MIDDLETON OLD TOWN HALL
EXISTING CONDITIONS ASSESSMENT

REVISED May 16, 2013

PREPARED FOR:

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INTRODUCTION

The Middleton Old Town Hall was originally built in 1795-1796, and was moved to its present location in 1812. At that time, it was raised and placed above a first story of another meetinghouse, creating a banquet hall that is still in regular use. From the outside, the building is large and old, but otherwise non-descript; the banquet hall below could be interchanged with many a New England church basement. Upstairs in the sanctuary, however, is one of the best preserved examples of meetinghouse architecture and interior decoration in New England. A stunning wraparound mural adorns the walls, painted by John Avery in 1841. The original box pews are beautifully crafted and hand-numbered by the muralist. An addition off the back of the building, currently housing the kitchen, was once the Corner School, moved to its current location in 1950. Unlike the meetinghouse, the schoolhouse interior was not preserved, but the timber frame itself is an excellent example of early 19th century vernacular building. As a whole, the building is truly an historical gem and well deserves its New Hampshire Preservation Alliance designation as one of the "Seven to Save." Beyond its unique architectural significance, this building is the social center of this small community. Currently, visitors cannot access the meetinghouse on the second floor due to lack of adequate structural support, and the fragility of the murals. Given the frequency with which the banquet hall is still used, it is a shame that more people cannot experience the time capsule upstairs. This building is threatened by decay due to continued water penetration from surrounding grade. If decaying conditions in the undercarriage are allowed to continue, very soon no one will be able to use the banquet hall at all.

Captioned photos will be included within the text of this report; additional photos have been provided to the client on a CD. Color-coded frame drawings will be provided separately due to large file size. Please Glossary in Part Four for clarification.

PART 1: HISTORY AND DEVELOPMENT OF THE PROPERTY
from NH State Register:

ARCHITECTURAL DESCRIPTION
The Middleton Old Town Hall is simple in structure, rectangular in shape, and comparative to similar New Hampshire town halls of this era, although perhaps more unusual in its creation. The 2nd floor meetinghouse, built in 1795, was moved in 1812 from a location approximately one mile away and raised on top of a first floor meeting hall. In 1950, the one-room schoolhouse known as The Corner School was closed and eventually was moved to the Old Town Hall to create a kitchen area off the back of the building. Running water was installed in 1955. In approx. the mid 1900s, another small structure was constructed to the west side to accommodate utilities such as a furnace and a concrete vault to house town documents was added to that. There is an exterior brick chimney on the west side of the building. At some point in the late 1900s, a support post for the second floor is said to have been removed, greatly diminishing the usability of the 2nd floor meetinghouse. The structure has had basic maintenance but needs structural work; the murals according to historian and author Linda Lefko, are in need of immediate attention.

STATEMENT AND PERIOD OF SIGNIFICANCE

The Middleton Old Town Hall was once part of a thriving "four corners" on a prominent stagecoach road from the Seacoast to Lake Winnipesaukee and on to Sandwich, making it significant to the town and to the state. This structure is all of what remains of several buildings of that era, including two taverns and a hotel. Now flanked by a modern municipal building and modest church, this structure represents the early history of the town of Middleton. That the townspeople, through the Old Home Association, have maintained it for this long attests to its significance to the town.

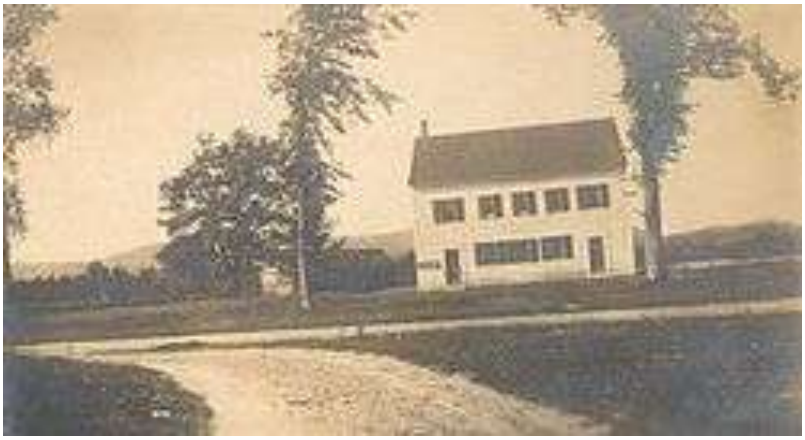


Photo 1: Middleton Old Town Hall, 1907

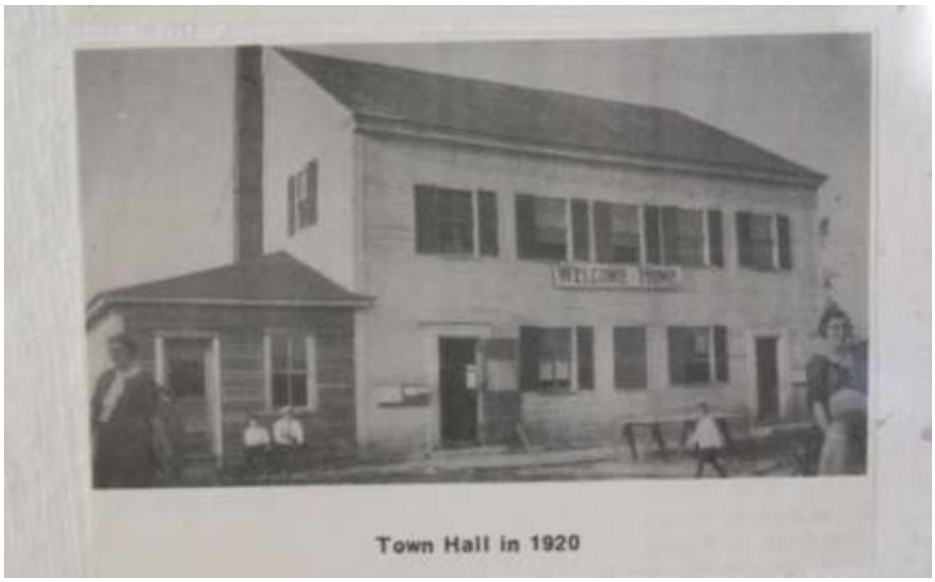


Photo 2: Middleton Old Town Hall 1920

CHRONOLOGY OF SIGNIFICANCE

1812 when the meetinghouse was moved to its current location and the first floor was built underneath.
1830 and beyond, when King's Highway was a stagecoach road from Dover to Sandwich and the Town Hall was a significant structure at the Four Corners spot.
1841 when John Avery painted the murals in the meetinghouse
The structure continues to be of significance to the current townspeople.

PART 2: EXISTING CONDITIONS ASSESSMENT

2.1 EXTERIOR SIDING AND TRIM

Photo 3: Middleton Old Town Hall September 2012

Overall, exterior siding and trim appears to be well-maintained (Photo 3). Raking fascia, crown, and returns are consistent with vernacular trends of the early 1800s, when the meetinghouse was moved. The gabled door canopy over the main entrance is not consistent with this style and is not visible in the photo from 1907. Currently, however, the canopy protects an entrance ramp which allows access by visitors with limited mobility and ought to be retained.

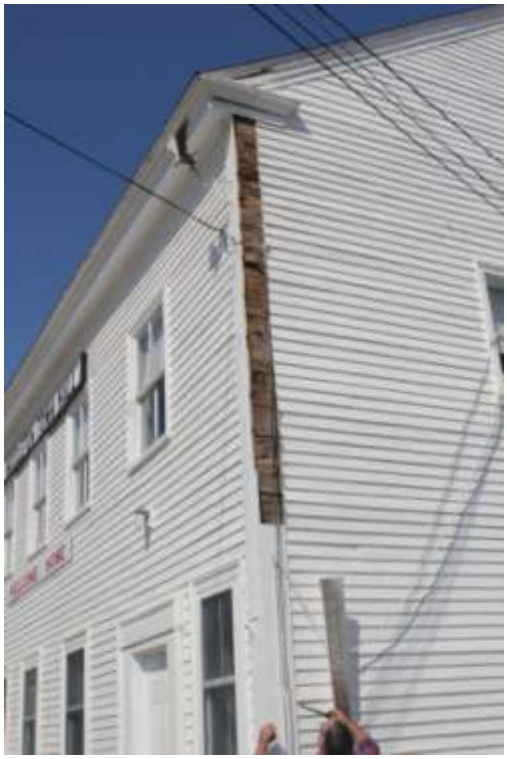


Photo 4: Corner board removed (roughly) by phone company

The building is roofed with asphalt shingles. The architectural shingles on the main building are in good condition, those on the 1910s addition are in excellent condition, and the 3-tab asphalt shingles on the schoolhouse are adequate, but will need to be replaced within 10 years.

Alterations to the window and door schedule have been minimal given the continuous usage of this building. Historic photos show that the easternmost window on the south eave was added after 1920 (Part 4.5, p.12, Photos 1, 2). The east door is still in place, but does not appear to be accessible from the inside, which is currently a storage room. Making this door functional again, and re-installing the set of stairs that were originally behind it, would provide a second egress from the meetinghouse.

In 2012, the phone company removed a corner board on the southeastern corner of the building (Photo 4). Currently, the original sheathing is exposed, and the corner board ought to be replaced in kind.

2.2 UNDERCARRIAGE AND GROUNDS

See Structural Drawings [Part 4.5] p.14

The meetinghouse undercarriage is made up of hand-hewn carrying timbers, nominally 9" x 10", that run eave to eave, and 6"- 8" half-round floor joists, 3' on center. They are cogged into the carrying timbers. The carrying timbers are supported along their span by a series of "footers" which include poured concrete and concrete block footers, pressure-treated posts, and the occasional concrete block pier. The footers have been coated in cement on which water condenses in a moist environment. The cement is in direct contact with the carrying timbers, causing them to rot.

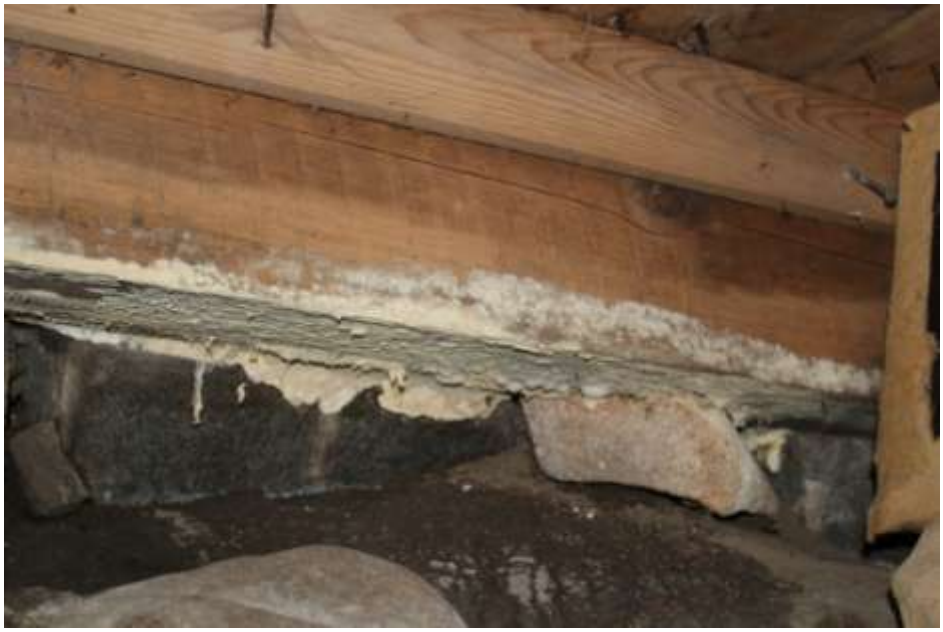


Photo 5: White mold on sill

One carrying timber, in Bent Five (Part 4.5, p.10) has been replaced by pressure-treated 2x10s, and many of the half-round timbers have been replaced by milled 4x6s. The front eave sill (Part 4.5 p.12), has been repaired multiple times, and is now composed of a patchwork of timbers that show no evidence of any tension connections, much less appropriate joinery. All of the carrying timbers, including the pressure-treated replacement, and many of the floor joists are showing signs of white mold (Photo 5).

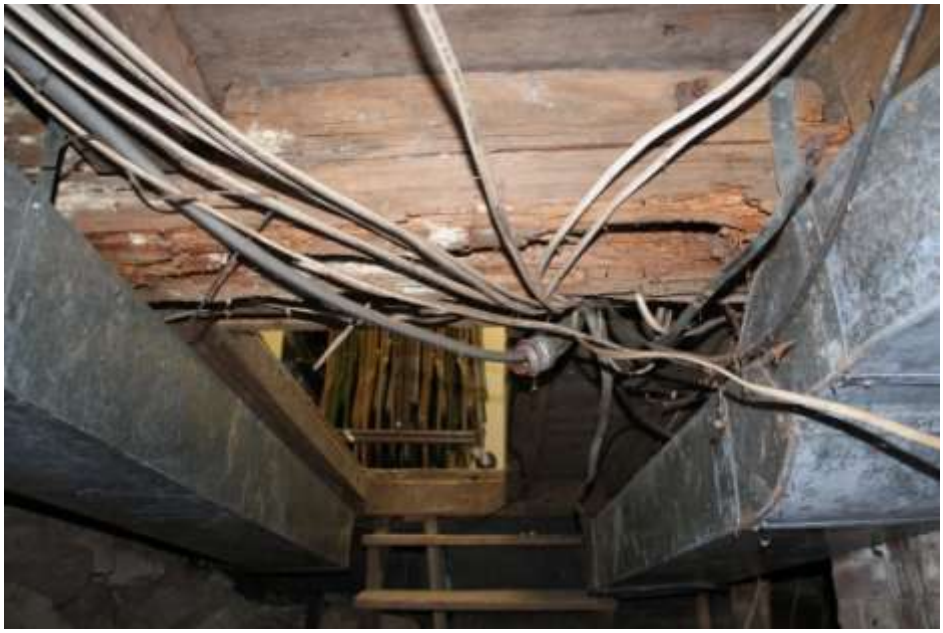


Photo 6: Rotten sill, Bent Six

Photo 7: White mold and rot on carrying timber

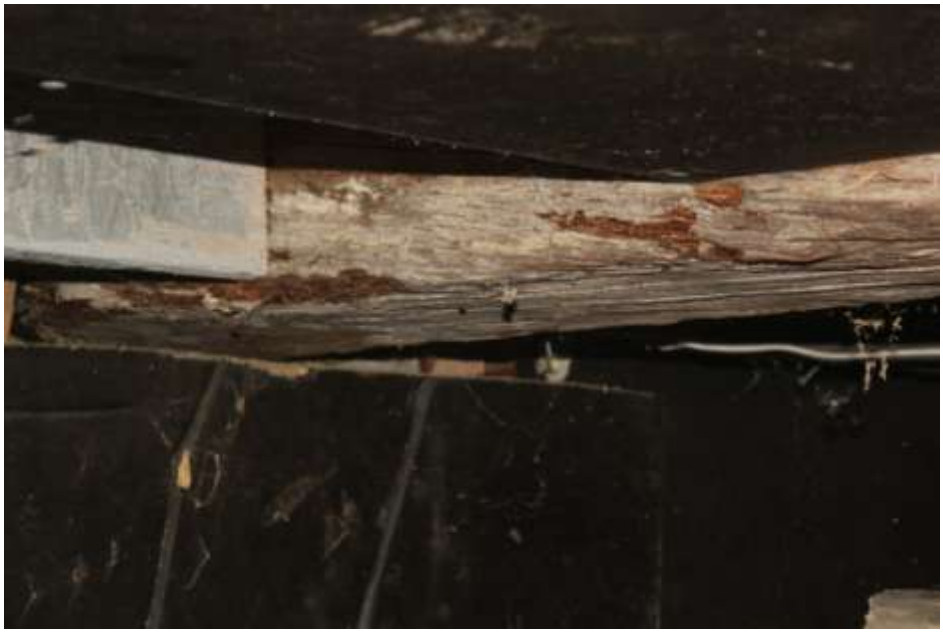


Photo 8: White mold and rot on carrying timber

Rot has claimed the sill in Bent Six (Part 4.5, p.11), and the sill is crumbling at the site of the basement hatch (Photo 6). White mold has rotted the front halves of the carrying timbers in Bents Two, Three and Four (Photo 7, 8). Serious mold deterioration has been observed in the north sill between Bents Four and Five. Mold has been observed on many of the joists that we could see, but most of the joists are obscured by insulation, especially in the Bay between Bents One and Two (Part 4.5, p.14). For this reason, even though we were able to observe extensive mold damage, we do not believe we saw all of it, specifically in the sill of Bent One. Unfortunately, insulation between the joists, tight to the floor, can contribute to damage of the floor frame. By restricting air flow, the insulation captures moisture directly against the frame, and creates the ideal environment for white mold and other causes of rot. We recommend instead insulating the ground and foundation walls, and lining with a moisture barrier. We also recommend installing a fan to control air circulation. A fan is often more energy efficient than an open vent in the foundation wall, because you can use a humidity sensor to turn the fan on and off automatically, and can better control heat loss.

The granite foundation is in need of moderate repair. One stone on the east gable has fallen into the crawl space, and a mason experienced with preservation work should inspect the rest of the foundation walls for instability. Currently, much of the foundation is obscured by sheets of insulation, which should be removed as part of Phase 1 (Part 3.1).

Photo 9: Plow and snow bank adjacent building

We did not observe any forms of functional drainage around or under the building. The expanse of asphalt and its proximity to the building, in addition to the poorly vented concrete block building, do not allow rainwater and snowmelt to drain away from the building. The only source of ventilation was where a large piece of the granite foundation had fallen into the basement, a blessing in disguise. Additionally, the snowmelt created by the proximity of the yearly plow pile is not helping matters (Photo 9). This lack of ventilation and drainage is causing moisture to accumulate in the basement, and accelerating the spread of white mold.

In order to improve drainage, the asphalt abutting the building ought to be removed to a minimum distance of 6 ft, and the landscape re-graded to direct water away from the crawl space. Re-grading plans should be reviewed by an archaeologist and follow the Secretary of the Interior's Guidelines for the Treatment of Historic Properties. Artifacts found within the re-grading area should be documented and removed. The establishment of proper drainage is integral to the survival of this building.

2.3 BANQUET HALL

Structural drawings [Part 4.5] pp. 14, 15

According to the state register, quoted above, the first floor of this building was originally a "first floor meeting hall." Within the framing itself, we have yet to see hard evidence for this claim, but the repair process will be an ideal time for in-depth investigation of the framing between floors. The first floor now consists of a banquet hall, stage, storage rooms and a single stairwell. The second floor, composed of the 1795 meetinghouse, is supported on what were the original meetinghouse sills.

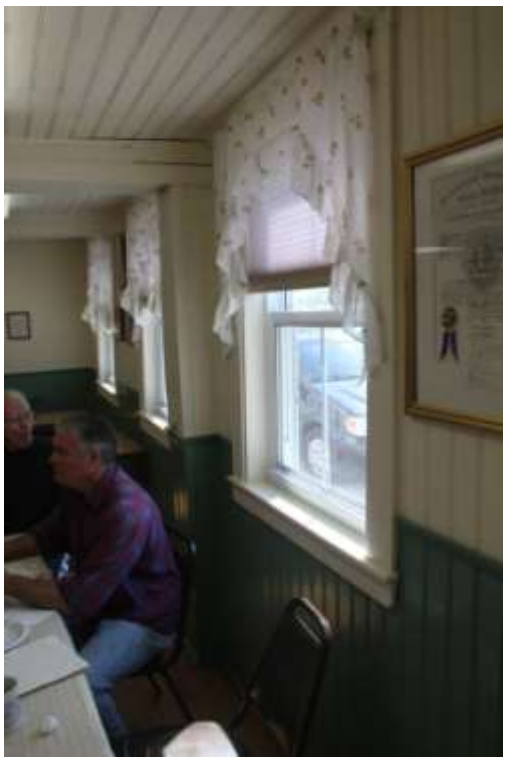


Photo 10 and Photo 11 Tapered gunstock posts in banquet hall, encased in beadboard.

Tapered gunstock posts line the south, west and north walls of the banquet hall (Photos 10, 11). Gunstock posts are typical of 18th and early 19th century timber framing, and are specifically used in conjunction with the English tying joint of that period. These posts are characterized by their taper from top to bottom, the additional material at the top accommodating the complex joinery where the post connects to both plate and tie beam. In each bent is a pair of gunstock posts that are connected by a tie beam that runs from eave to eave. These tie beams support the original meetinghouse floor, and, like the posts, are cased in beadboard. The ties vary in width, but even the narrowest appears to be 11 ½" wide. Two summer beams, or what may be truncated summer beams, run above these ties. It is unclear what their dimensions are, but given the size of the casing, they appear to be wide, upwards of 12 inches, and relatively short, fewer than 7 inches. The bent drawings, and second floor framing drawings, reflect our best conjecture of this configuration (Part 4.5, pp. 6-11, 15). More invasive investigation will be required during repair Phase II (Part 3.2) in order to confirm joinery between first floor posts, first floor tie beams and original meetinghouse undercarriage.

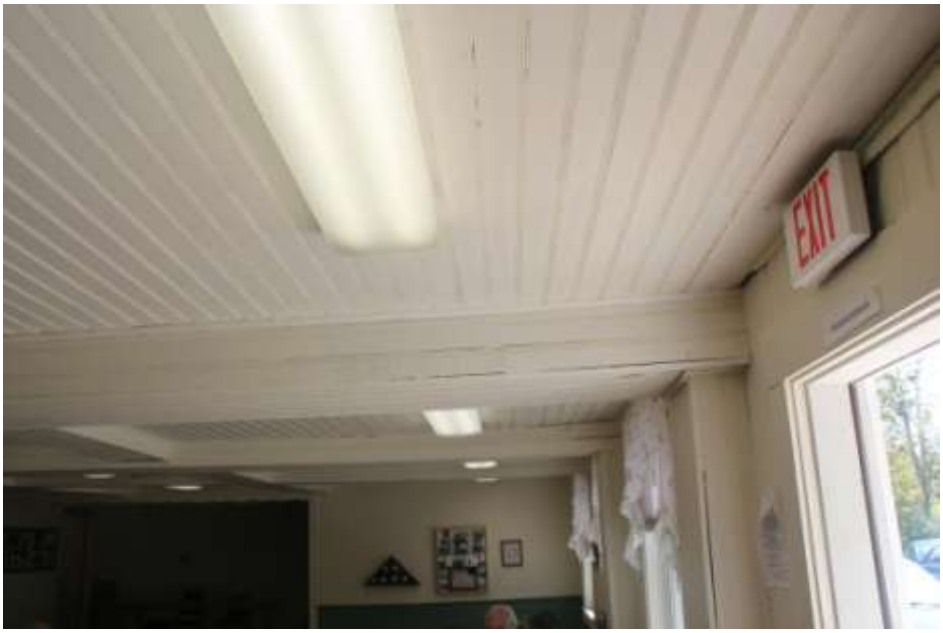


Photo 12: First floor tie beams sagging, opening joints in beadboard.

These first floor tie beams, and summer beams are sagging visibly (Photo 12). In the past, temporary posts were employed when there were functions upstairs, but without removing the beadboard, it is difficult to tell whether these temporary posts were properly engaged with the framing. There is a single center post at Bent Five (Part 4.5, p.10). Given the span and performance stage, we recommend that this post be replaced by two posts, and that similar posts be installed beneath second floor girts in Bents Three (Part 4.5, p.8) and Four (Part 4.5, p.9).

Photo 13: Box Pews and sanctuary floorboards

Floor joist layout of the second floor/original meetinghouse was determined by examining floorboard nailing (Photo 13). Floor joists are 6 ½" x 6 ½" laid out 3' on center.

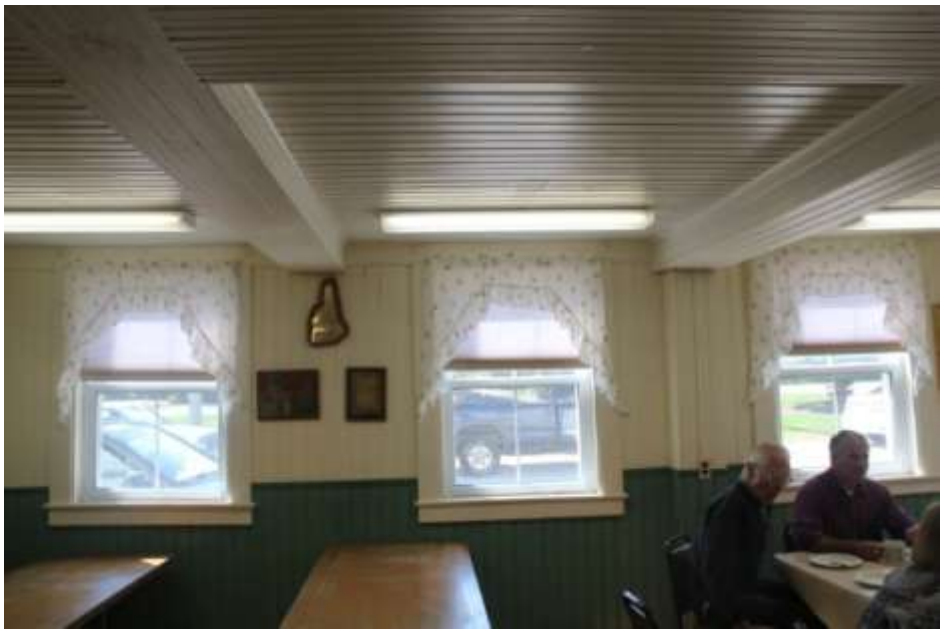


Photo 14: South post in Bent 3 is hacked back or missing entirely

The post on the south end of Bent Three is either missing, replaced, or has been hacked back (Part 4.5, p.8, Photo 14). Given the direction of cracking in the mural, the south post in Bent Four (Part 4.5, p.9) is probably also deteriorated in some way and may need repair. Given the condition of the south sill, it is likely that it will need a foot repair. The section of original meetinghouse sill that runs above these posts may also be deteriorated in some way, causing a gradual sag in the second floor (Part 4.5, p.12). Currently, it is impossible to inspect without removing flooring, ceiling or sheathing, but it ought to be inspected during Phase 2 (Part 3.2) of the repair process.

The north wall upstairs visibly drops sharply from the northeast corner at Bent One to Bent Two (Part 4.5, p.13), indicating damage to the post below (Part 4.5, p.7). This post is hidden by the partition wall that divides the stairwell from the banquet hall. In the banquet hall, the adjacent post in Bent Three appears to be twisted and leaning slightly in its casing (Part 4.5, p.8). The north sill below this portion was inspected, and did show white mold on its interior surface, but did not have the extensive damage observed elsewhere (Part 4.5, p.14). The problem may originate with the portion of original meetinghouse sill that runs above these posts between Bents Two and Three (Part 4.5, p.13).

There are two storage rooms located on the east end of the banquet hall. There was no evidence indicating the rooms were original and there may be structural supports hidden within their North-South partition walls. The southeast storage room used to have a set of stairs along its east wall which could be restored, and used for a second fire egress from the meetinghouse.

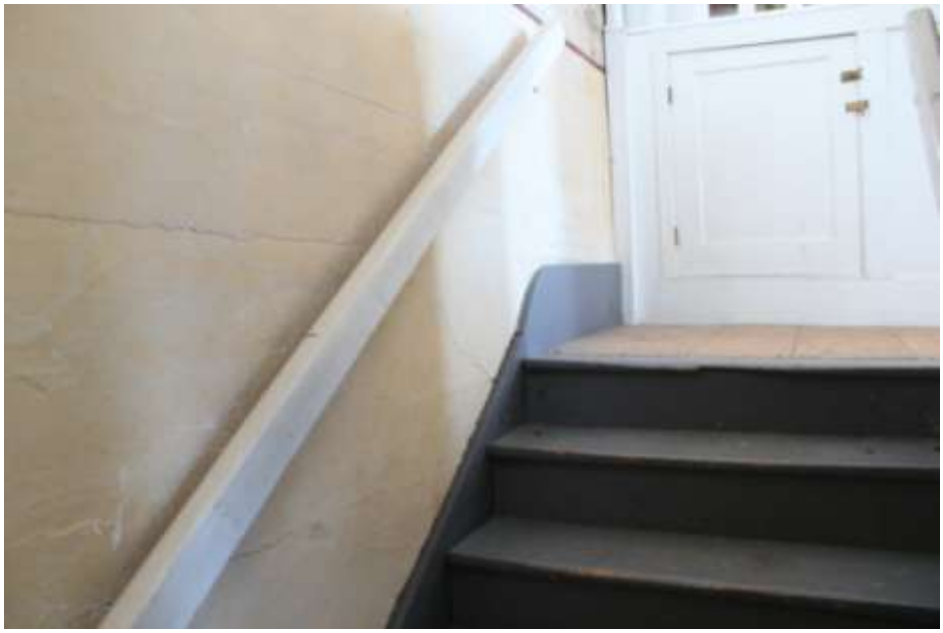


Photo 15: Existing meetinghouse stairs on west eave wall. Note change in pitch of baseboard from stairs to second floor.

There is evidence for a second staircase upstairs in a truncated baseboard to the south of the front podium. When the meetinghouse was moved it appears that they installed symmetrical staircases on either side of the podium. The angle of the remaining baseboard indicates that the stairs used to be much steeper (Photo 15). In order to comply with contemporary building code, a second egress will need to be added to the meetinghouse. It would be historically appropriate to place them in the Southeast corner where there were stairs originally. In order for the stairs themselves to comply, they will need to make at least one turn, similar in layout to the existing stairs.

2.4 CONCRETE VAULT

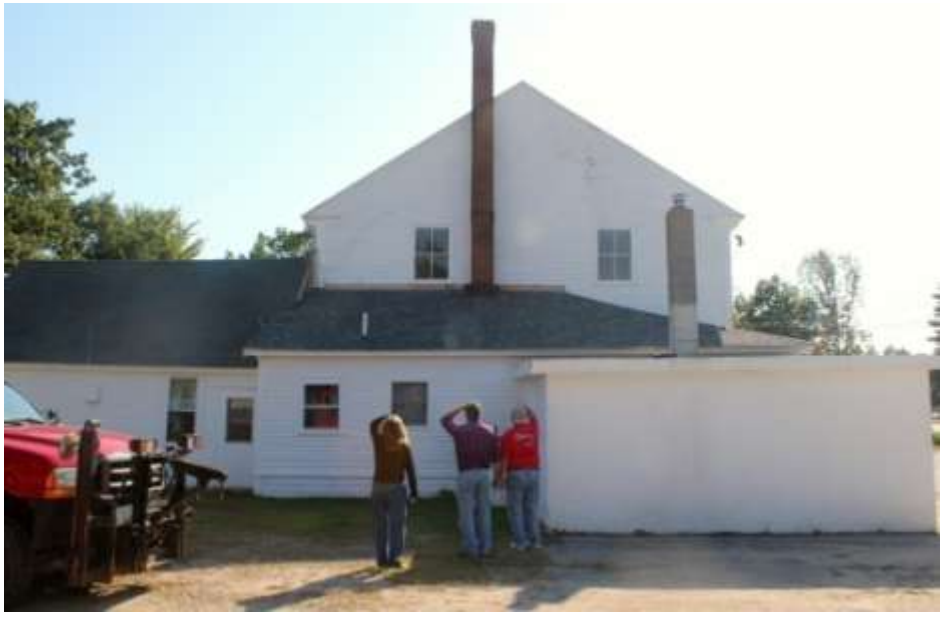


Photo 16: West Gable, with concrete vault in foreground

A concrete vault was added to the west gable in the mid-1900s in order to house town documents (Photo 16). These documents are no longer stored there, and the vault now mostly stores moisture and mold spores. Built well after this building's period of historical significance, the concrete vault was an unfortunate addition to this historic property. Its design and construction in no way emulates a building that has long served as a center of the community. But the building's negative impact is far more than aesthetic. The flat roof collects run-off from the bathroom addition, and moisture condenses and accretes on the concrete block. The lack of ventilation, in combination with poor drainage, is at the root of the white mold problem in the building's undercarriage.

There are a number of reasons that it will be more costly to repair this building than to rebuild a storage facility of similar size. Primarily, we don't believe it possible to vent the building in such a way that it stops contributing to moisture problems within the building. Secondarily, additional drainage and grading around the main building will work more effectively with that portion of the building mass removed.

Lastly, I want to reiterate that, due to the mold problem, retaining the concrete addition will have a negative effect on the rest of the building, not a neutral one. It ought to be measured, photographed thoroughly and carefully demolished to prevent damage to the adjacent structure and any hidden artifacts.

2.5 LIBRARY, BATHROOM ADDITION

Adjacent to the meetinghouse is a stud-framed, hip-roofed addition that was built sometime between 1907 and 1920 (Photos 1, 2). In contrast to the concrete building, locating the bathrooms in the 1910s addition is good preservation practice, as it protects the historic building from the moisture, and invasive plumbing.

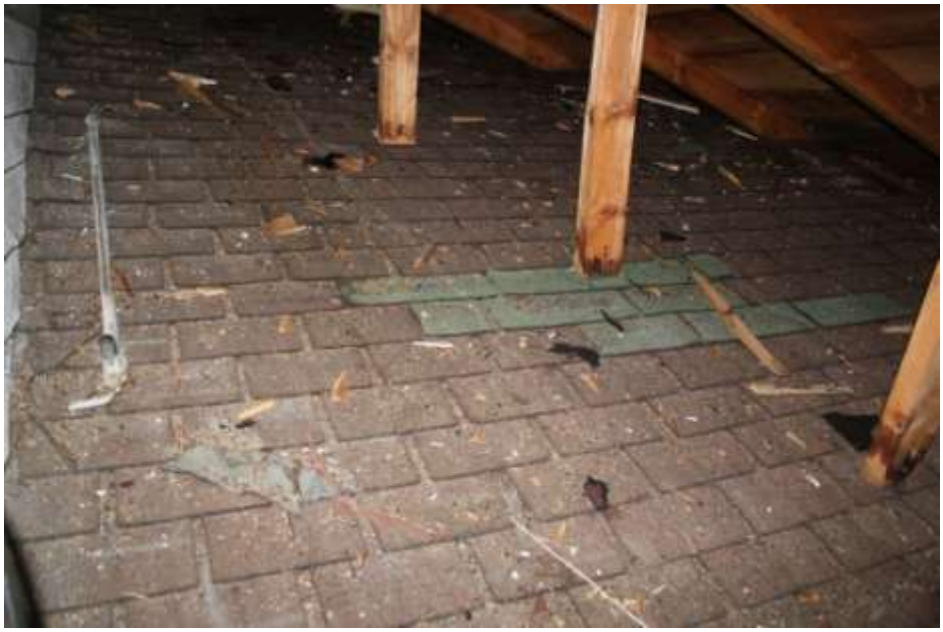


Photo 17: Bathroom addition roof, from schoolhouse attic

The building originally had a hip roof, and in 1950, when the Corner School was added to the rear of the property, a shed roof extension was built on top of the back pitch of the hip roof (Photo 17). The hip roof appears to have been built directly onto the sheathing of the main meetinghouse.

The undercarriage of the 1910s addition is conventionally framed for the turn of the 20th century. In the library, the joists are 2”x6”, 24 inches on center. The hatch in the floor is framed by two 6” x 6”s and a header of 2x6s (Part 4.5, p.14). The 6x6s that create the hatch opening run by the header and connect to a 6x6 running parallel to the West wall that was cut off near the bathrooms and furnace. That end of the 6x6 is unsupported, and continues as a 2x6. The floor framing in this addition is not critical, but ought to be addressed in the later repair phases.

2.6 MEETINGHOUSE

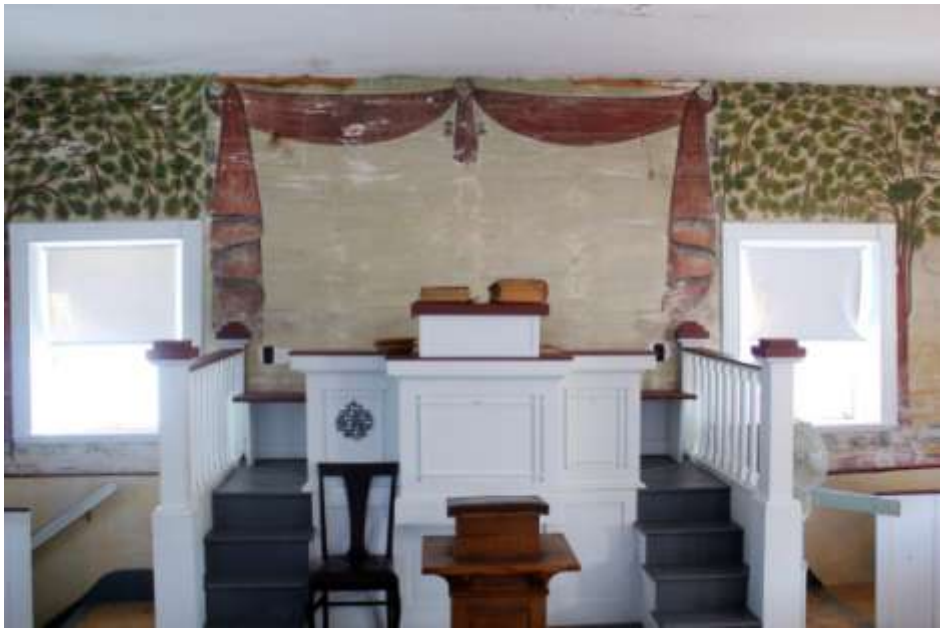


Photo 18: Meetinghouse podium, and mural, painted by John Avery, in 1841

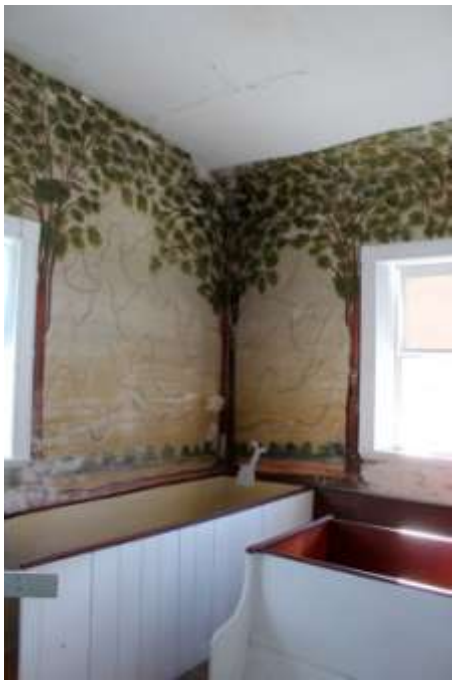


Photo 19: Mural, northeast corner

The first priority in the preservation of this building is the meetinghouse interior, including the mural and box pews. The skim coat of the mural is delaminating in a few places, and needs to be re-adhered before the building is manipulated (Photo 19). There are also larger cracks in the mural that extend through the brown coat, and are the result of structural settling. From what we could observe without more invasive inspection, this damage is due to deterioration of the sills, and subsequent deterioration of the posts.

The cracks due to structural settling should be stabilized before manipulating the building, as outlined in Tony Castro's report. During the leveling process, the cracks should be observed through a viewing panel. In this way, the mural and plaster can serve as controls for manipulating the building.

After the mural is stabilized, a water level should be used to determine the precise amount of sag at each level of the building -- first floor, meetinghouse floor and attic -- as well as at each bent. We recommend that the meetinghouse be leveled from the original meetinghouse sill, effectively lifting and supporting the second floor from the same place as when the building was originally moved. This will allow full access to the undercarriage framing and post feet once flooring in the banquet hall is removed. When lifting or leveling, special attention will be paid to supporting the plate, and straightening any sag at the same time, in order to prevent compression of the mural. This can be accomplished by placing ledger and brackets along both the second floor sill and the top plate, and connecting the two with strong-backs laid out along the posts. A full leveling plan can be developed after the first stabilization phase of repairs is completed, with a limited amount of more invasive investigation.

Plaster cracks due to structural settling are sometimes improved by peacefully leveling a building. In this case however, the primary preservation concern is the condition of the mural. The framing of both floors can be repaired without leveling the building fully, if that is required.

2.7 ATTIC

Structural Drawings [Part 4.5] pp.16-17

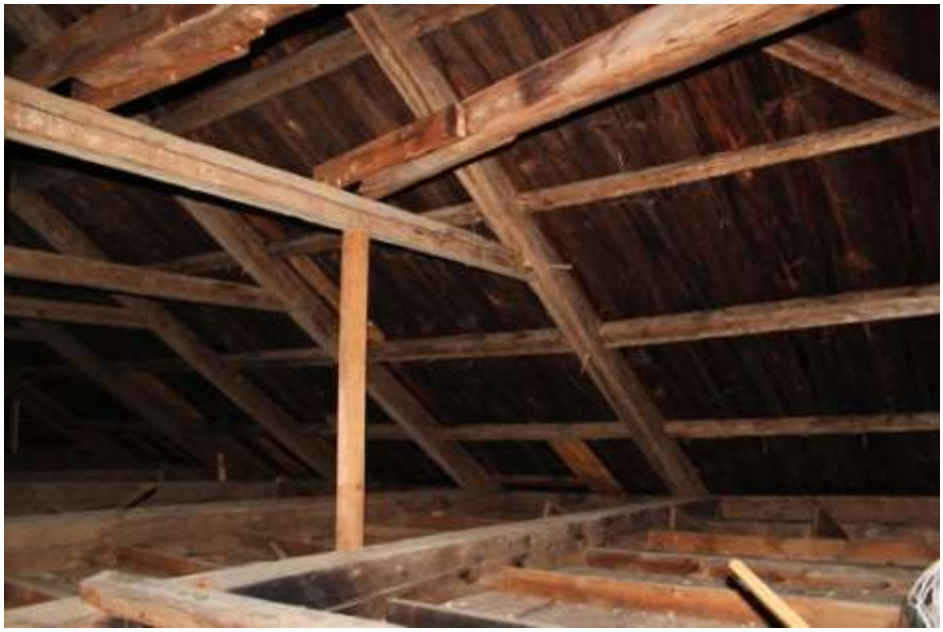


Photo 20: Meetinghouse attic, looking toward south roof pitch

To a timber framer, the main meetinghouse roof system is a thing of beauty. It is a principal rafter-principal purlin roof, with collar ties and oversized tie beams (Part 4.5, p.17). The principal rafters taper from 6” x 9” at the heel to 6” x 7” at the roof’s apex. The purlins also taper dramatically, and probably run half the length of the roof. In traditional roof systems, the purlins are typically little more than shaped saplings, and the shape of the tree is evident in the taper of the framing member (Photo 20).

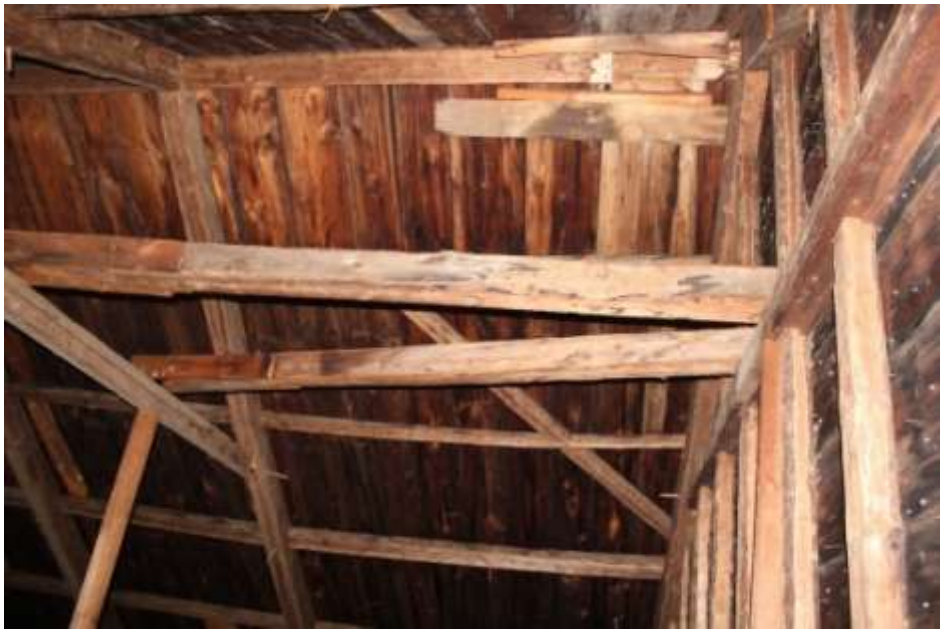


Photo 21: Wind brace in south roof pitch, adjacent Bent 6

Wind braces, located in the bays adjacent to both gables, have contributed to the long term stability of this roof system (Photo 21). Hewn collar ties support rafter pairs at their midpoint; they are nominally 5x6 inches, and joined to the rafter by pinned mortise and tenon.

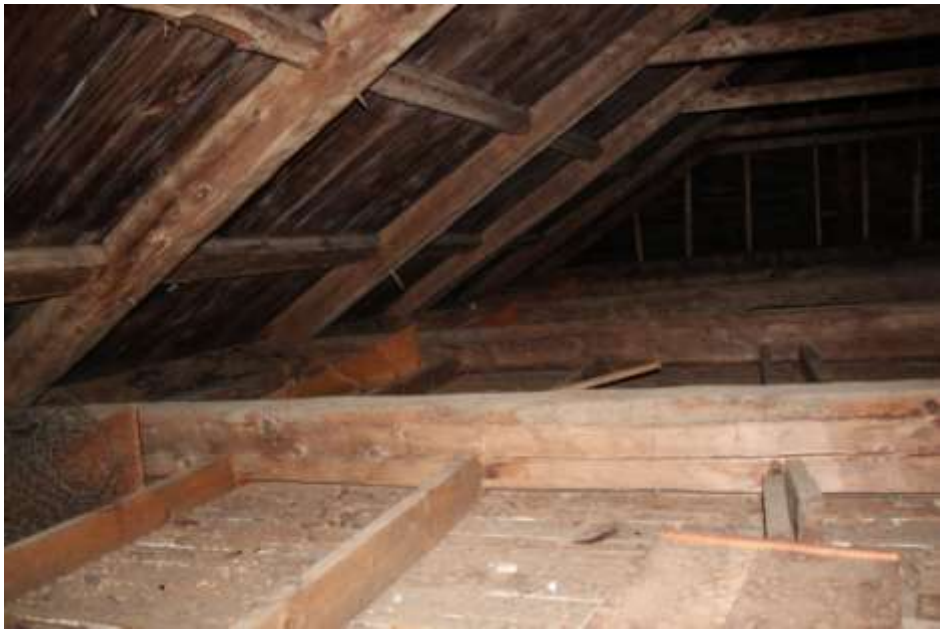


Photo 22: Oversized tie beam, 10" x 12"

In a building with an open span of 32 feet, it is unusual for the builder not to use some kind of truss system to support the tie beam, or bottom chord, across the open span. Here, the original builders employed an oversized tie beam, 10” x 12”, to support its own weight across that distance (Photo 22).

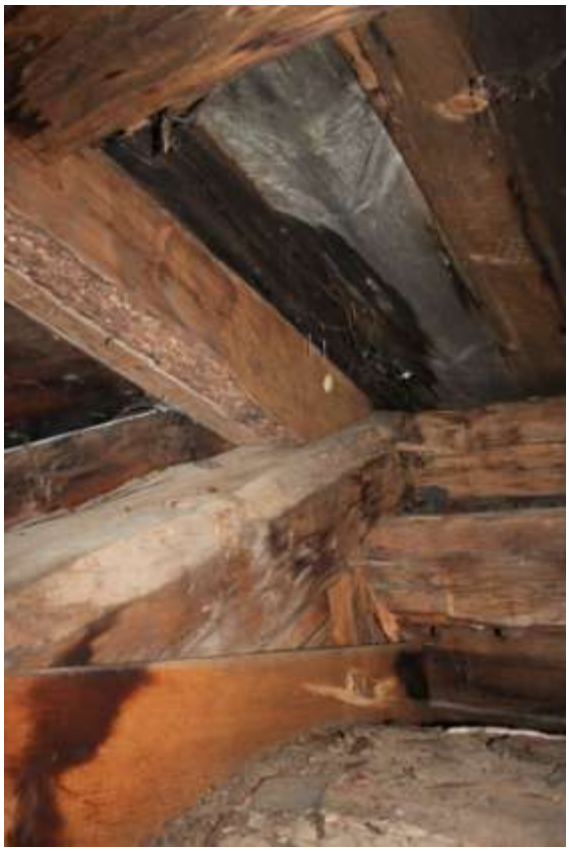


Photo 23: Tie beam, rafter and plate connection

The tie beams cog over the plates, 6” x 12”, and extend past the plates by 10 inches. The ends of the ties are joined to flying purlins, 4” x 12”, which run between the bents (Photo 23).

To a certain extent, the ribs creating the coved ceiling may have also provided secondary support and bracing (Photo 24, Part 4.5, p. 16). The ceiling is framed by a series of these ribs, 2” thick, approximately 4’ on center which are nailed to ceiling joists, upright sawn, 2” x 6”, 3’ on center.

Given the span of the ties and joists, and the importance of the coved ceiling, I was not able to visually inspect each of the rafter-tie-plate joints. I did not see any leaks, or obvious deterioration. During the repair process, a plank should be threaded into the hatch, and used to walk down the eaves and inspect these joints.

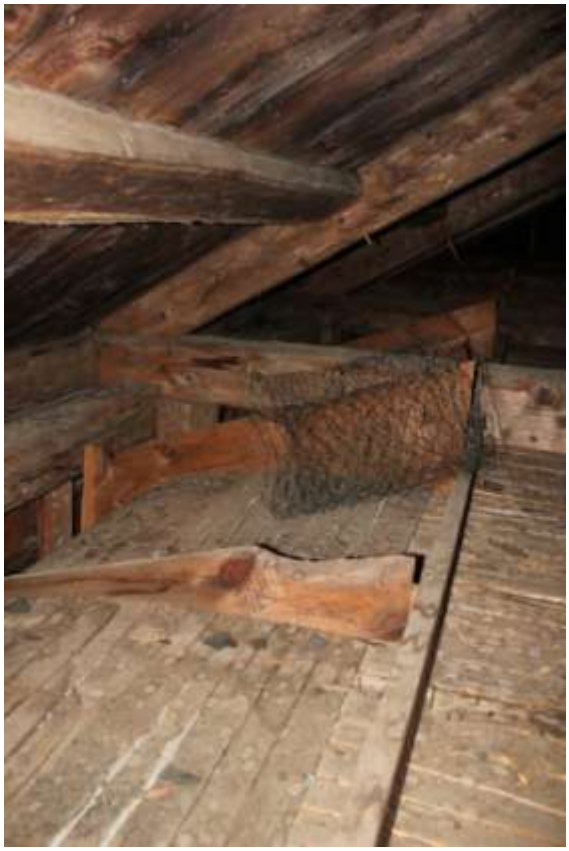


Photo 24: Coped ceiling joists, or "ribs," which create the coved meetinghouse ceiling

2.8 SCHOOLHOUSE

Structural Drawings [Part 4.5] pp.18-26

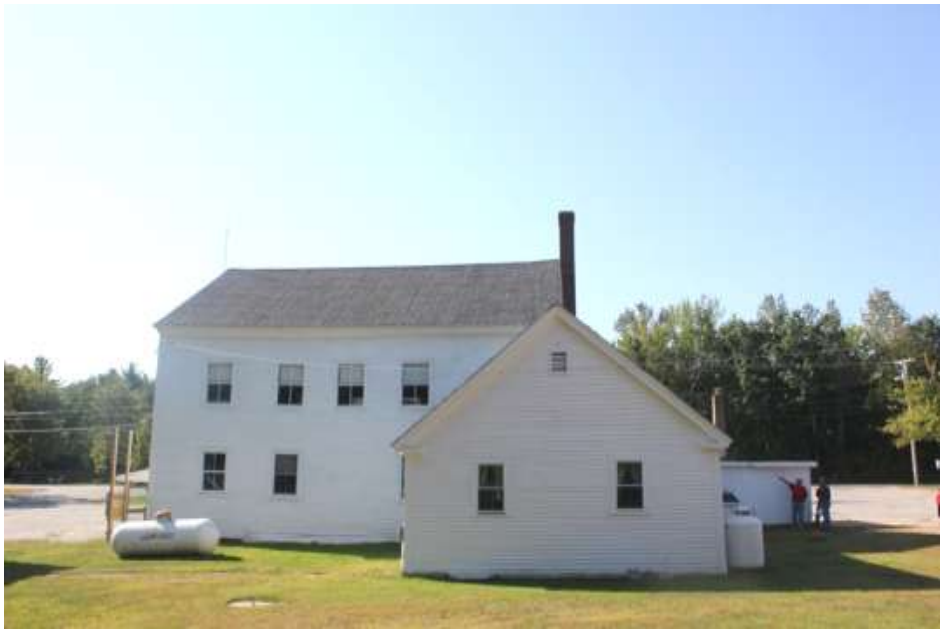


Photo 25: Schoolhouse exterior, rear, north gable

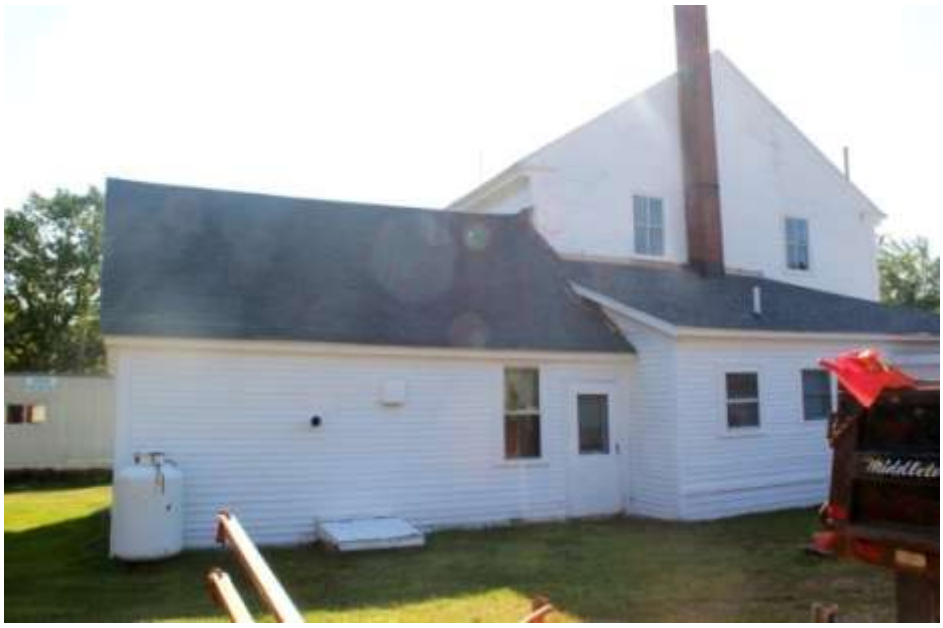


Photo 26: Schoolhouse exterior, west eave

The schoolhouse attic has an access hole in the bay closest to the banquet hall, in the center of the ceiling. This hole was first framed out for a chimney. To enter, remove the center drop ceiling panel in the row adjacent the main building, and push aside the insulation [This route is much easier than entering via the North Gable vent].

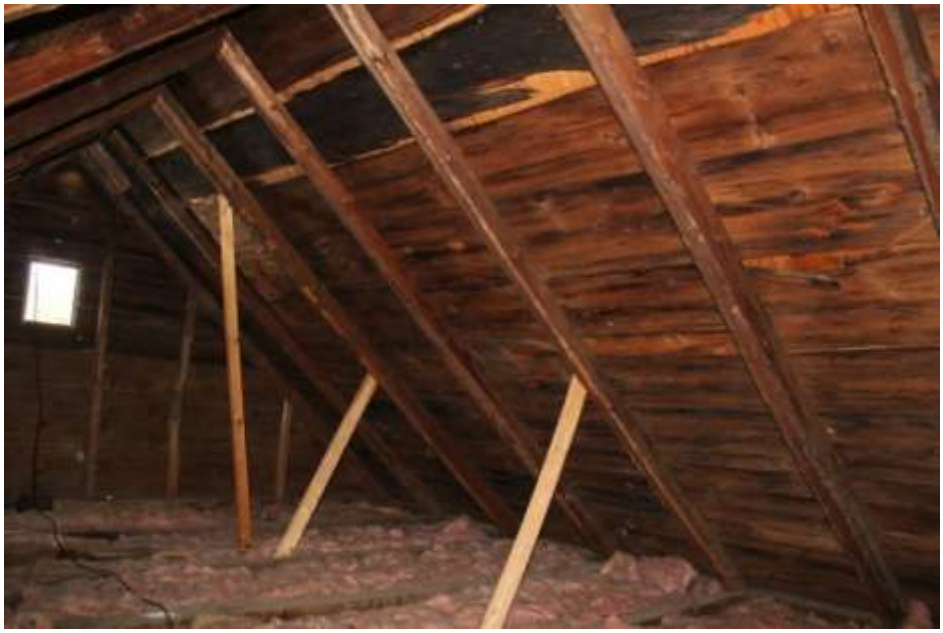


Photo 27: Schoolhouse roof framing

The schoolhouse roof is framed with a series of common rafters, 4”x 6” at the heel, tapering to 4”x 4” at the peak (Part 4.5, p.26, Photo 27). They are hand-hewn, but barely; nearly every rafter has at least two waney edges with the bark still attached. One can see how the natural taper of a tree was employed to give strength to the bottom of the rafter, and lightness to the top. Common rafter roofs were common in Connecticut in the 18th century, but came to Northern New England much later. It is unusual, and architecturally significant, to find a common rafter roof system that is completely hand hewn. The gable end studs are waney, like the rafters, nominally 3” x 3”.

Photo 28: Schoolhouse tie beam-plate-rafter connection

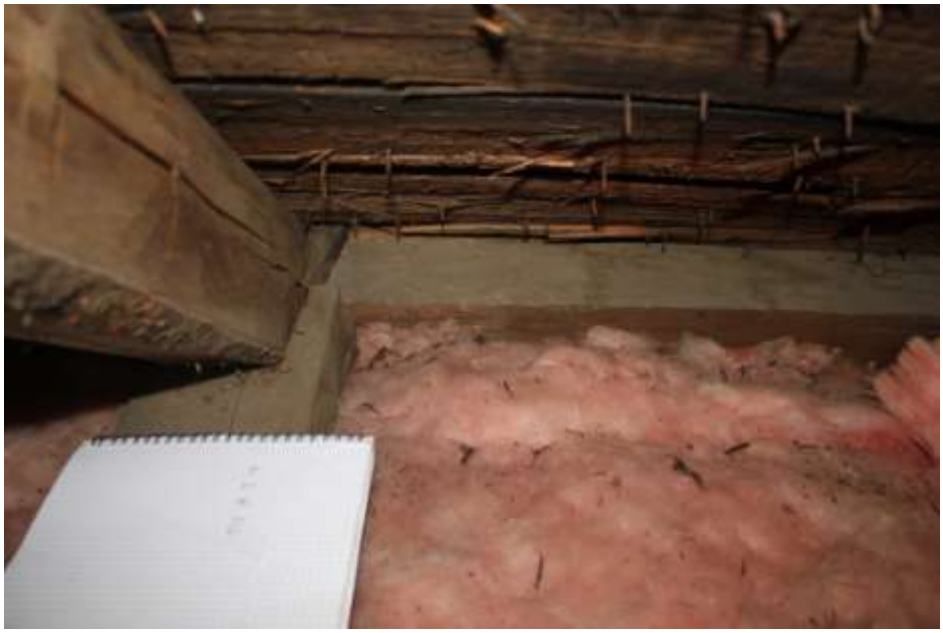


Photo 29: Half dovetail on end of schoolhouse tie beam

The tie beams, ceiling joists and plates are also hand hewn, nominally 6" x 6"in dimension (Part 4.5, p.26). The tie beams and ceiling joists are cogged over the plate with a half dove-tail (Photos 28, 29). The half dovetail is a good tension connection that keeps the eave walls from spreading under the outward thrust of the rafters.

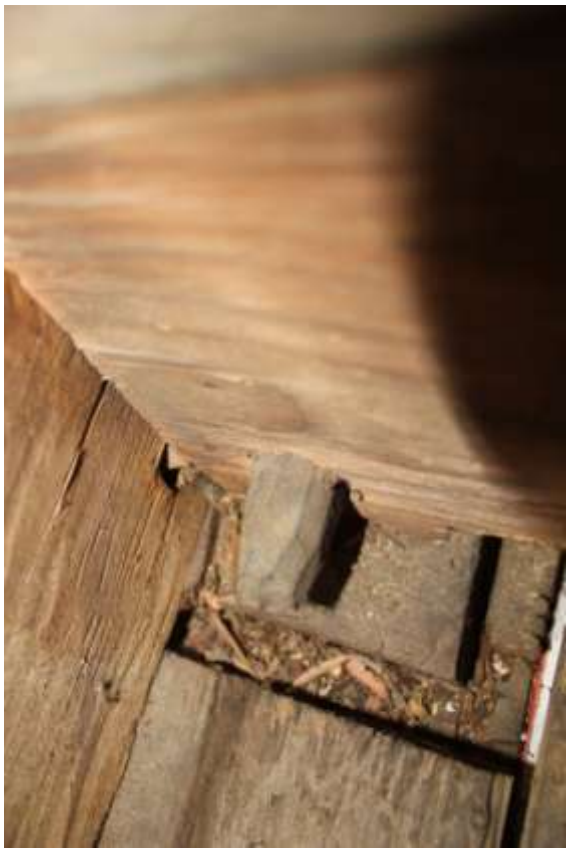


Photo 30: Shoulder of gunstock post, and teasel tenon pin

The gable tie beams are joined to gunstock post and plate with an English tying joint. At the inside of the gable corners, I was able to photograph a corner of the top of the gunstock posts and the end of the pin securing the teasel tenon (Photo 30). As stated above, the English tying joint is typical of the 18th and early 19th centuries. The development of this joint was integral to the longevity of timber-framed buildings in the Northeast and they are a significant architectural detail. The posts are 7" x 9" at the plate-tie level and probably taper to 7" x 7" at the sill.

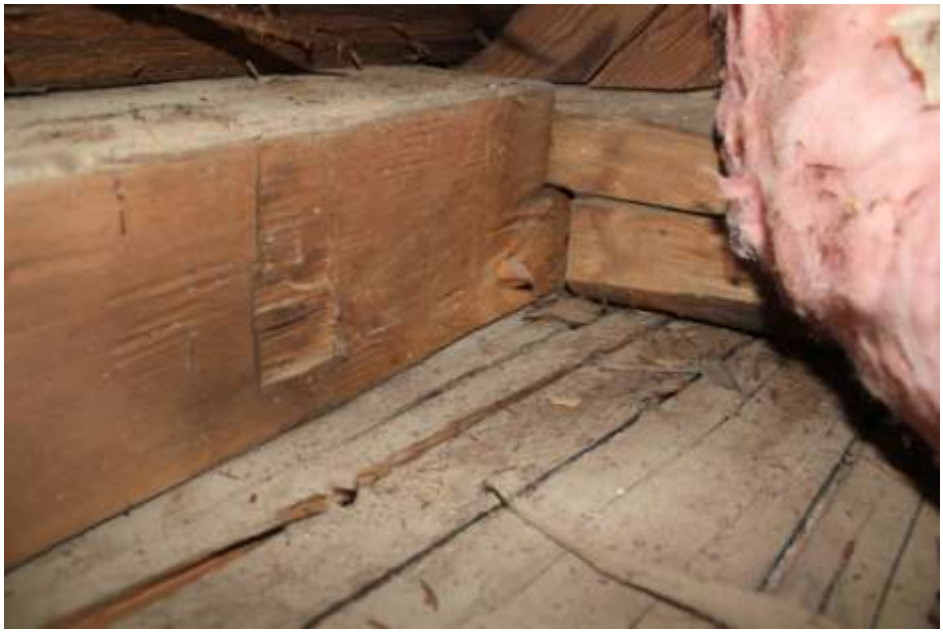


Photo 31: East schoolhouse plate, with pin at midspan

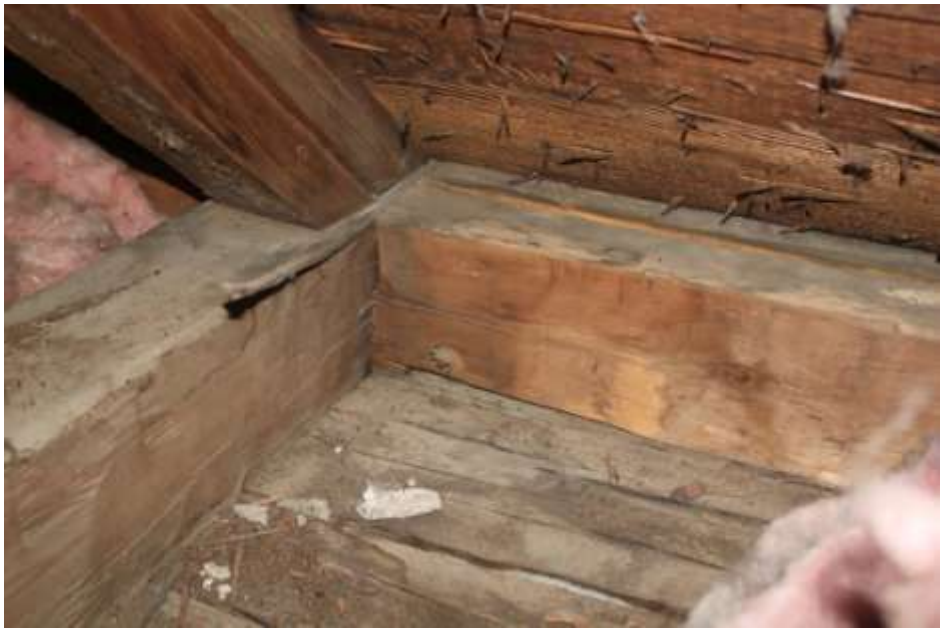


Photo 32: West schoolhouse plate, with pin at mid span

Unfortunately, mid-eave posts were better hidden. I was not able to observe the tops of any posts along the length of the plates, nor did I see any teasel pins in the central tie beams/ceiling joists. There are three pins in the east eave plate; it is likely that they secure the joinery of a straight 6”x6” post (Photo 31), a brace for that post, and a brace for the southeast corner post. There is a similarly laid pin at the center of the south plate (Photo 32). The joist bays are well-insulated, and we suspect that there are additional brace pins 42” from each corner.

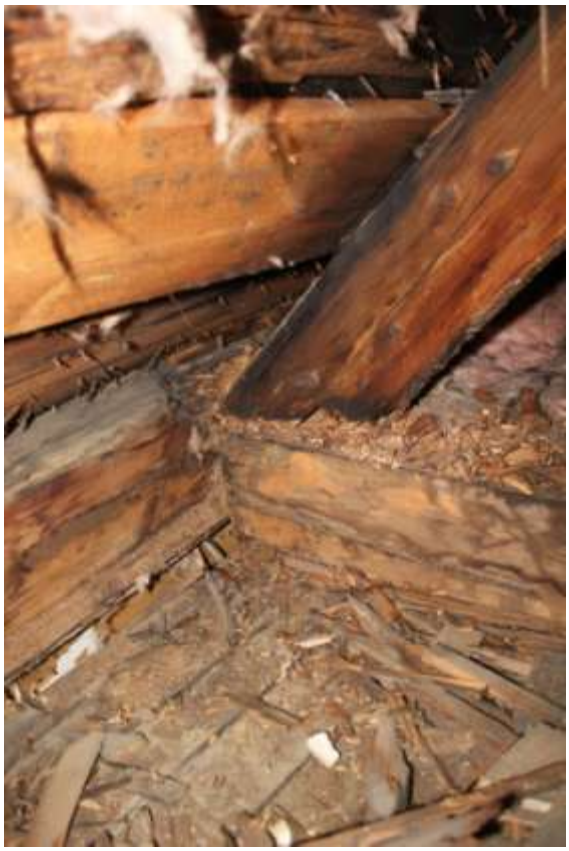


Photo 33: Tie beam 3, end rotten and severed from west schoolhouse plate

The open span at the center of the schoolhouse is 19'7", which is long for a 6"x6" tie beam. There is no reason to believe that the tie beam in SH Bent Two was ever supported by a central post, and walking across the ties is quite springy. There is an opening for stairs headed off between the second and third ceiling joists; if the attic was ever used for storage, or a second floor, it may have contributed to the damage to the third joist, and the roof above (Part 4.5, p.25).

The end of ceiling joist/tie beam three is severed, and has dropped well below the top of the plate (pp 25-26, Photo 33). The plate and rafter heel are similarly rotten. This damage was likely due to a roof leak, and possibly exacerbated by overloading of the tie beams. Fortunately, the damage is localized.

The schoolhouse sheathing is upright sawn, a technology that became more widely used in this area around the 1790s (Photo 34). Cut nails puncture the sheathing, left over from the application of the first roof shingles. The gable end studs are nailed to the rafters with a combination of wrought and cut nails. (Photos 34, 35). Cut nail technology was invented in the 1790s and spread rapidly.

Photo 34: Schoolhouse roof sheathing, upright sawn

Photo 35: Early cut nail in gable end stud

Photo 36: Wrought and cut nails in gable end stud

Given this evidence, along with the frame design, the school house was probably built in the first two decades of the 19th century. The cut nails, common rafter roof and upright sawn sheathing point to sometime after 1800. Due to milling improvements in the early 19th century, it is unlikely to find handhewn elements as small as these rafters after 1820.

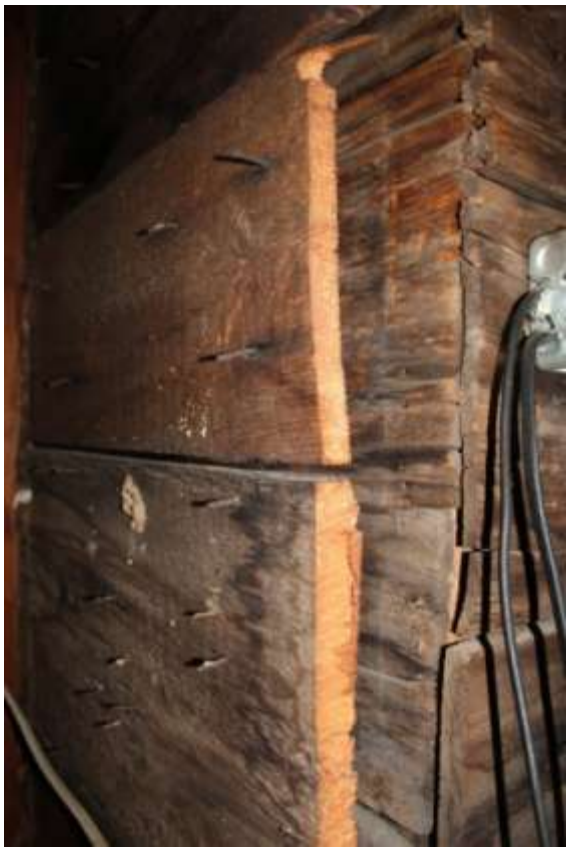


Photo 37: Gap between schoolhouse sheathing and northwest corner of the meetinghouse

During the repair process, the schoolhouse may need to be disengaged from the main meetinghouse. Fortunately, there is a wide gap between the exterior sheathing of the school house and the meetinghouse sheathing (Photo 37). The spread is as wide as 6 inches at the Schoolhouse tie level.

PART THREE: REPAIR RECOMMENDATIONS AND ESTIMATES

3.1 PHASE ONE: Stabilize undercarriage, demolish concrete vault. Improve drainage and grading.

	ESTIMATE:	SOURCE:
ENVIRONMENTAL REMEDIATION - Remove insulation from first floor joist bays and abate white mold with EPA approved antimicrobial and biocide solutions. - Install humidity controlled mechanical ventilation	[redacted]	EnviroVantage
DRAINAGE AND GRADING - Demo concrete block building to remove source of additional moisture, and mold. - Remove asphalt from the front of the building in a strip at least 6' wide, or what is possible in order to retain parallel parking. - Improve grade surrounding building, install drainage.	[redacted]	Cantwell Excavating, LLC
FRAME STABILIZATION & CARPENTRY - Stabilize undercarriage with temporary 2x pressure-treated sisters and non-hemlock cribbing. - Re-sheath and clapboard void left in west eave of 1910s addition.	[redacted]	Preservation Timber Framing
PLASTER STABILIZATION - Re-adhere skim coat delamination of mural	[redacted]	Tony Castro
ADDITIONAL TASKS - Find new location for plowed snow pile, well away from building.	[redacted]	
PHASE ONE SUBTOTAL	[redacted]	

*Tony Castro provided a total estimate of [redacted] (Part 4.1). For the purposes of this report, and phasing, we have divided a total of [redacted] into three equal parts.
**[redacted] includes [redacted] for mold remediation by EnviroVantage and their rough estimate of [redacted] for the installation of mechanical ventilation.

Phase One is composed of short term repairs that comply with the Secretary of Interior's Guidelines for the Treatment of Historic Properties. These repairs follow the standards for Preservation. Specific applicable recommendations include but are not limited to:

Structural Systems:

- Stabilizing deteriorated or damaged structural systems as a preliminary measure, when necessary, prior to undertaking appropriate preservation work.

Mechanical Systems:

- Installing a new mechanical system if required, so that it causes the least alteration possible to the building.
- Providing adequate structural support for new mechanical equipment.

Wood:

- Protecting and maintaining wood features by providing proper drainage so that water is not allowed to stand on flat, horizontal surfaces or accumulate in decorative features.
- Replacing in kind extensively deteriorated or missing parts of wood features when there are surviving prototypes such as brackets, molding, or sections of siding. New work should match the old in material, design, color, and texture; and be unobtrusively dated to guide future research and treatment.

Interior finishes:

- Stabilizing deteriorated or damaged interior features and finishes as a preliminary measure, when necessary, prior to undertaking appropriate preservation work.
- Protecting interior features such as a staircase, mantel, or decorative finishes and wall coverings against damage during project work by covering them with heavy canvas or plastic sheets.
- Evaluating the existing condition of materials to determine whether more than protection and maintenance are required, that is, if repairs to interior features and finishes will be necessary.

3.2 PHASE TWO: Stabilize mural, repair undercarriage

	ESTIMATE:	SOURCE:
PLASTER STABILIZATION - Mural stabilization and monitoring as recommended by Tony Castro. See report in Part 4 for details	[redacted]	Tony Castro
TIMBER FRAME REPAIR, LEVELING & CARPENTRY - Separate meetinghouse from schoolhouse and bathroom addition. - Establish level at every post on each floor. Remove flooring and ceiling beadboard in banquet hall and inspect second floor framing. - Build cribbing piles, set steel, jacks and strongbacks. Lift meetinghouse from original sills, current second story. Level where possible, and to the extent allowed by mural. - Replace undercarriage sills, carrying timbers and joists, as necessary. - Repair post feet, and second floor sill as necessary (second floor sill repair not included in current estimate). - Make repairs to floor framing in bathroom addition, inspect Schoolhouse for white mold - Replace clapboards, beadboard walls and ceiling, and flooring etc.	[redacted]	Preservation Timber Framing
FOUNDATION REPAIR - Repair foundation, replace footers and install interior drainage	TBD	Cantwell Excavating, LLC
POTENTIAL ADDITIONAL REPAIRS (PHASE TWO) - Repair of schoolhouse undercarriage - Repair of original meetinghouse sill, in the event that rot is found.	TBD	Preservation Timber Framing
PHASE TWO SUBTOTAL	[redacted]	

Phase Two is composed of medium term repairs that comply with the Secretary of Interior's Guidelines for the Treatment of Historic Properties. These repairs follow the standards for Preservation. Additional recommendations applicable to Phase Two include:

Structural Systems

- Replacing in kind those visible portions or features of the structural system that are either extensively deteriorated or missing when there are surviving prototypes such as cast iron columns and sections of load bearing walls. The new work should match the old in materials, design, color, and texture; and be unobtrusively dated to guide future research and treatment.

3.3 PHASE THREE: Interior repair, Schoolhouse repair

	ESTIMATE:	SOURCE:
MURAL REPAIR - Repair mural as recommended by Tony Castro	[redacted]	Tony Castro
SCHOOLHOUSE REPAIR, INTERIOR RENOVATIONS - Repair schoolhouse plate, rafter and purlin system - Install additional posts in banquet hall - Install second set of stairs at original position. Replace doorway for additional egress.	[redacted]	Preservation Timber Framing
ENERGY EFFICIENCY - Install reversible insulation and moisture barrier in basement, on floor and foundation walls, away from floor framing.	TBD	T.C. Hafford Waterproofing Inc.
POTENTIAL ADDITIONAL REPAIRS (PHASE THREE) - Interior Painting	TBD	
PHASE THREE SUBTOTAL	[redacted]	

These estimates do not include provisions for a structural system analysis or sprinklers, which some building inspectors may require in order to comply with building code.

Phase Three is composed of long term repairs that comply with the Secretary of Interior's Guidelines for the Treatment of Historic Properties. These repairs follow the standards for Rehabilitation. Additional recommendations applicable to Phase Three include:

Structural Systems

- Repairing the structural system by augmenting or upgrading individual parts or features using recognized preservation methods. For example, weakened structural members such as floor framing can be paired with a new member, braced, or otherwise supplemented and reinforced.

Interior Finishes

- Repairing historic interior features and finishes by reinforcing the materials using recognized preservation methods. The new work should match the old in material, design, color, and texture; and be unobtrusively dated to guide future research and treatment.

Accessibility

- Identifying the historic building's character-defining spaces, features, and finishes so that accessibility code-required work will not result in their damage or loss.
- Complying with barrier-free access requirements, in such a manner that character-defining spaces, features, and finishes are preserved.
- Working with local disability groups, access specialists, and historic preservation specialists to determine the most appropriate solution to access problems.

- Providing barrier-free access that promotes independence for the disabled person to the highest degree practicable, while preserving significant historic features.

Energy Efficiency

- Installing thermal insulation in attics and in unheated cellars and crawlspaces to increase the efficiency of the existing mechanical systems.
- Installing insulating material on the inside of masonry walls to increase energy efficiency where there is no character-defining interior molding around the windows or other interior architectural detailing.

TOTAL ESTIMATED COSTS [redacted]

This three phase approach to the preservation of the Middleton Old Town Hall is designed to allow immediate action in concert with a long term commitment to the complete preservation of this important historic landmark. Estimates included with each phase are provided as tools for planning and fundraising. Each phase is prioritized and designed for success through logical execution of tasks given financial constraints.

The mural at the Middleton Old Town Hall sets this traditional New England meetinghouse apart from all others. The mural is one-of-a-kind, and it is extremely rare to find original pews and woodwork in such unadulterated condition. Limiting use of the meetinghouse space has been a functional method of preservation for a long time, but no longer suffices. The banquet hall is used frequently, and is a valuable public space, but the undercarriage supporting it is rapidly deteriorating. Repair will be a significant investment, but a worthy one. This building must be preserved. Middleton ancestors knew the importance of this building and invested in its future. Residents now have opportunity to continue this legacy. Improvements to this building, through careful preservation and thoughtful discussions for its continued use will allow generations to share this valuable resource and contribute to Middleton's enduring sense of place.

PART 4: SUPPLEMENTAL INFORMATION

4.1 TONY CASTRO & COMPANY REPORT

Tony Castro & Company
Historic Painting & Plaster Restoration
Murals & Decorative Painting
372Intervale Road, New Gloucester, Maine 04260 (207)-926-5618

MIDDLETON OLD TOWN HALL
Middleton, New Hampshire
Decorative Mural Assessment and Recommendations

The following observations, assessments, and recommendations are made after a site visit on February 13th, 2013:

Overview

The murals are a wonderful surviving example of decorative painting on interior plaster walls in the early 1800's. They are attributed to the painter John Avery. Their condition is good all things considered. The level of plaster failure and paint failure is of concern. Each of these has its own set of contributing factors.

The Date

According to an article by John Nolan there has been speculation that the murals may

Image 1

Image 2

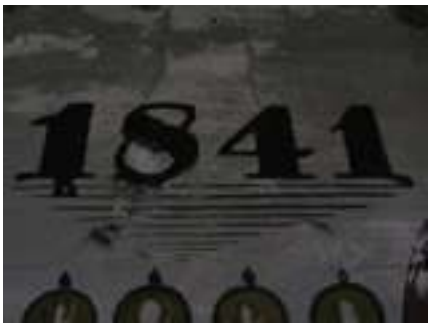


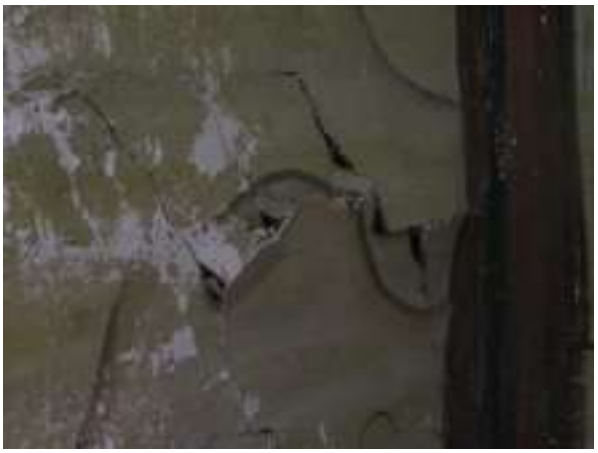
Image 3

have been painted as early as 1804. This date would be eight years before the building was moved in 1812. Before the building was moved, the room was on ground level and the entrance to the room was likely on the back (west) wall which now has the loft. There is evidence that the murals were painted after the present loft was either constructed or altered. Note in Image 1 where the green background of the mural was

painted onto the natural board which is part of the loft. In Image 2 there is evidence of an alteration to the horizontal boards at the loft suggesting the location of the original entrance?? The '1841' that appears on the west wall above the lyre has been roughly overpainted in a darker and glossier black, but there is evidence that the same date was painted there in the original hand. It would take further investigation to be sure about the dating of the murals, but for now it can be assumed that they are clearly after the move of the building and most likely in 1841.

The Plaster

Most all of the plaster failure can be attributed to movement in the buildings structure. Water infiltration especially on the ceiling but also on the upper walls has also helped to weaken the plaster. ***Before any structural work is begun on the building all areas of plaster should be addressed for stability***. Decisions will need to be made in conjunction with structural repair. At present there is substantial settling in both the north and south walls. When the members are replaced there will no doubt be

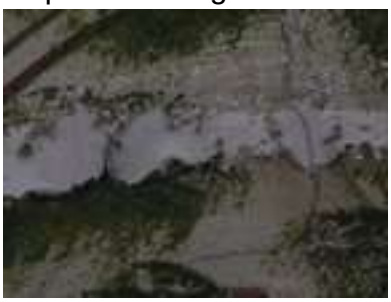
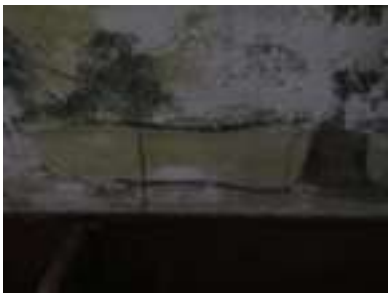
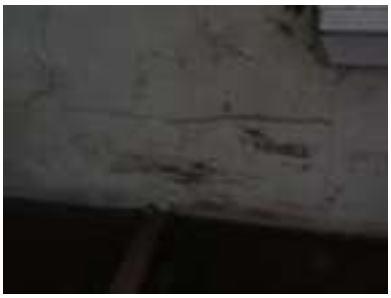


movement even if the plan is made to not straighten but rather to maintain the building in its present position. There are a few areas in particular that will not withstand even slight movement without some potential plaster loss. Two of these are at either end of the south wall shown above. Certainly all areas are not exempt from the possibility of loss during structural repairs. The structural repairs are necessary to prevent the continued movement and subsequent damage to the plaster. Fortunately actual plaster loss to date is primarily limited to that shown above and that removed to install electrical outlets in the east wall shown at right.

The Paint

The type of paint used to create the murals is generally referred to as 'distemper. Each painter had their own variation of the recipe and technique for mixing. The binder in the paint that holds the pigment and chalk together and to the plaster was made most often

from a dilute hide glue. One of this paints most endearing attributes is that it has no sheen and when used for artwork it gives a wonderful soft appearance. Unfortunately it is also extremely sensitive to water and humidity. Considering they were painted more than 170 years ago the murals have survived quite well. There is however significant paint loss as well as deteriorated paint in danger of further failure.

Illustrated above are several examples of the paint failure all of which can be attributed to moisture. Some have been a result of water infiltration due to leaks in the roof and possible ice dam situations. The bulk of the loss appears to be from atmospheric moisture resulting in condensation on the walls. Distemper paint is far more sensitive to this than most other paints. The same amount of moisture would not even be apparent on a modern painted surface. The absorbent nature of these old protein bound paints and subsequent breaking down of the binder leads to the type of failure that exists here.

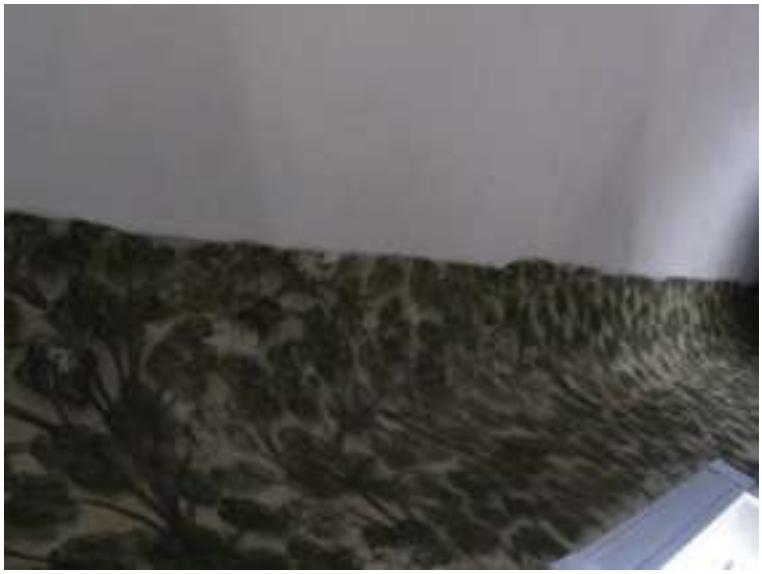
Controlling the humidity in the building will be an important aspect to any plan to preserve the murals. The sources of this moisture are many. It begins with natures help from above with rain and snow, and below from the soil, and all around from humid weather. It is added onto by cooking and human respiration. It has the greatest tendency to condense on the walls when the temperature of the plaster is significantly lower than the air temperature. Keeping the roof from leaking including adding ice and water shield for ice dams, moisture control in the crawl space against the soil including ventilation, exhaust fans whenever cooking, and a dehumidifier in the meeting house would all be beneficial. Warm moist air let in when windows are opened in the summer for ventilation tends to condense on the cold plaster overnight. Again, what would be a negligible amount of condensation on most surfaces is the long term demise of distemper paint. Because distemper is so absorbent you never even see the typical

droplets of water thought of with condensation as they are absorbed as quick as they form.

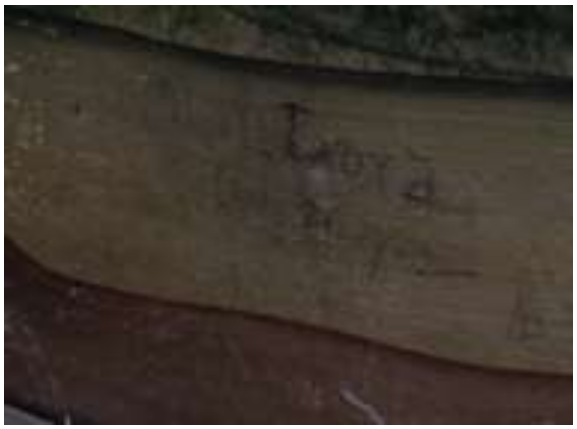
Much of the mural paint is at a point where if rubbed it will crumble off. Some will continue to fall off on its own. Conservation procedures should be executed to help stabilize the paint and will require very careful application to prevent darkening the colors.

The trim paint in the sanctuary has been overpainted. There are two removed pew doors that still have their original color and details. As can be noted in the images to the right, the original numbering of the doors was executed by a much more refined hand. Consideration should be given as to whether it would be appropriate to bring the color and numbering back to an accurate representation of the original or to leave the changes as part of the rooms 'story', and display the original doors as a tribute to the original.

The ceiling paint is also not original. Unfortunately it was applied onto the upper part of the mural. The tops of the trees no doubt had a much softer and more organic line and may have gone even several inches further up the cove between the wall and ceiling. The original ceiling color was most likely the same as the lightest sky behind the trees at the top of the murals. See image at right...



There are numerous signatures and other comments marked around the base of the murals in pencil or by scratching. These too are a part of the story and all should be preserved. Two areas are shown below.



The Implementation of Conservation

Before the structural repairs begin, a coordinated plan will need to be formulated between all involved. The murals are a most significant historical attribute. This is in no way meant to down play the significance of the buildings individual structure, the story that goes along with its move, its place in local and regional history, the meetings and weddings and funerals, and all who have past by. But only a few structures have surviving mural decorations from that time period much due to the vulnerability of distemper paint.

In order to sustain the ideal of no plaster and/or paint loss during the structural repairs it will be necessary to first stabilize the paint itself with appropriate conservation methods and then temporarily hold all areas of plaster with the slightest chance of failing during any movement. In the case of the south east corner where the veneer coat of plaster is failing from the brown-coat the veneer layer should be re-adhered to the base coat before any other work begins. In all other areas the plaster failure is between the base coat of plaster and the lath (which is likely the older split board type). With very careful monitoring during the process and with some added holding devised in some areas, the plaster will actually be improved by the partial straightening of the buildings structure. If some of the compression and ‘racking’ can be overcome it will help settle the plaster back into its original place. This will take the utmost of care to accomplish and will require a slower than usual sequence of jacking.

After all structural repairs are finished all plaster should be analyzed for stability. Any areas where the keying of the plaster has been compromised should be re-adhered using an adhesive injection process. Ideally this is done from the back side of the plaster. The ceiling is the only area more easily accessible from the back side. To access the backside of the walls would be to remove exterior siding and sheathing etc.

Without a huge budget the re-adhering will instead need to be done through the cracks in the plaster and by the addition of 1/8th inch holes through the plaster. This should therefore be kept to the utmost minimum. At any point that it is deemed that the straightening of the building is increasing the amount of loose plaster rather than helping it back into place, then the straightening process should be stopped and the structure secured in that position.

Summary

The structural repairs needed at the Old Town Hall can be carefully accomplished in a way that will benefit the decorative murals on the second floor. It must be noted that with nothing being done the building will continuing to settle, and plaster will soon fail to the point of loss. There is the chance of some small plaster loss during the structural repairs with even the utmost care and precautions being taken. The reward will be a stable situation that can be used and enjoyed and maintained. And with no moisture remediation the mural paint will continue to fail. Being aware of and addressing all the various sources of moisture will greatly help preserve the artwork.

4.2 TONY CASTRO & COMPANY PRICING

Tony Castro & Company
Historic Painting & Plaster Restoration
Murals & Decorative Painting
372Intervale Road, New Gloucester, Maine 04260 (207)-926-5618

MIDDLETON OLD TOWN HALL
Middleton, New Hampshire
Mural Conservation

The cost for us to stabilize the paint before the structural repairs by the application of conservation resin, protect and hold all areas of plaster in danger of failure during jacking, monitor the plaster during jacking, and then make repairs to loose plaster after structural repairs are complete should fall into the range between [redacted] and [redacted]. If these figures are to be used for fundraising it would be best to plan for the higher number. The final figure will depend upon how well some of the unknowns of the process unfold. This pricing only addresses the murals and the plaster they are on. It does not include the trim paint, or the ceiling paint and plaster, or the tops of the mural trees that are covered by ceiling paint. Protection for the pews should be addressed incase any piece of ceiling plaster should drop during the structural repairs This might best be accomplished by creating a “floor” above the pews that could support rolling staging to access the ceiling.

Please feel free to contact me with any further questions, Tony Castro

4.3 ENVIROVANTAGE ESTIMATE FOR MOLD REMEDIATION

April 2, 2013

Emilee Williamson
PRESERVATION TIMBER FRAMING
53 SAWMILL HILL
BERWICK, ME 03901

Re: Middleton, NH Town Hall / Mold Remediation

Dear Emilee,
Thank you for the opportunity to present a proposal to remediate the mold in the crawlspace of the Middleton Town Hall. Please review the following quote and contact me with any questions you may have.

Based on my visual inspection and the report generated by Preservation Timber Framing we think the best approach to provide a safe working environment yet conserve costs is to tackle the mold remediation in two phases. Prior to demolition of the sills and selected joists we will send in a crew to spray and treat the crawlspace. We will not be overly aggressive in removing the decay or mold growth due to the likelihood that the framing may be replaced. The goal is to return the indoor air quality to a level consistent with the exterior environment.

After the framing has been replaced we will revisit the site and evaluate what additional mold remediation needs to be done.

Description of work to be performed: Mold:

- Supply proper trained supervisor and workers with PPE (personal protective equipment)
- Seal off the work area using plastic sheeting and place under negative air pressure. This is done in an effort to limit the potential for mold spores to spread beyond the work area
- Spray all reachable framing in the crawlspace with EPA approved antimicrobial and biocide solutions to kill the mold
- During our process we may install dehumidifiers and fans as necessary
- Install air cleansing scrubber for 48 hours
- ***Cost of labor, materials and disposal – Phase 1:*** [redacted]
    - *Phase two will likely not exceed* [redacted]

Quotation Notes:

- Owner will need to supply heat, water, electric and facilities for the time of the work
- Some tape damage may occur when building and removing containments
- All items will need to be removed from work area by owner prior to start of work
- EnviroVantage's maximum liability will not exceed the amount of the invoice
- We reserve the right to change or alter any of our conclusions or recommendations
- If billing information is different than the owners information, please note on the contact sheet
- No entry into work zone until authorized by EnviroVantage representative

General Information

EnviroVantage is an award winning Specialty and licensed Environmental Contractor with over 25 years of experience and success with projects of this nature, including many of New England's most recognizable landmark projects. We've achieved that level of accomplishment through our continued desire to go above and beyond the expectations of our clients with high quality workmanship, teamwork, communication, dedication to safety and environmental responsibility. We are committed to doing what it takes to get the project done right the first time. For further information on the benefits of working with us, I encourage you to visit our website at www.envirovantage.com.

I appreciate your interest in doing business with EnviroVantage and thank you for your consideration. We look forward to working with you and being a valuable part of your project team.

Feel free to contact me with any questions.

Chris Prior EnviroVantage, Inc.
Asbestos-Demolition-Lead-Mold-PCBs
24 Hour Emergency Services Cell: 603-231-7054

Terms and Conditions:
The above price(s), specifications and conditions are satisfactory and are hereby accepted.
EnviroVantage is authorized to perform the work as of _____, 2013
Payment Terms: __50__% Deposit required prior to start and final payment upon completion.
Overdue payments will bear interest at two (2) percent per month. Costs of collecting overdue invoices, including reasonable attorney's fees will be added to the invoice for collection.

Authorized Signature:_____
*Price quoted is only valid for 30 days after date of proposal. Signature required prior to start of project.

QID: 7143

4.4 GLOSSARY OF TERMS

Bent: Refers to a bread slice of framing members parallel to the gable, and containing posts, a gable sill, floor girts, tie beam and rafters. Bents are typically numbered, starting at the reference end of the building, if there is one.

Cog: This is a square cut-out from the top edge of a rafter horizontal framing member. The L-shaped end of joist or purlin usually drops into it. Sometimes purlins also contain a cog, and they join to a rafter like two hands cupping one another.

Carrying Timber: A large horizontal framing member running through the middle of a floor system, from one sill to another. Also referred to as a "floor girt", "summer beam" or, if adjacent to a chimney mass, "chimney girt"

Collar tie: A small horizontal roof framing member. It connects an opposite pair of rafters, in the upper half of their height. In older frames, collar ties are tenoned into mortises in the rafters, creating an especially strong roof frame.

Cornice: The collection of trim located at the top of an exterior wall, where it meets the roof. The cornice is composed of crown, fascia, soffit, bed molding and sometimes a frieze.

Eave: The side of the house parallel with the slope of the roof, and parallel with the plate.

English Tying Joint: A double mortise and tenon connection used to join the top of a post, usually a gunstock, to both the tie beam and the plate. The top of the post is cut into two tenons which are oriented perpendicular to one another and run parallel to the length of the mortises they enter. The tenon which enters the tie beam is called a teasel tenon. The plate and tie are not only mortised to accept the post, but are connected to one another by a lapped half dovetail joint.

Frieze: A wide horizontal trim board hung at the top of a wall directly beneath the soffit. Characteristic of a drop tie frame and the Greek Revival period.

Gable: The face of the house parallel with the triangle created by the two slopes of the roof, or parallel with the tie beam in the case of a hip-roofed house.

Girt: A horizontal framing member within the floor or wall plane. It usually goes from post to post, or sill to sill. Frequently cogs are cut into it, and floor joists rest on it. A chimney girt runs adjacent to the chimney mass. It is frequently larger, and runs from eave to eave, when in the first floor framing, chimney girts are also called carrying timbers.

Joist: A smaller floor or ceiling framing member. They rest on sills, girts, tie beams, and sometimes plates. They provide a nailing surface for flooring or ceiling plaster and lath and sometimes both.

Joist pocket: A square cut-out on the top edge of a floor girt, sill or tie beam, usually occurring in a series that indicates joist layout. The L-shaped end of a joist drops into this.

Mortise: Square hole in a framing member, a tenon fits into it to create a mortise and tenon joint. This joint is typically pinned together, and is what allows timber frame structures to be assembled without nails. This is the primary joint that distinguishes a timber frame from later platform, balloon, or post and beam structures.

Plate: A top of wall horizontal framing member, it sits atop the posts, parallel with the eave.

Post: Main vertical framing members, in corners and within walls. Connects sill to plate. A gunstock post is one that tapers, narrower at the bottom and wider at the top. It is wider at the top to accommodate two tenons, one that goes into the tie beam, and one that goes into the plate. A gunstock post is typically found in older frames.

Purlins: Horizontal roof framing members that run from rafter to rafter. They provide nailing surface for vertical roof sheathing.

Rafters: Diagonal roof framing members, create the roof pitch, contain cogs in which the roof purlins sit.

Sill: Horizontal framing member that sits on foundation. Posts stand upon it, first floor girts and carrying timbers fit into cogs or mortises along its length.

Soffit: The horizontal section of exterior trim that projects from top of the wall. Combined with the fascia, crown, bed molding, and sometimes the frieze, it creates the cornice.

Summer Beam: Horizontal first floor framing member. A summer beam is like a floor girt, but it has larger dimensions and it runs from gable sill to gable sill. Sometimes called a carrying timber.

Tenon: The “male” part of a mortise and tenon joint. It occurs on the end of a framing member (such as a post or girt), and its dimensions are reduced from the size of the rest of piece in order to fit into the mortise.

Tie Beam: Horizontal framing member, runs parallel to gable. Keeps the eave walls from falling out by resisting the outward thrust of the rafters.

This glossary was written by Jessica MilNeil and is the property of Preservation Timber Framing. We encourage its sharing, but please credit its use.