

STRATFORD SHOAL LIGHTHOUSE
Long Island Sound
Bridgeport Vicinity
Fairfield County
Connecticut

HAER No. CT-173

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PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Northeast Region
Philadelphia Support Office
U.S. Custom House
200 Chestnut Street
Philadelphia, P.A. 19106

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HISTORIC AMERICAN ENGINEERING RECORD

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- Location:** Long Island Sound, Bridgeport vicinity, Fairfield County, Connecticut.
41°03.6'N, 073°06.1'W (no U.S.G.S. quadrangle map exists for this location)
- Engineer/Architect:** U.S. Lighthouse Board, D.V. Howell
- Fabricator:** D.V. Howell, M.K. Chase, Atlantic Steam Engine Works
- Date of Construction:** 1874-1878
- Present Owner:** United States Coast Guard
Aid to Navigation Team
120 Woodward Avenue
New Haven, CT 06512
- Present Use:** Active navigational aid
- Significance:** Stratford Shoal Lighthouse, completed in 1878, is a significant example of mid-nineteenth-century masonry lighthouse engineering and design. It was among the last water bound masonry lighthouses constructed in the United States before the U.S. Lighthouse Board switched to the use of cast-iron materials for such structures in the 1870s. Located on the treacherous "Middle Ground" shoal, the lighthouse played an important role in the Long Island Sound navigational system. Its construction represented a difficult engineering challenge that took several years to complete.
- Project Information:** The United States Coast Guard (USCG) proposes to install a solar power array on its Stratford Shoal Lighthouse. The proposed project will impact the historic and engineering integrity of this property. The lighthouse is listed in the National Register of Historic Places as part of a thematic nomination of Operating Lighthouses in the State of Connecticut. In accordance with an agreement between the United States Coast Guard and the Connecticut State Historic Preservation Office (SHPO), Historic American Engineering Record documentation is to be prepared for the lighthouse prior to installation of the solar array.

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PART I. DESCRIPTIVE INFORMATION

The 1985 *National Register of Historic Places Inventory—Nomination form for the Stratford Shoal Lighthouse* describes the structure as follows:

Stratford Shoal Lighthouse, constructed 1874–1878, marks a gravel shoal in the middle of Long Island Sound seven miles south of Bridgeport, Connecticut. Surrounded by a horseshoe-shaped, riprap breakwater, the lighthouse consists of a granite block, gable-roof dwelling with a lantern tower projecting from the center of its west elevation. The structure sits on a cylindrical granite ashlar foundation. Except for a modern, two-tiered concrete boat landing in the open, western end of the riprap horseshoe, there are no other structures on the site.

Large blocks of regularly-coursed, quarry-faced granite form the battered, truncated conical base of the structure's foundation. The foundation measures fifty-five feet in diameter at the base, forty-six feet at the top, and rises eighteen feet, six inches above the high water line. Laid on a leveled site in five feet of water, the eight bottom courses are arranged in steps of decreasing diameter, while the upper three courses form a cylinder with a slightly overhanging capstone course. The granite blocks are bonded by large iron staples, set in lead. A triple railing supported on metal stanchions is mounted at the perimeter of the base. The base contains a cellar, and below it, two rainwater cisterns.

The dwelling is square in plan, measuring twenty-eight feet on each side. It has Gothic Revival details, most prominently displayed in its steeply-pitched, cross-gable roof and hooded, pointed-arched windows on the third story of the tower. The roof is surfaced with standing metal seam panels and has decorative molded wood barge boards and soffits. Skilled workmanship is evident in the dressing and laying of the lighthouse's smooth-faced ashlar granite block walls. The walls measure eighteen inches thick at the beveled granite watertable and fourteen inches thick at the top of the tower.

The elevations of the lighthouse are symmetrical in scheme. The center bay of the east elevation projects three feet beyond the wall plane and is capped by a gable roof. This bay contains the original—now unused—principal entrance, containing a modern steel door atop a flight of three granite steps. An arch-topped window is located above the doorway in the second-story gable. The current entrance is located in the bay south of the west light tower, and consists of a steel door atop a short flight of welded steel steps. The elevations contain flat-topped window openings featuring rusticated projecting sills and lintels with dressed edges, a keystone detail, and eared or dropped corners. Two such window openings appear on the first and second stories of the north and south and west elevations, and two flank the west entrance. The west elevation of the tower contains first- and second-story windows, and the third story contains windows on the east, north, and south elevations. Although most of the original windows have been removed or covered over, some of the original two-over-two wood sash are still in place behind modern vented panels that cover them.

The tower, three stories in height, projects five feet from the west elevation and measures ten feet, four inches wide at the base. Above the second story level, the tower corners are chamfered to form an octagonal plan, seven feet in diameter. A carved stone plaque between the first- and second-story windows on the west elevation of the tower contains the date "1877". The tower contains five windows: one on each story of the west elevation, as well as one on the north and south sides of the third story. Each of the third story windows

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in the tower interior has a pointed, Gothic arch surround. On the south wall of the first story of the tower is a niche with a granite lintel, designed for storage of oil tanks.

The interior of the lighthouse and tower has five levels. The cellar is built into the granite base, and has cast concrete pads, which were used to support diesel-electric generating equipment, now removed. A segmental cast-iron spiral stair with checkered tread rises in the center of the tower from the first story to the lantern. This stair furnishes the only access to upper stories of the lighthouse from landings on the second and third story level. Openings on the three levels contain double-leaf metal doors connecting the tower and dwelling. The first floor is divided into four large corner rooms by an east-west corridor, which runs between the spiral staircase in the tower and the east entrance. The odd, triangular shape of a closet space opening off the southwest room of the first story was shown on the original plans to have been intended for cellar stairs. Instead, this stairway was installed in a space across the center hallway, and the proportions of the hall itself altered probably at the time of construction. Above the first-story tower doorway is a curved stone plaque carved to read: "Stratford Shoals/Lighthouse/AD 1877/Lat. 41° 3' North/Long. 73° 6~1 West." The second floor is laid out much like the first, with an east-west running corridor connecting four corner rooms and a bathroom at the north end. Flanking each of the south windows are two circular weight drop channels in the brick lining, intended for the original rotating beacon. The third floor is accessed from the octagonal section of the tower, which has a small door leading to an elaborate, timber-framed attic inside the steeply-pitched, cross-gable roof. The fifth level of the interior contains the lantern and is lined with vertical tongue-in-groove planks surrounded by wood moldings.

A projecting cast-iron deck surrounds the base of the octagonal cast-iron lantern and is supported by scroll cast-iron brackets with drop pendants. The gallery is edged with a triple flat-section iron rail, supported on round stanchions topped with brass spheres. The lantern contains eight large rectangular glass panes in the upper half of its walls and cast-iron plates in the lower half. A cast-iron frieze above the glass panes is ornamented with an embossed foliage motif. Centered above every other side of the octagonal frieze is a classically-styled, cast-iron escutcheon which joins the frieze to a ribbed, bell-shaped, copper-sheathed roof. A spherical ventilator and platinum-tipped lightning rod designated in the original drawings are missing from the roof. A modern, electrically-operated beacon is mounted on angle-iron posts at the center of the lantern. A metal ladder leads from the lantern deck down to a fog siren located on a small steel deck over the gable intersection.

Unoccupied since 1970, the lighthouse has lost much interior detailing. The little that remains demonstrates an attention to detail, which matches that of the carefully designed stonework and lantern. For example, the woodwork in the southwest room on the first story, designated a workroom in the original plans, exhibits false graining where later layers of paint have been removed. This finish also may be hidden in other rooms. Complex molded wood trim survives in some rooms around doorways and windows, although moisture damage has prompted simple replacements in many locations. Wall surfaces of plaster and some beaded board wainscoting also remain.

PART II HISTORICAL INFORMATION

The 1985 *National Register of Historic Places Inventory—Nomination form for the Stratford Shoal Lighthouse* recounts the history of the structure as follows:

Stratford Shoal Lighthouse, constructed 1874–1878, is significant as a carefully-crafted example of the masonry lighthouse design employed by the U.S. Lighthouse Board for water bound sites, before the adoption of cylindrical cast-iron foundations and superstructures in the mid-1870s. Incorporating a domestic model, which had been earlier utilized for some Hudson River lighthouses, the construction of the Stratford Shoal Lighthouse in the treacherous waters of Long Island Sound required a massive amount of money and manpower.

Temporary lighted navigational aids were constructed in the American Colonies as early as the first half of the seventeenth century. The first permanent lighthouse was built on Little Brewster Island in Boston Harbor in 1716. The New London Harbor Light, established in 1760, was the first permanent lighthouse erected on Long Island Sound. A series of other lights were constructed along the northeastern coast to improve navigation on the busy shipping lanes between New York and Boston during the late eighteenth and early nineteenth centuries.

The Middle Ground shoal on Long Island Sound was long recognized as a significant hazard to shipping. Located some seven miles south of Bridgeport, Connecticut, the shoal represented a difficult engineering challenge. The waters around the shoal were often rough and, during the winter months, subject to dangerous ice flows. The first effort to mark the shoal occurred in 1831, when the U.S. Congress appropriated \$1,000.00 to erect a beacon there. No action, however, was taken until 1863, when a lightship was commissioned from a New York shipbuilder for \$8,500.00 to be positioned over the shoal. Battered by severe weather, the original lightship was removed in 1866. A second lightship took its place in 1868, but the uncertainty of its mooring and its wavering beam during heavy weather forced its removal several years later. Finally, in 1873 Congress approved the construction of a permanent light at the shoal.

During March 1873, a major development in lighthouse engineering was introduced to the United States Lighthouse Board, an organization formed by Congress in 1852 to standardize lighthouse design, operations, and technology. This development was the invention of a segmental, cylindrical, cast-iron design for lighthouse foundations located on water-bound reefs and shoals in bays and rivers subject to the flow of ice. One of the sites considered for this innovation was Stratford Shoal. However, the original plan for a granite riprap and concrete foundation for the Stratford Shoal site, which had already been presented by the Third District Engineer in 1872, was adopted. Therefore, Stratford Shoal represents a late example of the masonry foundation-type lighthouse, which was under construction simultaneously with the earliest cylindrical cast-iron foundations being fabricated and installed at Southwest Ledge near New Haven, Connecticut, and Ship John Shoal in the Delaware River Bay.

At Stratford Shoal a riprap ring, open to the west, was built up from the shoal to protect the construction site and provide construction crews and their water craft shelter from the prevailing easterly winds. Within the center of the ring, the gravel shoal surface was removed and a concrete pad laid to provide a bed for the circular cut-stone foundation, which measured 55 feet in diameter at its base and 46 feet in diameter at its top.

Construction of the foundation, composed of huge blocks of granite backed with concrete, was completed with great difficulty by D. V. Howell in 1874-1876. The cut stone for the lighthouse was supplied by M. K. Chase, a Connecticut stone supplier, and the metal work by the Atlantic Steam Engine Works. The stone was shipped from the granite quarries and stockpiled nearby on a temporary wharf built for staging the construction materials. The light house dwelling and tower were erected during 1877 and 1878. Work continued in spite of a major setback—the sinking of the construction schooner *Mignonette*, which broke from her moorings in a storm. The men and supplies were saved and remained at the site, where they were housed in the nearly-completed lighthouse. On December 15, 1878, the beacon was exhibited for the first time.

The design of Stratford Shoal Lighthouse represents the keeper's-house-with-attached-tower type, which had been used for American lighthouses since the 1830s. For wave-washed sites this design provided a more comfortable alternative to the tall, conical tower, and emphasized the domestic side of its functions, combining the physically-separate light tower and keeper's dwelling common at on-shore sites. Typically, either masonry or wood-frame construction was used for the design. Typically, architectural details of the popular revival styles of American architecture, in this case, the Gothic Revival, were incorporated in the design.

The masonry model of the keeper's-house-with-attached-tower was developed for sites on the Hudson River in the 1860s and was adopted for Long Island Sound lighthouses in the 1870s. The same basic design was used to construct several lighthouses in the area. For example, Race Rock Lighthouse, New York closely resembles Stratford Shoal. Constructed about the same time, the two lighthouses vary only in their stone finishing, window details, and roof shape.

Improvements in marine safety and navigational technology, were reflected in changes through the years of the lighting and fog-signal apparatus at Stratford Shoal, which played a vital role in guiding ships away from the hazardous Middle Ground shoal and supplying bearing information to ships in Long Island Sound. The original lighting apparatus installed at Stratford Shoal consisted of a fresnel lens that flashed every 30 seconds. This beacon was improved in 1879 and the flash interval changed to 15 seconds. The following year, a second class Daboll fog-trumpet and a caloric engine were added. A new lens was installed in 1894, but was replaced in 1905 by a fourth order flashing light. Two Homsby-Akroyd engines and a Clayton air compressor for an improved trumpet were installed in 1897 and in 1919 a first class air siren was added. New fog signal engines were added in 1923. In 1970 a powerful 600,000 candlepower light, which was visible for 13 miles, was installed at Stratford Shoal. That same year the lighthouse was fully automated, and in 1978 the power source

was changed to battery power. At present, the lighthouse continues to perform the important function for which it was designed.

PART III SOURCES OF INFORMATION

A. Plans and Drawings

United States Coast Guard Civil Engineering Unit, Metro Center Boulevard, Warwick, RI

B. Historic Views

None located

C. Interviews

None conducted

D. Bibliography

Smith, Edward, Dorothy B. Templeton and Richard Meyer

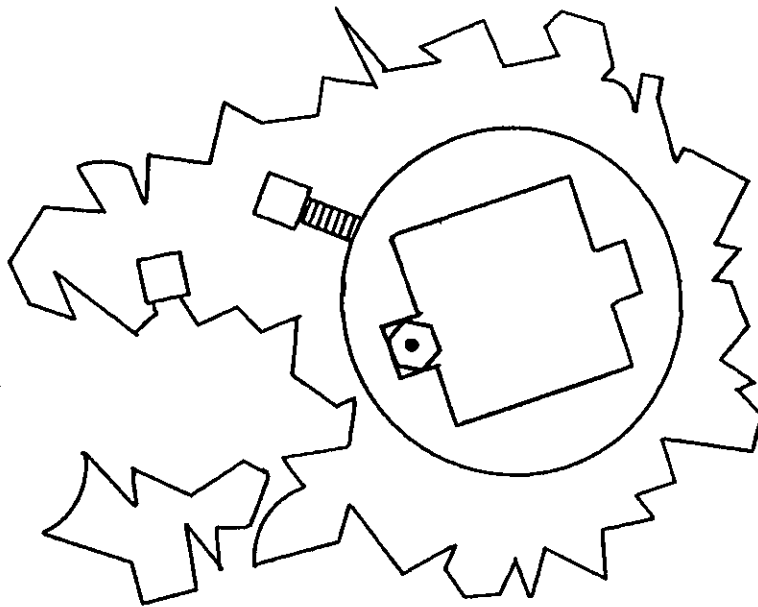
1986 *Historic Sites Survey, Inventory and Analysis of Aids to Navigation in the State of Connecticut*. John Milner Associates, Inc., West Chester, PA

1986 *Historic Sites Survey, Inventory and Analysis of Aids to Navigation in the State of Connecticut: Appendix C—Condition Reports: Stratford Shoal*. John Milner Associates, Inc., West Chester, PA

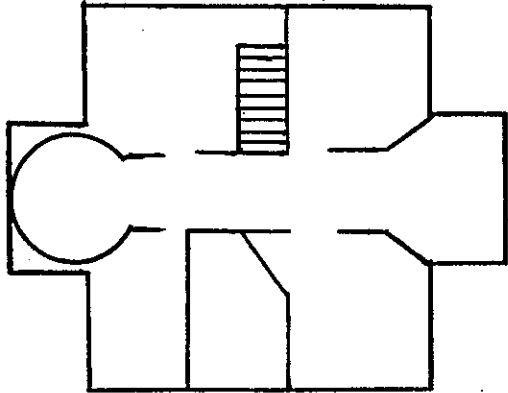
Templeton, Dorothy B.

1985 *National Register of Historic Places Inventory—Nomination Form for the Stratford Shoal Lighthouse*. Connecticut Historical Commission, Hartford, CT

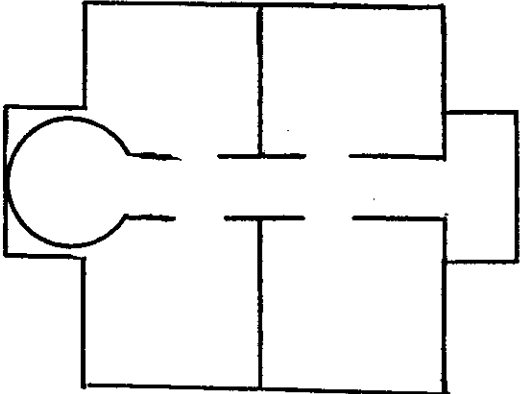
SITE PLAN



FLOOR PLANS



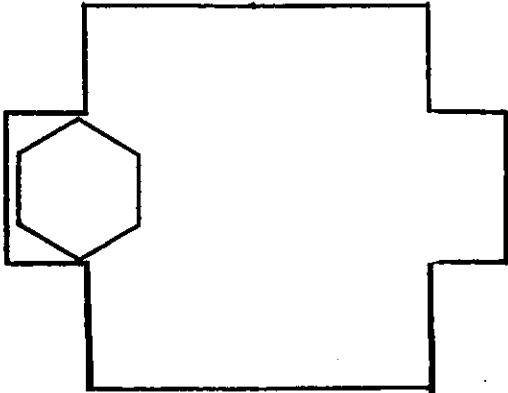
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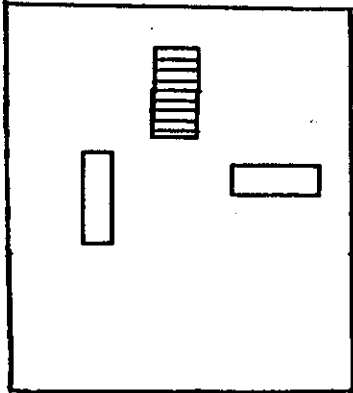
SECOND FLOOR



LANTERN



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BASEMENT

