WEBSTER MEETING HOUSE
HISTORIC BUILDING ASSESSMENT

1220 BATTLE STREET
WEBSTER, NEW HAMPSHIRE
JUNE 2020

ARCHITECTURAL HISTORY HISTORIC PRESERVATION

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Old Webster Meeting House, West (Front) and South (Side) Elevations
June 7, 2020

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HISTORY AND DEVELOPMENT OF THE PROPERTY:

Summary History:

The Webster Meeting House has been owned and maintained since 1941 by the Society for the Preservation of the Old Meeting House in Webster, New Hampshire, which has adopted the shorter name of the Webster Historical Society for all but legal matters. The structure was built in 1791 to shelter religious and municipal meetings of inhabitants of the western section of the town of Boscawen, New Hampshire. People living in this part of Boscawen, finding the five-mile journey to the town's older meeting house to be long and difficult, were then petitioning to be incorporated as a separate town. Although that incorporation did not occur until 1860, the petitioners voted to erect a second meeting house, originally known as the Westerly Meeting House in Boscawen, for the accommodation of local residents. In keeping with New England tradition at the time, the meeting house was built to serve both religious services and town or political meetings. The structure was a large (40 by 52-foot) two-story structure with box pews on the first floor and a gallery or balcony embracing three sides of the auditorium and providing additional seating at the level of the upper windows. Like the majority of New Hampshire meeting houses of the period, the building had a "porch" or enclosed stair tower at each end to provide staircases to the balcony. The building was constructed under the supervision of local carpenter and joiner Samuel Jackman (1749-1845).

Unlike a dwelling house frame, a meeting house of the eighteenth century has few large timbers running laterally through the building. The interior of a meeting house (as originally built) was a single large room. The front and rear walls of the building are of course connected together by the end walls, but except for girts that support the inner edges of the two end galleries, are not connected within the building. The interior was a single large, two-story-high void.

For this reason, a meeting house has an exceptionally heavy and rigid roof system, which serves to lock the entire frame together at the top and to span the entire depth of the auditorium with no support from below. The roof trusses of a meeting house must not only span the width of the building without support from below, but must also resist wind and snow loads on the roof and bear the substantial weight of the lath and plaster of the auditorium ceiling. One-coat lime-sand plaster like that used in the eighteenth century weighs between 5.5 and 6.0 pounds per square foot. The ceiling of the Webster meeting house measures about 40 by 52 feet, or 2,080 square feet. Thus, the weight of the ceiling plaster is somewhere around 12,000 pounds.

Because of its open interior, a meeting house was not ordinarily raised bent-by-bent in the same manner as a dwelling. Rather, the entire front and rear wall frames were assembled on the ground, including the wall plates that connect the tops of the posts along the length of the building, and tipped up into place as fully assembled “broadsides” by immense muscular effort.

The Webster Meeting House (originally the Westerly Meeting House in Boscawen) is the only New Hampshire meeting house to benefit from a narrative account of the raising of its broadsides. In his *The History of Boscawen and Webster . . .* (1878), historian Charles Carleton Coffin (who also wrote a history of Newbury and Newburyport, Massachusetts), gave an

animated account of this raising as told to him by his father, who was fourteen years old at the time of the raising:

> The raising of a meeting-house was a great event and people came from the surrounding towns to aid in the work. They came early in the morning with pike-poles, pitch-forks, and iron bars,—pike-poles and pitch-forks to lift with when the "broadside" should be well up in the air, and iron bars to hold against the foot of the posts to slide them into the mortises of the sills. On such an occasion there was plenty of rum. The first thing to be done was to take a drink, to give strength for the labor of the day. Then came the bringing together of the timbers. The sills were already laid and levelled. First the posts, then the girts and levers [braces], and lastly the plates.
>
> It had been framed by the "scribe" rule—each piece being [individually] fitted to its place. The "square" rule [with standardized mortise and tenon joints] was then unknown to country carpenters. The broadside was then pinned together. Then came the drinking of more rum, and the marshaling of the crowd,—the cool-headed men take hold of the iron bars, the strong and experienced men in places of responsibility. When all were ready, the master workman, standing in rear where he could see all that was going on, commanded silence. We hear him say,—
>
> "Are you ready all?"
>
> "Aye! aye!"
>
> "Take hold all!"
>
> The men bend, and place their shoulders beneath the posts. A swarm take hold of the plate, another hold of the girts. The men at the iron bars spit on their hands:
>
> "Now, then!"
>
> The frame rises. It is up to their shoulders.
>
> "Now she rises!"
>
> Those by the plates seize their pike-poles and pitch-forks. At each corner and in the middle are "shores" and with a crowd of men and boys lifting on each.
>
> They lift with all their might, and grow red in the face. The pike-poles bend, the handles of the pitch-forks are ready to snap.
>
> "Steady there!"
>
> Now comes the tug of war at the foot of the posts. The iron-bar men are bracing with all their might.
>
> "Heave-ho!" from the master."
>
> Now she goes!" from the men.

> Higher, still higher, up to the perpendicular. The tenons slide into the mortises in the sills, the "shore" men hold back on the poles, and the first broadside of the house of God stands in its appointed place. The men wipe their brows, and take another drink of rum. There is a congratulatory dram all around, in preparation for the opposite broadside. That, too, rises. Then come the connecting girts and plates, and then the lifting of the beams for the galleries, the high beams, the putting up of sleepers, planks and boards, rafters and purlins, and, last of all, the ridge-pole. When the last is in its place, a crowd of men sit astride it, take full drams from the bottles of rum passed up to them, and then dash the bottles to the ground. This last is the dedicatory dram.[1]

In 1823, a dispute arose over the religious use of the meeting house, and this ultimately resulted in the building becoming a physical reflection of the principle of separation of church and state. Under a law of 1819, New Hampshire towns could no longer support and pay the salary of a minister of an established church or restrict the use of the pulpit to one religious sect. The Congregational Church, which had been the sole religious user of the building, withdrew and constructed a new and fashionable church nearby on Corser Hill for its own exclusive use.

In 1844, another religious organization, the Christian Union Society, agreed with the town to cooperate in remodeling the old building to separately serve both town and the society. The stair towers at each end of the building were removed and the opening within the U-shaped gallery was floored over to provide a second story chapel that was reached by new internal staircases inside the front door. The first story became the town hall. This division of the meeting house into two areas for two separate functions transformed the building into a textbook example of the impact of the passage of New Hampshire's "Toleration Act" on the traditional architecture of New Hampshire.[2]

The Webster Meeting House was recognized as a community landmark at the beginning of the twentieth century. As outlined in greater detail below, the Webster Old Home Day Committee and the Old Meeting House Cemetery Association restored the building, then in unpainted and weathered condition, in 1902. The bronze tablet now over the front door was placed by the Webster Old Home Day Committee in 1902 and proclaims the building to be "A sacred legacy from the past. Guard it well."

This restoration was one of the most ambitious known efforts during the earliest years of New Hampshire's iconic "Old Home Day" celebrations (the first of their kind in the nation) and was one of the earliest deliberate efforts of historic preservation in the state's history.

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[1] Charles Carleton Coffin, *The History of Boscawen and Webster from 1733 to 1878* (Concord, N. H.: Republican Press, 1878), pp. 139-41. An account of the raising of a meeting house frame was written in 1859 in the form of a poem by Sarah Shedd of Washington, N. H., describing the raising of the Washington Meeting House (now the Washington Town Hall) in 1787. See Ronald Jager and Sally Krone, *" . . . A Sacred Deposit" The Meetinghouse in Washington, New Hampshire* (Portsmouth, N. H.: Peter E. Randall, 1989).

[2] Coffin, *The History of Boscawen and Webster*, pp. 240-42; "Toleration Act of 1819," *Historical New Hampshire* [Fall 2019]:12-17.

The meeting house continued its dual function, central to the life of the community, until 1941. The building was then determined to lie within the perimeter of a flood control project being developed by the U. S. Army Corps of Engineers. The Corps condemned the structure and reimbursed the Town of Webster with $10,000 to compensate for its loss. Local citizens, unwilling to see the demolition of the landmark, incorporated themselves as "The Society for the Preservation of the Old Meeting House in Webster, N. H." and raised the necessary funds to purchase and pay for moving the building from its original site to a new and higher location on Corser Hill, near the Congregational Church that had been built in 1823. Now commonly known as the Webster Historical Society, this organization has cared for and interpreted the building to the public since 1941.[3]

Since 1941, the Webster Historical Society has carried out more than 25 building maintenance and conservation projects on the Webster Meeting House. In addition, the Society has transformed an adjacent fire station (replaced by a new safety complex elsewhere) into a storage and research facility for its growing collection of manuscripts, photographs, museum objects, and vehicles.

Detailed Timeline:

1791 The meeting house was built by local carpenter and joiner Samuel Jackman (1749-1845) as a “twin-porch” meeting house, having projections at each end to enclose staircases leading to the galleries. This was a favored design for meeting houses in southern New Hampshire.

1823 The Congregational Church, originally the established church in town and the only religious occupant of the meeting house, withdrew from the town building and constructed the Webster Congregational Church on Corser Hill for their exclusive use.

1844 The local Christian Union Society and the town voted to cooperate in remodeling the building, removing the projecting stair enclosures, flooring the formerly open area inside the galleries, and adapting the interior for a chapel on the second story and a town hall on the first.

1860 Webster was separated from Boscawen and incorporated as a town.

1863 The town shingled the building (Town Report).

1880 The town shingled the building (Town Report).

1885 A stove and stovepipe were purchased for the town hall (Town Report).

1896 The town shingled the building (Town Report).

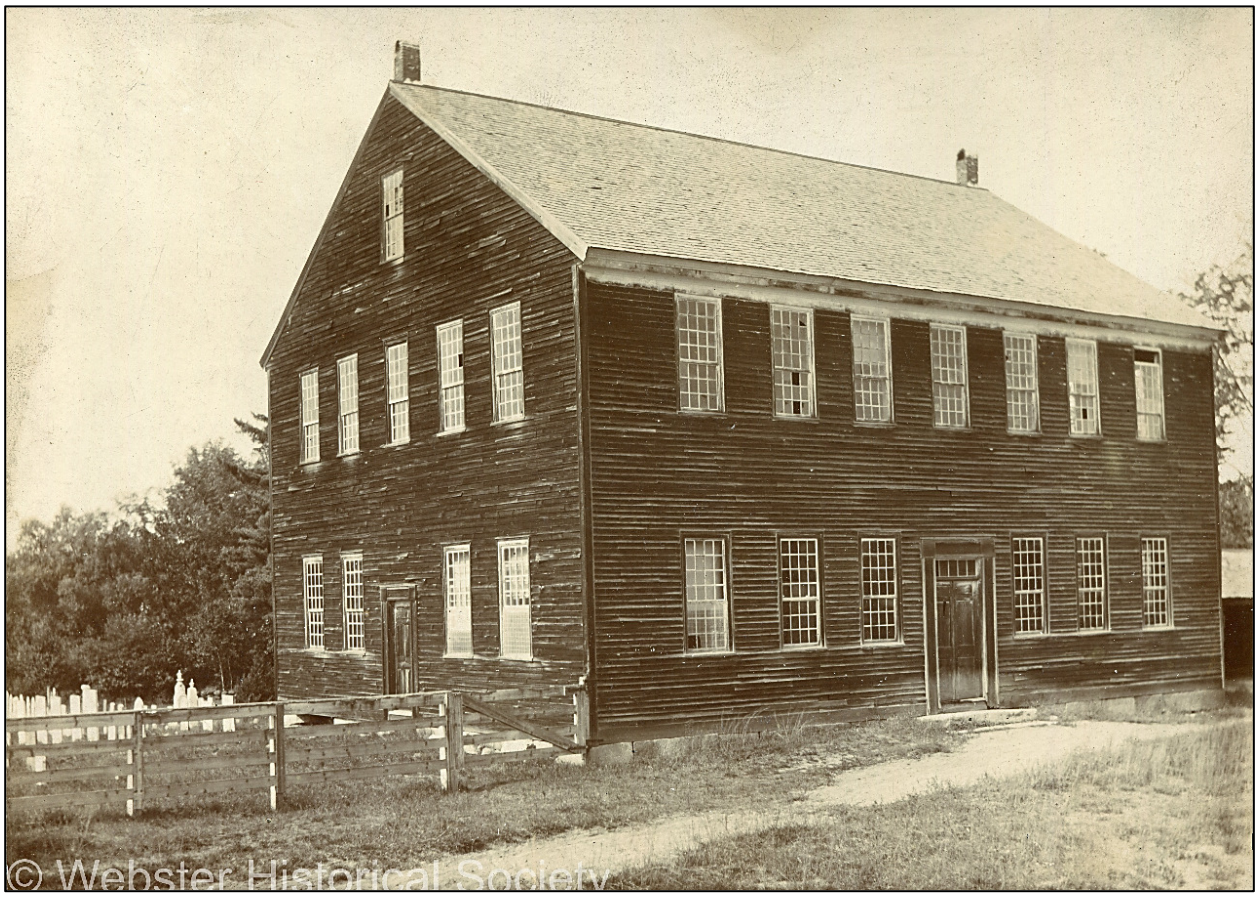
1902 The Webster Old Home Day Committee and the Old Meeting House Cemetery Association “restored” the building.[4] The bronze tablet now over the front door was placed by the Webster Old Home Day Committee in 1902 and proclaims the building to be “A sacred legacy from the past. Guard it well.” The Webster Old Home Day Committee Report of 1902 does not provide details of the restoration, noting only that “at the meeting last year [1901] Francis B. Sawyer suggested that the “Old Meeting House” erected in 1791 ought to be

[3] See National Register nomination for "Old Webster Meeting House" [NR# 85000479].
[4] Webster Old Home Day Committee Report, 1902; Buxton, *History; Boscawen-Webster* [1934]: 103-5

preserved. . . . Interest in the project and funds for the repairs increased during the year and a committee was chosen to have charge of the matter. The contract for work stipulated that it should be finished before "Old Home Day," 1902, and Dr. Little called on James L. Colby for a report of the building committee, and followed this statement by a brief history of the building."

As seen in the photograph below, reportedly taken around 1899, the meeting house prior to its turn-of-the-century restoration was in weathered condition. The chronology given earlier shows that the building was re-shingled, on average, every sixteen or seventeen years, but there is no clear record of re-clapboarding during the 1800s.

This photograph shows that the building had once been painted with white lead and linseed oil. Remnants of that paint remain under the cornice and on window casings and sashes. But lead paint erodes slowly over time, and very little pigment is seen on the clapboards of the building, many of which had been aged by unprotected exposure to the sun. It seems likely that many of these clapboards dated from 1844, and some of them possibly from 1791. It is also possible that the clapboards were never painted white, but rather were covered with a less expensive red or brown pigment, which would not be visible in a black-and-white photograph.



Webster Meeting House with weathered clapboards and remnants of lead-and-oil paint, circa 1899. Webster Historical Society

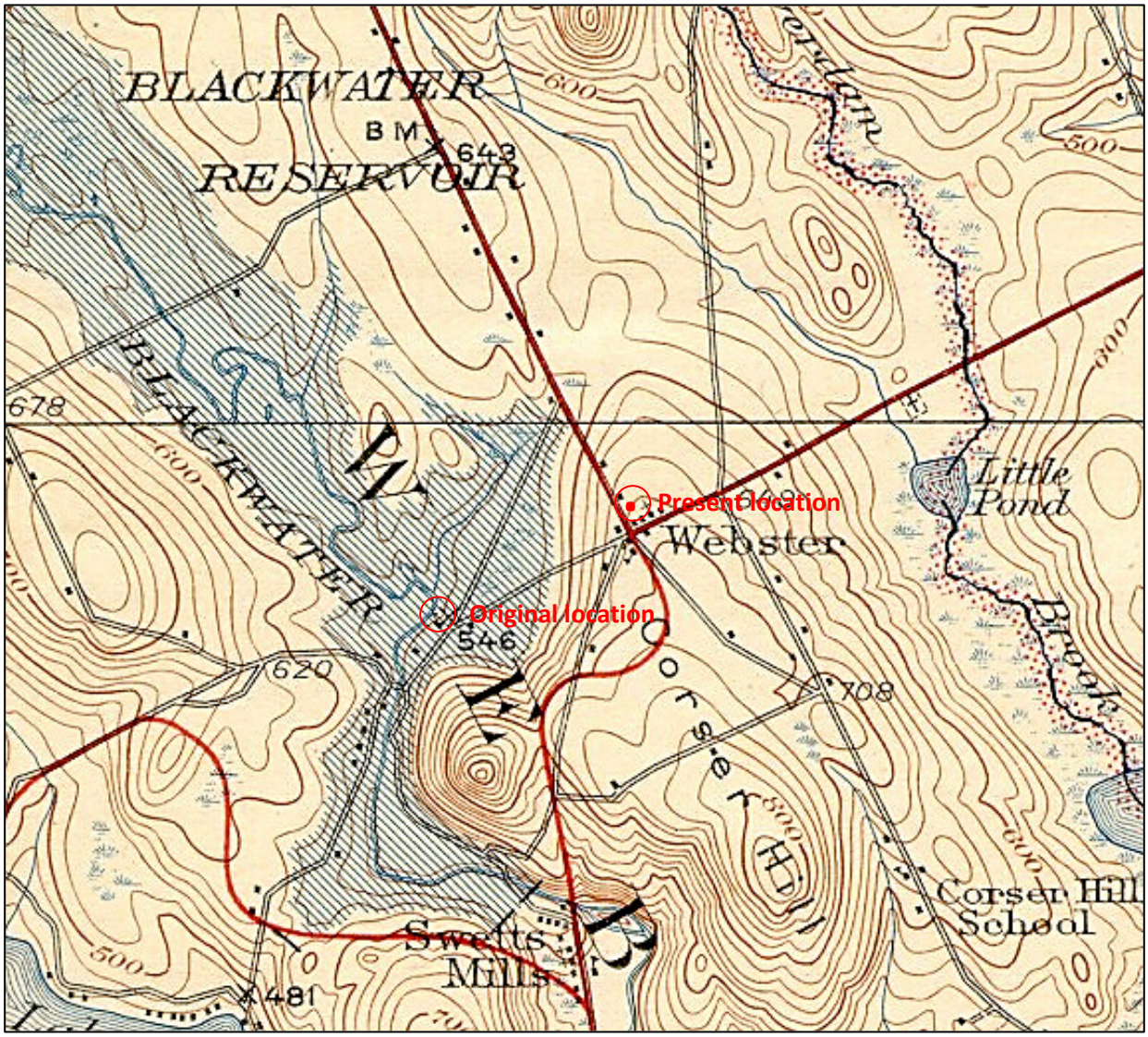
As noted on the following pages, physical evidence suggests that the clapboards seen in this photograph were largely or completely replaced in the turn-of-the century restoration and that the clapboards currently on the walls date from circa 1902.

1917 The town painted the meeting house (Town Report).

1921-2 The town shingled the building (Town Reports).

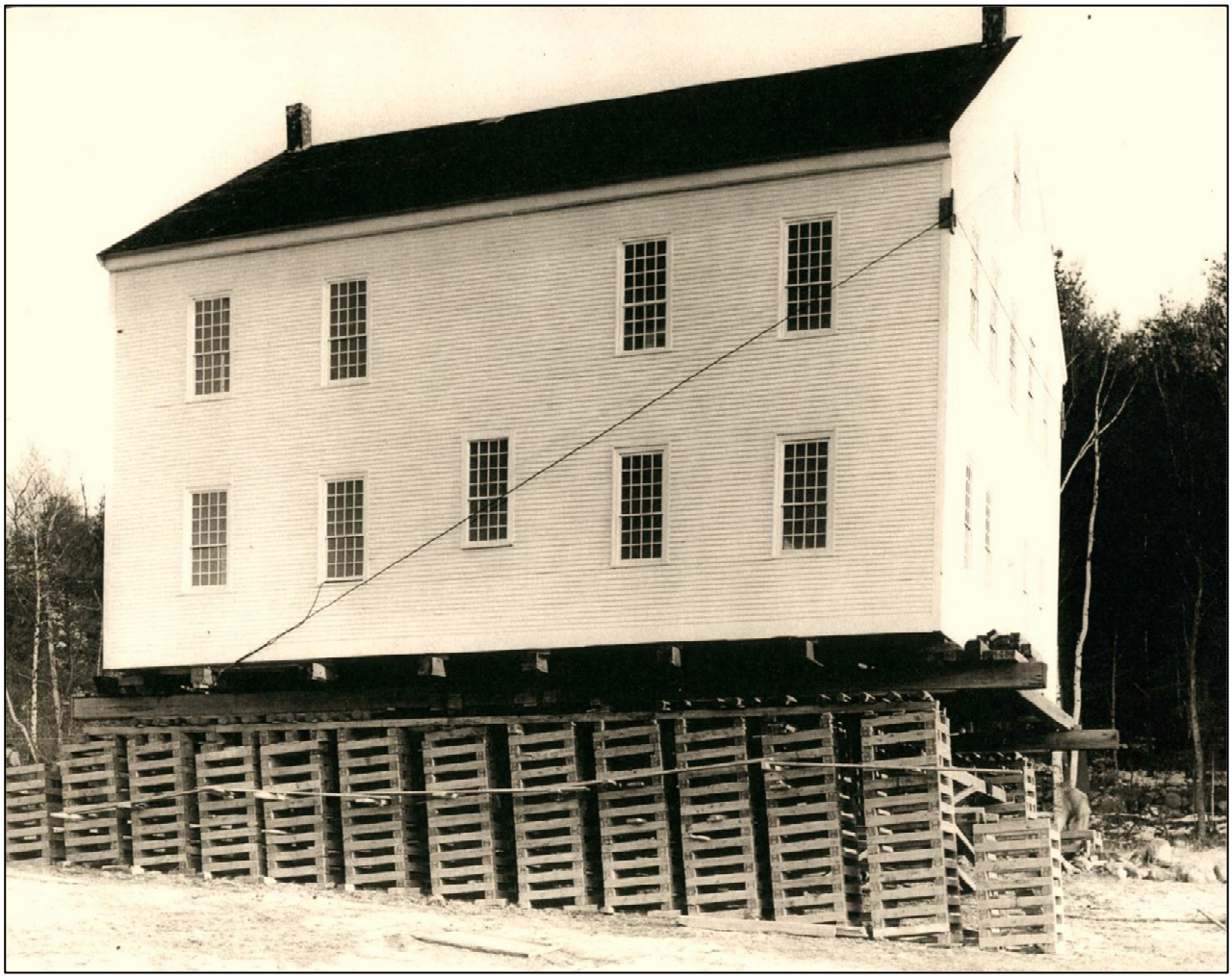
1934 The town painted the meeting house (Town Report).

1935 Electric lights were installed in the "office"—possibly in another building.



Original and present locations of the Old Webster Meeting House. Detail from 1927 Penacook NH quadrangle, U. S. Geological Survey, as reprinted in 1943 to show proposed road changes for the Blackwater Reservoir.

1941 The United States Army Corps of Engineers established the Blackwater River Flood Control Project and condemned the building, which was located within the limits of the proposed water storage reservoir. The Corps reimbursed the Town of Webster $10,000 for the building. In October 1941, the Society for the Preservation of the Old Meeting House in Webster, New Hampshire was formed to purchase the structure as surplus property and relocate it to a site above the elevation of the reservoir.



Walter Hill Company moving the meeting house northeasterly from its original location to a temporary site near the intersection of Battle Street and Long Street in the fall of 1941. Hill placed the building at its current location in the late spring of 1942. The move was carried out slowly, using a single horse to turn a capstan that was progressively anchored at intervals along the gravel roadway. Seen in this photograph is the rear side of the building, originally the northern elevation. In the building's new location, the rear elevation faces east.
Courtesy of the Webster Historical Society.

Walter Hill Company of Tilton moved the building to its current location in the spring of 1942. The relocation required that the building be rotated 90° on its new site, with the original south (main) doorway now facing west.[5]

Subsequent to the moving of the building in 1941-2, the following work is documented in the files of the Society for the Preservation of the Old Meeting House in Webster, New Hampshire, now generally referred to as the Webster Historical Society:

1959 Shingled roof ($700).

1955-7 Painting and repairs $200.

1959 Painted building (perhaps the $1,060 cost listed for "painting" without a date).

1964 The New Hampshire Historical Society compiled photographs and descriptive data to list the Webster Meeting House in the Historic American Buildings Survey.

1965 Removed interior partition; patched clapboards; repaired roof; repaired stairs.

1966 Graded all grounds around the meeting house except ditch by road; seeded lawn.

1966 Re-set and leveled granite steps.

1968 State filled large ditch in front of meeting house.

1969 Re-plastered walls and ceilings.

1970 Added electrical service.

1970 Painted interior, second floor; re-glazed second-floor windows.

1970 Shingled roof: Cedar shingles on new plywood underlayment (Lake, $2,800).

1970 Added gravel to driveway.

1972 The Society built an adjacent shed, simulating the appearance of horse sheds that had stood next to the building in its original location. These sheds are used for the shelter and display of horse-drawn or horse-powered equipment.

[5] Dorothy Sanborn, "Webster Meeting House," in Webster History Committee, *Webster, New Hampshire, 1933-1983* (1984): 157-9.

Temporary jacking of the meeting house in 1979 for the construction of a concrete foundation below grade. Photograph by James L. Garvin, June 1979.

1979 The Society for the Preservation of the Old Meeting House in Webster had the building lifted temporarily to permit the excavation of a deepened crawl space and the construction of concrete foundation walls below grade. The former granite underpinning stones were replaced above grade and the building was lowered onto its new foundation. The electrical service was updated.

1979 Painted exterior (MacArthur, $3,600)

1979 Repairs to clapboards

1979 An enclosed two-bay addition to the shed behind the meeting house for secure storage.

1985 Working with Dorothy R. W. Sanborn of the Society for the Preservation of the Old Meeting House, the New Hampshire Historical Society completed a nomination of the property to the National Register of Historic Places. The building was listed on March 7, 1985.

1987 Painted exterior (Radcliffe, $4938).

1989 Shingled roof with white cedar shingles (Mountain County Home, $3,500).

1992 Installed two flagpoles.

1992 Painted exterior (Connelly, $4,600).

1993 Repaired plaster and painted first floor interior ($3,295).

1994 Installed electrical receptacles on lower floor.

1999-2000 Painted building exterior; re-glazed windows (Gosinksi, $8,150).

2002 Painted exterior (Jon S. Lilly, $8,300).

2006 Re-glazed and primed all windows; replaced 41 panes of glass (Keith & Kal, $3,038).

2007 Painted building exterior (Keith & Kal, $8,427.00).

2008 Shingled roof with 30-year architectural shingles (Mitchell, $13,360).

2012 Re-set and leveled front granite steps

2019 Installed a heavy vapor barrier, composed of a 90-mil crosslinked polyethylene sheeting, on the basement floor and walls on December 19, 2019.

2019-present Regular monthly moisture readings are taken of the lower clapboards to measure and track the variations in moisture content in the sheathing and cladding of the building.

2020 The Webster Historical Society solicited bids for window conservation through a formal Request for Proposals distributed in June 2019. The society received bids from two window conservators with extensive experience in New Hampshire. A window conservation contract was awarded to the low bidder, and conservation of the windows will occur during the summer of 2020 using Webster Historical Society funds and an appropriation made at the 2020 Webster town meeting.

STATEMENT OF SIGNIFICANCE

The Webster Meeting House, originally called the Westerly Meeting House in Boscawen, is the only eighteenth-century meeting house in the upper Merrimack Valley of New Hampshire that essentially retains its original exterior appearance as well as many of its original interior features. It is one of four eighteenth-century meeting houses in New Hampshire that remain in nearly original condition.[6]

The building was constructed in 1791 after the inhabitants of the western part of the town of Boscawen, complaining that many of them had to travel five miles or more over hills and past ponds and swamps to the town's only meeting house, petitioned to be set off as a separate

[6] The other three are at Danville (1755), Sandown (1773), and Fremont (1800). The Fremont Meeting House is a twin porch building that retains the original form and floor plan of the Webster Meeting House before the latter was remodeled to accommodate a separate town hall (first story) and chapel (second story) in 1844.

township. Although this division did not take place until 1860, creating the town of Webster, the inhabitants of Boscawen voted in 1791 to erect a second meeting house for the convenience of the inhabitants of the westerly section of the township.

In so doing, the people of Boscawen followed local architectural tradition, making the new building a virtual twin of the earlier Boscawen meeting house, which had been built in the easterly part of the township, not far from the Merrimack River, in 1769.[7] The building was also part of a larger regional tradition. It was one of some seventy known examples of meeting houses built between 1772 and 1804 that had end "porches" or stair enclosures that provided access to the galleries. By far the greater number of these twin porch meeting houses were in southern New Hampshire, where they constituted a dominant architectural tradition.[8]

While the Westerly Meeting House was originally one of a large group of comparable structures, all of its prototypes and contemporaries have been destroyed or so remodeled that their original appearance is no longer discernible. The companion meeting house built in the eastern part of Boscawen in 1769, for example, was burned in 1798. The structure that replaced this eastern meeting house, constructed in 1799, was remodeled in the form of a typical Greek Revival church building in 1839, with additional remodeling at later dates. Another meeting house in nearby Pembroke was converted to a barn and remains so today. That on Searles Hill in neighboring Salisbury, six miles distant, was built in 1768 and dismantled about 1790. Another at Canterbury, adjoining Boscawen on the east, was converted to a town "house" or hall.

The Westerly or Webster Meeting House largely retains the outward form that it was given in 1791, but the interior was remodeled in 1844. This remodeling was not capricious but was a deliberate adaptation of the meeting house to meet the mandates of the Toleration Act of 1819, which ended town support for an established church in New Hampshire towns. In common with several other New Hampshire meeting houses, the Webster building was divided into two stories at the level of the former gallery and became a town "house" or hall on the first story and a religious meeting room or chapel on the second.

The Webster Meeting House is also a landmark in the history of historic preservation in New Hampshire because of two initiatives that occurred about forty years apart.

As described above, the Webster Meeting House was recognized as a community landmark at the beginning of the twentieth century. The Webster Old Home Day Committee and the Old Meeting House Cemetery Association restored the building, then in unpainted and weathered condition, in 1902. The Webster Old Home Day Committee placed a bronze tablet now over the front door, proclaiming the building to be "A sacred legacy from the past. Guard it well."

This restoration was one of the most ambitious known efforts during the earliest years of New Hampshire's iconic "Old Home Day" celebrations (the first efforts in the United States to lure

[7] Coffin, *The History of Boscawen and Webster*, pp. 101-2, 139-43.
[8] Peter Benes, "Twin-Porch versus Single-Porch Stairwells: Two Examples of Cluster Diffusion in Rural Meetinghouse Architecture," *Old-Time New England* 69 (Winter-Spring 1979): 44-68.

expatriate natives back to their place of birth), and was one of the earliest deliberate efforts of historic preservation in the state's history.[9]

The second preservation initiative occurred in 1941, when the "sacred legacy from the past" was condemned for flood control after devastating floods in 1936 and 1938 ravaged the Merrimack River Valley and the valleys of the tributaries of the Merrimack. The Society for the Preservation of the Old Meeting House in Webster, N. H., purchased, moved, and restored the building, and has maintained the structure in the succeeding years.

These efforts in 1902 and 1941, and the subsequent stewardship of the structure down to the present day by the Society for the Preservation of the Old Meeting House, now commonly called the Webster Historical Society, make the Webster Meeting House a landmark in historic preservation in New Hampshire.

ARCHITECTURAL DESCRIPTION

Exterior Description[10] (see Photographs in the Appendix)

The Webster Meeting House is a rectangular framed building of two stories, with clapboarded walls, a gable roof, and a foundation of split granite underpinning supported on modern (1979) concrete walls below grade. The façade faces west and is seven bays wide. Window sashes are sixteen-over-twelve. Most of them display the dominant muntin profile of the turn of the twentieth century, reflecting their installation during the restoration of 1902. Exterior window casings are flat and display flat fillets in place of backband moldings.

The front doorway, in the center of the façade, is a simple Greek Revival design that probably dates from 1844, when the structure was altered from its original use as a meeting house to a dual use as a town hall on the first story and a chapel on the second. The doorway casing encloses two modern doors of mahogany, each having three panels without applied moldings around their margins. Above the doors is a five-light transom sash with thin muntins characteristic of the Greek Revival period. The door casings are wide flat boards with flat strips applied to their inner and outer edges and with flat square corner blocks at the juncture of side and top casings. The building's water table and corner boards are simple square-edged planks. The cornice of the façade is composed of ovolo-and-cavetto crown and bed moldings.

The side (north and south) elevations are identical to one another. Both are five bays wide, with window sashes and casings matching those of the façade.[11] The attic of the building is lighted by single twelve-over-twelve windows in the center of each gable. The end doorways of the

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[9] A similar effort occurred in Allenstown, N. H., in 1908, when Buntin Chapter, Daughters of the American Revolution, took custody of the largely disused Old Allenstown Meeting House and restored the building in much the same manner as had the Webster Old Home Day Committee in 1902. See James L. Garvin, "Allenstown Meeting House Historic Structure Report" (2004, rev. 2007, 2010), New Hampshire Division of Historical Resources, Concord, N. H.

[10] The exterior and interior descriptions are adapted from those of the National Register nomination of 1985, with updates as necessary.

[11] The attic window casing on the south retains molded backbands that appear to be original. It is the only window enframement on the building to do so.

building each have five-panel doors with flat panels surrounded by Grecian ogee moldings. Their casings are identical in design to those of the front doorway. The side doorways have no transom sashes. The raking eaves of the roof are trimmed with tapered boards applied tightly against the clapboards.

The rear (east) elevation is five bays wide, with window sashes and trim matching comparable features on other elevations. At the center of this elevation is a window, elevated above the other four windows of the first story but otherwise similar to them; it provides light to an elevated enclosure in the town meeting room on the first story.[12] The cornice of the rear of the building is a plain box with fascia and plancia boards but without crown or bed moldings.

Interior Description (see Photographs in the Appendix)

The interior of the building is divided into two stories. The first floor is a single, large room, remodeled as the town hall in 1844 and now used to exhibit artifacts that illustrate the history of the town of Webster and the Merrimack Valley. The principal entrance to this room is through a vestibule inside the front door from which two flights of stairs diverge and rise to the second floor; the two end doors of the building also open into this room.

Opposite the principal door and against the eastern wall is a raised enclosure of unpainted pine with paneled ends and an open-ended aisle that probably served as the moderator's desk during town meetings. The raised paneling of the northern side of the enclosure is of eighteenth-century origin and includes panels with curved margins that were probably components of the original pulpit of the meeting house. The paneled wall on the southern end of the enclosure appears to date from the remodeling of 1844. The enclosure is lighted by the central window of the rear (east) side of the building.

The walls of the first story are plastered. Portions of the floor boards of this room are fastened with hand-forged nails and apparently date from 1791.

The perimeter of the original gallery opening is bordered by heavy beams. These are supported by a total of six original turned pine gallery posts that take the form of Tuscan columns with low pedestals and square architrave blocks. The plastered ceilings outside the original gallery opening slant upward to the outer walls of the building, reflecting the pitched flooring of the galleries that remain intact on the second story. The central portion of the ceiling of the first story was originally an opening within the breastwork of the gallery. The added floor in this area is framed by two heavy bridging joists within the original opening. Across the tops of these timbers lie a closely spaced series of common joists of square cross-section, which support the floor boards of the central portion of the chapel above.

The second story of the building is a single large room with a level central floor in the area within the original breastwork of the gallery. Sections of paneling that appear to have formed parts of the breastwork are stored on the second story. The floors of this room slant upward on the front and sides where the original gallery construction is retained. The gallery floor is filed

[12] The casing of this window is composed of flat boards without applied fillets at the outer margins.

with a series of “slip” pews, which face the center of the rear of the building where the original elevated pulpit stood midway between the first floor level and the gallery level. An analogous position on the second story is now occupied by a movable reading desk in the Empire style, decorated with painted graining in imitation of hardwood veneering. This desk probably dates to the conversion of the new second story into a chapel in 1844. Filled mortises in the floor boards of the chapel show that additional pews once extended out into the flat central area of the floor.

The second-story chapel is reached by two enclosed flights of stairs that rise from each side of the vestibule. On the second story, the two stairwells are guarded by simple balustrades with square balusters. The joinery of the chapel is simple: window casings are square-edged, and the corners of the uncased but painted posts of the frame have chamfers that extend to within a few inches of the ceiling. The walls and ceiling are plastered, and the juncture of the two is finished in a plastered cove of small radius. Patched areas at the north and south ends of the chapel ceiling reveal where stove chimneys, visible in old photographs, rose through the ceiling and extended above the ridge of the roof. A trap door giving access to the attic is near the former chimney location at the north end of the ceiling.

The frame of the building is composed mostly of oak. The roof frame is composed of six sets of heavy, hewn rafters. The pairs of rafters at each end of the building are supported by wall studs in the gable walls of the building. The inner four sets of rafters are components of four heavy trusses that lie above the four posts that line the front and rear walls of the building and increase in cross-section as they rise toward the ceiling of the second story.

The four trusses are composed of horizontal tie beams that lie above the wall posts and form the lower chords of the trusses; king posts that rise from the center of each tie beam and extend to the ridge of the roof; and doubled rafters that form the slanted upper chords of the triangular trusses. The king posts are tied together by horizontal beams that extend longitudinally through the length of the attic and intersect the king posts at mid-height. Diagonal wooden braces extend from the midpoints of these horizontal ties to mortises near the tops and feet of the king posts, locking the complex roof frame into a rigid structure that spans the building without support from below.

ASSESSMENT OF CONDITIONS

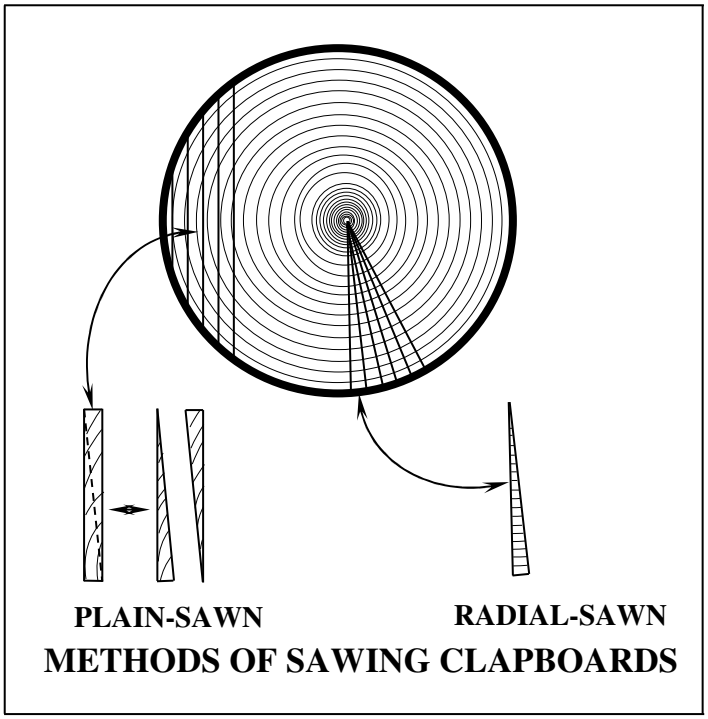
The following sections describe various components of the building with an emphasis on those features that have revealed problems and have been studied most intensively in 2019 and 2020. As described later, most of these problems derive from excessive moisture in the building. This moisture, in turn, may be traced to the excavation of a shallow dirt-floored basement under the structure in 1979, as shown in the photograph on page 11 of this report.

In common with most meeting houses, the Webster building, both in its original location and after it was placed on its current site in 1941-2, had always stood on a shallow foundation of stone underpinning supported on a rock-filled trench. The excavation of the cellar in 1979, intended to provide better perimeter support for the structure, also extended the earthen surface under the building downward through soils that may have a seasonally high water table. Efforts to determine the effects of moisture in the building, underway since the end of 2018, are summarized in the pages that follow.

Clapboards: Investigation of the physical environment that is affecting the Webster Meeting House began in 2018 with a study of the clapboards. As seen in the pages below, the clapboards have been unable to hold paint in recent years. Excessive paint failure is a direct result of the excessive moisture conditions. The change in moisture levels over the years is indicated by the history of the repainting of the meeting house. Records indicate that after the building was restored and painted in 1902, it was again painted in 1917, probably in 1941 when it was moved, and in 1955 and 1959. Since 1979, however, the building has been repainted in 1987, 1992, 1999, 2002, and 2007—an average of every 5.6 years.

While some of this rapid paint failure can probably be attributed to changes in the formulation of commercially available paints--lead paint, respected for its longevity, was removed from the American market in the 1970s--the building has clearly suffered from increasing moisture levels that would be destructive to paint of any formulation that might be applied to the building. Since monitoring began in late 2018, the building's clapboards have remained above 15% moisture content—too wet to retain paint—for an average of eight months out of every twelve. To combat this condition, the Webster Historical Society contracted for the professional installation of a robust vapor barrier composed of a 90-mil crosslinked polyethylene sheeting; this was installed on December 19, 2019.

The walls of the Webster Meeting House are clad with pine clapboards that measure about 5½ inches in width and have an average exposure to the weather of 3¼ to 3½ inches. The clapboards are circular sawn and are laid directly on the sheathing of the frame without building paper between the sheathing and clapboards. The clapboards were originally nailed with cut nails, and most of them retain these nails. Wire nails of a more recent period have been added to many clapboards, and in some cases this excessive nailing has caused the clapboards to split along the nail lines or at their midpoints.



METHODS OF SAWING CLAPBOARDS

As described below and shown in the preceding drawing, the clapboards now covering the Webster Meeting House are sawn radially. This traditional method of sawing clapboards replicates the grain orientation that would have been found on the hand-split or riven clapboards used on the meeting house in 1791. By contrast, the currently common method of producing clapboards cuts plain-sawn boards from a log and then re-saws these boards into clapboards using a band-saw, as shown to the left of the preceding drawing. This method of production causes the grain to lie at an angle with the axis of the clapboard, encouraging warping and splitting of the board as the weather and humidity change over time.

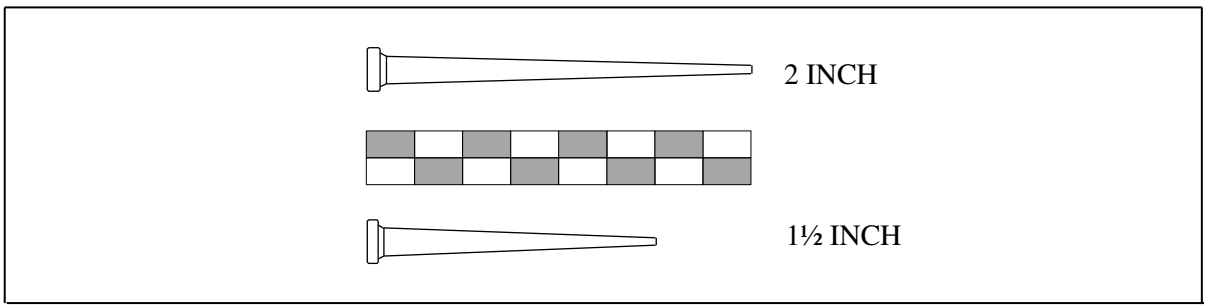
Although circular-sawn clapboards were being introduced by the early-to-mid 1830s, these earliest versions of sawn (rather than riven or split) clapboards were finished by hand shaving in the same manner as earlier riven clapboards. The clapboards shown in the photographs below appear to date around 1900. They are of good quality.

Clapboard on south wall of the Webster Meeting House, showing 5½-inch total clapboard width and 2-inch lap (left photo). Circular saw marks are visible on the face of the clapboards, (at the arrow), but are more pronounced on the back of the clapboards (right photo). The visible wood grain (annual rings) on the back of the clapboard indicates that this is a quarter-sawn clapboard of good quality, cut from a close-grained tree.

Together with the tight and regular grain of these clapboards, the fact that they show evidence of circular sawing on both sides indicates that they were radially sawn. As shown in the diagram on the previous page, radial sawing cuts clapboards from a section of tree trunk in such a way that the annual rings of the wood are perpendicular to the axis of the clapboard. This produces a clapboard that has minimal tendency to warp or curl under varying moisture and weather conditions, and is the best wooden clapboard available. While there were many clapboard mills

producing radially-sawn products in New Hampshire in the late 1800s and early 1900s, very few exist today.

Nails: The cut clapboard nails that are original to these clapboards are found in two lengths as shown below. Cut nails are machine-made nails. The earliest examples were introduced in the very late 1700s, but were not available in all areas in the first years of their introduction because of limited numbers of nail factories and limited commercial connections between points of manufacture and rural hardware dealers. The fact that wrought nails were used in the floorboards of the first story of the building indicates that the original clapboards on the Webster Meeting House would likewise have been fastened with hand-forged nails rather than with cut nails.



The cut nails now seen on accessible areas of the building are technologically of a late type that was prevalent from the mid-1800s until well after the introduction of the wire nail in the 1890s. These nails are consistent with a date around 1900. It is likely that the original clapboards were at least partially replaced when the building was adapted from its original form into a two-story building that combined a town house and a chapel. This change removed the exterior stair "porches" at each end of the building and would have required the clapboarding of areas that had been enclosed by the porches. Some window and door changes occurred at this time, likewise requiring new clapboards in certain areas.

Subsequent work: The subsequent history of clapboarding on the building is not documented in detail. The majority of clapboards on the building appear to date from around 1900, which was a time of renewed interest in the antiquity and historic importance of the building and the date (1902) of a focused effort at its restoration. As shown on the preceding pages, clapboards were "patched" in 1965.

Variations in current moisture readings in adjacent clapboards on the lower walls of the building suggest that some clapboards of a different species and density from the white pine clapboards of 1902 have been inserted in places. The moisture meter being used to measure the moisture content of the clapboards is calibrated for a specific species—eastern white pine, with a density of 0.40. Newer clapboards of a different density, such as spruce at 0.45 or Douglas fir at 0.50, would affect the moisture readings when tested by the meter that is calibrated for a density of 0.40.

As seen in the 1964 photograph on the following page, taken a year before clapboards on the building were "patched," there were formerly areas of irregular or bulging clapboards in the

south gable of the building. These areas of clapboarding had apparently been replaced by the date of the 1979 photograph on page 7. These irregular areas likewise do not appear in photographs taken by Adele Sanborn for the National Register of Historic Places nomination of 1982 (listed 1984). This photographic evidence suggests that some areas of clapboards on the building have been replaced from time to time in recent decades.

Webster Meeting House, 1964. Historic American Buildings Survey (HABS NH-7—WEBS, 2-1), photograph by Gerda Peterich. Irregular or bulging clapboards are visible in the gable.

Despite evidence of repairs to clapboards on the southern elevation of the meeting house, this side of the building currently exhibits the most obvious deterioration of clapboarding. In the years since the building was moved and reoriented in 1941 this side, formerly facing east, has faced south. Moisture readings recorded on the four sides of the structure for over a year, shown in the graph on a following page, reveal that this face of the building is consistently second only to the west-facing front of the structure in having the lowest moisture readings of the building's four elevations. This south side is exposed, however, to sunlight from dawn nearly to sunset, and the ultraviolet radiation of sunlight is a powerful deteriorative agent.

Whatever the cause—probably a combination of sunlight and the application of clapboard patches of varying wood species from time to time—the southern side of the building displays small areas of complete deterioration of clapboards, as seen on the following page. Possibly some replaced clapboards suffered from excess dampness or incipient dry rot when they were applied.

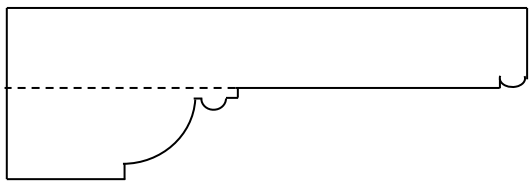
Top left: Area above westernmost window, south side, second story. March 2020.

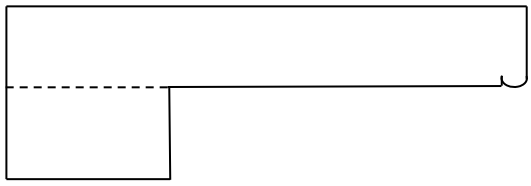
Top right: Area east of easternmost window, south side, second story. March 2020.

Left: Area below westernmost window, south side, second story. The location of this deterioration suggests the possibility that rainwater leakage occurs at the left-hand casing or the sill of the window.

Door and Window Casings: It is also clear that the casings around the front (west) door of the building have been replaced in recent times, although those on the north and south (side) doors appear to be old. These side door casings, and those around most of the windows of the building, can be dated stylistically to the remodeling of the building in 1844. They are characteristic of the Greek Revival style of that era and indicate that the exterior of the building was somewhat modernized at the time that the structure was divided for dual uses as a town hall and a church.

The south attic window of the meeting house is the only window that retains its original exterior casings. The profiles below illustrate the contrast between detailing of 1791 and that of 1844.





Casing of 1791 (Southern Attic Window) *Casing of 1844 (most other windows)*
On some windows, the original casing may have been retained rather than removed, and the molded backband replaced by a rectangular fillet, as shown on the right.

It should be noted that some of the wooden window sills of the building have cracked due to exposure to the weather and sun. A few have had areas of decay or splitting removed and wooden patches or "Dutchmen" installed. All window sills should be studied to assess the need for further repairs, consolidation, or replacement.

Left: Cracked or checked window sill, south side of building.

Right: Infill ("Dutchman") repair to window sill, south side of building.

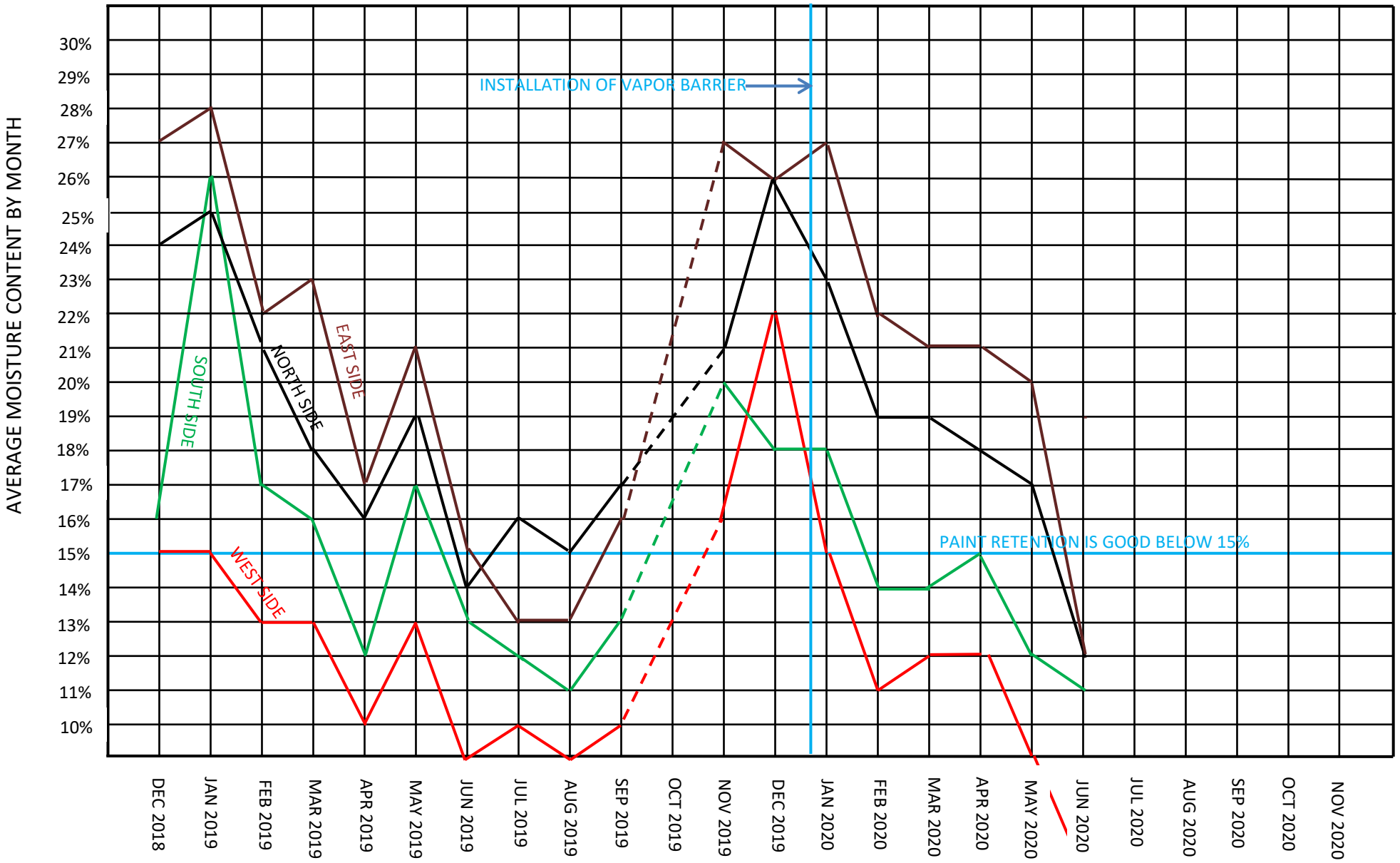
Moisture Conditions in the Clapboards

Moisture meter readings were initially taken around the lower zones of the building during an inspection on December 20, 2018. Readings have continued until the present time and are recorded on the following graph.

A major concern of the Webster Historical Society has been the inability of the meeting house clapboards to hold paint. This may be a longstanding problem, but it was apparently made far worse by the excavation of a deepened, dirt-floored crawl space or shallow cellar in 1979. As noted previously, the frequency of exterior paint failure and repainting increased dramatically after the crawl space was created. Formerly needing paint every fifteen to twenty years, the building has required repainting every 5.6 years, on average, since the crawl space was created.

As noted above, the clapboards on the building, at least in the limited area where they were examined, are quarter-sawn pine with close grain, and represent high-quality cladding that would be a good base for paint under favorable conditions.

As seen in the following graph, the moisture content in the clapboards has been excessive. Under normal conditions, clapboards will retain good quality paint when the wood has a moisture content of 15% or lower. As shown in the graph, the clapboards on the sunlit south and west sides of the building fell within or just above this range during the summer months of 2019 and are again returning to those levels in the spring of 2020. On the north and east sides of the building, however, the moisture content has generally exceeded the recommended range during most months of the year. A robust vapor barrier was professionally installed in the basement in late December 2019. Moisture levels are expected to drop and remain below 15% on all sides of the building, and will be closely monitored for the indefinite future.



OLD WEBSTER MEETING HOUSE CLAPBOARD MOISTURE CONTENT BY MONTH

Moisture Conditions on the Interior, January 2, 2019

As seen in the table below, moisture meter readings on the interior of the building, taken on January 2, 2019, were largely uniform throughout the building and were much lower than the readings on the exterior areas that are not warmed by the sun. The water content of the materials on the interior is somewhat higher than is recommended for museum collections, especially on the first story where window shades prevent the room from being warmed by the sun, but moisture levels in the wood of the building and in the objects exhibited there are probably comparable to the conditions that were experienced by these materials when they were kept in private homes during the nineteenth and early twentieth centuries. The moisture content of these collections probably changes slowly through the year, avoiding the damaging shrinkage or swelling that follows a rapid change in moisture content.

Weather: Fair, sunny, seasonably cold. Inside temperature: 32°F. Inside relative humidity: 16%

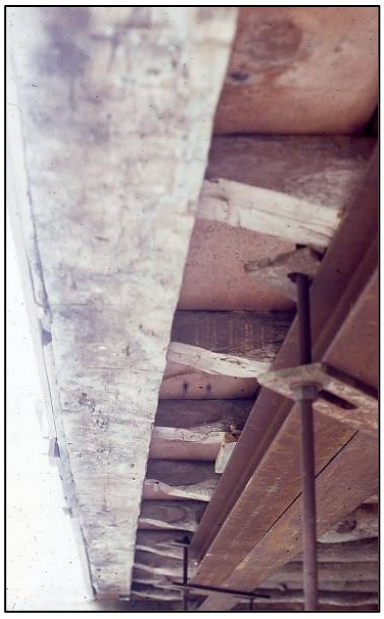
Location	Moisture content of wood (eastern white pine)
First floor at joist locations	17-19%
First floor, floor boards between joists	17-19%
First floor, outside wall wainscoting	17-19%
Second floor, outside wall wainscoting	16-17%

It will be noted that the data above includes no moisture meter readings from the framing of the first floor except as registered from above, on the surface of the floor. The shallow cellar beneath the building, excavated in 1979, is presently not accessible from inside the structure. The only access to the space is through one of four small cellar windows, two on the north and two on the south. As seen in the photographs below, taken in June 1979 when the building was lifted for its new foundation, the first floor framing of the meeting house is composed of a series of hewn timber girders that span the building from east to west (as the building is now oriented). These girders support the ends of sleepers, which are sections of natural tree trunks that are left in their rounded condition except on their tops and at the ends. The ends of the sleepers are hewn to a rectangular cross section, creating cogs that rest in notches that are cut into the upper edges of the girders. Examples of these end cogs are seen in the photograph at the right.

It will be beneficial to take additional moisture readings on the interior of the building once the effect of the vapor barrier that was installed in December 2019 has been recorded on the exterior for several months.

The photographs on the following page show the subflooring boards of the first floor. Inside the building, it can be seen that many of the finish floor boards that rest on the subflooring are nailed with hand-forged wrought iron nails, which are original features of the building. The spacing of the sleepers can be determined from above by observing the lines of these nails in the finish flooring.

First floor frame, camera facing northeast, June 1979. The east-west floor girders support the ends of rounded sleepers. The steel beams were inserted temporarily during the lifting of the building. Photograph by James L. Garvin.



As seen in these photographs, the condition of the first-floor framing was excellent in 1979. Throughout its history until that time, the meeting house had stood above a very shallow crawl space, a characteristic that is typical of almost all eighteenth-century meeting houses. Even after the building was moved to its present site in 1941-2, it was replaced on underpinning stones set at grade level, providing only a shallow space under the structure. As seen in other meeting houses, such shallow crawl spaces are usually not ventilated. Typically, these spaces remain very dry. In several meeting houses dating from the 1700s and early 1800s, wood chips and shavings from the construction of the building are well preserved on the dry ground under the structure, having been unaffected by dampness for two centuries or more.

Left: North sill, camera facing east, June 197. Garvin photograph.

Current condition of the exterior paint. The data above show that excessive moisture content is concentrated in the exterior skin of the building, specifically in the clapboards and presumably in the sheathing boards that underlie the clapboards. The result of this moisture content is paint failure, as seen below.

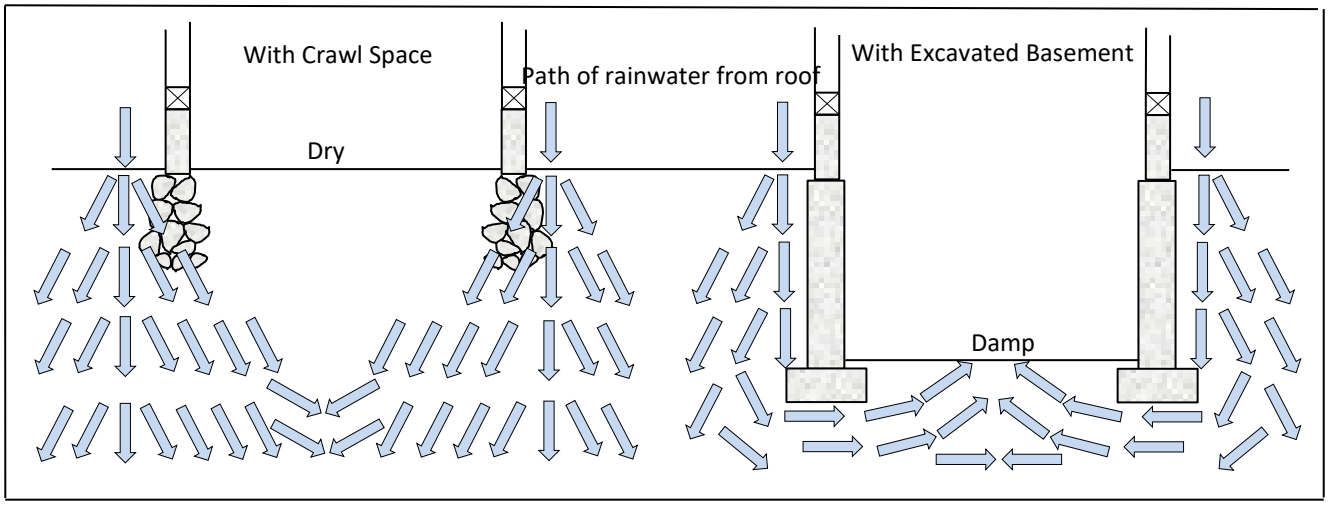
Water table, clapboards, and window casings on the west side of the Webster Meeting House, January 2, 2019.

Sources of moisture in the building: earth floor: The basement is a forty-year-old feature that altered the relationship between the building and its environment. The walls of the basement are poured concrete. Concrete walls and floors are resistant to the passage of liquid water. They are not resistant, however, to permeation by water vapor, which is a gas that passes easily through microscopic voids in concrete. This is the reason that vapor barriers are installed beneath concrete basement floors and on the exteriors of concrete basement walls.

The floor of the basement is natural earth. This earth floor was exposed to the air above until a vapor barrier was installed over the floor and up the concrete walls in December 2019.

As seen in the drawings below, the deepening of the basement in 1979 created a situation where water from the roof of the building could find its way back inside the structure. With only a shallow crawl space, the earth under a meeting house typically remains very dry—dry enough to preserve wooden chips and shavings for 200 years or more. A deepened basement, on the other hand, provides a "well" beneath the building where water from the roof may migrate under the

building and saturate the ground to the elevation of the lowered cellar floor. If the floor is uncovered earth, the water may then be free to escape inside the building.



Sources of moisture in the building: soil characteristics: The migration of roof water through the soil beneath the eaves of a building is not the only means by which soil can introduce moisture into a building. Certain types of soil hold rainwater near the surface and can cause the water table beneath a building to rise to a point where water dampens the soil in a dirt-floored basement, or actually rises above the floor. Present information does not suggest that this type of soil behavior would normally be a problem at the Webster Meeting House, although the soils under the building can seasonally support an elevated or "perched" water table.

Current soil maps indicate that the building stands on a type of soil called Henniker Fine Sandy Loam. Just in front (to the west) of the meeting house, the soil type changes to Metacomet Fine Sandy Loam. Henniker Series soils are classified as well drained, and Metacomet Series soils are moderately well drained. But both also include horizons or soil layers that begin about two feet below the surface and are sufficiently dense that they retard the drainage of surface water and can create seasonally high water tables. In soils of the Henniker Series, these dense layers may extend from about 29 inches below the surface to 65 inches below the surface. It is possible that the type of soil beneath the meeting house creates unusually wet conditions under the building during certain seasons or under certain weather conditions. This possibility should be monitored.

Sources of moisture in the building: condensation: In addition to evaporation from a damp cellar floor, there is a second source of moisture that is commonly encountered in unheated buildings. This is condensation of moisture from the outside air, especially in humid summer weather. Condensation may become a serious problem, and a source of much liquid water in a building, during the humid summer months. It occurs mostly in the basement when the basement is accessible to humid outside air.

The basement windows of the Webster Meeting House are screened but their hinged sashes were left open year-round until December 2019, leaving the basement exposed to a degree of air infiltration year-round.

Typically, an unventilated basement or crawl space under a building remains cool during the summer. When the outdoor humidity is high, the cool areas under the building are frequently below the dew point. In such a situation, water vapor in the humid air from the outdoors finds its way into the building and condenses as liquid water droplets on all surfaces, including the wooden floor joists overhead. Sometimes, a stratum of water droplets forms in the still air, creating a layer of visible fog in the cellar. Even with the cellar floor sealed against moisture, the infiltration of outside air can introduce damaging amounts of water that will saturate the first floor frame and eventually cause decay. Water from this saturated wood eventually finds its way into the upstairs rooms as well.

For these reasons, control of the moisture in the clapboards of the Webster Meeting House began with a simple procedure, followed by monitoring of moisture conditions in the clapboards. In December 2019 a heavy vapor barrier, composed of a 90-mil crosslinked polyethylene sheeting, was installed on the basement floor and walls. As seen in the graph on a preceding page, monthly moisture readings have followed this installation and will continue through an indefinite future, at least until moisture content in the clapboards on all sides of the building has stabilized within an acceptable range.

Results of a damp basement. The floor surfaces in even a shallow cellar seldom cool below freezing except in the coldest weather; this is why cellars in houses were used for storage of root crops, cider, and other food. The unfrozen cellar floor therefore acts as a source of water vapor year-round. During the daytime in winter, the warmer air in the upper rooms, having been heated by the sun, is capable of absorbing some of the water vapor generated in the basement. Being a gas, this vapor migrates into the upper parts of the building by vapor pressure, penetrating wooden floors and plaster walls with ease. At night, when the building cools, this water vapor can condense on cold surfaces. It is not uncommon in unheated buildings to find hoarfrost covering all walls and furnishings at night or on especially cold days in winter. Such frost is especially common in attics, which tend to become the warmest areas in any old building during sunny winter days, but to cool quickly at night. On warmer days, this frost melts, often inviting the flowering of mold or creating damaging condensation on objects in the buildings or behind the glass of framed pictures.

This cycle of migration and condensation of water vapor slowly saturates all the building materials. This accumulated moisture can be a chief cause of paint failure on the clapboards, condensing behind the clapboards under the right weather conditions. Often, the condensation is invisible inside the building. This is because the water vapor, being a gas until it condenses, naturally moves under vapor pressure from areas of high concentration to areas of lower concentration. In cases where outside air has lower relative humidity than the air inside a building, as is often the case in the winter, the water vapor will migrate through the wall plaster toward the outside. At some point within the wall cavity, the vapor may cool to a point where it condenses, or changes from a gas to a liquid. The temperature at which this happens is called the "dew point," and the dew point may be within the wall cavity or at the wall sheathing or the

clapboards that form the exterior skin of the walls. In a cold climate like that of New England, the condensation of water vapor in wall cavities is a wintertime phenomenon.

Other sources of moisture in the wood: damaged clapboards and window frames. The Webster Meeting House is in generally well-maintained condition. It has a relatively new asphalt shingle roof. Two former stove chimneys at the ends of the building have been removed, offering no break in the roof where leaks could occur. For these reasons, the excessive water in the clapboards appears to originate in the interaction of the building and its natural environment, not from major defects in the envelope of the building.

Yet one source of water content in the building could lie in unseen leaks around window openings. Some of the window sills of the building have lost the protection of paint, and splitting and decay of the sills has followed. It seems likely that some outside water is penetrating the skin of the building around a number of the windows.

Despite their good quality as radially-sawn clapboards cut from clear pine stock, a number of the clapboards now on the building have split at the nail lines. This has been caused, in part, by the re-nailing of many clapboards with modern wire nails. By preventing the natural swelling and shrinkage of the clapboards under changing weather conditions, this tight nailing has encouraged splitting. Some clapboards have split at their midpoints rather than at the nail lines, again because of too-tight nailing of the clapboards. Any cracked clapboards that do not have an unbroken coat of paint over the crack will of course offer potential point of entry for rainwater.

These areas of potential water infiltration were identified during the spring of 2020. The building was examined in early May 2020 by Stephen Bedard of Bedard Preservation and Restoration, LLC.

This examination found that about 90% of the historic clapboards on the north, east, and west sides of the building are in good condition under their failed paint and can be preserved. On the south side, pictured on page 21 of this report, over 50% of the clapboards are so badly damaged or deteriorated that they cannot be preserved. This report therefore recommends full replacement of the clapboards on the south side of the building.

Insect damage. A condition of consistently high humidity in wood invites insect infestation. As shown in the preceding photographs of the first-floor structure of the building in 1979, the girders and sleepers (joists) of the frame showed little sign of insect activity. Many of the sleepers, which are hewn flat only on the top, retained their bark on their undersides.

Examination of the first floor framing from beneath the building in May 2019 revealed areas of powder post beetle infestation. American powder post beetles are members of the genus *Lyctidae*. Their larvae feed on starches in wood, creating a network of tunnels, mostly in the outer or sapwood layers. *Lyctus* beetles are especially prevalent and active in wood in unheated buildings that are subject to moisture content of 15% and above—exactly the conditions that have prevailed in the first floor framing of the Webster Meeting House, at least since the shallow basement was created in 1979.

Powder post beetles propagate when adult females find their way into a building and deposit tiny eggs in fissures or pores in the surfaces of the timber members, often in cracks created by the checking of the wood as it seasons in the frame. The eggs hatch and larvae begin to bore networks of tunnels beneath the surface as they grow. Eventually, the adults emerge from the wood, leaving holes that measure between $^{1}/_{16}$ and $^{1}/_{12}$ inch in diameter. These holes are made more visible by trails of fine, dry, yellow, flour-like powder called "frass," which is a residue of the digestion of wood nutrients by the larvae in their tunnels and sifts from the exit holes. Adult beetles mate and succeeding generations may repeatedly infest the same timbers in buildings that offer beneficial conditions of wood species and moisture.[13]

In June 2019, Webster Historical Society member Mark Kimball applied a boron-based insecticide named *Bora-Care*™ to the members of the first floor frame seen in the photograph on page 25. Being toxic to many pathogens but benign to mammals, boron-based insecticides and fungicides are recommended treatments for a variety of fungal and insect infestations in wood.

Together with the installation of a heavy vapor barrier in the basement under the meeting house in December 2019 and the closure of formerly opened cellar windows, the application of *Bora-Care*™ to the framing timbers is expected to halt the cyclical infestations of powder post beetles. The condition of the timbers should be monitored periodically and applications of the boron compound should be repeated if necessary.

Changing paint formulations. While excessive moisture content in the wood is undoubtedly the chief cause of paint failure on the Webster Meeting House, other conditions may contribute to the failure of paint. As seen by the gray residue in areas where wood is visible on the clapboards, the building was painted with white lead and linseed oil when the clapboards were applied, probably in 1902. White lead paint fails slowly by eroding rather than peeling, eventually thinning away almost completely if not renewed. This characteristic of lead paint is seen in the photograph of the building taken around 1899 before the current clapboards were applied. After years of weathering, a residue of white lead remains on the wood, and this residue forms a good base for overlying coats of the same paint. The building was undoubtedly repainted with lead and oil during much of the twentieth century, and the condition of its paint appears good in most older photographs.

White lead has not been available in the United States as a house paint pigment since the 1970s. Most modern white paints use titanium dioxide as the pigment and no longer use a natural oil such as linseed oil as the "vehicle" or liquid component of the paint. In recent decades, most exterior house paints have been latex paints, composed of a chemical emulsion (usually an acrylic or a vinyl) suspended in water and forming a vehicle that carries a pigment such as titanium dioxide. These paints harden quickly as the water evaporates and the emulsion consolidates. Latex paints have gained favor because of their ease of application, rapid drying, lack of odor, and quick cleanup of brushes with soap and water rather than with the traditional paint thinner.

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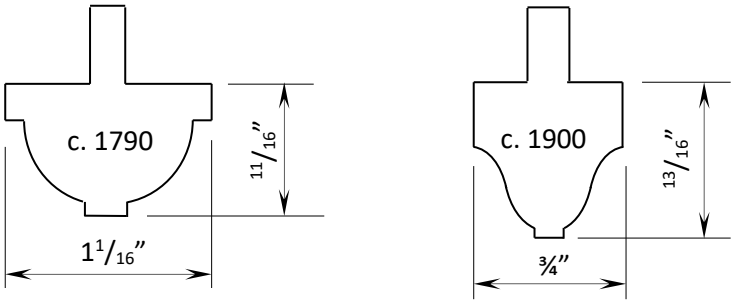
[13] A. J. Panshin and Carl de Zeeuw, *Textbook of Wood Technology*, Vol. I, (3rd ed., New York: McGraw-Hill, 1970), pp. 371-4.

The application of latex paints over older coats of oil-based paints can cause adhesion problems, especially in the presence of excessive moisture in the wood. The physical behavior of oil-based and water-based paints differs, and the incompatibility of the two materials often causes or contributes to failure. Older and newer paints often have different rates of expansion and contraction under changing temperatures. The surface tension that results can cause the overlying modern paints to break the bond of the underlying older paints with the wood, causing the type of failure seen in the photograph above. The problem is compounded when the underlying wood itself is subjected to swelling and shrinkage because of excessive and changing moisture content.

Repainting the building. As stated below under "Recommended Preservation Approach," this report recommends the preservation of all clapboards that remain in sound condition and can be prepared to accept new coats of paint. Clapboards in areas of extreme deterioration will be replaced by new quarter-sawn clapboards. Both old and new clapboards will require painting to protect them against saturation from rain, water infiltration through joints, and exposure to damaging ultraviolet radiation from sunlight. As outlined below, the recommended painting regimen recommends that all new clapboards be back primed and face primed before installation. All cuts will be end primed. The entire building will be primed with a full coat of oil-based primer. The building will receive a finish coat of an exterior acrylic latex house paint such as Sherwin-Williams "Durations" exterior house paint. This paint treatment will protect both the historic and the new clapboards once stable moisture conditions in the building have been attained.

Window sashes. The window sashes of the Webster Meeting House are among the most important and character-defining features of the building. Their care and preservation has been made part of a cyclical program to maintain the outer envelope of the building. The spring of 2020 saw the beginning of a program to conserve the window sashes.

As seen in the photographs on the preceding pages, both the first and second stories of the building are lighted by 16-over-12 sashes. The attic windows are 12-over-12. Almost all the sashes have the late muntin profile shown below at the right, but one set, to the north of the reading desk or pulpit on the second story, has muntins of an eighteenth-century profile and appears to survive from the original construction of the building.



Although most sashes in the building appear to date from the restoration of 1902, the building retains one pair of sashes that are much older, as shown above. Like the window casing around the attic window on the south gable, this set of sashes provides important evidence of the original architectural character of the building and should be carefully preserved

The sashes throughout the building appear to have been generally well maintained on the interior since the building was restored in 1902. The Webster Historical Society solicited bids for window conservation through a formal Request for Proposals distributed in June 2019. The society received bids from two window conservators with extensive experience in New Hampshire. As assessed by the two contractors, the window sashes of the Webster Meeting House suffer from paint loss and loss of glazing compound on the exterior, and have been frozen in place by paint that has rendered them immovable. On the interior, the sashes have suffered from condensation that has damaged their paint but has not yet resulted in visible decay of the wood.

The society entered into an agreement for window conservation with the low bidder in early 2020. This project will remove the sashes to a shop a few at a time (temporarily filling the window openings to exclude weather); remove all glazing compound (putty); temporarily remove glass; remove all deteriorated paint and re-prime each sash; re-set the historic glass (replacing any broken panes) with glazier's points and Sarco Type M glazing compound; re-paint each sash with a high-quality paint such as Sherwin-Williams "Durations;" re-set each sash in its original position, securing it with properly designed interior window stops to replace the current recent stops; and adjust each window for proper functioning. These windows have fixed upper sashes and non-counterbalanced lower (movable) sashes.

With moisture in the building controlled by the installation of a vapor barrier beneath the structure in December 2019, the conserved sashes should no longer suffer from condensation on the interior. The high-quality paint used on both exterior and interior of the sashes will provide the longest possible paint life for the conserved windows.

RECOMMENDED PRESERVATION APPROACH

As described in the Appendix to this report, treatment of the Webster Meeting House is following the *Secretary of the Interior's Standards for Preservation*. Physical treatment of the exterior clapboards and trim of the building, and of the windows, is based on a study and budget submitted by Bedard Preservation & Restoration, LLC, submitted on May 7, 2020 and included in the Appendix. This study estimates that approximately 90% of the historic clapboards on the north, east, and south sides of the building can be preserved. On the south side, severe deterioration (shown on page 21 of this report) will necessitate the replacement of all of the clapboards, which are in disintegrating condition, with new radially-sawn clapboards.

Moisture issues were identified in the autumn of 2018 as excessive and as the apparent root cause of the chronic failure of paint on the structure, the deterioration of areas of clapboards and exterior trim, and of the presence of powder post beetles in the lower frame. For this reason, planning for intervention in the building has concentrated first on understanding and correcting the problem of excessive moisture in the building fabric.

As shown previously, the Webster Historical Society responded to the presence of excessive moisture by charting the moisture content in the clapboards and sheathing for a full year in order to gain some understanding of the annual cycle of moisture in the cladding of the structure. This twelve-month period of monitoring was followed by the professional installation of a heavy vapor barrier covering the basement floor and walls in December 2019, followed by further monthly monitoring to determine the efficacy of this technique of moisture control.

Specifications for conservation of the building's window sashes, representing the first component of actual preservation work on the building, mandated the application of the *Secretary of the Interior's Standards for Preservation*.

The proposed treatment of the clapboards and exterior trim is likewise based on the *Secretary of the Interior's Standards for Preservation*. Except on the badly deteriorated southern side of the building, it is estimated that about 90% of the existing historic clapboards can be retained. Where sections of new clapboards are required on these three sides, new quarter-sawn (radial sawn) clapboards of "extra clear" grade will be applied using hot-dipped galvanized common nails.

On the southern elevation, all old clapboards will be replaced by quarter-sawn (radial sawn) clapboards of "extra clear" grade, using hot-dipped galvanized common nails.

This report recommends full repainting of all four sides of the building. All new clapboards will be pre-primed on back and front. All end cuts will be primed as clapboards are being installed. After proper preparation, both historic and new clapboards will receive a full coat of oil-based primer. This will be followed by a full coat of a high-quality exterior acrylic latex house paint such as Sherwin-Williams "Durations" exterior house paint, the same paint that will have been used previously on the exteriors of the conserved window sashes.

Applicable Preservation Briefs

10. Exterior Paint Problems on Historic Woodwork

39. Holding the Line: Controlling Unwanted Moisture in Historic Buildings

47. Maintaining the Exterior of Small and Medium Size Historic Buildings

Conservation of the window sashes of the Webster Meeting House, expected to be completed in 2020, will have been guided by:

9. The Repair of Historic Wooden Windows

APPENDIX

Secretary of the Interior's Standards for Preservation

Photographs of the Building

Floor Plan

Character-defining Features

Summary Report on the Condition of Clapboards and Exterior Trim [Bedard Preservation and Restoration]

Cyclical Maintenance Program

SECRETARY OF THE INTERIOR'S *STANDARDS FOR PRESERVATION*

"Preservation" is defined as 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 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.

1. A property will be used as it was historically, or given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.

2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials, or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.

3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.

4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

8. Archaeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

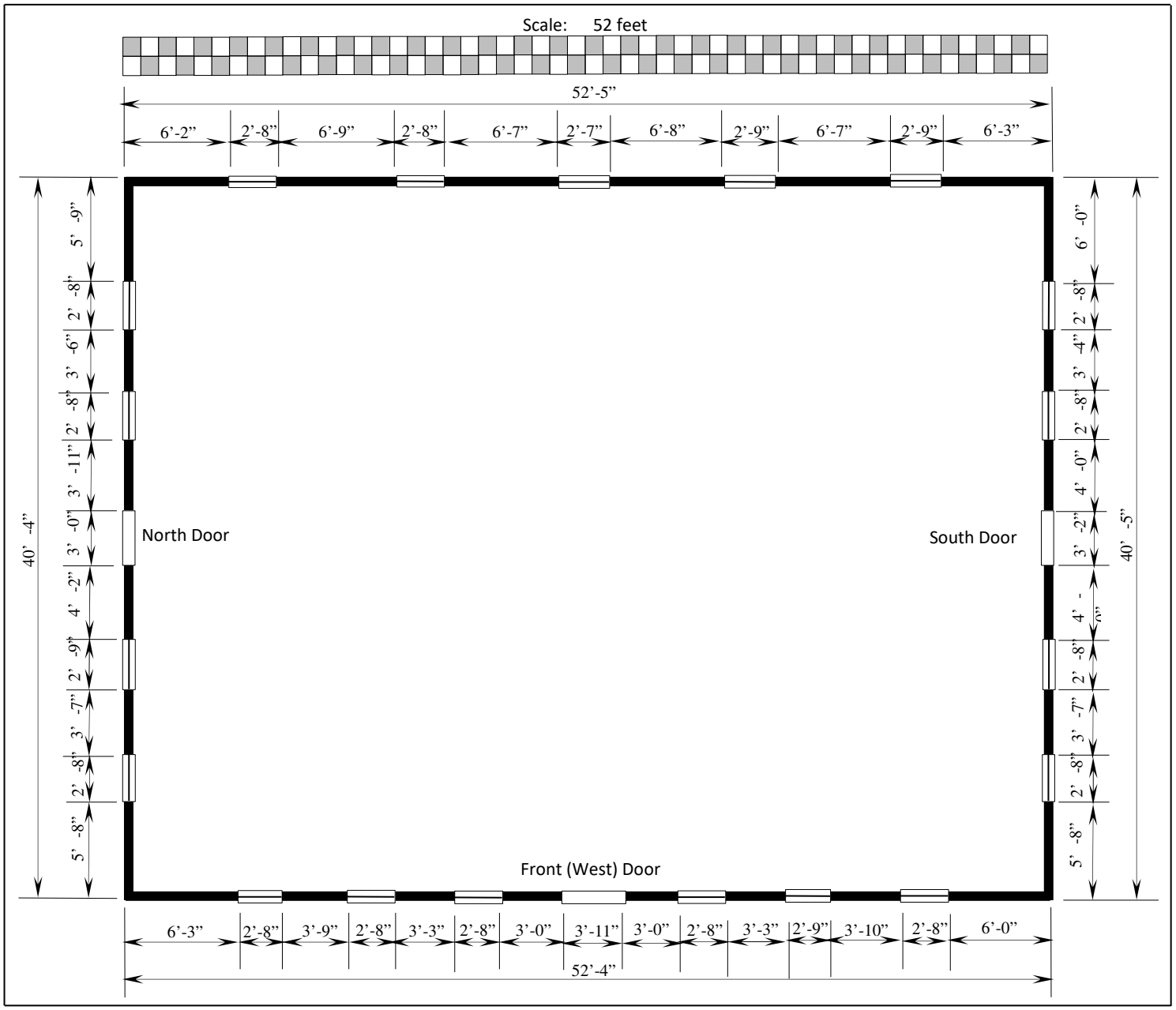
PHOTOGRAPHS OF THE BUILDING

Webster Meeting House: façade (western elevation) and southern elevation. Camera facing northeast.

Webster Meeting House, south (side) and east (rear) elevations. Camera facing northwest.

Webster Meeting House: Town Hall on first story, showing original gallery columns and staircase enclosure (rear). Camera facing northwest.

Webster Meeting House: Second-story chapel with reading desk at rear center. Camera facing southeast.


Scale: 52 feet
52’-5”
6’-2”
2’-8”
6’-9”
2’-8”
6’-7”
2’-7”
6’-8”
2’-9”
6’-7”
2’-9”
6’-3”
40’ -4”
5’ -9”
2’ -8”
3’ -6”
2’ -8”
3’ -11”
3’ -0”
4’ -2”
2’ -9”
3’ -7”
2’ -8”
5’ -8”
North Door
South Door
40’ -5”
6’ -0”
2’ -8”
3’ -4”
2’ -8”
4’ -0”
3’ -2”
4’ -
2’ -8”
3’ -7”
2’ -8”
5’ -8”
Front (West) Door
6’-3”
2’-8”
3’-9”
2’-8”
3’-3”
2’-8”
3’-0”
3’-11”
3’-0”
2’-8”
3’-3”
2’-9”
3’-10”
2’-8”
6’-0”
52’-4”

CHARACTER-DEFINING FEATURES OF THE WEBSTER MEETING HOUSE

The identification of the character-defining features of historic properties like the Webster Meeting House is a critical first step in planning for its future life. Before applying *The Secretary of the Interior's Standards,* it is important to understand what physical features of the building help to tell the story of its history and architectural importance. The *Secretary's Standards* recognize the importance of maintaining these original features and spaces while rehabilitating the property for a compatible use and preserving it for a long future life.

Recognizing that a property may have original features throughout that are all "character defining," the *Standards* allow for the categorization of the features into primary and secondary spaces and features. Primary spaces and features are those that should not be changed or removed unless they are beyond repair (at which time they should be replaced to match the old in design, color, texture and materials). Secondary spaces and features are those that can be altered *when necessary* to accommodate compatible change that allows new and continued use of the property.

Further, the guidelines of the *Secretary of the Interior's Standards* state that "identification, retention, protection and repair" should be given first priority in every rehabilitation project. Interior spaces are not only defined by their finishes and features, but also by the size and proportion of the rooms themselves and their function in the historic use of the space. Distinctive features and finishes should be retained as much as possible in primary interior spaces, whereas extensive changes are more acceptable in the secondary interior spaces that service the primary or functional portion of the building. This does not mean that secondary spaces are insignificant or that all character-defining finishes can be removed from secondary spaces; rather, it means that more leeway is given for change needed to accommodate modern use in these areas.

Normally, only original features of a building, and alterations or additions more than fifty years old, are considered to be character-defining elements of a historic building under the evaluation criteria of the National Register of Historic Places and in the application of the *Secretary's Standards for the Treatment of Historic Properties*.

The Webster Meeting House was restored in 1902 according to the standards of the time, making it a landmark in the history of historic preservation in New Hampshire. The Society for the Preservation of the Old Meeting House in Webster, New Hampshire (now commonly called the Webster Historical Society) was formed in 1941 and acquired and moved the building to preserve it in the condition in which it then stood, adding to the building's stature in the history of preservation in New Hampshire. Since 1941, the meeting house has had only the regular maintenance described in the preceding pages of this report. Thus, virtually all the exterior and interior features of the building would be defined as character-defining. One exception, a ramp leading to the south door in recent years in deference to the Americans With Disabilities Act, was removed in 2019 due to deterioration and noncompliance with code. Its replacement, proposed for installation in 2020, will clearly not be regarded as character-defining.

Character-Defining Features of the Webster Meeting House			
Primary Features	***Secondary Features***	***Contributing Non-Historic Features***	***Non-Contributing Non-Historic Features***
• *Building frame and sheathing* • *Moderator's enclosure on the first story, including remnants of the original pulpit* • *Second-story framing and all attributes of the church room of 1844, including pews and desk (pulpit)* • *Features of the restoration of 1902, including clapboards, window sashes, and the bronze tablet over the front door* • *Features of the building's relocation in 1941*	• *Restored front (western) double-leaf doors and door casings* • *Granite underpinning above grade (some is not original)*	• *Concrete foundation of 1979*	• *Handicapped ramp at the south entrance* • *Electrical service (1970)* • *Asphalt shingled roof (2008)*

May 7, 2020

Summary Report and Proposal for Treatment of the Exterior

Bedard Preservation & Restoration LLC
PO Box 430
Gilmanton, NH 03237

Re: Webster Meeting House

Summary

Clapboards The heavily peeling paint on the clapboards makes it difficult to come up with a definitive amount of clapboard replacements. However, what can be seen and determined is that approximately only about 10% of the clapboards on the west (front) , north gable end and the east sides appear to need to be replaced. In the event that the scraping of the paint for repainting purposes finds an appreciable amount more, I have included an additional 20% as a contingency.

Unfortunately, the damage and rot to the clapboards on the south side of the building comes up to level (50% or more) to indicate that the entire side of clapboards should be replaced.

All of the windowsills show signs of surface splitting (with a few that need more significant repair) and I have included “Abatron Preservation Products” to first consolidate then fill-in the needed areas.

All windows on the first floor level along the shed sides of the building will have lead flashing added to the window headers as well as all windows on the gable ends.

Doors and “water tables” will also receive lead flashing.

Window trim appears to be in reasonable condition throughout with only minor repair needed

Gable end entrance door thresholds are in need of replacement.

All clapboards will be back and face primed. All cuts will be primed as clapboards are being installed.

We will stage the south wall ourselves so that the painter would have use thereby reducing costs.

West side (front)

- Repair/replace water table on either side of front door
- Carefully remove damaged clapboards and “tooth-out” for replacements
- Install lead flashing on all first floor window headers, front door and water table
- Repair all window sills
- Repair all trim as needed
- Back/face prime all new clapboards and prime “end cuts” as being made
- Install clapboards with hot dip galvanized common nails

Cost of labor and materials	$ 3,600
20% contingency	720
Total	**4,320**

North side

- Repair/replace water table and trim boards as needed
- Carefully remove damaged clapboards and “tooth-out” for replacements
- Install lead flashing on all window headers and water table as well as door
- Repair all window sills
- Repair all trim as needed
- Replace door threshold
- Back/face prime all new clapboards and prime “end cuts” as being made
- Install clapboards with hot dip galvanized common nails

Cost of labor and materials	$ 4,000
20% contingency	800
Total	**4,800**

East side

- Repair/replace water table and trim boards as needed
- Carefully remove damaged clapboards and “tooth-out” for replacements
- Install lead flashing on all window headers and water table
- Repair all window sills
- Back/face prime all new clapboards and prime “end cuts” as being made
- Install clapboards with hot dip galvanized common nails

Cost of labor and materials	$ 3,200
20% contingency	640
Total	**3,840**

South side

- Set staging up for complete side
- Strip off clapboards being careful of trim
- Remove existing flashing over windows and doors
- Diagram and photograph shadow lines on sheathing from original “porch”
- Secure existing sheathing by added screws and shim as needed for clapboards
- Install lead flashing over all windows and doors.
- Replace door threshold and door trim as needed
- Repair/replace water table and trim as needed
- Back/face prime all new clapboards and prime “end cuts” as being made

- Install clapboards with hot dip galvanized common nails
- Take down staging after exterior painting contractor utilizes it to save money.
- Remove all debris from site and clean up.

Cost of labor and materials **$ 28,240** utilizing quarter-sawn, extra clear cedar clapboards

Cost of labor and materials 26,240 utilizing spruce quarter sawn, extra clear spruce clapboards

TOTAL PROJECT COST $ 41,200

QUOTE FOR PAINTING THE EXTERIOR OF THE WEBSTER MEETING HOUSE

Webster Meeting House, 1220 Battle St, Webster, NH

May 7, 2020

- East and west sides, north gable end: scrape loose paint, prime entire surface with oil-based primer, caulk seams and patch holes, apply one coat Duration as topcoat.
- South gable end: caulk seams, patch holes, apply one coat Duration as topcoat to pre-primed, new clapboards.
- South gable end will have staging in place provided by clapboarding crew; other sides will be reached by ladders and lift.

Total labor, materials, and lift rental: $35,000.00

John Thompson
JLT Painting
603-630-4311

CYCLICAL MAINTENANCE PROGRAM

As noted throughout this report, the Webster Meeting House has been subjected to regular inspection and evaluation of its condition since December 2018, with special focus on identifying the sources of excessive moisture and reducing moisture content in the building to beneficial levels. Surveillance and intervention will continue through an indefinite future to ensure the longevity of this landmark of local history and historic preservation.

In February 2020, the trustees of the Webster Historical Society appointed Society member Mark Kimball as chair of the Buildings and Grounds Committee. Mr. Kimball took charge of applying *Bora-Care*™ boron solution to the first floor girders and sleepers to treat signs of powder-post beetle infestation and prevent re-infestation. He subsequently superintended the installation of a heavy vapor barrier, composed of a 90-mil crosslinked polyethylene sheeting, on the basement floor and walls in December 2019. He has adjusted the exterior grade around the building to drain water away from the eastern foundation and has superintended repairs to the asphalt shingled roof. The electrical service of the building has been inspected by a licensed electrician and electrical receptacles have been changed to accord with current electrical codes.

By identifying and focusing on these areas of concern, these efforts have laid the groundwork for a regular program of cyclical maintenance. This program will continue after the exterior skin of the building, including its window sashes, clapboards, and exterior trim, has been conserved under the principles of the *Secretary of the Interior's Standards for Preservation*.

The program of cyclical maintenance for the Webster Meeting House will include, but not be limited to:

- Regular inspection of all exterior surfaces to ensure their proper condition.
- Regular monitoring of moisture content in the exterior and interior of the building.
- Inspection for signs of vermin or mold on interior surfaces and mildew on exterior paint.
- Periodic inspection of the condition of the vapor barrier in the basement.
- Maintenance of proper grading around the building to draw roof water away from the foundation.
- Periodic inspection of the attic to check for roof leaks and to ensure that the roof trusses, roof sheathing, and attic windows remain in good condition.
- Inspection and repair of a new handicapped ramp to be added at the south entrance door and maintenance of barrier-free access to the first story of the building (see photograph on page 38 of this report).
- Maintenance of exterior finishes of the building, including paint, flashings, thresholds and window sills, and window glazing.
- Protection of museum artifacts and other collections that are stored and exhibited in the building; regular cleaning of exhibit cases, floors, and pews in the church room.