COPPER HARBOR LIGHT
Hays Point at end of unimproved road
(Norland Trail), 1.3 mi. north off U.S.
Rt. 41, .4 miles east of Ft. Wilkins
State Park entrance
Copper Harbor vicinity
Keweenaw County
Michigan

HAER No. MI-92

HAER
MICH
42-COPHAR.V,
4-

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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Copper Harbor Vicinity
Keweenaw County
Michigan

USGS Fort Wilkins Quadrangle, UTM Coordinates: 16.435170.5258020

Date of Construction: 1933

Engineer: United States Light House Service

Present Owner: United States Coast Guard

Present Occupant: Not manned

Present Use: Light tower for ships on Lake Superior

Significance: This steel skeleton light tower is part of a system of 20th-century Lake Superior navigational aids. Situated just west of the existing 1866 Copper Harbor Lighthouse and on the approximate site of the site's earliest (1849; demolished) lighthouse, its light replaced that of the 1866 lighthouse.

Project Information: Under a Memorandum of Agreement among the United States Coast Guard, the Michigan Historical Center, the Advisory Council on Historic Preservation and the USCG, documentation of the light tower was undertaken in October 1995 as a mitigative procedure in advance of its anticipated demolition by the Coast Guard.

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June 1996

NARRATIVE

Description of Site

The Copper Harbor Light is mounted on a steel skeleton tower located at Hays Point on the north side of Michigan's Keweenaw Peninsula on Lake Superior. Situated 76' due west of the historic (1866) Copper Harbor Lighthouse, at the end of an unimproved road (Norland Trail), 1.3 miles north of U. S. Route 41, the tower occupies a high, rocky promontory on a 1.1-acre plot. The site proper is covered with scrub growth and small trees, while the surrounding area is heavily forested with evergreen trees. The light is part of a system of navigational aids that also includes the front and rear Copper Harbor range lights located along U. S. Route 41 east of Copper Harbor at Ft. Wilkins State Park.

The unmanned steel tower was erected in 1933 to replace a manned light in the square tower attached to the keeper's residence. The old brick tower and residence are both still extant. The modern tower stands on the approximate site of an even earlier freestanding light tower, constructed in 1848[1] and now demolished, presumably when the 1866 tower was put into service. The small stone residence of the earliest keepers still stands nearby.

Description and History of Tower

Construction of the steel tower was first ordered in May 1932, but a shortage of funds delayed the work.[2] On May 5, 1933, Charles Park, Superintendent of Lighthouses, endorsed the installation of the light on a 60' steel tower and the sale of the reservation's excess land and buildings (which were at that time under lease until June 30, 1937, apparently as summer residences), in order to avoid maintenance expenses and the necessity of repeated releasing. A construction plan for the new tower was approved on May 29, and a site 76 feet west of the 1866 light tower was selected. The project, which cost $1,750

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[1]Barry James and Grant Day, History and Archaeology of the First Copper Harbor Lighthouse (Report of Investigations Number 21 Archaeology Laboratory, Department of Social Sciences, Michigan Technological University, Houghton, MI. Submitted to Bureau of Michigan History, Michigan Department of State, 1995), p. 109.

[2]Ibid.

including labor and materials, used hired labor and depot forces.[3]

The tower, constructed of steel angles with diagonal bracing, rises in eight stages and is surmounted by a platform with iron-pipe railings. It is one of many such towers erected by the Lighthouse Service after 1923, when a standard plan was developed for their construction.[4] Except for relatively minor changes described below (electrification, periodic replacement of lenses and lanterns, the removal of the acetylene tank house and addition of a metal battery house, and repainting), it remains essentially as built. Its general condition is fair to good.

The base of the tower is 11'7-1/4" square. It rests on a foundation of four 5' x 5' concrete piers, each 4' deep and beveled 3" at the top edges. Each of the four legs of the tower rests on a 12"-high cast-iron base and is braced to one of the piers by two 1"-diameter anchor bolts projecting 4' feet into the concrete. The steel angles that comprise the tower are joined by a combination of bolts and rivets, with steel plate gussets at each intersection. The principal corner posts are 4" x 4" x 1/2" angles. The horizontal cross pieces of the lower stages are formed of 2-1/2" x 3-1/2" x 1/2" angles riveted together. The principal cross bracing is of 2-1/2" x 2" x 1/4" angles. The four corner posts rise inward terminating in a 2'-6"-square section supporting a platform with steel railings at the top and a stand for the light.[5] Presently, a steel ladder, believed to

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[3]Charles Park, Superintendent of Lighthouses, "Recommendation as to Aids to Navigation" to Commissioner, Bureau of Lighthouses, May 5, 1933. (National Archives, Record Group 26, Box 979, File 1454E); and Charles K. Hyde, The Northern Lights: Lighthouses of the Upper Great Lakes (Lansing, Mich.: TwoPeninsula Press, 1986).

[4]John S. Conway, The United States Lighthouse Service, Edition of 1923 (Washington, D.C.: U.S. Government Printing Office, 1923), p. 17: "Recent improvements . . . include structural steel skeleton towers, also similar towers of iron pipe. Standard plans have been developed for each of these types, both of which are useful when quickness of construction is desired. . . . Each type is square in plan and strongly braced with due provision allowed for corrosion in proportioning the size of the members."

[5]See Drawing No. RHL 704-695, M. H. Wilkins Co., Detroit, Mich. "60 Ft. Tower and 40 Ft. Tower." "Copper Harbor Sta." No date. This may be the original construction drawing.

be original, extends to the top of the tower on the east side with a wood security cover at the base.[6]

Although a design for a steel acetylene tank house was prepared for Copper Harbor Station in 1931 (Drawing RHL-704-678), it was not erected there. (A note on the drawing states, "This tank house installed at Sand Isld. Aug. 1931"). Instead, a wooden acetylene-tank house (no longer extant) was moved from the front of the old lighthouse and placed directly under the steel tower. The tank house was anchored to a 1' x 3"-thick by 6'-6"-long cement slab by bolts 3/4" in diameter by 14" long.

An acetylene lantern with a 375-mm lens and 1-1/4" burner was placed on the top of the tower. The lantern displayed the same characteristic (flashing green) as the earlier light but at 480 candlepower.

Although the standard plan allows for the optional use of a daymark, this tower had no daymark but was painted black to make it easier for mariners to identify it. In 1935, in response to complaints from vessel owners that the tower was hard to see, the front of the old brick lighthouse was painted white, at a cost of $60, in an effort to provide greater visual contrast.[7] Old photographic views show that at some point between 1943 and 1958, the tower itself was repainted white, and it remains so today.

Since the station was judged to be of "minor importance" and the steel tower and its acetylene light required only periodic maintenance, its care was assigned until 1937 to "aged and deserving keepers ... unable to assume the more laborious tasks of more difficult stations." That year, in response to complaints from the International Shipmasters Association that the light was of insufficient candlepower, plans were undertaken to electrify it. Electrification was scheduled to coincide with the retirement of the last lightkeeper on June 30, 1937. The unmanned station would then be overseen by the keepers of Manitou Island, "with the keeper of Eagle Harbor and the lamplighter of Mendota cooperating," and the position of keeper discontinued for

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[6]See Photograph No. 6.

[7]Barry and Day, ibid.

Copper Harbor.[8] The project was completed at a total cost of $688.34, almost all of which was for materials.[9]

As part of the electrification project, a shed-roofed metal battery house, measuring 5'-6" square and containing two racks for six DH5-1 low-discharge Willard cell batteries, was erected on a 6" reinforced-concrete on-ground slab at the south side of the tower. According to construction drawings, this house was "Moved from the Airway Tower of USLHS." From the battery house, an electrical cable ran to the top of tower.[10] The original proposal to use LeCarbone batteries to power the light was discarded because the performance of such batteries had proved unsatisfactory in other installations.[11]

The previously existing acetylene buoy lantern was retained as a standby in case the electrified light should fail. The buoy lantern was mounted on a steel bracket at the top of the tower on the north side. Fitted with a new 300-mm lens, it was turned on and off by an A.G.A. sun relay, intended to conserve battery energy. In 1952, the buoy lantern was replaced by a 375-mm lantern. In 1976, the old lantern atop the tower was replaced by a DCD-36 rotating beacon (green light) with 115/230 volt alternating current 60-phase electricity for the first time. The new electric power entered the battery house where it powered both the DCD-36 rotating beacon and an Edison battery charger with 26 B2H cells retained for emergency use. The electricity was first supplied by an overhead pole line and has subsequently been placed underground, probably in connection with the use of the old part of the site by the Fort Wilkins State Park. In 1967 the light was equipped with Fisher Pierce photo control.[12]

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[8]F. P. Dillon, Superintendent of Lighthouses to Commissioner of Lighthouses, March 30, 1937.

[9]"Estimate of Cost of Proposed Work," September 23, 1937. (National Archives, RG 26, Box 797, File 1454E)

[10]Drawing: RHL 704-692 (Old Number 12351-S), Apr. 10, 1937. "Copper Harbor Lt. Sta. Mich. Alterations to Lighting Apparatus."

[11]F. P. Dillon, Superintendent of Lighthouses, to Commissioner of Lighthouse Bureau, April 8, 1937. (National Archives, RG 26, Box 979, File 1454E)

[12]Drawing RHL 704-699.

The Copper Harbor Light, now automated, is still in operation, displaying a rotating green light atop the tower and a flashing green light at the side.

Except for the 1.1-acre plot immediately surrounding the steel tower, the land and buildings of the original 51.9-acre Copper Harbor Light Station reservation (Hays Point, Porter's Island, and part of the facility at Fort Wilkins) were sold to the State of Michigan, with the Lighthouse Service retaining right of access to the new tower. Now owned by the Michigan Department of Natural Resources, the property is part of the Fort Wilkins Historic Complex at Fort Wilkins State Park, and a maritime museum occupies the old keeper's residence and tower.

Sources of Information:

National Archives and Records Administration, Washington, D.C., Record Group 26, Records of the United States Coast Guard, Correspondence of the Bureau of Lighthouses, 1919-1939, Box 979, File 1454E

Engineering Drawings:

National Archives and Records Administration, Washington, D.C., Cartographic Branch, Record Group 26, Records of the United States Coast Guard:

RHL 704-676 (old number 11826-N) "Copper Harbor Lt. Sta. Mich. Foundation Plan for Steel Tower 5/29/33" National Archives RG 26. Shows 60'steel tower without daymark. Refers to drawing 11306. Tank house moved from existing dwelling and placed at center of steel tower. Tower anchored in four concrete piers, each 5' x 5'x 4'. Base of tower 11'7-1/4" square; tower rises in eight stages with diagonal bracing.

RHL 704-678 "Copper Harbor Lt. Sta. Mich. Tank House for 6 A-50 Accumulators," May 18, 1931.

RHL 704-679. Aug. 1910 with later revisions. "Copper Harbor Light Sta. Mich. Location of Buildings." This drawing shows the original dwelling house, boat house (next to original keepers house), landing dock, 1866 dwelling house and tower, privy, and walkways connecting all of the above. Also shows later 60' steel tower (notes "no daymark") and refers to Drwg. 11306 and Foundation Plan 11826. New steel tower erected 76' west of old tower, center to center. Also gives property line markers for sale of old buildings and shows portion retained by Lighthouse Service as 1.1 acres at western edge of Hays Point on north-south line. (This map is the basis for Massey Maxwell sketch plan.)

RHL 704-686 "Stand-by Light, Electrical, Copper Harbor Light, Copper Harbor, Michigan." 6/22/1976.

RHL 704-688. 2-15-55. "Copper Harbor Lt. Sta. Reservation, Copper Harbor, Mich. Land Survey." Shows existing and prior ownership of Lighthouse Board land

RHL 704-689. "Map of Fort Wilkins State Park Area." 10-21-57. Shows Norland Trail leading from Coast Guard Light Station to US 41 near Ft. Wilkins State Park.

RHL 704-691. "Copper Harbor, Mich. Light House Reservation, October 1877 and March 26, 1892" Reservation originally comprised of sections 27 and 28, plus lot 1 of section 33. April 3, 1847 and December 9, 1852.

RHL 704-692. (Old Number 12351-S) Apr. 10, 1937. "Copper Harbor Lt. Sta. Mich. Alterations to Lighting Apparatus." Shows battery house erected on 6" reinforced concrete slab on ground. "House is from Airway Tower of USLHS". From battery house a cable runs to top of tower. Notes that existing 375-mm [acetylene] buoy lantern to remain as standby, with new 300-mm lantern with sun relay erected on steel bracket to north side of tower near the top. Battery house 5'6" square and contained 2 racks for 6 batteries (type DH5-1 low-discharge Willard cells). Notes: 1) 1939: Edison Primary Cells installed. 1952: 300-mm buoy lantern with sun relay replaced with 375-mm lantern. 1976: "As built [without] old lantern replaced by DCD-36 light.

RHL 704-699. (Old number 1547-S). 12-01-60. "Copper Harbor Lt/Sta Copper Harbor, Mich. Electrical Equipment Layout & Schematic. 115/230 VAC 60 N mains electricity supplied and connected to battery house. Batteries are kept and DCD-36 rotating beacon mounted on steel bracket. New Edison battery charger and 26 D2H batteries installed (1960). 1967 converted to photo-control using Fisher-Pierce Photo Control. Refers to the [1952] installation of second light (375 mm lantern) mounted on brackets at side.

RHL 704-695. M. H. Wilkins Co., Detroit, Mich. "60 Ft. Tower and 40 Ft. Tower." "Copper Harbor Sta." No date. Shows steel construction of light tower and ladder in middle of one face of tower. [Original construction drawing?]

Historic Views

Copper Harbor (MI) Lighthouse, June 22, 1943. State Archives of Michigan, Neg. #10433.

Copper Harbor (MI) Lighthouse, 1958. State Archives of Michigan. Neg. #24607.

Copper Harbor (MI) Lighthouse, post-1943; ca. 1950s. Photo on file. Michigan Iron Industry Museum.

Copper Harbor (MI) Lighthouse, Postcard. No date. Curt Teich Postcard Collection, Lake County (Illinois) Museum.

(Reproduced in Great American Lighthouses, by F. Ross Holland, Jr.)

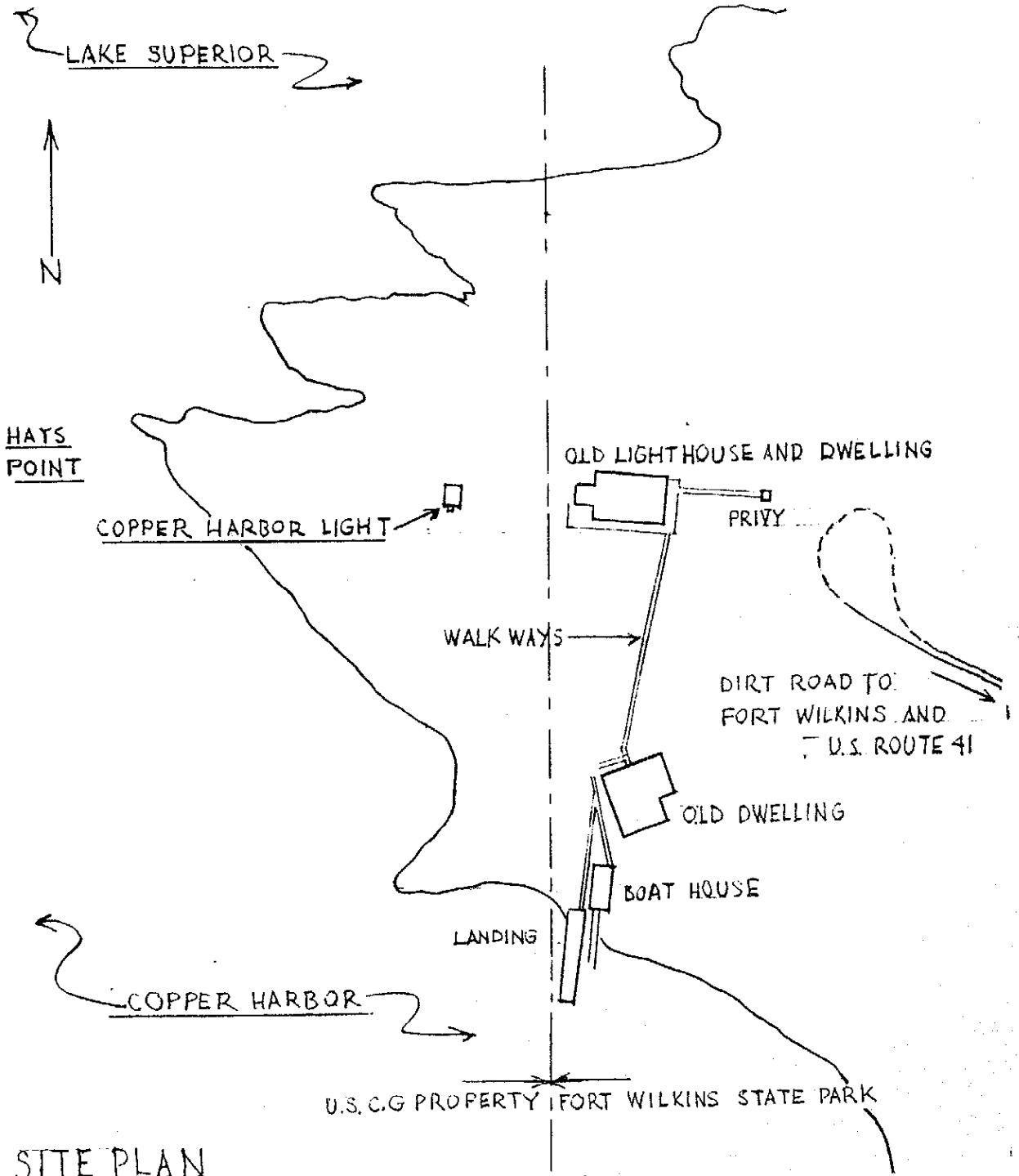
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SITE PLAN

ADAPTED FROM "COPPER HARBOR LIGHT STA. MICH., 1910, AS AMENDED, DWG. NO. RHL 704679"
SCALE: APPROX 1" = 100'

J.C. MASSEY 1996