RECEIVED AUG 30 2024 BY: R Potter

Town of Sudbury
Community Preservation Committee

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PROJECT SUBMISSION FORM

Applicant: Sandra R. Duran, Combined Facility Director, Town of Sudbury Facility Department Department

Submission Date:

Group or Committee Affiliation (if any): Historic Commission

Applicant Address: 299 Old Sudbury Road
Sudbury, MA 01776

Purpose (please select all that apply):

___ Open Space & Recreation
___ Community Housing
X Historic Resource

Applicant Email: DuranS@Sudbury.ma.us

Applicant Phone: 978-405-4753

Project Manager Email: DuranS@Sudbury.ma.us

Project Manager Phone: 978-405-4753

Project Name: Hosmer House Exterior and Grounds Preservation Project

Project Description: The Hosmer House, built in 1793 and bequeathed to the Town of Sudbury in 1959 currently has rotten trim, clap boards, missing and damaged shutters, deteriorated brick sidewalls, overgrown trees and rotten arbors in the historic gardens. This CPC Funding request is to replace the deteriorated wooden clapboards and trim, any rotten infrastructure, prep, prime and paint the wooden clapboards and trim; gently clean and re-point the brick sidewalls; clean and restore the brick patios and walkways, remove overgrown and volunteer trees; replace historic arbor on the grounds.

Costs:

Fiscal Year	Total Project Cost	CPC Funds Requested	Other Funding Sources (Amount and Source)
2025	$500,000	$500,000	
2026			
2027			
2028			
2029			
Total			

How does this project meet the General Criteria and Category Specific Criteria for Community Preservation Committee projects (see attached)?

This funding request is consistent with the Master Plan. The outcome of this project will preserve an important historic building in Town Center.

Does this project fall within the jurisdiction or interest of other Town Boards, Committees, Commissions, or Departments? If so, please list the boards, committees, commissions, or departments, whether applications and/or presentations have been made, and what input or recommendations have been given.

Historic Districts Commission and the Historical Commission

For Community Preservation Committee Use:

Form Received On: 8-30-24

Project Presented to CPC On: _____

Reviewed By: R. Potter

Determination: _____

CPC Article Project Description Hosmer House Envelope and Grounds August 30.2024

The Hosmer House, built in 1793 and bequeathed to the Town of Sudbury in 1959 currently has rotten trim, clap boards, missing and damaged shutters, deteriorated brick sidewalls, overgrown trees and rotten arbors in the historic gardens. This CPC Funding request is to replace the deteriorated wooden clapboards and trim, any rotten infrastructure, prep, prime and paint the wooden clapboards and trim; gently clean and re-point the brick sidewalls; clean and restore the brick patios and walkways, remove overgrown and volunteer trees; replace historic arbor on the grounds.

HOSMER HOUSE

HISTORIC STRUCTURE REPORT / CULTURAL LANDSCAPE REPORT

299 OLD SUDBURY ROAD

SUDBURY, MA 01776

PREPARED FOR:

TOWN OF SUDBURY

PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT

278 Old Sudbury Road
Sudbury, MA 01776

PREPARED BY:

ARCHITECTURAL PRESERVATION STUDIO, DPC

594 Broadway, Suite 919
New York, NY 10012-3233
212.477.7976
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ISSUED:
September 5th, 2024

APS PROJECT No.:
24-007

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4.0 ARCHITECTURAL:

EXISTING CONDITIONS, ASSESSMENT AND RECOMMENDATIONS

It should be noted that each deficiency noted below can include conditions at multiple locations in a particular area. Photographs of representative existing conditions are provided for each deleterious finding.

In general, the Hosmer House is in fair-to-good condition and has been well-maintained. The wood clapboard siding appears to be in fair-to-good condition. The brick masonry is in fair condition as it requires attention due to excessive water infiltration in certain areas. Gutters and downspouts as well as site drainage, require attention to direct water away from the house, and to be historically accurate to the period of significance. Interior spaces were also surveyed to determine the effect of any exterior deficiencies to the existing interior finishes.

EXTERIOR ASSESSMENT:

4.1 Clapboard Siding & Decorative Wooden Cladding Elements

Existing Conditions & Analysis

The Hosmer House is clad partially in clapboard, painted a pale yellow, with an average exposure of four inches (4") (See Figure 4.1-1). The trim, water table, and pilasters are all painted white. The clapboard and trim on the north and south elevations as well as the additions to the building; the new kitchen and servant's room (F-05 & S-04), the office and shoe shop (F-07 & S-08) are in fair-to-good condition overall. The open-air carriage house and back entry into room F-05 at the rear of the house is constructed both with wide and narrow wooden planks placed vertically which are in fair condition. Over all the elevations, it was typically noted that the paint atop the clapboard is peeling and cracking, there are mildew stains on the lower lying wood elements, and dispersed over the elevations are abandoned metal fasteners and hardware that show signs of corrosion.

There is a clear differentiation between older and newer clapboard evident when examining the elevations. The clapboard on the entire north elevation, the upper portion of the west elevation of the southwest addition, and a small portion on the south elevation are butt-beveled (See Figure 4.1-4). The clapboard laps on the south elevation and courtyard returns, and both two-story additions are butted-up to each other, which likely indicate a recent siding replacement (See Figure 4.1-5).

In areas where the paint has peeled or cracked, it has allowed for water to migrate onto the surface of the clapboard, resulting in split wood and rotted sections of board (See Figure 4.1-2). The splits observed run horizontally through the planks, and range from 6 inches to 4 linear feet in length. While this condition was observed on all elevations clad in clapboard, it was most prevalent on the north elevation. Also to be noted on the north elevation is a depression in the clapboard, approximately 4 square feet in size (See Figure 4.1-3). The paint on the butt-beveled clapboard has blistered in some places, which could be due to the use of incorrect non-breathable paint (See Figure 4.1-6), while the paint on the additions clad in clapboard is in relatively good condition.

The carriage house connected to the south east edge of the house, and outhouse (accessed through the carriage house) are non-weatherized structures. The carriage house is constructed of wooden, vertical planks, with an average exposure of six and a half inches (6-1/2") (See Figure 4.1-7). The columns supporting the carriage house have been refaced along the south elevation; however the wood does require a new coat of paint, as it is currently peeling due to exposure to the elements (See Figure 4.1-8 & 4.1-9). The outhouse and north elevation of the carriage house are constructed of wide, vertical planks with an average exposure of fifteen inches (15"). Overall; the siding has separated, leaving gaps in the wall, varying approximately one to two inches (1" - 2") in width (See Figure 4.1-10). The outhouse was constructed with two, non-glazed openings to the south and east which have wooden trims, in fine condition. Evident on all elevations of the outhouse and east elevation of the carriage house is: peeling paint, separating and cracked wood cladding, ivy roots, and

rusted abandoned metal hardware still fastened into the wood. Along the north elevation of the carriage house, there is an approximately 1 foot high mildew stains running the length of the wall, most likely due to the proximity of vegetation to the wood siding.

Bordering each of the elevations clad in clapboard are trim, corner boards and water tables painted in white. These elements all seem to have been replaced relatively recently, as they are fastened in the same manner as the new clapboard siding—butted-up to one another, which is typical of newer construction techniques.

On the replaced trim, there is a brand name visible, 'LifeSpan Solid Select' which is a product engineered to ward off rot and insects. It seems to be primed with a primer system, which protects against water infiltration and weathering (See Figure 4.1-6). Of concern are the splits in the wood ranging from 1 linear foot to 2 linear feet in length (See Figure 4.1-11).

A metal drip edge has been installed on top of the new water table on the north elevation to wick any water away and off the wood. A drip edge is an angled piece of flashing which is installed along the top edge of a water table. The purpose of a drip edge is to help redirect water from the top of the water table, and protects the building elements below. However, at several locations this drip edge has been bent, and segments have become detached from one another.

At several locations, the fasteners used to secure the trim, corner boards and water tables have begun to corrode and are staining the wood (See Figure 4.1-12). As the Hosmer House was used throughout the years, there seems to have been the need for anchors, screws and nails used to presumably fasten holiday decorations on the exterior of the house, which are now corroding.

Additional decorative wood cladding elements on the exterior of the house are Doric pilasters bookending the north elevation, which wrap onto the east and west elevations respectively (See Figure 4.1-13). It was evident upon inspection that the bottom 3 feet of each pilaster has been repaired through replacement at some point in the building's history. At the joint of the repaired pilasters, there are several vertical splits in the wood ranging from 8 inches to 2 feet in length due to the method used to fasten the shafts of the pilasters to the surface of the clapboard (See Figure 4.1-14). Additionally, there were instances where the pilasters were separating from the brick walls creating gaps between the materials (See Figure 4.1-15). This is likely due to improper fastening between the two materials, and water infiltration causing the wood to expand. Both bases of the pilasters are covered in a slight layer of biological growth and mildew most likely due to stagnant water on the surface of the wood, and the proximity of vegetation to the lower elements of the building (See Figure 4.1-16).

In general, the clapboard and decorative wood cladding elements on the house were found to be in fair-to-good condition. The deficiencies observed mainly relate to deferred maintenance, inadequate flashing systems, and materials reaching the end of their normal life cycle.

Recommendations

Peeling paint seen at various locations across the elevations clad in clapboard no longer provides protection to the wood and accelerates deterioration. Regarding the areas clad in older clapboard, the paint has cracked in a rectilinear pattern which could be a sign of lead-containing paint, and investigation of the house's exterior for lead-based paint (LBP) should be conducted prior to any repairs or paint removal. All wood clapboard siding should be 100% repainted, and all newer siding should be selectively repainted. Approximately 15% of all clapboard planks on the exterior need to be replaced due to deterioration past the point of repair, and all abandoned metal nails, screws etc. which cause expansion and stress to the surrounding wood, should be 100% removed from the façade, and holes should be filled with wood filler and repaired in situ.

To APS's knowledge, no paint color analysis has been performed. After wood repairs have been completed, portions of the exterior of the house should be prepped, primed, and painted. Prior to any painting, an analysis should be performed to determine historic paint finishes. Many surfaces in landmark buildings have been over-coated many times during their history without stripping the layers beneath. These layers form an important archaeological record. It is often possible to remove a fragment of the surface coatings containing all of the accumulated layers. This composite piece can be sent away for analysis in a specialist laboratory, where the material and color of each layer can be analyzed. This can reveal a

wealth of information about the history of the building. They provide the evidence to justify changing from a modern paint scheme to a historically appropriate scheme, which has proven historical precedent.

The existing wood clapboard siding, where damaged, should be reattached using stainless-steel nails, repaired in situ using epoxy consolidation, or selectively replaced to match existing. All new wood siding should be back primed. The area on the north elevation where a 4 square foot depression has formed should be investigated for the cause of the issue to determine if there are any concealed conditions within the wall structure.

In areas where the cladding on the carriage house and outhouse are separating; small cracks should be filled with wood filler, whereas larger gaps should be dealt with through replacement.

Typical over all facades clad in clapboard is evidence of past ivy growth and vegetation which touches the structure. While it is evident that the ivy has been removed and much of the vegetation has been trimmed, there are remaining vestiges of the ivy on the carriage house. Vegetation should be managed as part of a regular maintenance plan to halt any further growth.

At some locations, the vertical distance between grade and the lowest course of siding is minimal, which could result in further damage due to moisture. Best practice includes a six inch (6") minimum clearance above grade. In areas where biological growth and mildew and/or mold are found at the base of the wooden elements, the wood should be cleaned with a non-toxic cleaner.

It is evident that over the course of maintenance for the Hosmer House, clapboard planks, trim, and other decorative wooden elements have been replaced. In these areas it seems that the replacement pieces have been fastened to the building using flathead nails. In several areas where this work has been performed, the fasteners have become displaced, and in some areas have begun to rust. Areas where these conditions are observed should be refastened with non-rusting fasteners and rust should be cleaned from the wood surfaces. The gaps found at the joints between the pilasters and the adjacent walls can be repaired by refastening the pilasters to the masonry or filling the gaps with appropriate material such as sealant for small gaps and supplemental wood filler pieces for larger gaps.

Figure 4.1-1
Clapboard painted a pale yellow, with an average exposure of 4 inches.

Figure 4.1-2
Butt-beveled laps to fasten the siding.

Figure 4.1-3
Butted-up laps to fasten the siding.

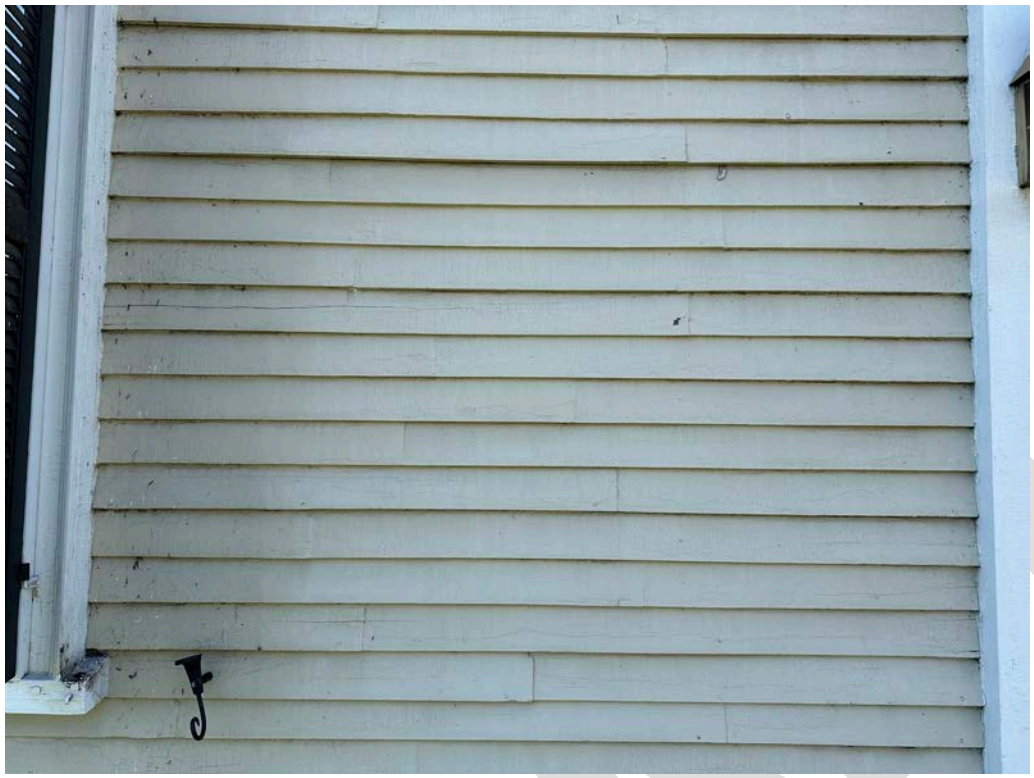

Figure 4.1-4
Large horizontal cracks visible across the north elevation.

Figure 4.1-5
Depression in the clapboard, approximately 4 square feet in size.

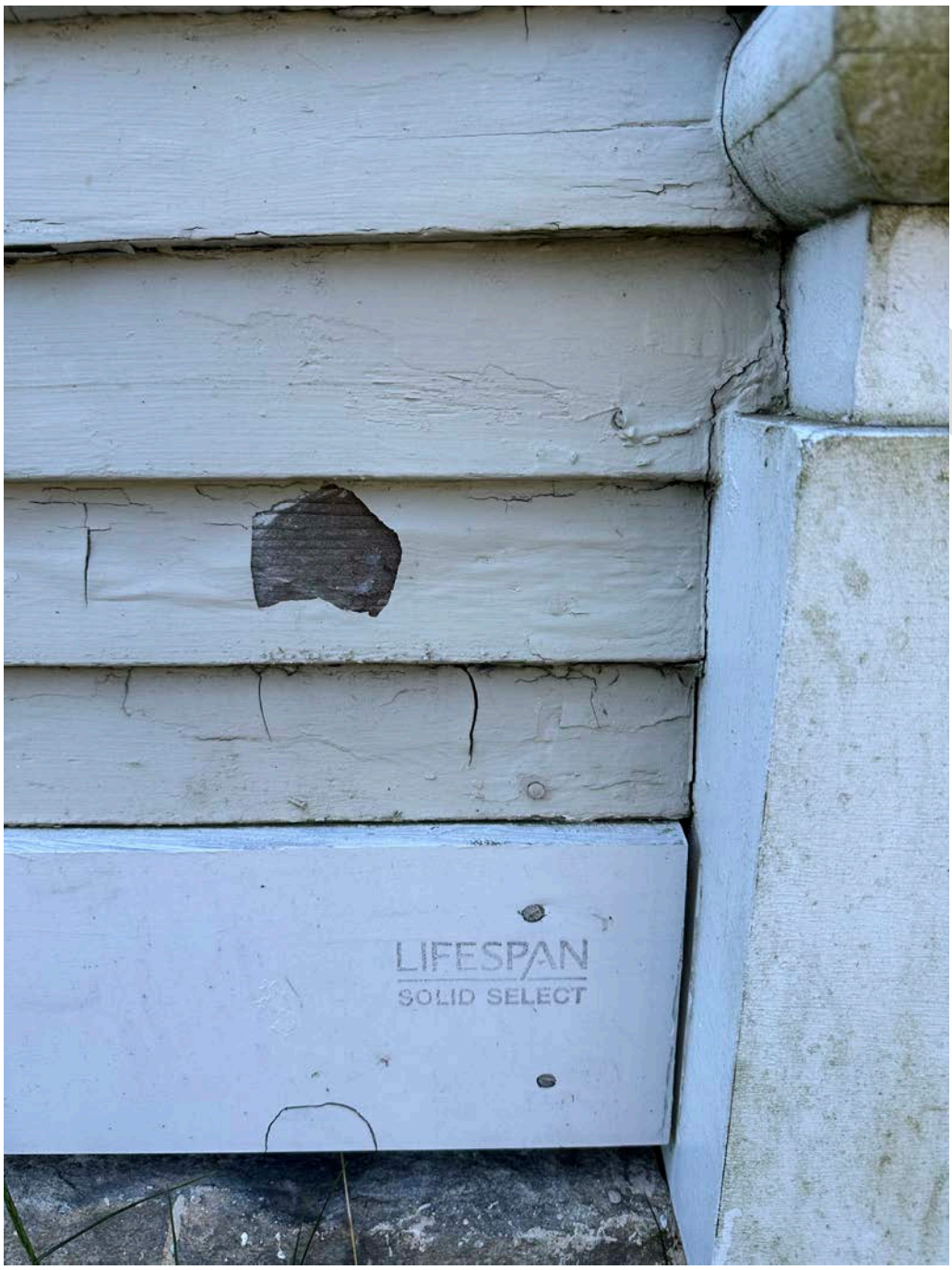

Figure 4.1-6
Blistering paint on butt-beveled clapboard.

Figure 4.1-7
Vertical planks of carriage house with an average exposure of 6-1/2 inches.

Figure 4.1-8
Peeling paint at carriage house columns and arches.

Figure 4.1-9
Refaced and re finished carriage house column.

Figure 4.1-10
Vertical planks at outhouse with an average exposure of 15 inches. Visible gaps varying approximately 1 inch to 2 inches in width, and peeling paint.

Figure 4.1-11
Splits in the wood ranging from 1 linear foot to 2 linear feet.

Figure 4.1-12
Fasteners used to secure the trim, corner boards and water tables have begun to corrode and stain the wood.

Figure 4.1-13
Bottom 3 feet of each pilaster shaft and both bases have been replaced.

Figure 4.1-14
At the joint of the repaired pilasters, there are several splits in the wood ranging from 8 inches to 2 feet in length.

Figure 4.1-15
The pilasters are separating from the brick walls causing gaps between the materials.

Figure 4.1-16
Both bases of the pilasters are covered in a slight layer of biological growth and mildew due to excessive moisture on the surface of the wood, and the proximity of vegetation to the lower elements of the building.

4.2 Brick Masonry

Existing Conditions & Analysis

While the Hosmer House is predominantly clad in clapboard, the second most prominent material on the exterior is brick masonry found on both the west and east elevations of the house. The bricks are layed in a Flemish Bond pattern, are red in color and are set in white mortar with one quarter inch (1/4") joints (See Figure 4.2-1). Conditions of the brick vary across both elevations however, overall the brick is in poor-to-fair condition, and the mortar is in good condition, however the most visible deterioration is water infiltration into the bricks. There are open joints which permit the intrusion of water leading to freezing and expansion within the masonry. Most notably this is evident on the west elevation above the porch roof where the bricks are stained and discolored (See Figure 4.2-2) due to excessive moisture as a result of splashback from the lack of gutter at the roofine above and inadequate flashing above the roof. In some areas, this has allowed for extensive biological growth which is particularly evident on the east elevation along the entire wall just above the stone foundation (See Figure 4.2-3). This condition can be attributed to the brick's inability to dry out after being exposed to large amounts of water.

There are two large cracks present in the brick walls of the east and west elevations ranging between 26 to 11 courses of brick in length (See Figures 4.2-4 & 4.2-5). Both cracks have previously been improperly patched with mortar, which has failed, as the cracks have reappeared. The first crack is approximately one eighth inch (1/8") wide and located below window W-23 running through both brick and mortar, and is approximately thirty three (33") long. It is evident that this crack has previously been repaired as the first seven inches (7") of the crack has a different color mortar. The second crack runs the whole length of the building from the wooden cornice to window W-32, between W-32 and W-07 following the mortar joints, and approximately thirty-nine (39") down from W-07's sill towards the stone foundation wall. The width of this second crack varies throughout.

Along many of the window casing edges are signs of past repair. Several of the bricks at the outer edge of the masonry openings are cracked, missing pieces, and patched with mortar (See Figure 4.2-6).

There are two areas on the west elevation of approximately three feet by five feet (3' x 5') between windows W-46 and W-47, and windows W-48 and W-49, on the second floor where the brick has lost their fire faces and show mortar loss. (See Figure 4.2-7).

Additionally, there are several areas along the base of the building on the east elevation in which the mortar has deteriorated due to water infiltration, and in these gaps, small plants have taken root (See Figure 4.2-8).

At either side of all the windows across the east and west elevations, there are abandoned shutter anchors, and scattered over the ground floor of both elevations are abandoned nails. This condition if left untreated could lead to masonry damage due to rust forming, which would exert stress on the surrounding masonry.

Recommendations

The largest issue determined in regards to the brick exteriors is excessive water infiltration, which is causing expedited deterioration of the brick and surrounding mortar of the Hosmer House in certain locations. The deteriorated mortar permits the intrusion of water, which becomes trapped within the masonry. During the winter, the water freezes and expands, enlarging the crevice in which it resides. Masonry deterioration (open mortar joints, cracked brick, etc.) increases with each successive freeze-thaw cycle.

Above the porch roof, it appears that the metal flashing has failed, and water is bring retained by the bricks above, running the whole length of the porch. All flashing above and around joints between roofs and brick should be replaced. Refer to section '4.7 Roofs' for further recommendations.

The mortar between the bricks is generally in good condition, with a few problem spots on the east and west elevations. Therefore, approximately 30% of the building should be re-pointed. Additionally, approximately 5-10% of the elevations clad

in brick masonry should be selectively replaced due to cracked and spalling bricks. APS recommends that a qualified testing lab undertake mortar-sample analysis to determine the composition and formula of binders and sand to provide an exact mortar match, including type, compressive strength, and color match, and the mortar joints should be repointed with white mortar with one quarter inch (1/4") joints. Additionally, anywhere where an abandoned piece of metal such as a nail, or shutter anchor remain should be removed, and the missing brick replaced.

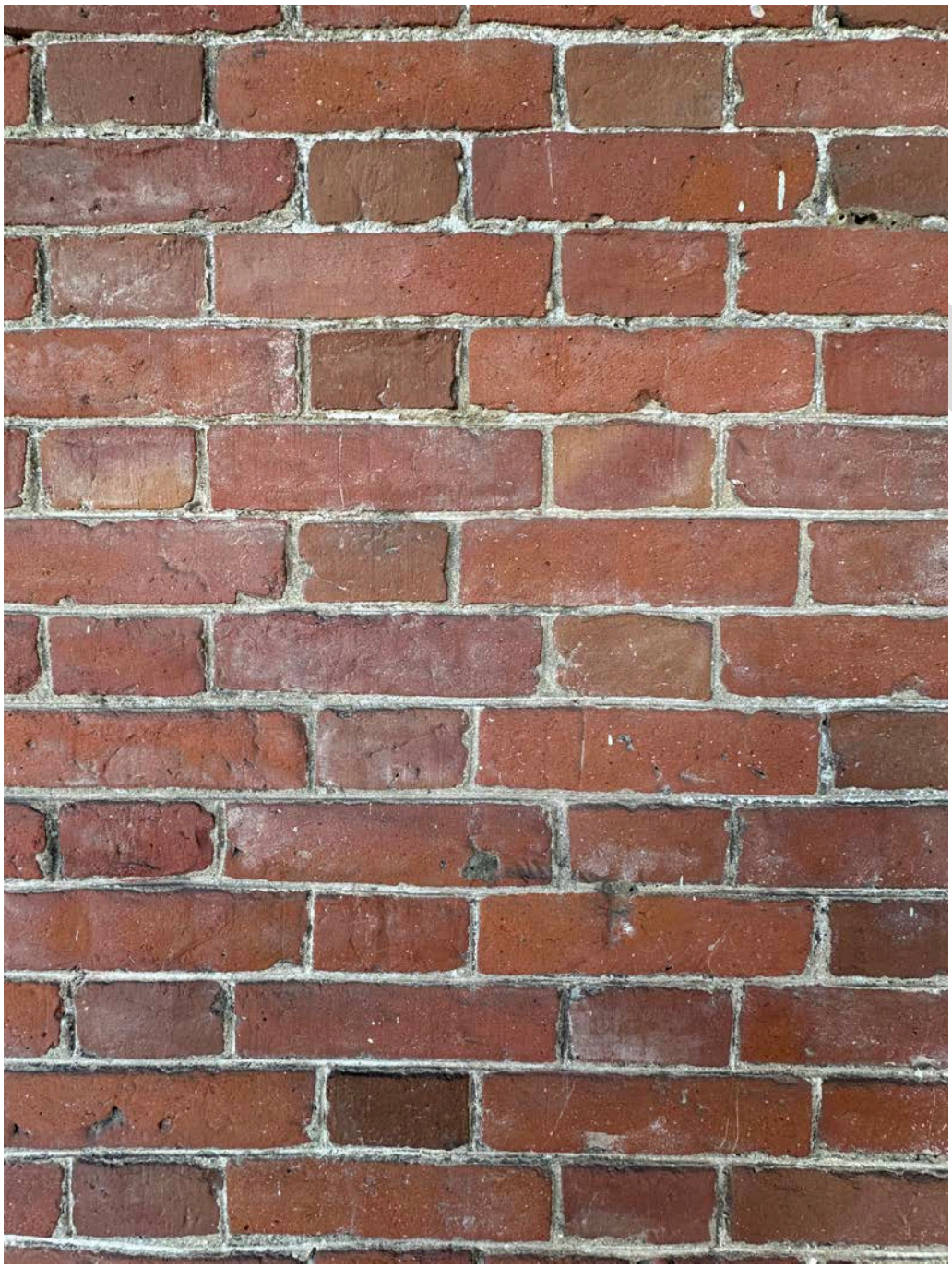

Figure 4.2-1
Bricks laid in Flemish Bond pattern with one quarter inch (1/4") mortar joints.

Figure 4.2-2
Discolored bricks due to water infiltration. And inadequate flashing.

Figure 4.2-3
Extensive biological growth on the east elevation along the entire wall.

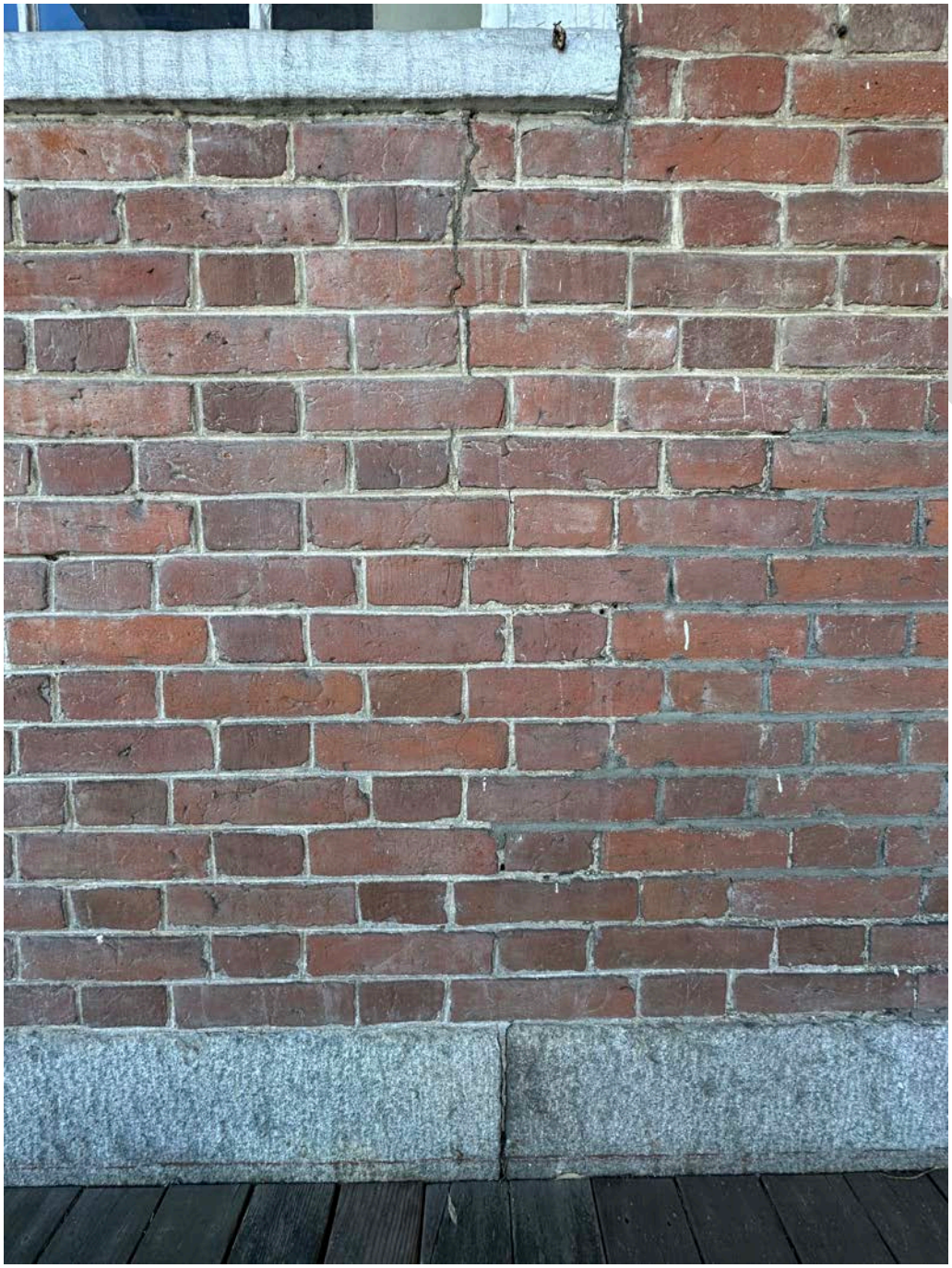

Figure 4.2-4
Crack on the west elevation below W-23. Previously improperly patched.

Figure 4.2-5
Crack on the east elevation below W-07. Previously improperly patched.

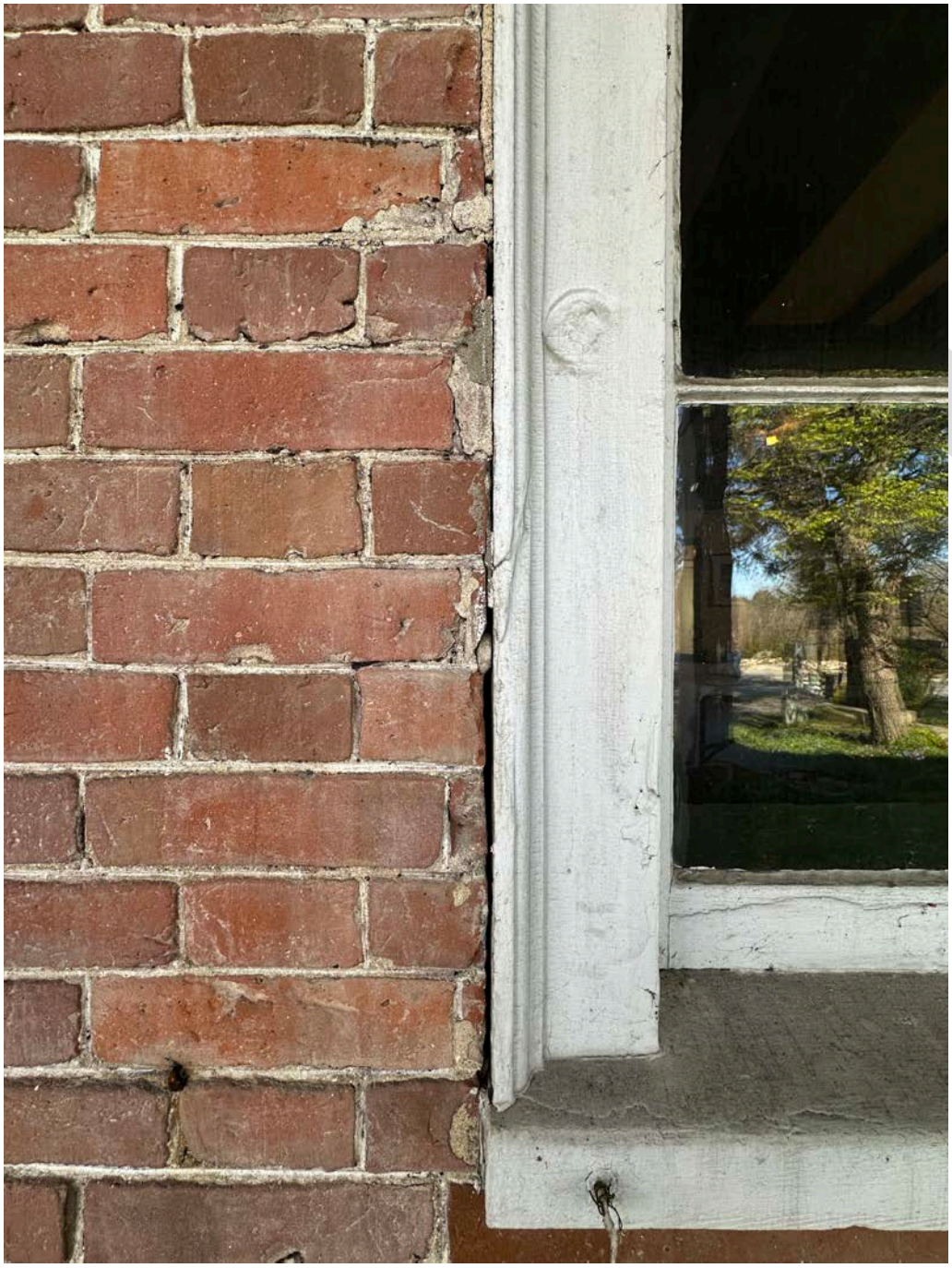

Figure 4.2-6
Several of the bricks at the outer edge of the masonry openings are damaged, missing pieces, and patched with mortar.

Figure 4.2-7
There are two areas on the west elevation of approximately 3' by 5' between windows W-46 and W-47, which show signs of deterioration. Bricks are missing their fire faces or cracked, and there is extensive mortar loss.

Figure 4.2-8
Several areas along the base of the building on the east elevation in which the mortar has deteriorated due to water infiltration, and in these gaps, small plants have taken root.

4.3 Granite Foundation Walls

Existing Conditions & Analysis

The Hosmer House sits atop a granite base. Along the north, east and west elevations, the base is constructed with a single rectilinear cut stone atop ashlar masonry walls, laid to sit directly below the exterior brick or wood wall system (See Figure 4.3-1). However, the foundation below rooms F-05 and F-07 is constructed from ashlar masonry alone (See Figure 4.3-2). Overall, the foundation of the Hosmer House is in good condition. Typical conditions observed throughout are failing mortar joints and biological growth on the stones where vegetation is growing in close proximity to the foundation wall (See Figure 4.3-3). In both laying patterns, the stones have become displaced overtime which has formed large gaps between stones, or stone foundation and the cladding system. This displacement has formed large gaps between stones, or stone foundation and the cladding system. In addition, base flashing is missing at several locations and wood siding is not installed properly to overhang the foundation wall (See Figures 4.3-3, 4.3-4, 4.3-5, 4.3-6).

At some locations, the vertical distance between grade and the lowest course of siding is minimal, which could result in further infiltration and damage due to moisture.

The carriage house is built out from the eastern exterior wall of the kitchen addition (room F-05), and shares the ashlar masonry foundation of room F-05 along its western edge (See Figure 4.3-7). The foundation along the northern wall is constructed of concrete masonry units (CMU's) and timber (See Figure 4.3-8). These foundations seem to have been restored in the recent past and are in good condition.

The basement is partially below-grade with an exterior access door along the south wall of the southwest addition. The foundation walls are constructed of ashlar masonry, which are also exposed in the basement (See Figure 4.3-9). There is one crawl space (room B-02) directly below room F-05, which is accessed from outside with no access to the basement, and is also constructed of both ashlar and loose laid stone masonry (See Figure 4.3-10).

Recommendations

Moisture penetrates the foundation wall through capillary action when mortar joints are open. During winter, the moisture freezes and expands, further deteriorating the mortar joints. It is recommended that all open mortar joints in the foundation wall be repointed, resulting in approximately 50% repointing.

In instances where there is displacement noted across the cut stone laid foundation, the stones should be reset. The foundation below the stone should be cleaned, and assessed for the cause of the displacement. Once the foundation stone is reset, the joints should be repointed to avoid further water infiltration.

At instances where the vertical distance between grade and the lowest course of siding is minimal, base flashing should be installed to protect the cladding system. All vegetation should be removed from these areas, and it should also be insured that an adequate drainage systems expelling water away from the building be installed above these areas.

Figure 4.3-1
Along the north, east and west elevations, the base is constructed with a single rectilinear cut stone atop ashlar masonry walls, laid to sit directly below the exterior brick or wood wall system.

There is no evident base flashing at several of these walls.

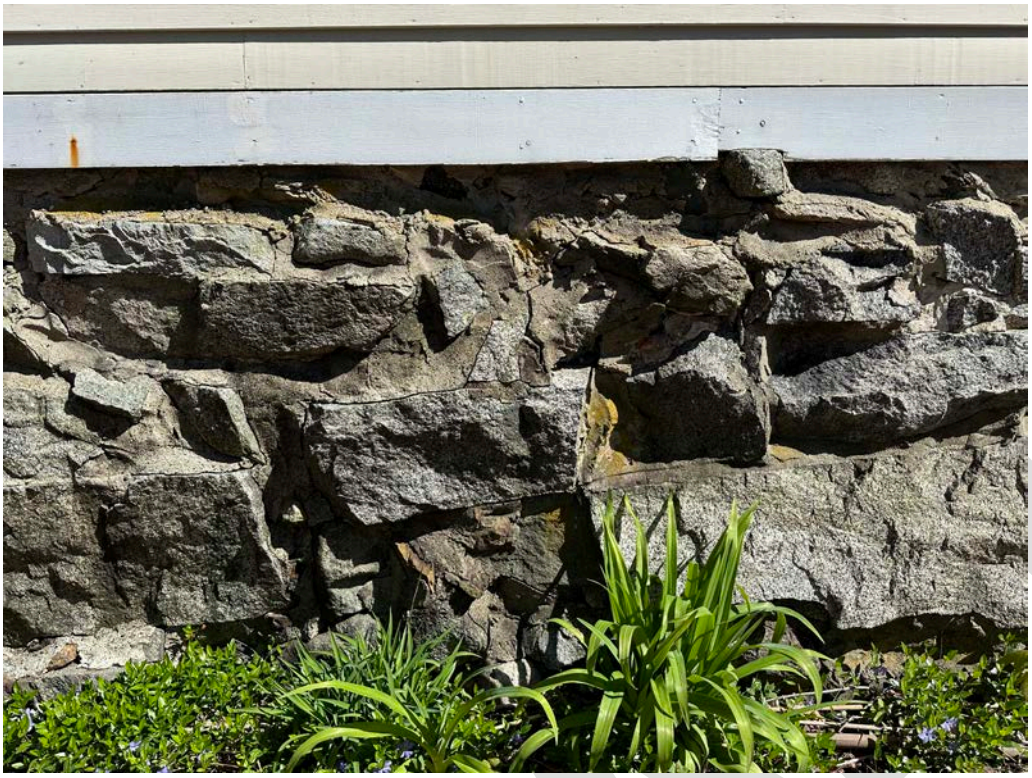

Figure 4.3-2
Foundation below rooms F-05 and F-07 is constructed from ashlar masonry.

There is no evident base flashing at majority of these wall segments.

Figure 4.3-3
Base flashing was found in certain locations along the ashlar stone walls; however it is not entirely covering the foundation wall, and is bent out of shape in several locations.

Figure 4.3-4
There is no evident base flashing between the wood pilaster and the granite foundation.

The granite stone is set further out than the pilaster base, allowing for further water infiltration.

Figure 4.3-5
There is no evident base flashing between the wood pilaster and the granite foundation.

The granite stone is set further out than the pilaster base, allowing for further water infiltration.

Figure 4.3-6
There is no evident base flashing between the cladding system and the ashlar stone foundation wall.

The wood water table has been damaged, most likely due to water atop the stones.

Figure 4.3-7
Ashlar foundation wall shared by the east wall of the southeast addition, and the carriage house.

Figure 4.3-8
The foundation along the northern wall is constructed of concrete masonry units (CMU's) and timber. These foundations seem to have been restored in the recent past and are in good condition.

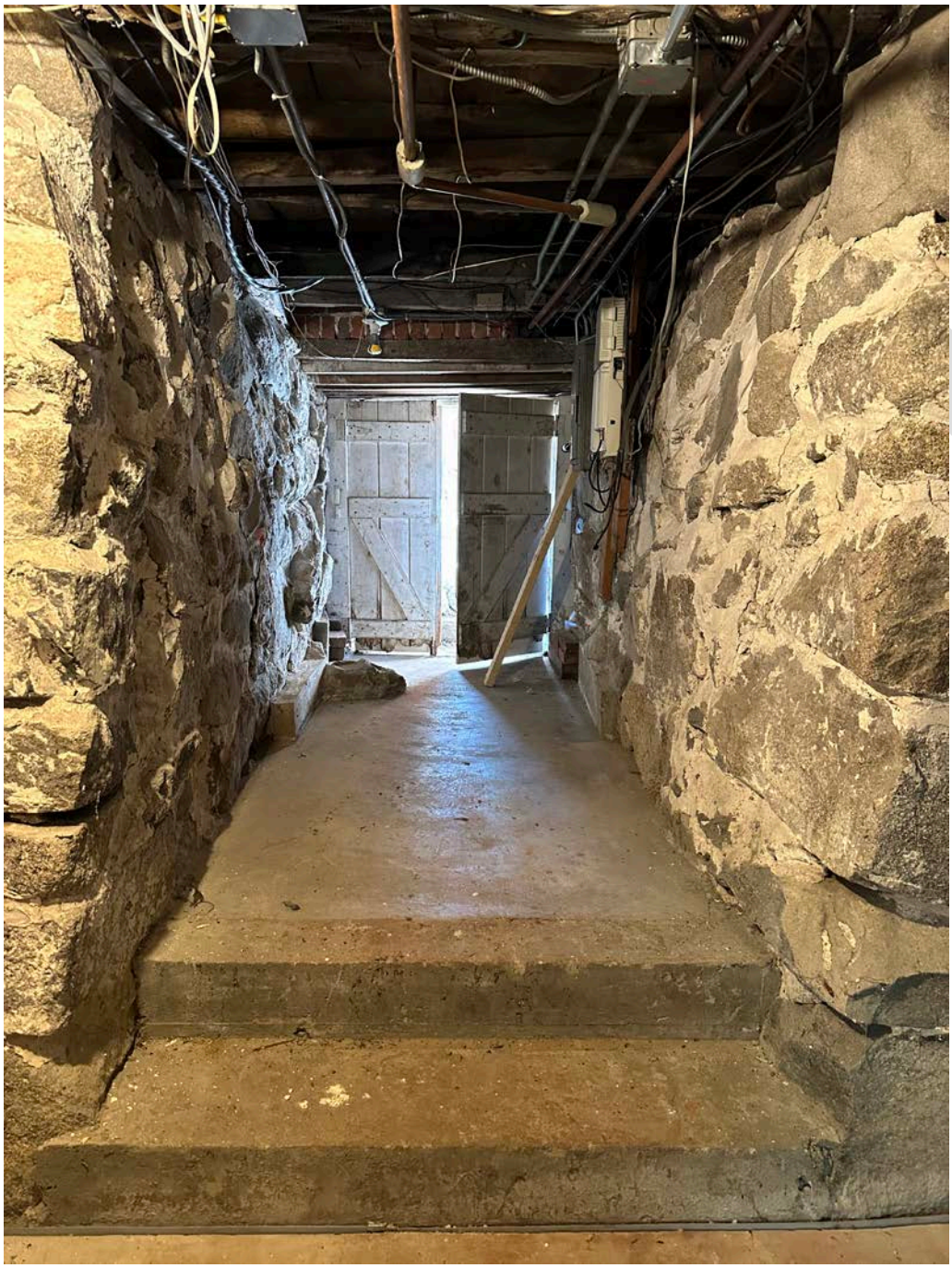

Figure 4.3-9
The basement is partially below-grade with an exterior access door along the south wall of the southwest addition. The foundation walls are constructed of ashlar masonry, which are also exposed in the basement.

Figure 4.3-10
There is one crawl space (room B-02) directly below room F-05, which is accessed from outside with no access to the basement, and is also constructed of both ashlar and loose laid stone masonry.

4.4 Windows, Doors, and Casing

Conditions and Analysis

All windows are wood, single-glazed, and painted white on the exterior with different colors on the interior. The main house windows, shoe shop (S-08), and the south and east façades of the office (F-07) are double-hung with a six-over-six lite configuration (See Figure 4.4-1). Other configurations include six-over-nine lites in the kitchen (F-05), servant's room (S-04), and back hall (S-05), as well as an awning window in the kitchen and fixed windows in the kitchen and shoe shop bathroom. Additionally, two vertical fixed wood windows flank the office entrance door (D-21) on the west side of the office (See Figure 4.4-2).

Wood storm windows painted white are installed on the exterior side of the north façade windows and three second-floor windows of the east façade. Interior window inserts were observed in some windows, but most had been removed at the time of inspection (See Figure 4.4-3).

There are seven exterior doors with varying configurations, including a double door (D-22) (Figure 4.4-4). These doors appear to be from different periods, with one door (D-06) showing signs of recent replacement, including new tempered glass (See Figure 4.4-5). Only one door (D-21) is fitted with a wood screen door.

The overall condition of the wood windows, doors, and casing is fair to good condition, with minor wood damage and peeling paint in some areas (See Figure 4.4-6). However, doors D-01 and D-12 are in poor to fair condition, showing signs of wood deterioration, cracks, and previous repairs (See Figures 4.4-7 and 4.4-8).

Wood door sills, such as those on D-12 and D-06, were found to be damaged, cupped, and pitched backward (See Figure 4.4-9).

None of the windows appear to be operable, with no locks present, and the chains/cords or balances missing or unobserved, except for the south windows in the dining room.

The storm windows are non-operable and are screwed to the wood casing. One storm window on the north façade (W-05) was installed upside down (See Figure 4.4-10). It is also believed that window W-35 in the servant's room, north façade, was installed upside down, as its configuration should be six-over-nine instead of nine-over-six (See Figure 4.4-11).

During the Request for Proposal process in December 2023, condensation was observed between the window and storm window (See Figure 4.4-12). This is a common issue with storm windows that can create a greenhouse effect, leading to temperature buildup and condensation, which can cause deterioration of the protective coating and wood rot. Venting the exterior glazing at the top and bottom can prevent this, though it will reduce the insulating value of the air layer between the glazing.

Historical photos from 1983-1984 show storm windows on the first floor of the north, west, and east elevations with a different configuration than what is seen today.

While storm windows generally provide thermal comfort, reduce noise, and minimize energy loss, they require maintenance, ventilation, and cleaning. Additionally, they can impact the historic character of the house, as they often appear flat and lack the depth and shade of traditional windows. Thus, although they provide the best protection, they are not always the best approach for historic windows.

The screen door was found to be damaged and inappropriate in design (See Figure 4.4-2). If a screen door is needed, it should be made of wood and kept as simple as possible. If a horizontal rail is required, its location should align with the height of the lock rail of the paneled door behind it, which is not the case here. Additionally, the current screen door obscures the finely paneled door behind it.

The perimeter sealant and glazing putty around the windows appear deteriorated, with cracks and gaps in some locations, leading to poor performance (See Figures 4.4-13 and 4.4-14). Properly maintained joints are crucial for waterproofing. The glazing putty creates an airtight seal that prevents drafts and energy loss.

Several broken glass panes were observed.

Metal window head flashing was noted at most windows but appears bent or poorly installed in some areas (See Figure 4.4-15).

Recommendations

Restoring existing historic windows is always challenging. Improving energy efficiency is a primary concern, though it can be achieved without replacing windows that contribute to the building's historical significance.

Rather than focusing solely on windows, energy conservation measures should be considered that address the building's overall thermal efficiency. This should include physical measures like attic insulation, as well as the efficiency of heating systems and controls. The goal should be to strike a balance between energy conservation and building preservation.

Since the existing windows are in fair to good condition, replacement is not recommended. All windows should be repaired to ensure full operability. As needed, remove windows for complete restoration off-site. Restore, prepare, prime, and paint the windows. A paint analysis should be performed to determine appropriate colors. Repairs to wooden elements must match the existing historic materials, and profiles. Install weather-stripping at all windows (meeting rail, threshold seal, etc.) to reduce air infiltration, enhance energy efficiency, and improve comfort. Reinstall the windows after repairs are completed, ensuring full operability by installing chains, pulleys, and hardware. Repair or repaint the wood casing, frames, sill, stool, and install new window head flashing as necessary. Remove all storm windows, window inserts, and the screen door.

Installing new weather-stripping and glazing putty at the window perimeter, along with routine caulking of the exterior frame, can substantially upgrade a window's energy and acoustic performance. If additional energy improvements are desired, consideration should be given to replacing the existing single glass with new high-performance laminated glass or vacuum-insulated glass, both ranging between 7 to 10 mm in thickness. Though these options are costly, they can be implemented without significantly altering the sash and muntins to accommodate the increased thickness and weight of the glazing.

Alternatively, the installation of new storm windows on the exterior or interior side (e.g., Allied Storm Window) can be considered, using more attractive and efficiently designed wood storm sashes that are more in keeping with the character of historic windows. These should be openable and removable to allow for maintenance and cleaning.

APS's preferred option, included in the preliminary budget, involves installing new glass without storm windows.

Figure 4.4-1
Double-hung six-over-six lite window configuration found typically on the main house.

Figure 4.4-2
Two vertical fixed wood windows flanking the office entrance door (D-21). The screen door was found to be damaged and inappropriate in design.

Figure 4.4-3
Window inserts painted white and installed at the interior of the windows.

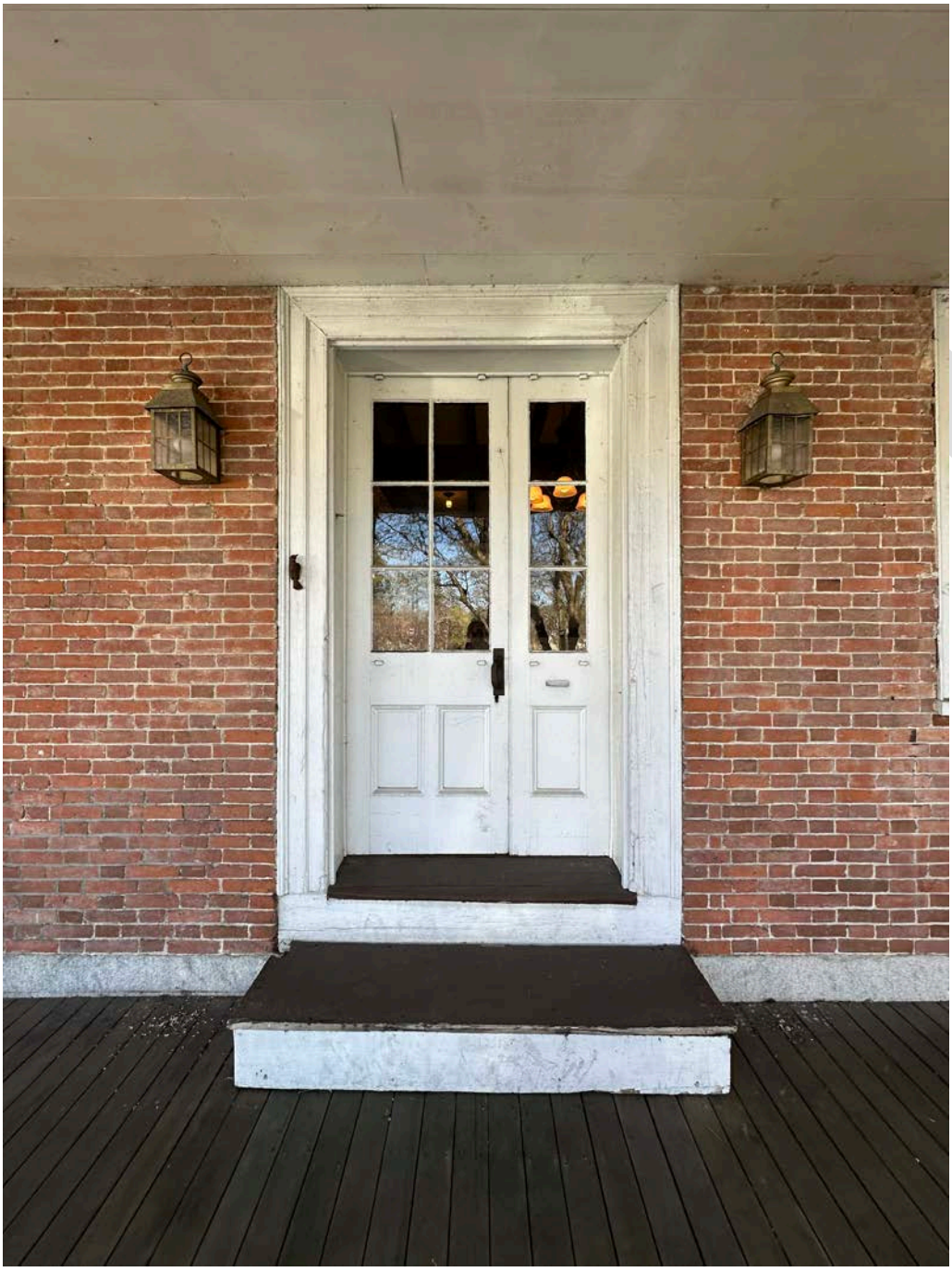

Figure 4.4-4
Throughout the house there are varying door configurations. Pictured here is D-22, a double door.

Figure 4.4-5
D-06 is a new tempered glass door.

Figure 4.4-6
Minor wood damage and peeling paint found typically over all elevations.

Figure 4.4-7
D-01 in poor-to-fair condition, showing signs of wood deterioration, cracks, and previous repairs.

Figure 4.4-8
D-12 in poor-to-fair condition, showing signs of wood deterioration, cracks, and previous repairs.

Figure 4.4-9
Door and sill on D-12 and D-06 were found to be damaged, cupped, and pitched backward.

Figure 4.4-10
The storm windows are non-operable and are screwed to the wood casing. One storm window on the north façade (W-05) was installed upside down.

Figure 4.4-11
Window W-35 in the servant's room, north façade, was installed upside down, as its configuration should be six-over-nine instead of nine-over-six.

Figure 4.4-12
During the Request for Proposal process in December 2023, condensation was observed between the window and storm window.

Figure 4.4-13
The perimeter sealant and glazing putty around the windows appear deteriorated, with cracks and gaps in some locations, leading to poor performance.

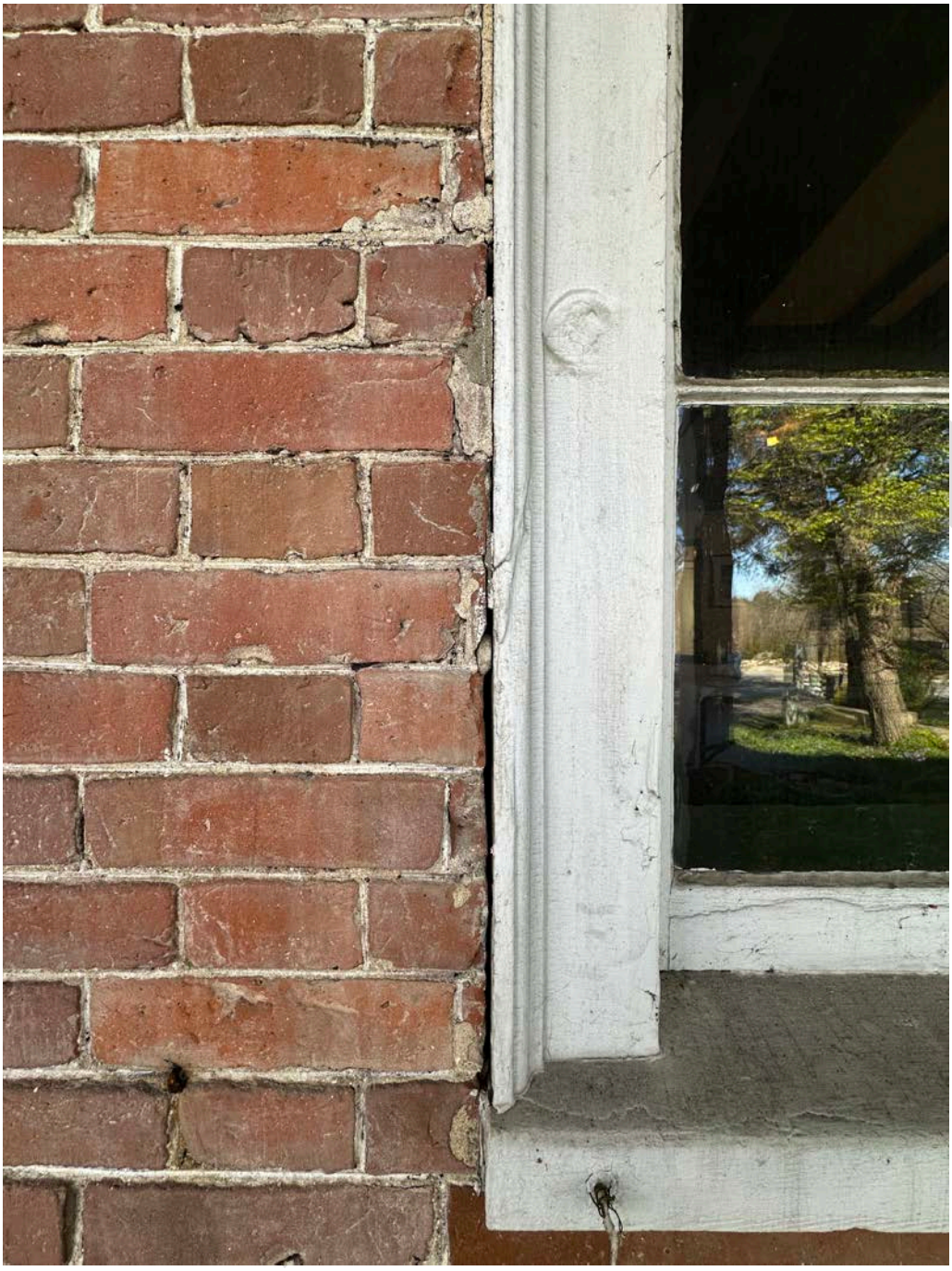

Figure 4.4-14
The perimeter sealant and glazing putty around the windows appear deteriorated, with cracks and gaps in some locations, leading to poor performance.

Figure 4.4-15
Metal window head flashing was noted at most windows but appears bent or poorly installed in some areas.

4.5 Shutters

Existing Conditions & Analysis

All 9 windows on the north elevation of the Hosmer House are flanked by fixed-louvered shutters painted in a black finish. Each shutter is operable and held open by metal shutter tiebacks, which were traditionally known as "shutter dogs." Each shutter is constructed of a top, mid/divider and bottom rail, and flanked by two stiles. Between the rails are fixed louvers without tilt bars. These shutters seem to have been recently installed, however, overall are in poor condition. While the wood of the shutters is quite new, it seems that they have been constructed poorly, and are falling apart in several locations. Typical conditions observed across most shutters were loose bottom rails (See Figure 4.6-1); louvers falling out of place (See Figure 4.6-2) and splitting wood where the dowels were placed to hold in the upper and lower rails. In instances where the fasteners of the bottom rails were failing, it was evident that a repair had been made by inserting a screw into the side of the stiles, through to the bottom rail, however this seems to have failed as well, as the wood around the screw is now splitting (See Figure 4.6-3). Behind many shutters was evidence of soiling such as dust, dirt and debris piling up (See Figure 4.6-4). Less typical conditions found were that the shutters have been loosely anchored to the building, and many of the tiebacks are loosely installed and are rusting (See Figure 4.6-5).

Shutters appear to be in poor condition. Wood joineries have failed, and protective paint is peeling. Metal screws are rusting, causing stress and damage to the surrounding wood window and wood siding.

Recommendations

The most evident explanation for the failing shutters is poor construction. 100% of the shutters should either be repaired properly, by resecuring each of the loose louvers, removing and refastening the wooden dowels securing the bottom rails, and the shutter tiebacks should be reinstalled properly. All elements of the shutters should be prepped, primed and painted. An alternative would be to replace 100% of the shutters with historically appropriate counterparts constructed from a superior wood. The Cost estimating portion of the report will include both pricing options.

Figure 4.6-1
Loose bottom rail of a shutter. Typical conditions seen throughout.

Figure 4.6-2
Louvers which have fallen out of place. Typical condition seen throughout.

Figure 4.6-3
Instances where the bottom rail of the shutter has become loose. A repair had been made by inserting a screw into the side of the stiles, through to the bottom rail, however this seems to have failed as well, as the wood around the screw is now splitting.

Figure 4.6-4
Evidence of soiling such as dust, dirt and debris piling up. Typical condition seen throughout.

Figure 4.6-5
Less typical conditions found were that the shutters have been loosely anchored to the building, and many of the tiebacks are loosely installed and are rusting. Typical condition seen throughout.

4.6 Roof Drainage

Existing Conditions & Analysis

Gutters and downspouts are in fair condition: The Hosmer House historically did not have gutters for roof drainage; however, at some point in the building's history between 1980 and 2004, white, corrugated aluminum metal gutters were installed along the rooflines of the north elevation and southwest extension elevation. There are three aluminum downspouts which are also white, round and corrugated, two which run along both edges of the north elevation and one along the southwest corner of the house. At the northeast corner of the house, the downspout expels water below grade (See Figure 4.8-1), whereas the downspouts at the northwest and southwest of the house expel water through a gutter extension above grade, away from the house's foundation walls (See Figure 4.8-2). While the gutters themselves are in good condition, they have been inappropriately installed along the roof line, some of the fasteners into the building façade are failing. Additionally, the gutter material, shape, and placement, are historically inaccurate for a building of this significance.

Along the north elevation, a gutter was installed along the roofline, supported by wood blocking (See Figure 4.8-3). It seems that to avoid fastening the gutter to the detailed fascia, small blocks cut to match the profile of the fascia were installed at evenly spaced intervals and protrude out just past the roof edge (See Figure 4.8-4).

The gutter on the north elevation leads to two downspouts, which run along the edges of the building, and are fastened directly to the wooden pilasters with downspout straps installed without spacers at the northwest and northeast corners (See Figure 4.8-5).

A second gutter was installed along the southern roofline of the southwest extension. Wood blocking cut to match the profile of the fascia was installed on this elevation as well, however only one of the three blocks is actually fastened to the body of the gutter (See Figure 4.8-6). This gutter is fastened to the roof rafter at the southeast corner with a spike-and-ferrule, while the remaining length of gutter is fastened using strap hangers, which were installed atop the roof membrane, rather than below (See Figure 4.8-7).

There is one downspout along the length of the second gutter which is fastened to the trim of the clapboard at the southwest corner. This downspout terminates an appropriate distance from the house's foundation, and expels water above grade (See Figure 4.8-8).

Typical conditions found across all downspouts are that segments are bent or out of plumb, hangers are missing from the north elevation, some seams on the downspouts are open, there are mildew stains on the lower segments of the downspouts, and the short leader terminations prevent adequate drainage away from the base of the house (See Figure 4.8-9). In addition, the grade around the building is sloped towards the building at some locations, which does not provide adequate water runoff.

Recommendations

The roof drainage of the Hosmer House is visually inappropriate and improperly installed. In consideration of the architectural design and historic lack of gutters and downspouts on the house, an appropriate drainage system should be designed and implemented incorporating appropriate drainage at grade.

Figure 4.8-1
Located at the northeast corner of the house is a downspout that expels water below grade.

Figure 4.8-2
Located at the northwest corner of the house is a downspout that expels water through a downspout extension above grade, away from the house's foundation walls.

Figure 4.8-3
Along the north elevation, a gutter was installed along the roofline, supported by wood blocking.

Figure 4.8-4
It seems that to avoid fastening the gutter to the detailed fascia, small blocks cut to match the profile of the fascia were installed at evenly spaced intervals and protrude out just past the roof edge.

Figure 4.8-5
Downspouts fastened directly to the wooden pilasters with downspout straps installed without spacers at the northwest and northeast corners

Figure 4.8-6
Along the southwest extension, Wood blocking was cut to match the profile of the fascia and was installed on this elevation, however, only one of the three blocks are actually fastened to the body of the gutter.

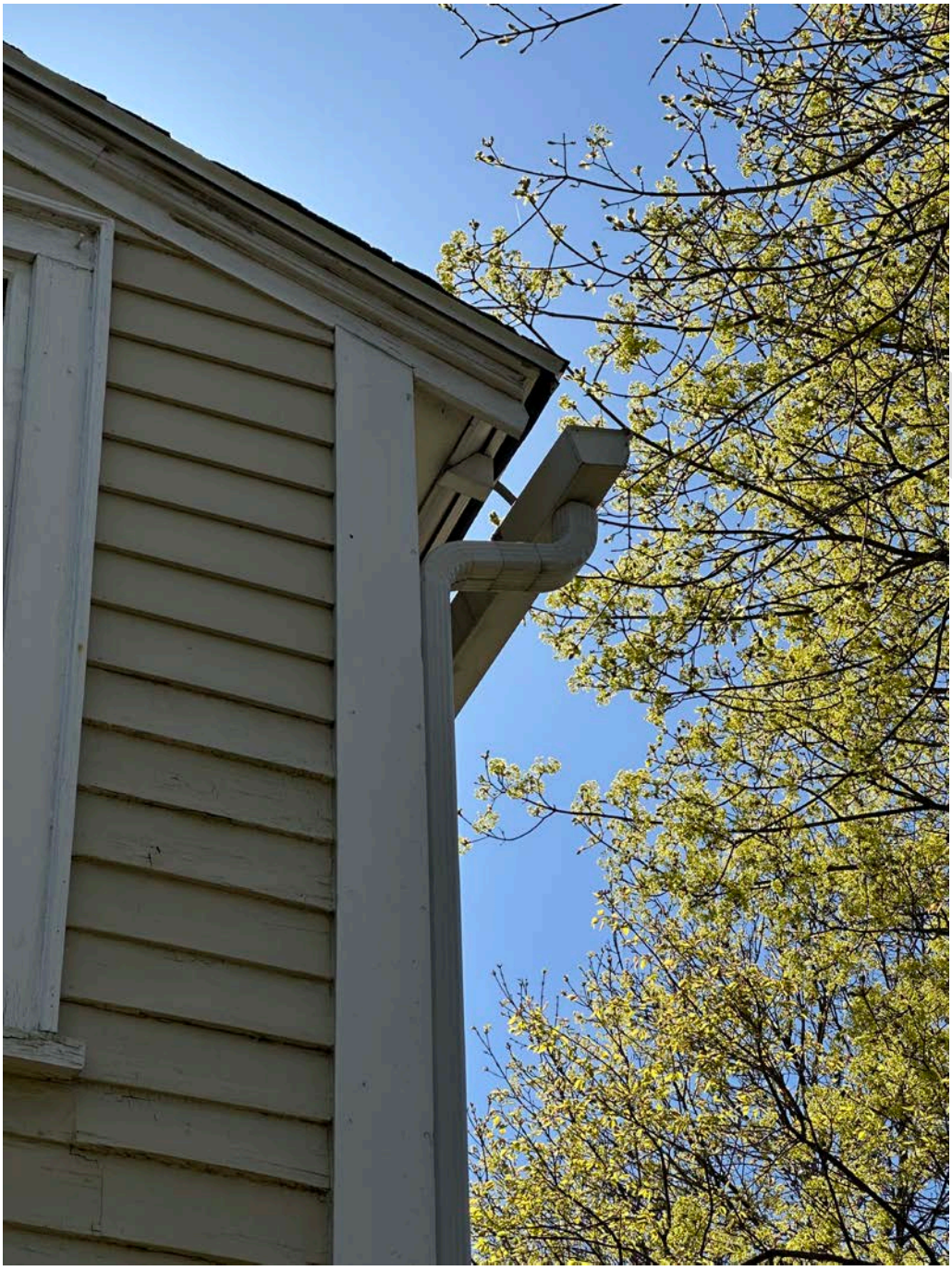

Figure 4.8-7
This gutter is fastened to the roof rafter at the southeast corner with a spike-and-ferrule, while the remaining length of gutter is fastened using strap hangers, which were installed atop the roof membrane, rather than below.

Figure 4.8-8
This downspout terminates an appropriate distance from the house's foundation, and expels water above grade.

4.7 Chimneys

Existing Conditions & Analysis

There are five chimneys at the Hosmer House, which were inspected by drone. Four tall, brick-masonry chimneys are situated in pairs along the east and west elevations of the main house, slightly set back from the hipped roofline (See Figure 4.9-1).

Chimneys FP-05 and FP-09, and FP-06 and FP-10 have stacks in the basement and hearths in rooms F-08 and above in room S-09, which extend to the height of the main roof.

Chimneys FP-01 and FP-07 and FP-02 and FP-08, terminate at grade, and extend to the height of the main roof.

Originally, the chimneys reached a height above the roofline, however at some point in the buildings history, all four chimneys were shortened, and it is evident that the chimneys have been repaired at some point in the building's history, as the brick and mortar seem to be of a different visual quality.

The four chimneys on the main roof appear capped with a stone, with the exception of one at the northwest corner which has a vent. All chimneys are laid in stretcherbond pattern. Just below the coping stone the chimneys is crowned with two courses of protruding brick and cement, creating a drip edge (See Figure 4.9-2). These four chimneys appear to be in good condition and do not appear out of plumb. There are however, several instances of brick deterioration seen in all four chimneys, such as cracked and chipped bricks.

The step-flashing around the chimneystacks and crickets is in poor condition due to general end-of-life degradation as edges of the flashing are upturned and portions of the step-flashing are separating (See Figure 4.9-3).

The fifth chimney, located in the southwest addition, has a hearth in room F-07 and a visible stack in room S-08. This chimney is topped with a vent cap (See Figure 4.9-4).

There is a Fireplace (FP-03) in room F-05 of the southeast edition, which has no visible venting above the roofline, yet has a visible chimneystack in room S-04.

Recommendations

All five chimneys require 100% repointing of masonry joints and selective brick replacement where necessary, of approximately 5-10%. While the chimneys are not in poor condition, it is important to maintain the masonry with selective repairs. The step flashing around all chimneys is deteriorated and requires 100% replacement at all locations.

Historically, the chimneys at the Hosmer House reached above the roofline of the house. While it may be considered to rebuild the chimneys to their appropriate and historical height for a house of this significance, it is dependent on the date to which the building is being presented. If the chimneys were shortened prior to the date of presentation, then they should remain their current height. Functionally (since they are not being used), there is no need to restore the original height. The current height is also safer and less maintenance is required. If the three capped chimneys on the main roof are in fact inoperable, they should be properly sealed.

Figure 4.9-1
Four tall, brick-masonry chimneys are situated in pairs along the east and west elevations of the main house, slightly set back from the hipped roofline. The fifth chimney is located in the southwest addition.

Figure 4.9-2
All chimneys are laid in stretcherbond pattern. Just below the coping stone the chimneys is crowned with two courses of protruding brick and cement, creating a drip edge.

Figure 4.9-3 The step-flashing around the chimneystacks and crickets is in poor condition due to general end-of-life degradation as edges of the flashing are upturned and portions of the step-flashing are separating.

Figure 4.9-4 The fifth chimney, located in the southwest addition, is topped with a vent cap.

4.8 Porch

Existing Conditions & Analysis

A single-story open porch extends along the entire length of the west elevation. It is constructed of a wood deck, wood columns and a shingled hip roof (See Figure 4.10-1). This porch facilitates entrance into room F-08, a room currently being used as a shop and visitors center. The porch is raised approximately six inches (6") above the ground, with a white painted facia five and a half inches (5-1/2") in height and three quarter inch (3/4") deep. The planks which make up the decking, run the depth of the porch and are three and a half (3-1/2") wide and three quarter inch (3/4") deep, and overhang the deck facia by an average of one inch (1"). The porch roof is supported by four columns along the outermost edge which are approximately six inches by six inches square (6" x 6"). Overall the porch is in fair condition, however typical conditions are mildew and mold due to proximity to vegetation and the earth, and peeling paint on the roof, columns, and facia.

Portions of the facia surrounding the porch has been replaced recently, as the wood is of the same quality and character as the replaced sections of the pilasters. There is extensive mildew and mold on the deck facia, most likely due to its proximity to the earth and surrounding vegetation and the section of facia between the second and third columns is rotted through, the wood is cracked, and a portion of the facia has fallen off (See Figure 4.10-2). Along the entire perimeter of the porch are rusted nail fasteners embedded in the facia. Along the base of the whole porch is a gap between the ground and fascia, large enough for rodents and wildlife to enter through.

The planks which deck the porch are weathered and have mildew stains. Some planks have been repaired, but not in full length. The decking planks directly below the door threshold are rotted, and are exhibit the most severe deterioratined of the deck (See Figure 4.10-3). Atop the deck there is a movable stair to aid in entering into F-08 as the door opening is quite high from the finished porch deck. This stair is unattached from the building and poses a danger if imporperly placed, as the stair becomes wobbly.

The 4 columns which support the porch roof are in poor-to-fair condition. The shaft of the columns have degraded over time, and have lost material mass at various locations (See Figure 4.10-4). Between twelve inches to fourteen inches (12" - 14") of the shafts of the two columns at either end of the porch have been replaced along with all four column capitals and bases, most likely at the same time as portions of both the facia and pilasters were replaced due to the similarity of the replacement wood (See Figures 4.10-5 & 4.10-6).

The porch ceiling is in good condition. The ceiling board at the underside of the roof is relatively new, however, oils are being drawn out from the knots in the wood, creating brown rings which telegraph through the white paint, typical throughout (See Figure 4.10-7). The frieze board and facia of the porch roof have as well been replaced, most likely at the same time as the earlier mentioned repairs (See Figure 4.10-8), and instances where the wood has split, in some cases showing cracks as long as fourteen (14"). The portion of facia and frieze along the south elevation of the porch has been reinforced with a metal 'L' bracket and bolts, which fastens into the trim of the clapboard siding on the west elevation (See Figure 4.10-9).

Recommendations

In general, the porch attached to the west elevation of the Hosmer House is in fair condition. Vegetation should be cleared periodically from the grounds to achieve a two foot (2') buffer between the building and vegetation. The areas of fascia where mildew growth has occurred on sound material should be cleaned with a non-toxic cleaner, brushed and dried. In areas where mildew and vegetation has led to material loss and wood rot, the section of rotted wooden planks should be replaced and new planks (approximately 20%) should be spliced in with a wood of same quality and species as the original wood of the porch. Rotted deck planks below the detachable stair should be replaced in full length, and all sound planks should be treated to prevent further mildew growth. A new removable step should be fastened into the porch decking and secured for safety purposes.

The reinforced southern corner of the porch roof at the frieze board and fascia was most likely installed because the porch was leaning or separating from the main building. This movement should be monitored, to determine if this is an ongoing and active issue, or not. The reinforcement could potentially be removed, though this will need to be confirmed with the structural engineer. Once the root cause is determined, this reinforcement piece, if still necessary, should be replaced with a more stylistically-appropriate reinforcement. The portions of the fascia which have long cracks should be removed, and new planks should be spliced in, made with wood of the same quality and species as the surrounding material.

The 4 columns supporting the porch roof seem to have been replaced in sections (either both the base and capitals, or in vertical sections). The columns should be restored with wood of the same quality and species as the surrounding material.

Figure 4.10-1
A single-story open porch extends along the entire length of the west elevation. It is constructed of a wood deck, wood columns and a shingled hip roof.

Figure 4.10-2
There is extensive mildew and mold on the deck facia, most likely due to its proximity to the earth and surrounding vegetation and the section of facia between the second and third columns is rotted through, the wood is cracked, and a portion of the facia has fallen off.

Figure 4.10-3
The decking planks directly below the door threshold are rotted, and are exhibit the most severe deterioratined of the deck.

Figure 4.10-4
The 4 columns which support the porch roof are in poor-to-fair condition. The shaft of the columns have degraded over time, and have lost material mass at various locations.

Figure 4.10-5
Between 12" to 14" of the shafts of the two columns at either end of the porch have been replaced along with all 4 column capitals and bases.

Figure 4.10-6
Between 12" to 14" of the shafts of the two columns at either end of the porch have been replaced along with all 4 column capitals and bases.

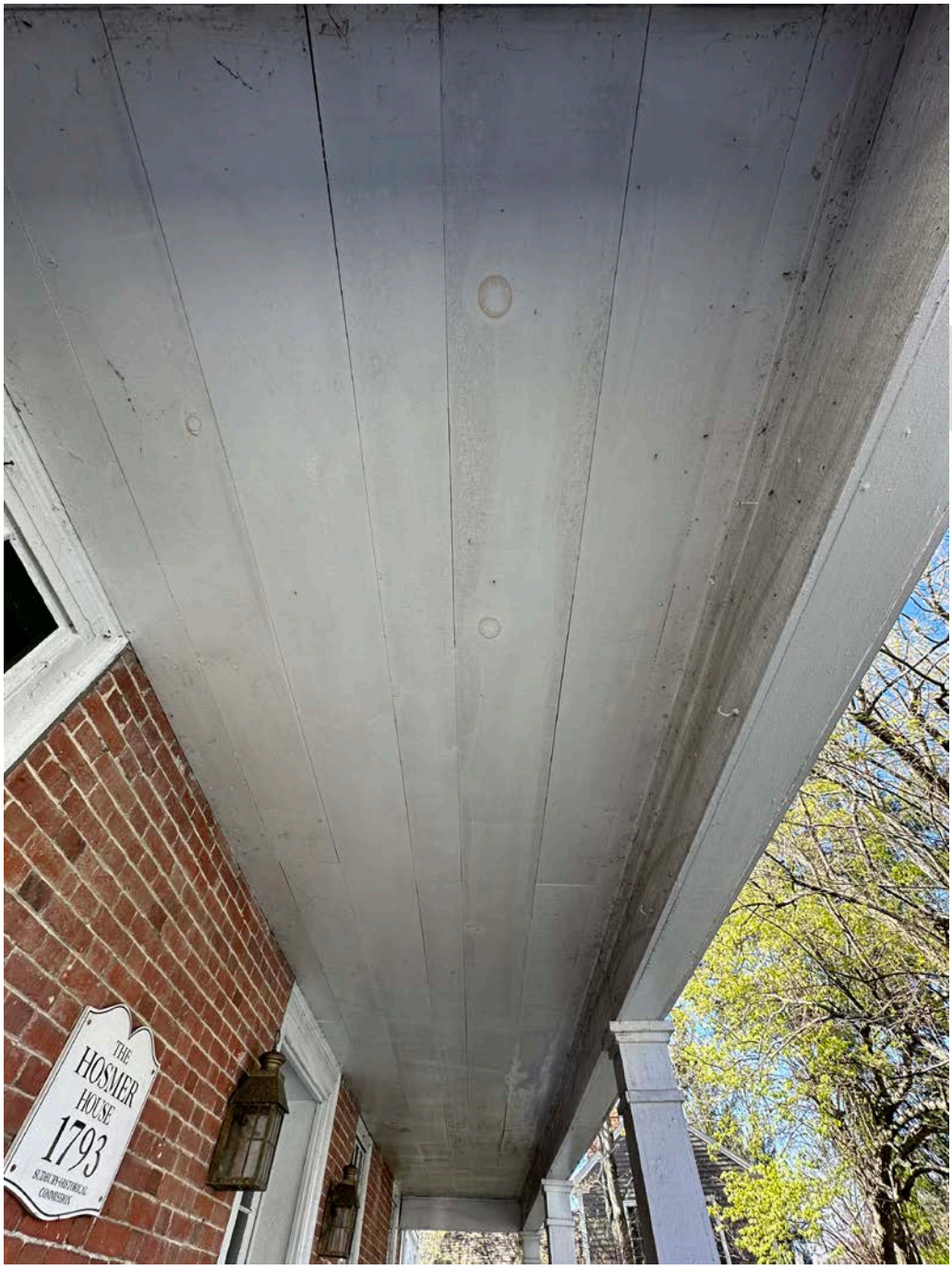

Figure 4.10-7
The porch ceiling is in good condition. The ceiling board at the underside of the roof is relatively new, however, oils are being drawn out from the knots in the wood, creating brown rings which telegraph through the white paint, typical throughout.

Figure 4.10-8
The frieze board and facia of the porch roof have as well been replaced.

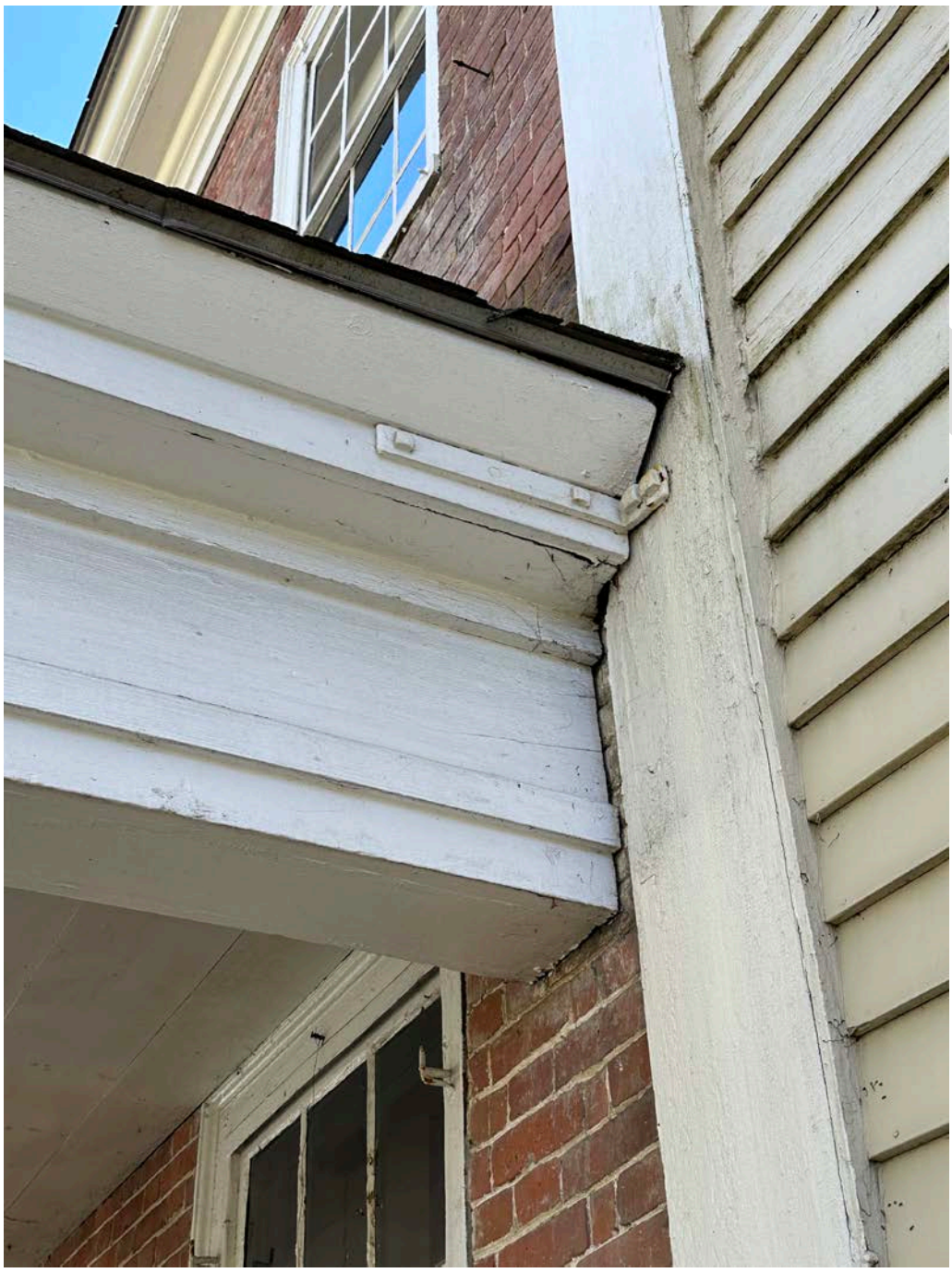

Figure 4.10-9
The portion of facia and frieze along the south elevation of the porch has been reinforced with a metal 'L' bracket and bolts, which fastens into the trim of the clapboard siding on the west elevation.