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NATIONAL REGISTER

United States Department of the Interior
National Park Service

National Register of Historic Places Multiple Property Documentation Form

This form is for use in documenting multiple property groups relating to one or several historic contexts. See instructions in *Guidelines for Completing National Register Forms* (National Register Bulletin 16). Complete each item by marking "x" in the appropriate box or by entering the requested information. For additional space use continuation sheets (Form 10-900-a). Type all entries.

A. Name of Multiple Property Listing

Light Stations of Maine

B. Associated Historic Contexts

Maritime Transportation in Maine, ca. 1600-1917
Federal Lighthouse Management, 1789-1939

C. Geographical Data

State of Maine

☐ See continuation sheet

D. Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this documentation form meets the National Register documentation standards and sets forth requirements for the listing of related properties consistent with the National Register criteria. This submission meets the procedural and professional requirements set forth in 36 CFR Part 60 and the Secretary of the Interior's Standards for Planning and Evaluation.

Signature of certifying official — Date: 10/9/87

Maine Historic Preservation Commission
State or Federal agency and bureau

I, hereby, certify that this multiple property documentation form has been approved by the National Register as a basis for evaluating related properties for listing in the National Register.

Patrick W. Andrus
Signature of the Keeper of the National Register — Date: 11/20/87

E. Statement of Historic Contexts

Discuss each historic context listed in Section B.

MARITIME TRANSPORTATION IN MAINE
Ca. 1600-1917

The history of the State of Maine is one in which the early development of the means for maritime transportation have been critical to the sustained exploitation of its natural resources. Shaped by glaciers during the last ice age the state's 2,500 mile coastline and long, navigable inland waterways provided both difficult barriers to and marvelous opportunities for the growth of the region.

Long before European settlers had reached the Maine coast, its native Indian population had fully realized the abundance and accessibility of the maritime resources. The countless waterways and coves provided among other things, sheltered habitation sites in close proximity to bountiful supplies of fish, oysters and other marine life as well as an important means of transportation.

These same characteristics were equally evident to the European explorers of the sixteenth and early seventeenth centuries. James Rosier's account of the 1605 voyage of the ship Archangel, for example, records the enthusiasm of a probe up the St. George River and the discovery of its many "gallant coves" with the numerous excellent places for docking and repairing ships./1 Farther along in his narrative the chronicler expounds upon the great accomplishments of the voyage with the discovery of a bold coast, a large secure harbor and a river highway over which the evident resources of the land could be easily moved. Subsequent expeditions identified the much larger Sagadahoc (Kennebec), Penobscot and Saco rivers.

Commercial exploitation of the state's maritime resources by Europeans began as early as 1614 when Captain John Smith, arriving on Monhegan Island in April, "to make tryalls of a mine of Gold and Copper," soon abandoned the project in favor of drying fish./2 Smith's initial shipments to England and Spain netted him a 1,500 pounds sterling profit from his voyage. Fishing stations subsequently sprang up not only on Monhegan Island but along the entire coast. Well into the first quarter of the eighteenth century fish was the principal staple export from Maine./3

During the Archangel's voyage in 1605 Captain George Waymouth recognized the great wealth of "spruce trees of excellent timber and height able to mast ships of great burden."/4 From 1652 until the Revolution the colonies supplied the largest masts for England's Royal Navy. As the adequate timber was depleted along the coasts of Massachusetts and New Hampshire the search turned eastward. By 1727 Casco Bay was the gathering place for masts shipped through Falmouth (present day Portland) and Scarborough./5 Control over and access to these timber resources was in part responsible for the British occupation of Castine during the Revolution and again in 1814./6

Beginning in the early decades of the seventeenth century the abundance and variety of timber coupled with the deep sheltered waterways encouraged the development of local shipbuilding, albeit on a small scale. The importance of this enterprise is indicated by the fact that forty-seven vessels of thirty tons and more were built in Kittery and York between 1693 and 1714; this despite the turmoil of constant warfare with the native Indian population and the abandonment of all settlements east of Wells. Later in the eighteenth century shipbuilders established important yards all along the coast, among the most significant of which were those at Bath, Wiscasset, Newcastle and Bucksport. The construction of naval vessels came to a virtual standstill during the Revolution, and the immediate postwar period witnessed a severe depression and an English embargo. To dramatize the condition of the merchant fleet, as late

[X] See continuation sheet

as 1787 not a single large vessel was owned by the residents of Portland./7

Despite the economic woes of the 1780's, the post Revolutionary period was one of tremendous growth in Maine. Between 1783 and 1826, for example, 226 new towns were incorporated, more than five times as many as existed before. In 1794 there were 49,769 tons of shipping registered to Maine owners. This figure had risen to 148,876 tons by 1812./8 During the early stages of the war of 1812 there was little apparent slack in the growth of maritime industries, but with the English blockade beginning in 1814, commerce was substantially curtailed.

The separation in 1820 of Maine from Massachusetts and its admission to the Union coincided with the beginning of a period of growth that reinforced the significance of the state's maritime resources. Well-established industries such as fishing and shipbuilding continued to make rapid production gains. In the period 1820-26 the total output of the fishing industry in the United States averaged 63,987 tons per year. Maine's share totaled 12,326 tons per year or nearly twenty-percent of the total./9 Shipbuilding also gained momentum during the 1820's. In the 1830's its production exceeded that of Massachusetts and in the following decade it surpassed both New York and Massachusetts combined, thereby leading the United States./10 The numerous harbors such as those described by Rosier in 1605 facilitated the growth of a coastwide shipbuilding industry that and developed a character quite unlike the concentration of ship yards to a few major centers in states like New York and Massachusetts. By 1855, the peak of Maine's "Golden Age of the Wooden Ship," 215,904 tons of shipping were built in its yards, or more than one-third of the total production in the United States. In 1860 nearly one in five residents of the state were mariners./11

Maine's burgeoning nineteenth century coastal seaports became the shipping points for commercial traffic that extended deep into the interior. Before the development of an extensive railroad network farmers and merchants as far removed as New Hampshire and Vermont traded in Maine./12 The construction of canals linking the inland lake systems also facilitated the movement of goods to and from the coastal villages./13

Among the most important of the products that left the state's harbors was lumber. The vast forests of interior Maine provided the raw material for a prodigious industry whose greatest period of activity existed between 1820-80. It created, almost instantly, large settlements such as Calais on the St. Croix River and wealthy urban centers like Bangor at the head of navigation on the Penobscot River. The output of Bangor's lumber industry was particularly dramatic. In the fifty-six year period between 1832 and 1888 nearly nine billion board feet of lumber was produced here.

Fishing, shipbuilding and lumbering were the most significant nineteenth and early twentieth century industries that were dependent on maritime transportation. With the development of the commercial granite, lime, brick and ice industries, however, the already crowded waterways gained an additional volume of traffic as Maine progressed through the nineteenth century. The image of harbors literally choked with sailing vessels, piers and warehouses is clearly visible in numerous documentary photographs taken during the period./14

In addition to the heavy volume of merchant traffic which passed up and down the coast, steam passenger vessels, in service as early as 1816, connected the coastal and larger river towns with urban areas such as Portland, Boston and New York. Passenger traffic, including countless pleasure craft, increased dramatically throughout the second half of the 1800's as the growth of the state's summer resorts became a major seasonal industry. The importance of the seasonal traffic was specifically cited in the 1888 Annual Report of the Light-House Board to support the Board's request to establish a light station and fog signal at Great Duck Island.

As demonstrated above, the particular nature and direction of Maine's growth was intimately linked to the development of its long coastline and abundant harbors, lakes and waterways into a useable transporation network. The immense tonnage of both raw and finished products which left the state's numerous seaports testifies at once to both the need for and the ultimate success of the system of navigational aids that greatly facilitated commercial maritime transportation.

The history and importance of maritime transportation in Maine does not end at the somewhat arbitrary date of 1917 that marks the end of this discussion. Nevertheless, it is a date which is useful for a number of reasons. Prior to the United States' entry into World War I other methods of transportation, principally the railroad and the automobile had become viable alternatives to travel by water. After the war the pace of change continued, especially with respect to the increasingly wide use of automobiles on the broadening system of adequate roads.

ENDNOTES

1 Historians have disagreed about the exact location of the river described by Rosier. However, it has generally been concluded that this is indeed the present St. George River. Henry S. Burrage, D.D., The Beginnings of Colonial Maine 1602-1658 (Portland: Marks Printing House, 1914), pp. 45-46, hereinafter cited as Burrage, Colonial Maine.

2 William Hutchinson Rowe, The Maritime History of Maine: Three Centuries of Shipbuilding and Seafaring (Freeport, ME: The Bond Wheelwright Company, 1966), p.21, hereinafter cited as Rowe, Maritime History.

3 Rowe, Maritime History, p.28.

4

The first known mast harvested along the coast of Maine was in 1609 during Henry Hudson's first voyage in the Half Moon. England received her first shipment of New World masts in 1634. Rowe, Maritime History, pp. 34-35.

5

The 1755 Tate House (N.R. 1/13/70) in the Stroudwater neighborhood of Portland was built and occupied by George Tate, the Mast Agent for the Royal Navy. National Register Nomination for the Tate House, Office of Archaeology and Historic Preservation, National Park Service, Washington.

6

Rowe, Maritime History, p. 43.

7

Rowe, Maritime History, p. 64.

8

Rowe, Maritime History, p. 66.

9

Maine: A History, A Facsimile of the 1919 Edition edited by Louis Clinton Hatch with a new Introduction and Bibliography by William B. Jordan, Jr. (Somersworth, NH: New Hampshire Publishing Co., 1974), p. 674.

10

Rowe, Maritime History, p. 142.

11

Rowe, Maritime History, p. 262.

12

Rowe, Maritime History, p. 112.

13

The most extensive canal system built in Maine was the Cumberland and Oxford canal (N.R. 11/1/74) that linked Sebago Lake and Portland. Constructed in the 1820's it was made obsolete by rail lines. National Register Nomination for the Cumberland and Oxford Canal Historic District, Maine Historic Preservation Commission, Augusta.

14

The Maine Historic Preservation Commission, Augusta, holds an extensive collection of late nineteenth century photographs and stereo view cards that illustrate this point.

FEDERAL LIGHTHOUSE MANAGEMENT
1789-1939

For nearly two centuries the United States government has been responsible for the establishment and operation of lighthouses and other aides to maritime navigation. The history of this Federal management in many ways parallels the development of the nation from a newborn association of former colonies in 1789 to an increasingly dynamic nation in the nineteenth century and finally to its emergence as a full member of the world community with international responsibilities.

On August 7, 1789, the newly gathered United States Congress approved an Act to create the Lighthouse Establishment./1 The provision accepted title to and jurisdiction over the existing lighthouses as well as the financial responsibility for other aids to navigation for one year; a resolution subsequently amended to increase its duration. Prior to 1789 twelve lighthouses had been erected by the seaboard colonies, the oldest of which was the light built in 1716 on Little Brewster Island at the entrance to Boston Harbor./2 Not until 1797, however, had all of the lighthouses been turned over to the Federal government.

During the first three decades of its existence the Lighthouse Establishment had authorized a nearly fourfold increase in the number of lighthouses. By 1820 there were fifty-five such facilities in operation along the coastal United States. These early lights were apparently built to meet immediate and pressing local needs and were not conceived as integral components of a general system of navigational aides./3

In the absence of a full time qualified staff to design and see to the supply and maintenance of its facilities the Lighthouse Establishment entered into contracts with civilian builders, suppliers and in rare cases engineers for specific needs. In 1812, for example, a contract was made with Winslow Lewis "for fitting up and keeping in repair, any or all of the lighthouses in the United States or territories thereof, upon the improved plan of the reflecting and magnifying lanterns."/4 Congress had authorized the purchase of Lewis' patent for this lamp and its supply and maintenance were continued under contract until 1828.

One of the most notable civilians engaged in this manner for work in Maine was the architect/engineer Alexander Parris (1780-1852). Parris was a leading proponent of the use of granite as a building material and his Maine commissions for the Lighthouse Establishment underscore this commitment. Although his first designs were made in 1838 and 1841 for Saddleback Ledge Light and York Ledge Beacon, respectively, Parris's greatest period of work came near the end of his long career beginning with the re-design of Matinicus Rock Light (1846-47), followed by Mount Desert Rock Light (1847), Libby Island Light (1848) and Monhegan Light (1851). A sixth tower, the 1852 structure at Whitehead Light is virtually identical to the one at Monhegan and can be reasonably attributed to Parris. The striking conical structures at Saddleback and Mount Desert are particularly forceful examples of the quality and uniqueness of his designs./5

Perhaps because of its lack of diligent oversight of its contractors and administrative procedures the Lighthouse Establishment came under increased Congressional scrutiny during the 1830's. Complaints were made about the efficiency and management of American lighthouses. One such complaint came from the publishers of Blunt's Coast Pilot who argued that "the whole lighthouse system needs revision, a strict superintendance and an entirely different plan of operation."/6 A number of steps were taken to evaluate both the process by which lights were established and their construction and technical capability with respect to European examples. In addition, Congress authorized the President to divide the Lake and Atlantic coasts into manageable districts and to appoint naval officers to survey individual districts and evaluate the present condition of navigational aids and future needs./7 This was a clear step toward the development of a more fully integrated lighthouse organization.

In 1842 the Secretary of the Treasury appointed I.W.P. Lewis, an engineer by profession,to inspect and evaluate existing lighthouses and to prepare a plan for a complete system of illumination along the coastal United States./8 Three years later two naval officers were dispatched to Europe in order to study European lighthouses and recommend improvements to existing lights in the United States. Despite the identification of serious problems in the system Congress took no action with respect to these fact finding missions.

By the mid 1840's the Lighthouse Establishment was responsible for 325 lighthouses and lightships and nearly 1,000 other aids to navigation. As one author later wrote "It is true that many of the lighthouses then built were later rebuilt more substantially, yet the class of work done probably met at a moderate cost the immediate needs of a growing country."/9

On March 3, 1851, Congress passed an Act which, among other things, provided that Army engineers be detailed to superintend the construction and renovation of lighthouses and authorized the use of the Fresnel light. Furthermore, it instructed the Secretary of the Treasury to appoint a board composed largely of engineers and charged it with the task of developing a program to improve virtually every aspect of the Lighthouse Establishment. In its report of January 30, 1852, it recommended a complete reorganization./10 Over the objections of Stephen Pleasanton, who was at that time the superintendant of the Lighthouse Establishment, Congress later that year adopted the board's recommendation.

The legislation of 1852 reshuffled the existing Lighthouse Establishment and created a supervisory Lighthouse Board, a group of engineers and scientists many of whom had been members of the committee that drafted the study report. Immediate steps were taken to improve the equipment utilized in lighthouses. By 1859, for example, the superior Fresnel lens had supplanted nearly every Argand lamp previously used./11 Of particular significnace was the institution of a research and development program. Among its accomplishments was the design of a bell bouy (1854), a siren fog signal (1866), a whistling bouy (1876) and a gas bouy (1882)./12

Among the many recommendations made in the study report published in February of 1852 was on which stated "That all constructions, renovations, and

repairs of towers and buildings, be hereafter made upon the plans, estimates, and drawings, and under the personal superintendence of an officer of engineers of the army..."/13 The uniformity in design and materials of subsequent lighthouse construction or remodeling is clearly evident in documentary photographs and the numerous existing buildings at various Maine light stations.

The published annual reports of the Lighthouse Board demonstrate the extent to which a systematic and well documented approach to maintaining the aids to navigation had been instituted. Introductory statements advise on the need for new lights, the progress of experiments and the introduction of new materials (such as different lamp oils). These are followed by brief but detailed descriptions of work performed in the various lighthouse districts during the past year. In a series of reports beginning in 1875 they reveal a particularly important glimpse of the impact of late nineteenth century cultural attitudes on the Board's recommendations. Amidst its yearly descriptions and accounting of work performed the board stated that:

> It is thought that the time has now come when it is proper to supply light-houses, particularly those at isolated points, with a limited quantity of reading-matter. By so doing, keepers will be made happier and more contented with their lot, and less desirous of absenting themselves from their posts./14

Nine years later the annual report carried the statement that 380 light keeper's libraries were in use./15

The Lighthouse Board created in 1852 continued to function until 1910 when it was again reorganized and replaced by the Bureau of Lighthouses./16 At this time there were 1,397 lights and a total of 3,992 lighted aids and 6,507 unlighted aids, 457 of which were fog signals. During the second year of the Bureau's existence the number of lighthouse districts was increased from sixteen to nineteen and embraced waterways as far north as Alaska, south to Puerto Rico and west to the Hawaiian Islands. In 1939 the Bureau of Lighthouses was transferred to the Coast Guard. This agency continues to establish, maintain and in some cases deactivate navigational aids. In Maine it has nearly completed the automation of existing active lighthouses.

ENDNOTES

1 This act was the ninth law ratified by Congress and the first to provide for a public work. George Weiss, The Lighthouse Service: Its History, Activities and Organization (Baltimore: Johns Hopkins Press, 1926), p.2, hereinafter cited as Weiss, Lighthouse Service.

2

Three additional lighthouses were under construction at this time including the Portland Head Light (N. R. 4/24/73) in what was then Massachusetts and is now Maine. Weiss, Lighthouse Service, pp. 1-2.

3

Weiss, Lighthouse Service, p. 4.

4

Weiss, Lighthouse Service, p. 5. Lewis obtained a patent for his lamp in 1810, and the following year installed it in the Boston Light. Edward Rowe Snow, Famous New England Lighthouses (Boston: The Yankee Publishing Company, 1945), p. 20, hereinafter cited as Snow, Lighthouses.

5 The excellent design of the Saddleback tower was recognized in an 1843 report to Congress in which the author, I.W.P. Lewis, stated that it was "the only establishment on the coast of Maine that possesses any claim whatever to superiority...the only one ever erected in New England by an architect and engineer." Snow, Lighthouses, p.61.

6

Twenty-fifth Congress, Second Session, S. Doc. 138.

7

Weiss, Lighthouse Service, p. 8.

8

Lewis was the nephew of Winslow Lewis. Snow, Lighthouses, p. 20.

9

G. R. Putnam, Lighthouses and Lightships of the United States (Boston: Houghton, Mifflin Company, 1917), p. 41.

10

The Board's report contains an extensive list of specific faults of the existing lighthouses; objections which apply to virtually every aspect of the system. Thirty-second Congress, First Session, S. Ex. Doc. 28.

11

Named after its designer, M. Augustin Fresnel and first used in 1819, the Fresnel light was a major technological advance over the earlier Argand lamp. In place of parabolic reflectors placed behind lamps, the Fresnel apparatus made use of a centrally located oil burning wick surrounded by a lenticular lens that refracted light into parallel rays. Alexander George Findlay, Lighthouses of the World and Fog Signals, 36th edition (London: Richard Holmes Laurie, 1876), p. 20.

12

Weiss, Lighthouse Service, p. 15.

13

Thirty-second Congress, First Session, S. Ex. Doc. 28.

14

Annual Report of the Light-House Board to the Secretary of the Treasury for the Year 1875 (Washington: U. S. 6. P. O., 1875), p. 10, hereinafter cited as Annual Report with the corresponding volume.

15 Annual Report, 1884, p. 11.

16 This reorganization, unlike that of 1852, was primarily an administrative one. Weiss, Lighthouse Service, p. 20.

F. Associated Property Types

I. Name of Property Type Light Station

II. Description

The light stations of Maine embody in both design and materials, a highly specialized structural form adapted to survive the rigors of an often hostile environment. Constructed at a wide range of sites along the state's 2,500 mile long coastline as well as on the banks of two important rivers and in one lake, these stations illustrate an evolutionary process in engineering and technology spanning a period of time from the 1790s to the present.

For purposes of comparison Maine's light stations can be placed into one of four general periods of construction. The first time frame extends from 1790, when the state's first station (Portland Head Light, N.R. 4/24/73) was activated until 1852 when a reorganization of the Lighthouse Establishment was effected. The second period is confined to the duration of the 1850s when a remarkable

III. Significance

Maritime Transportation in Maine
ca. 1600-1917

Maine's light stations have assumed significant roles in the growth and development of the state's critical maritime transportation network. Prominently located at strategic offshore, coastal and river sites, they are the most technologically and architecturally significant elements in what is today an extensive system of navigational aids employing a variety of structures. Constructed, at first, in response to specific local needs, but later as part of a coastwide pattern of aids to navigation, these complexes continue to underscore the historic patterns of growth in Maine's coastal communities.

Maritime transportation has been a critical factor in the state's particular pattern of growth. Its abundant natural resources were exploitable at an early date in large part because those resources were made accessible by

IV. Registration Requirements

Maine's National Register-eligible light stations possess integrity of workmanship, materials and character, as well as associative significance by virtue of their role in history, in their setting and in notable cases as the work of a master. Based upon association alone, light stations meet the National Register criteria, but the very nature of a functioning complex implies the existence of a relationship whose spirit today is embodied in buildings and structures alone.

Historically, a light station in Maine was composed, at minimum, of a light tower, dwelling and some form of warning device, be it a bell or steam fog signal. Any number of additional ancillary buildings and/or structures could be original features (such as a boathouse) or later additions (oil houses). The rapid rate of light station automation has been and continues to be, the greatest threat to the existence of a complete complex; in fact, such examples are extremely rare in Maine. Functionally obsolete buildings and the absence of continuous repair and maintenance provided by a keeper, threaten the existence the existence of virtually every component of a station.

A light station represents a unique association of man and his technological innovations braced against what are often extreme natural

[X] See continuation sheet

[ ] See continuation sheet for additional property types

G. Summary of Identification and Evaluation Methods

Discuss the methods used in developing the multiple property listing.

The multiple property listing for light stations in Maine was based on a survey of the extant complexes in the state and a thorough study of pertinent documentary materials located in a number of repositories. The National Register criteria were applied to each property and a determination of eligibility made on the basis of those criteria in conjunction with an understanding of the appropriate historic contexts. Two separate contexts were developed for this submission. One provides a framework to evaluate the design, construction and setting of a particular light station based upon the history of the Federal agency under which they were established and maintained. The second context enables the evaluation of significance at a state and local level by understanding the function of this property type with respect to patterns of growth and development. While the time frames are not coterminus, they do overlap during the periods of significance of all Maine light stations.

A shared combination of function and association provided an easily defined typology for the submission. Light stations were designed and constructed to serve a narrowly defined purpose, and each one maintains important historic associations with respect to patterns of development. No example deviates from this typology.

[X] See continuation sheet

H. Major Bibliographical References

Annual Report(s) of the Light-House Board to the Secretary of the Treasury. Washington, D.C.; U.S.G.P.O., Various issues and dates.

Heap, Major D. P. Ancient and Modern Light-Houses. Boston: Ticknor and Company, 1889.

List of Light-Houses, Lighted Beacons, and Floating Lights, of the Atlantic, Gulf, and Pacific Coasts of the United States. Washington, D.C., U.S.G.P.O., Various issues and titles.

Maine: A History. A facsimile of the 1919 edition edited by Louis Clinton Hatch with a new introduction and bibliography by William B. Jordan, Jr., Somersworth, N.H.: New Hampshire Publishing Company, 1974.

"Report of the Officers Constituting the U.S. Light-House Board". Thirty-Second Congress, First Session, Senate Executive Document, No. 28, Washington, D.C.: A. Boyd Hamilton, 1852.

Rowe, William Hutchinson. The Maritime History of Maine: Three Centuries

[X] See continuation sheet

Primary location of additional documentation:

- [X] State historic preservation office
- [ ] Other State agency
- [X] Federal agency
- [ ] Local government
- [ ] University
- [X] Other

Specify repository: United States Coast Guard, First District, National Archives

I. Form Prepared By

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number of stations were newly established or older ones wholly or partially rebuilt. A third distinct period of construction took place during the decade 1870-1880. Finally, the thirty years from 1880 to 1910 saw the completion of the light station system in Maine with the use of a variety of structural configurations and materials.

With the exception of a handful of examples, light stations are multi-part complexes consisting of both structures and buildings. At the minimum a station consists of a light tower which elevates the navigational aid to a proper height above sea level. In a few cases these towers contain within their walls the entire living quarters and storage facilities. In the vast majority of examples, however, the towers are accompanied by an attached or detached keeper's dwelling. The tower and dwelling are the most visually prominent components of a light station. However, there is a wide range of ancillary buildings and structures that perform specialized and very significant tasks in the entire light station system. Bell houses and fog signal buildings contain the warning apparatus utilized during fogs, oil storage sheds house the fuel used in the lamps, boathouses shelter what is often the only means of transportation, cisterns collect fresh water for domestic and steam fog signal use and barns house animals and equipment.

LIGHT TOWERS

Maine's light stations utilize towers of various shapes and sizes constructed of a wide variety of materials. Of the towers erected between 1790 and 1851 the majority, if not every one, was built of stone. In many cases the local masons utilized readily available rubble stone found on or near the site. Less frequently, as at Mount Desert (rebuilt 1847), intricately joined dressed granite blocks were employed. These towers share an additional similarity by virtue of their conical shafts. This particular design feature illustrates the fact that most of these towers were erected at some of the most weather hazardous locations on the coast where they required not only a sufficient height but also the ability to sustain tremendous destructive forces. Another light station configuration employed in the period utilized a tower mounted atop the dwelling. At least five such stations were known to have existed but all of them were subsequently replaced.

The great period of construction and remodeling of the 1850's witnessed a substantial change in both the design and materials used in light towers. Among the stations established at this time each tower was constructed of brick. In addition, a number of the older stations, including West Quoddy Head (N.R. 7/4/80), were rebuilt with brick towers. The more sheltered location of some of these lights accounts in part for the widespread use of brick. This consideration is emphasized by the fact that the newly rebuilt (1855) towers at Boon Island and Petit Manan Island were constructed of granite. Both structures stand on exposed locations. Unlike their predecessors, the 1850's towers were rarely given a slight conical shape. This is perhaps as much a function of their generally reduced height as it is the change in material. Most of the towers were cylindrical but two, those at Fort Point and Deer Island thorofare

both erected in 1857, had a square shaft. At least three were stations built with towers atop the dwelling, but the design apparently proved faulty and two, Grindle Point and Indian Island, were pulled down and rebuilt during the 1870's.

Between 1870 and 1880 thirteen Maine light stations were either established or substantially rebuilt. The towers erected during this period reveal the continued experimentation with new forms and materials. Three stations, including the rebuilt towers at Grindle Point and Indian Island as well as the newly built Burnt Coat Harbor Light Station (1872), employed a tapered square brick structure. The general precedent for the design was employed during the late 1850s, but the tapered shaft was a new feature. In 1875 a pair of light stations (Avery Rock and Egg Rock) were constructed with a centrally placed square brick light tower around which was the one-and-a-half-story dwelling. A third innovation was the use of a steel frame encased by cast iron plates over a brick lining. Employed at the twin towers at Cape Elizabeth (1876), at the rebuilt Little River Station (1876), and at the newly built light at Cape Neddick (1879), these handsome iron structures are among the most architecturally distinct of Maine's light towers, principally the result of the Italianate style ornamentation applied to windows and balconies.

The last phase of light station construction took place during the thirty years between 1880 and 1910. An additional fifteen complexes were built in this period and two were reconstructed. A majority of these stations were constructed at relatively well sheltered locations along river banks or in channels.

The towers exhibit a wide variety of configurations. The 1883 Ram Island structure makes use of a cylindrical form with a tall granite base supporting an upper shaft of brick. This scheme was also employed at Isle Au Haut in 1907. A trio of channel lights were built in 1890 at Goose Rocks, Lubec Channel and Crabtree Ledge. Those identical structures employed a wide cast iron faced concrete base surmounted by a narrow upper shaft, the lower portion of which was shielded by a gallery. Both the keeper's quarters and the storage facilities were contained within the cast iron tower. In 1898 four light stations, containing five towers, were established along the southern end of the Kennebec River. Unlike any previously constructed towers these were octagonal wooden frame structures sheathed in wood shingles. The remaining towers made use of a variety of well-established forms such as a conical granite configuration at Ram Island Ledge (1905), a square brick structure attached to the dwelling at Rockland Breakwater (1902) and a detached cylindrical brick tower at Whitlocks Mill (1907).

DWELLINGS

Dwellings erected at Maine's light stations can, like the towers, be generally grouped into one of four types. The oldest of the four, no examples of which survive,was a one- or one-and-a-half-story rubble stone building with a gable roof. A considerable number of these are known to have existed by reference in the written nineteenth century descriptions that appear in the Annual Reports of the Light House Board. All of them were replaced in

subsequent rebuildings of the light stations.

More ambitious coursed ashlar granite dwellings were erected at Little River (1847) and in rebuildings at Matinicus Rock (1846) and Boon Island (1851). In other cases, such as Grindle Point (1850), a brick dwelling may have been employed. The period of building activity after 1852 witnessed a substantial turn-around in the accepted method of construction for keeper's quarters. With the exception of the Heron Neck (1853) and rebuilt Bear Island (1853) houses, both in brick similar to Grindle Point, the remaining dwellings built during the 1850s were of wooden frame construction. Although the reasons for this dramatic change are not entirely clear, it is plausible to argue that the seemingly more durable and weather-resistant masonry building was not required in a less exposed location given the greater expense involved in erecting it. A secondary reason must surely relate to the constant dampness of a masonry building in a wet, cold climate and the evident advantages of heating a frame house.

Documentary photographs of Maine's light stations probably taken in the 1860s, reveal that the second generation dwellings were very similar in plan, materials and detailing. These similarities clearly reveal that the concept of instituting an in-house system of engineer designed complexes had been accomplished under the newly established Light House Board. The majority of these dwellings share a number of characteristics: one-and-a-half-story rectangular blocks with side sheds or short rear ells; three-bay facades with doors located in narrow vestibules and placed in the center or at one corner; board-and-batten siding with label moldings above doors and windows; and a very conspicuous darkly colored exterior paint scheme. The latter two features are particularly revealing in that they place these buildings squarely in the context of mid-nineteenth century cottage architecture, albeit without a bold Gothic statement. The most intact example of this design is located at Baker Island Light Station (rebuilt 1855), although the board-and-batten siding has given way to clapboards. (Subsequent photographs show that this change had been made to most if not all of the 1850s dwellings by the late nineteenth or early twentieth century.)

The influence of architectural fashion on the design of dwellings which was overtly stated in the 1850s continued throughout the duration of the active period of light station construction and reconstruction. Although there were four distinct types of houses built in this period, only two represent widely adopted variants. The construction of Burnt Coat Harbor Light Station (1872) and remodeling of Grindle Point (1874-75) utilized dwellings which were very similar in spirit to the gable roofed houses of the 1850s, although a number of modifications had been made. Dwellings constructed in 1875 around the towers at Avery Rock and Egg Rock were unusual adaptations whose design flaws, especially the problem of heating, were uncovered after they were put into service.

A more typical late nineteenth century keeper's house is similar to those built at Cape Elizabeth (1876) or Perkins Island (1898). The characteristic features of these dwellings include a much larger full two-story block with an asymmetrical L or T-shaped plan capped by a cross gable roof. Short porches

were also introduced at this time. The earlier Cape Elizabeth house features a decorative sawn bargeboard and label molding, but its character is far different from the board-and-batten cottages of the 1850's.

During the last years of the nineteenth and early part of the twentieth century the keeper's house assumed yet another shape: a rectangular block covered by a gambrel roof punctuated by dormers. The gambrel roof is a clear architectural image of the Colonial Revival style influence, and it is one, not surprisingly, which was particularly at home with many of the expansive gambrel roofed Shingle Style cottages which populated Maine's coastal summer resorts. The oldest surviving gambrel roofed keeper's house is the one erected in 1890 on Bear Island. Among the many others is Marshall Point (rebuilt 1896), Rockland Breakwater (1902) and Isle Au Haut (1907), the latter covered in a stucco finish.

BELL HOUSES

Among the many crucial ancillary structures which comprised a light station, bell houses are now one of the rarest. The particular characteristics of individual light stations that appear in the official light lists reveals the number of Maine stations that were equipped with warning bells. Many of them were mounted on simple skeletel frames and struck by hand, but an equally large number had pyramidal frame structures to house the mechanical apparatus that automatically operated the bells. A relatively intact shingled example of this structure type survives at Whitlocks Mill Light Station. Modern technological advances in the development of steam powered fog signals and automation doomed many similar structures.

FOG SIGNALS

Navigation along the coast of Maine is frequently hampered by dense fogs that result from the mixing of the warm waters of the Gulf Stream and the colder Labrador Current. Bells and various other devices had been employed to act as navigational aids in such conditions, but their effectiveness was found to diminish relative to distance and the mechanical systems used to operate them were often unreliable. Although they were not installed at every light station in Maine the steam powered fog signal, initially a siren and later a whistle, left its impact on the evolving light station. Most extant steam powered fog signals, such as those installed at Petit Manan in 1869 and Egg Rock in 1904 consist of a square or rectangular shaped brick building capped by a low hipped roof that housed the steam generator. Those signals that remain in operation are now powered by modern engines leaving the brick buildings as the most evident historic component of this warning system.

BOATHOUSES

With the exception of those towers such as used at Lubec Channel and at Whaleback, Maine's light stations were equipped with boathouses and boat slips. For many of these complexes, especially those located on the islands, a boat was the only regular means of access to the mainland. Both surviving boathouses and

documentary photographs of those which have been lost reveal that a rectangular wooden frame, gable roofed configuration was the rule. A large opening in one gable end marks the location of the boat slips whereas a variety of windows and doors might be positioned in the remaining walls. Exterior sheathing materials applied to boathouses include both clapboards and wood shingles.

OIL HOUSES

In the late ninteenth century when kerosene began to replace lard oil as the fuel used to operate the lanterns, new storage facilities to house this combustible fuel were built at the light stations. The changeover was not immediate, however, and these structures were still being constructed during the early twentieth century. Invariably they have a uniform shape: a squat rectangular block covered by a gable roof. Built of either brick or rubblestone, the oil houses have one of two configurations: an early 1890s form features a ridge mounted ventilater and a transom above the gable end door; its successor employs a narrow rectangular vent above the door. They usually stand at some distance from the other buildings, due to their highly flammable contents.

WALKWAYS

Maine's light stations often occupy uneven rocky locations. In order to facilitate safe passage between the various buildings, therefore, connecting walkways were built. Depending upon the severity of the weather at a particular station these walkways were either left uncovered and provided with railings or completely enclosed. The extensive system of open walkways at the Kennebec River Light Station is intact as is the long enclosed passageway at Wood Island Light Station. Many others have been removed since automation of the lights. A third form of walkway is found at a number of the turn-of-the-century light stations such as Isle Au Haut and Doubling Point. Since the towers stand offshore from the keeper's house at these stations, an elevated truss-shaped walkway supported by piers bridges the distance between tower and shore.

OTHER BUILDINGS

Documentary photographs show and the Annual Reports confirm that the light stations may have contained a wide variety of additional ancillary buildings. Water cisterns and rain sheds were built at many stations to collect fresh water for use by the steam fog signals. Directly associated with the operation of the fog signal were storage facilities for coal and the cartways by which this fuel was transferred from a wharf to the engine. Both of these two facilities are now rare; in fact no coal sheds survive. Additional buildings that might populate a light station include sheds, barns, piggeries and in a few notable cases a small school house.

PHYSICAL CONDITION

Maine's light stations occupy some of the most weather hazardous locations of any property type in the state. Whether they stand on shallow rock

outcroppings, are submerged in the water, occupy small islands or bold rock ledges, these complexes are constantly exposed to moisture and winds which test the endurance of their construction. Documentary descriptions of the stations found in the Annual Reports clearly reveal the constant process of renewal and upkeep which the various components required. This maintenance was originally performed by the light keeper. Advances in technology and the subsequent automation of the lights (a task scheduled to be completed in Maine by 1990), however, has resulted in the lost performance of regular maintenance on every surviving building. These same factors have also made obsolete such ancillary buildings as dwellings, oil houses, boathouses, barns and rain sheds, among others. The result is that many complexes contain deteriorated components that, nevertheless, continue to provide an important, if somewhat incomplete, picture of an historic Maine light station.

PHYSICAL SETTING

An important associative characteristic of Maine's light stations is their physical setting. By virtue of their very function these complexes assume special relationships with their sites. Chosen not only because they present navigational hazards but also because they provide a suitable elevation for an effective beacon in a heavily trafficked area, the sites have important associative significance. Many of the state's coastal light stations occupy high, bold rock ledges that quickly fall to the sea. Others literally rise out of the sea and are constantly exposed to windswept waves. In such cases the establishment of a light station often represents the only known historic use of that site.

Such picturesque sites, in and of themselves, embody many of the characteristics which have long inspired widely recognized associations with Maine. Descriptive accounts of the region, pictorial guides and the written work of countless authors have imbued these settings with additional historic associations.

numerous and deep sheltered harbors and long navigable inland rivers. Light stations provided both distantly visible directional landmarks to specific coastal areas as well as warning signals to special hazards. Therefore, they have been intimately associated with an extremely important factor in Maine's development.

Federal Lighthouse Management
1789-1939

The long history of Federal involvement in the establishment and management of light stations has progressed through distinct organizational periods. Maine's light stations clearly embody, in their design, workmanship, materials and location, these specific stages of development.

In the period from 1789 to 1851, light stations were under the general supervision of the Lighthouse Establishment and its nominal head who was an auditor in the Treasury Department. This initial management phase saw the construction of a large number of complexes not only in Maine but throughout the agency's jurisdiction. Extant components from this period, principally light towers, reveal that the basic technology and methods of construction had changed little over more than a half century.

In reaction to what was widely regarded as an inferior system of navigational aids and a poor mechanism of supervision, the agency was reorganized in 1852. Subsequent light station construction and rebuilding, an explosion of which took place in the 1850s, clearly reveals that a systematic re-evaluation of a model complex had been undertaken and newly engineered designs put into service. Modifications to these elements were made throughout the nineteenth and early twentieth centuries as technological advances in component design made older systems obsolete. Changes came not only from an engineering standpoint, however, but also from currently fashionable trends in architecture, especially evident in the design of dwellings.

Maine's light stations, built between 1789 and 1907, clearly reveal in their design, materials and workmanship, the distinct phases of development which occurred as a result of the activities of the Federal Lighthouse Establishment. For these reasons they are significant reminders of the active role which this agency took in advancing the construction and maintenance of a technologically advanced system of navigational aids.

Ideally, the context of Federal Lighthouse Management should be applied to a system-wide evaluation of extant light stations. In the absence of such a study, however, it is entirely reasonable to utilize the context at a state level where both historical patterns and geographical conditions provide a distinct framework for reference.

conditions. This association is clearly represented by the existence of distinct dwelling quarters and the lantern-bearing tower; whether they are grouped together in one structure, or are distinct components. With notable exceptions, the existence of these features is the minimum requirement necessary to convey the historic function of a station. Additional buildings enchance the interpretative importance of any particular light station and where these survive they serve to partially off-set alterations to major components.

The integrity of each light station was evaluated with respect to all others in the state and in relation to its particular design, materials and location. Those that failed to meet the registration requirements as set forth above in Part F., Section IV, and their particular characteristics were in some way represented by other more intact examples were determined ineligible.

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