National Park Service
Department of the Interior

Cape Hatteras National Seashore
Manteo, NC

Hatteras Light Station
Double Keepers' Quarters

Historic Structure Report





The historic structure report presented here exists in two formats. A traditional, printed version is available for study at Cape Hatteras National Seashore, the Southeast Regional Office of the NPS, Denver Service Center of the NPS, and at a variety of other repositories. For more widespread access, the historic structure report also exists in a web-based format through ParkNet, the website of the National Park Service. Please visit www.nps.gov for more information.

Cape Hatteras National Seashore

Hatteras Light Station

Double Keepers' Quarters

Historic Structure Report

December 2017

for

Cape Hatteras National Seashore
Manteo, NC

by

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Cape Hatteras National Seashore

Hatteras Light Station

Double Keepers' Quarters

Historic Structure Report

Approved: _____ 2/16/18
Superintendent, Cape Hatteras National Seashore — Date

Recommended: Kathleen M. Bond 3/19/2018
Acting Chief, Cultural Resources Division, Southeast Region — Date

Recommended: _____ 3/20/2018
Deputy Regional Director, Southeast Region — Date

Approved: _____ 3/20/2018
for Regional Director, Southeast Region — Date

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Executive Summary

This Historic Structure Report (HSR) was produced for the Cape Hatteras National Seashore and the Southeast Regional Office to determine the best treatment and use for the Hatteras Light Station Double Keepers' Quarters. Use of the building is preferred as per National Park Service policies and guidelines for Cultural Resource Management and Executive Order No. 130006: *Locating Federal Facilities on Historic Properties*. This HSR will guide future rehabilitation and repair work on the building.

The project was conducted under a project agreement between the Historic Preservation Training Center (HPTC) and Cape Hatteras National Seashore (CAHA) entitled: "Prepare an HSR for Cape Hatteras Light Station" (PMIS #157627B). Funding was allocated through the Southeast Regional Office (SERO); project management was also done through SERO. HPTC, CAHA, and SERO are units of the National Park Service (NPS), U.S. Department of the Interior. NPS policies and guidelines were adhered to in the production and distribution of this HSR.

A Historic Structure Report is the primary guide to treatment and use of a historic building. It is prepared to identify and minimize the loss of character-defining features and materials and provides a basis upon which to address anticipated management objectives. This HSR aims to provide a current understanding of the historic Hatteras Light Station Double Keepers' Quarters and meet the following goals: provide a historical background and context for the building; supply a current physical description and timeline for changes to the building; identify character-defining features for the building; document the condition of the building; and provide treatment recommendations for the proposed use of the building (see pp. 187-190 for Hatteras Light Station Double Keepers' Quarters Prioritized Treatment List).

The historical background, context, building chronology, and technical evaluations provide an understanding of the historical integrity of the building. This information is valuable for guiding sustainable development of the Hatteras Light Station Double Keepers' Quarters by offering research and insight to park management. The contents are used by the park when scoping new projects. These new projects contain parameters for re-use functions and physical modifications that complement resource protection and preservation goals. This HSR informs management and directs planning and construction alternatives.

Research Conducted to Produce HSR

The following activities were conducted to gain a thorough understanding of the Hatteras Light Station Double Keepers' Quarters at Cape Hatteras National Seashore:

- Primary and secondary historic research into the sequence of changes and evolution of construction by the NPS:
    - Harpers Ferry Center Willow Springs, Charles Town, WV
    - Denver Service Center, Technical Information Center (eTIC), Denver, CO

    - Cape Hatteras National Seashore, Manteo, NC
- Architectural documentation by HABS
- Condition assessments by HPTC
- Recommended treatments by HPTC

Condition Assessment Summary

After HPTC's visit and assessment of the Double Keepers' Quarters, the investigation revealed modest maintenance deficiencies, resulting in an overall condition assessment rating of good.

It should be noted that this is a high-quality and historically significant building that cannot be replicated in today's economic environment. The maintenance deficiencies described herein, while needing to be addressed, are superficial and in no way signify justification for any treatment other than full restoration of the building and continued use. Reversal of recent out-of-character modifications is easily incorporated into any design or planning work and represents a return to the sustainable management of this historic structure.

The exterior and interior retain a high level of historic integrity dating to and/or sympathetic to the original date of construction and the date of significance for this HSR (1870-1936). Since the end of the period of significance, major changes to the original features include:

- Removal of exterior associated buildings, fences, and gates
- Removal of the extant kitchen wing chimney between 1948 and 1954
- Removal of the historic kitchen wing at the north elevation and replacement with the restroom addition in ca. 1957
- 1983-86 preservation work which "restored" the interior to the CCC-era (1937-39) timeframe (outside the period of significance) and preservation of exterior
- Removal of exterior window shutters in ca. 1998
- Relocation of the building to its current location (1999)
- Additions of exterior ramped walkways (ca. 2000)
- Additions of HVAC closets on the interior (ca. 2000)
- Installation of sprinkler system, fire alarm system, and security alarm system on the interior (ca. 2000)

Overall Hatteras Light Station Double Keepers' Quarters is in **good** condition, with a maintenance deficiency rating of **minor**, from the standpoint of NPS facility management programs (FMSS) and standards (with some features in "fair" and "poor" condition and "serious" and "critical" deficiencies).

The results of these investigations at the Double Keepers' Quarters provide a more fully integrated narrative of developmental history of the extant building, including changes made over the years by former owners and the NPS. It also will educate users of the building about the integrity of the historic fabric and the character-defining features so that it may be uncovered, interpreted, and preserved for future generations.

Recommendations for Treatment and Use Summary

The recommended ultimate treatments and use for the Hatteras Light Station Double Keepers' Quarters, as determined through research for this HSR, are as follows:

- *Exterior Restoration* with the removal of non-sympathetic modern accretions and retention, preservation and restoration of character-defining features and associated buildings important to the historic design and construction of the dwelling by the United States government in 1854, alterations by the same in 1892, and alterations which occurred to the dwelling and associated buildings through 1936.
- *Interior Rehabilitation* and preservation of character-defining features with removal of non-sympathetic modern accretions to reflect its original function. This treatment will preserve character-defining features and allow for the reversal of non-sympathetic treatments, materials, and finishes.

The treatment and use recommendations provided are meant to guide the final scope and description of the funded project and do not provide a construction or architectural program.

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Administrative Data

Project Identification

PMIS Number:	157627B
Project Title:	Prepare an HSR for Cape Hatteras Light Station
Project Location:	Cape Hatteras National Seashore, Manteo, NC

Name and Location Data

Preferred Structure Name:	Hatteras Light Station Double Keepers' Quarters
Other Structure Name:	Building 314; Hatteras Visitor Center
Structure Number:	HS-4C
LCS ID:	007251
Park:	Cape Hatteras National Seashore
Park District:	Cape Hatteras Light Station
Structure's County:	Dare
Structure's State:	North Carolina
NPS Region:	Southeast
Cluster:	Atlantic Coast
Administrative Unit:	Cape Hatteras National Seashore
GPS: Longitude:	-75.5298419316085
Latitude:	35.253029676691

Related Studies

Denver Service Center, National Park Service. "Relocate the Cape Hatteras Light Station." *Design Development Drawings*. October 1, 1998. NPS DSC eTIC No. CAHA 603 25006.

Denver Service Center, National Park Service. "Relocate the Cape Hatteras Light Station." *Final Construction Drawings*. October 1, 1998. NPS DSC eTIC No. CAHA 603 25006A.

Denver Service Center, National Park Service. "Relocate the Cape Hatteras Light Station." *Project Record Drawings*. December 23, 1999. NPS DSC eTIC No. CAHA 603 25006B.

Historic American Building Survey, National Park Service. "Cape Hatteras Lighthouse, Principal Keeper's Dwelling, Point of Cape Hatteras, Access Road from Route 12, Buxton, Dare County, NC." *Photos from Survey HABS NC-357-B*. 1989. Accessed at https://www.loc.gov/item/nc0477/ on June 1, 2016.

Holland, Jr., F. Ross. "A History of the Cape Hatteras Light Station, Cape Hatteras National Seashore, N. Car." Division of History, Office of Archeology and Historic Preservation, National Park Service, U.S., Department of the Interior. September 30, 1968. NPS DSC eTIC No. CAHA 603 D22.

Hurelle, Gary (Job Captain). "Design Analysis: Lightstation Move – Phase II, Historic District Contact Station & Site Development, Cape Hatteras National Seashore." May 1998, Rev. June 1998, Rev. August 1998. NPS DSC eTIC No. CAHA 603 D145.

International Chimney Corporation. "Supplemental Technical and Price Proposal: Final Proposal – Design and Construction (Design/Build) Contract to Relocate Cape Hatteras Light Station, Cape Hatteras National Seashore, Dare County, North Carolina, package CAHA 175/Request for Proposal." May 29, 1998. NPS DSC eTIC No. CAHA 603 D156.

National Park Service. "Cape Hatteras Light Station Cultural Landscape Report." Southeast Region. Cultural Resources. 2003. NPS DSC eTIC No. CAHA 603 D214.

National Park Service. "History of the Establishment of Cape Hatteras National Seashore Recreational Area." July 13, 1961. NPS DSC eTIC No. CAHA 603 D136.

National Park Service. "The Creation and Establishment of Cape Hatteras National Seashore." 2007, NPS DSC eTIC No. CAHA 603 D233.

Cultural Resource Data

National Register of Historic Places

National Register Status:	Entered – Documented
National Register Date:	March 29, 1978
National Historic Landmark?	Yes
National Historic Landmark Date:	August 5, 1998
Significance:	The Hatteras Light Station is significant at the national level under NR Criteria A and C. The station represents the operations and architecture of the U.S. Lighthouse Service on the Outer Banks of North Carolina.
NR Information System No.:	78000266

Period of Significance

The period of significance for the Cape Hatteras Light Station National Historic Landmark District, of which the Double Keepers' Quarters is considered contributing, is 1870, the year the current lighthouse was lit, to 1936, the year the lighthouse was deactivated by the U.S. Coast Guard and the year it was acquired by the National Park Service.

Despite the Double Keepers' Quarters being constructed in 1854, the period of significance for the purpose of this HSR will be 1870-1936 (the years corresponding to the period of significance for the landmark district), and will exclude the building's 1854-1870 period.

Recommended Treatment & Use

The recommended treatment for the Hatteras Light Station Double Keepers' Quarters is exterior restoration and interior rehabilitation. The recommended use is to continue as a museum open to the public.

Recommendations for Cataloguing & Storage of Materials Generated by HSR

All project materials will be turned over from HPTC to the Cape Hatteras National Seashore's Museum Resource Center. Electronic files and media will be transferred via the NPS ftp network site and through archival CDs mailed to DSC. Copies of materials will also be submitted to the Southeast Regional Office.

Abbreviations (alphabetical)

BFML	Building Feature Master List
CAHA	Cape Hatteras National Seashore
CCC	Civilian Conservation Corps
CDF	character-defining feature
DKQ	Double Keepers' Quarters
DSC	Denver Service Center
FMSS	Facility Management Software System
GMP	General Management Plan
HABS	Historic American Building Survey
HPTC	Historic Preservation Training Center
HSR	Historic Structure Report
ICC	International Chimney Corporation
NPS	National Park Service
PFMD	Park Facility Management Division
PKQ	Principal Keeper's Quarters
RFP	Request for Proposal
SERO	Southeast Regional Office
SHPO	State Historic Preservation Office
TIC	Technical Information Center
USCG	United States Coast Guard
USLHB	United States Light-House Board
USLHE	United States Light House Establishment
USLHS	United States Light House Service

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Part 1 | Developmental History

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Historical Background and Context

A Keeper's Job

Under the United States Light House Establishment, 1797-1852

A keeper's ultimate task was to maintain a good light a mariner could see and, if applicable, a fog signal a mariner could hear. During the earliest years of the United States Light House Establishment (USLHE), a spider lamp required "keeping the oil reservoirs full, the wicks lighted, and the panes of the lantern freed of the smoke that inevitably resulted from such primitive lamps." After the introduction of Winslow Lewis' Argand-style lamp and parabolic reflectors, duties likely increased, to include tending a dozen or more lamps and keeping the reflectors clean—not an easy task with shortened chimneys that rapidly blackened the reflectors. An in-depth inspection of the system in 1838 determined that "poorly kept lights apparently outnumbered good ones." The reasons for so many poorly kept lights are conjectured to include the type of lighting system used at the time, the lack of instruction to keepers at the time, and as political appointees, the quality of keepers left much to be desired. It is unknown exactly how keepers were trained during this time period, as very little formal instruction was provided; it is likely that instructions came word of mouth from outgoing keepers, the Collectors of Customs, or even from oil supply ships.[1]

Under the USLHE, lighthouse keepers were assigned via appointment, sometimes politically, not through the civil service system. Which political party a person backed mattered more than their competence for the job at hand. At Cape Hatteras, the first keeper, Adam Gaskins, a local state legislator, was initially recommended for the position by a local congressman in 1794—ten years before the lighthouse would be completed. When the lighthouse was nearing completion, Gaskins was still the lead candidate, "over another nominee of more education who wanted to open a school in the vicinity of the cape."[2] Gaskins began his keepership on December 29, 1802 at a rate of $333 per year[3] (equivalent to approximately $7,400 in 2016[4]).

This salary rate was average for a keeper at that time; most ranged between $200 and $350 per year. This varied based on a number of factors including the light station's location and the amount of work required at that station to maintain the light. Complaints by keepers were numerous, particularly regarding low pay, rare raises, the inability to support a family on their salary, etc. The federal government countered that keepers received free lodging and could supplement their income in other ways, e.g. working an additional job, gardening, and fishing. Despite the complaints, competition for nomination as a keeper was stiff.[5]

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[1] Holland, Jr., Francis Ross. "America's Lighthouses: An Illustrated History." New York: Dover Publications, Inc., 1972, pp. 43-44.
[2] Ibid, p. 39.
[3] Cape Hatteras National Seashore. "The Keepers of Cape Hatteras Light." n.d. Accessed at https://www.nps.gov/caha/learn/historyculture/upload/KEEPERS%20chronological.pdf on September 27, 2016.
[4] DaveManuel.com. "Inflation Calculator." 2016. Accessed at http://www.davemanuel.com/inflation-calculator.php on September 27, 2016. Note: all inflation calculations in this document were completed through this website.
[5] Dolin, Eric Jay. "Brilliant Beacons: A History of the American Lighthouse." New York: Liveright Publishing Corporation, 2016. pp. 63-4.

In 1816, Winslow Lewis, a jack-of-all-trades government contractor, surveyed all of the extant light stations at that time to determine an accurate keeper's salary at each. His results varied from $250 to $500 per year ($4,237 to $8,474 in 2016). At Cape Hatteras, he recommended the annual salary of $400 ($6,780 in 2016) be kept in place and provided the following justification: "No wood on the public land & the garden nearly covered with sand which makes its situation similar to Cape Look Out." The justification for Cape Lookout reads: "Situated on the extremity of the Cape eight miles from the main land, no land which can be cultivated, no wood nearer than three miles, the salary for keeping the light I think ought to be put on the same footing as all the Southern Light Houses 400 Dollars."[6]

Usurpation of a keeper was also common initially. A story from Cape Hatteras from 1816-17 details a group of people trying to replace the resident keeper there:

> The most articulate [one of the group] wrote the secretary of the treasury complaining of the light, saying that it was burning bright and clear at the beginning of the night but was permitted to go out after a few hours. He implied further that the keeper was in collusion with wreckers on the Outer Banks. Moreover, he continued, the keeper was a vendue master (i.e., he conducted auctions of the goods of wrecked vessels), thus benefiting from the tragedy of shipwreck. The letter writer's motives had a false ring, since at the same time he questioned the integrity of the Cape Hatteras keeper, he was urging the appointment of a fellow townsman as keeper of the Cape Hatteras light.[7]

Fifth Auditor Stephen Pleasonton, in charge of the USLHE issued the first *Instructions to the Keepers of Light Houses within the United States* on April 23, 1835. The instructions were short and included nine bullet points (fig. 1).[8]

Under the United States Light-House Board, 1852-1910

The 1851 *Act Making Appropriations for Light House, Light Boats, Buoys, &c* appointed a board to study every aspect of the troubled USLHE.[9] The resulting 760-page report "found the interest and ability of keepers 'was very various' and advocated testing keepers prior to their selection." A year later, when the United States

INSTRUCTIONS TO THE KEEPERS OF LIGHT HOUSES WITHIN THE UNITED STATES

1. You are to light the lamps every evening at sun-setting, and keep them continually burning, bright and clear, till sun-rising.

2. You are to be careful that the lamps, reflectors, and lanterns, are constantly kept clean, and in order; and particularly to be careful that no lamps, wood, or candles, be left burning any where as to endanger fire.

3. In order to maintain the greatest degree of light during the night, the wicks are to be trimmed every four hours, taking care that they are exactly even on the top.

4. You are to keep an exact amount of the quantity of oil received from time to time; the number of gallons, quarts, gills, &c., consumed each night; and deliver a copy of the same to the Superintendent every three months, ending 31 March, 30 June, 30 September, and 31 December, in each year; with an account of the quantity on hand at the time.

5. You are not to sell, or permit to be sold, any spirituous liquors on the premises of the United States; but will treat with civility and attention, such strangers as may visit the Light-house under your charge, and may conduct themselves in an orderly manner.

6. You will receive no tube-glasses, wicks, or any other article which the contractors, Messrs. Morgan & Co., at New Bedford, are bound to supply, which shall not be of suitable kind; and if the oil they supply, should, on trial, prove bad, you will immediately acquaint the Superintendent therewith, in order that he may exact from them a compliance with this contract.

7. Should the contractors omit to supply the quantity of oil, wicks, tube-glasses, or other articles necessary to keep the lights in continual operation, you will give the Superintendent timely notice thereof, that he may inform the contractors and direct them to forward the requisite supplies.

8. You will not absent yourself from the Light-house at any time, without first obtaining the consent of the Superintendent, unless the occasion be so sudden and urgent as not to admit of an application to that officer; in which case, by leaving a suitable substitute, you may be absent for twenty-four hours.

9. All your communications intended for this office, must be transmitted through the Superintendent, through whom the proper answer will be returned.

Fifth Auditor and Acting Commissioner of the Revenue

TREASURY DEPARTMENT
Fifth Auditor's Office
April 23d, 1835

Figure 1. The first instructions for keepers were distributed in 1835. Photo: http://uslhs.org/1835-instructions-keepers.

[6] Lewis, Winslow. "Light House Keeper's Salary." 1816. Accessed at http://uslhs.org/1816-winslow-lewis-lighthouse-keeper-salaries on September 26, 2016.
[7] Holland, Jr., "America's Lighthouses," p. 40.
[8] "Instruction to the Keepers of Light Houses within the United States." Accessed at http://uslhs.org/1835-instructions-keepers on September 26, 2016.
[9] Cybularz, Rebecca (NPS HPTC). "Cape Hatteras Lighthouse." *Historic Structure Report.* 2016. p. 29.

Light-House Board (USLHB) assumed control of the system, the Board "did all it could do to minimize the effect of politics on appointment of keepers."[10] This included "requiring prospective keepers to meet certain standards, placing keepers on probation for three months, and at the end of that period testing their skills and firing those who didn't pass. [They also stripped]… custom collectors of their power to nominate keepers, transferring the task instead to lighthouse inspectors."[11]

A major goal of the USLHB was to have men make a career of being a keeper, rising from lesser positions to that of head keeper.[12] This happened several times at Cape Hatteras from the 1870s to the early 1900s.[13]

Another way the Board assumed control was by issuing a new and more in-depth *Instructions for Light-Keepers of the United States* in 1852. This described when to light (sunset) and extinguish (sunrise) the lamps, when and how to clean the lighting apparatus, when and how to clean the lantern room, instructions on noting weather conditions and shipwrecks, and updating the station's store book, among other things. Of interesting note, the use and presence of alcohol at the light stations was especially frowned upon:

> The light keepers are required to be sober and industrious, and orderly in their families. They are expected to be polite to strangers, in showing the premises at such hours as do not interfere with the proper duties of their office; it being expressly understood that strangers shall not be admitted to the light-room after sunset. … The light-keepers must not, on any pretext, admit persons in a state of intoxication into the light-house.

Additionally, it was noted that the "principal light-keeper is prohibited from selling any malt or spirituous liquors, and from allowing any to be sold on the premises under his charge."[14]

A.W. Simpson, the third assistant keeper at Cape Hatteras from 1894-99, has been interpreted as one who liked to imbibe, which got him in trouble from time to time. The following saga unfolds at the time of his second nomination to the light station:

> …D. McD. Lindsey wrote the Lighthouse Board protesting his appointment, saying that Simpson was a thief, a common drunk, and a notorious liar. He stated that Simpson had been a watchman at the War Department in Washington and while there had been arrested a number of times for drunkenness. Once he stole his roommate's pants and sold them to buy whiskey. Simpson undoubtedly was appointed, Linsey [sic] went on, because of the efforts of the principal keeper who was related to Simpson. The District Inspector was instructed to investigate the charges, but his findings have not survived. Whatever they were and whatever the action of the Board, Simpson was not dismissed , for three years later the board received another letter, this time from an Alexander Hunter. Hunter charged Simpson with engaging in politics despite the rules and regulations against such activity, with being 'indecently drunk' in uniform in Manteo, North Carolina, and 'with being a felon, thief, and man of vile habits, and unfit to serve the government of the United States.' Hunter followed this letter up a few days later with one stating that Simpson had also been seen in the streets of Elizabeth City drunk. Again the District Inspector was instructed to investigate and again the results of his investigation have not

[10] Holland, Jr., "America's Lighthouses," p. 40.
[11] Dolin, "Brilliant Beacons," pp. 208-9.
[12] Holland, Jr., "America's Lighthouses," p. 103.
[13] Cape Hatteras National Seashore. "The Keepers of Cape Hatteras Light."
[14] United States Light-House Board. "Instructions for Light-Keepers of the United States." 1852. Accessed at http://uslhs.org/1852-instructions-light-keepers on September 26, 2016.

survived but the records of keepers show that Simpson continued on duty until 1899 when he was transferred to another station.[15]

Around this same time the USLHB began training its keepers and made literacy a job requirement so that keepers could accurately fill out their required reports and read the numerous instructions circulated to them.[16] Some of the publications the Board circulated included: *Lighthouse Establishment Instructions*; *Instructions and Directions for the Management of Lenses, Lights, and Beacons*; *List of Illuminating Apparatuses, Fixtures, Implements, and Supplies in general use in the U.S. Lighthouses, Lighted Beacons and Light-Vessels…*; *Instructions and Directions to Guide Lighthouse Keepers and others Belonging to the Lighthouse Establishment*; and *Management of Lens Apparatus and Lamps.* Annually, keepers also received an updated *Light List.*[17]

The number of keepers present at a light station increased during the Board's oversight. The number coincided with how large the lenses were. The head keeper was in charge and the assistants ranked in descending order depending on their time in service and experience.[18]

For example, Cape Hatteras had only a principal keeper for its first fifty years; in 1854, two years after the Board's establishment, three keepers—a principal keeper and two assistants—were assigned to the station (also coincides with raising the height of the tower and installation of the Fresnel lens). A third assistant would later be assigned (1878) to the light station to man a smaller, accompanying beacon there.[19]



Figure 2. Principal Keeper Unaka Jennette cleaning the lens' glass prisms in 1933, though he is not wearing his required apron. Photo: Cape Hatteras National Seashore Archives.

At light stations with two or more keepers, work was divided between two "departments." The keeper performing the duties of the first department "had to clean and polish the lens [fig. 2], clean and fill the lamp, dust the framework of the apparatus, trim carefully the wicks of the lens lamp, and, if required, put new ones in, and see that everything connected with the apparatus and lamp in general was perfectly clean and the lamp ready for lighting in the evening." The keeper performing the duties of the second department "had to clean the copper and brass fixtures of the apparatus as well as the utensils used in the lantern and watchroom; clean the walls,

[15] Holland, Jr., F. Ross. "A History of the Cape Hatteras Light Station, Cape Hatteras National Seashore, N. Car." Division of History, Office of Archeology and Historic Preservation, National Park Service, U.S. Department of the Interior. September 30, 1968. pp. 108-109.
[16] Dolin, "Brilliant Beacons," pp. 133-4.
[17] Holland, Jr., "America's Lighthouses," pp. 44-45.
[18] Dolin, "Brilliant Beacons," p. 232.
[19] Cape Hatteras National Seashore. "The Keepers of Cape Hatteras Light."

floors, and balconies, or galleries, of the lantern; and sweep and dust the tower stairways, landing, floors, windows, window recesses, and passageways from the lantern to the oil storage area."[20] All of these tasks were to be completed between sunrise and 10am, so that the lighthouse would be ready for lighting at sunset. At night, "watches were established, usually of four to six hours, when the keeper on duty would stay awake in the watch room below the lantern room, and tend the light as necessary." If only one keeper was assigned to a station, the keeper was required to check on the light at least twice between 8pm and sunrise.[21] Sleeping on the job was not tolerated. At Cape Hatteras in the 1880s, the second assistant keeper was found asleep by the head keeper; the assistant was dismissed.[22]

In addition to the tasks at the lighthouse and tending the lights, the keepers were also responsible for many other duties, including repairing the lighthouse boats, replacing broken glass, repairing and repainting all lighthouse buildings, and completing reports. Larger construction jobs were completed by working parties from the district office (fig. 3).[23]

In 1871 and 1881, new "Instructions" were issued. These sets were far more detailed than any of the previous iterations and further explained the daily, monthly, quarterly, annual, and other reports the keepers had to write, the different operating instructions for the numerous lighting apparatuses, and various other day-to-day tasks.[24]

In 1884 the Board required all lighthouse keepers to wear a uniform (fig. 4). The dress uniform consisted of "coat, vest, trousers, and cap, all of 'suitable dark indigo-blue jersey or flannel.' A double row of five yellow metal buttons ran down the front of the double-breasted coat and a yellow metal lighthouse badge perched on the cap just above the visor. There was an optional canvas helmet for warm weather."[25] When



Figure 3. The working party which built the addition to the Principal Keeper's Quarters in 1927. Principal Keeper Unaka Jennette is located in the front row, third from left. Photo: Cape Hatteras National Seashore Archives. Cropped by author.



Figure 4. First Assistant Keeper John Quidley in his USLHB uniform. Quidley was stationed at Cape Hatteras between October 1909 and March 1911. Photo: Cape Hatteras National Seashore Archives.

[20] Holland, Jr., "America's Lighthouses," p. 45.
[21] Dolin, "Brilliant Beacons," p. 235.
[22] Holland, Jr., "America's Lighthouses," p. 46.
[23] Dolin, "Brilliant Beacons," p. 238.
[24] United States Light-House Board. "United States Light-House Establishment, Instructions and Directions to Light Keepers." 1871. Washington: Government Printing Office. Accessed at http://uslhs.org/1871-instructions-light-keepers on September 26, 2016.
United States Light-House Board. "United States Light-House Establishment, Instructions to Light-Keepers." July 1881. Washington: Government Printing Office. Accessed at http://uslhs.org/1881-instructions-lightkeepers on September 26, 2016.
[25] Holland, Jr. "America's Lighthouses," p. 41.

cleaning the lens, they were to wear an apron. When working outside, they were allowed to exchange the dress uniform for a brown working suit.[26]

The Board also set up a twice yearly (at least) inspection of each light station. The inspections were intended to be unannounced, but the keepers were seldom completely surprised. "As the tender with the inspector on board approached the lighthouse, it would raise the inspector's ensign and sound the ship's horn to alert the keepers to his impending arrival, giving them enough time to quickly don their uniforms and put things in their proper place." The inspector scrutinized everything, including cleanliness and orderliness of the light station, review of the keeper's logbooks and other records, and inspection of the lantern room, lighting apparatus, storage areas, and even the living quarters.[27]

Despite the momentous efforts of the Board to rid the service of nepotism and make it a professional organization, keepers' positions were not included in the two Civil Service Reform Acts in 1871 and 1883. It was not until Grover Cleveland's executive order on May 1896 that keepers would finally be included in the classified civil service.[28] Applicants were now required to be qualified for the job and pass written and oral exams; political affiliation was not considered in any way. Further, once hired, the new employee was required to complete a six-month probationary period.[29]

Under the United States Lighthouse Service, 1910-1939

In 1910, the Light-House Board was replaced by the United States Light House Service (USLHS) under the direction of George R. Putnam.[30]

Putnam believed that the keepers were the backbone of the Service and believed that they deserved rights not previously privy to them, despite their employment with the federal government, like a pension. Lighthouse keepers were not eligible for pensions because there was no retirement system. Without a pension, most elderly lighthouse keepers were financially unable to retire. Those who still worked were becoming too feeble to properly perform the job. It took Putnam eight years to lobby Congress and on June 20, 1918, "President Woodrow Wilson signed legislation enabling keepers to retire after thirty years of service at age sixty-five, and to collect a generous pension (the mandatory retirement age was seventy). Soon after, not unpredictably, a large number of keepers who had been hoping that this day would arrive cheerfully submitted their resignations."[31]

Similarly, Putnam also fought to provide disability benefits to keepers and survivors benefits to families of keepers who died while on duty. He also rallied for increased salary. In 1867 the average salary was raised to $600 ($9,667 in 2016), where it stayed for fifty years! "Putnam believed keepers should be paid more, not only to benefit those already in the service but also to ensure that salaries remained competitive enough to hire competent people." In 1918, Congress raised the average

[26] Dolin, "Brilliant Beacons," p. 206.
[27] Ibid, p. 248.
[28] Holland, Jr. "America's Lighthouses," p. 40.
[29] Dolin, "Brilliant Beacons," pp. 209-10.
[30] Cybularz, HSR, p. 34.
[31] Dolin, "Brilliant Beacons," p. 223-4.

salary to $840 ($13,333 in 2016). By the early 1930s, keepers' salaries ranged from $1,080 to $2,100 ($18,947 to $36,842 in 2016).[32]

Under the United States Coast Guard, 1939 and on

The United States Coast Guard (USCG) gained control of the lighthouse service on July 1, 1939, "paradoxically, just as they were preparing to celebrate the service's illustrious [150-year] history." Some keepers resigned due to the shift. Others had to decide between retaining their civilian status or converting to the military hierarchy of the Coast Guard; about fifty percent chose the former and fifty percent chose the latter, becoming chief or first-class petty officers. Grumblings did occur, but the transition was smooth. Eventually, as older keepers did retire, they were replaced by USCG "servicemen who were usually stationed at lighthouses for relatively short stints, often just a couple of years.... Thus, slowly over time, temporary keepers replaced those who had chosen to make a career of lighthouse work."[33]

A Note on Diversity

African Americans and American Indians were sometimes employed in the early days of the USLHE. However several historians note that the Establishment was mostly Caucasian. At Cape Hatteras, a keeper was removed from his position because he had used a slave to tend the lighthouse there. After the Civil War, the USLHB did, from time to time, appoint African Americans into service, but this was infrequent.[34]

Women were more frequently employed as lighthouse keepers. Women often began as assistant keepers at lighthouses where their husbands or fathers were head keepers. If her husband or father died while still a keeper, the female assistant was sometimes promoted to fill the place of the deceased.[35] An estimated 240 women officially served as assistant keepers and 140 became principal keepers. All were typically paid the same as their male counterparts.[36] Records indicate that no female keepers, of any rank, were stationed at Cape Hatteras.

The Personal Life of a Keeper and His Family

Keeping a lighthouse is often thought of as isolated, lonely, and monotonous. However the families stationed at light stations made the best of the world in which they lived.

The education of children was particularly important. In isolated areas, keepers made their own accommodations for the education of their children. Some transferred to different stations when their kids were old enough for school, some boarded their children in a nearby town with a school, some trekked their children back and forth to school everyday, and some hired tutors to spend time with their children periodically throughout the year. In locations with a town/school nearby,

[32] Dolin, "Brilliant Beacons," pp. 224-226.
[33] Ibid, p. 385.
[34] Holland, Jr. "America's Lighthouses," p. 41.
[35] Ibid, pp. 41-42.
[36] Dolin, "Brilliant Beacons," p. 266.

children more easily obtained their education.[37] Rany Jennette, son of Unaka Jeannette, the last principal keeper at Cape Hatteras, remembers attending school in nearby Buxton:

> Sometimes we would have to walk to school along the sandy trails, about two miles. Most of the time, however, someone from the lighthouse or the Life Saving Station would give us a ride. After school, we knew it was going to be a long walk back home. Sometimes a car would pass, winding its way along the soft, sandy car track and we could hitch a ride on the running board. No one seemed to mind, as this was a favorite means of transportation for the young boys and girls. There was no lunchroom so lunches were packed and carried to school, usually in brown paper bags. … C.P. Gray was also the school principal and served in this capacity for many years. He was a well educated [sic] and intelligent man who has not had an equal to this day in any Dare County School. Stern but fair, with complete control over students and teachers, he knew how to handle a switch in the most effective way.
>
> At recess, morning and afternoon, we played baseball, shot marbles, and played a very simple game of basketball, with an old hoop nailed to a pine tree with a clearing underneath. We also had skis and sleds made form barrel staves, which we used to slide down a steep, pine-needle-covered hill close by the school house. The girls skipped rope and made playhouses with the abundance of straw that was most [sic] everywhere.[38]

To assist in reaching more remote areas, the USLHB began rotating minilibraries throughout the more isolated light stations in 1876. They began with "fifty minilibraries, each containing about forty books, housed in an attractive, sturdy, and portable wooden box." A minilibrary would stay at one light station for six months and then would rotate to the next while being replaced with another. "Donated by private individuals or purchased by the board, the books included the obligatory Bible and hymnbooks, along with a great variety of fiction and nonfiction—everything from novels to poetry and books on science." Within five decades, the number of minilibraries in circulation increased to five hundred.[39] Rany Jennette remembers the minilibraries, adding that because of the access to the books, the "lighthouse young folks had an advantage over the village youngsters."[40]

The USLHB provided various domestic food and supplies to each light station. For example, the 1881 food allowances per man included:

> Pork: 200 pounds
> Beef: 100 pounds
> Flour: 2 barrels
> Rice: 50 pounds
> Brown Sugar: 50 pounds
> Coffee (green grain): 24 pounds
> Beans or pease [sic]: 10 gallons
> Vinegar: 4 gallons
> Potatoes: 2 barrels[41]

To offset further food costs, those with access to fertile soil farmed and raised animals (fig. 5); others "farmed" the sea.[42] At Cape Hatteras, Rany Jennette remembers doing both:

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[37] Holland, Jr. "America's Lighthouses," p. 47.
[38] Jennette, Rany. "Cape Hatteras Lighthouse as I Knew It." n.d. Accessed at https://www.nps.gov/caha/learn/historyculture/upload/RANY's%20oral%20history%20edited%2011202008.pdf on September 27, 2016.
[39] Dolin, "Brilliant Beacons," pp. 205-6.
[40] Jennette, "Cape Hatteras Lighthouse as I Knew It."
[41] United States Light-House Board. "United States Light-House Establishment, Instructions to Light-Keepers." July 1881.

> We had chickens, hogs, cows, and vegetable gardens. So, like the farmer, most of our food was home-grown and close at hand. Staple foods were purchased at one of the general stores in Buxton and the other villages. This was a monthly trip after payday, referred to as 'grubbing up.' With fresh vegetables from the garden, fresh milk from the cow, and other supplies from the general store, we lived pretty good. Fresh beef was had only occasionally. A local person would slaughter a steer, usually on the beach on the beach, skin the animal, cut it into chunks, and peddle it through the village. By this time the flies would be trying to take over.[43]



Figure 5. Animal pens, including a chicken coop, can be seen in this May 1893 photograph of the Principal Keeper's Quarters. Tilman Smith was the principal keeper at that time and can be seen standing between the two women in his USLHB uniform. Photo: Cape Hatteras National Seashore Archives.

Pets, like dogs and cats, were quite common at light stations (figs. 6-7). Historic pictures show at least two dogs present at Cape Hatteras. Rany Jennette also noted in his oral history that his brother kept a pet goat at Cape Hatteras.



Figure 6. First Assistant Keeper John Quidley with his wife Emma Midgette Quidley, daughter Marie, and family dog "Pechichi," who was rescued from a shipwreck in ca. 1908, in front of the Double Keeper's Quarters sometime between October 1909 and March 1911 when he was stationed there. Photo: Cape Hatteras National Seashore Archives.



Figure 7. A pet dog photogprahed sometime after 1927 (the year the addition was put on the Principal Keeper's Quarters). This dog may have belonged to Principal Keeper Unaka Jennette's family. Photo: Cape Hatteras National Seashore Archives.

The Board and Service also supplied a medicine chest to every light station acknowledging that when living in isolated location illness and injury could quickly become life-threatening.[44] Rany Jennette remembers the following as contents in Cape Hatteras' medicine chest: "sweet spirits of nitre, cough mixture, castor oil, spirits of camphor, coliform liniment, saltpeter, quinine pills,

[42] Holland, Jr., "America's Lighthouses," p. 49.
[43] Jennette, "Cape Hatteras Lighthouse As I Knew It."
[44] Dolin, "Brilliant Beacons," p. 282.

cathartic pills, laudanum, carbolic acid, iodine, glycerine, lacto pepsin, rochelle salts, bandages, and a medical dictionary." He also noted that despite these supplies his mother also had her own remedies, like "fatback or sow belly and turpentine for nails stuck in feet, kerosene or coal oil for cuts, to name a few."[45]

During the 1920s USLHS commissioner Putnam believed that bringing a radio to each light station would aid in the quality of a secluded life. Putnam did not have the funding available to directly buy radios for each station, but in 1925 a New York woman purchased twenty-five radios and donated them to various light stations. A year later, Secretary of Commerce Herbert Hoover appealed the public to donate radios to the service. Nearly three hundred radios were donated as a result of Hoover's appeal. They were distributed nationwide.[46]

[45] Jennette, "Cape Hatteras Lighthouse As I Knew It."
[46] Dolin, "Brilliant Beacons," pp. 287-8.

Chronology of Development and Use

Early Dwellings

Planning for the first Cape Hatteras Lighthouse occurred throughout the 1790s. In October 1798, the federal government purchased four acres of land for the establishment of Cape Hatteras Light Station. Concurrently, recently retired Massachusetts congressman Henry Dearborn submitted a final proposal for building the Cape Hatteras Lighthouse. This proposal was accepted by President John Adams. In the fall of 1799, Dearborn travelled to Cape Hatteras to begin the construction of a keeper's quarters there. Work at the Light Station was nearly complete by the end of December 1802, when the first keeper began his appointment.[1]

On July 21, 1828, keeper Pharaoh Farrow sold approximately forty acres to the federal government for $200. The new tract was just north of the original lot and would be the site of a new keeper's dwelling and the 1870 lighthouse.[2] The original dwelling had become "so deteriorated that the Fifth Auditor of the Treasury, who administered this country's aids to navigation, authorized the expenditure of $1,500 to erect a new 'quarters building.'"[3]

New Dwelling

In October 1852, Congress created a nine-member United States Light-House Board (USLHB) to oversee the administration of the country's lighthouses. The Board took up their duties immediately upon organization.[4]

In 1853, at the behest of the USLHB, Congress appropriated $15,000 for improvements to the Hatteras Light Station.

> The Lighthouse Board used this money to raise the light tower about 50 feet and to erect a new dwelling for the keepers. Since by this time the Board had assigned several keepers, in addition to principal keeper, to the station, the Board ordered construction of a double dwelling. The evidence indicates that this structure, in modified form, survives today as the museum at the light station.[5]

The alterations to the lighthouse and the construction of the new dwelling, now known as the Double Keepers' Quarters, were completed in 1854 (fig. 8).

[1] Cybularz, Rebecca, Historic Preservation Training Center, National Park Service. "Cape Hatteras Lighthouse." *Historic Structure Report.* February 2016, pp. 41-44.
[2] Ibid, p. 45.
[3] Holland, Jr., F.R., and Archie Franzen. "Keeper's Dwelling: Cape Hatteras Light Station, Cape Hatteras National Seashore, North Carolina." *Historic Structure Report-Part I.* Division of History, Office of Archeology and Historic Preservation, National Park Service, U.S. Department of the Interior. December 1, 1968. p. 5.
[4] Cybularz, "Cape Hatteras Lighthouse," p. 30.
[5] Holland, Jr. and Franzen. "Keeper's Dwelling," pp. 5-6.

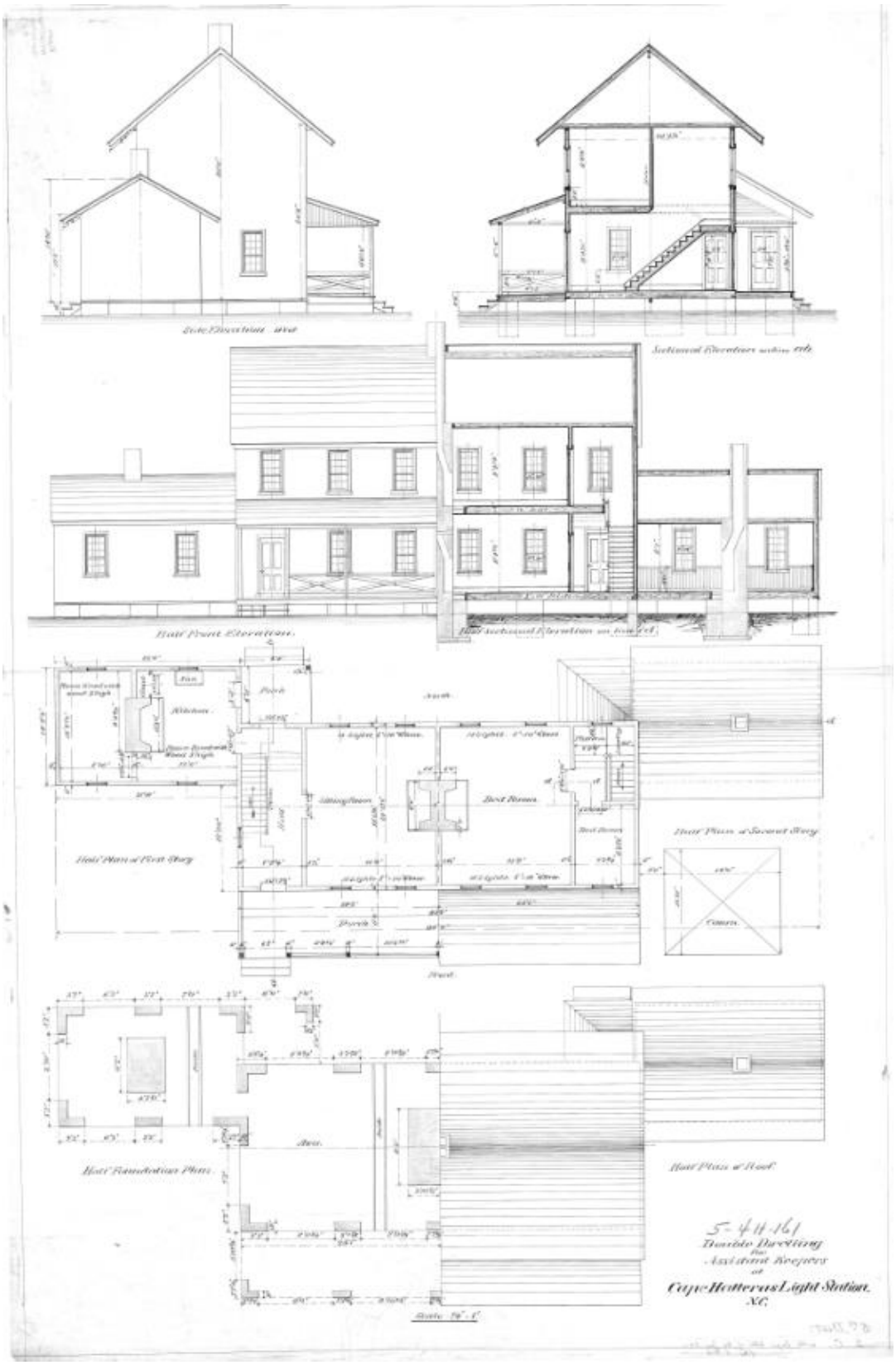


Figure 8. A drawing of the Double Keepers' Quarters as it was originally constructed in 1854. The drawing accompanied the Lighthouse Engineer's letter dated January 30, 1889, and was filed on February 5, 1889. Drawing: National Archives and Records Administration.

The new double dwelling consisted of a two-story, 48'-4"-wide and 20'-2½"-deep symmetrical main block, with one-story 22'-4"-wide and 14'-3½"-deep symmetrical wings at the northeast and northwest corners. The first floor included an 8'-0"-deep front porch which spanned the entire south elevation, an entry stair hall and sitting room with fireplace in each half of the main block, a kitchen with fireplace and pantry in each addition, and small rear porches in the ells of the main block and additions. The second floor included the upper portion of the stair hall, a large bedroom with fireplace, and a small bedroom in each half of the main block. It is unknown where the entry into the attic occurred. Exterior window openings are depicted with 9/6 double-hung windows; exterior and interior doors are depicted with a four-panel configuration. On the exterior, a single 14'-0"-wide and 12'-10"-deep cistern is located at the southeast corner of the building; it is unknown if one was originally symmetrically located at the southwest corner.

According to the Annual Report for the fiscal year ending June 30, 1855, the Double Keepers' Quarters had not been painted when it was constructed in 1854, but had "been thoroughly painted during the last summer with three coats of paint, under the superintendence of H.F. Hancock, esq., the superintendent of lights at Washington, NC."[6]

A March 15, 1862 inspection of the Hatteras Light Station noted the following regarding the dwellings: "The Keeper's dwellings are comparatively uninjured, requiring no more than the repairs that would be bestowed upon them on the ordinary occasions of our periodical visits for that purpose." A plank "causeway" was recommended for construction between the tower and the dwellings.[7] The "causeway" would be approved the following month.[8]

The Annual Report for the fiscal year ending June 30, 1864 noted the dwelling house was in fair condition and only required "incidental repairs during the coming year."[9]

New Lighthouse and Other Changes to the Light Station

After many months of planning for the new Cape Hatteras Lighthouse, a working party departed Baltimore, MD for Cape Hatteras on October 19, 1868. Also at this time, Fifth Lighthouse District Engineer W.J. Newman selected Dexter Stetson to be superintendent of construction. Work proceeded almost continuously until the lighthouse was lit on December 16, 1870.[10]

In June 1869, Lighthouse Engineer J.H. Simpson reported that "measurements [had] been made for the drain required to empty the pond on which the Light Keepers dwelling stands…." He then quoted the Superintendent of construction for the lighthouse as follows: "I would most respectfully urge upon you the importance of doing something of this kind. Otherwise the Keepers dwelling as well as my own quarters will scarcely be habitable during the sickly season which will soon set in. The water already becoming stagnant, stands 12 in. deep under the keepers dwelling, and the [illegible] from the kitchen and the offal generally of the premises has been known in here for many

[6] Photocopy of annual reports from Cape Hatteras National Seashore Archives.
[7] Newman, W.J., Acting Lighthouse Engineer. *Letter to Commodore W.B. Shubrick, Chairman, United States Light-House Board.* March 26, 1862. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[8] Newman, W.J., Acting Lighthouse Engineer. *Letter to Commodore W.B. Shubrick, Chairman, United States Light-House Board.* April 7, 1862. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[9] Newman, W.J., Acting Lighthouse Engineer. *Annual Report to Commodore W.B. Shubrick, Chairman, United States Light-House Board.* October 4, 1864. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[10] Cybularz, "Cape Hatteras Lighthouse," pp. 56-70.

years, that it already begins to smell offensive, and will (when the water dries up) as it will during the dry weather of June & July, become an insufferable nuisance. I would therefore respectfully suggest the draining of the pond and the fitting in around and under the fence with sand, as a remedy for the above [illegible]. I can easily fill in with sand under and around the dwelling if instructed by you to do so."[11] Two months later, "considerable sickness" was reported among the lighthouse working party, likely caused by disease from the stagnant water at the light station. Whiskey was deemed the solution.[12] It is unknown if whiskey was approved however.

As the construction of the lighthouse progressed, it became apparent that the Double Keepers' Quarters would be insufficient for use by the personnel needed to attend to the light station (three total keepers). With a surplus of bricks and other building materials, a new keeper's dwelling was proposed in November 1870. Originally planned for the third keeper, by the time construction was completed in April 1871, the dwelling was assigned to the Principal Keeper.[13]

In June 1880, an estimate of $1,000 was prepared for repairs to the dwellings in the upcoming year. Repairs were to include "new fencing; repairing roof and gutter; rebuilding chimney."[14]

According to the Annual Report for the fiscal year ending June 30, 1881, "extensive repairs" were made in March and April of that year, and included repairs to the plaster and painting, repairing the woodwork and brickwork of the cisterns, and repairing the pumps. In addition, fencing was repaired.[15]

A request was made in October 1882 to the USLHB for the installation of electric call bells on both keepers' dwellings to connect to the lighthouse towers. The call bells were soon after supplied.[16] Five years later, correspondence discussed repairs to the call bell system and replacement of the insulated wire between the bells was completed.[17]

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[11] Simpson, J.H., Lighthouse Engineer. *Letter to Admiral W.B. Shubrick, Chairman, United States Light-House Board.* June 18, 1869. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[12] Simpson, J.H., Lighthouse Engineer. *Letter to Admiral W.B. Shubrick, Chairman, United States Light-House Board.* August 17, 1869. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[13] Simpson, J.H., Lighthouse Engineer. *Letter to Rear Admiral W.B. Shubrick, Chairman, United States Light-House Board.* November 7, 1870.
Simpson, J.H., Lighthouse Engineer. *Letter to Dexter Stetson, Superintendent of Construction.* November 10, 1870.
Hains, Peter C., Captain of Engineers. *Letter to Dexter Stetson, Superintendent of Construction.* November 19, 1870.
Hains, Peter C., Captain of Engineers. *Monthly Report to Rear Admiral W.B. Shubrick, Chairman, United Stations Light-House Board.* January 12, 1871.
Hains, Peter C., Captain of Engineers. *Monthly Report to Rear Admiral W.B. Shubrick, Chairman, United Stations Light-House Board.* February 16, 1871.
Hains, Peter C., Captain of Engineers. *Monthly Report to Rear Admiral W.B. Shubrick, Chairman, United Stations Light-House Board.* March 18, 1871.
Hains, Peter C., Captain of Engineers. *Monthly Report to Rear Admiral W.B. Shubrick, Chairman, United Stations Light-House Board.* April 11, 1871.
Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[14] Babcock, O.E., Lighthouse Engineer. *Letter to Rear Admiral John Rodgers, Chairman, United States Light-House Board.* June 29, 1880. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[15] Photocopy of annual reports from CAHA archives.
[16] Lighthouse Engineer. *Letter to Rear Admiral R.H. Hyman, Chairman, United States Light-House Board.* October 23m 1882.
Luckey, Levi P. *Letter to A. Johnson, Portsmouth Buoy Depot.* January 15, 1883.
Babcock, O.E., Lighthouse Engineer. *Letter to J.D. Franzoni, Washington, DC.* March 9, 1883.
Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[17] Mallery, J.C., Lighthouse Engineer. *Letter to Chairman, United States Light-House Board.* October 8, 1887.
Chairman, United States Light-House Board. *Letter to J.C. Mallery, Lighthouse Engineer.* October 8, 1887.
Mallery, J.C., Lighthouse Engineer. *Letter to Keeper Tillman F. Smith.* October 14, 1887.
Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.

Repairs to the Double Keepers' Quarters were approved in July 1886.[18] Details are unknown.

In April 1887, a request was made and authorization was received "for repair of porches, cistern top, fences, etc." at the dwellings.[19]

A month later, it again became apparent that the extant Double Keepers' Quarters was insufficient for the staff stationed at Cape Hatteras (four total keepers). An inspection of the light station yielded the following recommendation: "I would earnestly recommend that additional quarters be provided at this station for the assistant keepers. There are three, including the one in charge at the Beacon, occupying quarters intended for two families. As each of these men has a family ranging from three to seven persons, it will be seen that they are much too crowded for either health or comfort. In order that the assistant in charge of the Beacon might live nearer his light, I would suggest in case additional quarters should be built that the house be located near the present Life Saving Station."[20]

The Annual Report for the fiscal year ending June 30, 1887 reiterated the recommendation: "The third assistant light-keeper at this station is in charge, under the principal keeper, of the Cape Hatteras beacon. There is no room for him in the keeper's dwelling. His duties pertain entirely to the beacon, and it is desirable to have him as near it as practicable, it is deemed necessary to put up a cottage for him in the immediate vicinity. This can be built for $3,500."[21]

The Lighthouse Engineer agreed in June 1887 and the USLHB agreed in July 1887[22]; however it would be several years until additional quarters would be constructed.

An estimate of expenses for the six months ending December 30, 1887 included $500 for repairs to dwellings, porches, and cistern roof, $150 for construction of two small store rooms, $50 for repairs to a cistern cover, and $300 for repairs to the fences.[23]

According to the Annual Report for the fiscal year ending June 30, 1888, the Double Keepers' Quarters, and its cistern, kitchen, and storehouse, received "thorough and extensive repairs" in January of that year. In addition, 400'-0" of new fence was built and the old fence was repaired, and two new storehouses measuring 10'-0" by 12'-0" were constructed for use by the assistance keepers.[24]

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[18] United States Light-House Board Engineer Secretary. *Letter to Lighthouse Engineer.* July 13, 1886. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[19] Smith, D.V., Keeper. *Letter to James F. Gregory, Lighthouse Engineer.* April 18, 1887.
Heap, D.P., United States Light-House Board Engineer Secretary. *Letter to James F. Gregory, Lighthouse Engineer.* April 26, 1887. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[20] Heap, D.P., United States Light-House Board Engineer Secretary. *Letter to James F. Gregory, Lighthouse Engineer.* May 23, 1887. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[21] Photocopy of annual reports from CAHA archives.
[22] Gregory, James F., Lighthouse Engineer. *Letter to Chairman, United States Light-House Board.* June 8, 1887.
Heap, D.P., United States Light-House Board Engineer Secretary. *James F. Gregory, Lighthouse Engineer.* July 8, 1887. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[23] Mallery, J.C., Lighthouse Engineer. *Letter to Chairman, United States Light-House Board.* Date Unknown. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[24] Photocopy of annual reports from CAHA archives.

According to the Annual Report for the fiscal year ending June 30, 1889, "slight repairs [were] needed to plastering, floors, etc., in dwellings."[25] The Annual Report for the next year estimated repairs to the dwellings and fences at $500.[26]

Addition to the Double Keepers' Quarters

In January 1891, Lighthouse Engineer J.C. Mallery proposed a two-story addition to the Double Keepers' Quarters. His request asked for labor and materials for the addition, sash and shutters for the dwelling and roof and gutters for the beacon totaling $2,000.[27] In response the USLHB wrote:

> Referring to your letter of Jan 14, 1891, with enclosed estimate, etc., and tracings showing plans of proposed addition to Assistant Keeper's [sic] dwelling at Cape Hatteras light-station, and asking authority to at once proceed with the work, the Board calls your attention to the fact that there is now an estimate before Congress for a new Assistant Keeper's [sic] dwelling and oil-house, at a cost of $5,000. At the present writing there is every reason to believe that Congress will appropriate the sum asked for, as it is included in the list of estimates among the items stated by the Board to be indispensable.
>
> This amount if appropriated is understood to be for the erection of a dwelling for the Assistant Keeper who is in charge of Hatteras Beacon and for the erection of an oil-house for the Cape Hatteras light-station. The Board therefore deems it best to postpone any action looking to the enlargement of the present Assistant Keeper's [sic] quarters until it is known what Congress will do in the matter. No action will therefore be taken upon your request for authority to purchase materials, etc....[28]

It is likely that Congress denied the appropriation as requests to start repairs and construction of the addition continued through 1891 and early 1892. In January 1892, the USLHB directly requested the Secretary of the Treasury Charles W. Foster for funds:

> The quarters for light-keepers at Cape Hatteras light are entirely insufficient, and authority is requested to construct there an addition to the present quarters, at a cost not to exceed $3,000.
>
> It is proposed to do this work by day's labor, as being most economical considering the exceedingly out of the way position of the station, it being impossible to find workmen at the place, and the crew and workmen which accompany the light-house tender *Jessamine* on her regular repair trips through that district are sufficient to insure what is intended being properly done. All the materials needed for the work can be purchased under existing contracts with the exception of the mill work required, which will not cost to exceed $250, and which it is requested may be purchased in open market.
>
> Authority is, therefore, asked to construct this addition, not to exceed $3,000, by hired labor, by the purchase of the mill work in open market, and of all other materials under existing contracts.[29]

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[25] Mallery, J.C., Lighthouse Engineer. *Letter to Chairman, United States Light-House Board.* June 30, 1889. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[26] Mallery, J.C., Lighthouse Engineer. "Estimate of expenditures for fiscal year ending June 30, 1890." June 30, 1890. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[27] Mallery, J.C., Lighthouse Engineer. *Letter to Letter to Chairman, United States Light-House Board.* January 14, 1891. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[28] Gregory, James F., United States Light-House Board Engineer Secretary. *Letter to J.C. Mallery, Lighthouse Engineer.* January 16, 1891. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[29] Mahan, F.A., United States Light-House Board Engineer Secretary. *Letter to Secretary of the Treasury.* January 5, 1892. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.

Treasury Secretary Foster acted swiftly in approving the request because two days later, the USLHB reported to Lighthouse Engineer Eric Bergland that the USLHB was authorized to construct the additional keepers' quarters for no more than $3,000.[30]

According to the Annual Report for the fiscal year ending June 30, 1892, "one of the kitchens forming the wings of the assistant keepers' dwelling was moved to the rear, and changes were made to adapt it to the use of two families. The main building was extended on its front and back lines about 16 feet; the inclosure constituted an addition 16 feet by 20 feet 3 inches in plan and two stories in height. This provided comfortable living quarters for the assistant keeper in charge of the Cape Hatteras Beacon, whose previous accommodations were scant." This effectively created a *Triple* Keepers' Quarters. During this same time period, the older portions of the Double Keepers' Quarters were also "put in complete order."[31]

In 1893, USLHB civil engineer and surveyor Herbert Bamber surveyed Hatteras Light Station (figs. 9-11). His survey drawings show how the buildings of the site related to one another and provide great detail on the sizes of the numerous buildings. The Double Keepers' Quarters, or Dwelling 2, is depicted as a rectangular building with a front (south) porch and two additions (northeast corner and north elevation). The building was labelled as frame with a shingle roof (tin roof over north addition) and brick pier foundation. An approximately 13'-0"-deep and 14'-6"-wide brick cistern was located at the southeast corner. An approximately 12'-2"-square summer kitchen was located to the northwest. Three sheds were located north of the quarters along the fence line. The east shed was approximately 10'-4" wide and 12'-6" deep. The center shed was approximately 12'-2" wide and 10'-2" deep. The west shed was approximately 12'-2" wide and 10'-2" deep. Surrounding the entire Double Keepers' Quarters complex (approximately 157'-7" wide x 111'-7" deep) was a wood board fence. An approximately 11'-2"-wide and 4'-1"-deep double privy was located just north and outside of the wood fence. All of the outbuildings were noted to be frame with wood foundations and shingle roofs, except the central and west sheds which had canvas roofs. A brick and concrete walk extended from the east end of the south porch southeast through the surrounding fence.

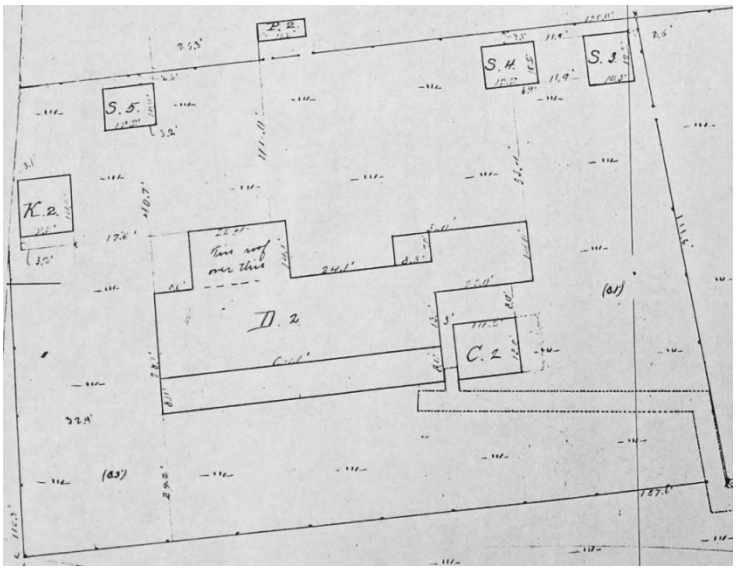


Figure 9, right. An 1893 site plan of the Double Keepers' Quarters and associated outbuildings at Hatteras Light Station by Herbert Bamber. Source: Cape Hatteras National Seashore Archives.

[30] United States Light-House Board Engineer Secretary. *Letter to Eric Bergland, Lighthouse Engineer.* January 7, 1892. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[31] Photocopy of annual reports from CAHA archives.



Figure 10. The Double Keepers' Quarters in May 1893, from the southeast. Note the evident line in the roof where the addition was made. The northeast addition is extant, as is the cistern in front of it, and one of the sheds to the right. Photo: Cape Hatteras National Seashore Archives; Box #4: Cape Hatteras Light Station Photos, Double Keepers' Quarters. Cropped by author.



Figure 11. The Hatteras Light Station on May 30, 1893, from the northwest. The west and north elevations of the Double Keepers' Quarters. Both additions can be seen, as well as the two kitchens, three sheds, double privy, and surrounding fence. Photo: NARA, RG 26, LG 26 82A. Copies found in NPS Harpers Ferry Center Photographic Archives and Cape Hatteras National Seashore Archives.

In January 1895 the chimney of the west kitchen addition was to be raised in height to increase draft. Around the same time it was noted that both dwellings needed to be painted on the interior and exterior, and the double keepers' quarters needed new floors.[32]

In September 1898, one of the building's chimneys was raised 2'-6" (it is unknown which one) and window screens were added to the window openings. In addition, the fences around the dwellings were repaired with ten new posts and fifty-four 1" x 6" x 18'-0"-long boards. The old wood walks were replaced with sixty 4" x 4" bearing pieces and 2,800'-0" of new planking. Repairs specific to the Double Keepers' Quarters included:

- Replacing the old sills, joists, floor, columns, and railings of the front with new materials.
- Replacing the shingle roofs of the porch and the east kitchen addition.
- Installing new 10" x 10" sills under the front and rear of the east kitchen addition.
- Installing new "base boards" on all four sides of the building.
- Installing new "weather-boarding" under the windows, and "piecing" the battens.
- Placing a new lock on an exterior door.[33]

The next month additional repairs were completed at the Double Keepers' Quarters. These included:

> Screens for six doors and thirty-five windows have been fitted and hung; one new door fitted, hung and fastenings put on. A new floor has been laid in the kitchen, and a shelf with brackets put up. Two new locks and knobs have been put on doors, and all of the doors and blinds eased. The plastering in four rooms has been repaired; a new platform constructed between the cistern and dwelling, and one section of railing on front of porch renewed.[34]

In May 1899, an arch was "turned over the kitchen chimney."[35]

After a "great hurricane" August 17-19, 1899, an inspection determined the light station had fared well. It was noted that the dwelling roofs "leaked very badly, but no shingle roof can be made to resist the driving effect of water before such a wind."[36]

In May 1900, the old call bell system was replaced with telephones for communication between the keepers' dwellings and the lighthouse.[37]

A September 1900 inspection noted the light station was in good condition, with some exceptions at the Double Keepers' Quarters: "The cistern leaks, the kitchen...needs a new roof.... A section of about 20' length of gutter is gone..., but there is no necessity for renewing it at this time.... The

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[32] Bergland, Eric, Lighthouse Engineer. *Letter to Light-House Board.* February 13, 1895.
Bergland, Eric, Lighthouse Engineer. *Letter to Light-House Board.* March 9, 1895.
Bergland, Eric, Lighthouse Engineer. *1895 Annual Report to Light-House Board.* June 30, 1895
Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[33] Jones, W.A., Lighthouse Engineer. *Monthly progress report to Light-House Board.* October 1, 1898. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[34] Jones, W.A., Lighthouse Engineer. *Monthly progress report to Light-House Board.* November 1, 1898. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[35] Jones, W.A., Lighthouse Engineer. *Monthly progress report to Light-House Board.* June 1, 1899. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[36] Jones, W.A., Lighthouse Engineer. *Inspection report to Light-House Board.* November 27, 1899. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[37] Jones, W.A., Lighthouse Engineer. *Monthly progress report to Light-House Board.* June 1, 1900. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.

necessary paint was furnished the keeper for painting the inside of the two abandoned lard oil tanks so they may be used as water cisterns at the south end of the...dwelling, thus giving them an increased water supply."[38] One month later it was reported that "two pitcher pumps have been set.... Cistern has been fully repaired. Gutter and spouting...have been replaced and repaired. New tin roof placed on kitchen..... Two large lard oil tanks from the tower have been converted into water tanks and placed as cisterns."[39]

In May 1901, Keeper P.H. Etheridge wrote to the USLHB requesting that a "ditch be cut between this station and the back landing creek for the purpose of draining the stagnant water from around this station." This request was based on a recommendation by Assistant Superintendent of Construction Mr. Fouchy, who had made a survey of the station. Etheridge also stated "that it is not only disagreeable, but it is very unhealthy and is causing lots of malaria and rheumatism and is also taking the drilled men from the station and putting undrilled men in their places."[40] Further discussion of the issue was made in September and October of the same year, and involved the filling of the marsh and/or drainage of the stagnant water:

> ...the condition at this station from stagnant water in the marsh, is very bad, and, in its present state, imperils the health of the keepers of Cape Hatteras Light-House and their families, and also, the keepers of the life-saving station. Recommendation is therefore made that an open ditch be cut from the marsh to the back-landing creek, and that shoal spots in the creek be opened up so as to not only drain the stagnant water from the marsh, but to allow tidal water to pass from the ocean into the marsh at high water; and to fill up a portion of the marsh next adjoining the houses, if funds for the same could be provided.[41]

It is unknown if this work was ever completed.

Details of alterations and work the Double Keepers' Quarters for the next few decades is unknown.



Figure 12, right. Assistant Keeper John Bunyon Quidley, with wife, Emma Midgette Quidley, and daughter, Marie Quidley. The dog, Pechichi, was rescued from a shipwreck in ca. 1908, so this photo postdates 1908. Photo: Cape Hatteras National Seashore Archives.

[38] Jones, W.A., Lighthouse Engineer. *Inspection report to Light-House Board.* September 8, 1900. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[39] Jones, W.A., Lighthouse Engineer. *Monthly progress report to Light-House Board.* October 1, 1900. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[40] Etheridge, P.H., Keeper. *Letter to General Superintendent, United States Light-House Board.* May 11, 1901. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.
[41] Jones, W.A., Lt. Col., Lighthouse Engineer. *Letter to United States Light-House Board.* October 2, 1901. Part of NARA's RG 26 Entry 3 (NC-63). Available for review at Cape Hatteras National Seashore Archives.

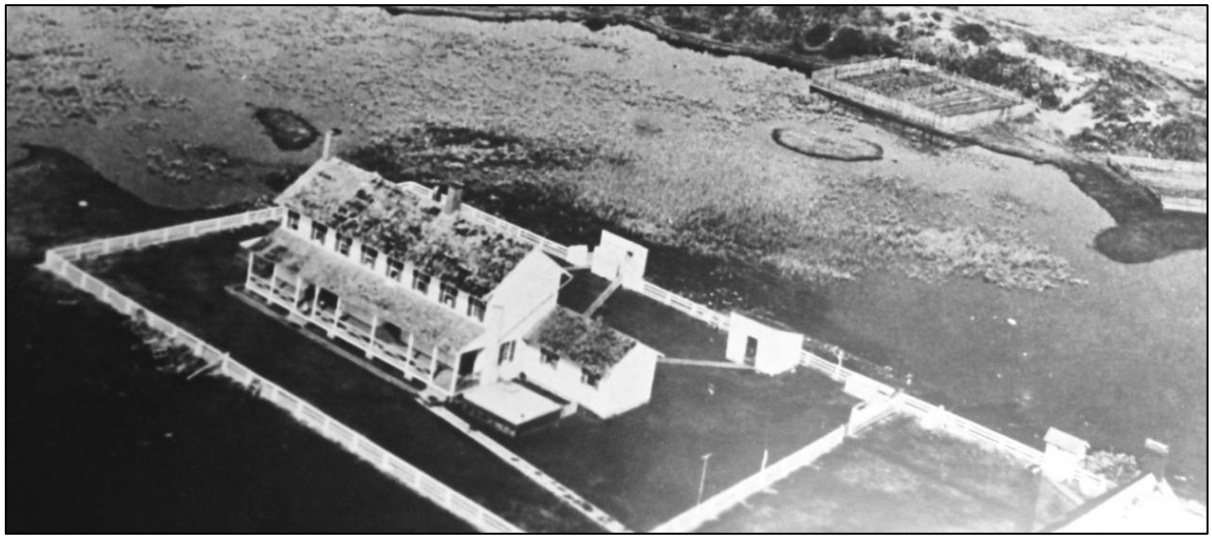


Figure 13. The Double Keepers' Quarters on March 1, 1919. Note that some outbuildings are still extant at this time and the second cistern (west) had been added. Photo: Cape Hatteras National Seashore Archives, Cape Hatteras Light Station Photos, Box 3 of 6: Double Keepers Quarters. Cropped by author.

In the early 1930s, because of the new battle with beach erosion near the lighthouse tower, the Bureau of Lighthouses began the process to acquire land to build a new light station. Principal Keeper Unaka Jennette owned the land which the Bureau preferred. After negotiations, Jennette sold the land to the Bureau for $266,880 in 1935. Because of defects in the title and the emergency (erosion) causing the procurement of the land, both parties agreed to condemnation proceedings. This resulted in a court case, and the Bureau officially acquired the land in 1936. Meanwhile, a new 150'-0"-tall skeleton tower located approximately a 1½ miles WNW from the 1870 tower was completed in September 18, 1935.[42]



Figure 14. The station in 1932, the year the principal keeper moved away. Photo: Cape Hatteras National Seashore Archives. Cropped by author.

Simultaneously, the Civilian Conservation Corps (CCC) Company 3423 arrived at Cape Hatteras State on August 12, 1935. Because no other

[42] Cybularz, "Cape Hatteras Lighthouse," p. 82.

provisions had been made, both keepers' dwellings were used as quarters for workers (fig. 16). At that time the buildings were in a rundown state and required rehabilitation to make them habitable.[43]

On May 13, 1936, the new skeleton tower, or the "Buxton Light," was activated. Two days later, on May 15, the light on the 1870 lighthouse was extinguished.[44]



Figure 15. The Double Keepers' Quarters in 1935, prior to the arrival of the CCC camp. Note the presence of a single privy. Photo: Cape Hatteras National Seashore Archives. Cropped by author.



Figure 16. The CCC Camp at Hatteras Light Station surrounding both quarters. Photo: Cape Hatteras National Seashore Archives.

[43] Nistal-Morat, Benjamin, Southeast Regional Office, National Park Service. "Second Narrative and Analytical Report on the Findings of Historic Structure Inspection. Conclusions and Recommendations. Cape Hatteras National Seashore: Cape Hatteras Principal Keeper's Quarters (Pink House). 1983. Box #1: CAHA 5029 Cape Hatteras Light Station Principal Keeper's Quarters Preservation Project Records. 1983-1988. Folder #2: CAHA-Cape Hatteras Light Station Principal Keeper's Quarters. Preservation Project Section 106 Case Report-1983-1984.

[44] Cybularz, "Cape Hatteras Lighthouse," p. 83.

Formation of a National Park

In 1934, at the request of the Secretary of the Interior, the National Park Service (NPS) surveyed "the seashores of the continental United States to ascertain whether there were remaining relatively unimpaired areas of such outstanding character and magnitude as to be worthy of acquisition and preservation by the people of the United States as National Seashores." The survey revealed that the Outer Banks of North Carolina "presented one of the finest opportunities to establish and preserve as a National Seashore an area of great biological interest, scenic beauty, historical value, and recreational appeal." It was recommended that the seashore be added to the national park system.[45]

On July 31, 1936, shortly after the Buxton Light was activated, Secretary of the Interior Ickes "...approved a plan to transfer the [former] Cape Hatteras Lighthouse property (about forty-four acres) to the Park Service for designation as a National Historic Site."[46]

The Department of the Interior formally requested title to the light station on August 4, 1936. On August 31, Acting Secretary of the Treasury Wayne C. Taylor notified the Secretary of the Interior that the NPS would receive the light station and its grounds.[47]

The "Cape Hatteras Lighthouse Reservation" was formally transferred to the National Park Service on November 9, 1936, with its "illuminating apparatus and other objects which add to the historical background of the lighthouse tower left intact until such time as they might again be needed by the Lighthouse Service." E.J. Byrum, the Project Supervisor for the CCC camp, had been designated the custodian of the property in September 1936, on behalf of the NPS.[48]

The transfer was publically announced on December 6, 1936. "Funds for the new NPS lighthouse were provided by the Public Works Administration, but no decision had yet been made about the final status of the surrounding area." A decision had to be made whether the lighthouse would become a national monument, a recreational area, or a historic site. Further studies were planned. In the meantime, a CCC enrollee was stationed on site to serve as a watchman.[49]

On March 15-18, 1937, a field investigation and photographic survey of the lighthouse was undertaken by F. E. Whitehouse and Charles Porter respectively. The field investigation only mentioned the lighthouse and oil house, and did not specifically mention the Double Keepers' Quarters or other buildings.[50] The only photograph of the Double Keepers' Quarters shows paint deterioration on the exterior of the building and two cisterns and a patched hole in the roof, but otherwise appears rundown (fig. 17). Additionally, it is assumed that many of the outbuildings had been removed from around the dwelling, as had happened at the Principal Keeper's Quarters by this time.

[45] National Park Service. "History of the Establishment of Cape Hatteras National Seashore Recreational Area." July 13, 1961. NPS DSC eTIC No. CAHA 603 D136. P.1
[46] NPS, "The Creation and Establishment of Cape Hatteras National Seashore ,", p. 44.
[47] Yocum, Roberts, & Shelton-Roberts, "Cape Hatteras," pp. 67-68.
[48] NPS, "The Creation and Establishment of Cape Hatteras National Seashore," pp. 44-5.
[49] Ibid, p. 45.
[50] Whitehouse, F.E., Associate Engineer. "A Field Investigation of Cape Hatteras Lighthouse, Buxton, North Carolina." March 15-18, 1937. Cape Hatteras National Seashore Archives.



Figure 17. The Double Keepers' Quarters in March 15-18, 1937. Photograph included as part of "A Field Investigation at Cape Hatteras Lighthouse" by Charles W. Porter. Photo: Cape Hatteras National Seashore Archives, Box #4: Cape Hatteras Light Station Photos, Principal Keepers Quarters.

CCC Job #10 received final approval on August 31, 1937. Associated drawings, dated June 23 of the same year, describe the proposed work for the Double Keepers' Quarters and the adjacent Principal Keeper's Quarters (fig. 18):

- Replace…Guttering
- Scrape and wire-brush all outside surfaces. Repaint two coats white paint.
- Replace missing window pains [sic]. Repoint damaged putty. Repair all damaged sash.
- Replace missing shutters. Repaint three coats green paint.
- Cleanout and repair all fireplaces, chimney and flues. Replace missing mantels.
- Install sash fasteners on all windows, side friction type.
- Scrape and refinish floor. Color and finish to be selected.
- Remove narrow beaded wall and ceiling boards and replace with finish pine boards and repaint three coats. Ceiling to be lighter than the walls. Colors to be selected.
- …Install a kitchen sink.
- Tim roof to be replaced [north kitchen wing].
- Remove damaged shingles and replace with new ones [elsewhere].
- A complete wiring system is to be installed during the construction and all wiring is to be concealed between the joists and rafters. See plan for outlets and switches.[51]

Based on these drawings the Double Keepers' Quarters was going to be used as at least three apartments for use by CCC employees while they worked on dune rehabilitation along the Outer Banks. Photographs dating to this time period show the building's condition just prior to and during work (figs. 19-20).

[51] United States Department of the Interior, National Park Service, Cooperating with North Carolina Department of Conservation & Development. "Cape Hatteras Lighthouse, Repairs to Dwellings." *2 Sheet Set.* June 23, 1937. NPS DSC eTIC No. CAHA 603 9006.

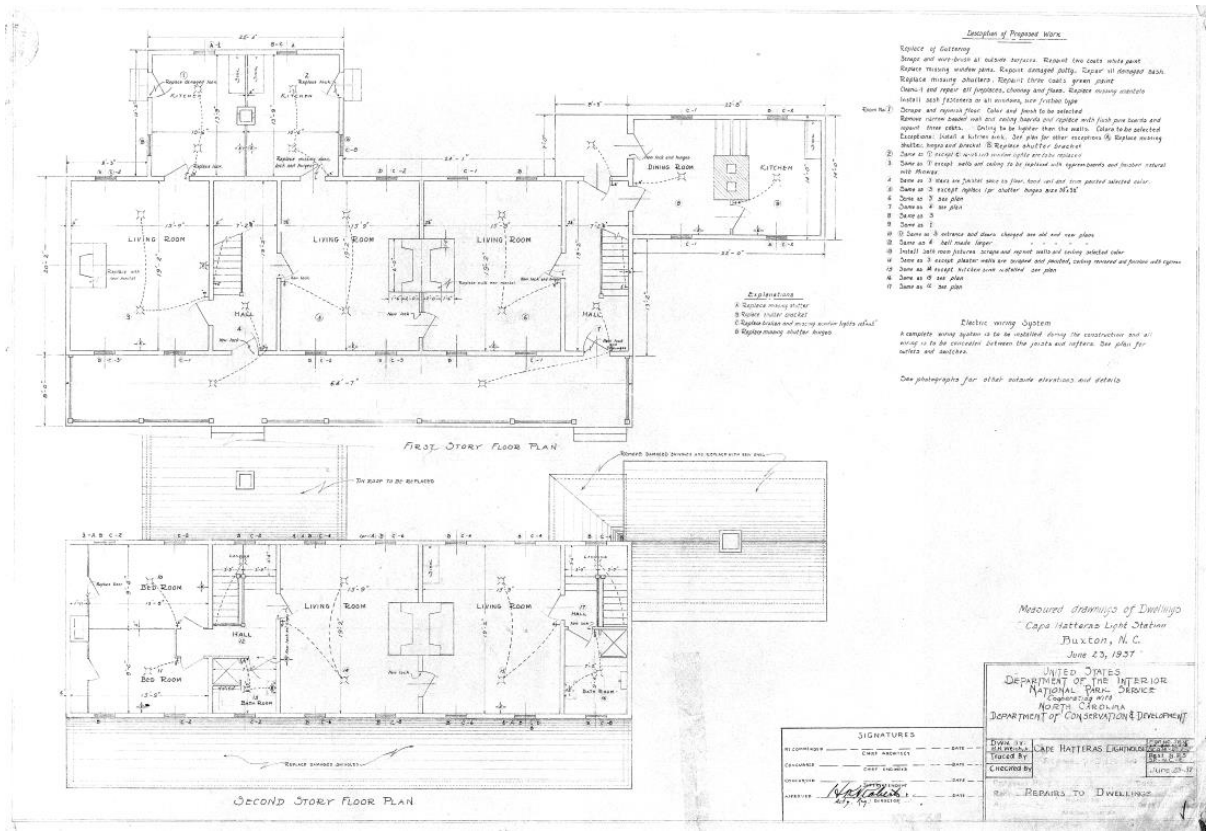


Figure 18. The June 23, 1937 drawing depicting CCC repairs to the Double Keepers' Quarters. Drawing: NPS DSC eTC No. CAHA 603 9006.

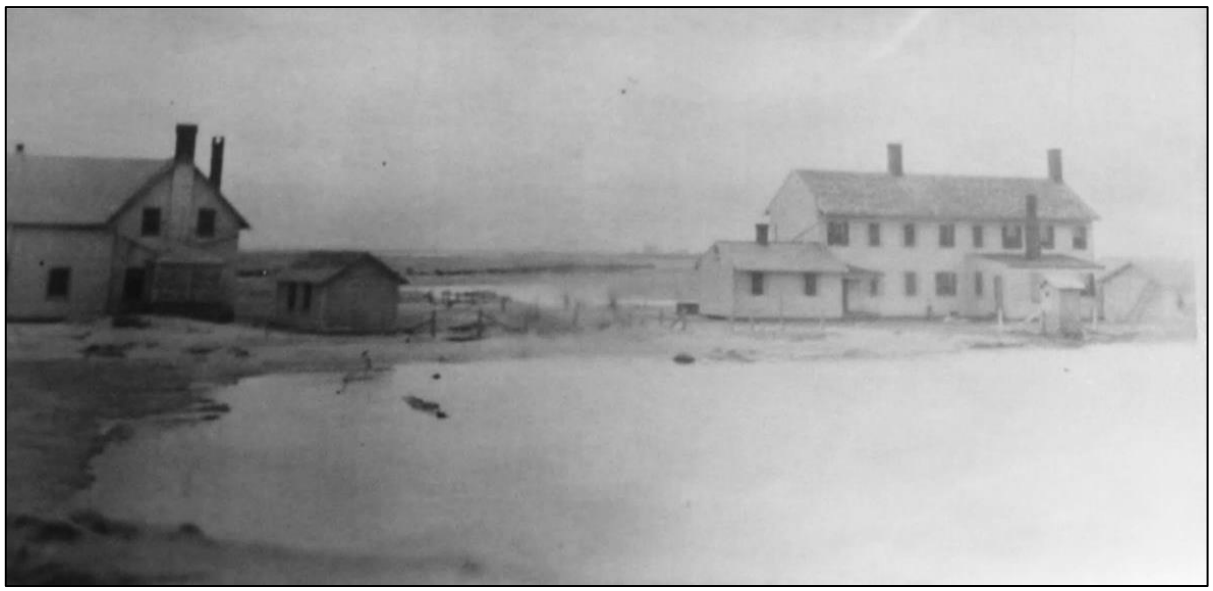


Figure 19. A rare view of the north side of both keepers' dwellings in 1937 (ca. June), prior to any rehabilitation work occurring to the buildings. Photo: Cape Hatteras National Seashore Archives, Box #4: Cape Hatteras Light Station Photos, Principal Keepers Quarters. Cropped by author.

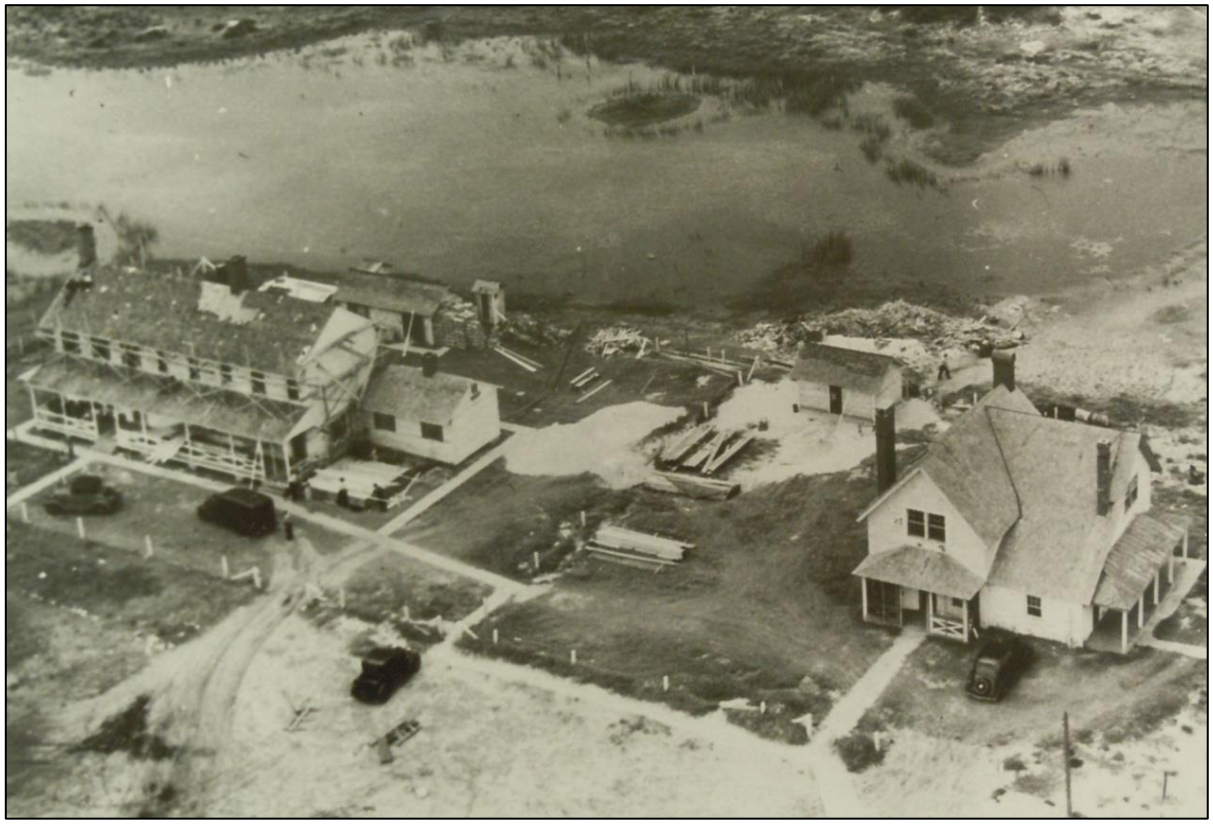


Figure 20. A view of both keepers' dwellings from the lighthouse on September 15, 1937 while rehabiliation work is underway at the Double Keepers' Quarters. Photo: Cape Hatteras National Seashore Archives, Cape Hatteras Light Station Photos, Box 2 of 6, Cape Hatteras Lighthouse B.

After treatment was completed to the dwellings, CCC work superintendent Byrum supplied a summary of the work, dated August 29, 1939. The work consisted of…

> …removing all plaster, replacing cypress ceiling, cleaning all floors, stairways, building closets and cabinets, staining walls and stairways, replacing new shingles on large and small houses where old ones were missing, repairing fireplaces and hearths, new top on front porch, two kitchens, back porch, new guttering installed on both houses, three cisterns cleaned, sewer rough in for both houses, water works roughed in and two coats of paint on outside of all buildings.

Including two modifications to the scope of work, the project for both buildings was completed for $4,402.91.[52]

On August 2, 1937, the House of Representatives unanimously passed the Cape Hatteras park bill. On August 14, the Senate passed the bill and sent it to the President. "The bill authorized the creation of Cape Hatteras National Seashore, contingent upon donation of ten thousand acres of land by the state of North Carolina or private gift within a period of ten years." On August 17, 1937, President Roosevelt signed the bill.[53]

[52] National Archives and Records Administration, College Park, MD, Record Group 79, Cape Hatteras national Seashore, Box #19, Folder: Cape Hatteras National Seashore Correspondence.
[53] NPS, "The Creation and Establishment of Cape Hatteras National Seashore," p. 35-7.

On November 11, 1937, the Hatteras Light Station was transferred to the NPS. Even though the park was not operational at the time, the light station was included as part of the nation's first National Seashore.[54] However, it was not until 1939 that the property was used for any recreational or tourist use when the CCC began giving tours of the lighthouse.[55]

In late 1937 both a water system (CCC Job #16) and a sewage and waste disposal system (CCC Job #17) were planned for Cape Hatteras State Park for use by up to twenty-five people of the Principal Keeper's Quarters and the Double Keepers' Quarters (figs. 21-22). A new power plant for the well pump was located east of the new septic tank (located between and north of the Principal Keeper's Quarters and Double Keepers' Quarters). The large drain field was located north of the septic tank. A pump house was located several hundred feet south of the dwelling sites.[56] The water supply system was completed for $1,605.14; the sewage and waste disposal system was completed for $475.41.[57]

On February 14, 1939, "Horace A. Dough, Custodian of Kill Devil Hill National Monument, [was appointed] as acting custodian of both the Cape Hatteras and Currituck Lighthouse reservations." Byrum continued to lead CCC efforts, but received Dough's authorization and direction as needed.[58]

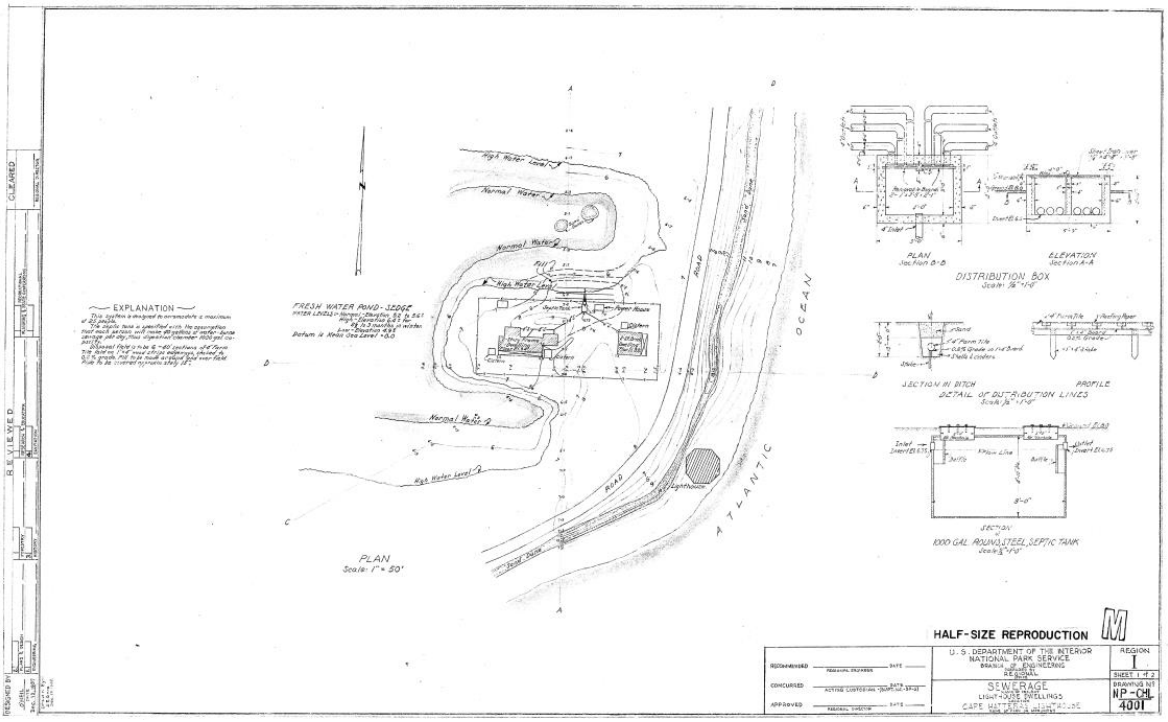


Figure 21. The 1938 plan for the new septic system. Drawing: NPS DSC eTIC No. CAHA 603 4001.

[54] National Park Service. "Cape Hatteras Light Station." *Website.*
[55] National Park Service. "Cape Hatteras Light Station." *Website.*
[56] U.S. Department of the Interior, National Park Service, Branch of Engineers. "Sewerage, Lighthouse Dwellings, Cape Hatteras Lighthouse." *2 Sheet Set.* December 13, 1937. DSC eTIC No. CAHA 603 4001.
U.S. States Department of the Interior, National Park Service, Cooperating with North Carolina Department of Conservation & Development. "Cape Hatteras Water Supply System, Lighthouse Dwellings." *1 Sheet.* September 9, 1937. DSC eTIC No. CAHA 603 4001.
[57] National Archives and Records Administration, College Park, MD, Record Group 79, Cape Hatteras national Seashore, Box #19, Folder: Cape Hatteras National Seashore Correspondence.
[58] NPS, "The Creation and Establishment of Cape Hatteras National Seashore," p. 45.

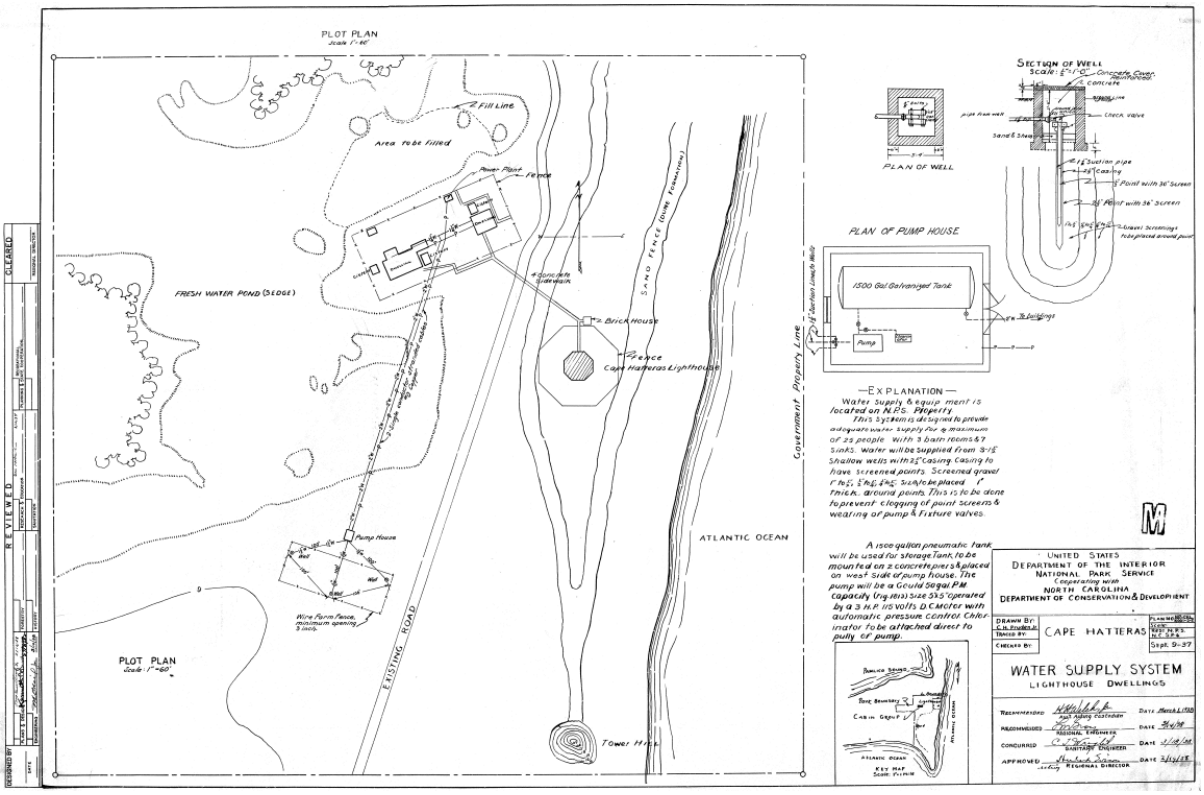


Figure 22. The 1938 plan for the new water supply system (power plant). Drawing: NPS DSC eTIC No. CAHA 603 4001.

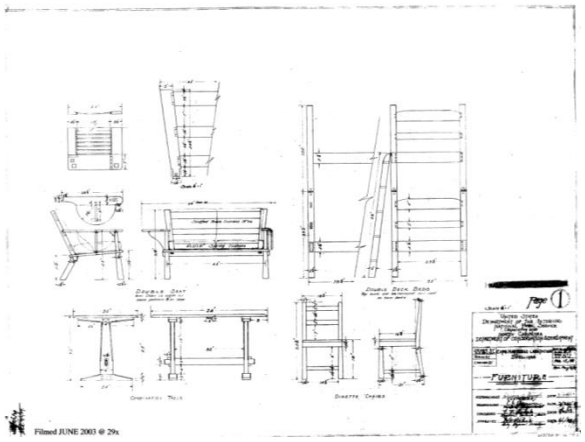


Figure 23. Furniture drawing for the Principal Keeper's Quarters and Double Keepers' Quarters. Drawing: NPS DSC eTIC No. CAHA 603 80030.

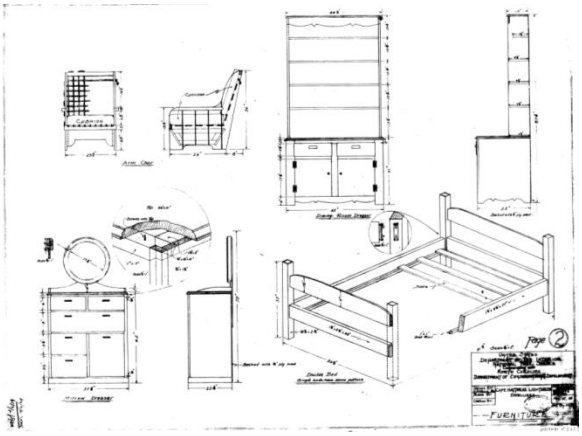


Figure 24. Furniture drawing for the Principal Keeper's Quarters and Double Keepers' Quarters. Drawing: NPS DSC eTIC No. CAHA 603 80030.

In early 1939, drawings were completed for new furniture (CCC Job #21) for both dwellings (figs. 23-24).[59] On March 7, 1940, it was reported that a majority of the furniture had been completed. Also at this time, it was reported that materials for painting the exteriors of the dwellings had been received.[60]

[59] U.S. Department of the Interior, National Park Service, Cooperating with North Carolina Department of Conservation & Development. "Cape Hatteras Lighthouse Dwellings." 2 *Sheet Set.* May 24, 1939. DSC eTIC No. CAHA 603 80030.
[60] National Archives and Records Administration, College Park, MD, Record Group 79, Cape Hatteras national Seashore, Box #19, Folder: Cape Hatteras National Seashore Correspondence.

In preparation of the United States' likely participation in World War II, the United States Light House Service was absorbed by the United States Coast Guard (USCG) in 1939. This was part of President Franklin Roosevelt's second reorganization plan. It was announced on May 9, 1939 and became official in June 1939.[61]

During the Spring of 1939, a design was completed for the installation of a bathroom in the enclosed porch between the main block and the original kitchen wing (drawing not included due to poor scan quality).[62] Later photographs and drawings show this bathroom extant (see fig. 27).

The CCC camp at Buxton was shut down on March 31, 1940. (All coastal CCC work would cease in 1942.)[63]

On June 29, 1940, the park was re-designated Cape Hatteras National Seashore Recreational Area.[64]

On August 6, 1940, Hatteras Light Station was visited by a vacationing NPS Assistant Director Conrad Wirth. After his visit, Wirth requested several changes be made at the light station. Pertaining to the Double Keepers' Quarters, his suggestions included installation of a bathroom on the first floor, installation of a shower and laundry on the first floor with an outside entrance, installation of battleship linoleum in the new bathroom, shower, and laundry spaces, screening in the porches, installation of rubber mats and stainless steel nosing on the interior stair treads, and the installation of an electric generating plant to share with the Principal Keeper's Quarters. This work was completed in 1941.[65]

An August 1940 site plan for the development of the light station shows the introduction of parking and a new restroom facility to the west of the lighthouse. The site plan was approved by the Acting Regional Director the next month.[66] Another site plan, dated January 3, 1941 shows the parking lot and restroom facility had been constructed by that time.[67]

After much debate, on January 16, 1941, NPS Chief Historian Ronald F. Lee "recommended that the lighthouse and surrounding state park lands be together designated as a national historic site that would eventually be absorbed by...Cape Hatteras National Seashore Recreational Area."[68]

Between August 1, 1941 and June 30, 1942, a seventy-five-man "Conscientious Objectors" camp was located at Hatteras Light Station. Camps of these types, part of the Civilian Public Service, "Provided those whose conscience forbade them to kill an opportunity to do work of national importance under civilian direction rather than go to war."[69] Their work included construction of a latrine and picnic shelter in the lighthouse area, construction of an electrical distribution system for

[61] Yocum, Roberts, & Shelton-Roberts, "Cape Hatteras," pp. 70-4.
[62] United States Department of the Interior, National Park Service, cooperating with North Carolina Department of Conservation & Development. "Cape Hatteras Lighthouse, Repairs to Dwellings, Bathroom." Cape Hatteras National Seashore Archives.
[63] NPS, "The Creation and Establishment of Cape Hatteras National Seashore," pp. 46-7
[64] NPS, "History of the Establishment of Cape Hatteras National Seashore Recreational Area," p. 2.
[65] National Archives and Records Administration, College Park, MD, Record Group 79, Cape Hatteras national Seashore, Box #19, Folder: Cape Hatteras National Seashore Correspondence.
[66] National Park Service, Branch of Plans and Design, Regional Office. "Park Road Realignment." *1 drawing sheet.* August 7, 1940. NPS DSC eTIC No. CAHA 603 2002.
[67] National Park Service. "State Park Area Development Plan, Part of the Master Plan, Cape Hatteras national Seashore Recreational Area, North Carolina." *1 drawing sheet.* January 1, 1941. NPS DSC eTIC No. CAHA 603 2013.
[68] NPS, "The Creation and Establishment of Cape Hatteras National Seashore," p. 45.
[69] Mennonite Central Committee. "Civilian Public Service." 2015. Accessed at http://civilianpublicservice.org/ on August 31, 2016.

the light station, and remodeling of the pump house, and alterations to the entrance road to the lighthouse area.[70] The camp may have used the dwellings as temporary residences.

On January 29, 1942, after the United States entered World War II, the USCG "leased the Cape Hatteras lighthouse under a special permit for use as a coastal watchtower to scout for German 'U-boats,' which were menacing shipping lanes even before U.S. entry into the war and sunk dozens of ships in the early months of 1942."[71] This permit would continue until August 15, 1947. During their tenure, the Coast Guard was accused of damaging the lighthouse. The Coast Guard defended itself by "…saying they cared for the lighthouse as well as they could during the time of war," but they had ceased the use of the property "sometime before the cessation of hostilities [in 1945]." This is assumed to include the dwellings as well. Increased security and surveillance was enacted, but little was done to the current situation through the remainder of 1947 and the early part of 1948. In April 1948, the Coast Guard requested another special permit to continue its use of the lighthouse as an aid to navigation. It promised to restore the lighthouse, which would occur in 1949.[72]

Despite the battle between the NPS and the USCG, cosmetic work was performed on the Double Keepers' Quarters in 1947. It is unknown which entity was responsible for the work, which included painting, replacing or repairing screens, doors, and porches, and repairing or replacing the gutters and downspouts.[73] It is believed that the Double Keepers' Quarters was used to accommodate overnight visitors starting about 1947, under a concessions contract.[74]

A photo from May 1948 shows the exterior of the Double Keepers' Quarters in good repair (fig. 25).



Figure 25, right. The south and east elevations of the Double Keepers' Quarters on May 8, 1948. Note the presence of standpipes through the roof, evidence of interior bathrooms. Photo: Cape Hatteras National Seashore Archives. Cropped by author.

[70] National Archives and Records Administration, College Park, MD, Record Group 79, Cape Hatteras national Seashore, Box #22, Folder: Cape Hatteras Selective Service Work Camps.
[71] Ibid, p. 46.
[72] Cybularz, "Cape Hatteras Lighthouse," pp. 88-92.
[73] Nistal-Moret, "Narrative Report on the Findings of Historic Structure Inspection."
[74] National Park Service. "Cape Hatteras Light Station." *Cultural Landscape Report.* Cultural Resources, Southeast Region. June 15, 2004. NPS DSC eTIC No. CAHA 603 D214. p. 24.

In 1953, after years of negotiations, fundraising, meetings, site visits, and surveys, the stars aligned for the formal formation of the national park. On January 12 of that year, NPS Director Conrad Wirth recommended that Secretary of the Interior Chapman approve the order to form Cape Hatteras National Seashore. (The seashore would not be formally dedicated until April 24, 1958.)[75]

As early as 1955, the building was converted for use as the park's Museum of the Sea and visitor center (figs. 26-27).[76] Drawings dating to October 1953 show changes to the building for use as a museum. On the first floor, the wall separating the original parlor rooms was removed to create one large room (later drawings confirm this did occur). On the second floor, the western stair was walled in.[77] These drawings are not included due to poor scan quality.



Figure 26. The south elevation on October 13, 1954. The shutters, front porch screens, and kitchen wing chimney had been removed. Photo: Cape Hatteras National Seashore Archives, Cape Hatteras Light Station Photos, Box 3 of 6: Double Keepers Quarters.



Figure 27. The north elevation in July 1956 with 1854 (left) and 1892 (right) kitchen wings extant. Note the enclosed bathroom (1939) on the north porch. Photo: Cape Hatteras National Seashore Archives, Cape Hatteras Light Station Photos, Box 3 of 6: Double Keepers Quarters.

Between July 1956 and August 27, 1957, the Double Keepers' Quarters was painted light blue (fig. 28) and the 1892 kitchen wing was replaced with a modern bathroom addition (still extant today) which likely included a breezeway between the north exterior wall of the main block and the restroom addition (fig. 29). These changes occurred just prior to the formal dedication of the park in April 1958. It is likely that the Light Station was "cleaned up" for the dedication.

It is unknown why the building was painted blue. The author speculates that after the adjacent Principal Keeper's Quarters was repainted pink in ca. 1956-57, the decision was made to paint the Double Keepers' Quarters blue. Tropical colors, like the pink and blue used, were very popular in the 1950s, and may simply have been the "style."

[75] Cybularz, "Cape Hatteras Lighthouse," pp. 93-95.
[76] Department of the Interior, National Park Service, Cape Hatteras National Seashore. *Fiscal Year Budget Briefing Statement.* February 9, 1987. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements – 1982-1987.
[77] National Park Service. "Proposed Museum Building at Cape Hatteras." *2 Sheet Set.* October 8, 1953. NPS DSC eTIC No. CAHA 603 2073.



Figure 28, right. The Double Keepers' Quarters sporting a new blue color and a new restroom addition on August 27, 1957, just prior to the formal dedication in April 1958. Photo: Cape Hatteras National Seashore Archives, Cape Hatteras Light Station Photos, Box 3 of 6: Double Keepers Quarters. Cropped by author.

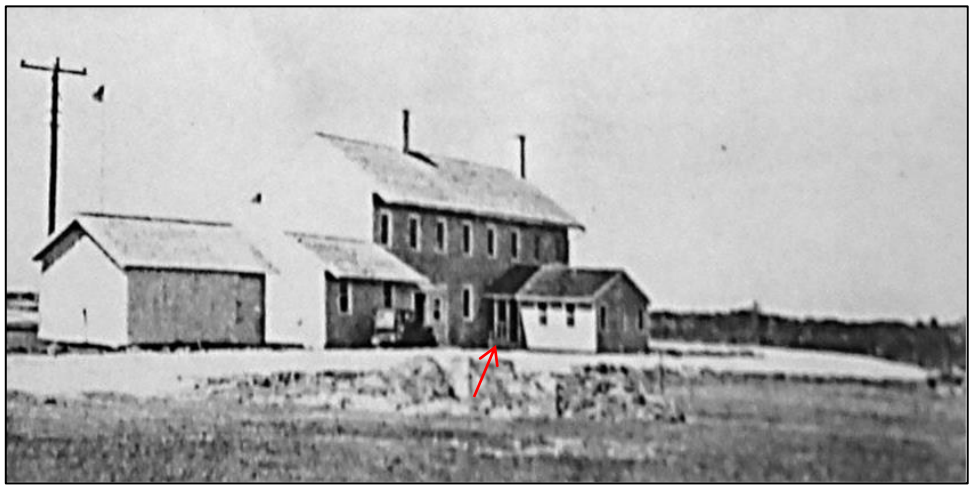


Figure 29, right. The rear of the building in July 1958. This photo shows a clear view of the new rear restroom addition with what appears to be a breezeway (arrow). Photo: Cape Hatteras National Seashore Archives, Cape Hatteras Light Station Photos, Box 3 of 6: Double Keepers Quarters. Cropped by author.



Figure 30, right. A photograph from atop the lighthouse looking at the Principal Keeper's Quarters, right, and Double Keepers' Quarters, left, in July 1963. Photo: Cape Hatteras National Seashore Archives, Box #4: Cape Hatteras Light Station Photos, Principal Keepers Quarters.

In 1970, an Interpretive Prospectus was developed for the light station in order, partly, to "exhibit the historic structures." Recommendations included removing the parking near the buildings, restoring the site and exterior appearance of the station, including both quarters' buildings, to the historic period, restoring the interior of the Principal Keeper's Quarters and furnish it with period furniture, and rehabilitate the interior of the Double Keepers' Quarters as a museum.[78]



Figure 31. The front porch of the DKQ in July 1963. The building still retains its light blue color, evidenced in this black-and-white photograph by distinctive white trim around the door and windows. Photo: Cape Hatteras National Seashore Archives, Folder: CAHA National Seashore, Cape Hatteras, Museum of the Sea.



Figure 32. The "Museum of the Sea" on March 22, 1969. Photo: Cape Hatteras National Seashore Archives.

[78] Abbott, Stanley W. (landscape architect), and Carlton D. Abbott (architect). "Hatteras – Interpretive Prospectus." 1970. Harpers Ferry Center library.



Figure 33. The front porch in ca. 1978 (approximate year of Dodge truck in background); note the concrete slab floor. Photo: Cape Hatteras National Seashore Archives.

In September 1979, the Double Keepers' Quarters was proposed for rewiring. The States Historic Preservation Office answered on October 16 with a determination of no adverse effect.[79] This work was likely not completed, as the building was later fully rewired during 1983-86 rehabilitation work.



Figure 34. The Double Keepers' Quarters in 1979. Photo: Cape Hatteras National Seashore Archives, Cape Hatteras Light Station Photos, Box 3 of 6: Double Keepers Quarters.

[79] Cape Hatteras National Seashore Archives. CAHA 5032/016 Cape Hatteras Light Station Building Records Collection, Folder: Light Station – 1977-1996.

In late 1981, a staff interpreter wrote and distributed a memo to the Cape Hatteras National Seashore's South District Interpreter, Chief of Interpretation, and Associated Division Heads on the condition of the Double Keepers' Quarters. He was dismayed at the following conditions:

1. The existing white paint is peeling, with layers of aqua and brown paint exposed. Much of exterior siding is rotten and needs to be replaced. The useable pieces need to be scraped, primed, and closely examined for insect infestation. Cracked boards should also be replaced (fig. 35).
2. Exterior siding falling off because old metal nails have rusted through. Water could, if it has not already, collect behind the siding and cause severe deterioration (figs. 36-37).
3. Some lower siding needs to be replaced due to rot and possibly termites (fig. 38)

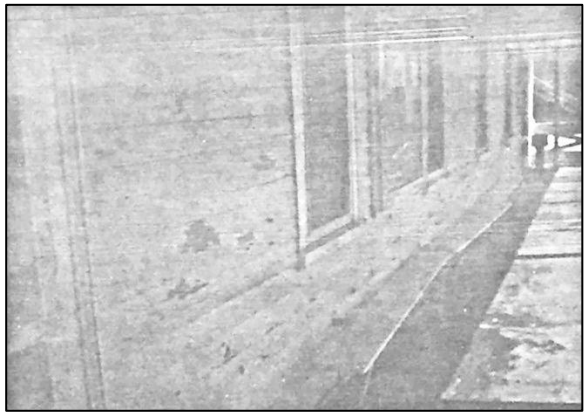


Figure 35. The physical appearance of the exterior of the DKQ in October 1981. Photo: Cape Hatteras National Seashore Archives.

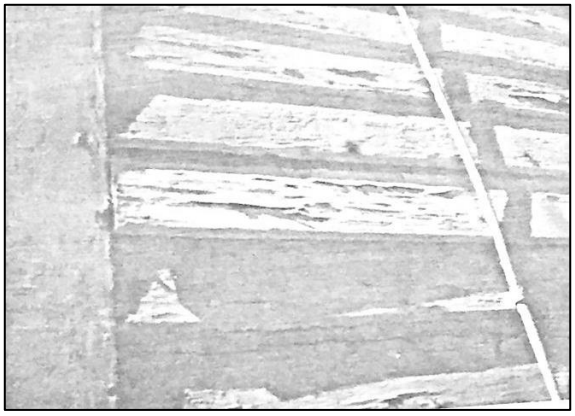


Figure 36. Rotting siding with corroded fasteners, in October 1981. Photo: Cape Hatteras National Seashore Archives.

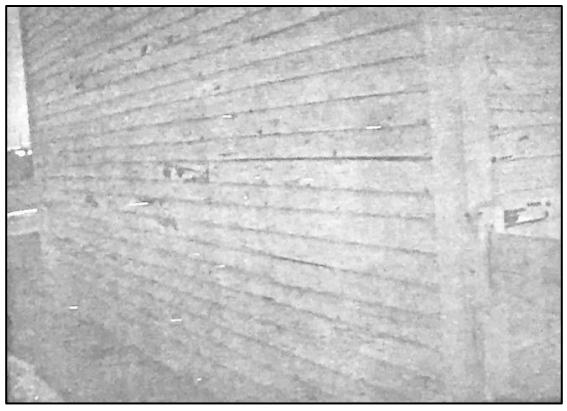


Figure 37. The siding exhibits rot and peeling paint, in October 1981. Photo: Cape Hatteras National Seashore Archives.

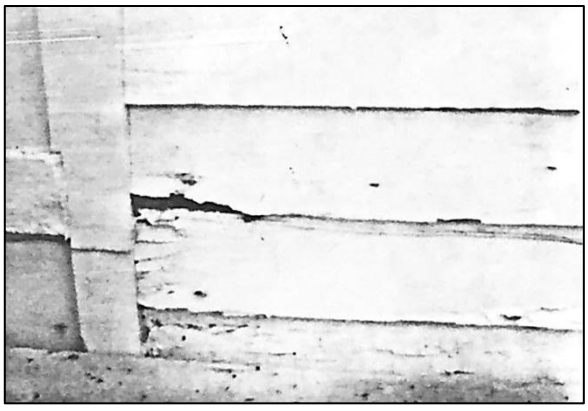


Figure 38. Lower siding shows degradation due to rot and possible termites, in October 1981. Photo: Cape Hatteras National Seashore Archives.

4. After restroom rehabilitation project began, algae formed on siding and excess moisture is causing rot. Ventilation needed under restroom (fig. 39).
5. Building has not been treated for termites or other pests in at least two years. Gather professional opinion on whether an active program should be started.
6. Modern utilities should be condensed and removed in unnecessary (figs. 40-41).
7. Front porch: concrete slab is cracked, separated, and has collapsed at least three inches. Slab has separated from the wall and needs to be jacked up and supported or fully replaced (fig. 42).



Figure 39. Ventilation is needed under the restroom addition (October 1981). Photo: Cape Hatteras National Seashore Archives.

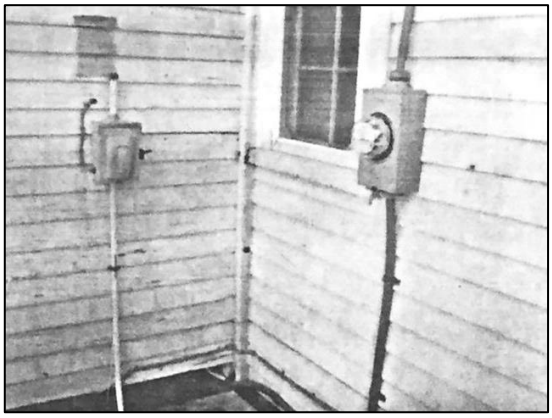


Figure 40. Electrical equipment is unsightly, October 1981. Photo: Cape Hatteras National Seashore Archives.



Figure 41, left. Modern conduit attached to the exterior of the building is unsightly, October 1981. Photo: Cape Hatteras National Seashore Archives.

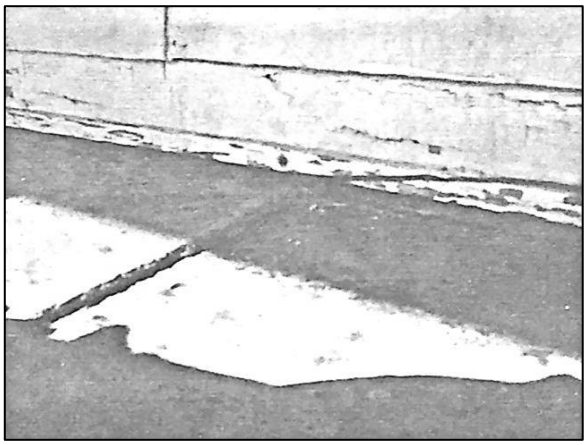
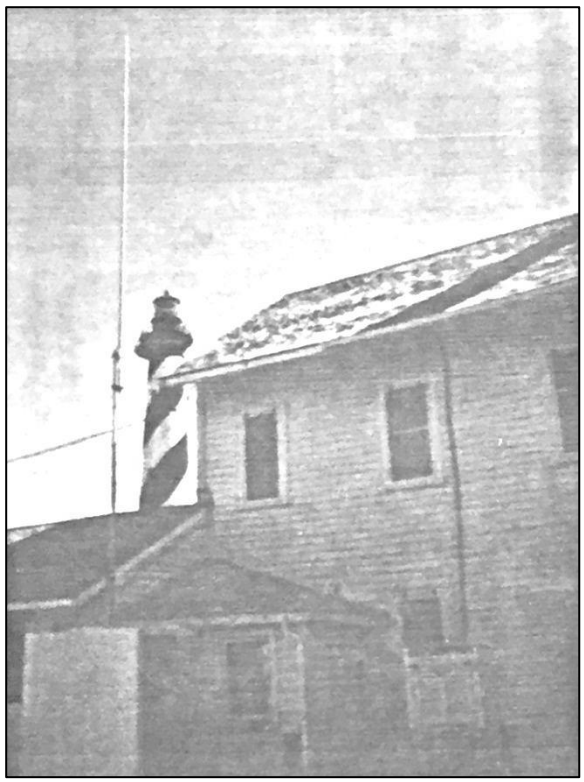


Figure 42, above. Cracked cement and settlement of three inches at the front porch in October 1981. Photo: Cape Hatteras National Seashore Archives.

8. Radio antenna unsightly (fig. 43).
9. Front entrance door: Casing in terrible condition. Rotten and broken. Lock barely holds. Water soaks through the underside of the door, soaks carpet, and likely framing underneath. Other doors in similar condition. Screen doors do not close correctly and slam children's fingers.
10. Gutter system: section above main entrance needs to be reconnected (fig. 44). Rear of building no longer has a gutter.

11. Interior: Window frames do not seal properly and rain water seeps in. Breezes come through windows in winter. Doorways in terrible condition. Walking through first floor you can tell the structural framing has settled.[80]



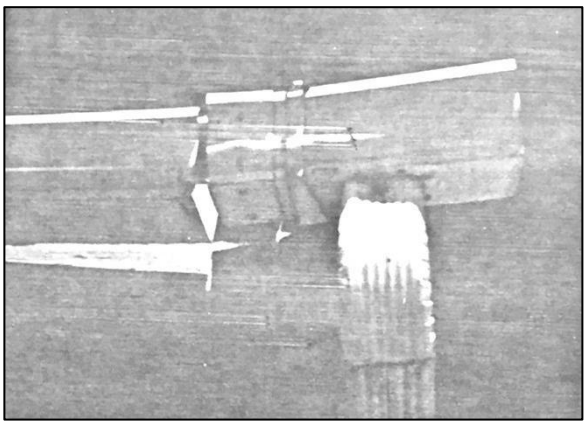


Figure 44, above. Disconnected gutter on the south elevation, in October 1981. Photo: Cape Hatteras National Seashore Archives.

Figure 43, left. Radio antenna at the rear of the building in October 1981. Photo: Cape Hatteras National Seashore Archives.

In January 1982 a scope of work was prepared for the Double Keepers' Quarters. It included replacement of exterior siding due to rotten extant siding which was falling off; repair or replacement of entrance doors, windows, and framing; removal of old utility wires and meters and relocation of wires and meters in use out of view to replicate historic appearance; removal of existing gutters and replacement with historically accurate system; removal of unsafe concrete porch and replacement with historically accurate wood porch; and replacement of rotten historic fabric located between exterior and interior walls.[81]

For Fiscal Year 1983, $50,000 was programmed for the rehabilitation of the building. On February 18, 1983, the park submitted a rehabilitation scope of work which included repair/replacement of siding, repair/replacement of doors and windows, and painting of exterior.[82]

[80] Wrenn, Warren R. "Structural Condition of Cape Hatteras Visitor Center (MOS)--Buxton." *Memorandum to South District Interpreter, Chief of Interpretation, and Associated Division Heads.* October 29, 1981. Cape Hatteras National Seashore Archives. CAHA 5032/016 Cape Hatteras Light Station Building Records Collection, Box 1 of 1, Folder #3: Double Keepers Quarters – 1981-1990.

[81] Midgette, Bebe, Supervisory Park Ranger. "Assessment of Actions Having an Effect on Cultural Resources." signed by [illegible] Hartman, January 25, 1982. Cape Hatteras National Seashore Archives. CAHA 5032/016 Cape Hatteras Light Station Building Records Collection, Box 1 of 1, Folder #3: Double Keepers Quarters – 1981-1990.

[82] Midgette, Bebe. "Cape Hatteras Light Station Historic District. Double Keeper's Quarters (Hatteras Island Visitor Center." *Briefing Statement Update.* July 9, 1983. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.

On March 1-3, 1983, the Double Keepers' Quarters was assessed by architects from the Southeast Regional Office. They reported the following conditions:

- No structural failure could be determined from the exterior of the building. The conditions of the exterior materials (presumably poor) were independent from any structural failure that might be occurring.
- The front porch concrete floor, brick piers, and inter-pier walls exhibited cracking.
- Crawlspace under the building was covered with 0'-8" to 1'-0" of water. Water did not touch structural members, but did reach siding.
- Grading around the building allowed water to collect around and under the building. Crawlspace up to 1'-6" lower than surrounding grade.
- Roof drainage system was seriously lacking functionality and caused excessive rainwater to penetrate siding and underside of building. Cisterns were not being used at this time.
- Building paper located under the siding was completely saturated with moisture. Most of the nails showed extensive corrosion. Siding is deteriorated and in some places is completely detached from the sheathing below. Sheathing was also completely saturated with moisture.
- Exterior paint of all surfaces showed chalking, staining, crazing, cracking, petaling, and intercoat segregation. Deterioration of the paint can cause further deterioration of the wood substrate.

Recommendations for returning the building to its 1892 appearance included:

- Installation of a roof drainage system to be discharged into the cisterns and/or away from the building's footings and foundations.
- Re-grading around the perimeter of the building for positive drainage. Installation of culverts under walkways and south side of road and parking area to disperse water away from building.
- Removal of underground kerosene tank located north of the west cistern.
- Repair of perforations in shingle roof; replacement of damaged material where needed.
- Repair of all fascia boards and soffits; replacement of damaged material where needed.
- Repointing of chimneys with a lime/white Portland cement/sand mix (4:1:12)
- Cleaning of debris from attic; removal of old electrical wiring and mechanical systems; inspection of "naked wiring"; covering of junction boxes.
- Inversion of the insulation in attic to ensure vapor barrier faces the ceiling boards of second floor.
- Removal of all siding and trim to assess condition of building paper.
- Removal of building paper where required.
- Assessment of sheathing conditions; repair/replacement where required.
- Allowing structure to dry out, dependent of weather conditions.
- Removal of porch concrete floor with minimum disturbance of the structure.
- Reset, repair, and repointing of brick piers.
- Removal of brick infill wall between piers.
- Assessment of all opening conditions; repair/replacement of wooden members were needed.
- Installation of shutters in all exterior openings (windows) of the main block, bathroom addition, and 1854 kitchen.
- Installation of period doors at all entrances.
- Installation of period hardware at all windows and doors.
- Removal of paint to expose wood at all openings using chemical strippers or mechanical means.
- Installation of new siding and trim after building has thoroughly dried; installation of new materials should be completed using galvanized nails which are countersunk and puttied.
- Priming of all siding surfaces and shutter surfaces with oil-based primer.
- Painting of shutters with an oil-based paint (two coats) in dark green.
- Painting of all siding and trim with an oil-based paint in white.

- Coating of new wood porch floor with raw linseed oil or varnish.[83]

An Assessment of Actions Having an Effect on Cultural Resources was completed for the preservation and stabilization of the Double Keepers' Quarters.[84] The SHPO's response could not be found.

On April 25, 1983, the project commenced. The removal of the concrete front porch began on May 2 (figs. 45-46). Demolition determined the porch was constructed, from top to bottom, of a 0'-4"-thick solid concrete slab, 0'-6" steel mesh, 0'-2" base of "poor" concrete (mostly sand), and a solid sand base. Four days later, on May 6, the sill of the south wall, directly adjacent the former concrete porch, was found to have "major" structural damage. Upon the removal of excess sand, the south wall was "literally suspended in air."[85]



Figure 45. The removal of the concrete porch floor began in May 1983. Photo: Cape Hatteras National Seashore Archives, Cape Hatteras Light Station Photos, Box 3 of 6: Double Keepers Quarters.



Figure 46. Deteriorated structural members, May 1983. Photo: Cape Hatteras National Seashore Archives, Cape Hatteras Light Station Photos, Box 3 of 6: Double Keepers Quarters.

[83] Nistal-Morat, Benjamin. "Narrative Report on the Findings of Historic Structure Examination Conclusions and Recommendations, Cape Hatteras Double Keepers Quarters, Cape Hatteras National Seashore." Date of assessment: March 1-3, 1983. Cape Hatteras National Seashore Archives. CAHA 5032/016 Cape Hatteras Light Station Building Records Collection, Box 1 of 1, Folder #3: Double Keepers Quarters – 1981-1990.
[84] Brown, Lenard E., Regional Historian. "Assessment of Actions Having an Effect on Cultural Resources." Southeast Regional Office. n.d. Cape Hatteras National Seashore Archives. CAHA 5032/016 Cape Hatteras Light Station Building Records Collection, Box 1 of 1, Folder #3: Double Keepers Quarters – 1981-1990.
[85] Midgette, Bebe. "Cape Hatteras Light Station Historic District. Double Keeper's Quarters (Hatteras Island Visitor Center." *Briefing Statement Update.* July 9, 1983. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.

The Double Keepers' Quarters was assessed by architects from the Southeast Regional Office on May 8-9, 1983, to determine the structural stability and safety of the structure and take emergency steps, if needed, to ensure safety. When workers encountered the structural damage on May 6, a call was placed to the regional office to inform them that the front wall of the building was bowing out, because the concrete front porch had been removed. The studs in the wall were "kicking out" from the sill plate. The SERO team hypothesized that the concrete slab had been installed in the 1930s-40s and further described the condition, as follows:

> Sand was poured between the main elevation and the walkway in place to a depth of approximately 36". This implied covering the south elevation's sill plate facing up to approximately 8" (the sill plate is 10"x10" and runs the length of the [1854] original section of the building.) The bearing surfaces for the concrete slabs were brick piers located in front of the porch. The inter-pier spaces were walled with cement. Therefore, the porch concrete floor encases a considerable amount of sand under it and against the building sill plate. The concrete slabs rested against the upper section of the sill plate and approximately 2" below the siding. Part of this sand began to be washed away by heavy water accumulation under the building, particularly under the SW corner of porch. This might explain cracks that developed on the concrete floor at that point and also at some other points along the brick piers joints and inter-pier walls. In other words, it appears that extensive water movement and sand dispersion under the structure is partially related to building materials' deterioration and structural rotation. Present soil conditions were discovered after the concrete slabs were removed and water under the structure subsided which allowed inspection under structure fully possible.

Further condition assessment of the remainder of building included:

- South Elevation substructure:
  - Sill plate deteriorated 0'-9" at facing.
  - Sill plate joint between 1854 structure and 1892 addition detached approximately 0'-1".
  - Sill plate at bearing point on brick piers crushed in some locations up to 0'-5".
  - Upper section of sill plate rotating outwards (pivoting at lower section) up to 0'-1½". Caused by degraded core and lower sections being crushed by static and temporary loads).
  - Many studs detached from sill plate 0'-1" to 0'-2"; many studs deteriorated at sill-bearing end.
  - Floor joists detached form sill plate 0'-1" to 0'-1½".
  - Southeast corner of sill plate crushed approximately 0'-6"; mortise and tenon connection detached up to 0'-1½".
- East elevation substructure:
  - Was covered with siding and sheathing.
  - Evidence that sill plate is rotating and deteriorated at SE corner.
- North elevation substructure:
  - Was covered with siding and sheathing.
  - Evidence that sill plate has extensive deterioration and is crushed at the joint between the exterior wall and kitchen porch. Directly below missing gutters.
  - Major crack located in brick pier directly north of chimney foundation.
- West elevation substructure:
  - Was covered with siding and sheathing.
  - Evidence of degradation and crushing found at SW corner.
- First-floor joists and girders:
  - Joist ends deflect downward at north and south elevations.
  - Some joists crushed (up to 0'-1") at bearing points in chimney foundation.
  - East girder--bearing in chimney foundation and brick pier--detached from floor joists, lower section crushed at bearing points.
- First-floor joist system:

    - Most joists east of 1854 chimney (toward east elevation) were displaced and upper plane rotating toward east elevation; worst rotation found under SE entrance to building.
- First floor:
    - East section, particularly at entrance hall subsiding down towards east elevation.
    - Floor areas south and north of 1854 chimney were subsiding down and out, especially at east elevation.
    - West section more stable than east section, although subsidence exists at north elevation.
    - An old Ticketron machine required "extensive perforations" through the floor, sheathing, and siding of the 1854 kitchen addition.
- Second floor:
    - East section, subsiding, like on first floor.
    - Upper sections and siding of partition walls at north and south of 1854 chimney reveal serious subsidence of ceiling and floor (down and out)
    - West section more stable than east section, although subsidence exists at north elevation.
- Attic:
    - Studs at attic gables in 1854 structure loose from mortise-and-tenon joints.
    - Several joists and some rafters found to be termite infested and seriously degraded. No live termites encountered.

The assessment also reported that the building had been overloaded by the park with "personnel, furniture, artifacts, bookcases, storage, operations, functions, etc." and the "approximately 2,000-pound Fresnel lens cap" was being displayed on the first floor. It was concluded that the building was moving toward possible collapse due to the above-stated findings.

Upon completion of the assessment by SERO, the building, which had remained open to visitors and staff up until this point, was closed on May 9. Further recommendations included:

- Removing all functions and loads from within the building.
- Shoring and underpinning at south elevation to be completed by park carpenter George Perrot.
- Erection of a fence 70'-0" from all elevations of the building to keep visitors away.
- Carefully continue working to remove and salvage material for possible reuse to include sheathing and siding 3'-0" above sill plate (shoring where required) and expose first-floor top plate at center of building (shoring where required).[86]

On May 19, removal of exterior siding at the base of the north elevation wall exposed extensive damage to framing members from water and termites. Additionally, lateral movement east to west and excessive bounce at the northwest and southeast corners of the second floor were reasons for further dismay. On May 23, the north exterior wall was shored because the bearing sill was "all but gone due to termite damage." An estimated 15% of the structural value remained. On June 9, an additional $50,000 was allocated for the project.[87] A final scope of work was completed on June 8, 1983. It included the following items:

1. Remove all exterior siding and sheathing to expose frame; repair or replace in kind where deteriorated.
2. Remove all interior paneling and trim to expose frame; repair or replace in kind where deteriorated.

[86] Nistal-Moret, Benjamin, NPS SERO Architectural Technician. "Second Narrative on the Findings of Historic Structure Inspection Conclusions and Recommendations, Cape Hatteras Double Keepers Quarters, Cape Hatteras National Seashore."
[87] Midgette, Bebe. "Cape Hatteras Light Station Historic District. Double Keeper's Quarters (Hatteras Island Visitor Center." *Briefing Statement Update.* July 9, 1983.

3. Repair deteriorated frame members; replace in kind, where required, using mortise-and-tenon joints.
4. If structural members have lost their structural integrity, replace in kind.
5. Remove all flooring, repair or replace in kind, where required.
6. Inspect all floor joists; repair or replace in kind, where required.
7. If joists have lost their structural integrity, replace in kind.
8. Replace all sill plates in kind with pressure-treated members.
9. Repair brick piers, to include slate waterproofing at top.
10. Replace shingle roofing in kind, to include flashing.
11. Inspect, repair, or replace in kind all roof structural members, where required.
12. Remove girders under first-floor floor.
13. Install two new girders at midspan, to include footings and piers.
14. Install new electrical in building.
15. Install new HVAC in building.
16. Install new insulation in floors, attic, and walls.
17. Rebuild chimneys at the 1854 structure, and 1892 addition.
18. Rebuild chimney at the 1854 kitchen (east elevation).
19. Rebuild main elevation porch according to historic 1890s appearance.
20. Remove north and west parking lot and road; regrade and reseed.
21. Remove all concrete walkways around building and replace with wooden boardwalks, according to 1890s appearance. Regrade and reseed.
22. Rebuild picket fence around building to include stiles according to 1890s appearance.
23. Regrade under building.
24. Install sump pump under the 1892 addition, two under the 1854 structure and one under the 1854 kitchen (east elevation).[88]

An archeological report assembled from an investigation during removal of accumulated sand under and around the building noted that no significant archeological artifacts were recovered. The artifacts that were recovered included broken bottles, window glass, nails, and corroded metal dating to the 1930s.[89]

On September 15, 1983, drawings for "The Preservation of Double Keepers Quarters" were completed by the Southeast Regional Office (figs. 47-53).[90]

[88] "Scope of Work, Cape Hatteras National Seashore, Cape Hatteras Double Keeper's Quarters." June 8, 1983. Cape Hatteras National Seashore Archives. CAHA 5032/016 Cape Hatteras Light Station Building Records Collection, Box 1 of 1. Folder #3: Double Keepers Quarters – 1981-1990.
[89] Ehrenhard, John E. (archeologist). "Archeological review: Double Keepers Quarters, Cape Hatteras Light Station." *Letter to Superintendent, Cape Hatteras National Seashore.* June 8, 1983. Cape Hatteras National Seashore Archives. CAHA 5032/016 Cape Hatteras Light Station Building Records Collection, Box 1 of 1. Folder #3: Double Keepers Quarters – 1981-1990.
[90] Southeast Regional Office, NPS. "The Preservation of Double Keepers Quarters, Cape Hatteras National Seashore, North Carolina." *12 Sheet Set.* September 15, 1983. NPS DSC eTIC No. CAHA 603 80026.

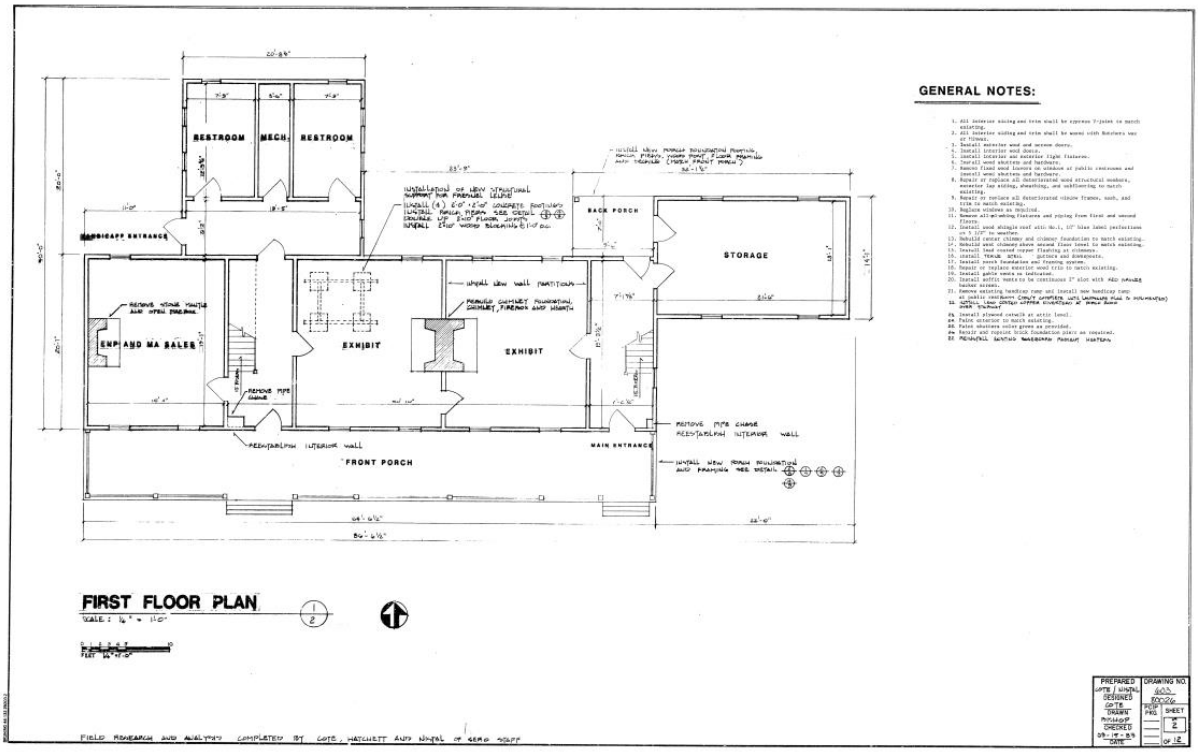


Figure 47. First-floor plan of preservation work. Drawing: Southeast Regional Office Cultural Resources Preservation Center, September 15, 1983. DSC eTIC No. CAHA 603 80026. Sheet 2.

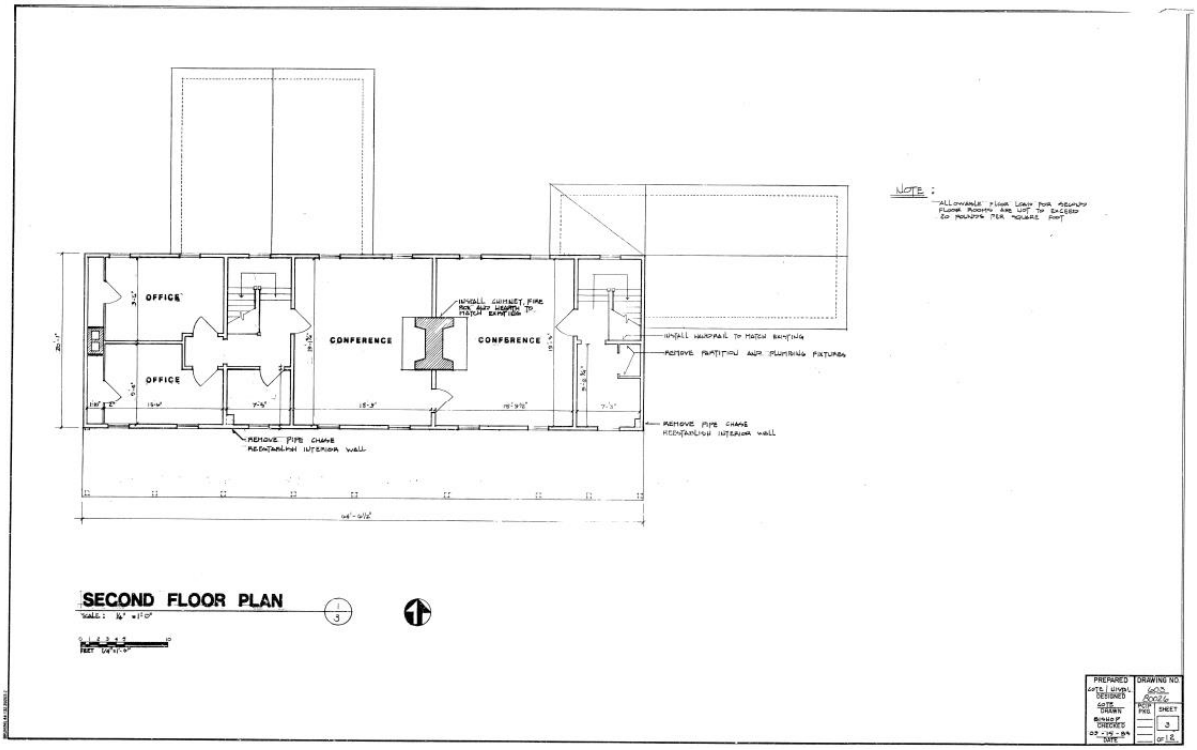


Figure 48. Second-floor plan of preservation work. Drawing: Southeast Regional Office Cultural Resources Preservation Center, September 15, 1983. DSC eTIC No. CAHA 603 80026. Sheet 3.

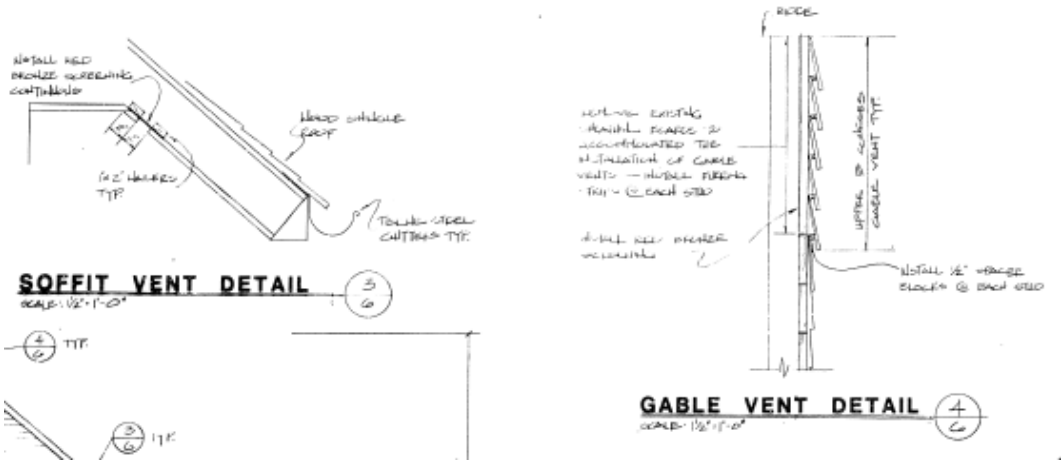


Figure 49. Soffit and gable vent details. Drawing: Southeast Regional Office Cultural Resources Preservation Center, September 15, 1983. DSC eTIC No. CAHA 603 80026. Sheet 6. Cropped by author.

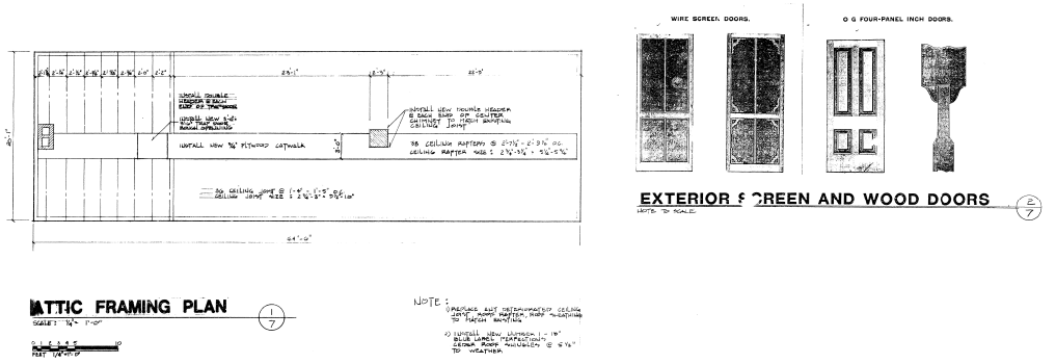


Figure 50. The attic framing plan and exterior screen and wood door details. Drawing: Southeast Regional Office Cultural Resources Preservation Center, September 15, 1983. DSC eTIC No. CAHA 603 80026. Sheet 7. Cropped by author.

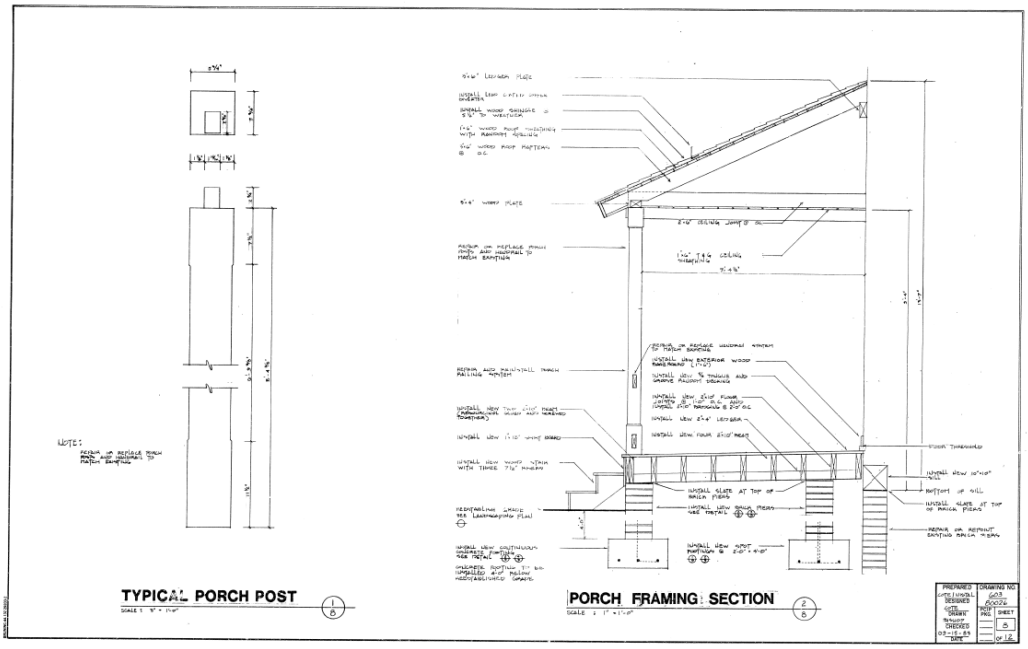


Figure 51. Typical porch details show areas to be reconstructed and those which will be preserved. Drawing: Southeast Regional Office Cultural Resources Preservation Center, September 15, 1983. DSC eTIC No. CAHA 603 80026. Sheet 8.

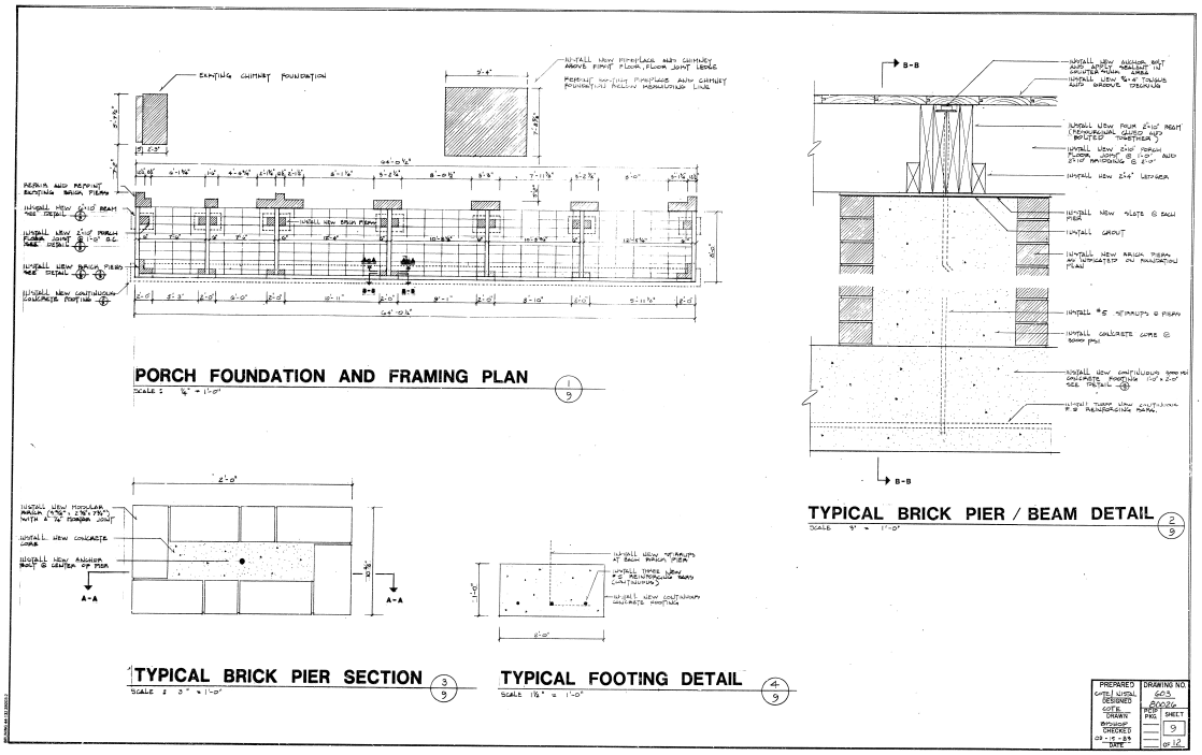


Figure 52. Details of the porch foundation and framing plan, a pier section, a footing detail, and a brick pier/beam detail. Drawing: Southeast Regional Office Cultural Resources Preservation Center, September 15, 1983. DSC eTIC No. CAHA 603 80026. Sheet 9.

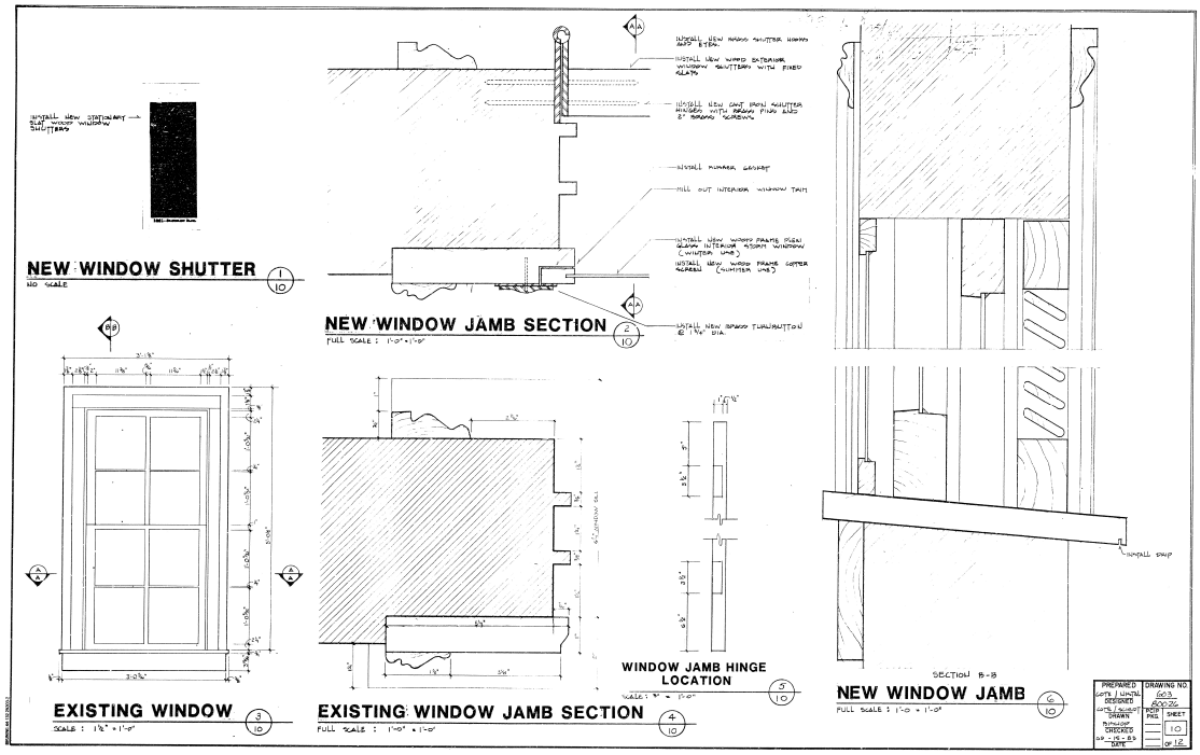


Figure 53. Window, shutter, and storm/screen details. Drawing: Southeast Regional Office Cultural Resources Preservation Center, September 15, 1983. DSC eTIC No. CAHA 603 80026. Sheet 10.

A month-by-month summary of completed work is as follows:

October 1983:	-	Roof replaced.
	-	Approximately 10% of deteriorated structural framing members and 24 feet of the first floor replaced.
	-	Work on 1854 chimney suspended until SERO architect could inspect unusual framing around the feature.[91]
November 1983:	-	50% of deteriorated structural framing members replaced.
	-	90% of temporary structure removed.
	-	All new concrete foundation piers installed under structure.
	-	First-floor sub-flooring and finish flooring of the main structure completely removed.
	-	1892 chimney removed.[92]
December 1983:	-	85% of deteriorated structural framing members replaced.
	-	40% of new brick pier installations completed.
	-	All new concrete work completed.[93]
January 1984:	-	95% of deteriorated structural framing members replaced.
	-	100% of temporary structural framing members removed.
	-	50% of the exterior siding removed.
	-	25% of exterior sheathing removed.[94]
February 1984:	-	65% of overall scope of work completed.
	-	100% of new brick piers completed.
	-	90% of the historic brick piers "re-worked."
	-	70% of slate flashing installed on top of piers.
	-	60% of new exterior sheathing installed.[95]
March 1984:	-	68% of overall scope of work completed.
	-	97% of new historic brick piers "re-worked."
	-	95% if slate flashing installed on top of piers.
	-	1854 chimney removed, except foundation.[96]
April 1984:	-	70% of overall scope of work completed.
	-	Historic brick piers completed.
	-	Slate flashing completed.
	-	All new exterior sheathing installed.
	-	25% of front porch "re-worked."
	-	All finish exterior siding primed.[97]
May 1984:	-	73% of overall scope of work completed.
	-	15% of finish siding installed.
	-	25% of windows "re-worked" and painted.
	-	40% of main block soffit "re-worked."[98]

[91] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* November 1, 1983. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[92] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* December 2, 1983. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[93] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* January 3, 1984. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[94] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* February 1, 1984. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[95] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* March 1, 1984. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[96] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* April 1, 1984. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[97] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* May 1, 1984. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.

June 1984:	-	76% of overall scope of work completed. - 40% of windows "re-worked" and painted. - 75% of main block soffit "re-worked."[99]
July 1984:	-	78% of overall scope of work completed. - Soffit and fascia work completed. - 1892 chimney reconstructed. - 50% of 1854 chimney reconstructed.[100]
August 1984:	-	83% of overall scope of work completed. - Front porch roof completed. - 50% of porch reconstructed. - 1854 chimney reconstruction completed.[101]
September 1984:	-	85% of overall scope of work completed. - 75% of porch reconstructed. - 1854 kitchen roof completed.[102]
October 1984:	-	Roof o Porch header system installed, outside corner mortised, both ends of system tied back to framing system of house. o Main-hip rafter set and patterns made for opposing rafters. o Rafter system installed on rear porch. Salt-treated sheathing boards installed at rear porch roof. Began installation of new wood shakes. o Wood shake roofing removed from restroom addition. 400 linear feet of sheathing required replacement. New wood shakes installed. o 19 pair of knee wall studs installed on entire roof system (on interior of attic). - Exterior walls o Framing in north wall and corner boards of restroom addition replaced. o Sub-flashing installed behind plywood and siding on north wall of restroom addition. o New siding installed on north elevation of restroom addition and east elevation of main block. o Fascia boards installed on north elevation of restroom and east elevation of main building. o All nails set, painted, and spackled. o Started siding on north wall of kitchen addition and north wall main block. - Front and rear porches: o Began working on front porch columns. o Reset sills and installed board (rim joist?) at rear porch. o Installed floor joists and installed bridging at both porches. o 50 square feet of front porch tongue-and-groove, salt-treated decking installed. Work stopped due to internal discussion at SERO. o Temporary steps and flooring installed at back porch. - Windows: 19 of 39 windows in place. Work on each window and opening included: scraping, stripping, sanding, painting of casings, trim, sashes, and joints, and glazing windows. - Brick foundation piers rebuilt.

[98] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* June 1, 1984. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[99] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* July 1, 1984. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[100] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* August 1, 1984. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[101] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* September 1, 1984. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[102] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* October 1, 1984. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.

	- Interior: o Began framing of interior walls. o Removed temporary supports from fireplaces. o Began installation of let-in braces. Scribed all let-in braces. - Miscellaneous: o Secured area for Hurricane Josephine. o Removed old insulation from attic. - Temporary electrical service modified.[103]
November 1984:	- Roof: Began flashing 1854 chimney. - Exterior Walls: o Completed installation of siding on north wall of main block. o Installed siding to east room of bathroom addition. o Reframed 2'-0" section of west bathroom addition wall and tied it back to main block structure. - Front and Rear Porches: o All nine columns spliced, patches, primed, and restored. o All decking completed. o New column made for rear porch. - Windows: o 30 of 39 windows in place. Work as described above. o Flashing drip caps completed on all windows of north wall, except 1892 addition. - Foundations: Flashing installed on sill of west wall of bathroom addition. - Miscellaneous: Weather-proofed plumbing under building.[104]
December 1984:	- Roof: Wood shakes spliced on main roof. - Porches: Old paint scraped from ceiling boards; front porch ready for paint. - Windows: Completed and secured with plywood. - Chimneys: Chimney flashing installation and painting completed. - Walls: o Sanded, spackled, and painted siding on south wall of main block. o Additional siding primed and back primed, and installed on east and west walls of restroom addition. - Interior Walls: o Completed let-in braces o Installed corner and ceiling returns for interior framing.[105]

Rehabilitation work was temporarily stopped between December 31, 1984 and January 16, 1985. After this time period, the project was turned over to a SERO project team and work continued.[106]

[103] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* November 1, 1984. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[104] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* December 7, 1984. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[105] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* January 15, 1985. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[106] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* February 14, 1985. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.

January 1985:	-	Masonry debris cleaned out from under building.
	-	All equipment in first floor cleaned out from building and ¾" plywood installed.
	-	Nailers installed on first floor and begun on second floor.
	-	Interior paneling and porch ceiling stripped.
	-	Electrical system roughed in.[107]
February 1985:	-	Front and rear porch ceiling boards primed and installed.
	-	Front porch rail completed.
	-	Front and rear porch skirt boards installed.
	-	Installed partition wall on the south side of the stairwell on the second floor.
	-	Electrical, telephone, security, and fire alarm systems roughed in on first floor.
	-	Paneling nailers installed on second floor.
	-	Window sash patched, sanded, spliced, and painted.
	-	Insulation installed.
	-	Paneling stripped.[108]
March 1985:	-	Front porch columns, railings, and trim work completed.
	-	Soffit moldings completed on entire building.
	-	Installation of water line at restroom.
	-	Insulation installed.
	-	Plywood catwalk installed in attic.
	-	Old chimney-well in kitchen addition "headed off."
	-	Second-floor flooring replacement completed.
	-	Window glazing completed in place.
	-	Began stripping stairwells.
	-	Wind load straps installed to all rafters in main block and kitchen addition roofs.
	-	Stripping of paneling and installation of new paneling.[109]
April 1985:	-	160'-0" linear of electric service cable installed underground.
	-	All sanding, spackling, caulking, and painting of exterior siding and trim completed.
	-	Scaffolding removed.
	-	Continued sanding and stripping interior paneling.
	-	Paneling completely installed in Rooms 2 and 3 of first floor and east stairwell.
	-	Scraping, stripping, and sanding of both sets of stairs and trim begun.[110]
May 1985:	-	Steel gutters primed.
	-	Scraped, stripped, and sanded both sets of stairs and trim.
	-	Window stools cut, shaped, sanded, painted, and set at all windows.
	-	New oak flooring installed.
	-	Rubber backing removed from original pine floors.
	-	Patched, sanded, and applied Tung oil to floors, stairs, and landings.[111]

At this time, Harpers Ferry Center completed designs for new exhibits to be displayed in the building upon completion.[112] These displays are still extant within the building.

On May 23, 1985, the project was returned to park staff for completion and work continued as follows:

[107] Ibid.
[108] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* March 18, 1985. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[109] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* April 1, 1985. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[110] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* May 9, 1985. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[111] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* June 14, 1985. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[112] Ibid.

June 1985:	-	Installed handicap ramp to restrooms.
	-	Sanded and primed exterior door sills.
	-	Primed and sanded shutters.
	-	Primed, spackled, and painted east and west stairs.
	-	Scraped and cleaned paint from windows.
	-	Ripped ¾" shoe molding out of new cypress, sanded, applied Tung oil, and installed at first floor.
	-	Installed crown moldings at first floor.
	-	Installed oak thresholds at all three fireplace hearths.
	-	Spackled, sanded, and painted door jambs and casings.
	-	Sanded first floor ceilings and walls.
	-	Started installation of paneling on second floor.
	-	Casings made for windows and doors.[113]
July 1985:	-	Shutters primed and first coated.
	-	Exterior doors primed and two hung.
	-	Completed paneling installation on second floor.
	-	Completed shellacking, sanding, and application of Weiman's Cream to first-floor walls, ceilings, and trim. Started same on second floor.
	-	Window and door casing primed.
	-	Second-floor flooring sanded.
	-	Completed install of window sill stools.
	-	Second-floor trim sanded.[114]
August 1985:	-	All door thresholds set.
	-	Trim molding for porch decks made and installed.
	-	First and second coats of linseed oil applied to porch decks and trim.
	-	Continued sanding, spackling, priming, and painting screen doors, window screens, and shutters.
	-	All window and door casings painted.
	-	Removed excess mortar and cleaned second-floor fireplaces.
	-	Second-floor ceilings and walls shellacked.
	-	Sanded all oak flooring (first floor) and applied three coats of polyurethane.
	-	Completed sanding and applied first coat Tung oil to second-floor flooring.
	-	Primed 320'-0" linear window casing, 40'-0" linear beaded-edge window stop, and 200'-0" linear door casing.
	-	First-floor light fixtures installed.
	-	Second-floor door jambs installed.
	-	Baseboard heaters installed.[115]
September 1985:	-	Second finish coat applied to restroom window screens.
	-	Second and third finish coat applied to restroom shutters.
	-	Sanded and finished painting back porch and restroom exterior doors.
	-	Second-floor window jambs furred out.
	-	Second-floor window casings and trim completely installed.
	-	Door and window jambs, casings and trim sanded and spackled.
	-	Crown moldings, baseboards, shoe moldings, and corner moldings installed on second floor.
	-	Threshold moldings around fireplace hearths and inside corner moldings at chimneys installed.
	-	Five exterior door locksets installed.
	-	Three exterior door thresholds installed.
	-	First finish coat applied to window and door trim on second floor.[116]

[113] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* July 26, 1985. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[114] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* August 19, 1985. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[115] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* September 16, 1985. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.

October 1985:	-	Finish paint to doors and window completed.
	-	Began installation of screen doors and hardware.
	-	Began installation of shutters.
	-	All carpentry work completed on second floor.
	-	Installed outside corner molding in office areas.
	-	Completed finish to second-floor paneling.
	-	Completed telephone system installation.[117]

For the next couple months, monthly reports stated that the following work remained to be completed: hanging exterior window shutters, hanging interior doors, foundation clean-up, site clean-up, installation of exhibits and landscaping. In addition, a landscape plan was to be developed to address water drainage, sewage, and site access.[118]

Final work continued in January 1986 and was completed in April 1986:

January 1986:	-	Shutters hung.[119]
February 1986:	-	Foundation and site cleaned.[120]
March 1986:	-	Temporary walks and fences installed around building until final landscaping could be completed.
	-	Gutters installed.[121]
April 1986:	-	Interior doors hung.
	-	Landscaping completed.
	-	Final cleanup.[122]

On May 3, 1986, after the two-and-a-half-year rehabilitation project was completed, an open house was held.[123] The building would return to its use as a museum/visitors center with new exhibits.

Also in May 1986, a Landscape Plan for the Hatteras Light Station was completed. The plan studied multiple factors including period of restoration for the site, persistent flooding and hydrology, historic fences and outbuildings, site and building utilities, U.S. Naval Facility to the north, revetment and seawall at the lighthouse, raising the buildings, and moving the buildings.

[116] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* October 15, 1985. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[117] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* November 18, 1985. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[118] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* December 16, 1985. "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* January 15, 1986. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[119] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* February 6, 1986. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[120] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* March 6, 1986. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[121] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* April 14, 1986. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[122] "Cape Hatteras Light Station, Cape Hatteras National Seashore." *Southeast Region Status Report.* May 15, 1986. Cape Hatteras National Seashore Archives. CAHA 5031/015 Cape Hatteras Light Station Briefing Book Coll. (c. 1980s), Box 1 of 1, Folder #1: Briefing Statements - 1982-1987.
[123] Ibid.

Conclusions of the plan were to continue as existing. After a total of $15,000 for archeological testing and monitoring, the remaining work would cost approximately $60,200 and include:

- Exposed septic lines would remain exposed.
- Approximately 370'-0" of 4'-0"-high, three-rail preservative treated fencing would be constructed south and east of both keepers' quarters and would be located 2'-0" to 5'-0" from location of historic fence to avoid damaging archeological resources. Two gates would control pedestrian traffic.
- Approximately 370'-0" of 5'-0"-wide concrete walk would be needed as a result of the new fence. The walk would be constructed above existing grade with fill materials to provide drainage from walks. A culvert would be constructed under access road to deter ponding in front of the Double Keepers' Quarters. The existing walk would be demolished.
- Overhead utilities would be relocated underground.
- The U.S. Navy buildings located to the north would be painted in earth tones to blend in with the landscape.
- Existing asphalt access drive and parking would be removed. The access drive and small turn-around would be resurfaced with turf block. No parking would then be provided.
- Cisterns would be reestablished to collect water flowing from the downspouts. Pipes hidden in cisterns would divert water out of each. One pipe would drain to the nearby pond. Other two pipes would drain to drain fields.[124]

Despite these recommendations, this work was never completed.

The Historic American Building Survey documented the Hatteras Light Station in September 1989 (figs. 54-57).



Figure 54. A view from the southwest in October 1989. Photo: HABS, http://www.loc.gov/pictures/collection/hh/item/nc0476/.

[124] Chief, Planning and Compliance Division, Southeast Division. "Report on the Preparation of the Comprehensive Design, Keepers Quarters Landscape Plan for Lighthouse, Cape Hatteras National Seashore." May 2, 1986. Box: CAHA 5567 Keepers Quarters Landscape Plan, 1986. Folder 1 of 1.



Figure 55. A view from the southeast corner in October 1989. Photo: HABS, http://www.loc.gov/pictures/collection/hh/item/nc0476/.



Figure 56. The west elevation in October 1989. Photo: HABS, http://www.loc.gov/pictures/collection/hh/item/nc0476/.



Figure 57. A view from the northeast corner in October 1989. Photo: HABS, http://www.loc.gov/pictures/collection/hh/item/nc0476/.

By September 1989, the exterior of the building, though only three years since its restoration, exhibited mildew and cracking paint. Recommendations at this time were to wash off the mildew, sand siding seams and cracking paint, and repaint exterior surfaces of the building.[125]

Due to insufficient repairs to the stairs in the 1980s (the treads were simply glued), by April 1990 a few treads on each stair were breaking off on the front and needed to be pulled back into place. Corrective measures included removing the existing balusters, removing the existing stair treads, gluing and clamping separated stair tread boards, drilling, bolting (two per board), and plugging holes, and reassembling stair treads and balusters (fig. 58).[126]

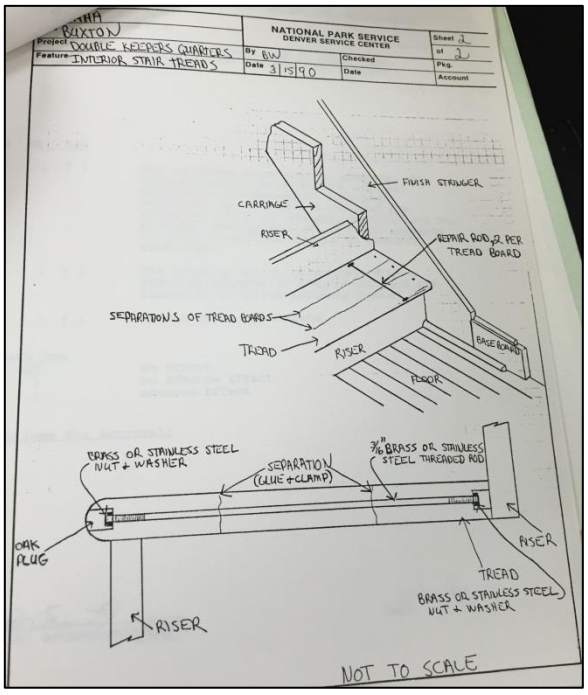


Figure 58. The design for repairs to the broken stair treads. Drawing: Cape Hatteras National Seashore Archives.

[125] Deputy Associate Regional Director, Cultural Resources, Southeast Region. *Letter to Superintendent Cape Hatteras National Seashore.* September 22, 1989. Cape Hatteras National Seashore Archives. CAHA 5604 CAHA Compliance, Box 1 of 1, Folder 1 of 1.

[126] Acting Deputy Associate Regional Director, Cultural Resources, Southeast Region. *Letter to Superintendent Cape Hatteras National Seashore.* April 20, 1990. Cape Hatteras National Seashore Archives, CAHA 5604 CAHA Compliance, Box 1 of 1, Folder 1 of 1.

In mid-1990, a sump pump and pump pit were proposed for under the Double Keepers' Quarters in an area to be determined by natural drainage and pooling tendencies. A discharge pipe was to be installed under the northern service road to the existing pond. At that time, standing water was consistently 0'-3" to 0'-10" deep under the first floor, contributing to rapid moisture damage in the form of rot, mildew, fungus, and algae.[127]

In 1992, due to the deterioration of the building so soon after its restoration, the Southeast Regional Office planned to complete destructive investigation of the Double Keepers' Quarters, to include:

- Removal of trim around four second-floor windows (interior and exterior) located on north and south elevations.
- Dismantling and removal of four second-floor windows located on north and south elevations of the structure.
- Removal of interior paneling adjacent to windows to determine condition of inner wall cavities.
- Marking, recording, and storing of all fabric removed.
- Replacement of windows and fabric after investigation work is complete until scope of work, plans, and specifications can be developed to correct the problems and compliance approval is received from Southeast Regional Office.
- Investigation and documentation of condition of foundations, piers, floor joists, and sills.
- Determination of type of underground tank, depth of tank, and what type of fuel is leaking.[128]

The conclusions of this work are unknown.

A preservation maintenance project for the Double Keepers' Quarters was planned in 1998. The scope of work would "completely repair, and re-furbish…" the 1854 building and would include the following work (figs. 59-66):

- Exterior:
  - Repair or replace minor areas of the siding.
  - Re-condition all doors, windows, and associated casings, and trim.
  - Re-condition (re-point mortar joints where necessary), all masonry foundation piers, chimneys, including two (2) brick cisterns.
  - Install new wood framed storm windows.
  - Paint complete exterior, to include all wood siding, windows, doors, and masonry cisterns. All wood, masonry (except for masonry chimneys), and metal surfaces should be repainted.
  - Paint, Benjamin Moore, Exterior Primer Base/White 100-00 Oil Flat, Primer Base/White 105-01, Latex Flat; Moorgard White 103-01 Latex Satin, Moorglo White 096-01 Latex Semi-gloss.
- Interior:
  - Re-condition and clean all masonry fireboxes and wood flooring.
  - Re-varnish and/or tongue oil all flooring.
  - Clean and re-condition all T. and G. cypress paneling.[129]

[127] Deputy Associate Regional Director, Cultural Resources, Southeast Region. *Letter to Superintendent Cape Hatteras National Seashore.* July 27, 1990. Cape Hatteras National Seashore Archives. CAHA 5604 CAHA Compliance, Box 1 of 1, Folder 1 of 1.
[128] Deputy Associate Regional Director, Cultural Resources, Southeast Region. *Letter to Superintendent Cape Hatteras National Seashore.* September 9, 1992. Cape Hatteras National Seashore Archives. CAHA 5604 CAHA Compliance, Box 1 of 1, Folder 1 of 1.
[129] Cape Hatteras Group, Maintenance and Engineering Services. National Park Service. "Cape Hatteras National Seashore, Cape Hatteras Light Station, Double Keepers Quarters, LCS 07251, 1998 - Preservation Maintenance." Cape Hatteras National Seashore Archives. CAHA 5030/014 Cape Hatteras Light Station Double Keepers' Quarters Preservation Maintenance Coll. (c. 1998), Box 1 of 1, Folder #1: CAHA Cape Hatteras Light Station Double Keepers' Quarters Preservation Maintenance Project (c. 1998) Report – 1998.

The completion report for the project stated that all the above work was completed, however the masonry was not restored and HVAC units were not installed due the building's pending relocation. As a note, the interior cypress paneling was restored in the following manor:

- One coat of #2 shellac, applied as a sealer.
- After dry, sanded with 400-600 grit sandpaper until shininess is removed and surface is reasonably smooth. (Steel wood could be substituted.)
- Dust with tack cloth.
- Vacuum floors.
- Apply two coats of furniture cream.[130]



Figure 59. The top of west chimney. Photo: Cape Hatteras National Seashore Archives.



Figure 60. Sanding the north elevation exterior wall of the restroom addition in preparation for paint. Photo: Cape Hatteras National Seashore Archives.

[130] Perrot, George E., III, and Barbara B. Pledger. Cape Hatteras Group, Maintenance and Engineering Services. National Park Service. "Cape Hatteras National Seashore, Cape Hatteras Light Station, Double Keepers Quarters, LCS 07251, 1998 - Preservation Maintenance Completion Report." Cape Hatteras National Seashore Archives. CAHA 5030/014 Cape Hatteras Light Station Double Keepers' Quarters Preservation Maintenance Coll. (c. 1998), Box 1 of 1, Folder #1: CAHA Cape Hatteras Light Station Double Keepers' Quarters Preservation Maintenance Project (c. 1998) Report – 1998.



Figure 61. Southern yellow pine siding fully prepared for painting. Photo: Cape Hatteras National Seashore Archives.



Figure 62. Southern yellow pine siding finish painted. Photo: Cape Hatteras National Seashore Archives.



Figure 63. West front door entrance – installation of porch decking and handrails. Photo: Cape Hatteras National Seashore Archives.



Figure 64. East front entrance door – wood walk repair and additional handrail installed. Photo: Cape Hatteras National Seashore Archives.



Figure 65. Fresh paint to the interior trim around the windows. Photo: Cape Hatteras National Seashore Archives.



Figure 66. Fresh paint to the exterior wood trim. Photo: Cape Hatteras National Seashore Archives.

Moving a Landmark Light Station

In late 1997, after several decades of planning and studies by the federal government, independent parties, and others, the National Park Service Denver Service Center (DSC) issued a Request for Qualification for firms interested in bidding on the Design-Build project to move the Hatteras Light Station. A total of six firms responded. In January 1998, after a technical evaluation panel of three evaluating DSC employees and two non-evaluating advisors chose two firms to respond to the Request for Proposal (RFP). The RFP was issued in February 1998. Six amendments were issued between March and May of that year. The final scope of work, as amended, follows:

1. Inspect all structures prior to any disturbance. Provide documentation of pre-move conditions.... Documentation will provide:
   - Basis for documentation of required repairs under this contract of damage resulting from move (e.g., cracked plaster, opened mortar joints, etc.)
   - Basis for precise reconstruction of dismantled components, if any, under this contact.
   - Basis for future reconstruction of granite fence footing by others. Specifically document the location of each granite block and mark blocks accordingly for future reconstruction.
2. Determine (within one tenth of a foot) physical relationship (horizontal coordinates and elevation of all (Lighthouse, Principal Keepers [sic] Quarters and Double Keepers [sic] Quarters, cisterns, fence footing and oil house) to one another.
3. Design support systems in preparation of moving each structure.
4. Design transportation system for lighthouse, other buildings and cisterns. Dismantling and reconstruction of cisterns may be considered. However, the preference is that the contractor should move the buildings intact to greatest extent feasible. Granite fence footing will be dismantled and placed in storage.
5. Specify techniques for clearing along move corridor and new site clearing (Historic Management Zone). This is approximately a total of 10 acres. Clean fill should be wasted within the project area to the maximum extent possible. Excess clean fill may be disposed of at a site available within 1 mile of project site. Unsuitable material and grubbing debris may be disposed of at a nearby landfill (within 80-90 miles of site.
6. Design new foundations at new site. Use the designated lighthouse position as base for locating other structures. New locations for buildings to match within one tenth of a foot existing relative positions (horizontal coordinates, vertical elevation and orientation relative to true north). Relocate all structures to finish elevations to avoid building flooding. Specific finish elevations will be determined during the design process. Provide design for rough grading at new site that will minimize wind and water erosion. Final grading will be included in a separate contract.
7. Submit design development and construction documents for all design work. NPS will review for compliance with proposal evaluation factors and contract requirements.
8. Secure the work site.
9. Schedule lighthouse move to minimize risk of exposure during move to nor'easters and hurricanes (late March to late May safest period for move). Schedule other moves at contractor's convenience within contract time frame. Schedule all other work (including demolition of most of the light house transportation system) so that contractor is clear of site by September 30, 1999.
10. Prepare old site for relocating the buildings. Cap and abandon existing connected utilities. Relocate (or demolish) existing aerial utilities at existing site as needed to accomplish work. Remove and salvage sidewalk material (from gate to lighthouse) and provide to the Park for storage.
11. Prepare route for move.
12. Implement stabilization system in preparation of moving each structure.

13. Construct move pathway and assemble equipment for transportation system for lighthouse and other buildings. Sand dunes may be removed as needed to accomplish the move. Rebuilding of the dunes will be accomplished by others. . . .
14. Document locations and top face elevation above grade of each block of granite footing surrounding the lighthouse. Remove footing and store at park where directed...for reinstallation under a separate contract. All portions of the granite block footing shall be removed, including the portion under the sand dune. Sand dunes may be removed as needed to accomplish the move.
15. Move lighthouse. At a minimum, move all portions of the lighthouse exposed at and above existing grade line.
16. Move Double Keeper's [sic] Quarters, Principal Keeper's Quarters, and Oil House. At a minimum, move all building portions exposed at and above existing grade line. The concrete pedestal in the oil house is to be removed by the contractor and provided to the Park for storage. The floor in the oil house is to be relocated intact, if feasible. If not, reconstruct with existing salvaged materials. If material cannot be salvaged, reconstruct with similar new material. Piers under the Double Keepers [sic] Quarters are to be moved intact, if feasible. If not, the piers should be dismantled, salvaged, and reconstructed with salvaged materials. If material cannot be salvaged, reconstruct with new material to achieve similar appearance.
17. Move two rain water cisterns associated with the Double Keeper's [sic] Quarters and the one cistern associated with Principal Keeper's Quarters. At a minimum, remove all portions of the cisterns, including all portions below grade. It is the Government's preference to relocate cisterns intact. If this is not feasible, reconstruct with existing or similar materials. Offeror's proposal should reflect if it is not feasible or unreasonable to relocate the cisterns intact and demonstrate means of reconstructing the cisterns in kind. Grades around relocated cisterns may be left rough and full exposure of cistern is acceptable.
18. Construct new foundations at new site and set structures onto them. Use the designated lighthouse position as base for locating other structures within one tenth of a foot of existing conditions (horizontal coordinates and elevation). New locations for all structures to match existing orientation to each other and to true north.
19. Provide final documentation of the condition of the Light Station after the move.
20. Closely inspect all buildings for damage occurring as result of preparation, moving, and placement on new foundation. Pre-move inspection, documentation will be baseline for determination of damages. The contractor shall repair all such damage under this contract.
21. Demolish and remove ...most of the lighthouse transportation system. NPS may choose to retain a representative portion of the transportation system, (approximately 100 feet) adjoining the old lighthouse site for future interpretation. NPS will make this determination after considering if system is suitable for this purpose.
22. Leave any below-grade foundation remnants in place at old site. Back fill and level excavations at old site. Leave old site in safe condition. NPS expects damage to existing parking lots. Existing parking lots need not be rebuilt. Contractor will be required to leave existing park lot areas in a safe condition after the relocation has been accomplished.
23. Provide electrical service to lighthouse at new site. This may be a temporary aerial service. Connect service and make light functional. Design and construction for the electrical service entry into the lighthouse will be concealed. Remove existing exterior conduit mounted on the exterior of the lighthouse.
24. Provide a permanent lightning protection system for the lighthouse. Provide temporary lightning protection to the lighthouse during the move.
25. Provide as-built record drawings of move preparations, move pathway construction, and new foundations.
26. Provide temporary aircraft lighting during the move and permanent after the move.[131]

[131] The following resources were supplied by Paul Cloyd, NPS DSC Historical Architect and Project Supervisor for the move:
National Park Service, Denver Service Center. "Relocate the Cape Hatteras Light Station, Package CAHA 175." *Request for Proposal.* February 20, 1998.
National Park Service, Denver Service Center. "Minutes of Cape Hatteras Light Station Pre-Proposal Conference/Site Visit." March 4, 1998.
National Park Service, Denver Service Center. "Amendment/Modification No. 1." *Amendment of Solicitation/Modification of Contract.* March 16, 1998.

As part of the RFP process, DSC released solicitation-for-bid drawings (four-sheet set) entitled "Existing Conditions/Proposed Building Relocation" (figs. 67-69).[132] Remaining design work and specifications for the move would be provided by the contractor.

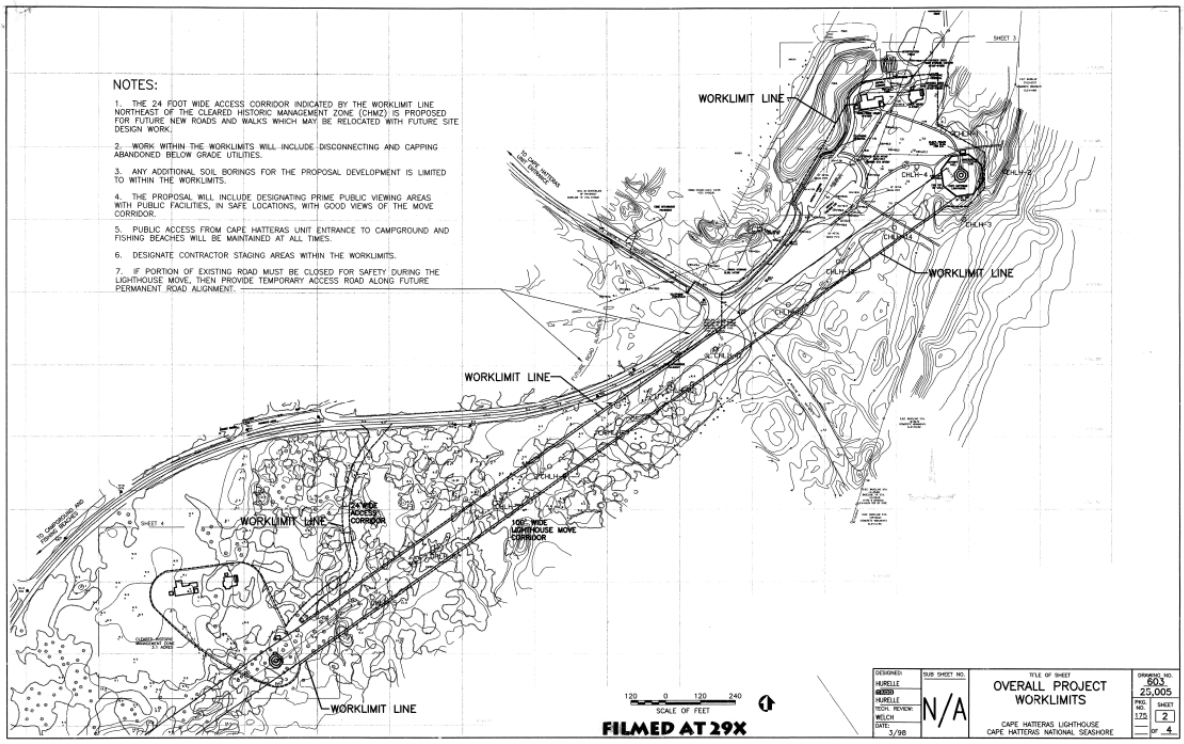


Figure 67. The overall project work limits in the solicitation for bid drawings, March 1998. Drawing: NPS DSC eTIC No. CAHA 603 25005.

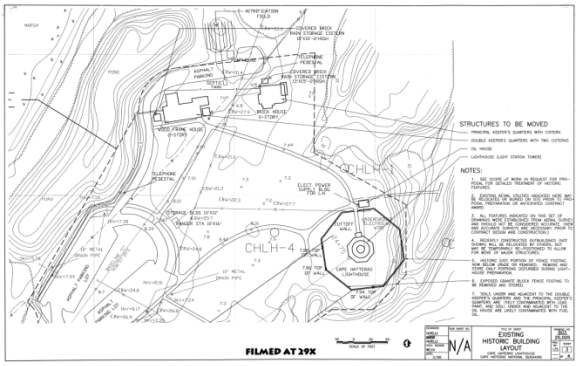


Figure 68. The existing historic building layout. Drawing: NPS DSC eTIC No. CAHA 603 25005.

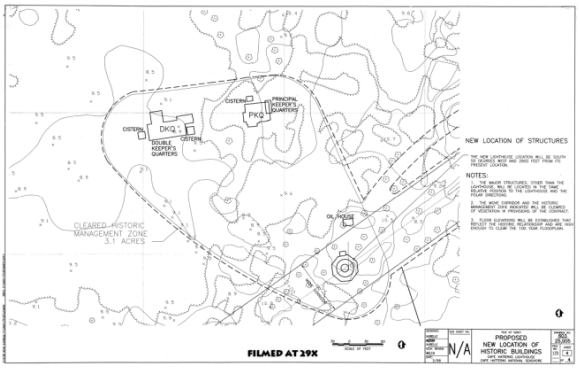


Figure 69. The proposed new location of historic buildings. Drawing: NPS DSC eTIC No. CAHA 603 25005.

National Park Service, Denver Service Center. "Amendment/Modification No. 2." *Amendment of Solicitation/Modification of Contract.* March 24, 1998.
National Park Service, Denver Service Center. "Amendment/Modification No. 3." *Amendment of Solicitation/Modification of Contract.*
National Park Service, Denver Service Center. "Amendment/Modification No. 4." *Amendment of Solicitation/Modification of Contract.* April 9, 1998.
National Park Service, Denver Service Center. "Amendment/Modification No. 5." *Amendment of Solicitation/Modification of Contract.* May 12, 1998.
National Park Service, Denver Service Center. "Amendment/Modification No. 6." *Amendment of Solicitation/Modification of Contract.* May 20, 1998.

[132] Denver Service Center, National Park Service. "Existing Conditions/Proposed Building Relocation." March 1998. NPS DSC eTIC No. CAHA 603 25005.

International Chimney Corporation (ICC) won the contract to move the light station for their familiarity with the lighthouse and "significant advantages in their move technology."[133] Their final proposal supplementation for the move was submitted in May 1998.[134] Several additional studies and reports were completed in the fall of the same year.

In October, the first draft Design Development Drawings for the relocation were completed by DSC.[135] In April 1999, Final Construction Drawings for the relocation were completed (figs. 70-76).[136]

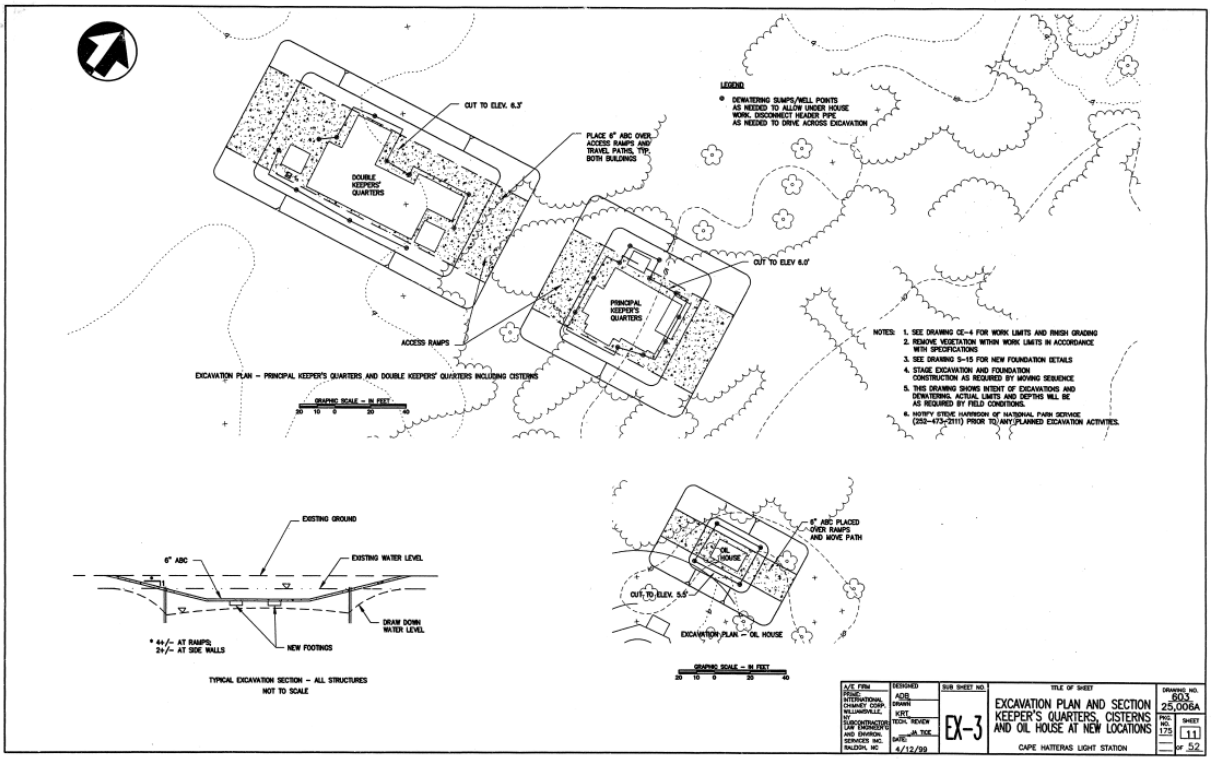


Figure 70. Excavation Plan and Section for the Keepers' Quarters, Cisterns, and Oil House at new locations. Drawing: NPS DSC eTIC No. CAHA 603 25006A. Sheet 11.

[133] Cloyd, Paul C., PE/RA. "Cape Hatteras Lighthouse HSR 100% draft review." January 2016.
[134] International Chimney Corporation. "Supplemental Technical and Price Proposal: Final Proposal – Design and Construction (Design/Build) Contract to Relocate Cape Hatteras Light Station, Cape Hatteras National Seashore, Dare County, North Carolina, package CAHA 175/Request for Proposal." May 29, 1998. NPS DSC eTIC No. CAHA 603 D156.
[135] Denver Service Center, National Park Service. "Relocate the Cape Hatteras Light Station." *Design Development Drawings.* October 1, 1998. NPS DSC eTIC No. CAHA 603 25006.
[136] Denver Service Center, National Park Service. "Relocate the Cape Hatteras Light Station." *Final Construction Drawings.* October 1, 1998. NPS DSC eTIC No. CAHA 603 25006A.

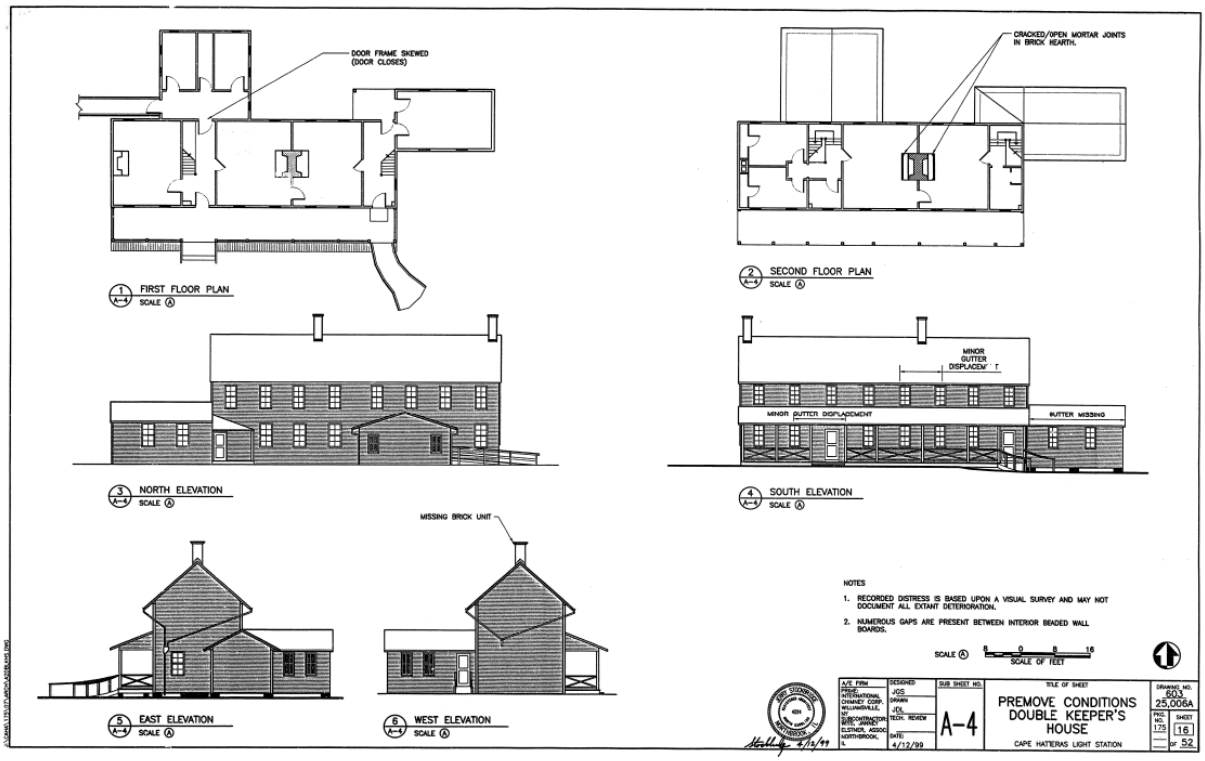


Figure 71. Pre-move condition of the Double Keepers' Quarters. Drawing: NPS DSC eTIC No. CAHA 603 25006A. Sheet 16.

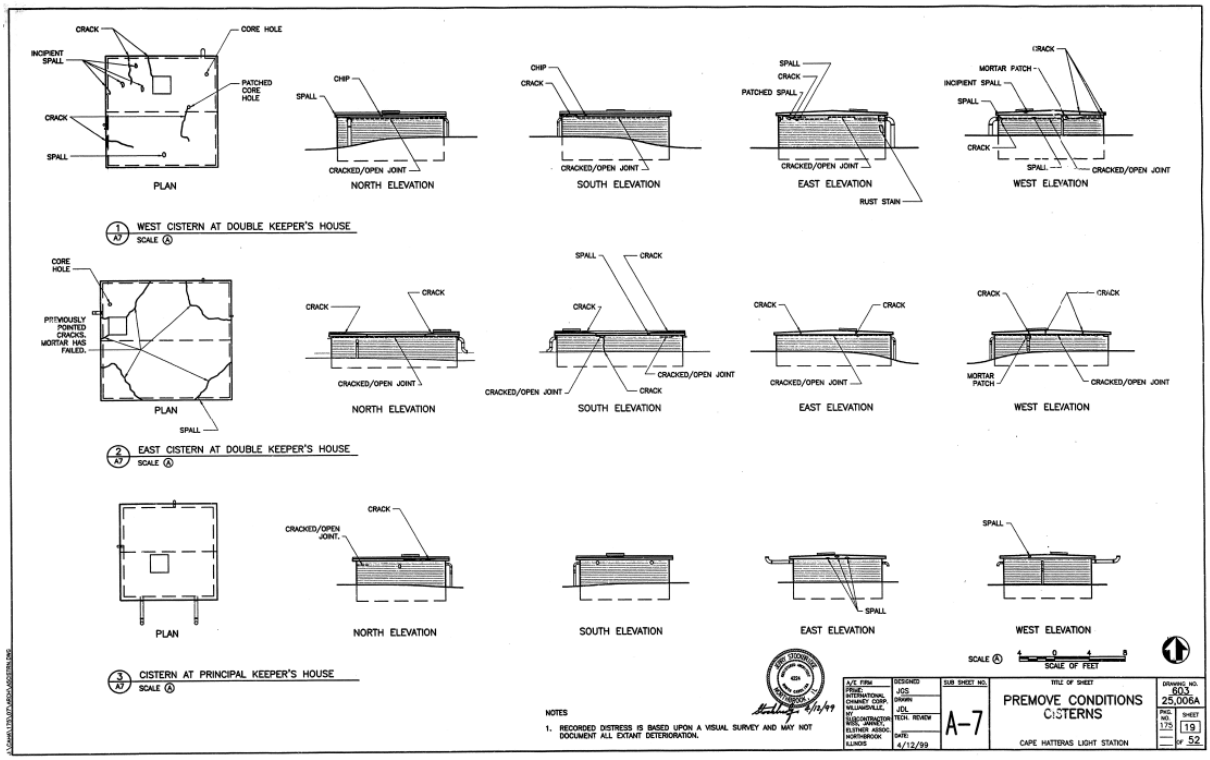


Figure 72. Pre-move conditions of the cisterns. The cisterns at the Double Keepers' Quarters are represented in the top two rows. Drawing: NPS DSC eTIC No. CAHA 603 25006A. Sheet 19.

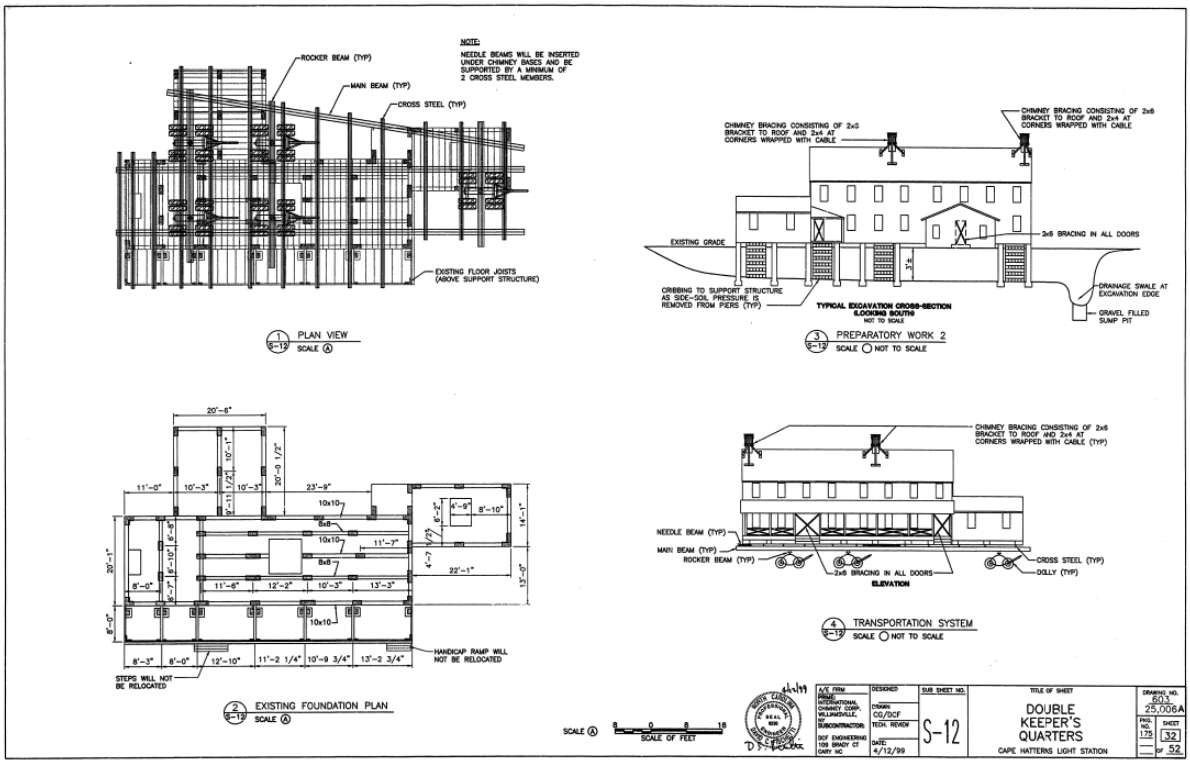


Figure 73. Drawing of existing foundation, preparatory work, and transportation system for the Double Keepers' Quarters. Drawing: NPS DSC eTIC No. CAHA 603 25006A. Sheet 32.

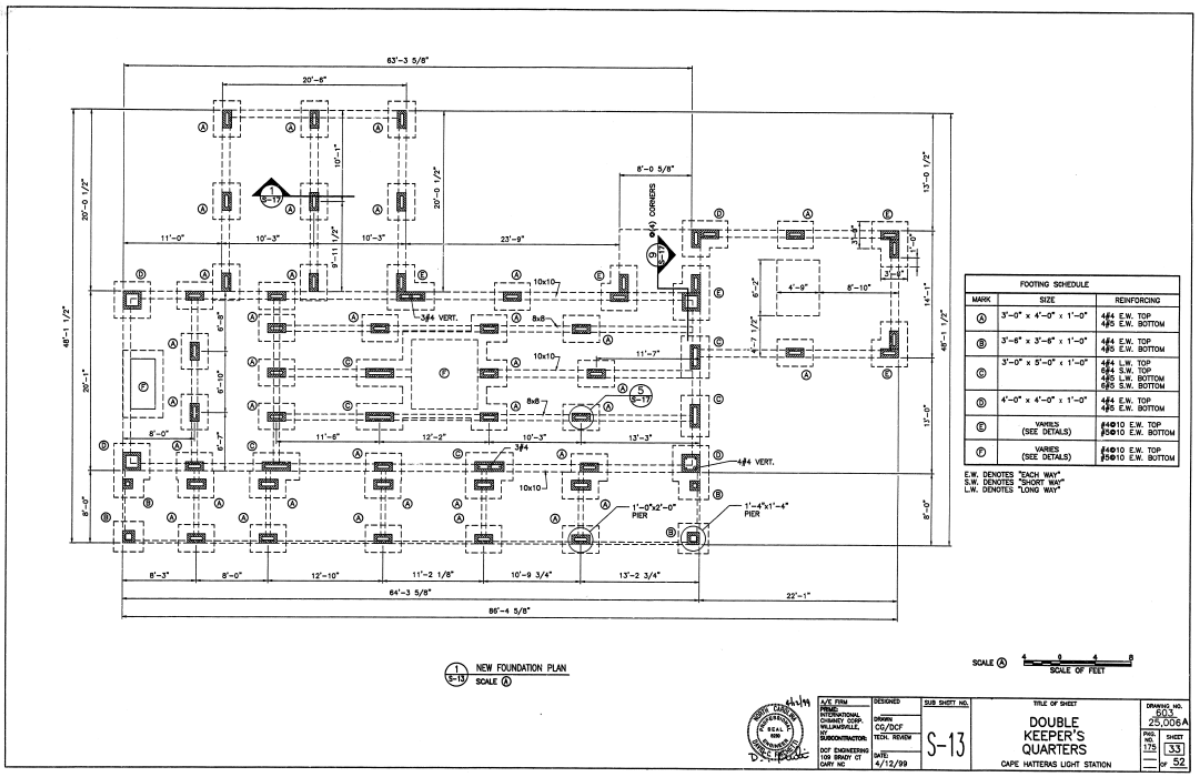


Figure 74. Drawings of the proposed foundation. Drawing: NPS DSC eTIC No. CAHA 603 25006A. Sheet 33.

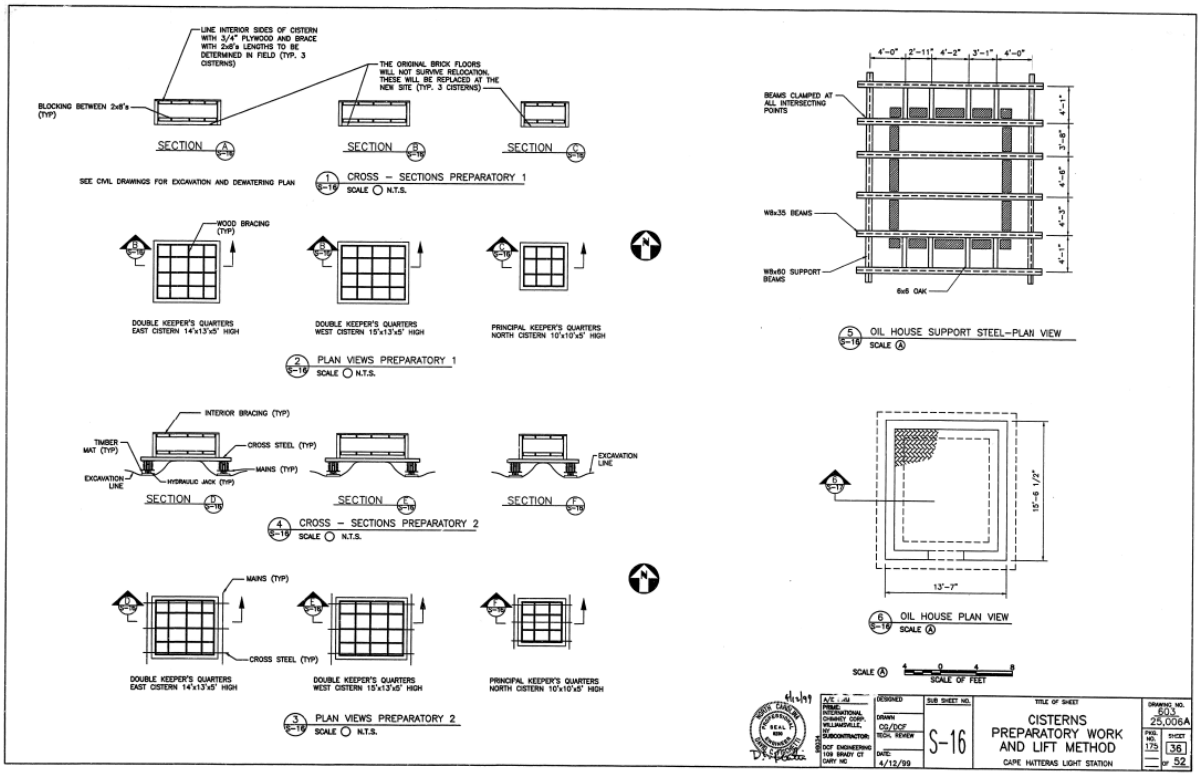


Figure 75. Preparatory work for the cisterns and oil house. Drawing: NPS DSC eTIC No. CAHA 603 25006A. Sheet 36.

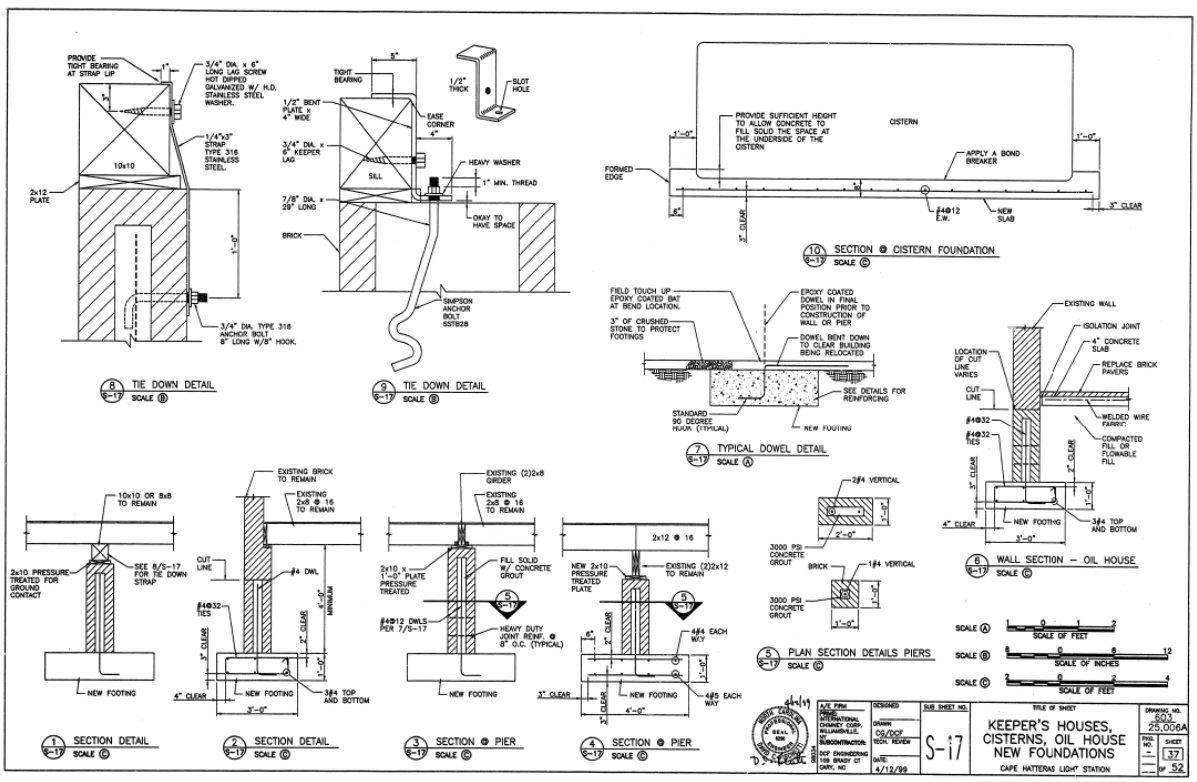


Figure 76. New foundation details for dwelling and cisterns. Drawing: NPS DSC eTIC No. CAHA 603 25006A. Sheet 37.

ICC worked with Expert House Movers, Inc. of Maryland (John Matyiko, Sr. with sons John, Jr., Joe, Jim, Jerry, and consultant Pete Friesen) to develop a plan and execute the work, with the help of architects, structural engineers, and other experts.

ICC first arrived at Cape Hatteras on December 15, 1998 to begin preparations for moving the lighthouse.[137] In January 1999 "work began in earnest." The first step was to ready the site for excavation. NPS archeologists were on site every day in order to monitor the proceedings, especially once excavation began. In order to create a temporary roadway, or "move corridor," trees were removed. The road would eventually be graded, laid with gravel, compacted, and rolled in preparation. In February, the chimneys of the Double Keepers' Quarters were stabilized with 2x6 brackets and 2x4 corners wrapped with cable for the building's move (fig. 77); the first-floor exterior doors and all windows were braced with 2x6 timbers.



Figure 77. Stabilization of the east chimney of the Double Keepers' Quarters. Photo: Cape Hatteras National Seashore Archives, 02/05/99.

Also in January, the cisterns (one located at the Principal Keeper's Quarters and two located at the Double Keepers' Quarters) were prepared for their moves. The interior of each was lined with ¾" plywood and braced with 2x8s (fig. 78). The original brick floor of each cistern would not be transported with the structures and would be replaced at the new site. On the exterior, wood corner boards were added at each corner so that steel cable straps could be wrapped around the structure to support the walls during the move, since the structure has no integral floor framing system. Three east-west trenches were dug below each of the Double Keeper's Quarters' cistern. Cross steel beams were slid into place in these trenches. Perpendicular to this, a pair of north-south trenches were dug adjacent to the walls of the cistern. Main steel beams were inserted to support the cross beams. Cribbing was then systematically placed under the main beams in order to excavate fully from around the cistern and sever the brick walls at a continuous plane. In early February, the cistern and its supportive structure were transported as a unit atop a flatbed trailer to a temporary site to rest on cribbing until its permanent site was ready for occupation (fig. 79).

[137] The creation of the this section of the move narrative was developed from several sources:
Cape Hatteras National Seashore Archives.
Duffus, Kevin (producer). "Move of the Century: Cape Hatteras Light." *Film.* Looking Glass Productions, Inc.: 2004.
Shelton-Roberts, Cheryl, and Bruce Roberts. "Moving Hatteras: Relocating the Cape Hatteras Light Station to Safety." Lighthouse Publications, 2015.
Cloyd, Paul C., PE/RA. "Cape Hatteras Lighthouse HSR 100% draft review." January 2016.



Figure 78. The interior of a cistern being braced for its move. Photo: Cape Hatteras National Seashore Archives, 01/28/99.



Figure 79. Two of the braced cisterns at their temporary site awaiting their permanent foundation. Photo: Cape Hatteras National Seashore Archives, 01/28/99.

Preparations for the move of the Double Keepers' Quarters were completed in February. The entire area under the build was excavated to fully expose the brick piers (fig. 80). Thirteen steel needle beams were slid under the building (north-south axis). Two steel main beams were inserted perpendicular and under the needle beams. Cribbing was then systematically placed under the main beams in order to excavate fully around the building and remove the brick piers from under the building, while being lifted by hydraulic jacks (fig. 81). Underneath and perpendicular to the main beams, two rocker beams were inserted, which would be directly attached to dolly wheels to be driven to its new site (fig. 82). On February 25, 1999, the Double Keepers' Quarters was completely moved from its original site and transported to a location adjacent to its new site to await a new foundation and the move of the Principal Keeper's Quarters.



Figure 80. The brick piers are exposed after excavation of sand from under and around the building is complete. Photo: Cape Hatteras National Seashore Archives, 02/15/99.



Figure 81. The building being lifted by hydraulic jacks. Photo: Cape Hatteras National Seashore Archives, 02/23/99.



Figure 82. Needle beams, main beams, rocker beams, and dolley wheels support the Double Keepers' Quarters. Photo: Cape Hatteras National Seashore Archives, 02/24/99.

While the building waited close by, a new foundation was constructed at the building's new location. The new foundation consisted of a grid of piers atop footings. The reinforced concrete footings varied in size (dependent on related pier size) (fig. 83).

The final placement of the Double Keepers' Quarters on the new concrete foundation occurred in reverse of its removal from the original foundation. Once the dwelling was positioned over the new concrete footings, wood cribbing was built up to meet and support the main beams (fig. 84). The building was positioned approximately 2'-0" above its previous elevation (the Principal Keeper's Quarters, Oil House, and Lighthouse were also placed at their original elevations relative to the new Double Keepers' Quarters elevation). This new elevation was to provide additional protection against flooding and shoreline erosion.



Figure 83. The new footings for the Double Keepers' Quarters are ready. Photo: Cape Hatteras National Seashore Archives, 03/22/99.



Figure 84. The Double Keepers' Quarters is located atop its new footings, resting on piers, and is ready for new piers. Photo: Cape Hatteras National Seashore Archives, 03/30/99.

Once the cribbing fully supported the building, the rocker beams and dolly wheels could be removed. New brick-faced, concrete block piers (varying in size due to related building loading) were constructed around the cribbing, main beams, and needle beams. When the building was supported by the new piers, the main beams, needle beams, and cribbing were removed (fig. 85).

After the foundations were completed for the Principal Keeper's Quarters and Double Keepers' Quarters, the foundations were completed for their three associated cisterns. The new foundations were composed of a continuous, reinforced cast-in-place concrete footer (see fig. 85). The final placement of the cisterns on the new concrete footers occurred in reverse of their removal from their original locations. Once a cistern was positioned over the new concrete footings, wood cribbing was built up to meet and support the main beams. The cisterns were also positioned approximately 2'-0" above their previous elevations (relative to the other buildings on site). Once the cribbing fully supported the cistern, the beams could be removed from under the cistern.

With all of the buildings and structures in place, final grading was completed. The grading would slope the grade away from the base of the buildings. This was truly tested a few months later when Hurricane Dennis struck in September 1999. Flood waters were kept at bay due to the buildings' new higher elevation (part of design process to mitigate future flooding) (fig. 86).



Figure 85. New brick-faced, concrete block piers fully support the Double Keepers' Quarters, left, as workers pour the new footing for the west cistern. Photo: Cape Hatteras National Seashore, 05/24/99.



Figure 86. After Hurricane Dennis struck, the dwellings were elevated above the flood waters. Photo: Cape Hatteras National Seashore Archives, 09/04/99.

The final inspection of the Light Station occurred on October 1, 1999. Very few punch list items remained to be completed. The Letter of Final Acceptance was issued in July 2000.[138]

The final cost for relocating the Hatteras Light Station totaled $9,518,042. This figure included the following:

$1,454,000	Design Services (combined)
$7,507,000	Relocation (all buildings)
$480,000	New Foundations (all buildings)
$20,000	Lightning Protection System (lighthouse)
$28,000	Temporary Electrical Service
$24,020	Public Viewing Area (change order)
$4,872	Disposal of Fuel Tank Contents & Contaminated Soil (change order)[139]

In November 1999, the design drawings were updated to include as-built conditions (figs. 87-88).[140] Some minor repairs were completed on the building including, removing two exterior ramps and exterior steps, repointing the previously cracked hearths and new cracks in the base of the west chimney, replacing several loose bricks in the chimneys and replacing the concrete wash on top, repairing the holes in the roof from the temporary chimney bracing.

[138] Cloyd, Paul C., PE/RA. "Cape Hatteras Lighthouse HSR 100% draft review." January 2016.
[139] Cloyd, Paul C., Contracting Officer's Representative/Project Manager, DSC, NPS. "Relocate Cape Hatteras Light Station , Phase 1." *Fact Sheet for Completion Report.* December 22, 1999.
Cloyd, Paul C., Project Supervisor, DSC, NPS. "Relocate Cape Hatteras Light Station." *Lump Sum Price Contract.* August 21, 2000.
[140] Denver Service Center, National Park Service. "Relocate the Cape Hatteras Light Station." *Project Record Drawings.* November 8, 1999. NPS DSC eTIC No. CAHA 603 25006B.

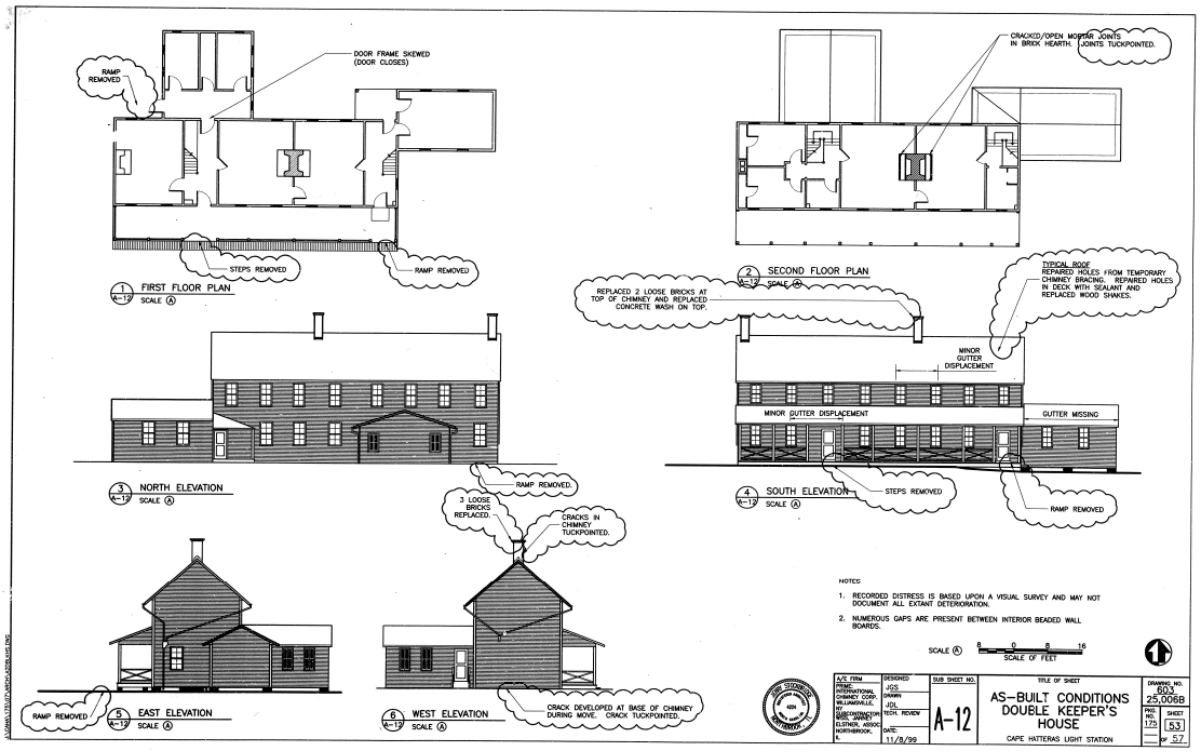


Figure 87. The condition of the Double Keepers' Quarters after its move. Drawing: NPS DSC eTIC No. 603 25006B. Sheet 53.

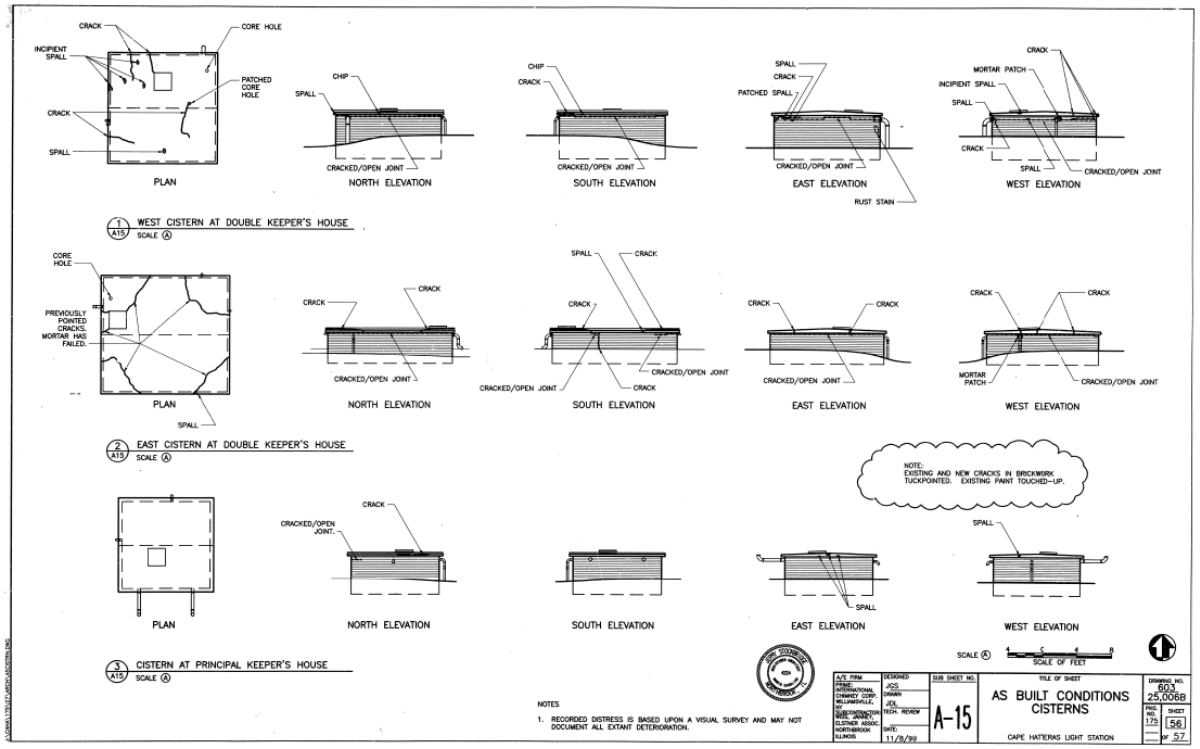


Figure 88. The condition of the cisterns after their move. The cisterns associated with the Double Keepers' Quarters are represented in the top two rows. Drawing: NPS DSC eTIC No. 603 25006B. Sheet 56.

Phase II of the project, which included development of the new site and redevelopment of the old site, was completed by August 2000 by JHC Construction, Inc.[141] New site development included providing electrical service, a new HVAC system, and a new sprinkler system to the Double Keepers' Quarters (figs. 89-92).

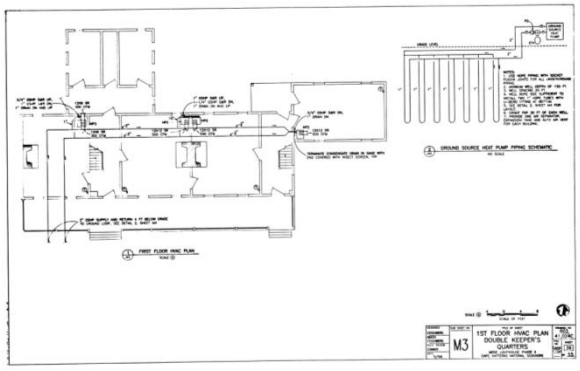


Figure 89. The new HVAC system for the first floor of the Double Keepers' Quarters. Drawing: NPS DSC eTIC No. CAHA 603 41024C. Sheet 39.

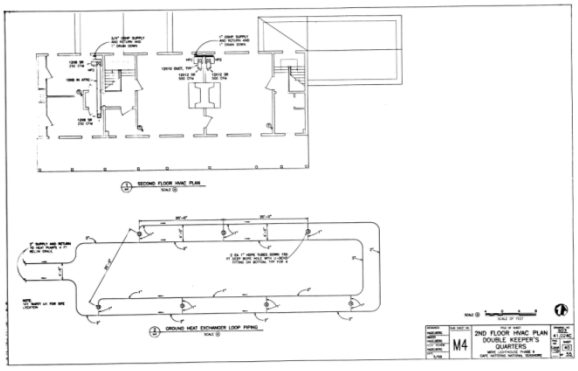


Figure 90. The new HVAC system for the second floor of the Double Keepers' Quarters. Drawing: NPS DSC eTIC No. CAHA 603 41024C. Sheet 40.

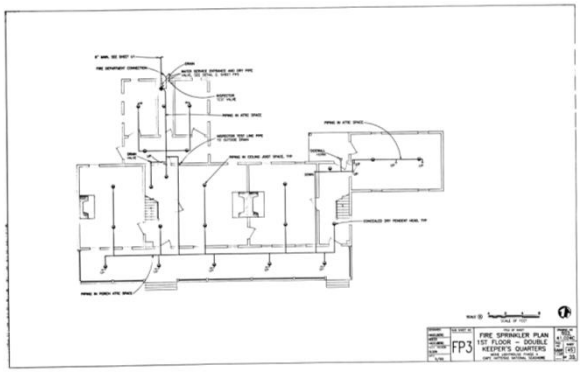


Figure 91. The new sprinkler system for the first floor of the Double Keepers' Quarters. Drawing: NPS DSC eTIC No. CAHA 603 41024C. Sheet 45.

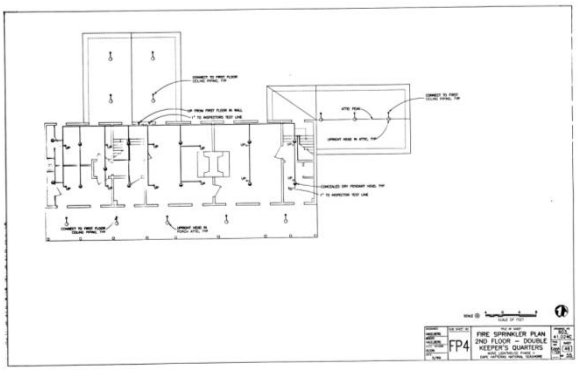


Figure 92. The new sprinkler system for the second floor of the Double Keepers' Quarters. Drawing: NPS DSC eTIC No. CAHA 603 41024C. Sheet 46.

[141] Denver Service Center, National Park Service. "Lighthouse Move Phase II." *As-Constructed Drawings.* December2000. NPS DSC eTIC No. CAHA 603 41024C.
In September 1997, DSC finalized drawings for the Phase II of the lighthouse move project. Phase II outlined the development of the area around the relocated historic district and redevelopment of the area where the light station had been. (Denver Service Center, National Park Service. "Lighthouse Move Phase II." *8 sheets.* September 1997. NPS DSC eTIC No. CAHA 603 41024.) On December 9-11, 1997, DSC conducted a value study for the Phase II drawings in order to provide guidance to the design team (also DSC) on the final drawings of the preferred design alternative. The value study suggested many alternatives, none of which directly affected the lighthouse or its move. (Denver Service Center, National Park Service. "Value Analysis Study for Cape Hatteras Lighthouse Site Redevelopment." *Final Report.* n.d. (likely early 1998). NPS DSC eTIC No. CAHA 603 D146.) Based on these suggestions, the DSC design team edited their Phase II design, which was re-released in June 1998. (Denver Service Center, National Park Service. "Lighthouse Move Phase II." *15 sheets.* June 1998. NPS DSC eTIC No. CAHA 603 41024A.) A final design analysis for the Phase II work was completed in August 1998 with final drawings being completed in January 1999. (Unknown. "Design Analysis: Lightstation Move – Phase II, Historic District Contact Station & Site Development, Cape Hatteras National Seashore." May 1998, Rev. June 1998, Rev. August 1998. NPS DSC eTIC No. CAHA 603 D145. -- Denver Service Center, National Park Service. "Lighthouse Move Phase II." *Construction Drawings.* January 1, 1999. NPS DSC eTIC No. CAHA 603 41024B.) Phase II work would cause little impact to the lighthouse structure itself.



Figure 93. The light station about a year after the move project is complete. Photo: Cape Hatteras National Seashore Archives, 09/00.

Continuing Its Service

Since the Double Keepers' Quarters' move, the building has been used as exhibit space. The north restroom addition is accessible only to park staff.

In 2001, a modification to the front porch and adjacent grading to the south was completed to "provide additional handicap brick walkway access into the [building]." The modification included the installation of a new wood floor platform atop the existing porch floor and a ramped bulkhead along the front of the porch, similar to what had been completed at the Principal Keepers' Quarters a year prior (figs. 94-95)[142]

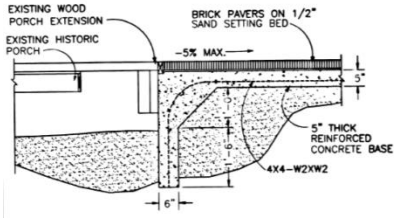


Figure 94. Detail drawing of the brick ramp walk abutting the south porch of the Double Keepers' Quarters. Drawing: NPS DSC eTIC No. CAHA 603 41024C.

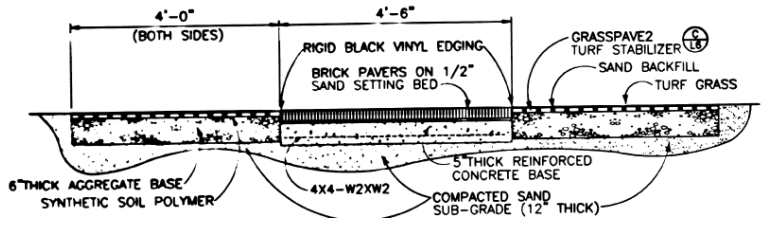


FIgure 95. Detail drawing of the new brick walks and stabilized turf on each side. Drawing: NPS DSC eTIC No. CAHA 603 41024C.

[142] Cape Hatteras National Seashore Archives, CAHA 5516 DKQ handicap modification, 2001, Box 1 of 1, Folder 1 of 1.



Figure 96. The exterior of the Double Keepers' Quarters on June 6, 2005. Photo: List of Classified Structures.

Sometime after June 6, 2005, the roof was replaced (figs. 96-97). After Hurricane Irene in August 2011, the roof was again replaced.[143]

The HVAC system was serviced and new ducts were added in 2015.

In 2015 and 2016, the Hatteras Light Station was again photographed and documented by the Historic American Building Survey. In addition, due to expanded technology not available in 1989 when the complex was first documented, HABS was able to digitally scan the buildings and site to create 3D models of the buildings and produce incredibly accurate drawings of each. See Appendix E for further information.

[143] HPTC conversations with CAHA maintenance staff in May 2016.



Figure 97. The exterior of the Double Keepers' Quarters amidst reroofing of the main block roof. Photo: Cape Hatteras National Seashore Archives.



Figure 98. The exterior of the Double Keepers' Quarters on May 11, 2016. Photo: HPTC.

Table 1. **Hatteras Light Station Double Keepers' Quarters Timeline**	
1802	First lighthouse completed; first keeper begins role; first dwelling in place
Ca. 1828	New dwelling constructed
1854	First lighthouse elevated New dwelling—Double Keepers' Quarters (DKQ)—constructed, including the southeast cistern
1868-1870	New lighthouse constructed
1870-1871	Adjacent Principal Keeper's Quarters (PKQ) constructed
1892	DKQ addition constructed on west side for the 3rd Assistant Keeper; original northwest kitchen wing moved to rear
1898	Exterior repairs made to DKQ
1900	Two old lard oil tanks reused as cisterns on south side of DKQ
by 1919	New brick cistern added at southwest corner of DKQ
1932	Principal keeper and his family permanently move out of adjacent PKQ
1935	CCC arrives on site, uses dwellings for workers
1936	New skeletal lighthouse lit; 1870 lighthouse extinguished
1937	CCC Rehabilitation work approved for DKQ to include: removal of all plaster; installation of cypress on ceilings and walls; cleaning floors and stairs; building cabinets and closets; staining walls and stairs; replacing roof shingles where missing; repairing fireplaces and hearths; new roof on south porch, both kitchen wings, and north porch; installing new gutters; cisterns cleaned; sewer and water roughed in; exterior painted Cape Hatteras Light Station transferred to National Park Service
1939	Bathroom added to north porch
1940	CCC camp removed from Buxton NPS director recommends changes to the DKQ to include: installation of a bathroom on the first floor, installation of a shower and laundry on first floor with exterior entrance; installation of battleship linoleum in new bathroom; screening north and south porches; installation rubber mats and stainless steel nosing to interior stair treads; installation of electric generating plant (completed in 1941)
1941-1942	"Conscientious Objectors" camp located at Hatteras Light Station
ca. 1947	After cosmetic repairs, DKQ used to accommodate overnight visitors under concessions contract
by 1948	South porch screened
1950	Lighthouse reactivated with new modern lens
1953	Cape Hatteras National Seashore formed; site altered to accommodate visitors
by 1954	Screens removed from south porch
by 1955	DKQ converted for use as Museum of the Sea and visitor center to include: removal first-floor interior walls and closing in west stair at second floor
1956/57	DKQ painted light blue; restroom addition constructed to replace north kitchen wing
1958	Formal dedication of Cape Hatteras National Seashore
by 1971	DKQ painted white
by 1981	DKQ had fallen into disrepair
1983	SERO performs condition assessment Rehabilitation work commences SERO performs second condition assessment and building closed to visitors SERO completes restoration drawings Restoration work recommences
1986	Restoration work completed
1989	HABS documentation
1992	SERO performs destructive investigation based on expedited deterioration
1998	Preservation maintenance project completed International Chimney Corporation wins contract to move lighthouse; in December, site work and preparations begins
1999	Lighthouse (Jun-Jul) and other structures (Feb & Mar) moved 2,900'-0"
2000	New site redeveloped, including Electrical, HVAC, and Sprinkler systems, and turf stabilization at the DKQ; began use as park offices
2001	Walks/ramps completed at DKQ
2015-2016	HABS documentation
End of Table 1.	

Architectural Description

The Historic Preservation Training Center visited the Hatteras Light Station once over the course of research for this Historic Structure Report. This trip occurred May 9-13, 2016. A large collection of field photographs, notes, and drawings were compiled during the visit. Through this work, detailed physical descriptions of features, condition assessments, and a compilation of character-defining and non-character-defining features have been made. Additional visits were coordinated with the Historic American Building Survey for documentation of the light station (April and June 2016). Park logistical assistance was provided by the Cape Hatteras National Seashore Resource Management Division and the Southeast Regional Office of the National Park Service.

Building Feature Master List

The Building Feature Master List (BFML) is an overall outline-format checklist used for creating a physical description of the Double Keepers' Quarters. The BFML describes features using a hierarchal structure based on industry standards adopted by the federal government—the UNIFORMAT II (ASTM E1557 Standard, 2008) used by many facility management industry leaders, including the National Park Service's Park Facility Management Division (PFMD). The BFML uses headings and sub-headings to divide architectural components, structural systems, mechanical systems, etc. into a simple organizational tool (Table 2).

A	Substructure
A10	Foundations
B	Shell
B10	Superstructure
B20	Exterior Enclosure
B30	Roof Closure
C	Interiors
C10	Interior Construction
C20	Stairs
C30	Interior Finishes
D	Services
D20	Plumbing
D30	HVAC
D40	Fire Protection Services
D50	Electrical
G	Building Sitework
G20	Site Improvements
G90	Other Site Work

Table 2. The basic UNIFORMAT II Building Feature Master List includes the above headings and subheadings.

Physical Description Summary

The Hatteras Light Station has undergone periods of use and non-use since its completion in 1871. The original design and construction methodology is readily apparent and has resisted attempts at modernization by retaining most of its exterior character-defining features. Despite the removal of some important exterior character-defining features (window shutters, related outbuildings, original grading at south porch, replacement of north elevation kitchen with restroom addition, removal of kitchen wing chimney, fencing around building site, etc.), the basic character-defining materials and architectural features of the exterior of the Double Keepers' Quarters remains intact and can instruct the nature of its care. The interior of the building lacks many of its character-defining features due to a vast history of interior alterations (CCC-era removal of lath and plaster and installation of paneling), covering up of elements, and the addition of modern building features (like HVAC closets). Future care of the building should be based on the

sustainable preservation maintenance of the traditional construction materials and methodologies, not on covering or replacing historic materials with inferior imitations. Significant character-defining features which have been removed should be installed as part of any future treatment of the Double Keepers' Quarters.

Double Keepers' Quarters Physical Description

Location within the Park

Cape Hatteras National Seashore (CAHA), the nation's first national seashore, is located along the Outer Banks of North Carolina, a series of barrier islands which separate the Atlantic Ocean from Pamlico Sound and the mainland. The park stretches from Nags Head in the north to Ocracoke in the south (fig. 99). The park currently oversees the care of three light stations, including the Hatteras Light Station.

Hatteras Island, one of the barrier islands, is located about halfway between the northern and southern reaches of the park (fig. 99 inset). Just offshore of the cape (an elbow-like jut of the Outer Banks into the ocean), the Gulf Stream and the Virginia Drift, a branch of the Labrador Current, collide. The collision of currents directs southbound ships towards the Diamond Shoals, a dangerous twelve-mile-long sandbar. Hundreds, if not thousands, of shipwrecks are located within the vicinity of the Diamond Shoals, giving the area the name of *Graveyard of the Atlantic*. The Hatteras Light Station was constructed on Hatteras Island to warn ships of the Diamond Shoals. The light station comprises the Lighthouse, Oil House just to the north, Principal Keeper's Quarters to the north-northwest, and Double Keepers' Quarters to the northwest.

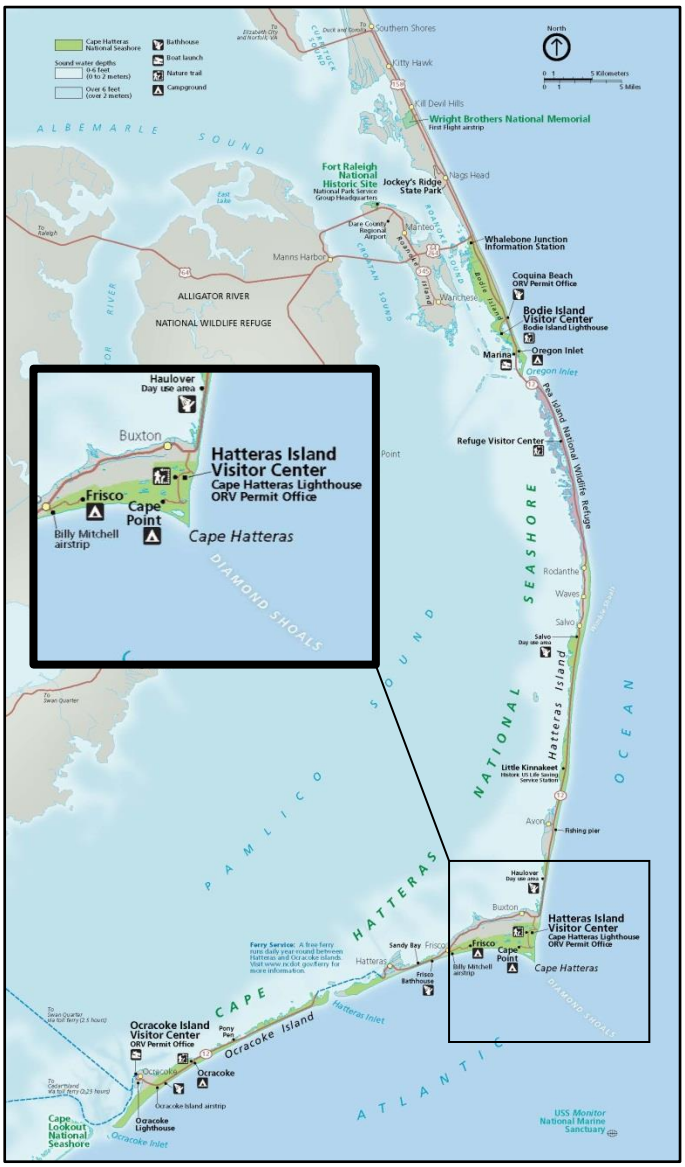


Figure 99. Cape Hatteras National Seashore is located on the Outer Banks of North Carolina. Inset: Hatteras Lighthouse is located on Hatteras Island. Map: Harpers Ferry Center, 2008.

When completed in 1870, the light station was located 1,600'-0" from the Atlantic Ocean. By 1980, 110 years later, the ocean was seventy feet away from the tower on the south. Due to the encroaching sea, all of the light station buildings were moved 2,900'-0" southwest in 1999 to remove them from the ocean's reach. Since the move, the buildings are once again 1,600'-0" from the Atlantic Ocean and in their exact spatial relationship to one another as they were in their original locations (fig. 100).[1]

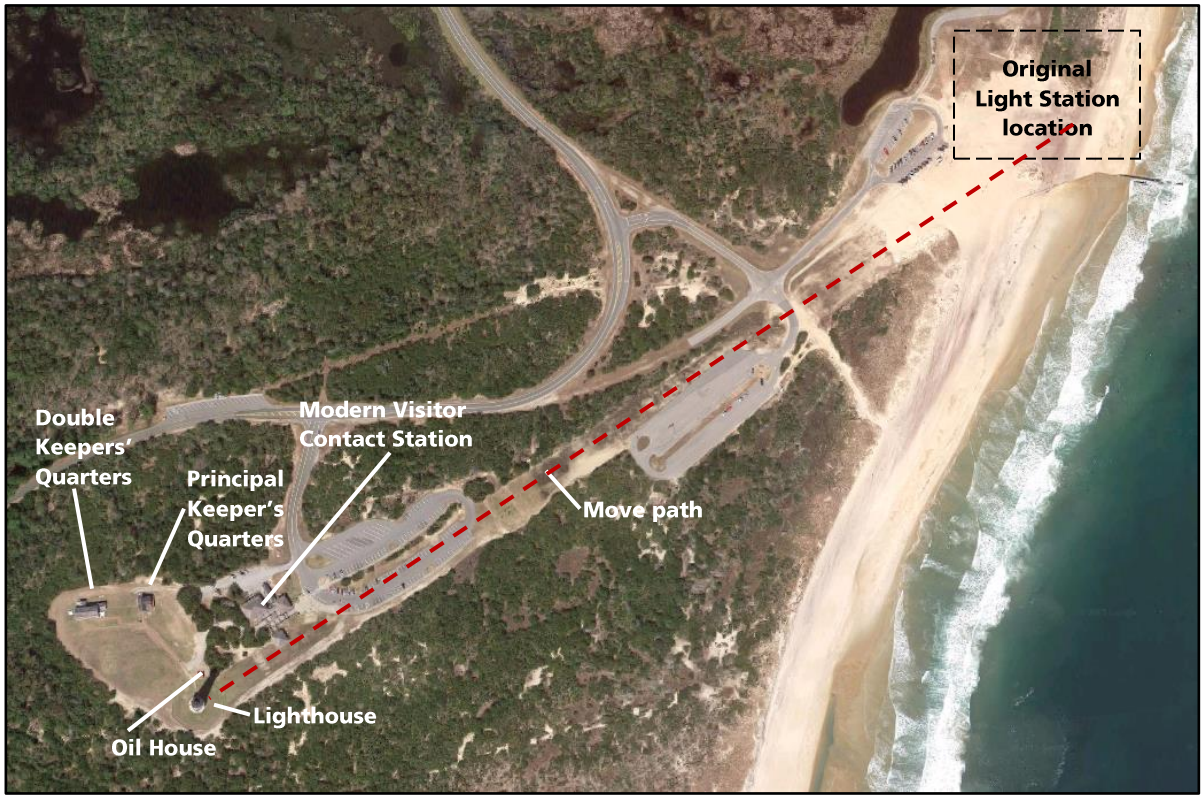


Figure 100. A Google Earth aerial view of the light station. The new location is at the bottom left, the original location is at the top right, and the move path joins the two sites. Photo: Google ©2015.

[1] The Request for Proposal required a tolerance of 0.1 foot for matching the relative positions (x, y, and z coordinates) of the light station buildings. After being positioned, one end of the Double Keepers' Quarters exceeded this tolerance due to a 0'-6" discrepancy in the x-y plane. The NPS concluded the risks of moving the building again outweighed the benefit to correct the position. For more information, see Paul Cloyd's comments on the Cape Hatteras Lighthouse HSR 100% draft, January 2016.

Exterior Overall

The prominent overall visual aspects of the Double Keepers' Quarters are its two-and-a-half-story rectangular massing with brick pier foundations, painted wood-sided exterior walls, and wood-shingle-clad gable roof with two unpainted brick chimneys (figs. 101-104). An original (1854) one-story, rectangular kitchen wing is located at the northeast corner. A ca. 1957 one-story, rectangular restroom addition is located on the north elevation. Both additions have brick pier foundations, painted wood-sided exterior walls, and wood-shingle-clad gable roofs; no chimneys are extant in these additions. A one-story wood porch is located the length of the south elevation of the buildings; a small one-story wood entry porch is located on the north elevation, between the north elevation of the main block and the kitchen wing. Both porches are clad with wood shingles on their shed (south porch) or hipped roof (north porch). Two painted brick cisterns, with painted concrete caps, are located adjacent to the building: one at the east elevation (constructed in 1854) and one at the west elevation (constructed sometime between 1893 and 1919). A brick sidewalk ramps up to south porch, where a platform was built to eliminate the step up into the building. A gravel, limited-access road is located north of the dwelling and cistern.



Figure 101. The Double Keepers' Quarters, 1854 kitchen wing, and east cistern, from the southeast. Brick ramps provide access to the south porch. Photo: HPTC, 05/11/16.



Figure 102. The Double Keepers' Quarters, 1854 kitchen wing (foreground), ca. 1957 restroom addition (background), and rear porch from the northeast. Photo: HPTC, 05/11/16.



Figure 103. The Double Keepers' Quarters, ca. 1957 restroom addition, and west cistern from the northwest. The Principal Keeper's Quarters is located east of the Double Keepers' Quarters (background). Photo: HPTC, 05/11/16.



Figure 104. The Double Keepers' Quarters and west cistern from the southwest. The Principal Keeper's Quarters is located east of the Double Keepers' Quarters. Photo: HPTC, 05/11/16.

South Elevation (fig. 105)

The south elevation of the main block is eight bays (five rooms) wide (54'-6½") and two-and-a-half stories tall, and sits on brick piers under a side-facing gable roof. The elevation is essentially symmetrical with evenly spaced 4/4 window and paneled door openings and a shed-roofed first-floor porch which spans the entire elevation. (The two south elevation door openings were originally symmetrical when first built in 1854 and were located in the end bays of what composed the elevation originally. In 1892 a two-bay addition was constructed on the west end of the main block, which made the south elevation slightly asymmetrical.) Two chimneys are located at roof level. The east chimney is centered in the 1854 section of the building. The west chimney is located at the west gable end.

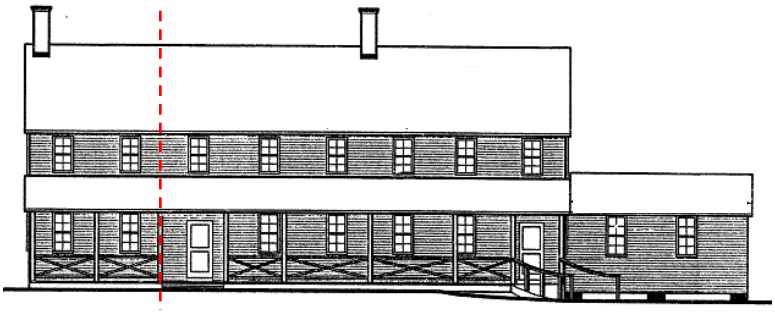


Figure 105. South elevation. Dotted line denotes the 1854 portion (right) from the 1892 addition (left). Drawing: NPS DSC eTIC No. CAHA 603 25006A, Sheet A-4. Cropped by author.

The 1854 kitchen wing is recessed from the south elevation of the main block by approximately 13'-0". The south elevation of the kitchen wing is two bays (one room currently; two rooms historically) wide (22'-0") and one-story tall, and sits on brick piers under a side-facing gable roof. The elevation is symmetrical with two evenly spaced 4/4 windows. A chimney was originally located in the center of the roof, but was removed sometime between 1954 and 1958.

East Elevation (fig. 106)

The east elevation of the main block is one room wide (20'-1") and two-and-a-half stories tall, and sits on brick piers under a front-facing gable roof. An off-center 4/4 window is located on the first floor). An 8'-0"-deep porch is located at the south elevation.

The 1854 kitchen wing projects 22'-0" from the east elevation of the main block. The wing is one room wide (14'-1") and one-story tall, and sits on brick piers under a front-facing, low-sloped gable roof. No openings are located in this elevation.

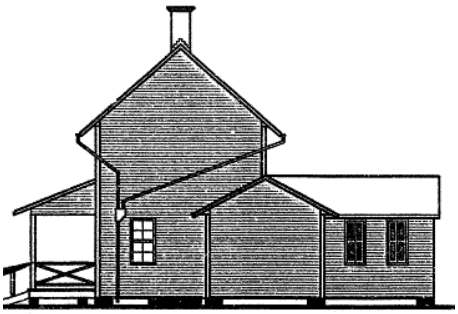


Figure 106. East elevation. Drawing: NPS DSC eTIC No. CAHA 603 25006A, Sheet A-4. Cropped by author.

The ca. 1957 restroom addition is recessed 33'-3" from the east elevation of the main block. The addition is two rooms wide (20'-0") and one-story tall, and sits on brick piers under a side-facing, low-sloped gable roof. Three evenly spaced 4/4 windows are located in the elevation.

North Elevation (fig. 107)

The north elevation of the main block is eight bays (five rooms) wide (54'-6½") and two-and-a-half stories tall, and sits on brick piers under a side-facing gable roof. The elevation is essentially symmetrical with evenly spaced 4/4 window and paneled door openings. A small hipped-roof porch is located between the main block and the east kitchen wing. Two chimneys are located at roof level. The east chimney is centered in the 1854 section of the building. The west chimney is located at the west gable end.

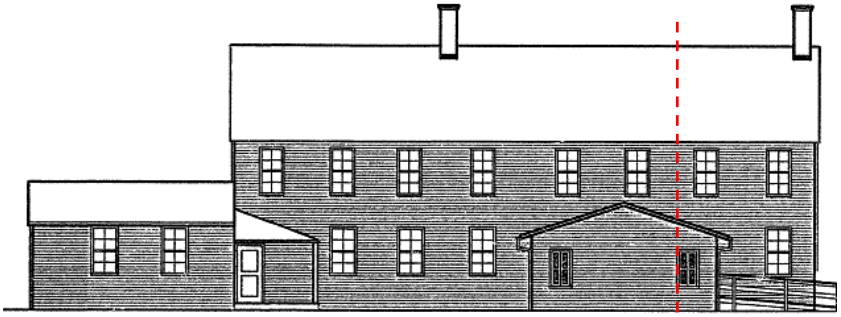


Figure 107. North elevation. Drawing: NPS DSC eTIC No. CAHA 603 25006B, Sheet A-5. Cropped by author.

The 1854 kitchen wing projects 7'-0" from the north elevation of the main block. The wing is two bays (one room currently; two rooms historically) wide (14'-1") and one-story tall, and sits on brick piers under a side-facing gable roof. The elevation is symmetrical with two evenly spaced 4/4 windows. A chimney was originally located in the center of the roof, but was removed sometime between 1954 and 1958.

The ca. 1957 restroom projects 20'-0" from the north elevation of the main block. The wing is two bays (three rooms) wide (20'-8½") and one-story tall, and sits on brick piers under a side-facing gable roof. The elevation is symmetrical with two evenly spaced 4/4 windows.

West Elevation (fig. 108)

The west elevation of the main block is one room wide (20'-1") and two-and-a-half stories tall, and sits on brick piers under a front-facing gable roof. A chimney is centered atop the peak of the roof. An 8'-0"-deep porch is located at the south elevation.

The ca. 1957 restroom addition is recessed 11'-0" from the west elevation of the main block. The addition is two rooms wide (20'-0") and one-story tall, and sits on brick piers under a side-facing, low-sloped gable roof. Two 4/4 windows are located on the north side of the elevation; and single door and wood stoop are located on the south side.

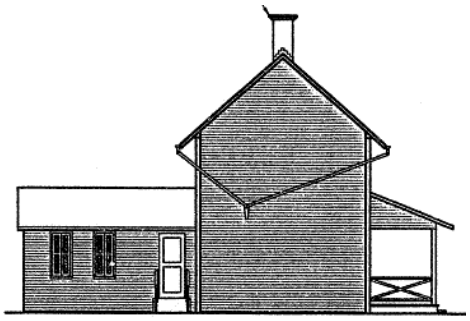


Figure 108. West elevation. Drawing: NPS DSC eTIC No. CAHA 603 25006B, Sheet A-5. Cropped by author.

Interior Organization

First Floor (fig. 109)

The first floor plan can be used to explain the evolution of the building as it exists today. The original (1854) main block (blue overlay in fig. 109) accommodated two keeper's families. The plan has two center rooms flanking a central fireplace and a pair of stair halls flanking the center rooms. A porch is located on the south elevation. Modern HVAC closets were added to Rooms 103 (NE corner) and 104 (NW corner) in ca. 2000.

The original (1854) kitchen wing (yellow overlay) was originally two rooms with a central chimney. The chimney and separating interior partition have been removed. A modern HVAC closet was added to Room 106 in ca. 2000 (SW corner). A small porch (purple overlay) is located in the ell created by the main block and kitchen wing; this porch is not original and was reconstructed sometime between 1893 and 1937. From 1854 to 1892, a matching kitchen wing and porch were located at the northwest corner of the west half.

In 1892, an extension of the main block was made to the west elevation to accommodate a third keeper's family (orange overlay). This extension included a new room on the first floor and an extension of the front porch. A modern HVAC closet was added to Room 101 (NE corner) in ca. 2000.

Also in 1892, the original northwest kitchen wing was moved to the north elevation to accommodate the west and center family. This wing was replaced in ca. 1957 with the extant restroom addition (green overlay). The addition includes a hall, two restrooms, and a utility closet.

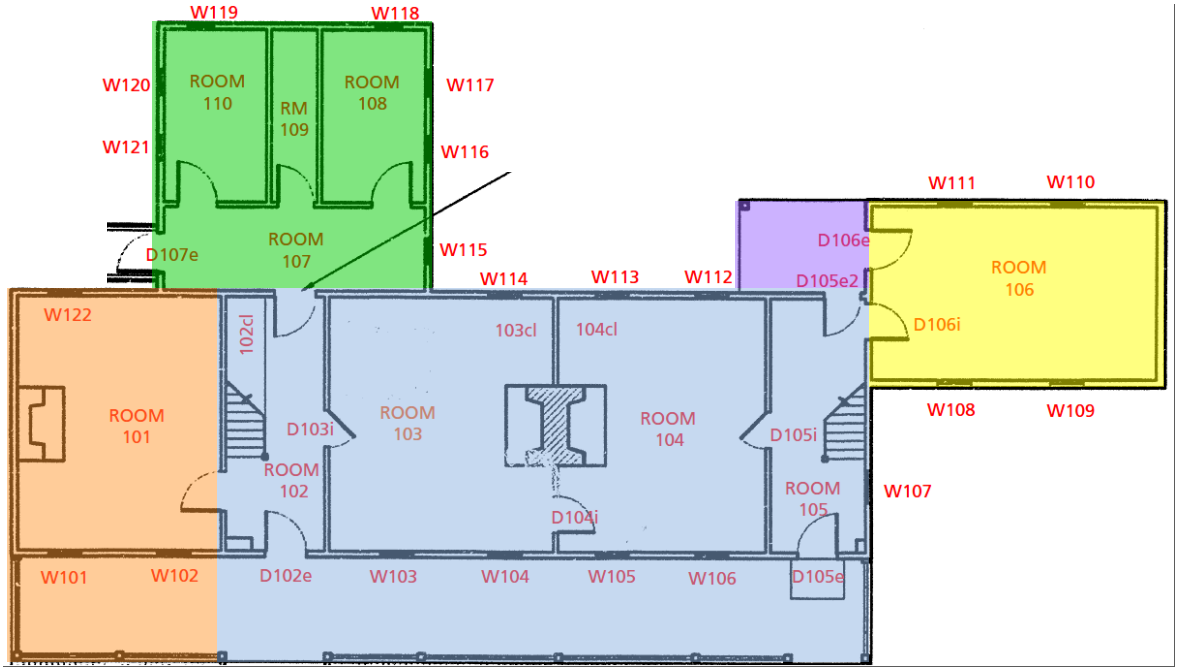


Figure 109. The first-floor plan. Drawing: NPS DSC eTIC No. CAHA 603 25006A, Sheet A-4. Cropped by author.

Second Floor (fig. 110)

The second floor is composed of the 1854 and 1892 main block. The 1854 portion (grey overlay in fig. 110) accommodated two keeper's families. The plan has two center bedrooms flanking a central fireplace and a pair of stair halls with small adjacent bedrooms flanking the center bedrooms. In 1892, an extension of the main block was made to the west elevation to accommodate a third keeper's family (orange overlay). This extension included two new rooms, if the partition wall is original to 1892, on the second floor. It is unknown if the closets in these rooms are original. Modern HVAC closets were added to Rooms 204 (NE corner), 206 (NE corner), and 207 (NW corner) in ca. 2000.

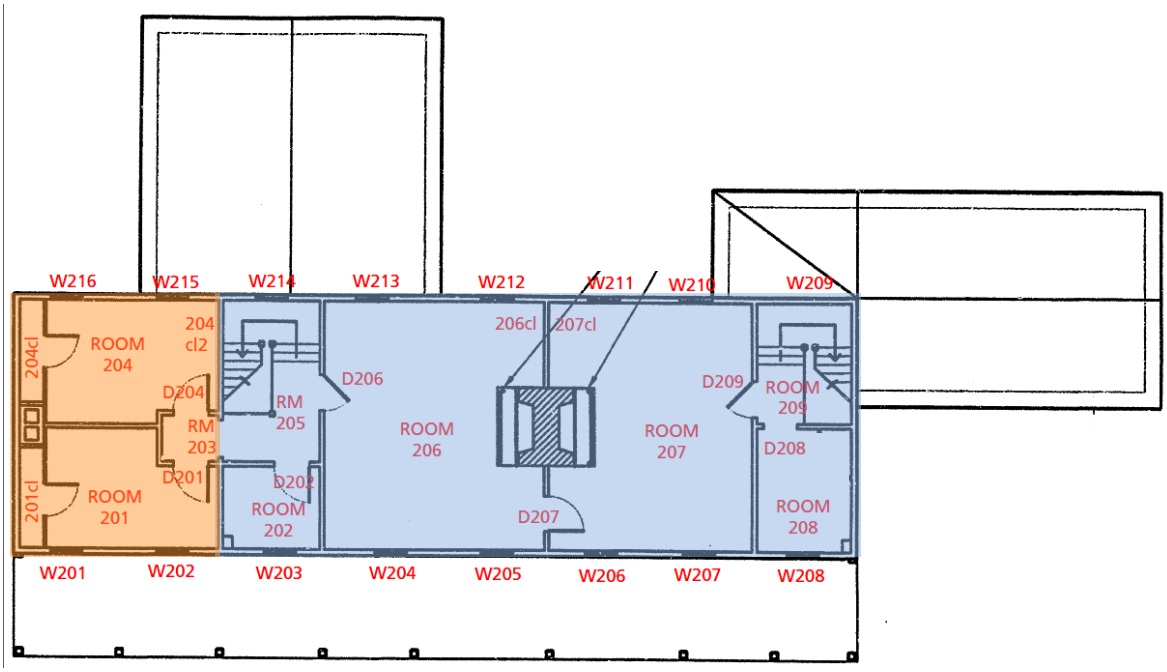


Figure 110. The second-floor plan. NPS DSC eTIC No. CAHA 603 25006A, Sheet A-4. Cropped by author.

Attic

The attic of the main block is accessible through a ceiling hatch in Room 203. The attic includes the space under the gable roof which includes the original 1854 portion and the 1892 addition.

The attic of the 1854 kitchen wing is accessible through a ceiling hatch in Room 106. The attic includes the space under the gable roof.

The attic of the ca. 1957 restroom addition is inaccessible.

Building Feature Master List Descriptions

A	SUBSTRUCTURE
A10	FOUNDATIONS
A1010	Standard Foundations
A101002	Column Piers

Original Foundation

The original column piers were constructed of brick. The piers varied in dimension depending on their location and loading (fig. 111). The footings' depths below grade are unknown.

During the 1983-86 preservation project, restoration work was completed on the historic brick piers, as well as the installation of new piers and footings for the south and north porches. Slate dampcourses (barrier which prevents rising damp) were installed atop the historic and new piers during this preservation work.

Brick from the original piers was salvaged for reuse to face the new concrete block piers at the building's new location (fig. 112).

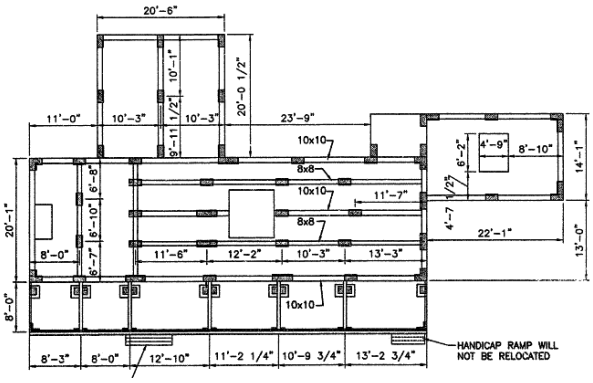


Figure 111. The brick pier layout prior to the building's move in 1999. Drawing: NPS DSC eTIC No. CAHA 603 25006A, Sheet S-12. Cropped by author.



Figure 112. Some of the brick piers which originally supported the Double Keepers' Quarters before its move. Workers salvage the brick to face the new cement-block piers at the new location. Photo: Cape Hatteras National Seashore Archives, 02/26/99.

Modern Foundation

The new foundation consists of a grid of brick-faced, concrete-block piers atop footings (figs. 113-116). The piers and footings vary in size depending on their location and loading. Their depth below grade is unknown.

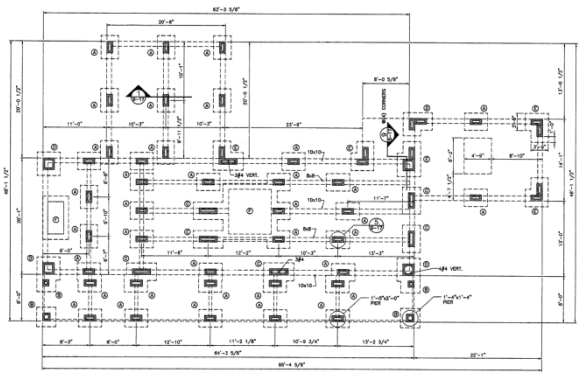


Figure 113. New foundation plan. Drawing: NPS DSC eTIC No. CAHA 603 25006A, Sheet S-13. Cropped by author.

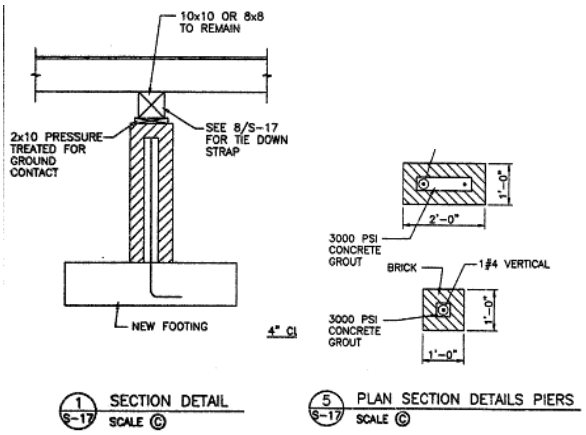


Figure 114. Sections through the new brick-faced, concrete-block piers atop reinforced concrete footings. Drawing: NPS DSC eTIC No. CAHA 603 25006A, Sheet S-17. Cropped by author.



Figure 115. One of the exposed brick piers supporting the Double Keepers' Quarters. Note the strap located on some of the piers. Photo: HPTC, 05/11/16.



Figure 116. A grid of brick-faced, concrete-block piers support the first-floor structural floor framing above. Photo: HPTC, 05/11/16.

B	SHELL
B10	SUPERSTRUCTURE
B1010	Floor Construction
B101001	Structural Frame

Main Block First-Floor Structural Floor Frame

The first-floor structural floor frame was completely replaced during the building's 1983-86 preservation project with pressure-treated framing members (fig. 117). The framing is fully exposed in the crawlspace underneath the building.

The framing of the 1854 portion of the main block is composed of 8"x8" and 10"x10" (dimensional) summer beams running east-west (fig. 118). End beams are located at the end of each of the summer beams (east and west) to tie together this primary layer of floor framing (likely through timber-frame joinery). This framework of beams is fully supported by the piers below. Perpendicular to (north-south) and above the summer beams are 3"x10" (dimensional) wood joists (fig. 119).

The framing of the 1892 portion of the main block is composed of one north-south summer beam (fig. 120). End beams are located under the exterior walls of the building above and tie together (likely through timber-frame joinery) this primary layer of floor framing. This framework of beams is fully supported by the piers below. Perpendicular to (east-west) and above the summer beams are 3"x10" (dimensional) wood joists.

No insulation, vapor barrier, or air barrier is present in either section.

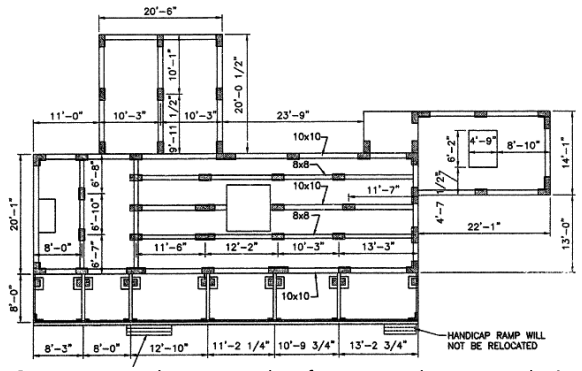


Figure 117. The network of summer beams and rim beams which compose the first-floor structural floor frame. Drawing: NPS DSC eTIC No. CAHA 603 25006A, Sheet S-12. Cropped by author.



Figure 118. Summer beams run east-west under the 1854 portion of the main block. Half-lap joints join two beams together over a modern pier. Photo: HPTC, 05/11/16.



Figure 119. The summer beams support floor joists which run north-south under the 1854 portion of the main block. Photo: HPTC, 05/11/16.



Figure 120. The end beams and summer beam run north-south under the 1892 portions of the main block. The beams support smaller floor joists which run east-west. Photo: HPTC, 05/11/16.

South Porch Structural Floor Frame

The south porch structural floor frame was completely replaced during the building's 1983-86 preservation work to replace a non-historic, built-up slab-on-grade porch floor. The porch floor frame is composed of seven 6"x10" (dimensional) beams perpendicular to the dwelling's south exterior wall (fig. 122). A breast joist atop the piers at the south side of the porch ties the ends of the beams together.



Figure 121. The framing of the south porch with beams, joists, and bridging. Photo: HPTC, 05/11/16.

Perpendicular to the beams (parallel to the exterior wall) are seven 2x10 (nominal) joists at 12”on center spanning between the beams (not on top). Bridging, composed of 2x10s (nominal) at 24” on center are located perpendicular between the joists (fig. 121).

No insulation, vapor barrier, or air barrier is present.

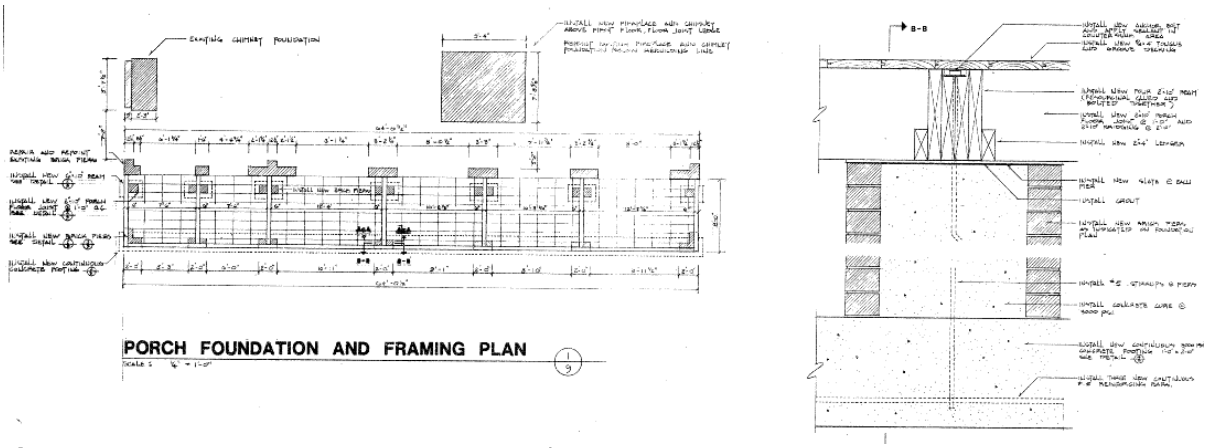


Figure 122. Framing plan and section, as designed for the 1983-86 preservation project. Drawing: NPS DSC eTIC No. CAHA 603 80026.

1854 Kitchen Wing Structural Floor Frame

The 1854 kitchen wing structural floor frame was likely completely replaced during the 1983-86 preservation project. The frame is composed of end beams located under the exterior walls of the building above and tied together (likely through timber-frame joinery). This framework of beams is fully supported by the piers below (see fig. 118). Joists (3”x10” dimensional) run north-south and are supported at their ends by the beams (fig. 123). The framing still shows an opening for the original fireplace foundation. This foundation was not moved with the building, nor was it reconstructed at the new site.



Figure 123. The joists are supported at their ends by end beams. Photo: HPTC, 05/11/16.

No insulation, vapor barrier, or air barrier is present.

North Porch Structural Floor Frame

The north porch structural floor frame was completely replaced during the building's 1983-86 preservation project. Two 6"x10" (dimensional) end beams at the edge of the porch floor. Parallel to the exterior wall of the main block are seven 2x10 (nominal) joists at 12" on center spanning between the beams (not on top). Bridging, composed of 2x10s (nominal) at 24" on center are located perpendicular between the joists (fig. 124).



Figure 124. The structural floor frame of the north porch floor. Photo: HPTC, 05/11/16.

No insulation, vapor barrier, or air barrier is present.

ca. 1957 Restroom Addition Structural Floor Frame

The ca. 1957 restroom addition structural floor frame may be original to its construction with some framing members being replaced during the 1983-86 preservation project. The frame consists of the one north-south summer beam (see fig. 117). End beams are located under the exterior walls of the building above and tie together (likely through timber-frame joinery) this primary layer of floor framing. This framework of beams is fully supported by the piers below. Perpendicular to (east-west) and above the summer beams are 3"x10" (dimensional) wood joists.

No insulation, vapor barrier, or air barrier is present.

Main Block Second-Floor Structural Floor Frame

The second-floor structural floor frame is inaccessible due to finished spaces on the first and second floors. No resources could be found which mention any alterations to this framing system. It is therefore assumed that this framing system is consistent with the original 1854 drawings: 3"x10" (dimensional) joists running north-south (spacing unknown). No specific details are known about the framing in the 1892 portion of the main block.

Main Block Attic Structural Floor Frame

The main block attic structural floor frame (or second-floor ceiling frame) is original to each frame's respective construction date (1854 and 1892). Joists dimensionally measuring 2¾"-3" x 9½"-10" are spaced 16" to 17" on center across the attic floor (fig. 125). No resources could be found which mention any alterations to this framing system, however a note in the 1983 preservation project drawings state that any deteriorated ceiling joists should be replaced to



Figure 125. The attic structural floor frame of the main block is partially exposed and is original. Photo: HPTC, 05/10/16.

match existing.

Insulation was added to the main block attic structural floor frame during the 1983-86 preservation work; this fiberglass insulation is likely that which is extant in the attic (see fig. 125). The insulation has an approximate R-value of 13 (based on its thickness). There is no air barrier present.

1854 Kitchen Wing Attic Structural Floor Frame

The 1854 kitchen wing attic structural floor frame (or first -floor ceiling frame) was inaccessible for assessment. Details are unknown.

ca. 1957 Restroom Addition Attic Structural Floor Frame

The ca. 1957 restroom addition attic structural floor frame (or first-floor ceiling frame) was inaccessible for assessment. Details are unknown.

B101002	Structural Interior Walls

Because the main block was originally framed with timber-frame techniques, no structural interior walls were required. Upon the west addition to the main block in 1892, the former west exterior wall became a structural interior wall. Upon the restroom addition to the main block in ca. 1957, a small portion of the main block's north elevation wall is also now a structural interior wall.

B1020	Roof Construction
B102001	Structural Frame

Main Block Structural Roof Frame

The main block attic structural roof frame is original to each frame's respective construction date (1854 and 1892). In 1983, the frame was identified as being composed of 2¾"-3¼" x 5¼"-5¾" (dimensional) rafters at 31½"-33½" on center. There is no ridge beam. At the lower end, the rafters are notched and lapped into the corresponding floor joists below, known as a bird's-mouth notch (fig. 126). Gussets have been added at each rafter pair and sisters have been added to some rafters (fig. 127). Original skip sheathing boards are located atop the rafters (fig. 128).

An X-brace is located in the eastern third of the attic (perpendicular to the roof rafters) (fig. 129). It is unknown when this feature was added, but likely installed after original construction because the building was twisting or racking.



Figure 126. The rafters are notched and lapped into the corresponding floor joists below with a bird's-mouth notch. Photo: HPTC, 05/10/16.



Figure 127 Modern gussets have been added to the rafters for added structural stability. Photo: HPTC, 05/10/16.



Figure 128. Original skip sheathing boards are extant atop the rafters. Photo: HPTC, 05/10/16.



Figure 129. An X-brace has been added to the eastern section of the attic (between the east exterior wall and the 1854 central chimney). Photo: HPTC, 05/10/16.

South Porch Structural Roof Frame

It is believed that the structural roof frame of the south porch shed roof was not replaced during the 1983-86 preservation work; however it is unknown if the frame was replaced at any other time. In 1983, the structural roof frame was identified as 2x6 ceiling joists and 3x6 roof rafters. Spacing was not identified. The rafters were supported at the exterior wall with a continuous 3x6 ledger plate attached to the wall. At the lower end, the rafters and joists were supported by a continuous beam. The beam is supported by nine wood posts (partially replaced and/or repaired during the 1983-86 preservation work). The roof frame was inaccessible by HPTC.

North Porch Structural Roof Frame

It is believed that the structural roof frame of the north porch hipped roof was not replaced during the 1983-86 preservation work; however it is unknown if the frame was replaced at any other time. In 1983, the structural roof frame was identified as 2x6 ceiling joists and 3x6 roof rafters. Spacing was not identified. The rafters were supported at hip ridge beam. At the lower end, the rafters and joists were supported by two continuous rim beams. The beams are supported by one corner wood post (dates to 1983-86 preservation work). The roof frame was inaccessible by HPTC.

1854 Kitchen Wing Structural Roof Frame

The structural roof frame of the 1854 kitchen wing was inaccessible by HPTC. Details are unknown.

ca. 1957 Restroom Addition Structural Roof Frame

The structural roof frame of the 1854 kitchen wing was inaccessible by HPTC. Details are unknown.

B20	EXTERIOR ENCLOSURE
B2010	Exterior Walls

Main Block Frame Exterior Walls

The 1854 and 1892 portions of the main block frame exterior walls are in their original configuration (figs. 130-131). Originally, these walls were constructed using timber-framing techniques.



Figure 130. The exterior walls have always been clad with painted siding, as seen here in 1893. Photo: Cape Hatteras National Seashore Archives. Cropped by author.



Figure 131. The rear elevation of the Double Keepers' Quarters in 1893 with painted wood siding on the exterior walls. Photo: National Archives and Records Administration, Harpers Ferry Center, and Cape Hatteras National Seashore Archives. Cropped by author.

During the 1983-86 preservation project, a large portion of the exterior siding and sheathing (at least 50% and 25% respectively) were removed from the building and replaced (fig. 132). It is assumed, based on the condition of the structure prior to the work, that some original framing members were replaced in the exterior walls, especially those directly connecting or adjacent to the first-floor structural floor frame (see Chronology of Development & Use section for more information and photographs). Historic exterior wall framing members and modern diagonal sheathing boards can be seen in the attic (fig. 133). Also at this time, foil-backed insulation was added to the exterior walls (likely R-13 based on the thickness of the exterior wall), which can be seen periodically through the interior paneling on the second floor of the building (photograph could not easily be taken). At the peaks of the gable roof, the sheathing boards were removed to accommodate indiscrete vents (fig. 134, see fig. 132). Furring strips were added to the studs and ½" spacer blocks were added at the lower edge of the siding boards (fig. 135).

In 1998, prior to the building's move, the building underwent a preservation maintenance project which included repairing or replacing minor areas of the exterior siding and completely painting the exterior with latex-based paint. It is unknown if the exterior has been painted since 1998.



Figure 132. At least 50% of the exterior siding was replaced during 1983-86 preservation work. A screened vent is located at the peak of the gable and also dates to the same time period (red triangle); it was designed to be undetectable from the exterior. Photo: HPTC, 05/11/16.



Figure 133. Exterior wall framing is exposed in the attic. The studs are historic, the sheathing is new. Photo: HPTC, 05/10/16.



Figure 134. The gable-end vents were installed during the 1983-86 preservation work. Photo: HPTC, 05/10/16.

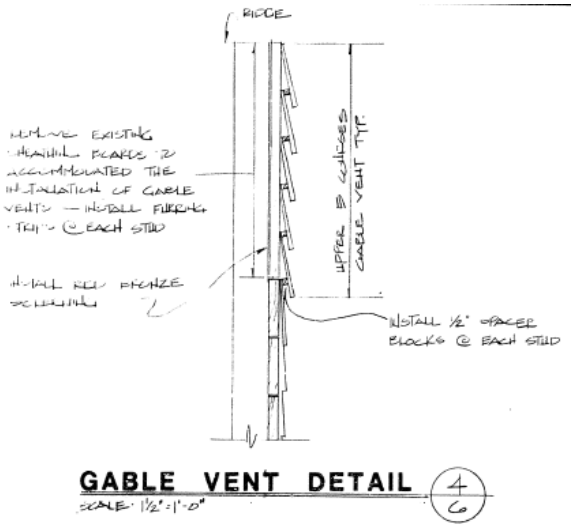


Figure 135, right. The design for the gable-end vents. Photo: NPS DSC eTIC CAHA No. 603 80026. Sheet 6. Cropped by author.

1854 Kitchen Wing Frame Exterior Walls

The 1854 kitchen addition frame exterior walls are in their original configuration (see figs. 130-131). Originally, these walls were constructed using timber-framing techniques.

During the 1983-86 preservation project, a large portion of the exterior siding and sheathing (at least 50% and 25% respectively) were removed from the entire building and replaced (fig. 136). It is assumed, based on the condition of the structure prior to the work, that some original framing members were replaced in the exterior walls, especially those directly connecting or adjacent to the first-floor structural floor frame (see Chronology of Development & Use section for more information and photographs).

Also at this time, foil-backed insulation was added to the exterior walls, which is extant (likely R-13 based on the thickness of the exterior wall). At the peak of the gable roof, the sheathing boards were removed to accommodate an indiscrete vent (see fig. 136). Furring strips were added to the studs and ½" spacer blocks were added at the lower edge of the siding boards (see fig. 135).

In 1998, prior to the building's move, the building underwent a preservation maintenance project which included repairing or replacing minor areas of the exterior siding and completely painting the exterior with latex-based paint. It is unknown if the exterior has been painted since 1998.



Figure 136. Gable-end exterior wall of the 1854 kitchen wing. The siding likely dates to the 1983-86 work. A screened vent is located at the peak of the gable and also dates to the same time period (red triangle); it was designed to be undetectable from the exterior. Photo: HPTC, 05/11/16.

ca. 1957 Restroom Addition Frame Exterior Walls

The ca. 1957 restroom addition frame exterior walls are in their original configuration. These walls are likely constructed with stick-framing techniques.



Figure 137. Gable-end exterior wall of the ca. 1957 restroom addition. The siding likely dates to the 1983-86 work. A screened vent is located at the peak of the gable and also dates to the same time period (red triangle); it was designed to be undetectable from the exterior. Photo: HPTC, 05/11/16.

During the 1983-86 preservation project, it is known that a large portion of the exterior siding and sheathing (at least 50% and 25% respectively) were removed from the entire building and replaced (fig. 137). It is assumed, based on the condition of the structure prior to the work, that some original framing members were replaced in the exterior walls, especially those directly connecting or adjacent to the first-floor structural floor frame (see Chronology of Development & Use section for more information and photographs). Also at this time, foil-backed insulation was added to the exterior walls, which is extant (likely R-13 based on the thickness of the exterior wall). At the peak of the gable roof, the sheathing boards were removed to accommodate an indiscrete vent (see fig. 137). Furring strips were added to the studs and ½" spacer blocks were added at the lower edge of the siding boards (see fig. 135).

In 1998, prior to the building's move, the building underwent a preservation maintenance project which included repairing or replacing minor areas of the exterior siding and completely painting the exterior with latex-based paint. It is unknown if the exterior has been painted since 1998.

Chimneys

There are two brick chimneys present on the exterior of the main block (fig. 138). The east chimney was originally constructed in 1854 as a central chimney and served both sides of the Double Keepers' Quarters. The west chimney was originally constructed in 1892 and served only the third keeper's quarters.



Figure 138. The chimneys in the main block were completely reconstructed during the 1983-86 work. Photo: HPTC, 05/12/16.

On the exterior, the chimneys remained unpainted through at least 1948. By 1954, and through to the 1983-86 preservation work, the chimneys were painted white.

During the 1983-86 preservation project, both chimneys were completely removed (except the foundation of the 1854 east chimney) and reconstructed to match their historic look (unpainted).

Both chimneys were maintained in placed during the building's move in 1999. Temporary framing was used to secure them in pl
ace. At the new location, the chimneys were set on completely new foundations and the portions above the roof were repointed due to small cracks appearing from the move process. The concrete washes were also renewed at this time.

It is unknown when the extant wood caps were added atop each chimney (fig. 139).



Figure 139. A wood cap (date unknown) located atop the west chimney. Photo: HPTC, 05/11/16.

A chimney was originally located in the center of the 1854 kitchen wing. It was removed sometime between 1948 and 1954 (see figs. 130-131).

Porches

At the south porch, only the roof framing members and portions of the columns are considered historic. All other components were replaced or reconstructed during the 1983-86 preservation work. The extant porch closely matches the original seen on the building in 1893 including the horizontal rails and cross members between square posts (figs. 140-141). The south porch was screened in 1941; the first photograph of this condition is dated 1948. By October 1954, the screen had been removed. An additional floor deck was added atop the 1985-87 floor deck in 2001 to make the porch and interior of the building ABAAS compliant. All of the porch components are painted, except the porch floorboards, with latex-based paint.

The extant north porch is not composed of any original porch components based on photographic comparison of what was there in 1893 and what is there now (figs. 142-143). It is unknown when the new porch was constructed, but the extant shape was in place by June 1937 (CCC drawings). In 1939, part of the porch was enclosed for a bathroom. The enclosure was extant through 1983. The entire porch (except roof frame) was most recently replaced during the 1983-86 preservation work. All of the porch components are painted, except the porch floorboards.



Figure 140. The south porch as it was seen 1893. Photo: Cape Hatteras National Seashore Archives. Cropped by author.



Figure 141, right. The extant south porch matches the original. Photo: HPTC, 05/12/16.



Figure 142. The earliest known photo of the north porch is largely obscured by the double privy; however the roof structure is small enough that the window shutter can be fully opened. Photo: NARA, HFC, and CAHA archives. Cropped by author.



Figure 143. The north porch as it is seen today. Note how close the roof comes to the window. A shutter would not be able to be fully opened as the porch is currently built, evidence that the extant porch is slightly larger than the original. Photo: 05/11/16.

B2020	Exterior Windows

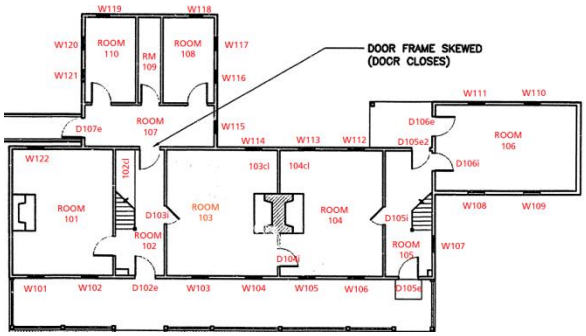


Figure 144. Window numbers for the first floor. Drawing: NPS DSC eTIC No. CAHA 603 25006A, Sheet A-4. Cropped by author.

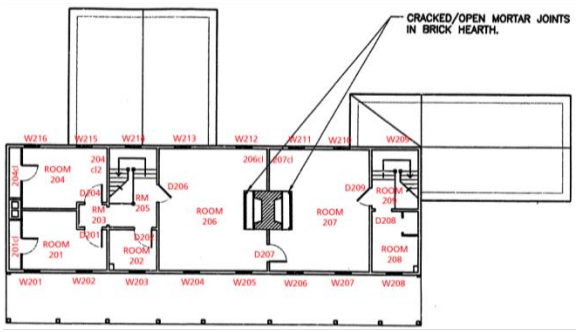


Figure 145. Window numbers for the second floor. Drawing: NPS DSC eTIC No. CAHA 603 25006A, Sheet A-4. Cropped by author.

The 1854 drawings of the original double dwelling state the windows were to be 15 lights (9/6 double hung), with glass 8”x10”. By 1893, the windows had been altered to be 4/4 double-hung units (fig. 146), which is what is seen today (fig. 147). However it is unknown to what time period the extant window sash date; some window components, e.g. muntins, show extensive wear typical of older windows, whereas other components, e.g. meeting rails, show little wear (fig. 149). Simple pegs hold the windows closed (fig. 148); it is unknown if these were original to ca. 1893 or installed at a later dated.



Figure 146. By 1893, 4/4 double-hung windows had been installed. Photo: NARA, HFC, and CAHA archives. Cropped by author.



Figure 147. An interior view of W214. Photo: HPTC, 05/10/16.



Figure 148. Many of the windows are held closed with pegs. Photo: HPTC, 05/10/16.



Figure 149. The lower window sash at W201 exhibits typical wear and tear on the muntins, rails, and stiles of an historic window. Photo: HPTC, 05/10/16.

The 1937 CCC work included repairs to missing window panes, replacing missing putty, and repairing damaged sash. Some extensive work occurred to the building the 1950s and window work could have been completed. The 1983-86 preservation work included repairing or replacing all deteriorated window frames, sash, and trim to match existing, and reglazing windows. It is known that all of the windows were removed from the building for repair work and reinstalled later. The 1998 work included "reconditioning" and painting of windows. It is likely that it will never be known if any windows are original to 1892 due to the many tenants, uses of the building, and "restorations" which have occurred.

Exterior storms windows are extant at all of the window openings (figs. 150-151); only W122 is missing its storm (fig. 152). Based on photographic evidence, exterior storm windows existed on the building at least between 1963 and 1979. During the 1983-86, the windows were equipped with screen units. The extant storm windows were installed during the 1998 preservation maintenance work.

Exterior louvered wood shutters are known to have been extant on the building between 1893 and 1948 and gone from the building between 1954 and 1969. Shutters were restored to the building during the 1983-86 preservation work, but had again been removed by 1998, likely to accommodate the installation of exterior storms.



Figure 150. W107 is a 4/4 double-hung window in the 1854 portion of the main block. It has an exterior storm window. Photo: HPTC, 05/11/16.



Figure 151. W115 is a 4/4 double-hung window located in the ca. 1957 restroom addition. It has an exterior storm window. Photo: HPTC, 05/11/16.



Figure 152. W122 is missing its exterior storm window. Photo: HPTC, 05/11/16.

A summary of the extant windows is as follows:

Window ID	Floor	Room	Type	Opening Date	Sash Date	Exterior Storm?
W101	1	101	4/4 DH	1892	1892?	Y
W102	1	101	4/4 DH	1892	1892?	Y
W103	1	103	4/4 DH	1854	1892?	Y
W104	1	103	4/4 DH	1854	1892?	Y
W105	1	104	4/4 DH	1854	1892?	Y
W106	1	104	4/4 DH	1854	1892?	Y
W107	1	105	4/4 DH	1854	1892?	Y
W108	1	106	4/4 DH	1854	1892?	Y
W109	1	106	4/4 DH	1854	1892?	Y
W110	1	106	4/4 DH	1854	1892?	Y
W111	1	106	4/4 DH	1854	1892?	Y
W112	1	104	4/4 DH	1854	1892?	Y
W113	1	104	4/4 DH	1854	1892?	Y
W114	1	103	4/4 DH	1854	1892?	Y
W115	1	107	4/4 DH	ca. 1957	1957?	Y
W116	1	108	4/4 DH	ca. 1957	1957?	Y
W117	1	108	4/4 DH	ca. 1957	1957?	Y
W118	1	108	4/4 DH	ca. 1957	1957?	Y
W119	1	110	4/4 DH	ca. 1957	1957?	Y
W120	1	110	4/4 DH	ca. 1957	1957?	Y
W121	1	110	4/4 DH	ca. 1957	1957?	Y
W122	1	122	4/4 DH	1892	1892?	N
W201	2	201	4/4 DH	1892	1892?	Y
W202	2	201	4/4 DH	1892	1892?	Y
W203	2	202	4/4 DH	1854	1892?	Y
W204	2	206	4/4 DH	1854	1892?	Y
W205	2	206	4/4 DH	1854	1892?	Y
W206	2	207	4/4 DH	1854	1892?	Y
W207	2	207	4/4 DH	1854	1892?	Y

W208	2	208	4/4 DH	1854	1892?	Y
W209	2	209	4/4 DH	1854	1892?	Y
W210	2	207	4/4 DH	1854	1892?	Y
W211	2	207	4/4 DH	1854	1892?	Y
W212	2	206	4/4 DH	1854	1892?	Y
W213	2	206	4/4 DH	1854	1892?	Y
W214	2	205	4/4 DH	1854	1892?	Y
W215	2	204	4/4 DH	1892	1892?	Y
W216	2	204	4/4 DH	1892	1892?	Y

B2030	Exterior Doors

All of the exterior door openings date to their respective building's date of construction (fig. 153). Those dating to 1854 are D105e (main block), D105e2 (main block), and D106e (kitchen wing). D102e dates to 1892 (main block addition). D107e dates to ca. 1957 (restroom addition).

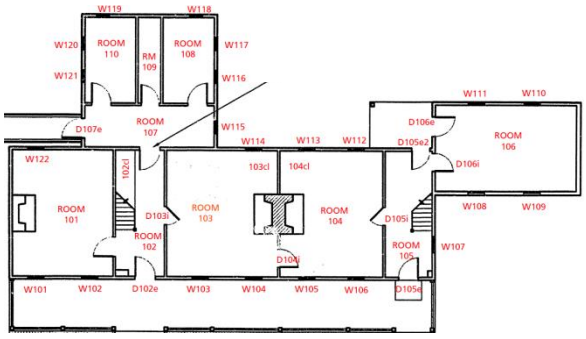


Figure 153. The first-floor plan with exterior door numbers. Drawing: NPS DSC eTIC No. CAHA 603 25006A, Sheet A-4. Cropped by author.

The four doors in the historic portion of the building were replaced during the 1983-86 preservation work with four-panel wood doors (figs. 154-156). Screen doors were also installed at this time. Some historic hardware was retained.

The exterior door in the ca. 1957 restroom addition was likely installed more recently than the 1983-86 work, likely after the move. The door is a steel slab with modern hardware (fig. 157).

A summary of the extant exterior doors is as follows:

Door ID	Elevation	Room	Type	Opening Date	Door Date	Hardware	Screen Door?
D102e	South	102	4-panel wood exterior	1892	1983-86	Modern closer, lever, slide bolt; historic hinges	Y (1983-86)
D105e	South	105	4-panel wood exterior	1854	1983-86	Modern closer, lever, slide bolt; historic hinges	Y (1983-86)
D105e2	North	105	4-panel wood exterior	1854	1983-86	Historic rim lock and hinges	Y (1983-86)
D106e	West	106	4-panel wood exterior	1854	1983-86	Historic rim lock and hinges	Y (1983-86)
D107e	West	107	Steel slab	ca. 1957	ca. 2000	Modern lever and hinges	N



Figure 154. D102e was replaced in 1983-86 with a four-panel wood door. A screen door was also added at this time. Photo: HPTC, 05/11/15.



Figure 155. D105e was replaced in 1983-86 with a four-panel wood door. A screen door was also added at this time. Photo: HPTC, 05/11/15.



Figure 156. D105e2, right, and D106e were replaced in 1983-86 with four-panel wood doors. Screen doors were also added at this time. Photo: HPTC, 05/11/16.



Figure 157. D107e was recently replaced (ca.2001) with a steel slab door. Photo: HPTC, 05/12/16.

B30	ROOFING
B3010	Roof Coverings
B301001	Roof Finishes

Main Block Roof Finishes

The main roof covers the 1854 and 1892 portions of the main block. The roof has always been covered in wood shingles, which today are likely western red cedar (the most common wood shingle used today), eastern white cedar, or Alaskan yellow cedar.[2] The current roof was installed in ca. 2011 (based on HPTC conversation with CAHA maintenance employees) (fig. 158). The wood-shingle roof is laid atop original skip sheathing (in ca. 1927 addition) and sheathing boards (in 1871 portion) using modern ring-shank nails (fig. 159). Some of the sheathing boards have been replaced. A modern impregnated tar paper was installed between the original sheathing and new shingles (not a proper installation technique). The starter course has two shingles (three is best). No metal flashing strips can be detected within the field of the roof (not required). Modern metal drip edge has been installed along the perimeter of the roof (not detrimental).



Figure 158. The extant wood shingle roof was installed in ca. 2011, seen here from atop the lighthouse. Photo: HPTC, 05/12/16.



Figure 159. Modern wood has replaced a few of the original sheathing boards. Note the modern ring-shank nails. Photo: HPTC, 05/10/16.

South Porch Roof Finishes

The south porch roof has always been covered with wood shingles, which today are likely western red cedar (the most common wood shingle used today), eastern white cedar, or Alaskan yellow cedar.[2] The current roof was installed in ca. 2011 (based on HPTC conversation with CAHA maintenance employees) (fig. 160). It is assumed that this roof was installed similarly to the main roof: atop original sheathing boards using modern ring-shank nails, inclusion of some modern wood installed between the sheathing boards (not a proper installation technique), and installation of modern impregnated tar paper between the original sheathing and new shingles (not a proper installation technique). The starter course has two shingles (three is best). No metal flashing strips can be detected within the field of the roof (not required). Modern metal drip edge has been installed along the perimeter of the roof (not detrimental) (fig. 161).

[2] Extant type of cedar cannot be determined as the shingles are too weathered at this point in time.



Figure 160. The modern wood shingle roof atop the south porch. Photo: HPTC, 05/12/16.



Figure 161. The roof has a metal drip edge along its perimeter and only a two-shingle started course. Photo: HPTC, 05/12/16.

North Porch Roof Finishes

The north porch roof was originally covered with standing-seam metal, as can be seen in an 1892 photograph (fig. 162). It is unknown when the porch roof was changed to being clad with wood shingles, but CCC-era (1937) drawings stated that damaged shingles on the north porch were to be replaced. The current wood shingles are likely western red cedar (the most common wood shingle used today), eastern white cedar, or Alaskan yellow cedar.[3] The current roof was installed in ca. 2011 (based on HPTC conversation with CAHA maintenance employees) (fig. 163). It is assumed that this roof was installed similarly to the main roof: atop sheathing boards using modern ring-shank nails and installation of modern impregnated tar paper between the original sheathing and new shingles (not a proper installation technique). The starter course has two shingles (three is best). No metal flashing strips can be detected within the field of the roof (not required). Modern metal drip edge has been installed along the perimeter of the roof (not detrimental).



Figure 162. The earliest-known photo of the north porch shows the roof was clad with standing-seam metal. Photo: NARA, HFC, and CAHA archives. Cropped by author.



Figure 163. The modern wood shingle roof atop the north porch. Photo: HPTC, 05/11/16.

1854 Kitchen Wing Roof Finishes

The 1854 kitchen wing roof has always been covered with wood shingles (fig. 164), which today are likely western red cedar (the most common wood shingle used today), eastern white cedar, or Alaskan yellow cedar.[3] The current roof was installed in ca. 2011 (based on HPTC conversation with CAHA maintenance employees) (fig. 165). It is assumed that this roof was installed similarly to the main roof: atop original sheathing boards using modern ring-shank nails, inclusion of some modern wood installed between the sheathing boards (not a proper installation technique), and installation of modern impregnated tar paper between the original sheathing and new shingles (not a proper installation technique). The starter course has two shingles (three is best). No metal

[3] Extant type of cedar cannot be determined as the shingles are too weathered at this point in time.

flashing strips can be detected within the field of the roof (not required). Modern metal drip edge has been installed along the perimeter of the roof (not detrimental).



Figure 164. The earliest-known photograph of the kitchen wing shows the roof was clad with wood shingles. Photo: Cape Hatteras National Seashore Archives. Cropped by author.



Figure 165. The modern wood shingle roof atop the 1854 kitchen wing. Photo: HPTC, 05/11/16.



Figure 166. The modern wood shingle roof atop the ca. 1957 restroom addition. Photo: HPTC, 05/11/16.

ca. 1957 Restroom Addition Roof Finishes

The ca. 1957 restroom addition roof has always been covered with wood shingles, which today are likely western red cedar (the most common wood shingle used today), eastern white cedar, or Alaskan yellow cedar.[4] The current roof was installed in ca. 2011 (based on HPTC conversation with CAHA maintenance employees) (fig. 166). It is assumed that this roof was installed similarly to the main roof: atop original sheathing boards using modern ring-shank nails, inclusion of some modern wood installed between the sheathing boards (not a proper installation technique), and installation of modern impregnated tar paper between the original sheathing and new shingles (not a proper installation technique). The starter course has two shingles (three is best). No metal flashing strips can be detected within the field of the roof (not required). Modern metal drip edge has been installed along the perimeter of the roof (not detrimental).

B301004	Flashings & Trim

Roof-Side Wall Flashing

Metal flashing was installed behind the wood exterior siding and wood shingle roofs during the 1983-86 preservation work. The flashing cannot be seen.

Chimney Flashing

Both chimneys have metal step flashing (fig. 69), likely composed of lead-coated tin or copper.

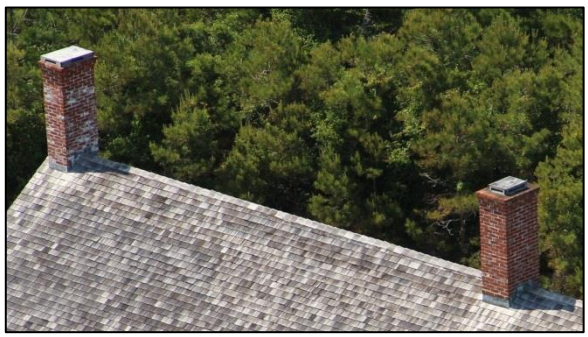


Figure 167. The chimneys have metal step flashing where they penetrate the roof. Photo: HPTC, 05/12/16.

[4] Extant type of cedar cannot be determined as the shingles are too weathered at this point in time.

B301005	Gutters & Downspouts

The entire roof drainage system was replaced during the 1983-86 preservation work. The half-round gutters and round downspouts are composed of terne-coated stainless steel.

The 10½:12 south and north slopes of the 1854/1892 main block each drain into a 0'-5" gutter which extend the entire length of the roofs (orange and purple in fig. 168). A 0'-3" downspout is located at each end of each gutter. The west downspouts join on the west elevation. Originally they drained into the west cistern, but now drain below grade (fig. 169). The east downspouts join on the east elevation and drain into the east cistern (fig. 170).

The 5:12 south porch roof drains into a 0'-5" gutter which extends the entire length of the roof (teal in fig. 168). A 0'-3" downspout is located at each end of the gutter. The west downspout originally drained into the west cistern, but now drains at grade (fig. 169). The east downspout originally drained into the west cistern, but now drains below grade (fig. 170).

The 6½:12 south and north slopes of the 1854 kitchen wing each drain into a 0'-5" gutter which extend the entire length of the roofs (grey and brown in fig. 168). A 0'-3" downspout is located at the east end of each gutter. The downspouts drain at grade (fig. 170).

The north porch hipped roof drains into 0'-5" gutters which extend along each side of the roof (blue in fig. 168). A 0'-3" downspout is located at the northwest corner and drains at grade.

The 4½:12 west and east slopes of the ca. 1957 restroom addition each drain into a 0'-5" gutter which extend the entire length of the roofs (green and red in fig. 168). A 0'-3" downspout is located at the north end of each gutter. The downspouts drain at grade (fig. 169).

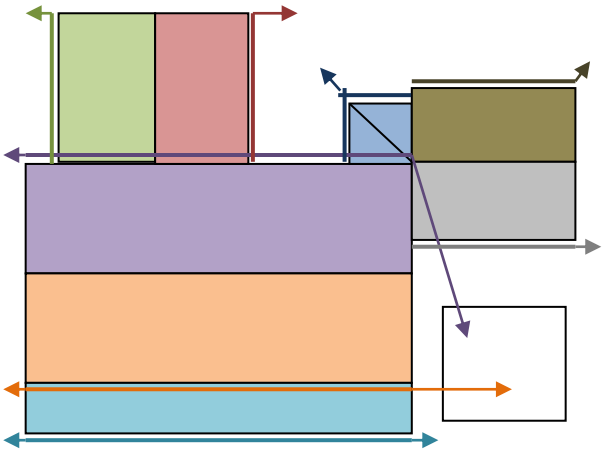


Figure 168 Different areas of the roof and their associated roof drainage system. Solid colored lines represent gutters for associated colored roof areas. Colored arrows represent downspouts for associated colored gutters. Drawing: HPTC.



Figure 169. The roof drainage system located on the west elevation. The west cistern is no longer utilized. Photo: HPTC, 05/11/16.



Figure 170. The roof drainage system located on the east elevation. The east cistern is utilized for water from the main block roof. Photo: HPTC, 05/11/16.

C	INTERIORS
C10	INTERIOR CONSTRUCTION
C1020	Interior Doors

Several different types of interior doors are extant within the Double Keepers' Quarters. It is believed that none of the interior doors are original.

The historic closets located in Rooms 201 and 204 had their respective doors replaced in 1937-39 by the CCC. The doors are composed of V-groove cypress panel boards which match the interior wall paneling (fig. 171). The hardware also likely dates to this time. Similarly, the closet under the west stair was also likely added at this time, and its door matches those seen at the second-floor closets (fig. 172).

The door opening between the main block and the ca. 1957 restroom addition was re-installed when the addition was being built. A door opening was in this place, though has been shifted slightly east to accommodate the closet under the stair. As a note, when the main addition was added in 1892, the door openings between the main block and former kitchen wing were located in rooms flanking the stair hall. The extant door is a four-panel door with historic hardware and likely dates to its installation in ca. 1957 (fig. 173). It is the only four-panel door on the interior of the building.



Figure 171. One of the CCC-era closet doors on the second floor. Photo: HPTC, 05/10/16.

Five interior doors, which likely date to the 1983-86 preservation work, are located at D101i, D201i, D202i, D204i, and D208i. These doors are 6-panel wood doors with historic locksets and hinges (fig. 174).

The three interior doors within the ca. 1957 restroom addition are modern solid-core wood slabs and likely date to the most recent bathroom renovation (ca. 1980?). Their associated hardware is also modern.

D101cl, D103cl, D104cl, D106cl, D204cl2, D206cl, and D207cl were installed in ca. 2000 when the modern HVAC closets were installed in the dwelling. The first five are composed of unpainted board-and-batten doors (fig. 175); the last two are composed of unpainted two-panel, two-louver doors (fig. 176). All of these doors include modern pulls and hinges.

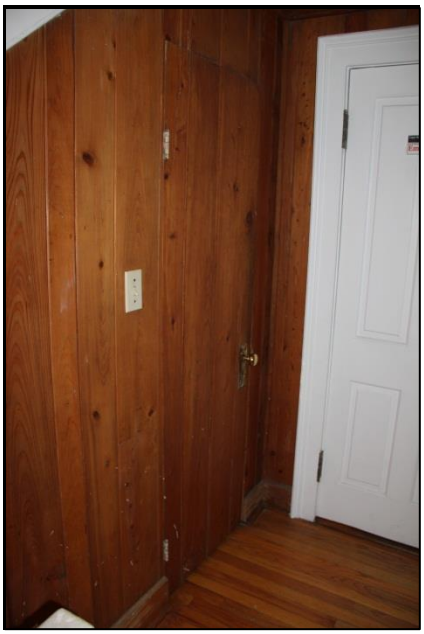


Figure 172. The CCC-era door and closet under the west stair. Photo: HPTC, 05/10/16.

The remaining door openings are missing doors, likely to improve movement between rooms by visitors. These

openings include D103i, D104i, D105i, D106i, D206i, D207i, and D209i. It should be noted that D104i and D207i are not original openings; they were likely installed in 1937-39, during the CCC-era work, to accommodate apartments after the building's renovation.

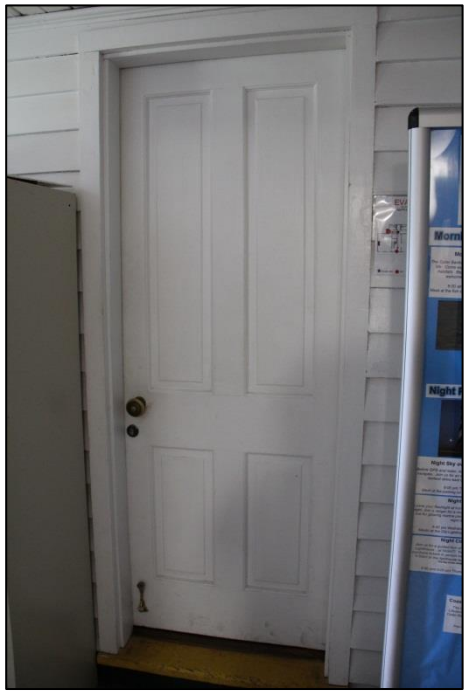


Figure 173. The door between the main block and restroom addition dates to the addition's construction: ca. 1957. The hardware is more historic. Photo: HPTC, 05/10/16.

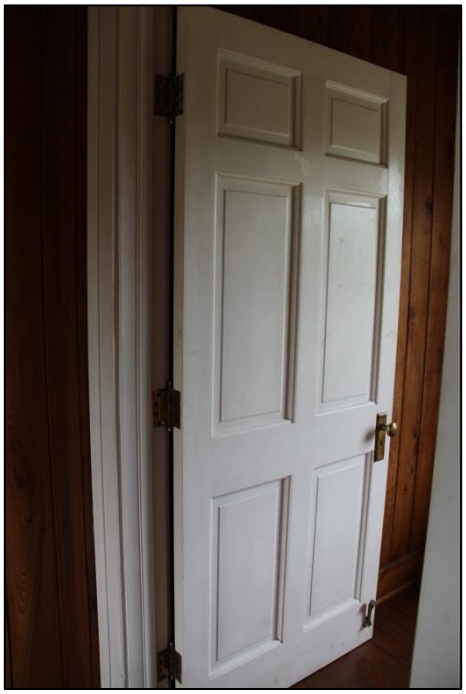


Figure 174. A modern six-panel door located on the second floor probably dates to the 1983-86 preservation work on the building. Photo: HPTC, 05/10/16.



Figure 175. A ca. 2000 HVAC closet with unpainted board-and-batten door. Photo: HPTC, 05/10/16.



Figure 176. A ca. 2000 HVAC closet with unpainted paneled and louvered door. Photo: HPTC, 05/10/16.

The following chart summarizes the features of the interior doors:

Door ID	Room	Type	Opening Date	Door Date	Hardware
D101i	101-102 (originally a window)	6-panel	Window: 1854; Door: 1892	1983-86?	Historic lockset & hinges
D101cl	101cl	Board & batten	ca. 2000	ca. 2000	Modern pull & hinges
D102i	102-107	4-panel	ca. 1957?	ca. 1957?	Historic lockset & hinges
D102cl	102cl	V-groove board	ca. 1937?	ca. 1937?	Historic lockset & hinges
D103i	102-103	N/A	1854	N/A	N/A
D103cl	103cl	2-panel, 2-louver	ca. 2000	ca. 2000	Modern pull & hinges
D104i	103-104	N/A	ca. 1937	N/A	N/A
D104cl	104cl	2-panel, 2-louver	ca. 2000	ca. 2000	Modern pull & hinges
D105i	104-105	N/A	1854	N/A	N/A
D106i	105-106	N/A	1854	N/A	N/A
D106cl	106cl	Board & batten	ca. 2000	ca. 2000	Modern pull & hinges
D108i	107-108	Slab	ca. 1957	1980?	Modern
D109i	107-109	Slab	ca. 1957	1980?	Modern
D110i	107-110	Slab	ca. 1957	1980?	Modern
D201i	203-201	6-panel	1892	1983-86?	Historic lockset & hinges
D201cl	201cl	V-groove board	1892	ca. 1937	Historic lockset, modern hinges
D202i	205-202	6-panel	1892	1983-86?	Historic lockset & hinges
D204i	203-204	6-panel	1892	1983-86?	Historic lockset & hinges
D204cl	204cl	V-groove board	1892	ca. 1937	Historic lockset, modern hinges
D204cl2	204cl2	Board & batten	ca. 2000	ca. 2000	Modern pull & hinges
D206i	205-206	N/A	1854	N/A	N/A
D206cl	206cl	Board & batten	ca. 2000	ca. 2000	Modern pull & hinges
D207i	206-207	N/A	ca. 1937	N/A	N/A
D207cl	207cl	Board & batten	ca. 2000	ca. 2000	Modern pull & hinges
D208i	209-208	6-panel	1854	1983-86?	Historic lockset & hinges
D209i	209-207	N/A	1854	N/A	N/A

C1030	Fittings
C103010	Closets

Historic Closets

The space under the west stair is believed to have been enclosed during the CCC-era work (ca. 1937). The closet is accessed from Room 102. The finishes on the interior of the closet are consistent with the finishes under the east stair, but the closet wall was added (fig. 177).

What are likely original (1892) closets are located on the west wall of Rooms 201 and 204. The closets were refinished during the 1937-39 CCC work and maintain these finishes (fig. 178).



Figure 177. The ca. 1937 closet enclosure under the west stair. Photo: HPTC, 05/10/16.

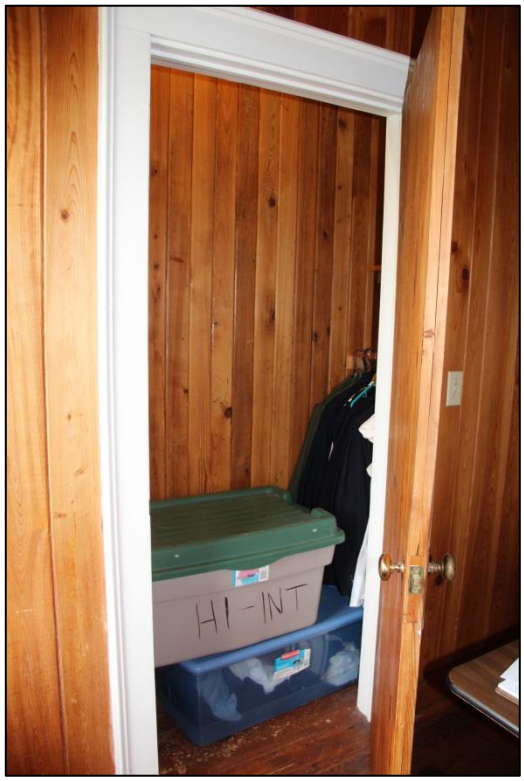


Figure 178. One of the original (1892) second floor closets; this one is in Room 101. Photo: HPTC, 05/10/16.

Modern Closets

The modern closets were installed in ca. 2000 when the modern HVAC system was first installed. On the first floor, HVAC closets are located in Rooms 101, 103, 104, and 106 (fig. 179); on the second floor, HVAC closets are located in Rooms 204, 206, and 207 (fig. 180).



Figure 179. A modern HVAC closet located in Room 103, installed in ca. 2000. Photo: HPTC, 05/10/16.



Figure 180. A modern HVAC closet located in Room 206, installed in ca. 2000. Photo: HPTC, 05/10/16.

C103098	Other Casework

Trim

It is believed that a majority of the interior trim was replaced during the 1983-86 preservation work (figs. 181-183). Monthly briefing reports from that time mention an assortment of tasks relating to interior trim: making new shoe molding and installing, installing crown moldings on first floor, making casings for windows and doors, installing window stools, priming 320'-0" linear of window casing, 40'-0" linear of window stop, and 200'-0" linear of door casing, furring window jambs out, installing window casings and trim, installing crown moldings, baseboards, shoe moldings, and corner moldings, etc.



Figure 181. The painted interior door casing and unpainted corner moldings likely date to 1983-86. Photo: HPTC, 05/10/16.



Figure 182. Staining has occurred to the interior wall paneling, but the stool, apron, baseboard, and shoe molding all appear in good (non-stained) condition. Photo: HPTC, 05/10/16.

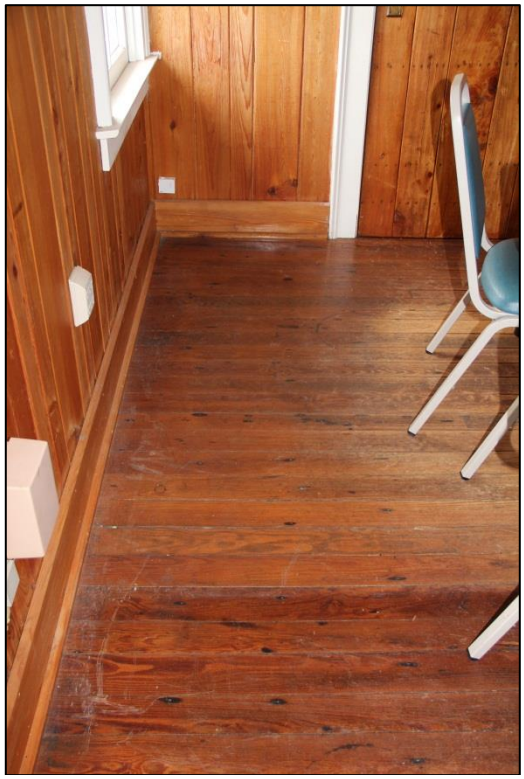


Figure 183, right. Likely replacement baseboard, shoe molding, window casing and stool, and door casing. Photo: HPTC, 05/10/16.

Fireplaces

There are two brick chimney stacks on the interior of the main block. The east chimney was originally constructed in 1854 as a central chimney and served both sides of the Double Keepers' Quarters. The west chimney was originally constructed in 1892 and served only the third keeper's quarters.

During the 1983-86 preservation project, both chimney stacks were removed (except the foundation of the 1854 east chimney) and reconstructed to match their historic look. Both chimney stacks were maintained in placed during the building's move in 1999. At the new location, the chimney stacks were set on completely new foundations.

The east chimney stack has four flues. The first floor has two fireplace openings: one in Room 103 (fig. 184) and one in Room 104. The second floor also has two fireplace openings: one in Room 206 (fig. 185) and one in Room 207. The chimneys, fireboxes, and hearths in these rooms are unpainted brick. There are no mantels. Originally, these chimneys would likely have been plastered over and had a simple wood mantel. A coal insert for the firebox was also likely used.

The west chimney has two flues. The first floor has one fireplace opening, in Room 103 (fig. 186). The chimney, firebox, and hearth are unpainted brick. There is no mantel. Originally, the chimney would have been plastered over and had a simple wood mantel. A coal insert for the firebox was also likely used. On the second floor, the chimney stack is masked by paneling and flanking closets along the west exterior wall. It is unknown if these closets are original to 1892. It is likely that the chimney stack accommodated one or two standalone coal stoves to heat the second floor.

A chimney stack was originally located in the center of the 1854 kitchen wing. It was removed sometime between 1948 and 1954.



Figure 184. The fireplace and chimney stack in Room 103. Photo: HPTC, 05/10/16.



Figure 185. The fireplace and chimney stack in Room 206. Photo: HPTC, 05/10/16.



Figure 186. The fireplace and chimney stack in Room 101. Photo: HPTC, 05/10/16.

C20	STAIRS
C2010	Stair Construction
C201001	Interior Stair Construction

Both of the interior stairs date to 1854 and are in their original configuration. Each dogleg stair consists of twelve risers up to a landing and two additional risers up to the second floor (figs. 187-188). The newel post, balusters, stringers, and risers are painted; the treads and railings are unpainted.

Some minor preservation maintenance work was completed to the stairs during the 1983-86 preservation work. This included scraping, stripping and sanding the stairs, patching, sanding, and applying tung oil to the stairs and landings, and priming and painting stair components. Some of the stair treads were further repaired in 1990.

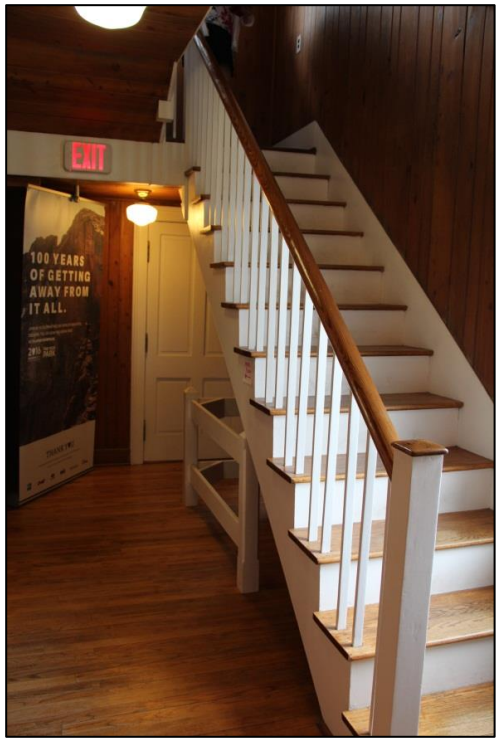


Figure 187. The lower run of the east dogleg stair as seen from the first floor. Photo: HPTC, 05/10/16.

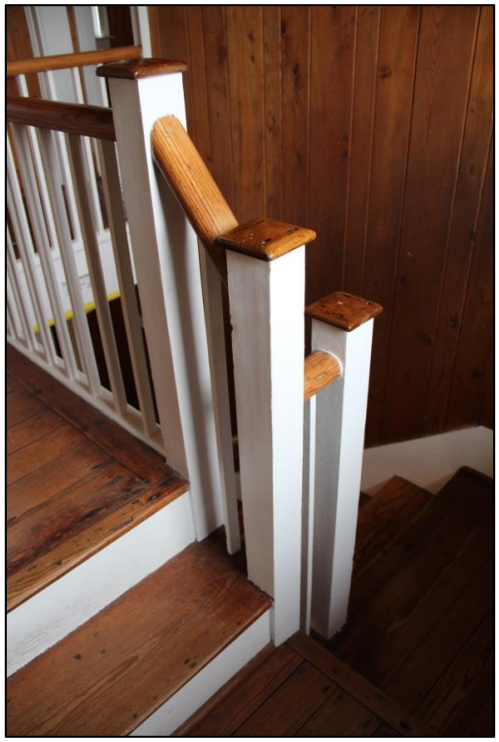


Figure 188. The west stair as seen from its intermediate landing. Photo: HPTC, 05/10/16.

C201002	Exterior Stair Construction

The extant exterior stair located at the north porch (north elevation) was likely constructed soon after the building's move in 1999. It consists of unpainted pressure-treated wood. Four risers lead from the ground to the porch (fig. 189).

The extant exterior stair located at the exterior door opening of the ca. 1957 restroom addition (west elevation) was also likely constructed soon after the building's move in 1999. It consists of unpainted pressure-treated wood. Five risers lead from the ground to a landing (fig. 190).



Figure 189. The exterior stair at the north porch is composed of unpainted pressure-treated wood. Photo: HPTC, 05/11/16.



Figure 190. The exterior stair at the restroom addition is also composed of unpainted pressure-treated wood. Photo: HPTC, 05/11/16.

C30	INTERIOR FINISHES
C3010	Wall Finishes

The interior wall finishes of the 1854/1892 main block and 1854 kitchen wing were originally lath and plaster (the kitchen wing also exhibited wood paneling 3'-0" around the perimeter of each room). During the 1937-39 CCC work (post-period of significance), the lath and plaster was removed and V-joint cypress paneling was installed. At some point afterward, likely between 1956 and 1958, the paneling was painted (fig. 191). During the 1985-87 preservation work, the cypress paneling was stripped of this paint, repaired, patched, and refinished to match its original look (fig. 192). In 1998, the interior paneling was cleaned and "reconditioned."

In the ca. 1957 restroom addition, Rooms 108 and 110 the walls are clad with painted Masonite with aluminum strips (fig. 193). In Room 109, the room is clad with painted and unpainted plywood. In Room 107, the room is clad with painted siding (fig. 194). All of these wall finishes were likely installed during the addition's most recent renovation (ca. 1980?).

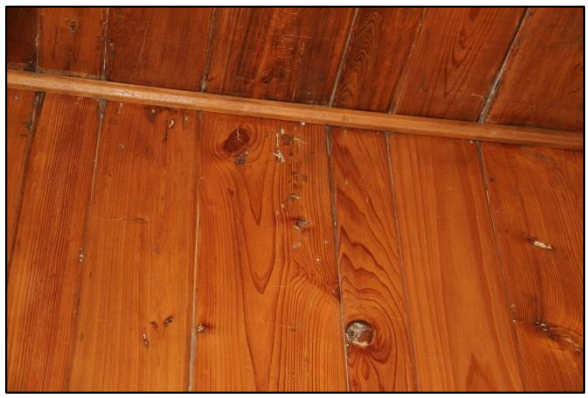


Figure 191. First-floor wall paneling, dating to 1937-39, was stripped of paint in 1983-86. Some paint can still be seen in knots and imperfections of the wood. Photo: HPTC, 05/10/16.



Figure 192, right. V-joint cypress paneling, dating to 1937-39, located on the second floor. Photo: HPTC, 05/10/16.

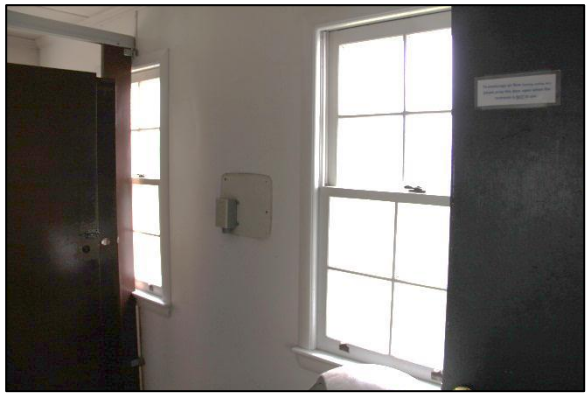


Figure 193. Painted masonite in Room 108. Photo: HPTC, 05/10/16.



Figure 194. Painted siding in Room 107. Photo: HPTC, 05/10/16.

C3020	Floor Finishes

Historic flooring was removed from the first floor during the 1983-86 preservation work to facilitate repairs to the first-floor structural floor frame. After those repairs were made, ¾" plywood sheathing and oak strip flooring were installed (fig. 195). The oak floors were then sanded and Tung oil was applied. In 1998, the floors were refinished with "varnish."

The flooring of the second floor is historic. It is believed that all of the southern yellow pine flooring was installed in 1892 when the addition was constructed on the main block, due to the flooring being very consistent throughout the second floor, including between the two parts of the main block (fig. 196). During the 1983-86 preservation work, the floors were patched, sanded, and Tung oil was applied. In 1998, the floors were refinished with Tung oil.

In the ca. 1957 restroom addition, Rooms 107, 108, and 110 the floors are clad 1'-0"-square VCT tiles (fig. 197). In Room 109, the floor is composed of unpainted plywood (fig. 198). Both of these floor finishes were likely installed during the addition's most recent renovation (ca. 1980?).



Figure 195. The oak strip flooring on the first floor was installed in 1983-86. Photo: HPTC, 05/10/16.

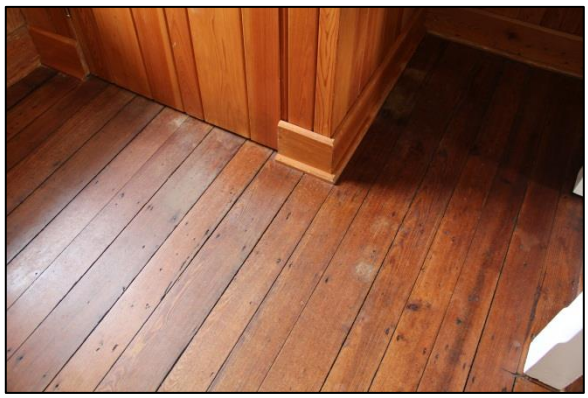


Figure 196. The pine flooring on the second floor is historic, if not original. Photo: HPTC, 05/10/16.



Figure 197. Modern VCT tile in one of the restrooms. Photo: HPTC, 05/10/16.



Figure 198, right. Unpainted plywood in Room 109. Photo: HPTC, 05/10/16.

C3030	Ceiling Finishes

The interior ceiling finishes of the 1854/1892 main block and 1854 kitchen wing were originally lath and plaster. During the 1937-39 CCC work (post-period of significance), the lath and plaster was removed and V-joint cypress paneling was installed. At some point afterward, likely between 1956 and 1958, the paneling was painted (fig. 199). During the 1985-87 preservation work, the cypress paneling was stripped of this paint, repaired, patched, and refinished to match its original look (fig. 200). In 1998, the interior paneling was cleaned and "reconditioned."

In the ca. 1957 restroom addition, Rooms 108 and 110 the ceilings are clad with painted drywall and batten strips (fig. 201). In Room 109, the ceiling is clad with painted and unpainted plywood. In Room 107, the ceiling is clad with painted beadboard (fig. 202). All of these ceiling finishes were likely installed during the addition's most recent renovation (ca. 1980?).

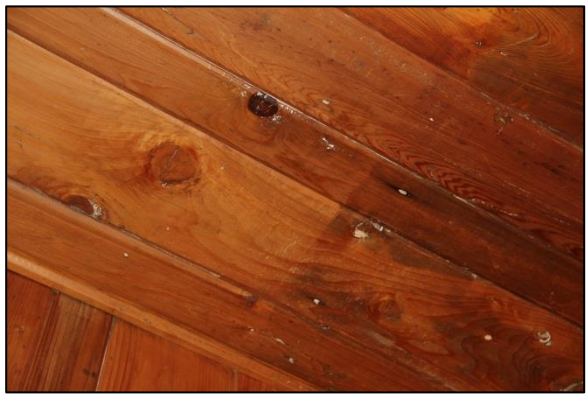


Figure 199. First-floor ceiling paneling, dating to 1937-39, was stripped of paint in 1983-86. Some paint can still be seen in knots and imperfections of the wood. Photo: HPTC, 05/10/16.

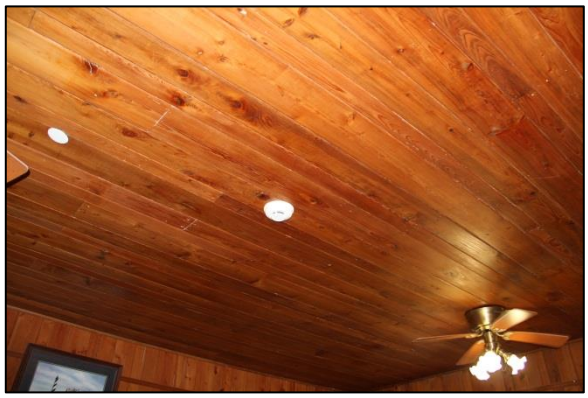


Figure 200. V-joint cypress ceiling paneling, dating to 1937-39, located on the second floor. Photo: HPTC, 05/10/16.



Figure 201. Drywall and batten strips in Room 108. Photo: HPTC, 05/10/16.



Figure 202 Wood beadboard ceiling in Room 203. Photo: HPTC, 05/10/16.

D	SERVICES
D20	PLUMBING

A plumbing system only services the ca. 1957 restroom addition of the Double Keepers' Quarters (fig. 203-204). The system likely dates to the addition's most recent renovation (ca. 1980?).



Figure 203. Modern plumbing fixtures in Room 107. Photo: HPTC, 05/10/16.

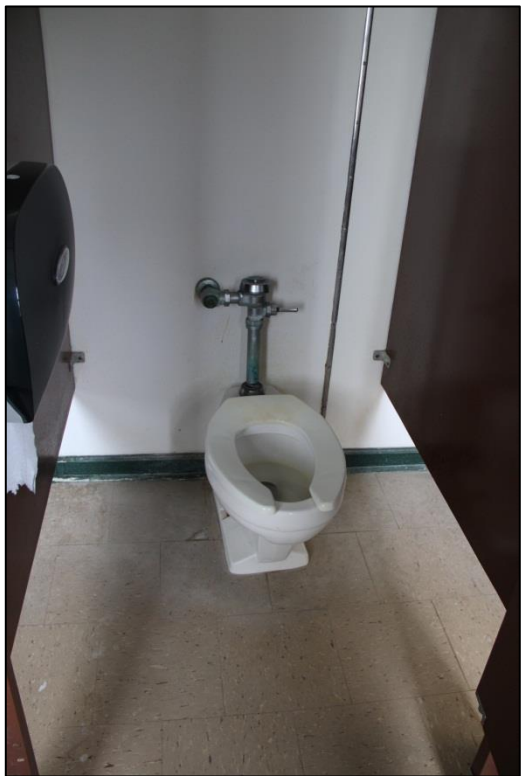


Figure 204, right. Modern toilet in Room 107. Photo: HPTC, 05/10/16.

D30	HVAC

A modern HVAC system was first installed in the Double Keepers' Quarters after its move in 1999 (ca. 2000). The system was replaced in 2015. There are four units on the first floor: the unit in Room 101 serves that room and the restroom addition; the unit in Room 103 serves that room only; the unit in Room 104 serves that room only; and the unit in Room 106 serves that room and the adjacent stair hall. There are three units on the second floor: the unit in Room 204 serves that room, Room 201, and Room 202 (fig. 205); the unit in Room 206 serves that room only; the united in Room 207 serves that room and Room 208 (fig. 206).

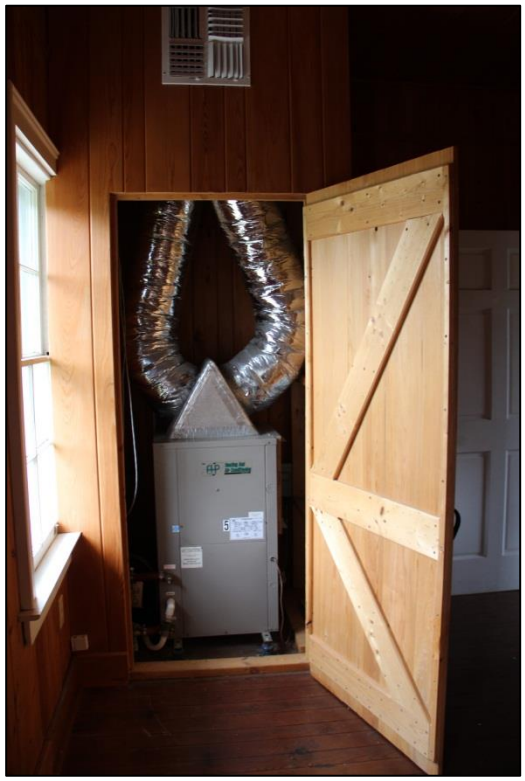


Figure 205. The unit is Room 204. Photo: HPTC, 05/10/16.



Figure 206. The unit in Room 207. Photo: HPTC, 05/10/16.

D40	FIRE PROTECTION SYSTEMS
D4010	Sprinklers

A wet-pipe sprinkler system was installed in the Double Keepers' Quarters after its move in 1999 (ca. 2000). The system's main controls are located in Room 109 (fig. 207). Pop-up heads are located in every first- and second-floor room (figs. 208-209); standard heads are located in the attic (fig. 210).



Figure 207. The main controls for the wet-pipe sprinkler system in Room 109. Photo: HPTC, 05/10/16.



Figure 208. A pop-up head (right) in the ceiling of Room 106. Photo: HPTC, 05/10/16.



Figure 209. A pop-up head in Room 204 (right) missing its cover. Photo: HPTC, 05/10/16.



Figure 210. A standard sprinkler head in the attic. Photo: HPTC, 05/10/16.

D4030	Fire Protection Specialties
D403001	Fire Extinguishers

Two fire extinguishers are located on the first floor: one each in Rooms 103 and 104. One fire extinguisher is located on the second floor, in Room 206.

D50	ELECTRICAL
D5010	Electrical Service & Distribution
D5020	Lighting & Branch Wiring

The modern electrical system, including panel, wiring, outlets, switches, and lighting were installed during the 1983-86 preservation work. A 200-amp electrical panel and 100-amp subpanel are located in Room 109 (figs. 211-212).



Figure 211. The 200-amp panel. Photo: HPTC, 05/10/16.



Figure 212. The 100-amp subpanel. Photo: HPTC, 05/10/16.

D5030	COMMUNICATIONS & SECURITY
D503001	Fire Alarm Systems

A fire alarm system was installed in the Double Keepers' Quarters after its move in 1999 (ca. 2000). The system includes hardwired smoke detectors, pull stations, and strobes throughout the first and second floors. The main control panel is located in Room 109.

D503008	Security Alarm Systems

A security system was installed in the Double Keepers' Quarters after its move in 1999 (ca. 2000). The main control panel is Room 107.

D5090	OTHER ELECTRICAL SYSTEMS
D509004	Lightning Protection System

No lightning protection system is currently extant at the Double Keepers' Quarters. A lightning protection system was located on the building in 1893 (fig. 213).

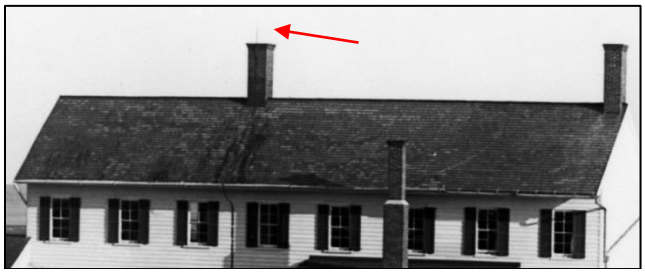


Figure 213, right. A lightning rod on the top of the east chimney in 1893. Photo: Cape Hatteras National Seashore Archives.

G	BUILDING SITEWORK
G20	SITE IMPROVEMENTS
G2030	Trail
G203003	Paved Surfaces

The modern brick-paved ramped walkways leading to the south porch were installed after in 2001 (fig. 214).



Figure 214, right. The modern brick ramped sidewalks leading to the Double Keepers' Quarters make the first floor of the building ABA compliant. Photo: HPTC, 05/11/16.

G2040	Site Development
G204001	Fencing & Gates

Fencing and gates surrounded the Double Keepers' Quarters throughout its history (see Chronology of Development and Use section for more information). None are currently extant.

G204008	Storm Water Collection & Storage

Two historic cisterns are located adjacent to the Double Keepers' Quarters.

The east cistern, dating to 1854, is still used to collect water from the building's roof drainage system. It is constructed of brick exterior walls; the top is composed of a concrete slab (fig. 215).

The west cistern, in place by 1932, is no longer used to collect water from the building's roof drainage system. It is constructed of brick exterior walls; the top is composed of a concrete slab (fig. 216).



Figure 215. The east cistern was constructed in 1854. Photo: HPTC, 05/11/16.



Figure 216. The west cistern is historic, but its exact date of construction is unknown. Photo: HPTC, 05/11/16.

G204099	Miscellaneous Structures

Several accessory structures surrounded the Double Keepers' Quarters throughout its history (see Chronology of Development and Use section for more information. None are currently extant.

G90	OTHER SITE WORK
G9087	Overall Building Site Drainage

The site drainage around the dwelling includes areas of neutral and negative drainage, meaning draining water either remains standing at the foundation or flows back towards the building rather than away. Because they building is raised several feet above grade, this is of little day-to-day concern; only during high-water events (flooding associated with hurricanes and nor'easters) would this be a concern.

Character-Defining Features

Each historic building is unique, with its own identity and its own distinctive character. Character refers to the visual aspects and physical features that comprise the appearance of historic buildings. Character-defining features include the overall shape of the building, its materials, craftsmanship, decorative details, interior spaces and features, as well as the various aspects of its site and environment. Identifying and preserving a building's character-defining features is essential.

A character-defining feature (CDF) is defined in Director's Order 28, *Cultural Resources Management Guidelines*, (Appendix A: Glossary) as:

> A prominent or distinctive aspect, quality, or characteristic of a historic property that contributes significantly to its physical character. Structures, objects, vegetation, spatial relationships, view, furnishings, decorative details, and materials may be such features.

In order to ascertain the important aspects of a building for future reference and analysis, character-defining features must be recorded. These are prominent or distinctive aspects, qualities, and characteristics of a historic property that contribute significantly to its physical character as represented at the time of intervention or treatment.

The process used in this assessment for determining the character-defining features was adapted from the NPS Preservation Brief #17: "Architectural Character: Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving Their Character," and are in accordance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties* and NPS Management Policies and Guidelines, specifically Director's Order 28, *Cultural Resource Management Guidelines.*

Preservation Brief #17 divides the assessment of character-defining features into three steps:

1. Identify the Overall Visual Aspects,
2. Identify the Visual Character at Close Range,
3. Identify the Visual Character of Interior Spaces, Features, and Finishes.

The purpose of Preservation Brief #17 is to help the owner or the architect identify those features or elements that give the building its visual character and that should be taken into account in order to preserve them to the maximum extent possible. The Brief states:

> There are different ways of understanding old buildings. They can be seen as examples of specific building types, which are usually related to a building's function.... Buildings can be studied as examples of using specific materials....They can also be considered as examples of an historical period, which is often related to a specific architectural style....
>
> There are many other facets of an historic building besides its functional type, its materials, or construction or style that contribute to its historic qualities or significance. Some of these qualities are feelings conveyed by the sense of time and place or in buildings associated with events or people. A complete understanding of any property may require documentary research about its style, construction, function, its furnishings or contents; knowledge about the original builder, owners, and later occupants; and knowledge about the evolutionary history of the building. Even though buildings may be of historic, rather than architectural significance, it is their tangible elements that embody its significance for association with specific events or

persons and it is those *tangible elements* both on the exterior and interior that should be preserved.

Therefore, the approach taken in this Brief is limited to identifying those visual and tangible aspects of the historic building. While this may aid in the planning process for carrying out any ongoing or new use or restoration of the building, this approach is not a substitute for developing an understanding about the significance of an historic building and the district in which it is located.

If the various materials, features, and spaces that give a building its visual character are not recognized and preserved, then essential aspects of its character may be damaged in the process of change.

A building's character can be irreversibly damaged or changed in many ways, for example, by inappropriate repointing of the brickwork, by removal of a distinctive side porch, by changes to the window sash, by changes to the setting around the building, by changes to the major room arrangements, by the introduction of an atrium, by painting previously unpainted woodwork, etc.

In summary, the Secretary of the Interior's Standards for the Treatment of Historic Properties embody two important goals:

1. Preservation of historic materials.
2. Preservation of a building's distinguishing character.

By succeeding at these two goals, it is likely that a building's historic integrity will be preserved.

Extant Character-Defining Features (to be retained)

Overall Visual Aspects

Shape and Mass (fig. 217)

- Shape and mass of the original, 1854 main block (rectangular, two-and-one-half stories with side-facing gable roof) and 1892 west addition (a continuation of the original structure), with south-face one-story front porch (shed roof).
- Shape and mass of the original, 1854 kitchen wing (rectangular, one story with side-facing gable roof).

Note: The rear restroom addition constructed in ca. 1957 is not



Figure 217. The Double Keepers' Quarters retains its character-defining shape and mass in the original main block and addition and kitchen wing. The north restroom addition (not visible in this photograph) is not considered a character-defining feature as it postdates the period of significance. Photo: HPTC, 05/12/16.

considered a character-defining feature because it postdates the period of significance. The rear porch is also not considered a character-defining feature because its dimensions do not accurately match the original rear porch.

Roof and Related Features

- Main block side-facing gable roof with cedar shingles (fig. 218).
- Main block south porch shed roof clad with cedar shingles (see fig. 218).
- Kitchen wing side0facing gable roof clad with cedar shingles (fig. 219).



Figure 218. The main block retains its side-facing, cedar-shingle-clad gable roof and shed-roofed south porch also with cedar shingles. Photo: HPTC, 05/11/16.



Figure 219. The original kitchen wing retains its side-facing, cedar-shingle-clad gable roof. Photo: HPTC, 05/11/16.

Openings

- All window and door placements and openings in the main block and kitchen wing (fig. 220).
- Alterations to original door and window openings in original main block in 1892 to accommodate moving the original northwest kitchen wing to the north elevation of the main block (later replaced in ca. 1957 with the extant non-character-defining restroom addition) and addition the addition to the main block (two west bays).
- Four-over-four double-hung wood windows (likely replacement) in all window openings (fig. 221).
- Four-panel exterior wood doors (replacement) in original main block and kitchen wing (fig. 222).



Figure 220. The window and door openings are original to their date of construction for the main block and northeast kitchen wing. Photo: HPTC, 05/11/16.



Figure 221. The 4/4 windows, though likely not original, accurately reflect what was in place by 1893. Photo: HPTC, 05/11/16.



Figure 222. The exterior doors in the main block and kitchen wing of the Double Keepers' Quarters are not original, but reflect the original doors which would have been present. The screen doors are not character-defining features. Photo: HPTC, 05/11/16.

Projections

- Two original brick chimneys (fig. 223).
- South porch (largely reconstructed to match original) (see fig. 220).
- Slightly projected eaves and soffits (fig. 224).



Figure 223. The west chimney, left, is believed to be original to its 1892 construction. The east chimney, right, is believed to be original to its 1854 construction. Photo: HPTC, 05/11/16.



Figure 224. Throughout the building, the eaves project out from the exterior walls. Photo: HPTC, 05/11/16.

Trim and Secondary Features

- Simple use of wood siding, trim, and other components (figs. 225-226).

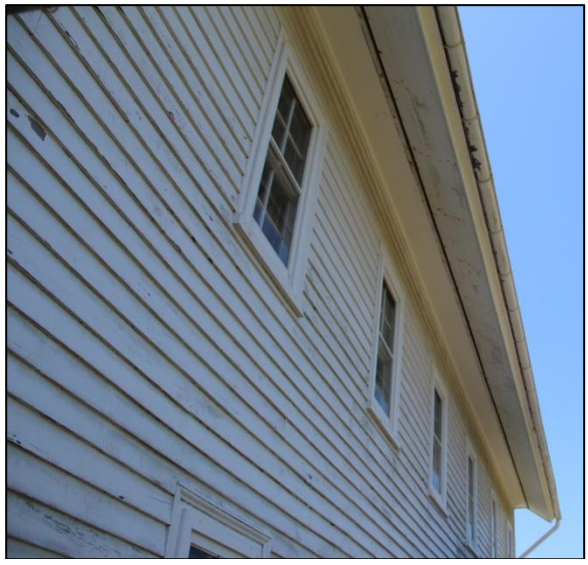




Figure 226, above. The wood components of the porches, while slightly degraded, are still character-defining features. Photo: HPTC, 05/11/16.

Figure 225, left. The wood siding and trim are likely not original, but are character-defining features. Photo: HPTC, 05/11/16.

Setting (fig. 227)

- Configuration of Double Keepers' Quarters in relation to other extant buildings (associated cisterns at east and west, Principal Keeper's Quarters to the east, and Oil House and Lighthouse to the southeast) at Hatteras Light Station.
- Rural, coastal location.



Figure 227. After the building's move, the Double Keepers' Quarters retained its coastal setting and its relation to other historic buildings on site. Photo: Cape Hatteras National Seashore Archives, 09/00.

Character, Materials & Craft Details at Close Range

- Brick piers, new to match original (fig. 228).
- Brick chimneys (fig. 229).
- Wood-framed and sided exterior walls (fig. 230).
- Wood porches, windows, doors, and other trim components (see fig. 230).
- Wood shingles on all roofs (fig. 231).



Figure 228. The brick piers are new due to the 1999 move of the building, but visually match the original piers. Photo: HPTC, 05/11/16.



Figure 229. The brick of the west chimney is a character-defining feature. Photo: HPTC, 05/11/16.



Figure 230. The wood components of the exterior windows, doors, trim, and porches are important character-defining features. Photo: HPTC, 05/11/16.



Figure 231. The cedar shingles of the roofs, here on the kitchen wing, are character-defining features. Photo: HPTC, 05/11/16.

Interior Visual Character

Individual Spaces, Related Spaces & Sequence of Spaces

- Retention of major room configurations in the 1852 main block and 1892 addition; the kitchen wing does not retain its smaller interior rooms and the restroom addition is not a character-defining element.
- Flow between individual rooms is extant in the form of original and historic door openings; door openings added during the CCC era are not character-defining features (see Physical Description of C1020 Interior Doors for more information).
- Gathering places, like fireplaces, are intact.

Interior Features

- Reconstructed fireplaces in the three main block first-floor rooms and two main block second-floor rooms (fig. 232); however the brick would have been covered with plaster.
- Two original wood staircases between first and second floors of the main block (fig. 233).
- Interior doors and trim, though not original, likely match historic painted components.
- Historic closets extant in second floor of main block addition; modern HVAC closets and closet under west stair are not character-defining features.



Figure 232. One of the reconstructed fireplaces on the first floor of the main block. Photo: HPTC, 05/10/16.

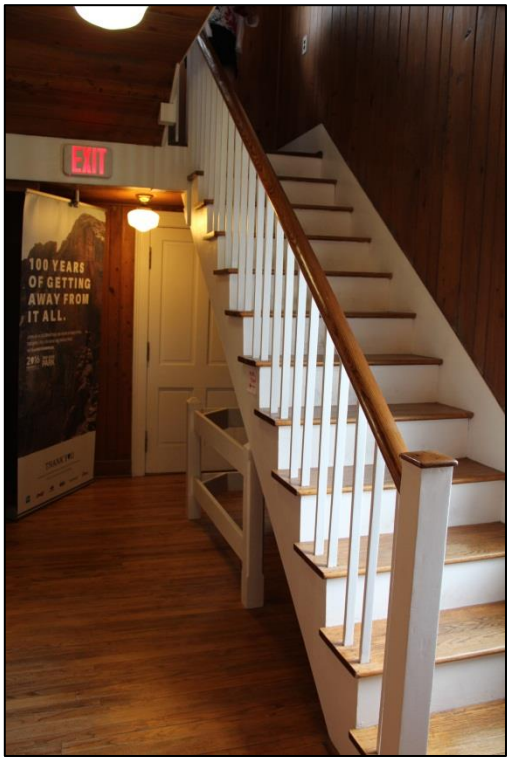


Figure 233. The original west stair in the main block. The east stair is identical, but reverse. Photo: HPTC, 05/10/16.

Surface Materials and Finishes

- Original wood staircases (see fig. 23317).
- Replacement hardwood (oak) floors on the first floor (fig. 234) and historic, if not original, pine floors on the second floor (fig. 235).

Note: CCC-installed cypress ceiling and wall interior paneling is not considered character defining as it postdates the building's period of significance.



Figure 234. The first-floor oak flooring was installed during the 1983-86 preservation work. It does not match the historic flooring seen on the second floor, but is an adequate replacement. Photo: HPTC, 05/10/16.



Figure 235. The second-floor pine flooring is historic and may be original. Photo: HPTC, 05/11/16.

Missing Character-Defining Features
(to be reconstructed in future phases of treatment)

- Shutters on all exterior window openings.
- Chimney at extant northeast kitchen wing.
- Interior partition walls (with plaster above wainscoting) in the extant northeast kitchen wing.
- 1854 northwest kitchen wing which was moved to the rear of the building in 1892, and was replaced in ca. 1957 with the extant non-character-defining restroom addition.
- Rear porch to accurately match the original rear porch.
- Plaster wall and ceiling finishes on the interior, including at fireplaces.
- Associated, adjacent outbuildings to match 1932 photograph (fig. 236).



Figure 236. Hatteras Light Station in 1932, around the time the last keeper vacated the Principal Keeper's Quarters. Exterior buildings and fences associated with the cultural landscape should be reconstructed. Photo: Cape Hatteras National Seashore Archives. Cropped by author.

- Concrete posts and wire fence around perimeter of building site to match 1932 photograph (also recommended in Cultural Landscape Report for Hatteras Light Station[1]).
- Walks and circulation paths associated with the Double Keepers' Quarters within its fenced building site (as recommended in Cultural Landscape Report).

Non-Character Defining Features
(to be removed in future phases of treatment)

- Ca. 1957 restroom addition which postdates building's period of significance.
- Reconstructed rear porch which does not accurately match the original rear porch.
- CCC-era cypress interior paneling which postdates building's period of significance.
- CCC-era interior door openings which postdate building's period of significance.
- CCC-era closet under west staircase which postdates building's period of significance.
- Modern HVAC closets.

[1] National Park Service. "Cape Hatteras Light Station." *Cultural Landscape Report.* Cultural Resources, Southeast Region. June 15, 2004. DSC eTIC No. CAHA 603 D214.

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Condition Assessment

The conditions assessment definitions used for this HSR are based on those outlined in the NPS PFMD's Asset Management Process (AMP), the Facilities Management Software System (FMSS), and the Facility Condition Assessment Survey (FCAS) and adapted for use by HPTC. For the purpose of this report, these definitions were strictly adhered to as a way to qualitatively assess the current condition of the Hatteras Light Station Double Keepers' Quarters.

Qualitative Condition Ratings

Good

- Routine maintenance should be sufficient to maintain the current condition; and/or
- A cyclic maintenance or repair/rehabilitation project is not specifically required to maintain the current condition or correct deficiencies.

Fair

- The feature generally provides an adequate level of service to operations, but
- The feature requires more than routine maintenance, and
- Cyclic maintenance or repair/rehabilitation work may be required in the future.

Poor

- Feature requires immediate attention;
- Routine maintenance is need at a much higher level of effort to meet significant safety and legal requirements;
- Cyclic maintenance should be scheduled for the current year; and/or
- A special repair/rehabilitation project should be requested consistent with park requirements, priorities, and long-term management objectives.

Maintenance Deficiency Priority Ratings (10-Year Rating Period)

Minor – Short-Term/Long-Term Priority

- This rating indicates standard preventative maintenance priorities and preservation methods have not been follow; or
- There is reduced life expectancy of affected adjacent or related materials and/or systems within 5 to 10 years and beyond; or
- There is condition with a long-term impact within 5 to 10 years and beyond.

Serious – Immediate/Short-Term Priority

- This rating defines a deteriorated condition that if not corrected within 1 to 5 years will result in the failure of the feature; or

- A threat to the health and/or safety of the user may occur within 1 to 5 years if the ongoing deterioration is not corrected; or
- There is ongoing deterioration of adjacent or related materials and/or features as a result of the feature's deficiency.

Critical – Immediate Priority

- This rating defines an advanced state of deterioration which has resulted in the failure of a feature or will result in the failure of a feature if not corrected within 1 year; or
- There is accelerated deterioration of adjacent or related materials or systems as a result of the feature's deficiencies if not corrected within 1 year; or
- There is immediate threat to the health and/or safety of the user; or
- There is failure to meet a legislated requirement.

Not Rated

- The feature was not rated as it was not extant at the time of the report or is non-contributing, removed, and not planned to be replaced.

Code Compliance

Both NPS policies and federal regulations stipulate that when an historic structure is preserved and/or rehabilitated, attempts should be made to meet applicable nationally-accepted model building codes to the maximum extent feasible. Compliance with nationally-accepted codes does not automatically trigger a complete code-based upgrade. Alternative criteria exist for alterations to historic structures; these typically encourage flexibility in the literal application of the code intent.

The *Public Buildings Amendment of 1988* instructs Federal agencies to follow "to the maximum extent feasible," as determined by the administrator or head of the agency, the "…nationally recognized model building codes and other applicable nationally recognized codes such as electrical codes, and fire and life safety codes." The National Park Service intends to consult pertinent national, state, and local codes, and typically applies to most strident code requirements. The Southeast Regional Office (NPS) Structural Fire Safety leader will be the Authority Having Jurisdiction (AHJ) for final determination of code applications for these structures.

The National Park Service has prepared Design Standards for all construction projects, including those affecting historic structures.[1] The design standard presents all codes that should be reviewed and includes the most recent copies of the following major codes and applicable laws, policies, codes, directives, standards, and NPS guidelines. The design standards present requirements for accessibility, civil, and environmental engineering, landscape architecture, architecture, including roofing and waterproofing, structural, mechanical, safety and fire protection, electrical, lighting, and sustainability disciplines.

Major codes, laws, standards, and guidelines that are part of the NPS Design Standards include:

[1] Denver Service Center. "Design Standards." *Denver Service Center Workflows.* National Park Service, Department of the Interior. 2009. Accessed at http://www.nps.gov/dscw/dstandards.htm on March 6, 2012.

- *Architectural Barriers Act Accessibility Standard* (ABAAS) for Federal Facilities, 2004
- *International Building Code* (IBC), 2009
- *International Existing Building Code* (IEBC), 2009
- *National Fire Protection Association 101* (NFPA 101), Life Safety Code
- *National Historic Preservation Act of 1966* (NHPA), amended
- *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* (36 CFR 68), 1995
- *The Secretary of the Interior's Standards for the Treatment of Historic Properties and the Guidelines for the Treatment of Cultural Landscapes*
- *The Secretary of the Interior's Standards and Guidelines for Archeological Documentation*
- *Uniform Code for Building Conservation*
- *Building Construction and Safety Code* (NFPA 5000)
- *National Fire Protection Association 70* (NFPA 70), National Electrical Code
- *Installation of Lightning Protection Systems* (NFPA 780)
- *Code for the Protection of Cultural Resource Properties* (NFPA 909)
- *Code for the Fire Protection of Historic Structures* (NFPA 914)
- *Safeguarding Construction, Alteration, and Demolition Operations* (NFPA 241)
- *Director's Order (DO) 5oB, Risk Management* (Manual 50B)
- *Director's Order (DO) 58, Structural Fire Management* (Manual 58)
- *5 U.S.C § 7902* (Safety Program)
- *15 U.S.C § 2225* (Fire Prevention and Control)
- *29 U.S.C § 668* (Occupational Safety and Health)
- *40 U.S.C § 619* (Construction, Alteration, and Acquisition of Public Buildings)

Summary of Conditions

Table 3. **Hatteras Light Station Double Keepers' Quarters Summary of Conditions**

UNIFORMAT II Outline Data		Condition Rating	Deficiency Rating
A	SUBSTRUCTURE		
A10	FOUNDATIONS		
A1010	Standard Foundations		
A101002	Column Piers	GOOD	MINOR
B	SHELL		
B10	SUPERSTRUCTURE		
B1010	Floor Construction		
B101001	Structural Frame		
B101001-1	Main Block First-Floor Structural Floor Frame	GOOD	MINOR
B101001-2	South Porch Structural Floor Frame	FAIR	SERIOUS
B101001-3	1854 Kitchen Wing Structural Floor Frame	GOOD	MINOR
B101003-4	North Porch Structural Floor Frame	GOOD	MINOR
B101003-5	ca. 1957 Restroom Addition Structural Floor Frame	GOOD	MINOR

(Table 3 continued)

			B101003-6	Main Block Second-Floor Structural Floor Frame	GOOD	MINOR
			B101003-7	Main Block Attic Structural Floor Frame	GOOD	MINOR
			B101003-8	1854 Kitchen Wing Attic Structural Floor Frame	GOOD	MINOR
			B101003-9	ca. 1957 Restroom Addition Attic Structural Floor Frame	GOOD	MINOR
		B101002	Structural Interior Walls		GOOD	MINOR
	B1020	Roof Construction				
		B1020-1	Main Block Structural Roof Frame		FAIR	MINOR
		B1020-2	South Porch Structural Roof Frame		GOOD	MINOR
		B1020-3	North Porch Structural Roof Frame		GOOD	MINOR
		B1020-4	1854 Kitchen Wing Structural Roof Frame		FAIR	MINOR
		B1020-5	ca. 1957 Restroom Addition Structural Roof Frame		FAIR	MINOR
B20	EXTERIOR ENCLOSURE					
	B2010	Exterior Walls				
		B2010-1	Main Block Frame Exterior Walls		FAIR	SERIOUS
		B2010-2	1854 Kitchen Wing Frame Exterior Walls		FAIR	SERIOUS
		B2010-3	ca. 1957 Restroom Addition Frame Exterior Walls		FAIR	SERIOUS
		B2010-4	Chimneys		FAIR	SERIOUS
		B2010-5	Porches		FAIR	SERIOUS
	B2020	Exterior Windows			FAIR	SERIOUS
	B2030	Exterior Doors			GOOD	MINOR
B30	ROOFING					
	B3010	Roof Coverings				
		B301001	Roof Finishes			
			B301001-1	Main Block Roof Finishes	POOR	SERIOUS
			B301001-2	South Porch Roof Finishes	POOR	SERIOUS
			B301001-3	North Porch Roof Finishes	POOR	SERIOUS
			B301001-4	1854 Kitchen Wing Roof Finishes	POOR	SERIOUS
			B301001-5	ca. 1957 Restroom Addition Roof Finishes	POOR	SERIOUS
		B301003	Roof Insulation & Fill		FAIR	SERIOUS
		B301004	Flashings & Trim			
			B301004-1	Roof-Side Wall Flashing	GOOD	MINOR
			B301004-2	Chimney Flashing	GOOD	MINOR
		B301005	Gutters & Downspouts		FAIR	SERIOUS
C	INTERIORS					
	C10	INTERIOR CONSTRUCTION				
	C1020	Interior Doors			GOOD	MINOR
	C1030	Fittings				
		C103010	Closets			
			C103010-1	Historic Closets	GOOD	MINOR
			C103010-2	Modern Closets	GOOD	MINOR
		C103098	Other Casework			
			C103098-1	Trim	GOOD	MINOR
			C103098-2	Fireplaces	FAIR	SERIOUS

(Table 3 continued)

C20	STAIRS			
C2010	Stair Construction			
C201001	Interior Stair Construction		FAIR	MINOR
C201002	Exterior Stair Construction		FAIR	MINOR
C30	INTERIOR FINISHES			
C3010	Wall Finishes		GOOD	MINOR
C3020	Floor Finishes		POOR	SERIOUS
C3030	Ceiling Finishes		GOOD	MINOR
D	SERVICES			
D20	PLUMBING		FAIR	MINOR
D30	HVAC		FAIR	MINOR
D40	FIRE PROTECTION SYSTEMS			
D4010	Sprinklers		GOOD	MINOR
D4030	Fire Protection Specialties			
D403001	Fire Extinguishers		GOOD	MINOR
D50	ELECTRICAL			
D5010	Electrical Service & Distribution		GOOD	MINOR
D5020	Lighting & Branch Wiring			
D5030	Communications & Security Systems			
D503001	Fire Alarm Systems		GOOD	MINOR
D503008	Security Alarm Systems		GOOD	MINOR
D5090	Other Electrical Systems			
D509004	Lightning Protection System		POOR	CRITICAL
G	BUILDING SITEWORK			
G20	SITE IMPROVEMENTS			
G2030	Trail			
G203003	Paved Surfaces		GOOD	MINOR
G2040	Site Development			
G204001	Fencing & Gates		N/A	N/A
G204008	Storm Water Collection & Storage (Cisterns)		POOR	MINOR
G204099	Miscellaneous Structures		N/A	N/A
G90	OTHER SITE WORK			
G9087	Overall Building Site Drainage		POOR	CRITICAL
End of Table.				

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Double Keepers' Quarters Condition Assessment

Note: Additional photographs of all building features are found in the physical description section.

A	SUBSTRUCTURE
A10	FOUNDATIONS
A1010	Standard Foundations
A101002	**Column Piers**

The modern brick-faced, concrete block piers and concrete footings were not completely accessible. Those portions which could be seen were found to be in good condition. Furthermore, based on conditions of adjacent materials (first-floor structural floor framing, finish floors, etc.), the piers are stable and structurally sound.

Condition Rating: GOOD
Deficiency Rating: MINOR

B	SHELL
B10	SUPERSTRUCTURE
B1010	Floor Construction
B101001	Structural Frame
B101001-1	**Main Block First-Floor Structural Floor Frame**

The first-floor structural floor frame of the main block, wholly replaced in 1983-86, is in overall good condition. However, several of the metal straps joining the joists to the support beams are slightly corroded, which is to be expected in a coastal environment (fig. 237). Furthermore, without any insulation, air barrier, or vapor barrier, moisture and air can infiltrate up into the conditioned first floor.

Condition Rating: FAIR
Deficiency Rating: MINOR



Figure 237. Some of the metal straps are slightly corroded. Photo: HPTC, 05/11/16.

B101001-2	South Porch Structural Floor Frame

The south porch structural floor frame, wholly replaced in 1983-86, is inaccessible for direct inspection. However, based on conditions in adjacent areas, the structural floor frame is likely in fair condition, especially due to the abutment of the raised brick ramp sidewalk and added porch floor at the south elevation of the south porch (fig. 238). This could allow the accumulation of excess water that might affect the south porch framing members.

Condition Rating: FAIR
Deficiency Rating: SERIOUS



Figure 238. The brick ramp sidewalk abuts the added floor of the south porch. This could cause excess water to affect the structural floor frame. Photo: HPTC, 05/11/16.

B101001-3	1854 Kitchen Wing Structural Floor Frame

The structural floor frame of the 1854 kitchen wing, wholly replaced in 1983-86 is in overall good condition. However, several of the metal straps joining the joists to the support beams are slightly corroded, which is to be expected in a coastal environment. Furthermore, without any insulation, air barrier, or vapor barrier, moisture and air can infiltrate up into the conditioned first floor.

Condition Rating: GOOD
Deficiency Rating: MINOR

B101001-4	North Porch Structural Floor Frame

The east porch structural floor frame, wholly replaced in 1983-86, is in overall good condition. However, several of the metal straps joining the joists to the support beams are slightly corroded, which is to be expected in a coastal environment.

Condition Rating: GOOD
Deficiency Rating: MINOR

B101001-5	ca. 1957 Restroom Addition Structural Floor Frame

The structural floor frame of the ca. 1957 restroom addition, wholly replaced in 1985-98, is in good condition. However, several of the metal straps joining the joists to the support beams are slightly corroded, which is to be expected in a coastal environment. Furthermore, without any insulation, air barrier, or vapor barrier, moisture and air can infiltrate up into the conditioned first floor.

Condition Rating: GOOD
Deficiency Rating: MINOR

B101001-6	Main Block Second-Floor Structural Floor Frame

The main block second-floor structural floor frame, likely original to 1854/92, is inaccessible for direct inspection. However, based on conditions in adjacent areas, the structural floor frame is likely in good condition.

Condition Rating: GOOD
Deficiency Rating: MINOR

B101001-7	Main Block Attic Structural Floor Frame

The main block attic structural floor frame, likely original to 1854/92, appears to be in good structural condition. The insulation within the floor frame does not include an air barrier, which can cause air infiltration from the conditioned space below.

Condition Rating: GOOD
Deficiency Rating: MINOR

B101001-8	1854 Kitchen Wing Attic Structural Floor Frame

The 1854 kitchen wing attic structural floor frame, likely original to 1854, is inaccessible for direct inspection. However, based on adjacent areas, the structural floor frame is likely in good condition.

Condition Rating: GOOD
Deficiency Rating: MINOR

B101001-9	ca. 1957 Restroom Addition Attic Structural Floor Frame

The ca. 1957 restroom addition attic structural floor frame, likely original to ca. 1957, is inaccessible for direct inspection. However, based on adjacent areas, the structural floor frame is likely in good condition.

Condition Rating: GOOD
Deficiency Rating: MINOR

B101002	Structural Interior Walls

The structural interior walls (originally exterior walls), appear to be in good structural condition.

Condition Rating: GOOD
Deficiency Rating: MINOR

B1020	Roof Construction
B1020-1	**Main Block Structural Roof Frame**

The extant original structural roof frame of the 1854/92 main block would not meet current building specifications due to inadequate sizes of members, inadequate spacing between members, lack of tie rafters, etc. However, the roof frame is original and has resisted the environmental and weather forces until this time, which is evidence the roof framing is sufficient and in good structural condition.

Historic water infiltration through the roof covering has stained some of the rafters (wood is solid) and caused deterioration to some of the skip sheathing boards (fig. 239).



Figure 239. Historic leaking water through the roof has caused staining of the rafters and deterioration of some of the sheathing boards. Photo: HPTC, 05/10/16.

Condition Rating: FAIR
Deficiency Rating: MINOR

B1020-2	South Porch Structural Roof Frame

The extant south porch structural roof frame, likely original, is inaccessible for direct inspection. However, based on adjacent areas, the structural floor frame is likely in good structural condition.

Condition Rating: GOOD
Deficiency Rating: MINOR

B1020-3	North Porch Structural Roof Frame

The extant north porch structural roof frame, not original and likely early twentieth century, is inaccessible for direct inspection. However, based on adjacent areas, the structural floor frame is likely in good structural condition.

Condition Rating: GOOD
Deficiency Rating: MINOR

B1020-4	1854 Kitchen Wing Structural Roof Frame

The 1854 kitchen wing structural roof frame, likely original, is inaccessible for direct inspection. However, based on adjacent areas, the structural floor frame is likely in good structural condition. It likely exhibits water staining to framing members similar to those seen in the main block structural roof frame.

Condition Rating: FAIR
Deficiency Rating: MINOR

B1020-5	ca. 1957 Restroom Addition Structural Roof Frame

The ca. 1957 restroom addition structural roof frame, likely dating to ca. 1957, is inaccessible for direct inspection. However, based on adjacent areas, the structural floor frame is likely in good condition. It likely exhibits water staining to framing members similar to those seen in the main block structural roof frame.

Condition Rating: FAIR
Deficiency Rating: MINOR

B20	EXTERIOR ENCLOSURE
B2010	Exterior Walls
B2010-1	**Main Block Frame Exterior Walls**

The frame exterior walls of the main block appear to be in good structural condition. However the painted wood exterior siding exhibits paint failure (fig. 240), exposed and corroded nails, biological growth (fig. 241), and wood rot (fig. 242), particularly at ends of siding and where the siding is close to an adjacent roof (fig. 243). The foil-backed insulation extant within the framed walls can block vapor permeability through the wall and could be triggering the paint failure through trapped moisture.

Condition Rating: POOR
Deficiency Rating: SERIOUS



Figure 240. Peeling paint on the west elevation of the main block. Photo: HPTC, 05/11/16.



Figure 241, right. Biological growth on the north elevation, typical due to the lack of direct sun exposure. Photo: HPTC, 05/11/16.

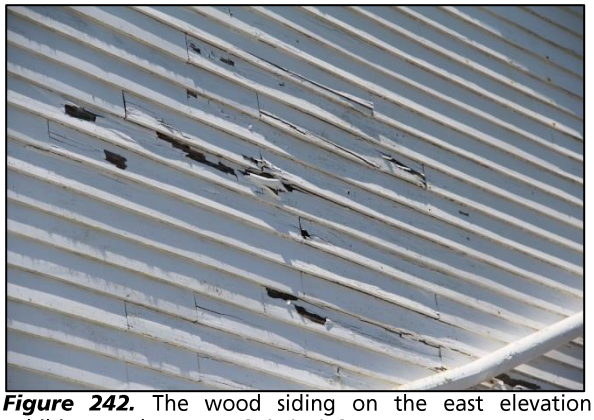


Figure 242. The wood siding on the east elevation exhibits rot. Photo: HPTC, 05/11/16.

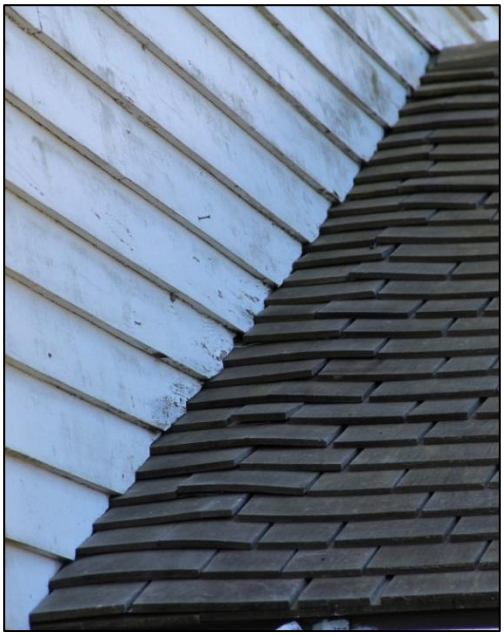


Figure 243, right. Ends deteriorated where they abut the restroom addition roof. Photo: HPTC, 05/11/16.

B2010-2	1854 Kitchen Wing Frame Exterior Walls

The frame exterior walls of the 1854 kitchen wing appear to be in good structural condition. However the painted wood exterior siding exhibits paint failure (fig. 244), exposed and corroded nails, biological growth (fig. 245), and wood rot (fig. 246). The foil-backed insulation extant within the framed walls can block vapor permeability through the wall and could be triggering the paint failure through trapped moisture.

Condition Rating: POOR
Deficiency Rating: SERIOUS



Figure 244. Paint on the south elevation of the kitchen wing is failing. Photo: HPTC, 05/11/16.



Figure 245. Biological growth on the north elevation of the kitchen wing, typical due to lack of direct sun exposure. Photo: HPTC, 05/11/16.



Figure 246. Deteriorated paint on the wood siding on the east elevation. Photo: HPTC, 05/11/16.

B2010-3	Ca. 1957 Restroom Addition Frame Exterior Walls

The frame exterior walls of the ca. 1957 restroom addition appear to be in good structural condition. However the painted wood exterior siding exhibits paint failure, exposed and corroded nails, biological growth, and wood rot (fig. 247). The foil-backed insulation extant within the framed walls can block vapor permeability through the wall and could be triggering the paint failure through trapped moisture.

Condition Rating: POOR
Deficiency Rating: SERIOUS



Figure 247. Paint failure, wood rot, and biological growth on the north elevation of the restroom addition. Photo: HPTC, 05/11/16.

B2010-4	Chimneys

The chimneys are in overall good structural condition. Both chimneys lack screened caps at the top of their flues to deter infiltration of rain water, insects, and rodents (fig. 248).

Furthermore, the character-defining chimney from the 1854 kitchen wing has been removed which deters from the historic building.

Condition Rating: FAIR
Deficiency Rating: SERIOUS

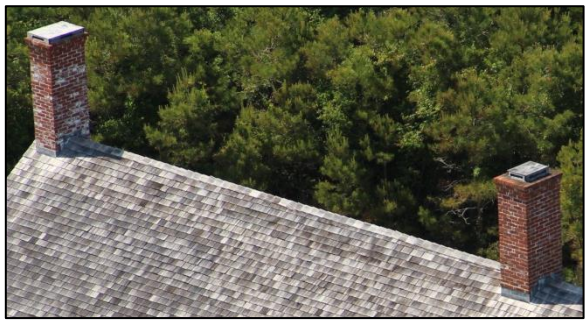


Figure 248. The chimneys do have wood caps, however they are not screened. Photo: HPTC, 05/11/16.

B2010-5	Porches

The painted wood south porch is in overall fair condition. It exhibits some paint failure, exposed nails, movement of extant Dutchman repairs, and biological growth. The added porch floor atop of the original floor, along with the abutting grade, causes the retention of water in this area and can cause deterioration of wood components.

The painted north east porch is also in overall fair condition. It also exhibits some paint failure, exposed nails, and biological growth. Furthermore, this porch, which has been reconstructed, does not exactly match the original size of the porch.

Condition Rating: FAIR
Deficiency Rating: SERIOUS

B2020	Exterior Windows

The wood exterior storm units, exterior wood trim components, and exterior windows exhibit the following issues: deteriorating paint, failing glazing putty (fig. 249), lack of storm window ventilation (fig. 250), biological growth, and rusting fasteners (fig. 251). Because of the existence of the exterior storm windows, the historic wood windows are in fair condition with some minor paint and glazing putty deterioration.

Wood shutters are no longer extant. They were last removed by 1998, likely to accommodate exterior storm windows.

Condition Rating: FAIR
Deficiency Rating: SERIOUS



Figure 249. Deteriorated and missing glazing putty on an exterior storm unit. Note the minor deterioration to the paint and glazing putty of the wood sash behind. Photo: HPTC, 05/11/16.

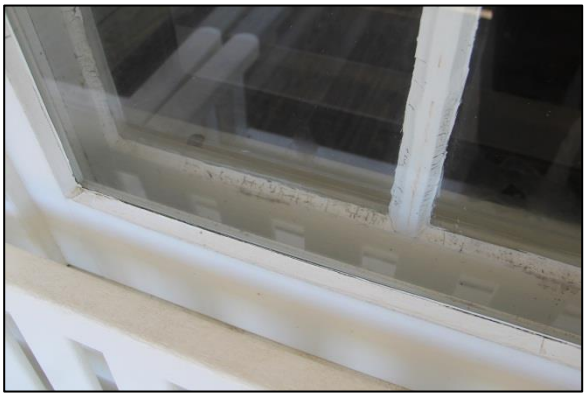


Figure 250. Biological growth and cracked glazing putty on the window sash and not the storm window suggests that there is inadequate ventilation at the storm window, and building heat between the two planes has caused the putty to crack. Photo: HPTC, 05/11/16.



Figure 251, right. Rusting fasteners (nails) on a storm on the east elevation of the main block. Note the lack of ventilation/weep holes in the storm windows. Photo: HPTC, 05/11/16.

B2030	**Exterior Doors**

The 1983-86 replacement exterior doors and screen doors show only minor signs of everyday wear and tear, including scuff marks, but are otherwise in good operating condition.

Condition Rating: GOOD
Deficiency Rating: MINOR

B30	ROOFING	
B3010	Roof Coverings	
B301001	Roof Finishes	
B301001-1	**Main Block Roof Finishes**	

The ca. 2011-installed cedar shingle main block roof is in overall good visual condition, and should be due to its young age (approximately five years). However it was not installed according to Cedar Shake and Shingle Bureau (CSSB) specifications. Shingle roofs (typically of western red cedar, Alaskan yellow cedar, or redwood) which have been installed according to CSSB specifications carry a twenty to twenty-five year installation guarantee and typically last at least thirty years. The following assessment was made of the current main roof as compared to CSSB specifications:

	CSSB Specifications	**Current Conditions**
Product Grade	No. 1 Clear shingles preferred	Unknown.
Sheathing	Skip sheathing or sheathing boards (1x4 or 1x6 boards placed horizontally across rafters) spaced according to exposed surface of shingle, to allow proper ventilation. No solid plywood sheathing! No interlaid felt! No tar paper underlayment!	Historic skip sheathing boards extant. Tar paper underlayment installed (fig. 252)!
Fasteners	Ring-shank stainless steel "Type 316" nail, probably 4d. Not underdriven or overdriven! Not hot-dipped or electro-galvanized!	Ring-shank nails, likely 4d (type unknown). Many overdriven between sheathing boards (see fig. 252)!
Zinc or Copper Strips	Helpful at ridge cap/vent and every 6'-0" down the slope to deter biological growth, but not required.	Not present.
Preservative Treatments	Preservative treatment (Certi-Last) is especially helpful in high-humidity areas to extend the service life, but not required.	Unknown.
Attic Ventilation	Movement of air will prevent or inhibit condensation of moisture on the underside of shingles or roof decks. Vents should be provided at soffits (eaves), gable ends (screened), and ridge lines.	Soffit vents extant, but air cannot move to attic due to presence of insulation at floor (figs. 253-254)! Gable end vents present but inadequate for size of attic (fig. 255)! No ridge vents extant!
Starter Course	Double or triple starter course preferred.	Double starter course.
Overhangs	Butts of first course of shingles should project 1-½" over fascia and approximately 1" over the gable or rake end.	Approximately correct.
Spacing	Spacing between adjacent shingles (joints), upon installation, should be between ¼" to $^{3}/_{8}$".	Unknown.

Because the cedar shingle roof was not installed in full accordance to CSSB specifications, the extant roof will have a dramatically shorter lifespan (ten to fifteen years should be assumed); therefore the roof is already a third to halfway through its lifespan.

At this time, it still performs as a watertight roof.

Condition Rating: POOR
Deficiency Rating: SERIOUS



Figure 252. Tar paper has been (inappropriately) laid over the sheathing boards and under the shingles. Overdriven nails can be seen between sheathing boards. Photo: HPTC, 05/10/16.



Figure 253. Soffit vents are extant around the perimeter of the building, but cannot adequately vent the attic due to the presence of insulation in the attic which blocks this air flow. Photo: HPTC, 05/11/16.



Figure 254. Attic insulation covers the soffit vents which inhibit their use. Photo: HPTC, 05/10/16.



Figure 255. The screen gable-end vents are inadequate for the size of the attic. Photo: HPTC, 05/10/16.

B301001-2	South Porch Roof Finishes

The ca. 2011-installed cedar shingle south porch roof is in overall good visual condition, and should be due to its young age (approximately five years). However it was not installed according to CSSB specifications. Shingle roofs (typically of western red cedar, Alaskan yellow cedar, or redwood) which have been installed according to CSSB specifications carry a twenty to twenty-five year installation guarantee and typically last at least thirty years. Because the space between the

porch ceiling and roof is inaccessible, its construction conditions are unknown. Therefore it is assumed that the south porch roof was installed in much the same way as the main block roof. The assessment of the roof as compared to CSSB specifications is likely similar (see p. 163).

Because the cedar shingle roof was not installed in full accordance to CSSB specifications, the extant roof will have a dramatically shorter lifespan (ten to fifteen years should be assumed); therefore the roof is already a third to halfway through its lifespan.

At this time, it still performs as a watertight roof.

Condition Rating: POOR
Deficiency Rating: SERIOUS

B301001-3	North Porch Roof Finishes

The ca. 2011-installed cedar shingle north porch roof is in overall good visual condition, and should be due to its young age (approximately five years). However it was not installed according to CSSB specifications. Shingle roofs (typically of western red cedar, Alaskan yellow cedar, or redwood) which have been installed according to CSSB specifications carry a twenty to twenty-five year installation guarantee and typically last at least thirty years. Because the space between the porch ceiling and roof is inaccessible, its construction conditions are unknown. Therefore it is assumed that the north porch roof was installed in much the same way as the main block roof. The assessment of the roof as compared to CSSB specifications is likely similar (see p. 163).

Because the cedar shingle roof was not installed in full accordance to CSSB specifications, the extant roof will have a dramatically shorter lifespan (ten to fifteen years should be assumed); therefore the roof is already a third to halfway through its lifespan.

At this time, it still performs as a watertight roof.

Condition Rating: POOR
Deficiency Rating: SERIOUS

B301001-4	1854 Kitchen Wing Room Finishes

The ca. 2011-installed cedar shingle kitchen wing roof is in overall good visual condition, and should be due to its young age (approximately five years). However it was not installed according to CSSB specifications. Shingle roofs (typically of western red cedar, Alaskan yellow cedar, or redwood) which have been installed according to CSSB specifications carry a twenty to twenty-five year installation guarantee and typically last at least thirty years. Because the space between the porch ceiling and roof is inaccessible, its construction conditions are unknown. Therefore it is assumed that the kitchen wing roof was installed in much the same way as the main block roof. The assessment of the roof as compared to CSSB specifications is likely similar (see p. 163).

Because the cedar shingle roof was not installed in full accordance to CSSB specifications, the extant roof will have a dramatically shorter lifespan (ten to fifteen years should be assumed); therefore the roof is already a third to halfway through its lifespan.

At this time, it still performs as a watertight roof.

Condition Rating: POOR
Deficiency Rating: SERIOUS

B301001-5	ca. 1957 Restroom Addition Roof Finishes

The ca. 2011-installed cedar shingle restroom addition roof is in overall good visual condition, and should be due to its young age (approximately five years). However it was not installed according to CSSB specifications. Shingle roofs (typically of western red cedar, Alaskan yellow cedar, or redwood) which have been installed according to CSSB specifications carry a twenty to twenty-five year installation guarantee and typically last at least thirty years. Because the space between the porch ceiling and roof is inaccessible, its construction conditions are unknown. Therefore it is assumed that the restroom addition roof was installed in much the same way as the main block roof. The assessment of the roof as compared to CSSB specifications is likely similar (see p. 163).

Because the cedar shingle roof was not installed in full accordance to CSSB specifications, the extant roof will have a dramatically shorter lifespan (ten to fifteen years should be assumed); therefore the roof is already a third to halfway through its lifespan.

At this time, it still performs as a watertight roof.

Condition Rating: POOR
Deficiency Rating: SERIOUS

B301004	Flashings & Trim
B301004-1	**Roof-Side Wall Flashing**

The roof-side wall flashings appear to be in good condition, as there are no known leaks and adjacent materials are also in good condition.

Condition Rating: GOOD
Deficiency Rating: MINOR

B301004-2	Chimney Flashing

The chimney flashings appear to be in good condition, as there are no known leaks and adjacent materials are also in good condition.

Condition Rating: GOOD
Deficiency Rating: MINOR

B301005	Gutters & Downspouts

A majority of the terne-coated stainless steel 0'-5"-halfround gutters and 0'-3" round downspouts are undersized for the pitch of the roofs and the rainfall intensity for the area. Many of these components exhibit peeling paint (fig. 256).

Additionally, a majority of the downspouts drain directly to grade directly adjacent the foundation piers. Considering much of the perimeter has neutral or negative grading, it is likely all of this water drains directly into the area below the building, a negative during high-water events (hurricanes, nor'easters, etc.).



Figure 256. Degraded paint at one of the gutters on the north porch. Photo: HPTC, 05/11/16.

Condition Rating: FAIR
Deficiency Rating: SERIOUS

C	INTERIORS
C10	INTERIOR CONSTRUCTION
C1020	**Interior Doors**

The historic and modern interior doors of varying age are in overall good condition.

Condition Rating: GOOD
Deficiency Rating: MINOR

C10230	Fittings
C103010	Closets
C103010-1	**Historic Closets**

The historic closets are in overall good condition.

Condition Rating: GOOD
Deficiency Rating: MINOR

C103010-2	Modern Closets

The modern closets are in overall good condition. However their presence negatively impacts the interior spaces by adding features which were not present historically. With the eventual replacement of the extant HVAC system to a more sympathetic and efficient system (see D30 HVAC

for more information), the closets will no longer be needed and could be removed from the building.

Condition Rating: GOOD
Deficiency Rating: MINOR

C103098	Other Casework
C103098-1	**Trim**

The interior trimwork, all likely dating to 1983-86, is in good overall condition.

Condition Rating: GOOD
Deficiency Rating: MINOR

C103098-2	**Fireplaces**

The interior fireplaces are in fair overall condition. The openings have been outfitted with insulation at their flue openings. Because of the lack of screened caps over the flues on the exterior, dirt, insects, and rainwater can infiltrate to the inside of the building from the top of the flues.

Condition Rating: FAIR
Deficiency Rating: SERIOUS

C20	STAIRS
C2010	Stair Construction
C201001	**Interior Stair Construction**

The interior stair is in overall fair condition. The painted finishes and unpainted components show some wear, particularly the treads (fig. 257).

Condition Rating: FAIR
Deficiency Rating: MINOR

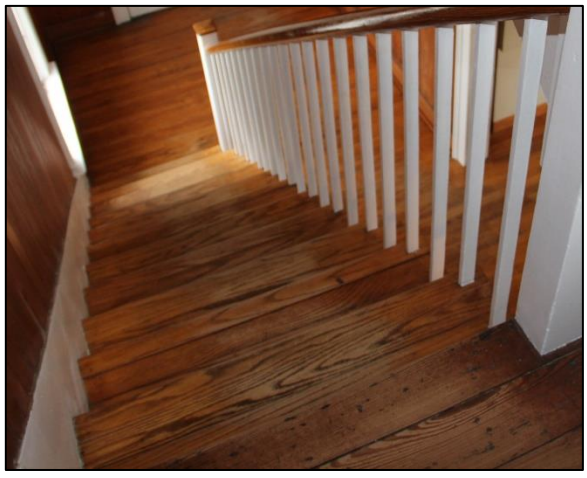


Figure 257, right. The treads of the interior stair show general wear to their finishes. Photo: HPTC, 05/10/16.

C201002	Exterior Stair Construction

The exterior stair at the north porch and restroom addition are in overall fair condition. The unpainted components show some wear.

Condition Rating: FAIR
Deficiency Rating: MINOR

C30	INTERIOR FINISHES
C3010	Wall Finishes

The interior wall finishes show some general wear, but are in overall good condition.

The CCC-era cypress paneling postdates the period of significance and does not accurately depict the most significant wall finish: lath and plaster.

The wall finishes of the restroom addition are not historic. These too are not sympathetic to the historic building, but these spaces are only accessible by park staff and are less of a concern.

Condition Rating: GOOD
Deficiency Rating: MINOR

C3020	Floor Finishes

The interior floor finishes show some wear to the finish, at both the first and second floors (figs. 258-259).

A subsequent site visit in December 2016 showed the floor to be *very* slightly buckling in Room 101, just inside the door, and in Room 103, just inside the west door. Park staff stated the buckling was particularly apparent right after a major hurricane in early October 2016 and has since subsided to the point where the areas are impossible to photograph.

Condition Rating: FAIR
Deficiency Rating: SERIOUS



Figure 258. The finish floor of the first floor shows wear patterns around the displays. Photo: HPTC, 05/10/16.



Figure 259.Historic finish floor on the second floor shows scratches and wear and tear. Photo: HPTC, 05/12/16.

C3030	Ceiling Finishes

The interior ceiling finishes show some general wear, but are in overall good condition.

The CCC-era cypress paneling postdates the period of significance and does not accurately depict the most significant ceiling finish: lath and plaster.

The ceiling finishes of the restroom addition are not historic. These too are not sympathetic to the historic building, but these spaces are only accessible by park staff and are less of a concern.

Condition Rating: GOOD
Deficiency Rating: MINOR

D	SERVICES
D20	PLUMBING

The plumbing system extant within the Double Keepers' Quarters is dated, but these fixtures are only accessible by park staff and are not a concern at this time.

Condition Rating: FAIR
Deficiency Rating: MINOR

D30	HVAC

The 2015 HVAC system appears to be in good condition; however the system seems to be largely oversized for the building. Hidden (high-velocity) or more efficient (ductless minisplit) systems would be more appropriate and would not require the addition of large closets to hide the equipment.

Condition Rating: FAIR
Deficiency Rating: MINOR

D40	FIRE PROTECTION SYSTEMS
D4010	**Sprinklers**

The wet-pipe sprinkler system was not assessed for working condition. It is assumed that the system is in good condition, as it is annually inspected. The pop-up sprinkler heads ensure the system is low profile.

No insulation or freeze-deterrent equipment are located on the system located in the unconditioned attic.

Condition Rating: GOOD
Deficiency Rating: MINOR

D4030	Fire Protection Specialties
D403001	**Fire Extinguishers**

The fire extinguishers are regularly serviced and replaced as needed. Because of the wet-pipe sprinkler system, the limited number of fire extinguishers on each floor is sufficient for the building.

Condition Rating: GOOD
Deficiency Rating: MINOR

D50	ELECTRICAL
D5010	**Electrical Service & Distribution**
D5020	**Lighting & Branch Wiring**

The 1983-86-installed electrical system, including panel, wiring, outlets, switches, and lighting appear to be in good condition.

Condition Rating: GOOD
Deficiency Rating: MINOR

D5030	Communications & Security Systems
D503001	**Fire Alarm Systems**

The ca. 2000 fire alarm system, including hardwired some detectors, pull stations, and strobes, appears to be in good condition.

Condition Rating: GOOD
Deficiency Rating: MINOR

D503008	Security Alarm Systems

The ca. 2000 security system appears to be in good condition.

Condition Rating: GOOD
Deficiency Rating: MINOR

D5090	Other Electrical Systems
D509004	**Lightning Protection System**

No lightning protection system is currently extant at the Double Keepers' Quarters, a historic feature of the building.

Condition Rating: POOR
Deficiency Rating: CRITICAL

G	BUILDING SITEWORK
G20	SITE IMPROVEMENTS
G2030	Trail
G203003	**Paved Surfaces**

The ca. 2000 brick-paved ramped walkway is in good condition, but could cause damage to the south porch, negative drainage at the south elevation, and is visually incompatible to the historic setting.

Condition Rating: GOOD
Deficiency Rating: MINOR

G2040	Site Development
G204001	**Fencing & Gates**

No fences and gates are currently extant at the Double Keepers' Quarters.

Condition Rating: N/A
Deficiency Rating: N/A

G204008	Storm Water Collection & Storage (Cisterns)

The east cistern is still being used to collect rain water from the roof of the Double Keepers' Quarters, as it did historically; the west cistern does not.

The exteriors of the brick and concrete cisterns exhibit failing mortar, deteriorated paint, biological growth, and chipped edges due to lawn maintenance equipment (figs. 260-261). The

interior of the cisterns were not assessed. It is assumed that water is currently stored inside, but is not regularly cycled out and refreshed.

Condition Rating: POOR
Deficiency Rating: MINOR



Figure 260. The east cistern still collects water, but exhibits deteriorated mortar and paint, and biological growth. Photo: HPTC, 05/11/16.



Figure 261. Chipped brick, degraded paint, and biological growth at the west cistern. This cistern no longer collects water draining from the roof. Photo: HPTC, 05/12/16.

G204099	**Miscellaneous Structures**

No miscellaneous structures are currently extant at the Double Keepers' Quarters.

Condition Rating: N/A
Deficiency Rating: N/A

G90	OTHER SITE WORK
G9087	**Overall Building Site Drainage**

The neutral and negative drainage around the building's foundation, along with downspouts which drain to grade at the foundation piers, creates a serious situation. These conditions allow excess water to sit around and under the building, on a site with an already-high water table.

Condition Rating: POOR
Deficiency Rating: CRITICAL

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Part 2 | Treatment and Use

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Requirements for Treatment and Use

The treatment and use of the Hatteras Light Station Double Keepers' Quarters must be considered within a framework of applicable laws, agreements, and policies. These mandates govern a wide range of management issues beyond the preservation, protection, and interpretation of the Cape Hatteras National Seashore's cultural resources. They extend to issues of visitor and staff use, agricultural lease, safety, and universal accessibility, among others. Additionally, the Cape Hatteras National Seashore Foundation Statement is discussed below.

Cape Hatteras National Seashore Foundation Statement

A foundation statement is "a formal statement of [a park's] core mission to provide basic guidance for all planning and management decisions: a foundation for planning and management." The document includes the definition of the park purpose, the park significance statements, primary interpretive themes, fundamental resources and values, and special mandates.[1]

Park Purpose:

> The purpose of Cape Hatteras National Seashore is to permanently preserve the wild and primitive character of the ever-changing barrier islands, protect the diverse plant and animal communities sustained by the coastal island process, and provide for recreational use and enjoyment that is compatible with preserving the distinctive natural and cultural resources of the nation's first national seashore.[2]

Park Significance: This section identifies seven reasons why the park's resources are significant enough to warrant national park designation. Two directly relate to the Hatteras Light Station buildings:

> Significance Statement 6: Its artifacts, historic sites, and geographic setting provide tangible links to understanding humankind's ability to adapt in a harsh and changing coastal environment in isolation from the mainland. These links, which are of deep symbolic significance to local villagers, include lighthouses, shipwrecks, Native American sites, and more.
>
> Significance Statement 7: Numerous historical events of national significance have occurred on or near its shores including four centuries of shipwrecks, the United States government's response to protect maritime commerce during the Civil War and World War II, and the experimental development and use of new technology.[3]

Primary Interpretive Themes: This section is based on the stated park purpose and significance. Two themes directly relate to the Hatteras Light Station buildings:

> Topic: History and Heritage – Within this dynamic and once isolated barrier island system, unique cultures have evolved which serve as a testament to humankind's relationship with the boundary of land and sea.

[1] National Park Service. "Foundation Statement: Cape Hatteras National Seashore, North Carolina." September 2011, pp. 6-7.
[2] Ibid, p. 9.
[3] Ibid, pp. 10-10-11.

> Topic: Stewardship and Preservation – Stewardship of the national seashore and preservation of its history provides future opportunities for people to access, experience, and learn about coastal dynamics/cultural change.[4]

Fundamental Resources and Values: This section identifies attributes "which warrant primary consideration during park planning and management because they are critical to achieving the park's purpose and maintaining its significance." The Double Keepers' Quarters is identified as a fundamental resource under "Historic structures, archeological sites, and cultural landscapes."[5] Another identified important value is the story of "the movement and preservation of the Cape Hatteras Light Station."[6]

Outer Banks Group Climate Action Plan

On September 29, 2015 the *Climate Action Plan* for Cape Hatteras National Seashore and the other entities of the Outer Banks Group was finalized.[7] The plan acknowledges that climate change threatens the cultural and natural resources which the NPS strives to preserve. Directives and guidelines provide information on how to take action through adaptation and mitigation to climate changes. These directives and guidelines include the following, among others:

- Executive Order No. 13693: "Planning for Federal Sustainability in the Next Decade"
- Green Parks Plan (NPS)
- 2012-2014 Climate Change Action Plan (NPS)
- Climate Change Response Strategy (NPS)

The plan further defines strategies that CAHA enact to meet required mitigation and adaptation goals. These include:

1. Reduce Greenhouse Gas emissions resulting from activation by operations
2. Increase climate change education and outreach
3. Actions for adapting cultural and natural resources to a changing climate

Strategy 3 most directly affects the Hatteras Light Station. It further states:

> Climate change threatens the cultural and natural resources that the Outer Banks Group is known for and so the Outer Banks Group has considered actions to take to adapt to climate change. In the context of climate change, adaptation is an adjustment in natural or human systems that moderates harm or seeks out beneficial opportunities in response to change. Adaptation may include a variety of social, economic, or ecological responses such as adapting the location, structure, or function of Outer Banks Group facilities in anticipation of climate change. Given the potential impact from climate change, it is important to closely monitor

[4] Ibid, pp. 12-13.
[5] Ibid, pp. 14-15.
[6] Ibid, p. 16.
[7] National Park Service, U.S. Department of the Interior. "Cape Hatteras National Seashore, Wright Brothers National Memorial, & Fort Raleigh National Historic Site." *Climate Action Plan.* Signed September 29, 2015. Accessed at http://www.nps.gov/subjects/climatechange/upload/CAHA_Action-Plan-final-9-29-15.pdf on December 15, 2015.
Additional information on how the National Park Service is planning for and addressing climate change, can be found through the following sources:
Rockman, Marcy. "An NPS Framework for Addressing Climate Change with Cultural Resources." *The George Wright Forum, vol. 32, no. 31 (2015).* pp. 37-50. Accessed at http://www.georgewright.org/321rockman.pdf on December 15, 2015.
National Park Service, U.S. Department of the Interior. "Preserving Coastal Heritage." *Summary Report, April 3-4, 2014, Federal Hall National Monument, New York City.* Accessed at http://www.achp.gov/docs/preserve-coastal-heritage.pdf on December 15, 2015.

cultural and natural resources and identify those that are most at risk. From this identification, the Outer Banks Group can work towards reducing the risk or documenting the resources to try and keep a record of them. Presented below are the actions that are currently under way and which comprise the Outer Banks Group's progress to date, and those actions that the Outer banks Group will pursue.

Progress to Date

- Relocated Cape Hatteras Lighthouse and other buildings away from eroding seashore.

Adaptation

1. Incorporate climate adaptation into all levels of NPS planning
   - Monitor resources for climate impacts
   - Develop management strategies to increase the adaptive capability of park resources and facilities
   - Identify species and resources most at risk
     - Conduct climate science within parks

Evaluate Progress and Identify Areas for Improvement

By taking the actions established in the goals above, the Outer Banks Group plans to reduce its emissions to the specified goals. Achieving these goals will require an ongoing commitment by the Outer banks Group, which may include subsequent emission inventories, additional mitigation and adaptation actions, and reevaluation of goals. Presented below are the actions that the Outer Banks Group will pursue.

Monitoring – Planned Actions

1. Monitor progress with respect to reducing emissions and use this to drive continual performance
   - Track progress on climate friendly actions through the environmental management system.

National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) mandates that federal agencies, like the National Park Service, take into account the effects of their actions on properties listed or eligible for listing on the National Register of Historic Places and gives the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment.[8] The Principal Keeper's Quarters is listed as a contributing structure in the Hatteras Light Station National Historic Landmark District and any undertakings (typically expenditure of federal funds) will be reviewed in accordance to NPS policy and federal historic preservation laws including the *Programmatic Agreement Among the National Park Service (U.S. Department of the Interior), the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers for Compliance with Section 106 of the National Historic Preservation Act* (2008).[9]

Section 110 of the NHPA clarifies the broad historic preservation responsibilities of Federal agencies with the intention of ensuring that historic preservation is fully integrated into the ongoing programs of all Federal agencies by identifying, protecting, and avoiding unnecessary damage to historic properties. Additionally, each agency is required to use historic properties available to it

[8] The NHPA of 1966 was last amended in 2006. A downloadable copy is located at (http://www.achp.gov/nhpa.html).
[9] A copy of this agreement can be found on the NPS's website at (http://www.nps.gov/policy/106agreement.pdf).

and when managing these properties, must consider preservation of their historic, archaeological, architectural, and cultural values.[10]

Executive Order No. 11593

Executive Order No. 11593: Protection and Enhancement of the Cultural Environment (1971) mandates that "the Federal Government shall provide leadership in preserving, restoring, and maintaining the historic and cultural environment of the Nation."[11] Responsibilities of federal agencies include:

- Nominating "...to the Secretary of the Interior all sites, buildings, districts, and objects under their jurisdiction of the control that appear to qualify for listing on the National Register of Historic Places."
- Exert caution "...during the interim period until inventories and evaluation...are completed to assure that any federally owned property that might qualify for nomination is not inadvertently transferred, sold, demolished, or substantially altered."
- "Initiate measures to assure that where as a result of Federal action or assistance a property listed on the National register of Historic Places is to be substantially altered or demolished, timely steps be taken to make or have made records, including measured drawings, photographs, and maps, of the property, and that copy of such records then be deposited in the Library of Congress as part of the Historic American Buildings Survey or Historic American Engineering Record for future use and reference."
- "Initiate measures and procedures to provide for the maintenance, through preservation, rehabilitation, or restoration, of federally owned and registered sites professional standards prescribed by the Secretary of the Interior."

Executive Order No. 13006

Executive Order No. 13006: Locating Federal Facilities on Historic Properties (1996) mandates that "the Federal Government shall utilize and maintain, wherever operationally appropriate and economically prudent, historic properties and districts...." Furthermore, "any rehabilitation or construction that is undertaken pursuant to this order must be architecturally compatible with the character of the surrounding historic district or properties."[12]

Secretary of the Interior's Standards

Treatment to the Hatteras Light Station Double Keepers' Quarters is to be guided by *The Secretary of the Interior's Standards for Historic Preservation Projects.*[13] Descriptions of the four standards are as follows:

> Preservation: "the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to

[10] More information on Section 110 can be found on the NPS's website at (http://www.nps.gov/hps/fapa_110.htm).
[11] A copy of this E.O. can be found on the NPS's website at (http://www.nps.gov/history/history/online_books/anps/anps_7b.htm).
[12] A copy of this agreement is located on the ACHP's website at (http://www.achp.gov/EO13006.html).
[13] Weeks, Kay D. and Anne E. Grimmer. "The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings." United States Department of the Interior, National Park Service, Cultural Resource Stewardship and Partnerships, Heritage Preservation Services, Washington, DC, 1995.

> protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project."
>
> Rehabilitation: "the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values."
>
> Restoration: "the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project."
>
> Reconstruction: "the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location."

Because the Double Keepers' Quarters stands intact, reconstruction is not a treatment consideration; however several outbuildings, an addition, and other character-defining cultural landscape features are no longer extant and should be considered for reconstruction.

Director's Order 28

DO-28 Cultural Resource Management Guideline is intended to guide the National Park Service through successful cultural resource management through three steps[14]:

- Research: "identify, evaluate, document, register, and establish other basic information about cultural resources;"
- Planning: "ensure that this information is well integrated into management processes for making decisions and setting priorities;" and
- Stewardship: "planning decisions are carried out and resources are preserved, protected, and interpreted to the public."[15]

Through the development of this HSR, the research and planning (for treatment and use) of the Double Keepers' Quarters is addressed. The general preservation philosophy integrated into this HSR is best represented by the following:

> Better to preserve than to repair, better repair than restore, better restore than [re]construct. It is ordinarily better to retain genuine old work of several periods, rather than arbitrarily to 'restore' the whole, by new work, to its aspect at a single period.[16]

[14] A copy of NPS-28 can be found at http://www.nps.gov/history/history/online_books/nps28/28contents.htm.
[15] NPS-28, p. 1.
[16] The Advisory Board on National Parks, Historic Sites, Buildings, and Monuments policy statement (1936). NPS-28, p. 2 .

Decisions for the future stewardship of the Hatteras Light Station Double Keepers' Quarters are under the purview of Cape Hatteras National Seashore. As part of NPS-28 "stewardship focuses on five major activities:

- Control of treatment and use,
- Monitoring conditions of deterioration and structural failure,
- Protecting from human and environmental threats,
- Retaining or delegating responsibility for structures, and
- Developing the skills, knowledge, and attitudes needed to support the program."[17]

A Call to Action

In 2011, National Park Service Director Jon Jarvis put forth his vision for NPS employees and partners "to commit to actions that advance the service toward a shared vision for 2016 and our second century."[18]

Action Item #25, "What's Old is New," addresses preservation actions: "Modernize historic preservation methods and technologies, show how historic structures can be made sustainable, and support efforts to rebuild the economic vitality of rural and urban communities by updating the *Secretary of the Interior's Standards and Guidelines for the Treatment of Historic Properties* in consultation with historic preservation partners."

Additionally, creativity and flexibility are encouraged when applying these Actions and should not hinder the day-to-day operations of the NPS.

International Building Code

According to the 1988 Amendment to the Public Buildings Act, any building constructed or altered by a Federal agency must, "to the maximum extent feasible, be in compliance with one of the nationally recognized model building codes and with other applicable nationally recognized codes." The International Building Code (IBC) is one of the allowable recognized model building codes.[19]

Treatments of the building and its site are to be guided by the International Building Code (IBC).[20] Threats to public life, safety, and welfare are to be addressed; however, because the Hatteras Light Station Double Keepers' Quarters is historic, alternatives to full legislative and code compliance are recommended where compliance would needlessly compromise the integrity of the historic building with the removal of character-defining features or infringement upon the National Historic Landmark characteristics of the site and/or structures.

[17] NPS-28, p. 127.
[18] More information on A Call to Action is located on the NPS website at (http://www.nps.gov/calltoaction/).
[19] The General Services Administration had more information on this amendment and other accepted building codes at (http://www.gsa.gov/portal/content/101288).
[20] IBC is overseen by the International Code Council. More information is located at http://www.iccsafe.org/CS/Pages/default.aspx.

Accessibility

With no construction activity to initiate changes, it is premature to recommend accessibility design modifications to the Hatteras Light Station Double Keepers' Quarters. Additionally, an accessibility assessment was not included in the scope of work for this project and therefore recommended accessibility treatments will not be provided. However, it should be noted that modifications may be likely as property use evolves and rehabilitation work commences. The most appropriate response will take into account scoping and technical design requirements of the Architectural Barrier Act Accessibility Standards and skillful application of preservation principles to preserve the historic character and historical integrity of this property.[21] Refer to NPS Preservation Brief #32: "Making Historic Properties Accessible" for more information.[22]

[21] The Architectural Barrier Act Accessibility Standards are under the authorization of the United States Access Board. More information can be found through Access Board's website (http://www.access-board.gov/aba/).
[22] Jester, Thomas C. and Sharon C. Park. "Making Historic Properties Accessible." Preservation Brief 32. Washington, DC, September 1993. Accessible at (http://www.nps.gov/hps/tps/briefs/brief32.htm).

Preferred Ultimate Treatment and Use

The Hatteras Light Station Double Keepers' Quarters was used as a dwelling from its construction in 1852 through ca. 1932, when the last lighthouse keeper moved out (major addition occurring in 1892). The building remained vacant until it was used by the CCC from 1935 through 1940 (major renovation occurring in 1937-39). After the CCC camp was disbanded, the dwelling was used as apartments and then as a National Park Service Museum (ca. 1955 through the present). A major preservation project occurred between 1983 and 1986, but its use as a museum continued before and after this work, as well as before and after the building's move in 1999.

Because there is a funded project occurring at the Double Keepers' Quarters in early FY17, the ultimate treatment and use recommendations provided are meant to assist in providing the correct treatments for the project. Additional recommendations beyond the scope of work for the funded project are included in this report to guide future work.

Considering the applicable laws, agreements, and policies discussed above, the Preferred Ultimate Treatment for the Hatteras Light Station Double Keepers' Quarters is as follows:

- *Exterior Restoration* with the removal of non-sympathetic modern accretions and retention, preservation, and restoration of character-defining features and associated buildings important to the historic design and construction of the dwelling by the United States government in 1854, additions be the same in 1892, and alterations which occurred to the dwelling and associated buildings through 1936.
- *Interior Rehabilitation* and preservation of character-defining features with removal of non-sympathetic modern accretions to reflect its original function. This treatment will preserve character-defining features and allow for the reversal of non-sympathetic treatments, materials, and finishes.

Also, considering the applicable laws, agreements, and policies discussed above, the Preferred Ultimate Use of the Hatteras Island Double Keepers' Quarters is to continue its use as a museum.

Alternatives for Treatment and Use[23]

The biggest emerging threat to the Principal and Double Keeper's Quarters is flood water that may be associated with accumulation of rainfall, sea water that washes over the dune system, and, possibly, sound-side water that may flood these areas as a result of storm surge. Flood waters can damage the building substructure, flooring, wallboard, insulation, and electrical systems. The acute and chronic impacts of flooding seriously threaten the ability for the Seashore to preserve these structures in a sustainable manner. Additionally, flooded conditions around this historic property are likely to become a more frequent and intense occurrence over the next several decades. Based on tidal gauge records from Cape Hatteras during the period 1978-2002, sea level rose 3.46 mm per year, indicating a mean sea level trend of 13.6 mm per century.[24] A recent panel of expert scientists predicted an additional sea level rise of between 0.4 and 1.4 meters over the next ninety years.[25] Other studies suggest that sea level rise in this area could be as high as 2 meters over the next century.[26]

As a result, the structures in this area are likely to be faced with an unprecedented level of flooding stress associated with future storms. Park managers must consider implementing significant adaptation actions if these structures are to be preserved in the face of these changes and in a manner that will be cost effective and sustainable.

It appears that three options may be available to preserve these structures in the face of increasing risk of flooding-related damages. They include:

1. Relocating the structures to higher elevation areas;
2. Elevating the structures to ensure that they are above reasonably foreseeable floodwaters; or
3. Implementing a large scale water management system to prevent flooding from reaching the structures.

Park managers believe that raising these structures presents the most reasonable and cost-effective solution to preserving them over the next fifty years. Elevating historic structures is a commonly-used and often advisable management measure that has been practiced by historic architects in coastal areas. This alternative is supported in the National Park Service Cultural Resources Climate Change Strategy (CRCC Strategy), which states that elevating a building above projected flood levels is an adaptation option to improve resilience/resistance of a resource exposed to environmental forces.[27] It is recommended that the park reference guides, produced by the states of Louisiana and Mississippi, to elevate structures in flood-prone areas at Cape Hatteras. These

[23] This section was completed by Cape Hatteras National Seashore park managers in December 2017.
[24] Zervas, Chris. "North Carolina Bathymetry/Topography Sea Level Rise Project: Determination of Sea Level Trends." *NOAA Technical Report NOS CO-OPS 041.* May 2004. Accessed at https://tidesandcurrents.noaa.gov/publications/techrpt41.pdf on 12/12/2017.
[25] Rahmstorf, Stefan. "A Semi-Empirical Approach to Projecting Future Sea-Level Rise. *Science*, 315: 368-370. 01/19/07. Accessed at http://science.sciencemag.org/content/315/5810/368 on 12/12/2017.
[26] Pfeffer, W.T., Harper, J.T., and O'Neal, S. "Kinematic Constraints on Glacier Contributions to 21st-Century Sea-Level Rise." *Science*, 321: 1340-1343. 09/05/2008. Accessed at https://www.ncbi.nlm.nih.gov/pubmed/18772435 on 12/12/2017.
[27] N.C. Coastal Resources Commission Science Panel on Coastal Hazards. "North Carolina Sea-level Rise Assessment Report." March 2010. Accessed at http://www.sealevel.info/NC_Sea-Level_Rise_Assessment_Report_2010--CRC_Science_Panel.pdf on 12/12/2017.

documents provide guidelines that will assist the Seashore in developing plans for elevating structures that minimize adverse effects to the historic character of these buildings.[28]

[28] Louisiana Office of Cultural Development, and URS. "Elevation Design Guidelines for Historic Buildings in the Louisiana GO Zone." 2014. Accessed at http://www.crt.state.la.us/Assets/OCD/hp/uniquely-louisiana-education/Disaster-Recovery/Final%20Elevation%20Design%20Booklet%2012-07-15%20v2.pdf on 12/12/2017.

Recommended Treatments by Feature

Treatment Timeframes

As part of the planning process required by NPS-28, the recommended treatments for each feature have been divided into different timeframes. The "Emergency" timeframe is for features that must be addressed as soon as possible within the next year, and are the items which are in the most dire condition (poor and critical). The "Immediate" timeframe is for features that must be repaired or replaced in the next one to three years, and are often the items which are in the worst condition (poor and critical). The "Short-Term" timeframe is for features which should be addressed in the next three to five years and are likely the items which are in moderate condition (fair and serious). Features found to be in good condition with a maintenance deficiency of minor have been categorized in the "Long-Term" timeframe. Typically these features currently require routine maintenance to maintain their current condition employing preventative maintenance methodologies but there is a reduced life expectancy within the five- to ten-year period and beyond.

Recommended treatments for items with an emergency need (Timeframe: *Emergency (within 1 year*), urgent need (Timeframe: *Immediate (1-3 years*), less urgent need (Timeframe: *Short-Term (3-5 years*), and minor need (Timeframe: *Long-Term (5-10 years)*, as described above are included under the Uniformat II layout by condition and deficiency rating in the Recommended Treatments for the Hatteras Light Station Double Keepers' Quarters section below.

Table 4. **Hatteras Light Station Double Keepers' Quarters Prioritized Treatment List**

Major Group Element	Group Element	Individual Element	Specific Element	Sub-Element	Condition Rating	Deficiency Rating
POOR						
D50 SERVICES	D50 ELECTRICAL	D5090 Other Electrical Systems	D509004 Lightning Protection System		POOR	CRITICAL
G BUILDING SITEWORK	G90 OTHER SITEWORK	G9087 Overall Building Site Drainage			POOR	CRITICAL
B SHELL	B30 ROOFING	B3010 Roof Coverings	B301001 Roof Finishes	B301001-1 Main Block Roof Finishes	POOR	SERIOUS
B SHELL	B30 ROOFING	B3010 Roof Coverings	B301001 Roof Finishes	B301001-2 South Porch Roof Finishes	POOR	SERIOUS
B SHELL	B30 ROOFING	B3010 Roof Coverings	B301001 Roof Finishes	B301001-3 North Porch Roof Finishes	POOR	SERIOUS
B SHELL	B30 ROOFING	B3010 Roof Coverings	B301001 Roof Finishes	B301001-4 1854 Kitchen Wing Roof Finishes	POOR	SERIOUS
B SHELL	B30 ROOFING	B3010 Roof Coverings	B301001 Roof Finishes	B301001-5 ca. 1957 Restroom Addition Roof Finishes	POOR	SERIOUS
G BUILDING STIEWORK	G20 SITE IMPROVEMENTS	G2040 Site Development	G204008 Storm Water Collection & Storage (Cisterns)		POOR	MINOR
FAIR						
B SHELL	B20 EXTERIOR ENCLOSURE	B2010 Exterior Walls	B2010-1 Main Block Frame Exterior Walls		FAIR	SERIOUS
B SHELL	B20 EXTERIOR ENCLOSURE	B2010 Exterior Walls	B2010-2 1854 Kitchen Wing Frame Exterior Walls		FAIR	SERIOUS
B SHELL	B20 EXTERIOR ENCLOSURE	B2010 Exterior Walls	B2010-3 ca. 1957 Restroom Addition Frame Exterior Walls		FAIR	SERIOUS
B SHELL	B20 EXTERIOR ENCLOSURE	B2010 Exterior Walls	B2010-4 Chimneys		FAIR	SERIOUS
B SHELL	B20 EXTERIOR ENCLOSURE	B2010 Exterior Walls	B3010-5 Porches		FAIR	SERIOUS
B SHELL	B20 EXTERIOR ENCLOSURE	B2020 Exterior Windows			FAIR	SERIOUS

(Table 4 continued)

B SHELL	B30 ROOFING	B3010 Roof Coverings	B301005 Gutters & Downspouts		FAIR	SERIOUS
B SHELL	B10 SUPERSTRUCTURE	B1010 Floor Construction	B101001 Structural Frame	B101001-2 South Porch Structural Floor Frame	FAIR	SERIOUS
C INTERIORS	C30 INTERIOR FINISHES	C3020 Floor Finishes			FAIR	SERIOUS
C INTERIORS	C10 INTERIOR CONSTRUCTION	C1030 Fittings	C103098 Other Casework	C103098-2 Fireplaces	FAIR	SERIOUS
B SHELL	B10 SUPERSTURCTURE	B1020 Roof Construction	B1020-1 Main Block Structural Roof Frame		FAIR	MINOR
B SHELL	B10 SUPERSTURCTURE	B1020 Roof Construction	B1020-4 1854 Kitchen Wing Structural Roof Frame		FAIR	MINOR
B SHELL	B10 SUPERSTURCTURE	B1020 Roof Construction	B1020-5 ca. 1957 Restroom Addition Structural Roof Frame		FAIR	MINOR
C INTERIORS	C20 STAIRS	C2010 Stair Construction	C201001 Interior Stair Construction		FAIR	MINOR
C INTERIORS	C20 STAIRS	C2010 Stair Construction	C201002 Exterior Stair Construction		FAIR	MINOR
D SERVICES	D20 PLUMBING				FAIR	MINOR
D SERVICES	D30 HVAC				FAIR	MINOR
GOOD						
A SUBSTRUCTURE	A10 FOUNDATIONS	A1010 Standard Foundations	A101002 Column Piers		GOOD	MINOR
B SHELL	B10 SUPERSTRUCTURE	B1010 Floor Construction	B101001 Structural Frame	B101001-1 Main Block Structural Floor Frame	GOOD	MINOR
B SHELL	B10 SUPERSTRUCTURE	B1010 Floor Construction	B101001 Structural Frame	B101001-3 1854 Kitchen Wing Structural Floor Frame	GOOD	MINOR
B SHELL	B10 SUPERSTRUCTURE	B1010 Floor Construction	B101001 Structural Frame	B101001-4 North Porch Structural Floor Frame	GOOD	MINOR

(Table 4 continued)

B SHELL	B10 SUPERSTRUCTURE	B1010 Floor Construction	B101001 Structural Frame	B101001-5 ca. 1957 Restroom Addition Structural Floor Frame	GOOD	MINOR
B SHELL	B10 SUPERSTRUCTURE	B1010 Floor Construction	B101001 Structural Frame	B101001-6 Main Block Second-Floor Structural Floor Frame	GOOD	MINOR
B SHELL	B10 SUPERSTRUCTURE	B1010 Floor Construction	B101001 Structural Frame	B101001-7 Main Block Attic Structural Floor Frame	GOOD	MINOR
B SHELL	B10 SUPERSTRUCTURE	B1010 Floor Construction	B101001 Structural Frame	B101001-8 1854 Kitchen Wing Attic Structural Floor Frame	GOOD	MINOR
B SHELL	B10 SUPERSTRUCTURE	B1010 Floor Construction	B101001 Structural Frame	B101001-9 ca. 1957 Addition Attic Structural Floor Frame	GOOD	MINOR
B SHELL	B10 SUPERSTRUCTURE	B1010 Floor Construction	B101002 Structural Interior Walls		GOOD	MINOR
B SHELL	B10 SUPERSTRUCTURE	B1010 Roof Construction	B1020-2 South Porch Structural Roof Frame		GOOD	MINOR
B SHELL	B10 SUPERSTRUCTURE	B1010 Roof Construction	B1020-3 North Porch Structural Roof Frame		GOOD	MINOR
B SHELL	B20 EXTERIOR ENCLOSURE	B2020 Exterior Doors			GOOD	MINOR
B SHELL	B30 ROOFING	B3010 Roof Coverings	B301004 Flashing & Trim	B301004-1 Roof-Side Wall Flashing	GOOD	MINOR
B SHELL	B30 ROOFING	B3010 Roof Coverings	B301004 Flashing & Trim	B301004-2 Chimney Flashing	GOOD	MINOR
C INTERIORS	C10 INTERIOR CONSTRUCTION	C1020 Interior Doors			GOOD	MINOR
C INTERIORS	C10 INTERIOR CONSTRUCTION	C1030 Fittings	C103010 Closets	C103010-1 Historic Closets	GOOD	MINOR

(Table 4 continued)

C INTERIORS	C10 INTERIOR CONSTRUCTION	C1030 Fittings	C103010 Closets	C103010-2 Modern Closets	GOOD	MINOR
C INTERIORS	C10 INTERIOR CONSTRUCTION	C1030 Fittings	C103098 Other Casework	C103098-1 Trim	GOOD	MINOR
C INTERIORS	C30 INTERIOR FINISHES	C3010 Wall Finishes			GOOD	MINOR
C INTERIORS	C30 INTERIOR FINISHES	C3020 Floor Finishes			GOOD	MINOR
C INTERIORS	C30 INTERIOR FINISHES	C3030 Ceiling Finishes			GOOD	MINOR
D SERVICES	D40 FIRE PROTECTION SYSTEMS	D4010 Sprinklers			GOOD	MINOR
D SERVICES	D40 FIRE PROTECTION SYSTEMS	D4030 Fire Protection Specialties	D403001 Fire Extinguishers		GOOD	MINOR
D SERVICES	D50 ELECTRICAL	D5010 Electrical Service & Distribution			GOOD	MINOR
		D5020 Lighting & Branch Wiring				
D SERVICES	D50 ELECTRICAL	D5030 Communications & Security Systems	D503001 Fire Alarm System		GOOD	MINOR
D SERVICES	D50 ELECTRICAL	D5030 Communications & Security Systems	D503008 Security Alarm System		GOOD	MINOR
G BUILDING SITEWORK	G20 SITE IMPROVEMENTS	G2030 Trail	G203003 Paved Surfaces		GOOD	MINOR
NOT RATED, NOT APPLIACABLE, or UNKNOWN						
G BUILDING SITEWORK	G20 SITE IMPROVEMENTS	G2040 Site Development	G204001 Fencing & Gates		N/A	N/A
G BUILDING SITEWORK	G20 SITE IMPROVEMENTS	G2040 Site Development	G204099 Miscellaneous Structures		N/A	N/A
End of table.						

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Double Keepers' Quarters Recommended Treatments

D509004 Lightning Protection System	POOR	CRITICAL

Timeframe: *Emergency (within 1 year)*

A lightning protection system was a feature of the Double Keepers' Quarters historically and should be restored.

A permanent, UL-rated lightning protection system should be installed. It should be designed to be demountable in the event of future roof replacements. Design features should include exposed downlead cables and the use of minimally-sized aerial terminals (government points). Attention should be paid to the selection of fasteners for the downlead cables into masonry walls. Penetrations through the roof should not be allowed. Require submittals from installers including layout of installation. Chimneys need a minimum of one point per chimney.

A lightning risk assessment is part of the project evaluation checklist found in Denver Service Center's Fire Protection Standards for properties undergoing rehabilitation work. Installing lightning protection is consistent with Director's Order #58: "Structural Fire Management," requiring NPS construction to have safeguards assuring life-safety design and minimizing the chances of catastrophic loss of property.[1]

G9087 Overall Building Site Drainage	POOR	CRITICAL

Timeframe: *Emergency (within 1 year)*

Negative drainage toward the building and neutral drainage and depressed areas under the building should be corrected immediately. Minor regrading of soil to create positive surface drainage near (within 12'-0") the building should be completed on all elevations; this includes at the south porch where abutting grade has caused rot to wood components. Every effort should be made to ensure water is running out from under and away from the building. The addition of small swales to direct water away from building could rectify large changes in grade elevation at the building.

Fill should be added to the interior of the area below the building to a height equal to or slightly above the lowest adjacent exterior grade, keeping in mind that the exterior grade may also change due to re-grading negative and neutral drainage.

An engineer specializing in coastal environments and grading and drainage design should be hired to complete a final drainage plan for the building.

[1] Refer to Structural Fire Reference Manual 58 at https://www.nps.gov/fire/structural-fire/resources/documents/reference-manual-58.pdf for more information.

B301001-1 Main Block Roof Finishes	POOR	SERIOUS

Timeframe: *Immediate (1-3 years)*

Movement of air in the attic will prevent or greatly inhibit condensation of moisture on the underside of the cedar shingles. To encourage circulation and improve ventilation of air in the attic of the Double Keepers' Quarters, extant vents should be improved and others should be added. A general rule of thumb for ventilation is for every 150 SF of attic area, there should be 1 SF of vent area. The attic space is approximately 1,280 SF; therefore a cumulative total of approximately 8.5 SF of vent area is needed to minimally vent the attic and provide minimal air circulation to the shingles. A combination of venting, at the soffits, gable ends, and ridges, is important for air circulation (fig. 262).

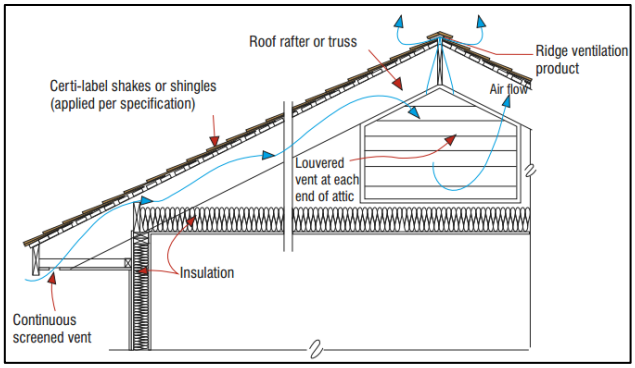


Figure 262. Several means of attic ventilation are important to adequately supply fresh air to the attic and underside of the cedar shingles. Photo: CSSB "New Roof Construction Manual, p. 13.

The extant soffit vents, added in the 1980s, are recommended; however fiberglass insulation covers the vents and prohibits air exchange. The extant fiberglass insulation should be temporarily removed. Attic rafter vents, also referred to as baffles, should be installed on the lower portion of and between every rafter. The insulation can then be replaced to abut the baffles (fig. 263). Allowing the extant soffit vents to breath properly will add approximately 21.3 SF of vent area to the attic.

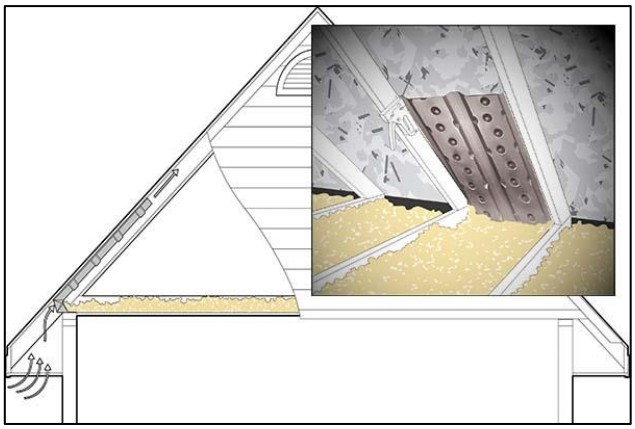


Figure 263. Insulation baffles between every rafter ensure attic insulation does not cover soffit/eave vents and inhibit air flow. Photo: http://www.trustgreenguard.com/attic_rafter_vents/.

The small gable end vents at the peak of each end of the gable roof should not be altered in any way. These vents provide approximately 4.5 SF of attic ventilation.

Timeframe: *Short-Term (3-5 years)*

Because the extant cedar-shingle main roof finishes were not installed in full accordance with Cedar Shake and Shingle Bureau (CSSB) specifications, the shingles will need to be replaced in approximately five years.

The replacement roof covering should be completed with CSSB-certified No. 1 Blue Label clear cedar shingles. The length of the shingles should be determined from the spacing of the extant roof sheathing boards; an experienced and competent roof contractor will be able to determine the

length and exposure of the shingles. Preservative-treated shingles (Certi-Last) are an option and should be considered for the coastal location. The shingles should be applied over spaced sheathing (extant in attic as sheathing boards) with no underlayment (extant underlayment should be removed and not replaced).

According to the CSSB, the following shingle application should be followed (fig. 264):

1. Shingles must be double or tripled at all eaves.
2. Butts of first course shingles should project 1 1/2" beyond the fascia and approximately 1" over the gable or rake end.
3. Spacing between adjacent shingles (joints) should be a minimum of 1/4" and a maximum of 3/8".
4. Certi-label shingles shall be laid with a side lap not less than 1 1/2" between joints in adjacent courses, and not more than 10% shall be in direct alignment in alternate courses. Check with your local building official in your area.
5. In lesser grade shingles containing both flat and vertical grain, joints should not be aligned with centerline of heart.
6. Flat grain shingles wider than 8" should be split in two before nailing. Knots and similar defects should be treated as the edge of the shingle and the joint in the course above placed 1 1/2" from the edge of the defect.[2]

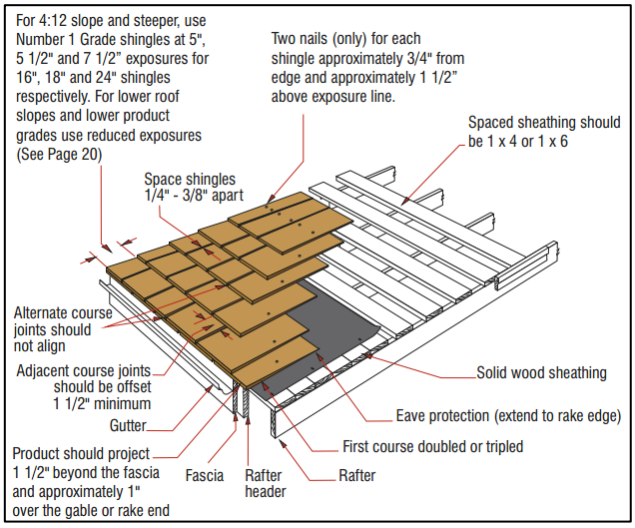


Figure 264. The application of cedar shingles has been standardized by the Cedar Shake and Shingle Bureau. Photo: CSSB "New Roof Construction Manual, p. 5.

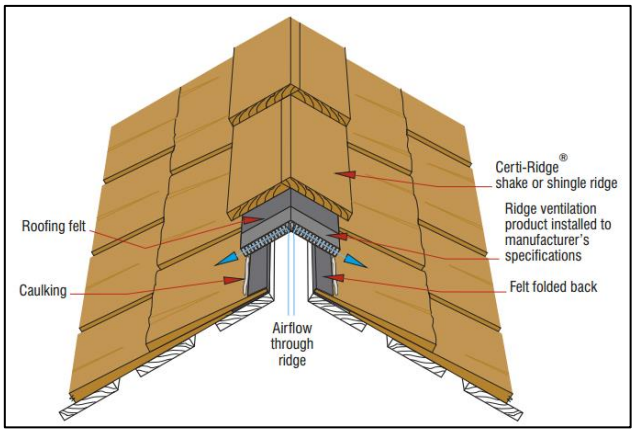


Figure 265. A ridge vent allows airflor through the ridge and is hidden by cedar shingles. Photo: CSSB "New Roof Construction Manual, p. 14.

Furthermore, ring-shank stainless steel "Type 316" nails, probably 4d, should be used. They should not be overdriven or underdriven and should not be hot-dipped or electro-galvanized.

Zinc or copper strips are helpful at the ridge cap/vent and approximately every 6'-0" down the slope to deter biological growth.

Concurrent with the roof replacement, a continuous ridge vent should be added to the ridge of the main block roof (fig. 265). The addition of ridge vents will add approximately 11 SF of vent area to the attic.

[2] Cedar Shake & Shingle Bureau. "New Roof Construction Manual." March 2015 edition. Accessed at http://www.cedarbureau.org/manuals/imperial/2015/RFI/RoofManual-0407-i.pdf on September 13, 2016.

Refer to the CSSB's website and technical publications for more information on the best practices for installing and maintaining cedar shingle roofs.

For further information, consult NPS Preservation Brief #19 *The Repair and Replacement of Historic Wooden Shingle Roofs.*

B301001-2 South Porch Roof Finishes	**POOR**	**SERIOUS**
B301001-3 North Porch Roof Finishes	**POOR**	**SERIOUS**

Timeframe: *Short-Term (3-5 years)*

Because the extant cedar-shingle roof finishes of the south and north porches were not installed in full accordance with Cedar Shake and Shingle Bureau (CSSB) specifications, the shingles will need to be replaced in approximately five years.

The replacement roof covering should be completed with CSSB-certified No. 1 Blue Label clear cedar shingles. The length of the shingles should be determined from the spacing of the extant roof sheathing boards; an experienced and competent roof contractor will be able to determine the length and exposure of the shingles. Preservative-treated shingles (Certi-Last) are an option and should be considered for the coastal location. The shingles should be applied over spaced sheathing (extant in attic as sheathing boards) with no underlayment (extant underlayment should be removed and not replaced).

According to the CSSB, the following shingle application should be followed (see fig. 264):

1. Shingles must be double or tripled at all eaves.
2. Butts of first course shingles should project 1 1/2" beyond the fascia and approximately 1" over the gable or rake end.
3. Spacing between adjacent shingles (joints) should be a minimum of 1/4" and a maximum of 3/8".
4. Certi-label shingles shall be laid with a side lap not less than 1 1/2" between joints in adjacent courses, and not more than 10% shall be in direct alignment in alternate courses. Check with your local building official in your area.
5. In lesser grade shingles containing both flat and vertical grain, joints should not be aligned with centerline of heart.
6. Flat grain shingles wider than 8" should be split in two before nailing. Knots and similar defects should be treated as the edge of the shingle and the joint in the course above placed 1 1/2" from the edge of the defect.[3]

Furthermore, ring-shank stainless steel "Type 316" nails, probably 4d, should be used. They should not be overdriven or underdriven and should not be hot-dipped or electro-galvanized.

Zinc or copper strips are helpful at the ridge cap/vent and approximately every 6'-0" down the slope to deter biological growth.

Refer to the CSSB's website and technical publications for more information on the best practices for installing and maintaining cedar shingle roofs.

[3] Cedar Shake & Shingle Bureau. "New Roof Construction Manual." March 2015 edition. Accessed at http://www.cedarbureau.org/manuals/imperial/2015/RFI/RoofManual-0407-i.pdf on September 13, 2016.

For further information, consult NPS Preservation Brief #19 *The Repair and Replacement of Historic Wooden Shingle Roofs.*

B301001-4 1854 Kitchen Wing Roof Finishes	POOR	SERIOUS

Timeframe: *Immediate (1-3 years)*

Movement of air in the attic will prevent or greatly inhibit condensation of moisture on the underside of the cedar shingles. To encourage circulation and improve ventilation of air in the attic of the kitchen wing, extant vents should be improved and others should be added. A general rule of thumb for ventilation is for every 150 SF of attic area, there should be 1 SF of vent area. The attic space is approximately 281 SF; therefore a cumulative total of 1.9 SF of vent area is needed to minimally vent the attic and provide minimal air circulation to the shingles. A combination of venting, at the soffits, gable ends, and ridges, is important for air circulation (see fig. 262).

The extant soffit vents, added in the 1980s, are recommended; however it is likely that fiberglass insulation covers the vents and prohibits air exchange. The extant fiberglass insulation should be temporarily removed. Attic rafter vents, also referred to as baffles, should be installed on the lower portion of and between every rafter. The insulation can then be replaced to abut the baffles (see fig. 263). Allowing the extant soffit vents to breath properly will add approximately 7.3 SF of vent area to the attic.

The small gable-end vent at the east end of the peak of the gable should not be altered in any way. This vent provides approximately 2.25 SF of attic ventilation.

Timeframe: *Short-Term (3-5 years)*

Because the extant cedar-shingle roof finishes of the roof were not installed in full accordance with Cedar Shake and Shingle Bureau (CSSB) specifications, the shingles will need to be replaced in approximately five years.

The replacement roof covering should be completed with CSSB-certified No. 1 Blue Label clear cedar shingles. The length of the shingles should be determined from the spacing of the extant roof sheathing boards; an experienced and competent roof contractor will be able to determine the length and exposure of the shingles. Preservative-treated shingles (Certi-Last) are an option and should be considered for the coastal location. The shingles should be applied over spaced sheathing (extant in attic as sheathing boards) with no underlayment (extant underlayment should be removed and not replaced).

According to the CSSB, the following shingle application should be followed (see fig. 264):

1. Shingles must be double or tripled at all eaves.
2. Butts of first course shingles should project 1 1/2" beyond the fascia and approximately 1" over the gable or rake end.
3. Spacing between adjacent shingles (joints) should be a minimum of 1/4" and a maximum of 3/8".

4. Certi-label shingles shall be laid with a side lap not less than 1 1/2" between joints in adjacent courses, and not more than 10% shall be in direct alignment in alternate courses. Check with your local building official in your area.
5. In lesser grade shingles containing both flat and vertical grain, joints should not be aligned with centerline of heart.
6. Flat grain shingles wider than 8" should be split in two before nailing. Knots and similar defects should be treated as the edge of the shingle and the joint in the course above placed 1 1/2" from the edge of the defect.[4]

Furthermore, ring-shank stainless steel "Type 316" nails, probably 4d, should be used. They should not be overdriven or underdriven and should not be hot-dipped or electro-galvanized.

Zinc or copper strips are helpful at the ridge cap/vent and approximately every 6'-0" down the slope to deter biological growth.

Concurrent with the roof replacement, a continuous ridge vent should be added to the ridge of the kitchen wing roof (see fig. 265). The addition of a continuous ridge vent will add approximately 3.7 SF of vent area to the attic.

Refer to the CSSB's website and technical publications for more information on the best practices for installing and maintaining cedar shingle roofs.

For further information, consult NPS Preservation Brief #19 *The Repair and Replacement of Historic Wooden Shingle Roofs.*

B301001-5 ca. 1957 Restroom Addition Roof Finishes	POOR	SERIOUS

Timeframe: *Immediate (1-3 years)*

Movement of air in the attic will prevent or greatly inhibit condensation of moisture on the underside of the cedar shingles. To encourage circulation and improve ventilation of air in the attic of the restroom addition, extant vents should be improved and others should be added. A general rule of thumb for ventilation is for every 150 SF of attic area, there should be 1 SF of vent area. The attic space is approximately 400 SF; therefore a cumulative total of 2.7 SF of vent area is needed to minimally vent the attic and provide minimal air circulation to the shingles. A combination of venting, at the soffits, gable ends, and ridges, is important for air circulation (see fig. 262).

The extant soffit vents, added in the 1980s, are recommended; however it is likely that fiberglass insulation covers the vents and prohibits air exchange. The extant fiberglass insulation should be temporarily removed. Attic rafter vents, also referred to as baffles, should be installed on the lower portion of and between every rafter. The insulation can then be replaced to abut the baffles (see fig. 263). Allowing the extant soffit vents to breath properly will add approximately 6.7 SF of vent area to the attic.

[4] Cedar Shake & Shingle Bureau. "New Roof Construction Manual." March 2015 edition. Accessed at http://www.cedarbureau.org/manuals/imperial/2015/RFI/RoofManual-0407-i.pdf on September 13, 2016.

The small gable-end vent at the north end of the peak of the gable should not be altered in any way. This vent provides approximately 2.25 SF of attic ventilation.

Timeframe: *Short-Term (3-5 years)*

Because the extant cedar-shingle roof finishes of the roof were not installed in full accordance with Cedar Shake and Shingle Bureau (CSSB) specifications, the shingles will need to be replaced in approximately five years.

The replacement roof covering should be completed with CSSB-certified No. 1 Blue Label clear cedar shingles. The length of the shingles should be determined from the spacing of the extant roof sheathing boards; an experienced and competent roof contractor will be able to determine the length and exposure of the shingles. Preservative-treated shingles (Certi-Last) are an option and should be considered for the coastal location. The shingles should be applied over spaced sheathing (extant in attic as sheathing boards) with no underlayment (extant underlayment should be removed and not replaced).

According to the CSSB, the following shingle application should be followed (see fig. 264):

1. Shingles must be double or tripled at all eaves.
2. Butts of first course shingles should project 1 1/2" beyond the fascia and approximately 1" over the gable or rake end.
3. Spacing between adjacent shingles (joints) should be a minimum of 1/4" and a maximum of 3/8".
4. Certi-label shingles shall be laid with a side lap not less than 1 1/2" between joints in adjacent courses, and not more than 10% shall be in direct alignment in alternate courses. Check with your local building official in your area.
5. In lesser grade shingles containing both flat and vertical grain, joints should not be aligned with centerline of heart.
6. Flat grain shingles wider than 8" should be split in two before nailing. Knots and similar defects should be treated as the edge of the shingle and the joint in the course above placed 1 1/2" from the edge of the defect.[5]

Furthermore, ring-shank stainless steel “Type 316” nails, probably 4d, should be used. They should not be overdriven or underdriven and should not be hot-dipped or electro-galvanized.

Zinc or copper strips are helpful at the ridge cap/vent and approximately every 6’-0” down the slope to deter biological growth.

Concurrent with the roof replacement, a continuous ridge vent should be added to the ridge of the restroom addition roof (see fig. 265). The addition of a continuous ridge vent will add approximately 4.5 SF of vent area to the attic.

Refer to the CSSB’s website and technical publications for more information on the best practices for installing and maintaining cedar shingle roofs.

For further information, consult NPS Preservation Brief #19 *The Repair and Replacement of Historic Wooden Shingle Roofs.*

[5] Cedar Shake & Shingle Bureau. “New Roof Construction Manual.” March 2015 edition. Accessed at http://www.cedarbureau.org/manuals/imperial/2015/RFI/RoofManual-0407-i.pdf on September 13, 2016.

G204008 Storm Water Collection & Storage (Cisterns)	POOR	MINOR

Timeframe: *Immediate (1-3 years)*

The historic cisterns should be returned to use as reservoirs collecting rain water from the roof of the Double Keepers' Quarters, as they did historically. Overflow valves will likely need to be installed to allow water to cycle through the cisterns and not become stagnant inside.

Exterior biological growth should be removed from the painted brick using a non-abrasive cleaner, such as D/2 Biological Solution (http://www.d2bio.com), a non-toxic cleaning solution.

Any repointing repairs needed should be undertaken prior to repainting of the brick. The following information regarding treatment recommendations to repointing masonry is located in the *Historic Lighthouse Preservation Handbook* (1997):

- Remove deteriorated mortar by carefully hand raking the joints to avoid damaging the masonry.
- Duplicate the historic mortar in strength, composition, color, and texture. A mortar analysis can be performed by preservation professionals.
- Duplicate old mortar joints in width and in joint profile.
- Do not remove non-deteriorated mortar from sound joints for purely cosmetic reasons.
- Do not use electric saws and hammers rather than hand tools to remove deteriorated mortar from joints prior to repointing.
- Do not repoint with mortar of high Portland-cement content (unless it is the same content of the historic mortar). This can often create a bond that is stronger than the historic material and cause damage resulting from the different coefficient of expansion and the differing porosity of the material and the mortar.
- Do not repoint with a synthetic caulking compound.[6]

For further information, consult NPS Preservation Brief #2 *Repointing Mortar Joints in Historic Masonry Buildings.*

After repointing the exterior should be recoated using a breathable, exterior masonry paint to match the extant historic colors. Keim Mineral Coatings of America, Inc. (http://www.keim.com) offers several options for vapor-permeable paints and coatings for historic masonry structure preservation projects. The paint has an extended life. A product representative will be able to provide technical assistance on appropriate treatments and products.

[6] National Park Service, United States Lighthouse Society. *Historic Lighthouse Preservation Handbook*. 1997. Accessed at http://www.nps.gov/martitime/nhlpa/handbook.htm. Part IV. A, p. 19.

B2010-1 Main Block Frame Exterior Walls	**FAIR**	**SERIOUS**
B2010-2 1854 Kitchen Wing Frame Exterior Walls	**FAIR**	**SERIOUS**
B2010-3 ca. 1957 Restroom Addition Frame Exterior Walls	**FAIR**	**SERIOUS**

Timeframe: *Immediate (1-3 years)*

Small sections of the exterior siding on the main block, 1854 kitchen wing, and ca. 1957 restroom addition have deteriorated and must be repaired. Any rotted locations should be repaired or replaced using consolidation and/or Dutchman repairs using the same species of wood, with the same rain orientation and similar moisture content. All deteriorated paint should be scraped, sanded, primed with oil-based primer, and painted with two coats of *premium-quality* latex paint. The paint color should match existing. The extant paint should be tested to determine if it lead-based before commencing any work.

For further information, consult NPS Preservation Brief #10 *Exterior Paint Problems on Historic Woodwork.* Additionally, a professional building scientist can provide alternatives to the current foil-backed insulation currently in place in the exterior walls.

B2010-4 Chimneys	**FAIR**	**SERIOUS**

Timeframe: *Immediate (1-3 years)*

A custom-fitted, vented, and screened non-corrosive sheet metal chimney cap (stainless steel or copper; galvanized is second preference) should be installed to both of the chimneys. This will prevent water from entering the chimney flues and prevents unwanted birds and rodents from nesting in chimneys. See B&B Sheet Metal (http://www.bbsheetmetal.com/product/chimney-caps/) for similar-type products or contact a local sheet-metal fabricator to have a custom cap made.

Timeframe: *Long-Term (beyond 5 years)*

A chimney should be reconstructed in the center of the kitchen wing to replicate the historic chimney which was present from the building's construction through at least 1948. Historic photographs and drawings should be used when designing the reproduction.

B3010-5 Porches	**FAIR**	**SERIOUS**

Timeframe: *Immediate (1-3 years)*

Small sections of the south and east porches have deteriorated and must be repaired. Any rotted locations should be repaired or replaced using consolidation and/or Dutchman repairs using the same species of wood, with the same rain orientation and similar moisture content. All deteriorated paint should be scraped, sanded, primed with oil-based primer, and painted with two coats of *premium-quality* latex paint. The paint color should match existing. The extant paint should be tested to determine if it lead-based before commencing any work.

For further information, consult NPS Preservation Brief #45 *Preserving Historic Wood Porches.*

Timeframe: *Long-Term (beyond 5 years)*

The footprint of the north porch does not accurately match the most historic photograph of the feature; it should be reconstructed to match historic photographs.

B2020 Exterior Windows	FAIR	SERIOUS

Timeframe: *Immediate (1-3 years)*

All of the exterior storm windows should be individually assessed for treatment needs and then treated off-site. Treatments will generally include removal of the units; refinishing rusting hardware; scraping and sanding of the paint; performing necessary carpentry repairs; and having the sash re-glazed, primed, and painted.

Before reinstalling the exterior storm windows in their respective window openings, all deteriorated paint should be removed from the window jambs and windows, all necessary carpentry repairs completed to the jambs, the windows spot glazed in place, and the jambs and windows primed and painted.

For further information, consult NPS Preservation Brief #9 *The Repair of Historic Wooden Windows.*

Timeframe: *Long-Term (beyond 5 years)*

In order to accurately interpret the building to its period of significance, wood shutters, present from at least 1893 through at least 1948, should be installed on all exterior window openings. The louvered shutters should be composed of moisture-resistant wood, like cedar or mahogany, and should follow a pattern similar to those seen in historic photographs.

B301005 Gutters & Downspouts	FAIR	SERIOUS

Timeframe: *Immediate (1-3 years)*

Most of the extant 0'-5"-halfround gutters and 0'-3"-round downspouts are undersized for the pitch of the roofs and the rainfall intensity for the area. The components should be replaced with painted terne-coated stainless steel components which are the proper size, as follows:

Location	Current Gutter	Proposed Gutter	Current Downspout	Proposed Downspout
South Slope of Main Block	0'-5"	0'-8"	2 @ 0'-3" (W to grade, E to E cistern)	2 @ 0'-6" (W to W cistern, E to E cistern)
North Slope of Main Block	0'-5"	0'-8"	2 @ 0'-3" (W to grade, E to E cistern)	2 @ 0'-6" (W to W cistern, E to E cistern)
South Porch	0'-5"	0'-8"	2 @ 0'-3" to grade	2 @ 0'-6" (W to W cistern, E to E cistern)
South Slope of Kitchen Wing	0'-5"	No change	1 @ 0'-3" to grade	No change
North Slope of Kitchen Wing	0'-5"	No change	1 @ 0'-3" to grade	No change
North Porch	0'-5"	No change	1 @ 0'-3" to grade	No change
West Slope of Restroom Addition	0'-5"	No change	1 @ 0'-3" to grade	No change
East Slope of Restroom Addition	0'-5"	No change	1 @ 0'-3" to grade	No change

Every effort should be made to utilize the cisterns with downspouts located on the west side (west cistern) and east side (east cistern) of the building.

B101001-2 South Porch Structural Floor Frame	FAIR	SERIOUS

Timeframe: *Immediate (1-3 years)*

Small sections of the south porch have deteriorated and must be repaired. Any rotted locations should be repaired or replaced using consolidation and/or Dutchman repairs using the same species of wood, with the same rain orientation and similar moisture content. All deteriorated paint should be scraped, sanded, primed with oil-based primer, and painted with two coats of *premium-quality* latex paint. The paint color should match existing. The extant paint should be tested to determine if it lead-based before commencing any work.

C3020 Floor Finishes	GOOD	MINOR

Timeline: *Immediate (1-3 years)*

After work is completed to the site building drainage (under and around), repairs to the buckling floor can be completed. It is likely that once the humidity levels are rectified, the wood flooring will return to its original shape (not buckled). If, after several months, the flooring does not return to its original shape, buckling floor boards can be repaired as previously repaired in the adjacent Principal Keeper's Quarters. Park maintenance staff flattened the flooring, screwed the flooring to the sheathing underneath, and plugged the screw holes.

Timeline: *Short-Term (3-5 years)*

The interior wood floors are beginning to show wear. The floors should be refinished in a compatible manner as completed in 1983-86. Records indicate the first-floor oak flooring was finished with three coats of polyurethane. This finish is the best for the modern flooring and the high traffic areas of the first floor.

Records indicate that the second-floor historic pine flooring was finished with Tung oil in 1983-86. Waterlox, a resin-modified Tung oil is compatible with the extant finish. Waterlox recommends the following steps for refinishing Tung-oil-finished surfaces:

1. Determine if the surface is oil-based by applying a drop of ammonia in an inconspicuous area. Covering the ammonia with a small cup will ensure it does not evaporate. If an oil product is extant, the ammonia will eventually wrinkle the film and turn yellow.
2. Clean the surface with TSP and water, followed with a clear-water rinse. Allow to dry for 24 hours.
3. Once surface is dry, lightly buff the surface with a maroon pad, or similar.
4. Re-coat the prepared surface with Waterlox Original Tung oil finishing system.

More information on Waterlox can be found at https://www.waterlox.com/project-help.

C103098-2 Fireplaces	FAIR	SERIOUS

Timeframe: *Immediate (1-3 years)*

After chimney caps are installed, the extant fiberglass and plywood coverings at the fireplaces can be removed. To deter air from infiltrating the interior of the building rigid XPS foam can be inserted at the base of the flue. The foam should be scribed and cut to fit snugly without the need for plywood or unsightly studs holding the plywood in place.

B1020-1 Main Block Structural Roof Frame	FAIR	MINOR
B1020-4 1854 Kitchen Wing Structural Roof Frame	FAIR	MINOR
B1020-5 ca. 1957 Restroom Addition Structural Roof Frame	FAIR	MINOR

Timeframe: *Ongoing*

The structural roof frame of the 1854/92 main block, 1854 kitchen wing, and the ca. 1957 restroom addition have no noted deficiencies. If deflection is noted at any time, further investigation into these systems will be required.

C201001 Interior Stair Construction	FAIR	MINOR

Timeframe: *Short-Term (3-5 years)*

The stair treads are beginning to show wear. The treads should be refinished in a compatible manner as completed in 1983-86. Records indicate the stair treads were finished with Tung oil at that time. Waterlox, a resin-modified Tung oil is compatible with the extant finish. Waterlox recommends the following steps for refinishing Tung-oil-finished surfaces:

1. Determine if the surface is oil-based by applying a drop of ammonia in an inconspicuous area. Covering the ammonia with a small cup will ensure it does not evaporate. If an oil product is extant, the ammonia will eventually wrinkle the film and turn yellow.
2. Clean the surface with TSP and water, followed with a clear-water rinse. Allow to dry for 24 hours.
3. Once surface is dry, lightly buff the surface with a maroon pad, or similar.
4. Re-coat the prepared surface with Waterlox Original Tung oil finishing system.

More information on Waterlox can be found at https://www.waterlox.com/project-help.

C201002 Exterior Stair Construction	FAIR	MINOR

The exterior stair, while not a character-defining feature, is in fair condition and does not require any treatment at this time.

D20 Plumbing	FAIR	MINOR

The plumbing system is in fair condition and does not require any treatment at this time.

D30 HVAC	FAIR	MINOR

Timeframe: *Long-Term (beyond 5 years)*

At the end of the extant HVAC system's service life, the inefficient system should be replaced with an efficient slim-duct, high-velocity or mini-split system. Large, unsympathetic closets would not be required with these systems. Use of ground-sourced heating and cooling systems to replace fossil-fuel-based systems should be considered when extant systems need to be replaced.

For further information, consult NPS Preservation Brief #24 *Heating, Ventilating, and Cooling Historic Buildings: Problems and Recommended Approaches.*

A101002 Column Piers	GOOD	MINOR

Timeframe: *Ongoing*

The 1999 column piers have no noted deficiencies. If deflection is noted at any time, further investigation into this system will be required.

B101001-1 Main Block First-Floor Structural Floor Frame	GOOD	MINOR

Timeframe: *Immediate (1-3 years)*

Insulation should be installed each of the first-floor structural floor frame joists to meet R-25 insulative requirements. Recommended insulation includes waterproof closed-cell spray polyurethane foam (SPF); R-25 would require approximately 0'-3" of SPF in each joist bay. With the use of closed-cell SPF, no separate vapor or air barrier is required, as the foam acts in these capacities. If insulation if not preferential, an air barrier should be installed. A professional building scientist can provide alternatives.

Otherwise, the floor frame has not noted deficiencies. If deflection is noted at any time, further investigation into these systems will be required.

B101001-3 1854 Kitchen Wing Structural Floor Frame	**GOOD**	**MINOR**
B101001-4 North Porch Structural Floor Frame	**GOOD**	**MINOR**
B101001-5 ca. 1957 Restroom Addition Structural Floor Frame	**GOOD**	**MINOR**
B101001-6 Main Block Second-Floor Structural Floor Frame	**GOOD**	**MINOR**

Timeframe: *Ongoing*

The structural floor frames of the 1854/92 main block (second floor), 1854 kitchen wing (first floor), north porch, and ca. 1957 restroom addition have no noted deficiencies. If deflection is noted at any time, further investigation into these systems will be required.

B101001-7 Main Block Attic Structural Floor Frame	**GOOD**	**MINOR**
B101001-8 1854 Kitchen Wing Attic Structural Floor Frame	**GOOD**	**MINOR**
B101001-9 ca. 1957 Restroom Addition Attic Structural Floor Frame	**GOOD**	**MINOR**

Timeframe: *Immediate (1-3 years)*

An additional layer of insulation should be added atop the extant fiberglass insulation in the attics of the main block, kitchen wing, and restroom to meet current R-value requirements. The additional fiberglass insulation should be laid perpendicular to the extant insulation and be rated approximately R-25. In addition, an air barrier should be added atop the fiberglass insulation to deter conditioned air rising into the attic. A professional building scientist can provide options.

Timeframe: *Ongoing*

The structural floor frames of the main block, kitchen wing, and restroom addition have no noted deficiencies. If deflection is noted at any time, further investigation into these systems will be required.

B101002 Structural Interior Walls	**GOOD**	**MINOR**

Timeframe: *Ongoing*

The structural interior walls have no noted deficiencies. If deflection is noted at any time, further investigation into this system will be required.

B1020-2 South Porch Structural Roof Frame	**GOOD**	**MINOR**
B1020-3 North Porch Structural Roof Frame	**GOOD**	**MINOR**

Timeframe: *Ongoing*

The structural roof frames of the south and north porches have no noted deficiencies. If deflection is noted at any time, further investigation into these systems will be required.

B2020 Exterior Doors	GOOD	MINOR

Timeframe: *Ongoing*

A determination should be made whether the extant screen doors are needed. Because the building is cooled during the summer months and heated during the winter months, the screen doors may no longer be needed and should be removed in order to return the building to an historic appearance. If deemed important, the screen doors should also receive maintenance similar to what is described in the previous paragraph.

Otherwise, the exterior doors are in good condition and do not require any treatments at this time.

B301004-1 Roof-Side Wall Flashing	GOOD	MINOR

Timeframe: *Short-Term (3-5 years)*

The roof-side wall flashing appears to have been installed adequately. When the roof coverings are replaced and/or any siding is removed for repair, the roof-side wall flashing should be assessed to ensure it was installed adequately.

The following recommendations, from CSSB, should be utilized at all roof-side wall junctions at the Double Keepers' Quarters roofs:

> Step flashing should extend under the [certified shingles], up the vertical surface, (one flashing installed on each course concealed under the covering course) and should be covered by a second layer of flashing (counter-flashing)."
>
> Different flashing metals are available in different areas depending on climatic variations. It is good practice to use metals that have proven their reliability under the specific conditions to be encountered. It is important that metal flashing have the same longevity as Western Red Cedar.[7]

Refer to details in CSSB's New Roof Construction Manual for more details.

B301004-2 Chimney Flashing	GOOD	MINOR

Timeframe: *Short-Term (3-5 years)*

The chimney flashing appears to have been installed adequately. When the roof coverings are replaced, the chimney flashing should be assessed to ensure it was installed adequately.

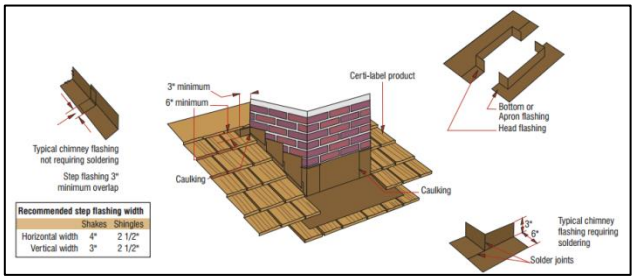


Figure 266. Typical chimney flashing details, as specified by CSSB. Details for roof-side wall flashing should be similar. Photo: CSSB "New Roof Construction Manual, p. 11.

The following recommendations, from CSSB, should be utilized at all chimneys (fig.

[7] Cedar Shake & Shingle Bureau. "New Roof Construction Manual."

266):

> Step flashing should extend under the [certified shingles], up the vertical surface, (one flashing installed on each course concealed under the covering course) and should be covered by a second layer of flashing (counter-flashing)."
>
> Different flashing metals are available in different areas depending on climatic variations. It is good practice to use metals that have proven their reliability under the specific conditions to be encountered. It is important that metal flashing have the same longevity as Western Red Cedar.[8]

Refer to details in CSSB's New Roof Construction Manual for more details.

C1020 Interior Doors	GOOD	MINOR

No work is required at this time.

C103010-1 Historic Closets	GOOD	MINOR

No work is required at this time.

C103010-2 Modern Closets	GOOD	MINOR

Timeframe: *Long-Term (beyond 5 years)*

When the extant HVAC system is replaced with a more sympathetic and efficient system (see D30 HVAC for more information), the modern closets will no longer be needed and should be removed from the building.

C103098-1 Trim	GOOD	MINOR

No work is required at this time.

C3010 Wall Finishes	GOOD	MINOR

Timeline: *Long-Term (beyond 5 years)*

The non-character-defining cypress paneling should be removed from the walls because this finish postdates the building's period of significance.

Plaster should be reinstalled on the interior of the main block. In the kitchen wing, the walls should be treated with plaster above wood wainscoting to match the original drawings. For further information, consult NPS Preservation Brief #21 *Repairing Historic Flat Plaster Walls and Ceilings*.

[8] Cedar Shake & Shingle Bureau. "New Roof Construction Manual."

C3030 Ceiling Finishes	GOOD	MINOR

Timeline: *Long-Term (beyond 5 years)*

The non-character-defining cypress paneling should be removed from the ceilings because this finish postdates the building's period of significance.

Plaster should be reinstalled on the interior of the main block and kitchen wing. For further information, consult NPS Preservation Brief #21 *Repairing Historic Flat Plaster Walls and Ceilings*.

D4010 Sprinklers	GOOD	MINOR

Timeframe: *Immediate (1-3 years)*

Precautions should be taken to eliminate the possibility of sprinkler system freezing in the attic of the Double Keepers' Quarters. This issue is particularly important in climates not normally associated with cold weather. The park should be alert to unusual climatic changes that may cause freezing and should be prepared to take protective measures as if in a cold climate. The following should be considered in advance of the cold season:

- During severe weather conditions, the piping may need to be drained to eliminate the possibility of ice plugs obstructing the piping or damaging the fittings and sprinkler heads.
- Provide adequate heating capacity to prevent freezing.
- Pay attention to locations likes attics to ensure adequate heat and air flow are reaching these areas.
- Search for isolated drafts or cold air leaks into little frequented areas or spaces where there are sprinkler pipes.
- Maintain extra heat during periods of extreme cold.
- Install pipe insulation on sprinkler piping in unheated areas taking care not to block the sprinkler heads.[9]

Otherwise, the sprinkler system should continue to receive annual inspections.

D403001 Fire Extinguishers	GOOD	MINOR

Timeframe: *Ongoing*

The fire extinguishers should continue to receive annual inspections.

[9] CNA. "Polar Prep: The sprinkler system freeze-up prevention guide." Accessed at https://www.cna.com/web/wcm/connect/d139531d-97f9-4598-8025-220dc7b3dfc9/RC_Property_Bul_PreventingSprinklerSystemFreezeUps_CNA.pdf?MOD=AJPERES on December 13, 2016.

D5010 Electrical Service & Distribution D5020 Lighting & Branch Wiring	GOOD	MINOR

No work is required at this time.

D503001 Fire Alarm System	GOOD	MINOR

Timeframe: *Ongoing*

The fire alarm system should continue to receive periodic inspections.

D503008 Security Alarm System	GOOD	MINOR

Timeframe: *Ongoing*

The security alarm system should continue to receive periodic inspections.

G203003 Paved Surfaces	GOOD	MINOR

Timeframe: *Immediate (1-3 years)*

The brick-paved ramped walkway should be reassessed for compatibility with the historic structure. While an ABAAS-compliant walkway is necessary for the building, the ramp is creating negative drainage at the south elevation and creating moisture-related issues at the south porch.

G204001 Fencing & Gates	N/A	N/A

Timeframe: *Long-Term (beyond 5 years)*

A fence surrounding the Double Keepers' Quarters site should be reconstructed to match that which was seen in the 1932 photographs of the Light Station. The *Cultural Landscape Report* states: "Restore the historic concrete post and wire fence that surrounded the principal and double keepers' quarters at the end of the historic period. This is consistent with the period of significance in that a rectangular fence surrounded the quarters from 1888 to ca. 1950." A site plan and fence detail are provided in the CLR (fig. 267).

As a note, HPTC believes the posts could also have been composed of painted wood.

Refer to NPS Preservation Brief #36 *Protecting Cultural Landscape: Planning, Treatment and Management of Historic Landscapes* on the importance of these features for interpretation of the site.

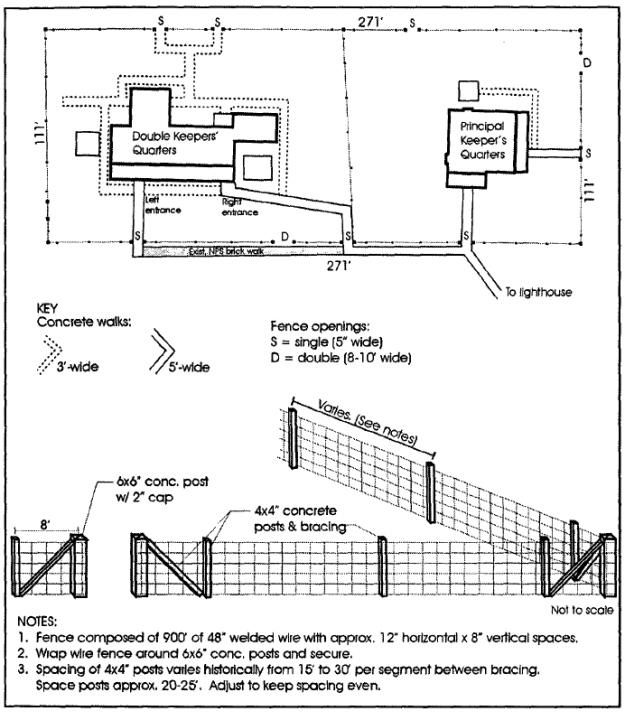


Figure 267. Details for the fence around both keepers' quarters. Drawing: Cultural Landscape Report, p. 46.

G204099 Miscellaneous Structures	N/A	N/A

Timeframe: *Long-Term (beyond 5 years)*

The miscellaneous accessory structures (outbuildings and a privy) which were extant at the Double Keepers' Quarters in the 1932 photograph should be reconstructed for interpretive purposes (fig. 268). Consultation of additional photographs will easily provide details to accurately reconstruct these buildings.

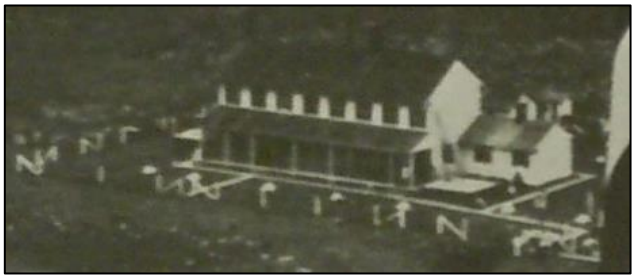


Figure 268. Historic outbuildings can be seen in this 1932 photograph. A privy also stood on site, but is obscured by the other buildings. Photo: Cape Hatteras National Seashore Archives. Cropped by author.

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Effects of Recommended Treatments

The potential effects of the recommended treatments for preservation are outlined in Table 5. The table is ordered by prescribed timeframe: emergency first, immediate second, short-term third, and long-term fourth. Effects to historic fabric, recommended mitigating measures, and beneficial outcomes are examined. Treatment recommendations which include periodic housekeeping and maintenance, reassessment, or are in good and minor conditions, are not discussed.

Table 5. **Hatteras Light Station Double Keepers' Quarters Recommended Treatment Effects**

Recommended Treatment	Potential Effect on Historic Fabric	Mitigating Measures	Beneficial Effects
Install lightning protection system.	No adverse effect.	N/A	Protect building from lightning strikes. Restore historic feature.
Correct negative drainage by regrading beneath building and around exterior perimeter.	Adverse effect: regarding could cause grade to slightly alter from historic level.	Removal of detrimental drainage issue around/under building.	Allow water to flora ay from building, not to and under it.
Insulate sprinkler pipes in attic.	No effect.	N/A	Eliminate threat of freezing water within pipes and damage to historic fabric.
Immediate (1-3 years)			
Remove insulation covering extant soffit vents; install interior rafter baffles; reinstall insulation.	No adverse effect.	N/A	Lengthen lifespan of roof shingles.
Return cisterns to operational as water-collecting reservoirs.	No adverse effect.	N/A	Reinstate the use of a historic cultural landscape feature.
Clean, repoint, and repaint cisterns.	No adverse effect.	N/A	Preservation maintenance.
Repairs to and repainting of wood siding and trim throughout entire building.	No adverse effect.	N/A	Preservation maintenance.
Install chimney caps.	Adverse effect: installation of non-historic feature.	Minimal caps will only be seen from the lighthouse.	Lengthen lifespan of chimneys. Deterrent from nesting insects, birds, and rodents, and intruding rain water.
Repairs and repainting of south and north porches.	No adverse effect	N/A	Preservation maintenance.
Repairs and repainting of exterior storm windows, jambs, and window sash.	No adverse effect.	N/A	Preservation maintenance.
Install properly sized gutters and downspouts of the same material.	No adverse effect.	N/A	Rectify site drainage issues.

(Table 5 continued)

Install insulation and vapor barrier between first-floor structural floor frame.	No adverse effect.	N/A	Rectify humidity issues within building. Meet current energy code.
Install additional layer of insulation in attic.	No adverse effect.	N/A	Meet current energy code.
Short-Term (3-5 years)			
Replace extant cedar shingles in-kind using traditional techniques. Correct deficient flashing details.	No adverse effect.	N/A	Lengthen lifespan of roof shingles. Rectify deficient conditions.
Install ridge vent at all roof ridges	Adverse effect: removal of small portion of historic skip sheathing boards along ridge.	Ventilation will create healthier environment within the attic. Undetectable from exterior.	Lengthen lifespan of roof shingles.
Refinish interior stair treads and second-floor pine flooring with Waterlox.	No adverse effect.	N/A	Preservation maintenance.
Refinish first-floor oak flooring with polyurethane.	No adverse effect.	N/A	Preservation maintenance.
Long-Term (beyond 5 years)			
Reconstruct chimney at northwest kitchen wing.	No adverse effect.	N/A	Reconstruction of missing character-defining feature.
Reconstruct north porch to match historic porch.	No adverse effect.	N/A	Rectify unsympathetic changes. Reconstruction of character-defining feature.
Install reproduction wood shutters at all window openings.	No adverse effect.	N/A	Reinstallation of missing character-defining features.
Replace HVAC system with energy-efficient, sympathetic system. Remove modern HVAC closets.	No adverse effect.	N/A	Rectify unsympathetic changes. Remove unsympathetic features.
Remove cypress wall and ceiling paneling and install plaster wall and ceiling finishes (with some wood wainscoting in kitchen addition).	No adverse effect.	N/A	Removal of unsympathetic features. Reinstallation of missing character-defining features.
Reconstruct historic fencing and gates.	No adverse effect.	N/A	Reinstallation of missing cultural landscape features.
Reconstruct historic outbuildings and privy.	No adverse effect.	N/A	Reinstallation of missing cultural landscape features.

(Table 5 continued)

Remove extant restroom addition and replace with reconstruction of historic kitchen addition.	No adverse effect.	N/A	Removal of unsympathetic features. Reinstallation of missing character-defining features.
End of Table 5.			

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As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. Administration.

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