



JOHN NELSON HOUSE AND BARN

Minute Man National Historical Site
Lincoln, Massachusetts



Documentation of
Physical Evidence 2009- 10

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**JOHN NELSON HOUSE
AND BARN**

**DOCUMENTATION of PHYSICAL
EVIDENCE 2009-10**

Minute Man National Historical Park

Concord, Massachusetts

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2010

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EXECUTIVE SUMMARY

Project Purpose and Scope

The intent of this project was the further documentation of the John Nelson House [List of Classified Structures (LCS) # 006551] and the John Nelson Barn (LCS # 012008) at Minute Man National Historical Park (NHP) by the Historic Architecture Program (HAP) in conjunction with the 2009–10 rehabilitation of the buildings by Architectural Preservation, Engineering, and Maintenance (APEM). HAP and APEM signed a project agreement for the exterior and interior paint analysis of the John Nelson House and Barn in 2009, which was done by Judith Q. Sullivan.¹ The documentation was an extension of that project agreement in support of the rehabilitation of the buildings by Minute Man NHP and APEM.

The rehabilitation of the buildings presented an opportunity to record elements of the buildings that were exposed during that work. Both the John Nelson House and Barn were recorded by the Historic American Building Survey (HABS) in 1962–63 with additional photographs of the barn taken in 1984 added to the HABS records. The current documentation was intended to augment the previous research and documentation by HABS and by John Milner Architects, Inc. in 2008 as presented in the “John Nelson House and Barn, Historic Structure Assessment Report.” The additional documentation might also provide a better understanding of the evolution of the buildings, and possibly clarify some questions raised by the previous report. This report includes descriptions of some of the repairs made during the rehabilitation, but is not intended to be a completion report for the APEM rehabilitation project.

The “John Nelson House and Barn, Historic Structure Assessment Report” (HSA) included plans of the buildings with room, doorway, and window numbers, which were utilized in the further documentation and will be referred to in this report (figs. 1, 2, and 3). The documentation for this report included field drawings, measured drawings, digital photography, and written descriptions of the buildings. This project also included physical investigation of the John Nelson House and Barn focusing on areas that were opened during rehabilitation. The following report includes a narrative of some of the observations, as well as annotated photographs and drawings. James Lee, Architectural Conservator, HAP, performed the documentation, digital photography, and produced the written descriptions in the following report. Charlotte Ciaraldi, Draftsperson, HAP Volunteer, assisted with field measurements and drawings, and produced the measured drawings of the John Nelson House framing. The project was coordinated through Stephen Spaulding, Division Chief, APEM, and David Bittermann, Senior Project Manager, APEM, as well as APEM Exhibit Specialist’s Greg Law and Pedro Deleon who were the on-site contacts during the documentation.

¹ Judith Q. Sullivan “John Nelson House, Paint Analysis.” (NPS, NER, HAP; Lowell, MA, 2010).

Documentation Conducted

The documentation for this report included, but was not limited to the following:

- Field drawings of the sills with post and stud locations of John Nelson House.
- Field drawings of the northeast wing framing of John Nelson House.
- Field drawings of the north and northwest addition framing, including first-story framing of Rooms 104–107, and second story framing of Rooms 105–107.
- Measured drawings of the northeast wing framing of John Nelson House.
- Measured drawings of the north and northwest addition framing, including first-story framing of Rooms 104–107 of John Nelson House.
- Digital photography of the exteriors and interiors of both buildings with attention to areas that were opened during rehabilitation.
- Field notes and observations of framing and building elements that were opened during rehabilitation.
- Field notes and observations of framing elements and building materials that were removed during rehabilitation.
- Analysis of nail evidence from the John Nelson House and Barn.

Observations and conclusions based on the documentation are summarized in the subsequent sections of this report. Some of the documentation of the John Nelson House and Barn is included in the report. The field drawings and field notes will be filed in the Cultural Resource Center Library, Boott Mill 4th floor, Lowell, Massachusetts, along with compact discs with digital photographs, including some photographs by Greg Law. The measured drawings and larger field drawings will be stored in the Cultural Resource plan files, Boott Mill 5th floor, Lowell, Massachusetts.

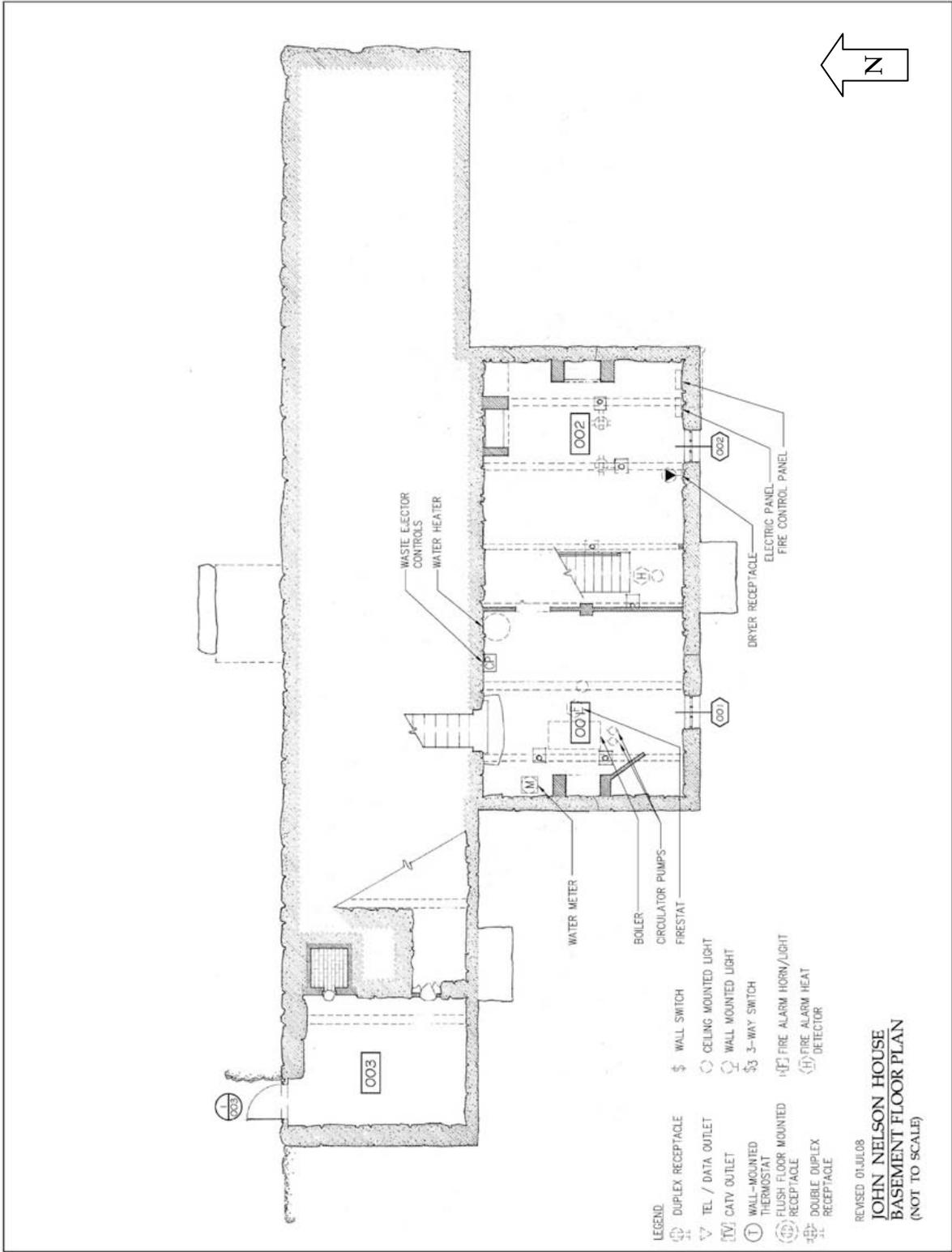


Figure 1. John Nelson House, basement plan with room, doorway, window, and utilities key.
Copied from HSA, 205, not to scale.

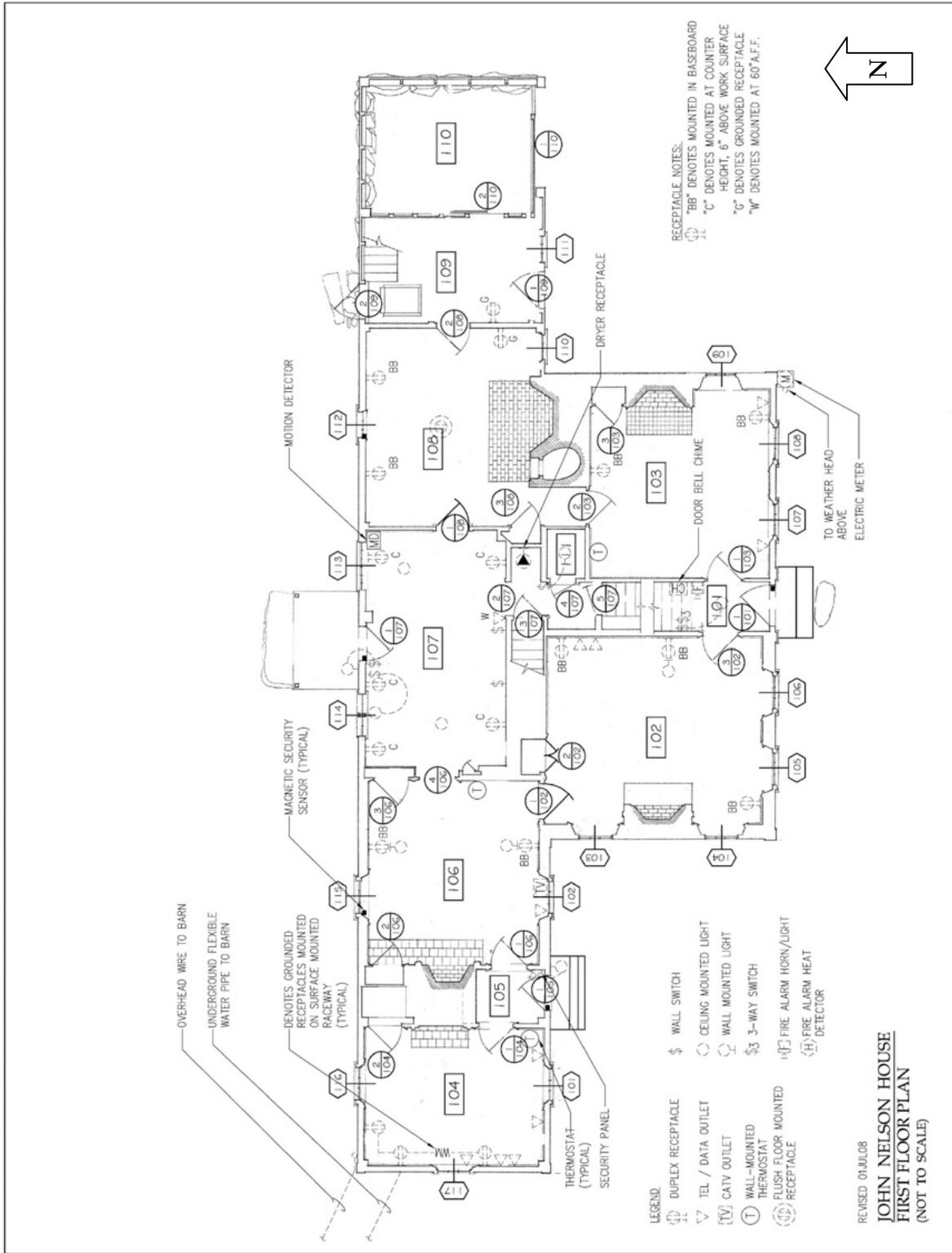


Figure 2. John Nelson House, first floor plan with room, doorway, window, and utilities key.
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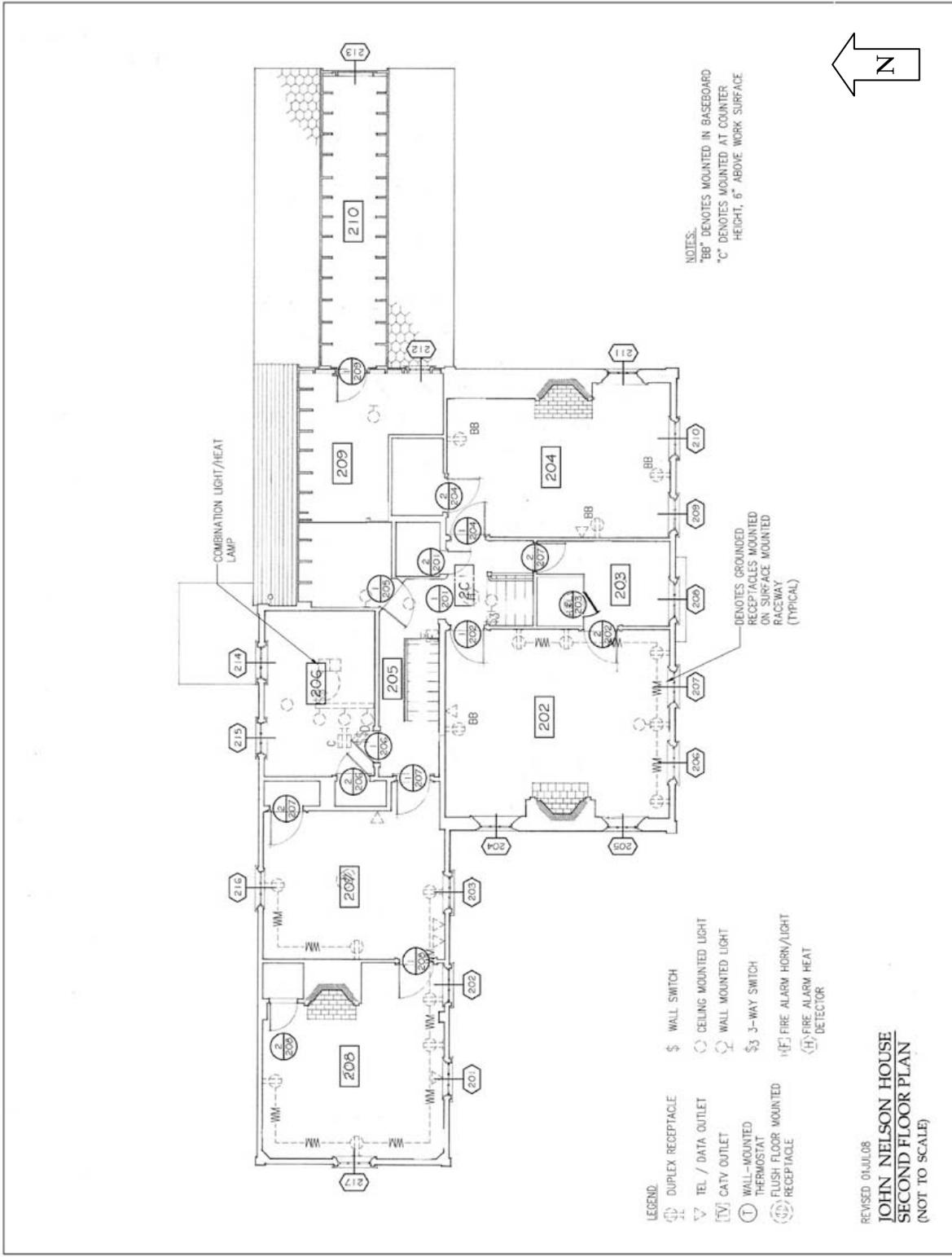


Figure 3. John Nelson House, second floor plan with room, doorway, window, and utilities key. Copied from HSA, 207, not to scale.

DOCUMENTATION

Brief Description of Buildings

The John Nelson House and Barn are situated on North Great Road (Route 2A), Lincoln, Massachusetts within the boundaries of Minute Man NHP. The façade of the house faces south toward North Great Road. The main block of the John Nelson House is a two-story Federal-style, brick-end house with painted clapboard siding, a low hipped roof with asphalt shingles, and brick chimneys. The house has an attached two-story ell on the north and northwest, and an attached one-story wing with a garage bay on the northeast. The building has a random rubble stone foundation with ashlar granite above grade on all but the north elevation. The northwest and northeast additions have clapboard siding, and the expansive north elevation is entirely sided with wooden shingles.

The John Nelson House is named for one of the house's early occupants who was also a contributor to the design and construction of the house. The documentary evidence included in the HSA presented the chronological evolution of the house (see "Table of Significant Nelson Family and Property Events"). Josiah Nelson constructed the brick-end main block of the house in 1808, and evidently attached it to an existing eighteenth-century structure, which abuts the northeast corner of the main block. Previous reports suggest that an increase in the 1821 tax assessment of John Nelson represents the construction of additions to the house between 1818–1821 (circa 1820). This probably included additions to the north and northwest of the main block of the building. Documentary evidence further indicated that there may have been other additions between 1835 and 1840. Census records documented that George Nelson, his wife Abigail, and three children occupied the house from the late-nineteenth century to the early-twentieth century. Alterations to the northeast wing were probably made during this time period.²

The main block of the John Nelson House is a noteworthy example of Federal-style architecture with brick ends, a decorative molded cornice, molded doorway elements, and other details that were apparently inspired by the designs published by Asher Benjamin and in other Federal-style pattern books. The house retains a high degree of architectural integrity and is a contributing resource to the historic significance of Minute Man NHP.

The John Nelson Barn is sited northwest of the house. The original section of the barn was a three-bay English-style barn that was evidently constructed between circa 1821 and 1824. Documentary evidence suggested that additions were made to the barn circa 1835, circa 1870, and circa 1900.³ Currently the barn consists of a timber-framed main block, and a north block framed with dimensional lumber that has a small wing attached to the east elevation.

The APEM project included the stabilization and rehabilitation of the John Nelson House and Barn. The documentation of the buildings by HAP will assist in the future interpretation and preservation of the structures.

² John Milner Architects, Inc. and HDR Engineering, Inc. "John Nelson House and Barn, Historic Structure Assessment Report" (Chadds Ford, PA: November 2008) 1 – 5.

³ John Milner Architects, Inc., 247 & 252.

Table of Significant Nelson Family and Property Events⁴

Date	Event
1636	Thomas Nelson (great-great grandfather of Josiah Nelson, Sr.) from Rowley, England settled in Massachusetts.
1720	Thomas Nelson (great-grandfather of Josiah Nelson, Sr.) located to the Lexington, MA area.
1726	Josiah Nelson, Sr. was born (d. 1810).
1772	Josiah Nelson, Sr. purchased a parcel of land in Lincoln, MA from Daniel Brown. This large parcel of land included the property that currently contains the John Nelson House and Barn. Josiah Nelson, Sr. constructed a wood frame house on a 21-acre lot north of Nelson Road.
1775	April 19, 1775 the Battle Road events took place as the British returned from Concord.
1778	Josiah Nelson, Jr. born (d. 1835).
1789	John Nelson born (d. 1859).
1808	Josiah Nelson, Jr. began construction of the John Nelson House on a parcel of his father's land south of Nelson Road, adding a brick-ended wood frame structure (the Main Block) to the southwest of an existing 18 th century wood frame structure.
1818	Josiah Nelson, Sr.'s property was divided among his heirs, after his death in 1810. John Nelson received 5 acres of pasture land on the south side of Nelson Road, along with the west end of the John Nelson House. Josiah Nelson, Jr. received 19 acres of land and the east end of the John Nelson House.
1821	Increased tax assessment indicates that the John Nelson House may have been expanded by John Nelson between 1818 and 1821 (the Northwest Wing).
1822	John Nelson's only son George was born.
1824	Tax assessment lists John and Josiah, Jr. as each assessed for half of the John Nelson House.
1826-7	Josiah Nelson, Jr. was declared insane and portions of his land were sold to pay off his debts. He maintained ownership of his half of the house.
1835	Josiah Nelson, Jr. died and his property was passed on to his heirs.
1840	Tax assessment lists Josiah Nelson, Jr.'s heirs as assessed for one-third of the John Nelson House. John Nelson was assessed for two-thirds of the house.
1846	John's only son George Nelson purchased the eastern section of the John Nelson House from Josiah, Jr.'s heirs.
1859	John Nelson died and his son George inherited his father's property and house, retaining ownership of the entire John Nelson House.
1863	George's son J. Walter Nelson was born, who owned and occupied the John Nelson House from the late 19 th century into the early 20 th century.
1905	J. Walter Nelson's son W. Newton Nelson was born. He owned and occupied the John Nelson House from the early through the third quarter of the 20 th century.
1970's	W. Newton Nelson sold the property, including the house and barn, to Minute Man National Historical Park.

⁴ John Milner Architects, Inc., Figure 1.0A-3, 5.

John Nelson House, Exterior

Introduction

The HSA sufficiently describes the exterior architectural elements of the John Nelson House. During the rehabilitation it was possible to observe and document additional information that generally supports the findings of the HSA.

Walls

The south elevation of the 1808 main block of the house is clad with featheredge clapboards. Featheredge clapboards are beveled at each end and designed to overlap the adjacent clapboard. A nail removed from the south elevation of the main block is characteristic of an early machine-cut nail. This is particularly evident from the way the nail shank is tapered on two sides, and the location of burrs on diagonally opposite edges of the nail shank.⁵ Early machine-cut nails were produced between circa 1790 and circa 1820, which is consistent with the 1808 date of construction for the main block.

Featheredge clapboards are also used on the south and west elevations of the northwest wing of the house. Nails removed from clapboards on both those elevations were determined to be transitional machine-cut nails. The defining characteristics included the burrs on the same side of the nail shank, and the bevel under the nail head is about one-quarter down the shank.⁶ A nail removed from the northwest corner board of the house was also found to be a transitional machine-cut nail. Transitional machine-cut nails were manufactured between circa 1810 and circa 1840, which is consistent with the early-nineteenth century construction date of the northwest wing.

The entire north elevation of the John Nelson House is covered with wood shingles. It was apparent from on-site observations that a large quantity of the shingles had been replaced, but some did appear to be older. Two nails removed from the older shingles near the west end of the house had characteristics of transitional machine-cut nails, circa 1810 to circa 1840. Two other nails removed from the north elevation were cut nails, but had a coating suggesting that they were restoration nails.

The east and south elevations of the northeast wing had clapboards that were butted together and fastened with wire nails. The physical evidence suggested that the northeast wing was constructed in the late-nineteenth to early-twentieth century and was also probably repaired since that time.

⁵ Maureen K. Phillips. "Mechanic Geniuses and Duckies,' a Revision of New England's Cut Nail Chronology before 1820;" Association for Preservation Technology International (APT) Bulletin, Vol. 25, No. 3/4 (1993), 4-16.

⁶ Ibid.

John Nelson House, Structural Elements

Introduction

The documentation began with the first-story sills and exterior wall framing. The rehabilitation included repairs to the sills, which were accessed by removing exterior cladding, water table, and sheathing. There was evidence of previous repairs to the sills and wall framing and some repairs were made as part of the current rehabilitation. The exposed framing was documented in field drawings that recorded the locations of the framing members and were supplemented by digital photographs. Some framing elements were also recorded in measured drawings.

Main Block

Documentation of the south elevation framing found that large sections of the original 8-inch by-8-inch sills had been replaced or repaired with smaller dimension sills that were in some cases doubled-up to fill the area being repaired (fig. 4). All of the sills on the south elevation were replaced with 8-inch-by-8-inch hemlock. The original framing included 3-inch-by-4-inch studs and diagonal wind braces. Previous repairs included sistering of the studs and some splices. The current work reinforced the studs where required.

The east end of the second-story south girt was opened during the rehabilitation where a previous repair was failing. The original framing in that location included diagonal braces from the corner post to the girt (fig. 5). The deterioration of the east end of the girt was extensive and about six feet of the girt was replaced with 8-inch-by-8-inch hemlock.

Northwest Wing

Northwest of the main block, the south elevation sill was replaced with 8-inch-by-8-inch hemlock and the studs were shimmed where required. The new sill has a half-lap joint near the center of the elevation (under D1/105) and at the east corner of the elevation the sill butts up against the north sill and corner post of the main block.

The sill on west elevation of the northwest wing was replaced in two sections. From the south corner approximately three feet of sill was replaced and from the north corner approximately seven feet of sill was replaced (fig. 6). A section of the old sill was left in the middle of the elevation and was joined to the new sections with half-lap joints. This elevation was framed with corner braces, and the jack stud under W117 had waned edges.

The north elevation had an older sill from the west corner continuing just east of W115 (Room 106). The first section of sill spanned Rooms 104 – 106, but beyond that the sills had been replaced (fig. 7). The posts on the north elevation appeared to be mortised into the older sill and documentation of the first-floor framing determined that the intermediate girts were half-lapped at the sills. Further observations of the first-floor framing suggested that the framing from Rooms 104 – 106, and into the west end of Room 107, was from one period

of construction (Drawing 1). The spacing between the girts was similar and the floor joists under these rooms were laid-out in the same manner. Room 105 was the exception, because the framing was spaced to conform to the chimney bay. The framing of the basement staircase in the southwest corner of Room 107 appeared to be integral to the floor framing at the west end of the northwest wing. The beam supporting the top of the staircase extends under the floor of Room 106 and appears to be part of the same framing system. The HSA conjectured that the west end of the northwest wing was a later addition, but the framing suggested that section of the building, from Room 104 – 106, as well as part of Room 107, was constructed at the same time.

With the exception of the posts and girts, most of the framing on the north exterior wall of Room 107 had been replaced during previous projects that included window sash and doorway replacement. The current rehabilitation included replacement of the sill with 8-inch-by-8-inch hemlock from east of W115 to W113 in Room 107. The sill below W113 and continuing east under the north wall of the eighteenth-century block was a 4-inch-by-6-inch replacement sill from previous repairs.

The documentation of the first-floor framing of Room 107 suggested that this section of the house had been altered several times. The first-floor framing has two north-south girts from the north sill to the rear sill of the main block. Floor joists span each section of the frame and extend under Room 106. The floor joists in the two eastern bays of framing generally line up. The floor joists in the west section of Room 107 extend under Room 106 and line up with the framing at the west end of the house. The framing suggests that the east end of the room was constructed at a different period. The deteriorated condition of the girts indicated that the east end was built prior to the west portion of the northwest wing.

Of the two first-floor girts in Room 107, the east girt has a three-foot wide beveled notch that looks like it may have served as an entry into the cellar. During the rehabilitation Pedro DeLeon, Exhibit Specialist, noted that the crawl space under Room 107 had approximately two feet of filled in earth. Thus it seems possible that there was a low cellar under Room 107, but there was no other evidence of the cellar found during the current investigation.

Observation and recording of the second-floor framing visible in the ceiling of Room 107 appeared to support the evidence on the first story. There are two girts that roughly correspond to the first-story girts and a third spans from the north girt to the beam framing the staircase (Drawing 1). The extant joists and open mortises indicated that the girt to the stair framing was a later addition. As with the first-floor framing, the ceiling joists at the west end of Room 107 continue into Room 106. The eastern-most bay of second-floor framing above Room 107 was not consistent with the other framing. This bay was framed on the west side with a 6-inch-by-6-inch beam sistered to the north-south girt and a one-inch thick ledger board sitting on top of the girt of the eighteenth-century structure on the east side. The tie-beam on the north wall was a 4-inch-by-6-inch header above W113, but there was no beam at the ceiling level. Random width joists were fastened to the beam and ledger with wire nails (Drawing 1). The framing evidence suggested that this bay was open at one time, which might also explain the presence of the vertical board wall near the southeast corner of Room 107 (see subsequent section “John Nelson House, Interior”).

The evidence of the earlier framing suggests that there may have been a one-bay wing on the north elevation of the main block prior to the construction of the northwest wing. This was further supported by the evidence of early lath over D1/107 (see subsequent section “John

Nelson House, Interior”). However, the evidence that supports this conjecture was not sufficient to definitively prove the presence or extent of the earlier wing.

Eighteenth-Century Structure

The rehabilitation project found that the north wall framing of the eighteenth-century structure had been previously repaired. The north sill had been replaced with 4-inch-by-6-inch sills and the wall framing was 2-inch-by-4-inch stud framing on a 2-inch-by-4-inch plate fastened to the sill. A section of the south sill, under window 110 had also been replaced with a 4-inch-by-6-inch sill during previous repairs. Other repairs to the framing were not evident during the current rehabilitation. The earlier corner posts, second-story north girt, and east-end girt were extant, and the areas that were open were recorded (the second-story south girt and west-end girt remained concealed during the documentation). Since, the more recent framing was sound it was left in place.

APEM carpenters accessed the crawl space beneath this section of the building and photographed the chimney base and some framing elements. The first floor was framed with timber sills, an east-west beam near the center of the eighteenth-century frame and an east-west chimney girt (fig. 8). The floor joists ran north-south and were mortised into the beams (fig. 9). The northern joists appear to have been replaced. The east-west beam spanning the center of this section of the building was supported by a brick pier. Shims were added between the pier and the beam to reduce the bounce in the floor.

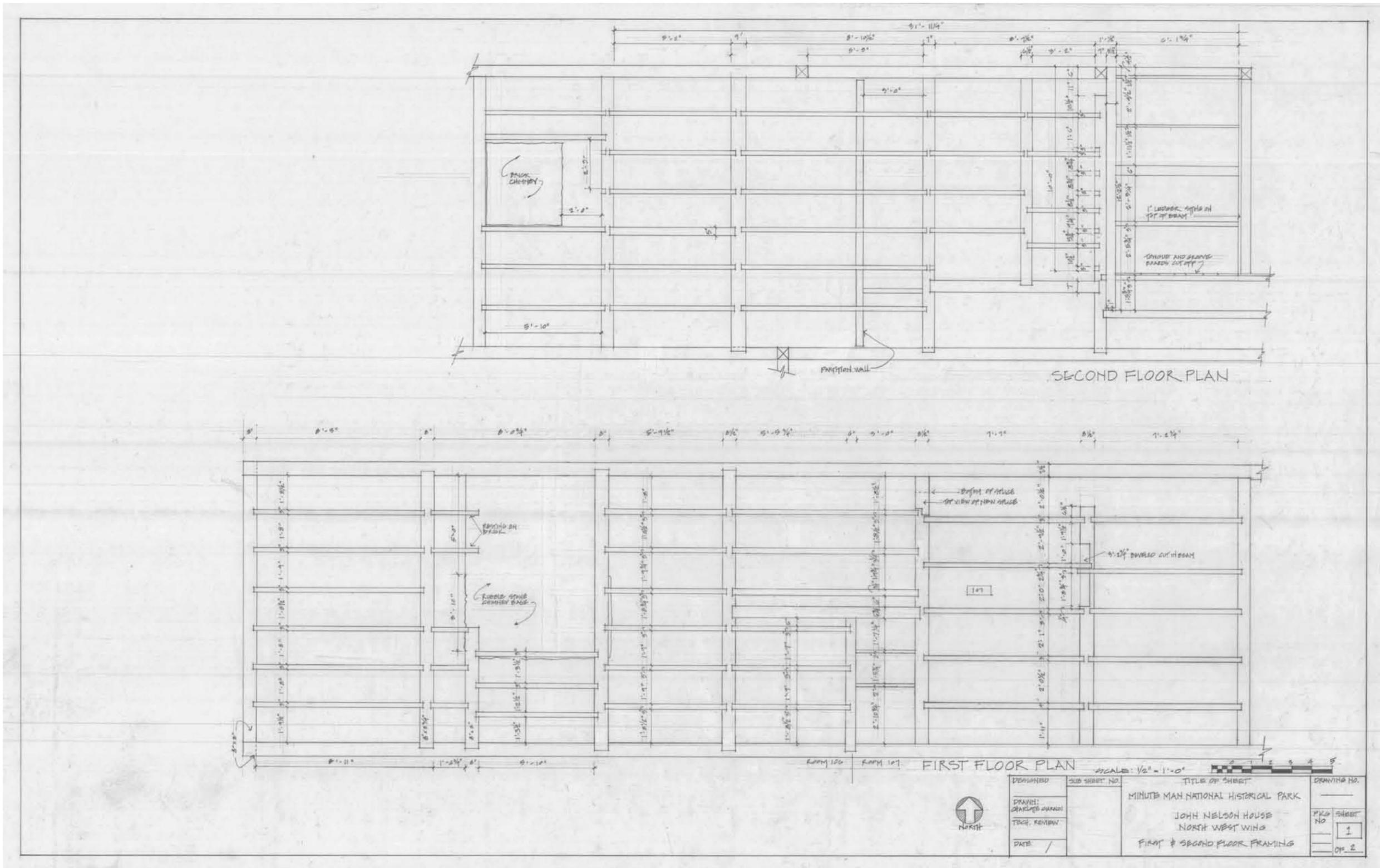
The second story north and east girts of the eighteenth-century structure were documented and the physical evidence indicated that the portion of the building had been larger. The extant ceiling joists are mortised into south face of the north girt and there are corresponding open mortises on the north side of the timber (figs. 10a and 10b). That evidence suggested that the structure had at least an additional bay north of the present north wall. Open mortises on the east-end girt indicated where the timbers framing the roof were located and open mortises on the east face suggested some portion of the structure extended east (fig. 11). There was no further evidence that indicated the extent of the extensions to the building.

Northeast Wing

As conjectured in the HSA, the northeast wing, which includes Rooms 109, 110, and 210, appears to be a collection of salvaged framing that was later added to the eighteenth-century portion of the house (fig. 12). The documentation included measured drawings of the framing that support that conjecture (Drawing 2). Based on the extant evidence, it was difficult to discern whether any of the framing in the northeast wing was representative of an earlier structure.

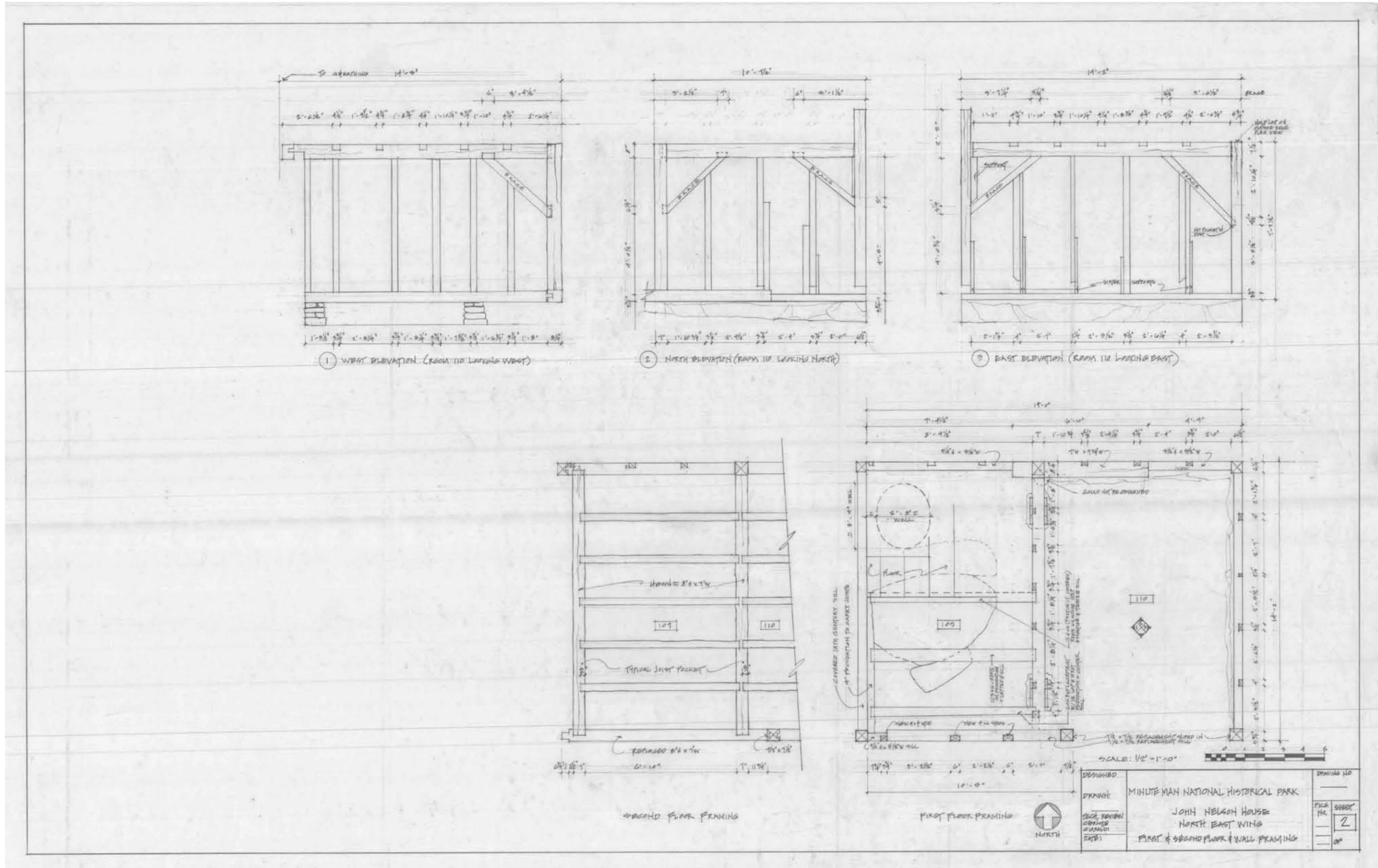
Significant portion of the framing had been previously repaired and much of it required repair during the current rehabilitation. The lower walls were a combination of undersized 4-inch-by-6-inch replacement sills, deteriorated studs with scabbed on sistering, and deteriorated posts (fig. 13); the upper walls were framed with 2-inch-by-4-inch lumber, and the roof was framed with 2-inch-by-6-inch rafters and ridge. The floor in Room 109 was

framed with random width joists and the second-story floor joists were a combination of sawn, hewn, and unhewn timbers.



Drawing 1. Minute Man National Historical Park, John Nelson House, Northwest Wing, First and Second Floor Framing, C. Ciaraldi, 12/2010.

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Drawing 2. Minute Man National Historical Park, John Nelson House, Northeast Wing, First and Second Floor and Wall Framing, C. Ciaraldi, 12/2010.

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Figure 4. John Nelson House, south elevation, main block, east end of sill depicting previous sill repairs.



Figure 5. John Nelson House, south elevation, main block, east end of second-story girt depicting deterioration.



Figure 6. John Nelson House, west elevation, northwest wing, showing sill repairs and wall framing.



Figure 7. John Nelson House, north elevation, northwest wing, showing continuous sill from northwest corner to east of W115.



Figure 8. John Nelson House, Room 108, chimney base and first-floor framing.



Figure 9. John Nelson House, Room 108, first-floor framing.



Figure 10a. John Nelson House, eighteenth-century structure, Room 209, north girt and wall framing, 2010.



Figure 10b. John Nelson House, eighteenth-century structure, Room 209, north girt with mortised joist and corresponding open mortise, 2010.

Figure 11. John Nelson House, Room 210, east girt of eighteenth-century structure showing open mortises, 2010.



Figure 12. John Nelson House, northeast wing, Room 109, northwest corner, west wall (exterior wall of 18th century structure), and framing.



Figure 13. John Nelson House, northeast wing, Room 110, northeast corner framing.

John Nelson House, Interior

Introduction

The documentation and physical investigation of the John Nelson House concentrated on the additions to the north of the main block, including the nineteenth-century northwest addition, the northeast addition, and the eighteenth-century structure abutting the northeast corner of the main block (Rooms 104 – 110). The rooms in the 1808 main block of the house were intact and generally were not opened during the rehabilitation.

Basement

The basement was generally not impacted by the rehabilitation of the house. Some of the first-floor framing members were replaced and some were reinforced with sistering. The documentation included investigation of the framing in the crawlspace under Rooms 105, 106, 107 and 108 and examination of extant materials.

The HSA described the closed-off staircase in the north wall of Room 001. That report suggested that the staircase was a former bulkhead on the north elevation of the main block, but backed off that conjecture citing the lack of physical evidence.⁷ Further investigation did indicate that the rubble stone walls surrounding the existing wooden staircase may represent a stone bulkhead structure that was in this location before the wooden staircase was built. However, confirmation of that conjecture was not possible without the removal of the extant staircase.

The extant wooden staircase appears to date from the early nineteenth-century construction of the northwest wing, which appears to have included Rooms 104 – 106, and at least part of Room 107. The first-story landing for the staircase was adjacent to the doorway between Rooms 106 and 107 (D4/106). The plaster walls lining the staircase were constructed with accordion lath fastened with cut nails, which is consistent with the early nineteenth-century construction. The evidence suggests that this staircase provided a second entrance to the basement and that this entrance allowed access from the west half of the house, which is consistent with the conjecture in the HSA.

Documentary records indicated that the house was owned by John Nelson and Josiah Nelson, Jr. during this time period and that each occupied half of the house.⁸ The addition of the second entrance to the basement apparently accommodated the needs of the two households. The brick partition between Room 001 and 002 further delineated the basement into two separate rooms.

⁷ John Milner Architects, Inc., 66.

⁸ Ibid, 3.

First Story

Room 101

The first-story rooms in the main block of the John Nelson House were not significantly altered during the rehabilitation. Room 101 is the center hallway in the 1808 main block of the building.

The walls in Room 101 have what appears to be a twentieth-century gold wallpaper with a stylized lattice pattern with flowers and butterflies. The paint analysis determined that the extant staircase was not original, but the stair stringer does appear to be earlier than the staircase. Paint evidence also determined that all three doorway surrounds in this hallway (D1/101, D3/102, and D1/103) were from the same period of construction (see Judith Q. Sullivan “John Nelson House, Paint Study,” 2010). It was also determined from paint samples and on site investigation that the staircase stringers were from the same period of construction as the other woodwork. The staircase treads and risers had fewer paint layers than the stringers suggesting that they had been previously replaced.

Room 102

Room 102 is the west parlor in the 1808 main block of the house and was kept intact with minimal rehabilitation. The interior window shutters had been secured to the splayed window jambs with screws, which were removed. The window sashes were removed, rehabilitated, and reinstalled.

During the rehabilitation the rim lock and knob was removed from D1/102. The rim lock was stamped “PAT^D/ MARCH 1, 1870/ CORBIN” indicating that the lock was installed after March 1870. The paint evidence on the doorway elements was consistent with other woodwork in Room 102, suggesting that the hardware was replaced. However, no scars from earlier hardware were observed. The doorway surround (D2/102) of the adjacent cabinet and shelves had scars indicating that a full-size door had hung from the east side of the doorway and opened into Room 102. The HSA suggested that this may have lead to an earlier staircase to the second story, but there was no further evidence of such a staircase. Given the evidence of the second-story staircase in Room 107, it does not seem likely that there was a staircase from Room 102. D2/102 was either a closet doorway or possibly an earlier doorway into Room 107 prior to the installation of the basement staircase in Room 107 (see subsequent section “Room 107”).

The investigation did find wallpaper beneath the present textured paper (now painted yellow; the paper was since removed). The earlier wallpaper was a machine made paper with intertwining vines that form diamonds and fleur-des-lys in the center of the diamonds. The background of the paper is gray, the vines are olive green, and the fleur-des-lys were dark olive green and silver. The wallpaper was documented in the 1962 Historic American Building Survey (HABS) photographs of the John Nelson House (figs. 14a, and 14b). The wallpaper was removed during the rehabilitation and a piece of the earlier wallpaper was stored in the HAP files. Pencil drawings on the walls beneath the wallpaper included the date of 1957 twice, suggesting that the wallpaper was either installed in 1957 or after that date. The pencil drawings were signed by Debbie Nelson, who lived in the house at the time.

Remnants of a brown-stripe wallpaper were found under the cornice in Room 102 (fig. 15). Based on the paper remnant it was not possible to determine if this was a boarder or representative of a paper that covered the entire wall. Examination of the wallpaper determined that it was printed on a rag/cotton fiber paper. Rag/cotton fiber papers generally predated wallpapers printed on wood pulp, which have been used since the 1850s. However, cotton papers were in use after the introduction of wood pulp papers. It is therefore difficult to date this paper based on that evidence.

Room 103

Room 103 is the east parlor in the 1808 main block of the building. It was also kept intact with minimal rehabilitation during the current project. A hand-wrought finish nail was removed from the south-wall dado behind the radiator. The fact that it was wrought suggests that it dated from the construction of the 1808 main block. The paint evidence determined that the baseboards, dados, and chair rails throughout the room had the same first paint layer, indicating that they were installed at the same time. Paint analysis also found that the fireplace surround and mantel were later additions to the room, confirming the conjecture in the HSA that the extant fireplace elements were installed in the late-nineteenth to early-twentieth century.

Room 104

Room 104 is the western-most room in the northwest addition of the John Nelson House. This room was not significantly altered during the rehabilitation. The window sashes were removed, rehabilitated, and reinstalled. Paint evidence indicated that the fireplace surround and mantel were installed with the other woodwork that was original to the nineteenth-century addition. The paint evidence from elements in the closet suggested that the interior of the closet was altered, but could not conclusively date those changes.

A nail removed from the window surround of W117 during the sash rehabilitation was determined to be a cut nail. The nail had characteristics consistent with modern machine-cut nails, which were manufactured from circa 1835 to circa 1890.⁹

Room 105

Room 105 is the entry hallway in the northwest wing of the John Nelson House and was mostly left intact during the rehabilitation. The exterior doorway (D 1/105) threshold was removed when the south elevation sills were replaced. The threshold was subsequently replaced.

⁹ Phillips, 9.

Room 106

Room 106 is located in the nineteenth-century northwest wing, east of the entry hallway (Room 105). Like other first-story rooms of the John Nelson House, Room 106 was not significantly altered during the rehabilitation. The textured plaster ceiling was taken down, and revealed sawn wooden lath that was left in place. Three small areas of lath were removed in order to observe the framing for the second story. The small closet in the northeast corner of the room was removed in order to perform the framing repairs in Room 107, but the doorway elements were left intact. That closet was rebuilt after the repairs in Room 107 were completed.

The physical evidence suggested that the fireplace structure had extended to the north wall and may have included a bake oven. The brick base of what may have been the former bake oven is concealed in the northwest closet. Paint evidence did indicate that the boards covering the brick base were part of a later alteration. During the repairs to the north elevation an 1863 penny was found on the north sill at the chimney bay. The sheathing in that bay appeared to have been patched, suggesting the penny was placed there during the some repairs to the chimney. Those repairs may have coincided with alterations to the bake oven. Paint evidence indicated that the fireplace surround and mantel were also altered and were not consistent with other woodwork in Room 106.

Room 107

Room 107 is north of the main block and is generally considered part of the nineteenth-century northwest wing. It had recently served as the kitchen for the house and had been altered to accommodate cabinets, appliances, and upgraded utilities. The description in the HSA documents materials that were extant at that time. During the rehabilitation most of those materials were removed in order to make structural repairs, as well as upgrade the building materials. The framing of the floor, ceiling, and some of the walls was revealed during the rehabilitation and was documented (see previous section “Structural Elements”).

During the rehabilitation the north wall was opened in order to perform structural repairs. The wall had been previously repaired with 2 inch by 4 inch stud framing, while retaining some of the older timbers (see previous section “Structural Elements”). It was apparent from the framing and the materials that windows W113 and W114 were replacement windows. There was no evidence of the earlier window elements.

When the north wall was opened one section of early lath and plaster was discovered above the exterior doorway (D1/107). The doorway had been previously replaced and the earlier plaster was encapsulated behind modern gypsum board, above the doorway header. The lath was hand riven (the only extant example in the building) and the plaster had a black paint finish, which appeared to be one layer thick. Other walls in the room had accordion lath and plaster or gypsum board, suggesting that this section of the north wall had the earliest finish in the room. Since the room had been extensively altered, the evidence of the early lath and plaster didn't initially assist in the interpretation of the room, but did raise further questions about the evolution of the room and the building.

The south wall had been furred out and covered with gypsum board and wall cabinets. Upon removal of those elements the vertical board wall enclosing the staircase to the second story

was revealed. A closet under the staircase was also uncovered and in the southwest corner of the room was evidence of the earlier stairwell leading to the basement, which was previously discussed. The vertical boards were fastened with cut nails and paint evidence indicated that the closet and the vertical board wall dated from the same period of construction. A nail removed from the vertical board wall had the characteristics of a transitional machine-cut nail dating from circa 1810 to circa 1840.¹⁰ The physical evidence appeared to confirm the early-nineteenth century period of construction for these elements, including the enclosed staircase.

Sections of the vertical board wall were covered with remnants of earlier wall papers. There were four wallpapers observed all of which were left in-situ (fig. 16). The earliest wallpaper (layer 1, fig. 17) was an off-white paper (now tan with age) with a reverse printed bright-blue foliated vine pattern. The build-up of paint around the leaf pattern indicated that the wallpaper was an early machine-printed paper, and the pattern and color suggested that it dated from the early-nineteenth century (circa 1835-40). The layer of wallpaper above that (layer 2, fig. 18) was a monochromatic paper that had a regular diamond pattern with smaller diamonds arranged in the center of each larger diamond. Small pieces of a third layer (layer 3, fig. 18) of wallpaper were also observed, which appeared to have simple corn flowers in parallelograms that were arranged in diamond patterns with a reverse printed blue center medallion. The next layer of wallpaper (layer 4, fig. 19) had a lacey diamond pattern with center medallions composed of blue flowers above geometric brackets with blue pendants. The pattern of that wallpaper is similar to late-nineteenth-to-early-twentieth century designs. The wallpaper evidence was consistent with other physical evidence that indicated an early-nineteenth century period of construction.

Examination of the south vertical board wall indicated that the staircase to the second story had been altered. At the east end of the board wall was evidence of an earlier doorway from the staircase (fig. 20). Further examination of the staircase determined that the bottom of the staircase had been constructed with winder stairs that turned north and landed in Room 107. The alterations had straightened the staircase and closed off the doorway.

Near the southeast corner of Room 107 was evidence of a vertical board wall that had extended east-west about three-and-half feet north of the 1808 block of the house. The vertical boards had been cut off near the ceiling and only the ends remained attached to the framing (fig. 21). The location of the board wall suggested a hallway extended along north wall of the main block, perhaps as access to the basement at one time. The presence of the wall also supported the evidence that the finish and framing in the bay north of that wall was a later alteration (see previous section “Structural Elements”).

Room 108

Room 108 was purportedly the earliest section of the building, dating from the eighteenth century and is situated at the northeast corner of the main block. The HSA cited documentary evidence, as well as some physical evidence for the eighteenth-century portion of the John Nelson House. A nail taken from what would have been the exterior east wall sheathing (now the west wall in Room 109, fig. 12) was a wrought nail and the earliest nail

¹⁰ Phillips, 9.

evidence in the building. However, a significant portion of the materials in Room 108 have been altered and little evidence of the eighteenth-century structure survived.

Paint samples from the woodwork in Room 108, including the fireplace surround and mantel suggested that Room 108 was altered when the main block was constructed. The upper walls appear to be primarily constructed with accordion lath and plaster, but some sections have been more recently repaired with particle board. As described in the HSA, the extant framing was indicative of an earlier structure, but it appeared that most materials were altered when the 1808 main block was constructed.

Repairs to the floor framing in Room 109 uncovered two stones that would have lead to the east doorway (D1/108) in Room 108 (fig. 22). The stones were apparently steps to the doorway indicating that it was an exterior doorway prior to the addition of the northeast wing. Whether the stone predated the 1808 main block could not be determined from the extant evidence.

The building materials in Room 108 were not significantly altered during the rehabilitation of the John Nelson House. Removal of particle board in the northeast corner of the room did confirm the presence of an earlier staircase in that corner (fig. 23). Tucked in the ceiling at the west end of the staircase opening was the bowl of a clay pipe (fig. 24). Since the ceiling materials were accordion lath and plaster that were consistent with the 1808 main block, it appears that the clay pipe bowl was deposited sometime after the early nineteenth-century alterations.

When the exterior south wall was opened, an earlier window header above W110 suggested that this had been a larger window opening. The header was about 6 inches above the top of the existing window sash and the framed opening was 32¼-inches wide. This suggests that the earlier sashes may have been slightly larger than the extant sashes, which are apparently replacements.

During the rehabilitation the brick cribbing under the center floor beam was stabilized. At that time the carpenters photographed the rubble-stone chimney foundation, as well as the timbers framing the chimney bay. The stone chimney foundation and framing may date from the eighteenth-century period of construction, but the extant fireplace and bake oven appear to be more consistent with the early nineteenth-century alterations.

Room 109

Room 109 is part of the northeast wing that appears to date from the late-nineteenth to early-twentieth century. The rehabilitation of Room 109 of the John Nelson House was primarily concerned with the structural repairs. As previously described, removal of the floor boards did reveal the stone steps to D1/108. The floor framing in this area appeared somewhat random (see previous section “Structural Elements”) and the floor boards were fastened with cut nails. The nails were rusted and difficult to categorize beyond the obvious cut nail characteristics of a square shank and a machine-made head.

An area of the floor near D2/109 was covered with a piece of plywood. The plywood was removed by the carpenters and uncovered a stone-lined well that was about ten-feet deep. The date of the well was not known. It seems likely that the well was constructed before the

northeast wing was added and was probably contemporary with the eighteenth-century structure.

Room 110

Room 110 is the eastern-most room in the northeast wing and appears to have been integrally framed with Room 109. The repairs to Room 110 included structural repairs and sheathing repairs. The room was open to the framing, which was recorded through photographs and measured drawings. The measured drawings recorded sections of the 4-inch-by-6-inch replacement sills on the east and north walls that have since been replaced with 8-inch-by-8-inch hemlock (Drawing 2).

Second Story

The second story of the John Nelson House was not extensively altered during the rehabilitation project. The documentation included drawings of the second-floor framing that was recorded when certain first-story ceilings were removed. The textured plaster ceiling in Room 106 was removed, and limited access to the framing was provided by removing small sections of the wood lath. In Room 107 ceiling materials were removed to reveal the framing of the second story (see previous section “Structural Elements”).

Sections of ceiling plaster in Room 202 and 203 were removed for access to the attic, revealing accordion lath that was consistent with other lath in the main block.

Remnants of wallpaper were removed from Room 202 and Room 207. The wallpaper in Room 207 was machine printed on a wood pulp paper. It included a floral pattern with pink roses and green vines and an alternating pattern with faint green design that included medallions between undulating stripes (fig. 25).

The rehabilitation project included repairs to the second-story bathroom (Room 206). Since the bathroom had been more recently upgraded, the current project did not uncover additional evidence that effected the interpretation of the building.



Figure 14a. John Nelson House, Room 102, HABS photograph of west wall fireplace showing wallpaper (see fig. 17b).



Figure 14b. John Nelson House, Room 102, wallpaper removed from west wall.



Figure 15. John Nelson House, Room 102, brown-stripe wallpaper found beneath cornice molding on west wall.



Figure 16. John Nelson House, Room 107, south vertical board wall, remnants of wallpaper. Layers are labeled earliest (layer 1) to most recent (layer 4) respectively.



Figure 17. John Nelson House, Room 107, earliest layer of wallpaper circa 1835-40 (layer 1).



Figure 18. John Nelson House, Room 107, wallpaper remnants (layers 2 and 3).



Figure 19. John Nelson House, Room 107, fourth layer of wallpaper (layer 4).



Figure 20. John Nelson House, Room 107 south vertical board wall, showing scars of earlier opening to winder staircase.



Figure 21. John Nelson House, Room 107, remains of vertical board wall near southeast corner.



Figure 22. John Nelson House, Room 109, stone steps to D1/108 found under floorboards in Room 109.



Figure 23. John Nelson House, Room 108, northeast corner location of earlier staircase.



Figure 24. John Nelson House, Room 108, location of clay pipe bowl in ceiling near staircase header.



Figure 25. John Nelson House, Room 207, wallpaper remnant.

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John Nelson Barn

Introduction

The John Nelson Barn was previously documented by HABS in 1963 and 1984, and John Milner Associates, Inc. in 2008. The Milner report, “John Nelson House and Barn, Historic Structure Assessment Report” (HSA), included the historical background, a physical description, and a structural engineering report for the barn. The 2010 rehabilitation and stabilization of the barn by APEM was focused on the southern-most section or main block of the barn (fig. 26),¹¹ as was the investigation and documentation. The NPS undertook repairs and rehabilitation of the barn in 1978–79, which included removal of damaged additions on the west side of the barn and repairs to the other sections with the focus on the main block. The current work included, but was not limited to, timber replacement, sistering of timbers, addition of structural supports, addition of steel brackets, repairs to the wall sheathing, replacement of about 80% of the roof sheathing, replacement of exterior wall shingles, replacement of roof shingles, and construction and installation of a sliding door on the south elevation. The documentation of the barn was undertaken to better understand the historic appearance of the building. Some of the following observations and conclusions are well supported by the physical and documentary evidence, while others are more conjectural based on the available evidence.

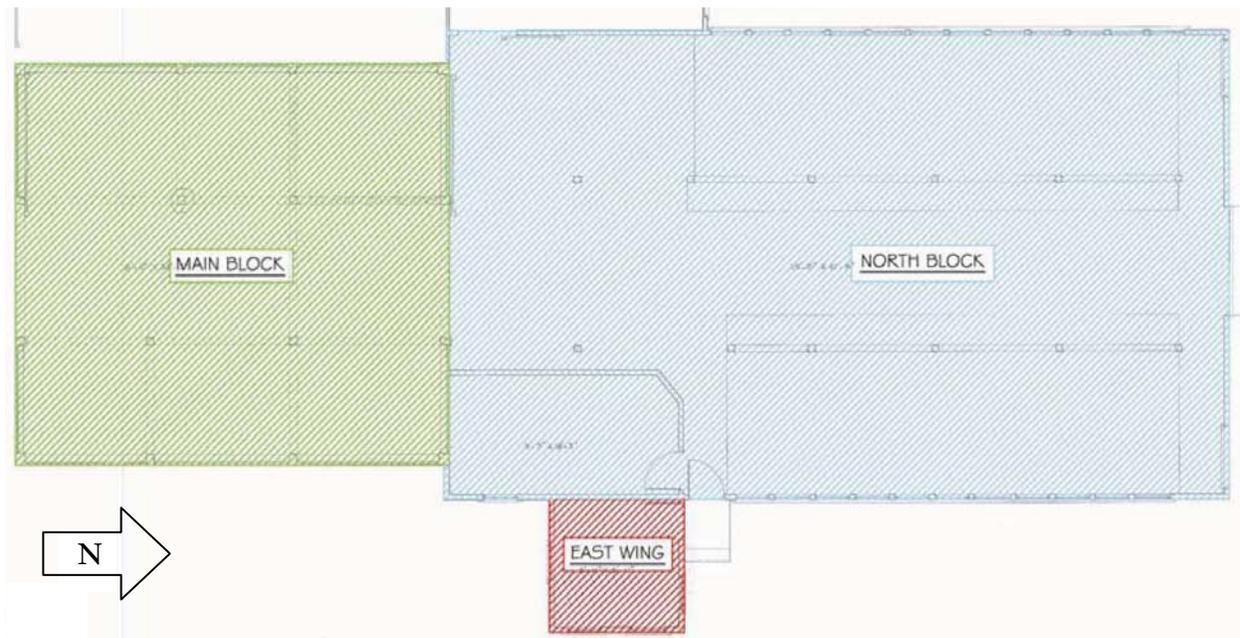


Figure 26. John Nelson Barn, section key plan, overlaid on HABS drawing (Historic Structure Assessment Report, 252, not to scale).

¹¹ HSA, figure 1.1B-5, 252.

Brief Description

The main block of the John Nelson Barn has been aptly described as an English barn. The typical English barn was organized in three bays, such that the central bay separated the two side bays. Traditionally the central bay was used as a threshing floor for the winnowing of grain during the hand-threshing process, and as a drive-up bay for unloading wagons. Thus the central threshing and wagon-drive bay was typically flanked by a hay storage bay (“haymow”) and a livestock “tie-up” bay. One of the distinguishing characteristics of the English barn was the location of the major doorway to the central bay that was centered in the side wall of the structure, as opposed to the gable end.¹² These characteristics apply to the main block of the John Nelson Barn, both in its historic form and its current form. The research conducted for the HSA suggested that the historic core of the barn was constructed in circa 1824.¹³ An addition was constructed on the north side of historic core of the barn in circa 1836, extending the main block to its current configuration (see subsequent description). As described in the HSA, a lean-to added to the west side of the barn in the 1870s later collapsed and was removed by the NPS in 1978. A large addition was made to the north side of the barn in the twentieth century (north block), and additions were made to the east and west sides of the north block.¹⁴ The west addition was documented by HABS in 1963, but was subsequently removed. The small east wing is extant (fig. 26).

Observations and Documentation

Preliminary observations determined that the historic core of the John Nelson Barn had been three bays long (east-west) and two bays wide (north-south), with the gables on the east and west elevations, and the main doorway on the south elevation. It appeared that the historic barn had been constructed with four bents (east-west, fig. 27) that created the bays, including a center drive-up bay (fig. 27). This was similar to the current configuration of the main block, but smaller.

The historic configuration of the barn was evident from certain extant framing members. On the south slope of the roof what is now an intermediate purlin (about two-thirds of the way to the current ridge) was determined to be the ridge of the historic barn. It is a five sided continuous timber with continuous rafters extending to the south plate and open mortises on the north side where historically rafters would have extended to the north plate (figs. 28 and 29). There are also wind braces from some rafters to the south side of the historic ridge, and again, corresponding open mortises on the north side (fig. 28). In addition, the framing of the south wall is similar to the intermediate north section of framing, suggesting that it was historically the north wall. This was most evident in the construction of the plate. On the south wall the plate overhangs the posts of each bent and is tenoned into girts that also extend beyond the posts (fig. 30). The north intermediate section of framing is framed in the same manner (fig. 31). That framing did not seem appropriate for an interior section of framing, but when compared to the south wall it became evident that it was historically framed as the north wall of the barn. That framing also aligned with, and supported the

¹² Thomas C. Hubka, *Big House, Little House, Back House, Barn* (Hanover, NH: University Press of New England, 1984), 54 - 55.

¹³ HSA, 247.

¹⁴ HSA, 247, 248, and 252.

evidence of the historic ridge. This was the primary indication that the historic configuration of the barn was three-bays long by two-bay wide.

The previous research indicated that the barn was added to in circa 1836, based on an increase in the assessed value of the barn. The physical evidence suggested that this addition included raising the roof of the main block of the barn to its current height and adding a section three bays long and one bay wide to the north side of the historic barn. The expanded barn resembled the current configuration of the main block of the barn (fig. 27).

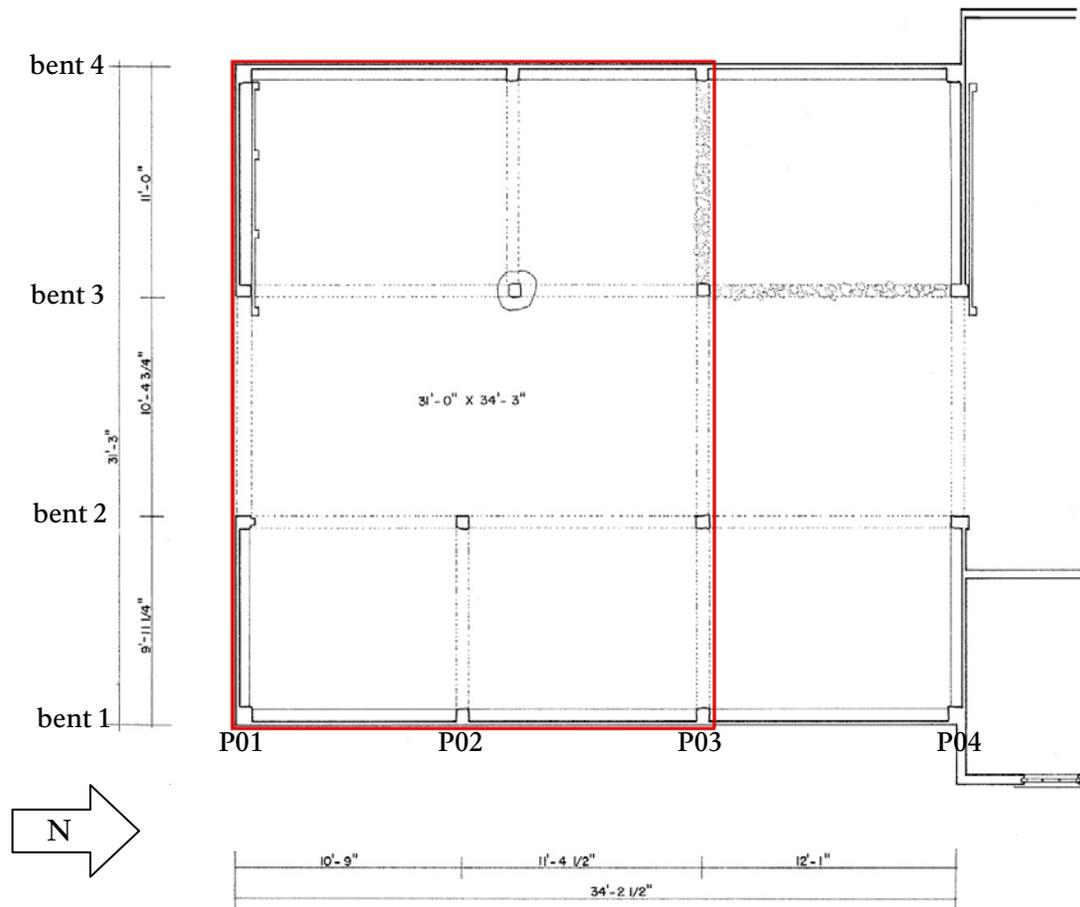


Figure 27. John Nelson Barn, main block with red outline indicating historic core of barn with labeled bents and posts. Plan copied from HABS drawing (not to scale).

The framing of the roof was indicative of the circa 1836 addition to the barn. On the south slope of the roof rafters spanned from the historic ridge up to the new five-sided ridge. The north slope of the roof was framed with continuous primary rafters at each of the four bents with principle purlins spanning the rafters at about two-thirds of the way to the ridge (fig. 32). Secondary rafters extended from the ridge to the purlins and from the purlins to the north plate. Though similar to the south slope framing, the north slope was different in that there are primary rafters at each bent, where as the framing of the historic barn roof precluded having continuous rafters from the new ridge to the south plate without reframing the south slope.

Orville Carroll made similar observations in 1978 when preparing the scope of work for repairing the barn. He noted that “around 1830-40 an additional bay was built across the north end and the roof raised.”¹⁵ The Milner HSA misinterpreted Carroll’s brief note about the addition to the north side of the historic structure. The HSA discussed “the possible construction of the first addition, a 3-bay wide cross gable on the north elevation of the main block, as having been constructed between the 1835 and 1836 tax assessments. The original materials of this first phase of the north block were observed and noted by Orville W. Carroll (NPS project supervisor who oversaw the 1979 documentation and repair work) as dating to the 1830’s.”¹⁶ However, Carroll’s description did not mention a cross-gable, but suggested the addition was across the north end and that the roof was raised. It appears that he was describing an addition within the main block and not the first phase of the north block addition. The subsequent description of the barn in the HSA was also misleading. It stated that the “main section of the barn (“main block”) was constructed in the early nineteenth century and is a traditional 3-bay English barn with a single gable running east to west. A cross-gable addition (“north block”) was constructed on the north elevation during the mid-to-late nineteenth century and was extended further north in the early twentieth century.”¹⁷ Again, the evidence suggests that historic barn occupied about two-thirds of the main block, the first addition to the north expanded the barn to the size of the extant main block. The cross-gable north block was probably added in a single build in the early-twentieth century, but was not extensively studied during this investigation.

The documentary evidence as presented in the HSA suggested that the historic barn was constructed in circa 1824 and that an addition was made to the barn in circa 1836, which as previously explained, expanded the barn to the present main block. The nail evidence generally supports these two periods of construction. Many of the older nails in the framing and sheathing were badly rusted, but some of the nails were identifiable. Most of the nails were cut nails and were identified as either transitional machine-cut nails, circa 1810-40 or modern machine-cut nails, circa 1835-90 (Table of Nail Evidence).¹⁸ There was one wrought nail (B12) that was removed from P03 of bent 3 (formerly a north wall post), but that was the only wrought nail found. The nail evidence indicated that the south part of the barn (primarily nails removed from the south wall) was constructed prior to the north section and generally supported the construction date of circa 1824. The north section appeared to have a mix of cut nails further narrowing the possible date of construction to circa 1835-40. This coincides with the other physical and documentary evidence, which indicated that the addition was built circa 1836.

The cut nails removed from the roof included both transitional machine-cut nails and modern machine-cut nails, found on both the north and south slopes. That evidence suggested that the roof was re-sheathed in circa 1836 when the north bay of the barn was added. The roof was also repaired in 1978-79 by the NPS.

The nails from the south wall suggest that some of the upper sheathing boards on that wall date from the earliest date of construction. The lower sheathing boards on that wall were apparently replaced, possibly during the NPS project in 1978-79.

¹⁵ Orville Carroll, Architect, North Atlantic Historic Preservation Center, to Regional Historical Architect, May 10, 1978; Minute Man NHP trip report file, NER, 115 John St., 4th floor, Lowell, MA.

¹⁶ HSA, 247.

¹⁷ Ibid, 252.

¹⁸ Phillips, 9.

Table of Nail Evidence

Nail sample #	Location	Description	Date
B01	South elevation, plate(removed), west end.	cut sheathing nail, very rusty, clenched approximately one-quarter down the shaft, no burrs evident, slightly rounded end.	ca. 1810–40
B02	South elevation, upper sheathing board, west end.	cut sheathing nail, very rusty, regular head, clenched approximately one-quarter down the shaft, no burrs evident, rounded end.	ca. 1810–40
B03	North elevation, sheathing.	cut sheathing nail, broken, regular head, clenched approximately one-third down the shaft, burrs on common side.	ca. 1835–90
B04	North roof, sheathing nail removed from rafter.	cut roof sheathing nail, broken and rusted, no other distinguishing characteristics.	unkown
B05	North roof, sheathing nail.	cut roof sheathing nail, rusted, longitudinal grain, clenched approximately one-third to one-half down the shaft, square end.	ca. 1835–90
B06	South roof, sheathing nail removed from rafter.	cut roof sheathing nail, broken and rusted, longitudinal grain, no other distinguishing characteristics.	ca. 1835–90
B07a	Roof sheathing (removed).	cut shingle nails, clenched approximately one-half down the shaft, square end.	ca. 1835–90
B07b	Roof sheathing (removed).	cut roof sheathing nail, longitudinal grain, clenched approximately one-third down the shaft, uniform head convex on each side.	ca. 1835–90
B08	North roof, sheathing nail removed from rafter.	cut roof sheathing nail, burrs on common side, clenched less than one-quarter down the shaft, rounded end.	ca. 1810–40
B09	North roof, sheathing nail removed from rafter.	cut roof sheathing nail, similar to B08, burrs on common side, clenched less than one-quarter down the shaft, rounded end.	ca. 1810–40
B10	Post removed from barn, unknown location.	cut nail, burrs on common side, clenched approximately one-quarter down shaft, regular head, rounded end.	ca. 1810–40
B11	South elevation, plate(removed), west end.	cut sheathing nail, similar to B01, clenched approximately one-quarter down the shaft, no burrs evident, slightly rounded end.	ca. 1810–40
B12	Intermediate north post (P03), bent #3, historically north post.	wrought nail, shank tapered on four sides, irregular hand-hammered T-head, pointed end.	varies, 17 th to early 19 th century

The extant framing and timbers that were removed were examined for open mortises, nails, and other evidence that might add to the understanding of the historic barn. Since many of the timbers were removed from the barn prior to investigation, it was sometimes difficult to interpret the framing evidence. The subsequent observations were from both intact framing and removed timbers.

There is an open mortise in P03, bent 2 at 5 feet 9 inches above the concrete pad. The opposite post (P03, bent 3) has been repaired, but appears to have also had a mortise at about that height. The open mortises also align approximately with the intermediate wall framing on the east wall, which is at 5 feet 7 inches above the sill. The open mortises suggest that the earlier barn had framing in the center bay of the north wall. Thus the historic barn appears to have had a central doorway on the south elevation and not on the north elevation.

A number of open mortises in the framing of the southwest bay suggest that this may have been partitioned from the rest of the barn at one time. The west wall in this bay is the only wall with intact interior sheathing, as well as a framed window now boarded over (fig. 33). The west sill has two open half-lap mortises (fig. 34); the first is 4 feet 6 inches from the southwest post and is 8½ inches wide; the second is 8 feet 6½ inches from the post and is 7 inches wide. These mortises may have carried large joists that supported a floor in this bay. The west wall timber approximately 8 feet above the sill has three 4-inch-by-5-inch half-lap mortises that presently carry 3-inch-by-4-inch joist to the corresponding timber in bent 3 (fig. 33). That timber in bent 3 not only has mortises for the joists, but also open mortises on the underside of the timber for studs (fig. 35). The timber spanning P02, bent 3 and P02, bent 4 has two open mortises that may have also held wall studs. The evidence in the southwest bay suggests that historically the bay had a floor, a ceiling, and walls that partitioned it from the adjacent bays.

The west sill extends from the southwest corner to the third post (P03, bent 4). There is an open mortise for an intermediate east-west sill at P02. From P03, bent 4 a sill continues to the north and a replacement east-west sill spans bent 4 and bent 3. P03, bent 4 has an open mortise on the east side at 2 feet 1 inches above the sill. Since the bottom of P03 bent 3 was replaced, it is not known whether there were corresponding mortise. However, an open mortise in the same position on the south side of P03, bent 4 has a smaller horizontal member and a brace up to the beam above (fig. 36). There may have been similar framing between P03, bent 4 and P03, bent 3. The framing would have added some structural support for the earlier north wall and would have also provided a nailing surface for the north wall sheathing. This evidence further supports the conjecture that the historic barn was two bays wide, as previously described.

In the current main block of the barn is evidence that the south and north doorways may have had swinging doors at one time. There were three holes near the bottom of P01, bent 3, which was replaced. The holes go diagonally through the post and were chiseled at both ends (fig. 37). This post also had similar holes at approximately 5 feet 4 inches and 8 feet 6 inches above the sill (figs. 38 and 39). The opposite post had been replaced and did not have any similar holes. However, the posts that flank the north doorway (P04, bent 2 and P04, bent 3) also had diagonal holes at 1 foot 2 inches and 8 feet 6 inches above the sill. The holes appear to be related to the doorways and possibly held pintles for hinged doors.

The south plate was constructed in three sections, each section spanning two bents. The plate was joined to the overhanging girt with a mortise-and-tenon. The south plate was

severely deteriorated, and was removed and completely replaced during the rehabilitation (fig. 40). The southwest section of the plate was roughly 7 inch by 7 inch and had a 3½ inch tenon on the end. Some sheathing nails were removed from the plate and were documented.

The east post of the south doorway (P01, bent 2) was replaced with a new post. The old post was a 6 ½-inch-by-7-inch hewn timber with four mortises on the north face (fig. 41). These were 2-inch-by-4-inch open-mortises that were spaced 3 feet 3½ inches apart on-center. The only corresponding mortises on P02, bent 2 were at about 8 feet where there was a beam (now removed) and above that, which may have been a pocket for a brace. The lower section of P02, bent 2 was previously repaired, removing evidence of earlier framing. It is not known from the evidence if the lower mortises in the old post were for braces or some other horizontal framing.

The posts on either side of the south doorway were also examined for evidence of a framed transom above the doorway. There was no evidence of framing for a transom.

The lower portion of P02, bent 2 was removed and replaced with a new timber. The portion removed included both previous repairs and a section of the historic post. The small section of historic post was heavily consolidated during previous repairs and had two mortises (figs. 42a and 42b). The mortises were for a beam extending south to P01, bent 2 and a beam extending east to P02, bent 1. As previously described, P01, bent 2 appeared to have a corresponding open mortise. Likewise, P02, bent 1 had a corresponding open mortise indicating that the historic barn was framed with beams in those locations. Indeed, the beam spanning P01, bent 2 and P02, bent 2 was shown in the HABS 1984 photographs and in the HSA documentation. Neither beam was replaced during the current rehabilitation.

A piece of P02, bent 3 was salvaged when the entire post was replaced. The piece had a half-lap joint from a previous repair and two open mortises (figs. 43a and 43b). The larger mortise was 2-inch-by-6-inch and probably held the north-south beam. A 2-inch-by-4-inch mortise was 2 inches above the other and may have held a brace or horizontal framing. Both mortises had scribe marks and holes for pegs with extant pegs suggesting that they were part of the historic barn.

As previously described, the current rehabilitation included replacement of deteriorated timbers, reinforcing of extant framing, and the addition of steel brackets. The rehabilitation retained some of the historic appearance of the barn, while making it structurally sound. A comparison of the 1984 HABS documentation and a 2010 completion photograph shows both the similarities and the changes (figs. 44 and 45).

There were other open mortises in extant framing and timbers removed during the rehabilitation. However, the location of the framing was not always noted by the carpentry crew when it was removed. Consequently this evidence did not provide further insight into historic appearance of the barn. The framing removed from the barn was documented and annotated photographs of some of the timbers are included with this report (figs. 46–85).



Figure 28. John Nelson Barn, historic 5-sided ridge with open mortises, now serving as purlin.



Figure 29. John Nelson Barn, historic 5-sided ridge with open mortises.

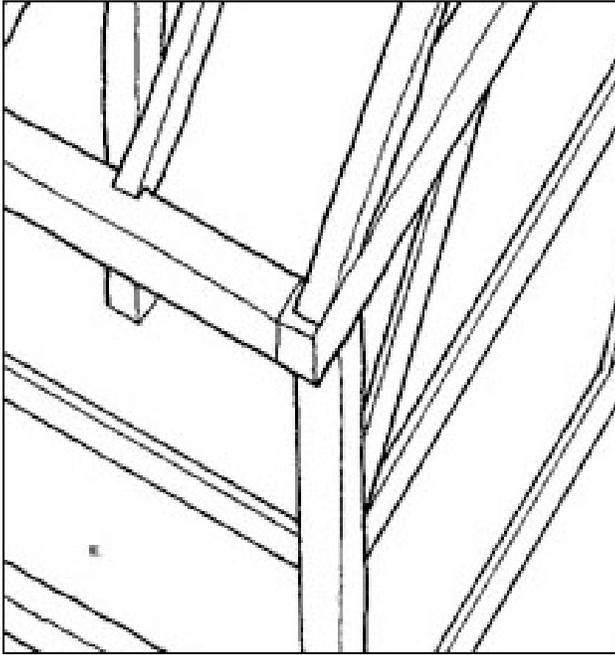


Figure 30. John Nelson Barn, detail of HABS isometric drawing showing overhanging girt and south plate.



Figure 31. John Nelson Barn, showing overhanging girt and earlier north plate above P03, bent 2.



Figure 32. John Nelson Barn, north roof with continuous rafter and purlin.



Figure 33. John Nelson Barn, southwest bay, west interior board wall.



Figure 34. John Nelson Barn, southwest bay, open mortises in sill.



Figure 35. John Nelson Barn, southwest bay, open stud mortise in beam.



Figure 36. John Nelson Barn, west wall, P03, bent 4, open mortise and extant framing.



Figure 37. John Nelson Barn, bottom section of P01, bent 3 removed, showing holes with chiseled ends, possibly for earlier pintles.



Figure 38. John Nelson Barn, top of P01, bent 3, showing hole possibly for earlier pindle.



Figure 39. John Nelson Barn, top of P01, bent 3 interior, showing hole with chiseled end, possibly for earlier pindle.



Figure 40. John Nelson Barn, south elevation grit and rafter ends where south plate was removed.



Figure 41. John Nelson Barn, east post of south doorway (P01, bent 2) showing open mortises.



Figure 42a and 42b. John Nelson Barn, remnant of P02, bent 2 showing open mortises.



Figure 43a and 43b. John Nelson Barn, piece of P02, bent 3 showing open mortises, scribe marks, and half-lap joint.



Figure 45. John Nelson Barn, looking southeast, 2010.



Figure 44. John Nelson Barn, HABS photograph looking southeast, September 1984.



Figure 46. John Nelson Barn, hewn with waned edges; 6½ inches wide by 8 feet 5 inches long; large open mortise 2 inches wide by 1 foot 3 inches long with two peg holes; deteriorated half-lap joint at one end.

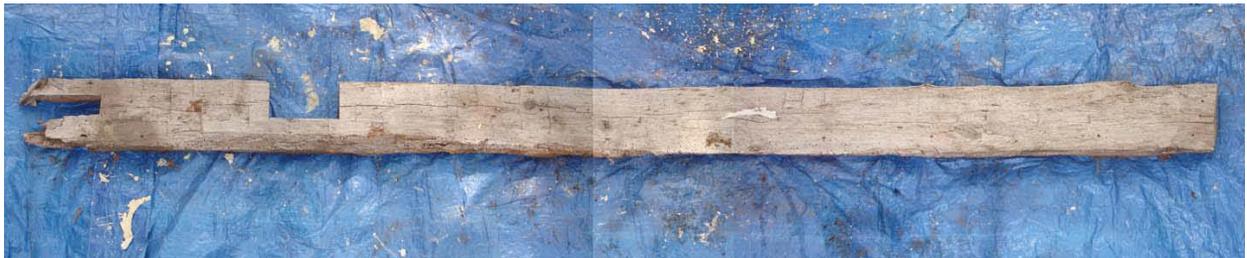


Figure 47. John Nelson Barn, hewn timber, possibly oak; 7 ¼ inches wide 11 feet 4 inches long; 8-inch-by-4-inch pocket; 8-inch-by-2-inch open mortise with single peg hole; regular pattern of nailing along “top” edge; cut nails observed.



Figure 48. John Nelson Barn, hewn timber; 6½ inches wide by 6 feet 3 inches long; deteriorated open mortise near one end.



Figure 49. John Nelson Barn, hewn timber; 6½ inches wide by 6 feet 2 inches long; open pockets at both ends; evidence of cut nails.



Figure 50. John Nelson Barn, hewn timber, possibly oak; 8 inches wide by 6 feet 6 inches long; irregular notch at one end (left); 5 inch "cheek" at one end (right).



Figure 51. John Nelson Barn, hewn timber; 7½ inches wide by 6 feet 3 inches long; 2½ inch wide open mortise at one end (left); possible open mortise at other end (right); evidence of cut and wire nails.



Figure 52. John Nelson Barn, possibly base of post deteriorated at bottom; 8 inches by 7 inches by 1 foot 10 inches long.



Figure 53. John Nelson Barn, hewn timber; 7 inches wide by 5 feet long; irregular notch at one end (left); evidence of cut and wire nails.



Figure 54. John Nelson Barn, end of timber; 5 inches wide by 9½ inches long; 4½ inch tenon on end; evidence of wire nails.



Figure 55. John Nelson Barn, deteriorated timber remnant, appears hewn; 7½ inches by 7 inches by 4 feet long; evidence of cut and wire nails; nailing pattern along one edge.



Figure 56. John Nelson Barn, sawn timber; 7½ inches by 3¾ inches by 5 feet 2½ inches long; large notched section 3 feet long and varied in depth.



Figure 57. John Nelson Barn, south upper wall sheathing board, approximately 15 inches wide (sheathing ranged from 12-19 inches wide); evidence of cut nails for shingle cladding; scribe marks appear to be “J N.”



Figure 58. John Nelson Barn, deteriorated timber, possibly remnant of south plate; 7½ inches wide by 3 feet 4 inches long; 5½ inch tenon at one end.



Figure 59. John Nelson Barn, hewn timber; 7½ inches by 4 inches by 8 feet 5 inches long; 7½ inch by 3 inch pocket at one end (right); iron rod in “top.”



Figure 60. John Nelson Barn, 7 inches wide by 3 feet 1 inch long; 3½ inch full tenon at one end; evidence of cut nails.



Figure 61. John Nelson Barn, hewn timber; 7 inches by 6³/₄ inches by 3 feet 4 inches long; 4-inch partial tenon at one end.



Figure 62. John Nelson Barn, hewn timber; 6¹/₄ inches by 6¹/₂ inches by 3 feet 5 inches long; 2¹/₂ inch deep full tenon at one end.



Figure 63. John Nelson Barn, sawn timber; 5¹/₂ inches wide by 3 feet 5 inches long; 4¹/₂ inch tenon at one end; wire nails/spikes at tenon.



Figure 64. John Nelson Barn, hewn timber; 8 inches wide by 5 feet 2 inches long; two 3½-inch-by-2-inch pockets approximately 2 feet on-center; of-center open mortise on “top” face; 3½ inch cheek at one end; evidence of cut nails.



Figure 65. John Nelson Barn, end of timber; 6½ inches wide; 3 inch tenon.



Figure 66. John Nelson Barn, deteriorated timber, appears hewn; 6¾ inches by 6 inches by 3 feet 10 inches long; 4½ inch mortise with two peg holes.



Figure 67. John Nelson Barn, deteriorated timber, appears hewn; 6½ inches wide by 5 feet long; two 3-inch-by-1-inch pockets, 17 ¼ inches on-center; open mortise on “front” face; evidence of cut nails.



Figure 68. John Nelson Barn, deteriorated timber remnant, possibly hewn; 7 inches by 7½ inches by 2 feet 1 inch long; 3 inch offset tenon; evidence of cut and wire nails; nailing pattern along one edge.



Figure 69. John Nelson Barn, deteriorated timber, possibly hewn; 5 inches by 6½ inches by 3 feet 7 inches long; 3 inch tenon.



Figure 70. John Nelson Barn, waned edge timber remnant, possibly rafter; 3½ inches by 4½ inches by 2 feet 8 inches; chiseled at end, possibly for joining to ridge.



Figure 71. John Nelson Barn, waned edge timber remnant; 5½ inches by 5¼ inches by 2 feet 8 inches; angled tenon suggesting it was a brace.



Figure 72. John Nelson Barn, possibly oak timber remnant; may have been part of an earlier repair; 7¾ by 7½ inches wide by 2 feet 8 inches long; 10 inch half-lap at end; chiseled out edge.



Figure 73. John Nelson Barn, deteriorated timber remnant; 7 inches by 6½ inches by 4 feet 6 inches long; 7 inch half-lap at end (right); 6½-inch-by-2-inch open mortise near broken end (left); evidence of wire nails at half-lap.



Figure 74. John Nelson Barn, deteriorated timber remnant, possibly hewn; 7 inches by 6½ inches by 3 feet 9 inches long; 4½ inch tenon; evidence of cut and wire nails.



Figure 75. John Nelson Barn, waned edge timber remnant, possibly hewn; 7 inches by 7½ inches by 6 feet long; full offset tenon with 4 inch cheek; 4-inch-by-2-inch mortise near broken end (left); 2-inch-by-6-inch cleat fastened with wire nails (left).



Figure 76. John Nelson Barn, hewn timber; 7 inches wide by 6 feet 9 inches long; evidence of cut and wire nails.



Figure 77. John Nelson Barn, deteriorated timber remnant, possibly hewn; 6 $\frac{3}{4}$ inches wide by 5 feet 1 inch long; 4 $\frac{1}{2}$ -inch-by-1 $\frac{3}{4}$ -inch open mortise.



Figure 78. John Nelson Barn, deteriorated timber remnant, appears hewn; 8 inches wide by 3 feet 9 inches long; piece on end (right) fastened with wire nails.



Figure 79. John Nelson Barn, waned edge timber remnant, possibly rafter; $4\frac{3}{4}$ inches by 5 inches by 6 feet.



Figure 80. John Nelson Barn, waned edge timber remnant, possibly rafter; $4\frac{1}{4}$ inches by $4\frac{1}{2}$ inches by 5 feet 10 inches; full tenon (left) with angled cheek.



Figure 81. John Nelson Barn, deteriorated timber remnant, appears hewn; $6\frac{1}{2}$ inches wide by 7 feet long; full tenon (left); $3\frac{3}{4}$ -inch-by- $1\frac{3}{4}$ -inch through mortise approximately 3 feet from cheek of tenon.



Figure 82. John Nelson Barn, hewn timber; 6½ inches by 7 inches by 7 feet long; full tenon (right); ¾-inch-by-¼-inch through mortise approximately 3 feet from cheek of tenon.



Figure 83. John Nelson Barn, hewn timber; 7¾ inches by 7½ inches by 8 feet 8 inches long; full tenons on both ends; evidence of both cut and wire nails; possibly section of south plate.



Figure 84. John Nelson Barn, deteriorated timber remnant, appears hewn; 6½ inches wide by 10 feet long; 4-inch-by-2-inch tenon (left).



Figure 85. John Nelson Barn, hewn common rafter from north slope; 5½ inches by 5 inches by 12 feet 10 inches long; birds mouth for joining plate (left); broken tenon with beveled cheek where joined to purlin (right).