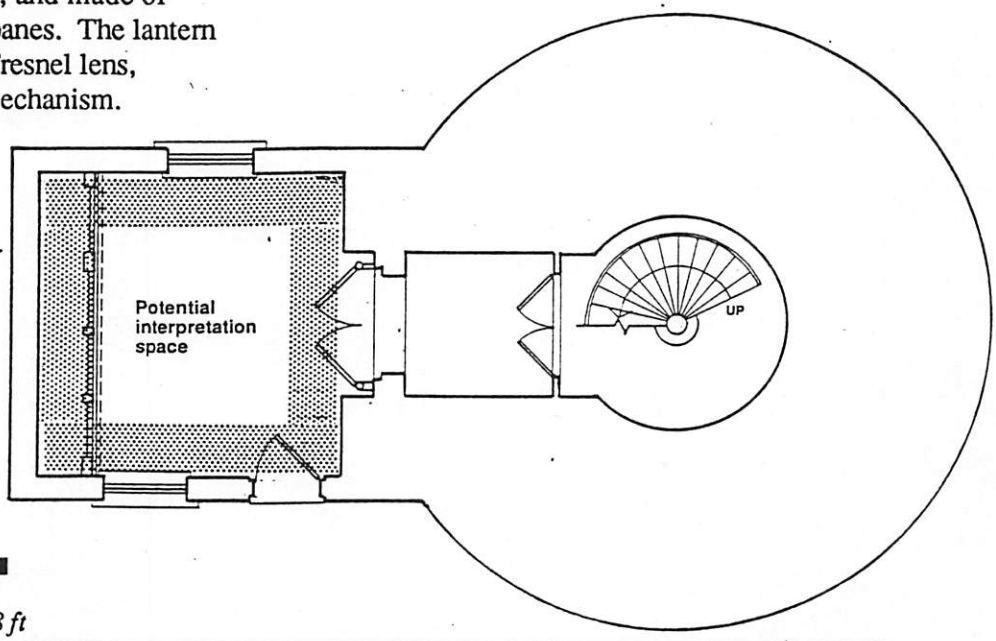
Tower
(built 1783, raised 1859)

The tower is 98' high, located near the eastern end of the island, at its highest point. The walls are built of rubble stone, with a brick inner lining; they are 7'6" thick at the bottom and 2'6" thick at the top, leaving a 10' diameter interior space which is largely filled by a cast-iron spiral staircase. There are five small windows, widely spaced, with cast-iron frames and sash, and two pairs of cast-iron doors at the bottom, at the inner and outer faces of the wall. The stone exterior of the tower is parged with cement and whitewashed; the brick interior is unpainted.



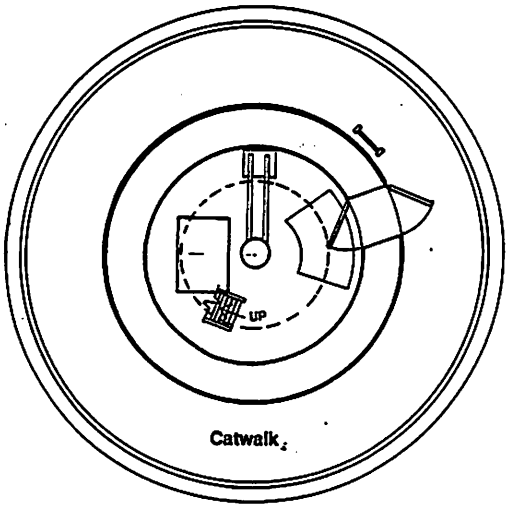
There is a one-story entry, with a red asphalt shingle roof, whitewashed brick walls, 6/6 wood frame windows with exterior storms, and new copper–clad door, gutters, and rain leaders. The interior of the entry has vertical wood panelling on the walls and ceiling, and a concrete floor. It contains a glass case with historical exhibits.

At the top of the stair, a cast-iron ladder leads up to the lamp room, which has wood flooring and walls. Above is the lantern, which is 11' high, 16-sided, and made of bronze, with curved glass panes. The lantern contains the second order Fresnel lens, mounted on its revolving mechanism.

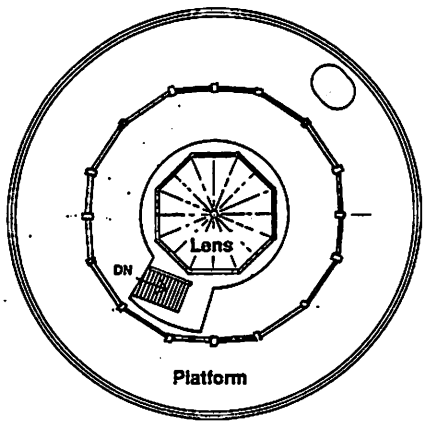


Tower: Plan
at Ground Level

North *0* *2* *4* *8 ft*



Plan at Lens Chamber



Plan at Lantern

PRESERVATION GUIDELINES FOR TOWER	Most Significant: must be retained	Significant: should be retained	Less Significant: can be changed	Comments
Exterior walls	X			Maintain size and location of steel straps and lightning protection system.
Balcony and catwalk	X			Potential new emergency light on exterior mast; minimize visual intrusion.
Doors, windows, ventilation system	X			Retain all existing hinges, dials, and hardware.
Lantern	X			
Entry roof		X		Retain shape and color.
Interior of entry		X		Retain paneling; potential for enhanced exhibit displays.
Interior of tower	X			
Interior of lamp room	X			
Stair, ladders, railings	X			Potential to add verticals in former locations for safety.
Lens and stand	X			Keep in operation.
Pulleys, other beacon equipment	X			

- **Proposed improvements**

Overhaul lens carriage, add fingerguard
Install additional verticals on stair railing
Repair thoroseal
Potential new exhibits in entry room

Principal Keeper's House
(built 1885)



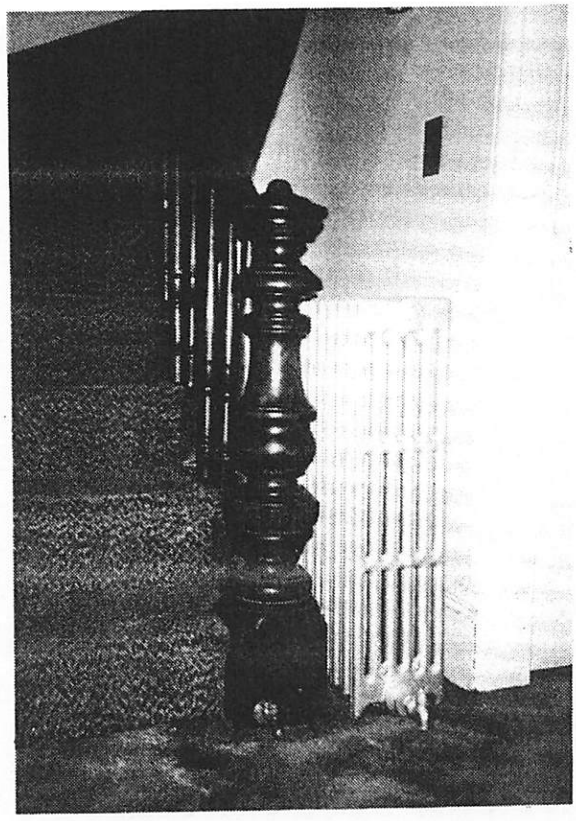


The principal keeper's house (so named to distinguish it from the older double keepers' house, now demolished) is a two-story wood frame house, measuring 28' by 40'. It is located on a raised knoll at the western end of the island. The house has a T-plan – typical of Lighthouse Board designs – with a gabled roof facing south, and a cross gable at the back running east-west. The walls are white painted shingles, with olive green trim. The roof is red asphalt shingles. There are white aluminum gutters and rain leaders. There is an exposed brick foundation wall, a full story high on the north side, where the ground falls away. The windows are 6/6 wood sash, with white aluminum exterior storms.

There have been several exterior modifications. The projecting window bay on the front was added by 1900. The house was originally clapboarded, and the window trim was wider and more extensive than at present. The southwest corner was originally an open entry porch; it is now enclosed with full-height windows. The concrete steps are recent. There is a recent exterior stair with a metal pipe railing at this corner, of inappropriate and unsound design. The rear (north) half of the present basement was an open porch; concrete block infill is visible inbetween a series of brick piers.

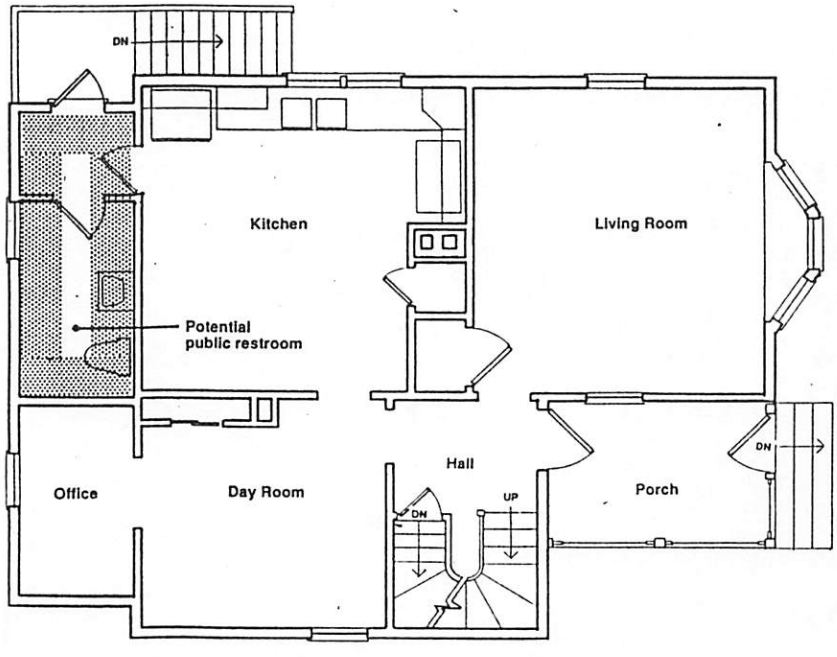
The plan of the first floor has been little modified since its construction. It contains three large rooms – living room, office, and kitchen – and two small

rooms on the north side. The room north of the kitchen was originally separated by a wall into two separate pantries. The second floor contains three bedrooms and a bath, some of which were modified in 1960, when plumbing was installed.



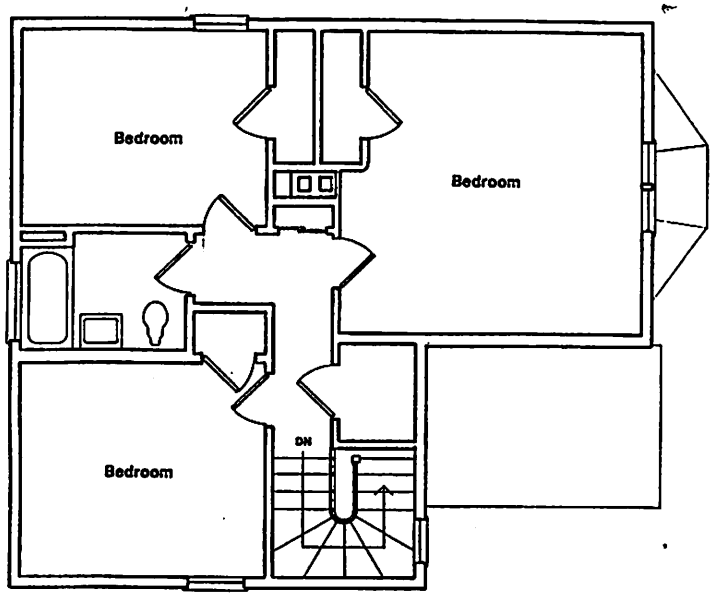
The interior finishes of the house have been almost entirely altered, largely since 1981. All of the ground floor rooms have suspended acoustic tile ceilings and carpet or vinyl floors. The living room and office and two of the upstairs bedrooms have wood veneer panelling on the walls; the other rooms have painted plaster. Many of the original baseboards and corner blocks have survived. The finishes and fixtures in the kitchen and bath are all recent.

The stairhall is the only space which has survived largely intact. It has plaster walls with wood corner beads, a plaster ceiling, narrow-board wood floors, and original wood detailing – a stained curving wood railing and painted wood baseboards and corner blocks.

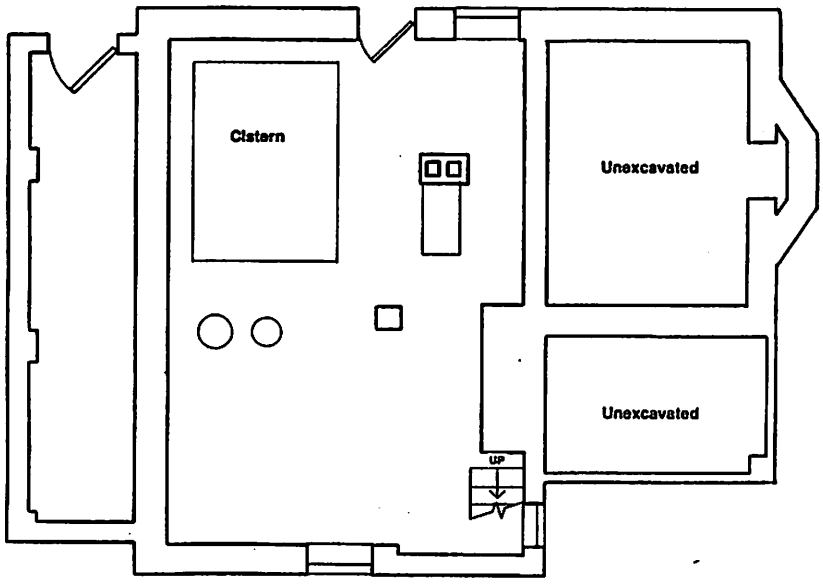


Keepers' House: Plan at First Floor





Keepers' House: Plan at Second Floor



Keepers' House: Plan at Basement



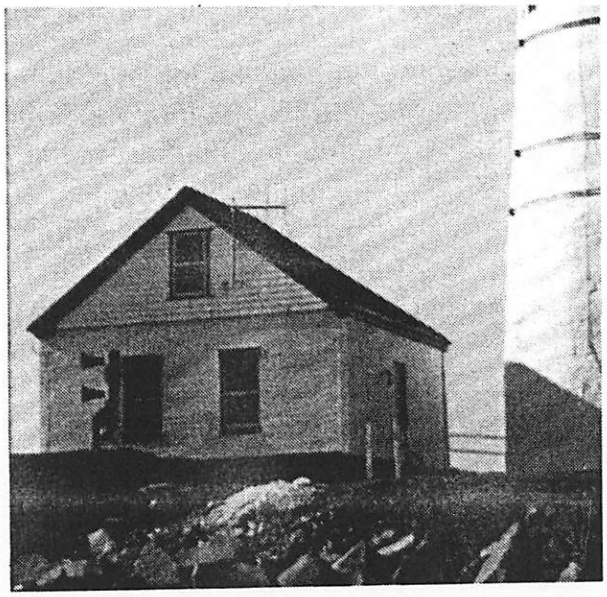
PRESERVATION GUIDELINES FOR KEEPERS' HOUSE	Most Significant: must be retained	Significant: should be retained	Less Significant: can be changed	Comments
Exterior walls	X			
Roof		X		Retain shape and color. Potential to restore wood shingles.
Front porch	X			Repair and stabilize deteriorated work.
Rear stair			X	Potential to replace unsound and inappropriate rear stair.
Exterior trim	X			Retain trim and gutters where original.
Windows and doors	X			
Interior floorplan		X		Potential to create new public restroom within previously altered rear entry, minimizing impact on original fabric.
Interior finishes			X	Retain finishes and trim where original.

- **Proposed improvements**

Repair front porch
Rebuild rear porch with compatible design
Connect existing toilet to new septic system
Install new public toilet
Inspect for asbestos

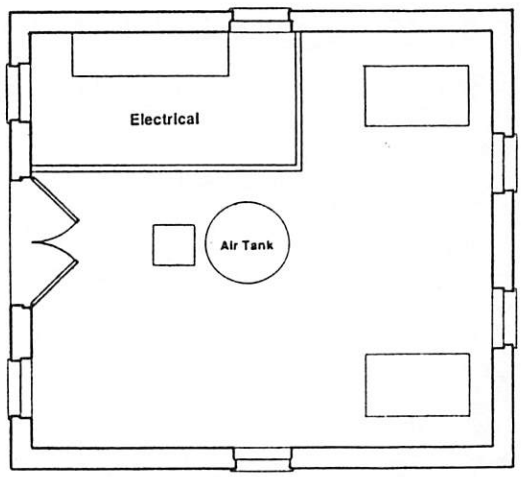
Fog Signal Building
(built 1876)

The fog signal building is a one-story rectangular building, measuring 22' by 24', and located immediately east of the tower, at the edge of the rock ledge at the eastern shore of the island. The walls are whitewashed brick, with exposed concrete foundations, painted red. At the northwest corner there is a portion of brick foundation wall visible under the concrete. It has a red asphalt shingle roof, hipped at the southern end and gabled at the northern end; within the gable end the wall is white-painted shingles. There are continuous wood gutters and metal rain leaders, both painted olive green. The windows are 6/6 wood sash, with exterior aluminum storms. There is a large double door at the south end, and an opening filled with glass block on the east side, where the fog detector is located.

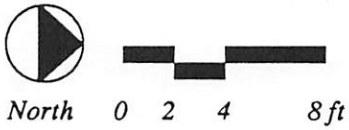


The interior walls were formerly painted brick, with the paint now largely stripped off. Several former openings, now blocked up, are visible. There is a brick chimney, now cut off below the roof. Interior equipment includes a pressurized air tank and two compressors (now disused), a fog detector, an emergency generator, and electrical switchgear inside a wire enclosure. There is a second floor loft, accessible by a ladder, which is used as a workshop.

Immediately to the north of the building is a raised concrete platform, the floor of a now-demolished addition to the building. Brick paving is visible under the concrete, and a stone foundation wall can be seen at the northern end.



Fog Signal Building: Plan



PRESERVATION GUIDELINES FOR FOG SIGNAL BDG.	Most Significant: must be retained	Significant: should be retained	Less Significant: can be changed	Comments
Exterior walls	X			
Roof		X		Retain shape and color. Potential to restore wood shingles.
Exterior openings & trim		X		Openings have changed considerably, in response to technology.
Windows		X		
Interior finishes		X		Retain chimney; leave masonry walls exposed.
Loft			X	
Disused equipment (pneumatic fog horn and tank)	X			As technology changes, retain previous equipment in place whenever possible.
Equipment in use		X		Screen equipment where required by public safety.

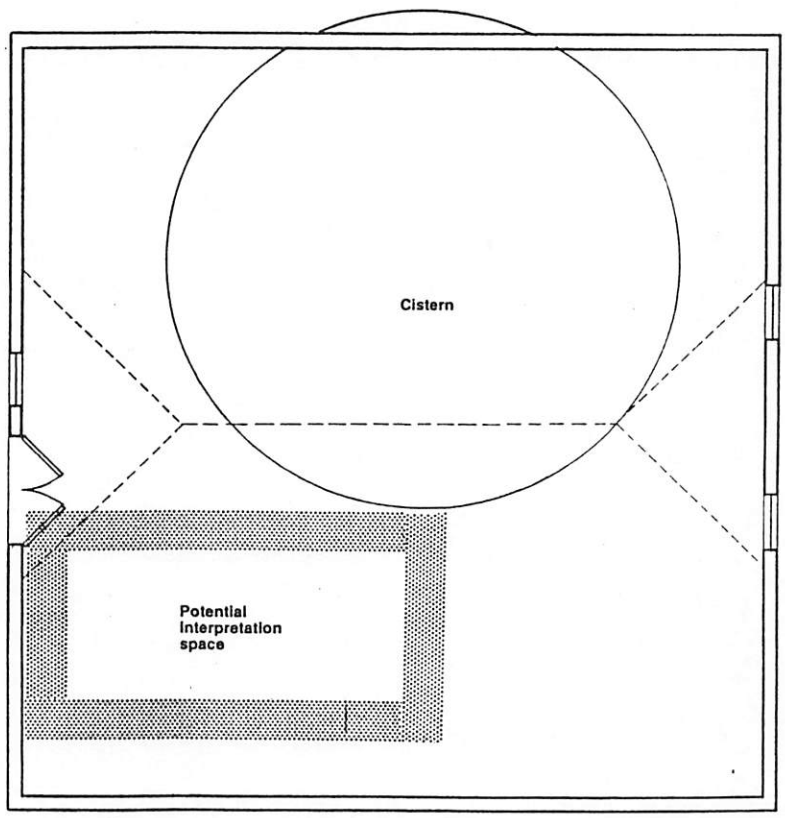
- **Proposed improvements**

Install safety signs for fog signal
Repair roof

Cistern Building
(built 1884)

The cistern building, also called the rain shed, is a one-story wood frame building, measuring 38' by 38', located north of the tower. It has a red asphalt shingle roof, with small hips at either end; white painted shingle walls; and 6/6 wood sash windows. There are several brick or stone piers supporting the roof load; portions of the walls rest directly on the ground. The interior floor is dirt. The building contains a round cistern, 25' in diameter, which projects 3' above ground level, and projects slightly out of the north wall. The cistern is filled with rain water, collected in gutters on the north and south sides. A large steel beam spans across the cistern on the northern side, supporting the roof load.





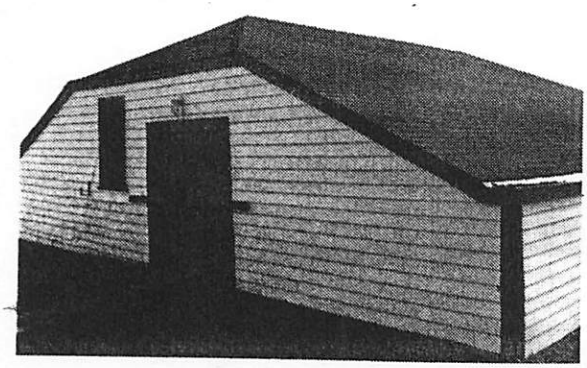
Cistern Building: Plan



PRESERVATION GUIDELINES FOR CISTERN BUILDING	Most Significant: must be retained	Significant: should be retained	Less Significant: can be changed	Comments
Exterior walls	X			
Roof		X		Retain shape and color. Potential to restore wood shingles.
Exterior openings & trim		X		
Windows and door		X		
Interior framing and finishes		X		Potential to repair original wood roof framing and remove steel beam. Leave framing exposed; retain dirt floor.
Cistern	X			Retain system of gutters and supply pipes.

- **Proposed improvements:**

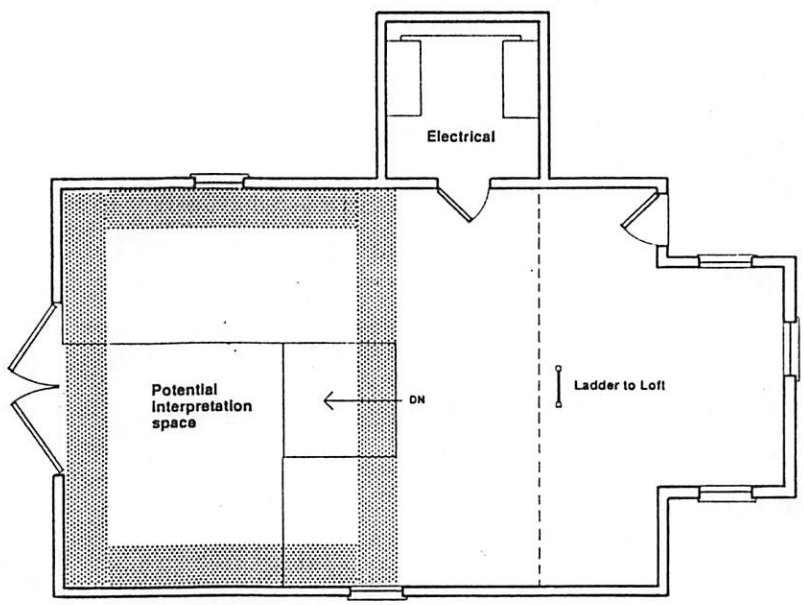
Repair roof and siding
Reseal cistern
Potential exhibit space



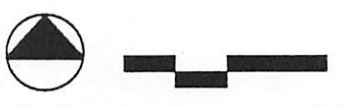
Boathouse
(built 1899)

The boathouse is a one-story wood frame structure, measuring 21' by 36', located at the western end of the island, just north of the land end of the south pier. It has a red asphalt shingle roof, white painted wood shingle walls, and 6/6 wood sash windows. There are large sliding double doors at the western end, aligning with a depressed portion of the floor, where the tracks of the marine railway originally ran from the beach into the boathouse. On the eastern side is a shed-roofed bay containing a workbench. On the northern side is a bay containing the electrical transformer. There is an interior loft space, reached by a ladder.





Boathouse: Plan



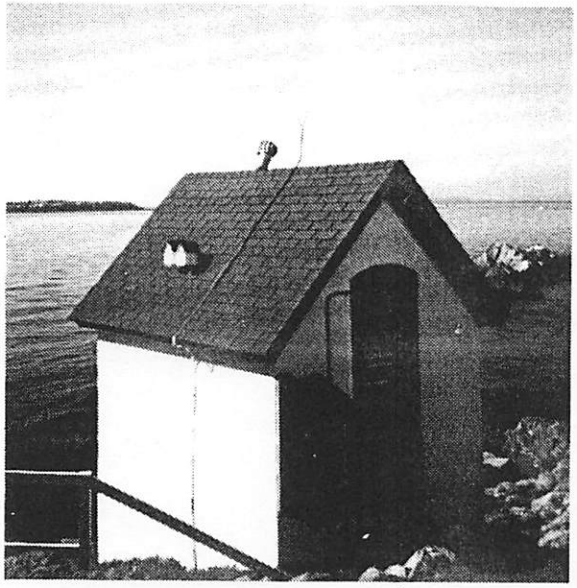
PRESERVATION GUIDELINES FOR BOATHOUSE	Most Significant: must be retained	Significant: should be retained	Less Significant: can be changed	Comments
Exterior walls		X		
Roof		X		Retain shape and color. Potential to restore wood shingles.
Exterior openings & trim		X		
Windows and doors		X		Repair deteriorated windows.
Interior floorplan			X	Loft can be changed.
Interior finishes			X	Leave framing exposed. Potential for removable interpretive displays.

- **Proposed improvements**

Repair deteriorated windows
Potential exhibit space

Oil House
(built 1876)

The oil house is a one-story brick structure, measuring 6' by 8', located on the south shore of the island. The roof is wood frame with red asphalt shingles (the framing exposed on the inside), the walls whitewashed brick, and the floor concrete. There are no gutters. There is a tall door opening with a transom, now filled with a solid panel, over the door. There is a recent metal ventilation hood in the roof, and a historic lightening rod and strap. The building is currently used for storage of paints and other flammable materials. A fire extinguisher cabinet is attached to the front of the building.



PRESERVATION GUIDELINES FOR OIL HOUSE	Most Significant: must be retained	Significant: should be retained	Less Significant: can be changed	Comments
Exterior walls	X			
Fire-fighting equipment			X	
Roof		X		Retain shape; potential to restore original slate.
Ventilation cupola			X	Potential to restore original cupola and transom.
Lightning rod and strap	X			Should remain visible.
Exterior openings & trim	X			
Door and transom		X		Potential to restore original appearance.
Interior finishes		X		Leave all framing exposed.

• **Proposed improvements:**
replace power supply cable

Management Requirements for Boston Light

A cooperative management system will be crucial to the future of Boston Light , since there will be a variety of different tasks to be performed, potentially with distinct or shared responsibilities for each. Since its creation in 1970, overall responsibility for the Harbor Islands State Park has been shared between DEM and the Metropolitan District Commission (MDC). Each organization provides seasonal park rangers and facilities for the islands under its control. Other islands in the park are owned by the City of Boston (Long, Spectacle, and Rainsford) and the Thompson Island Educational Center. DEM manages the Park Headquarters at Hewitt's Cove, and coordinates the network of ferries and water taxis. The park also relies heavily on volunteer efforts. Volunteers from FBHI provide support to park rangers on most of the islands during the season.

• **Navigation :** USCG will continue to be responsible for maintaining the light and fog signal as an aid to navigation. These efforts will be coordinated with aids to navigation elsewhere in harbor, including harbor buoys and lights on the Graves and Deer Island. USCG will also retain responsibility for maintenance efforts to prevent damage to navigational elements, including maintenance of the tower and fog signal building, and erosion control.

• **Caretaker:** the continued presence of USCG personnel on Boston Light year-round will be crucial to its future. They will be able to monitor the condition of the island and its structures and prevent vandalism, as well as maintain the aids to navigation. This caretaker role could be supplemented by interpretive staff during the visitor season, with the USCG staff reduced in number, freeing them up for other USCG assignments.

• **Maintenance:** there will be an ongoing need for routine maintenance to all existing structures and systems on island, as well as monitoring for repair and/or replacement of major elements. The emphasis should be placed on protecting and preserving significant historic features, and maintaining elements crucial to public access. Maintenance can be provided either by the on-island staff, as USCG currently does, or they could be supplemented by an off-island team visiting on a regular schedule, as DEM does with the other Harbor Islands.

• **On-island Interpretation:** interpretive services can be provided by on-island seasonal staff from DEM sharing the USCG living quarters in the house or living in another structure (such as the boathouse loft), or by DEM staff living off-island and arriving daily.

• **Public Access:** regular transportation to the island by boat will be an essential part of public access. To control visitor levels, regular public transportation should be scheduled from other harbor islands, via DEM's water taxi. Private small boats would only be allowed to drop off visitors at the pier or anchor off-shore and row ashore (during set visiting hours only). Special excursion boats, such as those chartered by FBHI, would continue to visit the Light directly from shore points (Long Wharf, Hingham, etc.) on a regular, prescheduled basis.

• **Volunteers:** in preserving Boston Light and making it available for public access and use, there will undoubtedly be a need for

private efforts, to parallel the efforts of the public sector. Such services might range from volunteer guide services, similar to the current efforts of FBHI on other harbor islands, to public education, outreach, and fund-raising.

Next Steps

In developing this study and its recommendations, HBI and DEM have solicited the active involvement of individuals and organizations concerned with the future of Boston Light, through the medium of the Advisory Committee. The process has been a rewarding one, and USCG and DEM look forward to future help from public and private organizations, as they work to develop management policies for the island.

APPENDICES

A. Text of Federal Legislation

In December 1989 Federal legislation (H.R. 2459 – P. L. 101-225, sponsored by Senator Edward M. Kennedy) was signed into law. The law contained the following provisions regarding Boston Light:

SEC. 221, BOSTON LIGHT STATION.

(a) The Congress finds and declares the following:

(1) The Boston Light Station (hereinafter in this section referred to as the "Boston Light") on Little Brewster Island, Boston Harbor, Massachusetts, is the Nation's oldest lighthouse station.

(2) The Boston Light is a National Historic Landmark and Little Brewster Island is listed in the National Register of Historic Places. As such, they should be administered and maintained in a way that preserves for public enjoyment and appreciation their special historic character.

(3) Continued manned operation of the Boston Light will preserve its special historic character. Any proposal to automate or modernize Boston Light must be consistent with the provisions of sections 106 and 110 of the National Historic Preservation Act (16 U.S.C. 470f and 470h-2).

(4) Efforts should be undertaken that will facilitate public access to, and enhance the public enjoyment and appreciation of, the Boston Light and Little Brewster Island.

(b) The Boston Light shall be operated on a permanently manned basis. The amounts authorized to be appropriated under sections 101 and 102 include funds–

(1) for maintenance of the keeper's house and of the Boston Lighthouse; and

(2) to enhance public access to the Boston Light and Little Brewster Island, including making pier improvements on the island.

(c) The Secretary of Transportation shall, in consultation with the Secretary of the Interior, the Massachusetts Department of Environmental Management, the Massachusetts Historical Preservation Officer, appropriate local government entities, and private preservation groups, develop a strategy to implement policies regarding the ownership, maintenance, staffing, and use of the Boston Light. The strategy shall propose ways–

(1) to provide improved public access to the Boston Light and Little Brewster Island; and

(2) to ensure that the special historic character of the Boston Light will be preserved, with the continuing presence of Coast Guard personnel, so as to provide the best possible public enjoyment and appreciation.

B. Secretary of the Interior's Standards for Preservation

The General Standards for Preservation established by the Secretary of the Interior (most recently revised in 1990) are as follows:

"1) A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.

"2) The historic character of a property shall be retained and preserved. The removal or alteration of features and spaces that characterize a property shall be avoided.

"3) Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements, from other buildings, shall not be undertaken.

"4) Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.

"5) Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.

"6) Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

"7) Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

"8) Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken."

In addition to the general standards, the following two standards apply specifically to preservation projects (the governing standard at Boston Light):

"9) Preservation shall maintain the existing form, integrity, and materials of a building, structure, or site. Substantial reconstruction or restoration of lost features generally are not included in a preservation undertaking.

"10) Preservation shall include techniques of arresting or retarding the deterioration of a property through a program of ongoing maintenance."

In certain areas the governing standards will be the Secretary of the Interior's Standards for Rehabilitation, Restoration, or Reconstruction. The following are standards for rehabilitation:

"9) New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property and its environment. The new

work shall be differentiated from the old to protect the historic integrity of the property, and shall be compatible with the massing, size, scale, and architectural details to protect the historic integrity of the property and its environment.

"10) New additions and related or adjacent new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired."

The following are standards for restoration:

"9) Every reasonable effort shall be made to use of property for its originally intended purpose or to provide a compatible use that will require minimum alteration to the property and its environment.

"10) Reinforcement required for structural stability or the installation of protective or code required mechanical systems shall be concealed whenever possible so as not to intrude or detract from the property's aesthetic and historical qualities, except where concealment would result in the alteration or destruction of historically significant materials or spaces.

"11) When archaeological resources must be disturbed by restoration work, recovery of archaeological materials shall be undertaken in conformance with current professional practices."

The following are standards for reconstruction:

"9) Reconstruction of a part or all of a property shall be undertaken only when such work is essential to reproduce a significant missing feature in a historic district or scene, and when a contemporary design solution is not acceptable.

"10) Reconstruction of all or a part of a historic property shall be appropriate when the reconstruction is essential for understanding and interpreting the value of a historic district, or when no other building, structure, object or landscape feature with the same associative value has survived and sufficient historical documentation exists to insure an accurate reproduction of the original.

"11) The reproduction of missing elements accomplished with new materials shall duplicate the composition, design, color, texture and other visual qualities of the missing element. Reconstruction of missing architectural features shall be based upon accurate duplication of original features, substantiated by historical, visual, or pictorial evidence rather than upon conjectural design or the availability of different architectural features from other buildings.

"12) Reconstruction of a building or structure on an original site shall be preceded by a thorough archaeological investigation to locate and identify all subsurface features and artifacts.

"13) Reconstruction shall include measures to preserve any remaining original fabric, including foundations, subsurface, and ancillary elements. The reconstruction of missing elements and features shall be done in such a manner that the essential form and integrity of the original surviving features are unimpaired."

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