City of McMinnville
Planning Department
231 NE Fifth Street
McMinnville, OR 97128
(503) 434-7311
www.mcminnvilleoregon.gov

Historic Landmarks Committee
Hybrid In-Person & ZOOM Online Meeting
Thursday, June 27th - 3:00 PM
Kent Taylor Civic Hall: 200 NE 2nd St.

Please note that this meeting will take place at McMinnville Civic Hall and simultaneously be conducted via ZOOM meeting software if you are unable or choose not to attend in person

Join Zoom Meeting
Meeting ID: 856 9408 0410
Passcode: 637718
https://mcminnvilleoregon.zoom.us/j/85694080410?pwd=TIWbHxBZ3bRI6AuBPpfo1c0zyF1Vf6.1
Or join ZOOM Meeting by phone via the following number: 1-253-215-8782

Committee Members	Agenda Items
John Mead, Chair Mary Beth Branch, Vice Chair Mark Cooley Christopher Knapp Katherine Huit City Council Liaison Chris Chenoweth	**1) Call to Order** **2) Citizen Comments** **3) Approval of Minutes** • 12-21-2024 Meeting Minutes *(Exhibit 1)* **4) Action Items** • HL 3-24: Certificate of Approval for Alterations 609 NE Cowls St *(Exhibit 2)* **5) Committee Member Comments** **6) Staff Comments** **7) Adjournment**

The meeting site is accessible to handicapped individuals. Assistance with communications (visual, hearing) must be requested 24 hours in advance by contacting the City Manager (503) 434-7405 – 1-800-735-1232 for voice, or TDY 1-800-735-2900.

*Please note that these documents are also on the City's website, www.mcminnvilleoregon.gov. You may also request a copy from the Planning Department.

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MINUTES

December 21, 2023 **3:00 pm**
Historic Landmarks Committee **Hybrid Meeting**
Regular Meeting **McMinnville, Oregon**

Members Present:	Mary Beth Branch, Eve Dewan, Mark Cooley, Christopher Knapp, and John Mead
Members Absent:	
Staff Present:	Heather Richards – Community Development Director and Adam Tate – Associate Planner
Others Present:	Chris Chenoweth – City Councilor

1. **Call to Order**

   Chair Mead called the meeting to order at 3:00 p.m.

2. **Citizen Comments**

   None

3. **Approval of Minutes**

   None

4. **Action Items**

- Certificate of Approval for Alteration: 806 SE Hembree St

Disclosures: Chair Mead opened the public hearing and read the hearing statement. He asked if any Committee member wished to make a disclosure or abstain from participating or voting on this application. There was none. He asked if there was any objection to the jurisdiction of the Committee to hear this matter. There was none.

Staff Presentation: Associate Planner Tate said this was a certificate of approval for alterations at 806 SE Hembree St. He discussed the subject site, project summary to weatherize the home, photos of the current house, proposed site plan, applicable review criteria, public agency comments, and conditions of approval. Staff recommended approval with conditions.

There was discussion regarding SHPO approval of the project and how that informed the HLC's decision. It was clarified the HLC could render a different decision as it was a review of the City's criteria.

Michael Figueredo, representing OHCS, was the technical lead for the weatherization assistance program for the state of Oregon. They had a programmatic agreement with SHPO to review historic buildings to make sure they met the requirements of SHPO. SHPO had reviewed the application according to the Department of the Interior's standards and said it met the requirements. He explained their whole house approach to weatherization and how they evaluated the whole house as a system that did a lot toward the building's durability. A choice to say yes to weatherization was a choice to say yes to preserving the building. He confirmed that unless they heard a no from SHPO, after 30 days it was an automatic yes. Most of the work was out of the public right-of-way and he thought that attributed to their approval.

There was discussion regarding the proposed conditions of approval, how the east façade window even though not on a primary street could be seen from the public right-of-way, specs for the sliding door, and how the applicant proposed to use the Cascade window series for replacement windows.

Applicant's Testimony: Kraig Ludwig, Energy Services Director at YCAP, the proposal included replacing the wood windows with vinyl windows. The estimate they had for the cost for the project was $32,000. However, the price was outdated and they would have to reach out to the contractor to review any potential increase. They proposed to replace the existing sliding aluminum door with an energy efficient vinyl door. It was not just the preservation of the property for them, but also a focus on the energy savings and health and safety measures. The work would include attic insulation, wiring assessment, exterior wall installation, replacement of windows and patio door, installation of a ductless heat pump, minor plumbing repairs, and other minor improvements. They wanted to assist the occupants in energy consumption to reduce utility bills. They would like to start the project as soon as possible. They had limited funding resources to add anything to the project.

Committee Member Branch asked what was included in the application submitted to SHPO, especially regarding the wood windows being replaced with vinyl.

Mr. Ludwig said it did reference the aluminum windows would be replaced with white vinyl. There were a few wood windows that would be replaced as well.

Committee Member Dewan clarified the house was not listed on the national register, but it was on the local historic register.

Committee Member Branch asked about the method of replacement for the windows and door including the exterior trim. Mr. Ludwig said they tried to put the materials back on the house after replacement as is unless they were broken and then they would be replaced with the same kind of materials.

Committee Member Branch asked if the windows would have a grid or be clear. Mr. Ludwig thought the two awning windows would have grids. If there were additional requirements outside the scope of the program, they would remove that portion from the project.

Chair Mead said the north facing aluminum window had no crown molding and cap over it. Was it possible to add the molding when the new window was installed? Mr. Ludwig thought it was something they could see if they could do.

Chair Mead asked if the exterior siding would be drilled and plugged. Mr. Ludwig said the plan was to remove the siding to drill and fill and then replace the siding right back.

Chair Mead asked about the options for the heat pump. Mr. Ludwig said all three were possible for the Committee to choose from.

There was no public testimony.

Chair Mead closed the public hearing.

There was discussion regarding the HVAC system options. The Committee was comfortable with the installation approach. Committee Member Branch suggested adding a condition that any siding needing to be replaced would match the profile of the existing siding.

There was discussion regarding the windows. For the north façade windows, they discussed identifying what the materials were, how the windows had to be replaced with like material instead of restoring to the original wood windows, guidelines for rehabilitation for missing historic features, regulatory authority of what they could require based on the proposal, and not requiring the applicant to go above and beyond what was proposed.

There was consensus to accept the vinyl replacements on windows 2, 7, 8, 9, and 10 and slider door 5, because they were aluminum currently. It was suggested to add a condition that the new vinyl windows would have no grids because the existing windows did not.

There was discussion regarding the wood windows, 6, 16, and 17. There was consensus to deny replacement of these windows and to recommend interior storm windows to be used or repairing the existing wood windows. Replacement of the wood windows would be allowed after review by staff.

It was suggested to add a condition for the applicant to take photographs before the work commenced.

The conditions to add would be: the siding that was pulled off for drilling would be replaced and any new material would match the profile and material of the removed siding, the white vinyl replacement windows would match the fenestration pattern of the existing windows with regard to grids, the exterior trim of the new windows would match the wood trim on the existing wood windows, and the applicant would provide exterior photographs of the project prior to beginning any work. The economic conditions criterion was not in play, but local criteria 17.65.060 subsections b and e was being used to deny replacement of the wood windows.

Committee Member Branch moved to approve HL 5-23 except for the replacement of the existing wood windows labeled as Windows #6, #16, and #17. The rest of the windows would be replaced with vinyl units with staff conditions and new conditions as stated above. The motion was seconded by Committee Member Dewan and passed 5-0.

5. Old/New Business

None

6. Committee Member Comments

Chair Mead said this was Committee Member Dewan's last meeting as she was moving to Ohio.

7. Staff Comments

Community Development Director Richards discussed staff recruitment. They were working on scheduling training for the committee.

Chair Mead said they had interviewed for Committee Member Dewan's replacement and the person would start in January. Committee Members Knapp and Branch had reapplied to serve on the committee.

8. Adjournment

Chair Mead adjourned the meeting at 5:01 p.m.

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EXHIBIT 2 – STAFF REPORT

DATE: June 27, 2024
TO: Historic Landmark Committee Members
FROM: Matthew Deppe, Associate Planner
SUBJECT: HL 3-24 (Certificate of Approval for Alteration)
609 NE Cowls Street

STRATEGIC PRIORITY & GOAL:

GROWTH & DEVELOPMENT CHARACTER
Guide growth & development strategically, responsively & responsibly to enhance our unique character.

OBJECTIVE/S: Define the unique character through a community process that articulates our core principles

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Report in Brief:

This is a quasi-judicial review of a "*Certificate of Approval for Alteration"* land use application for alterations to the existing historic landmark and building located at 609 NE Cowls Street (Tax Lot R4421-BB-18900. Alterations to existing historic landmarks that are designated on the Historic Resources Inventory need to be reviewed and receive approval for how their design complies with McMinnville's historic preservation standards. Per the McMinnville Municipal Code, the McMinnville Historic Landmarks Committee serves as the decision-making body for the Certificate of Approval review. The applicant, Beth Rhoades, on behalf of property owners Scott & Jennifer Scott, is requesting the Certificate of Approval for Alteration approval. The Certificate of Approval for Alteration request is subject to the review process described in Section 17.65.060 of the McMinnville Municipal Code (MMC). The Historic Landmarks Committee will make a final decision on the application, subject to appeal as described in Section 17.65.080 of the MMC. The below brief provides some clarification about existing conditions, recent HLC decisions, and a summary of preservation brief 16.

Background:

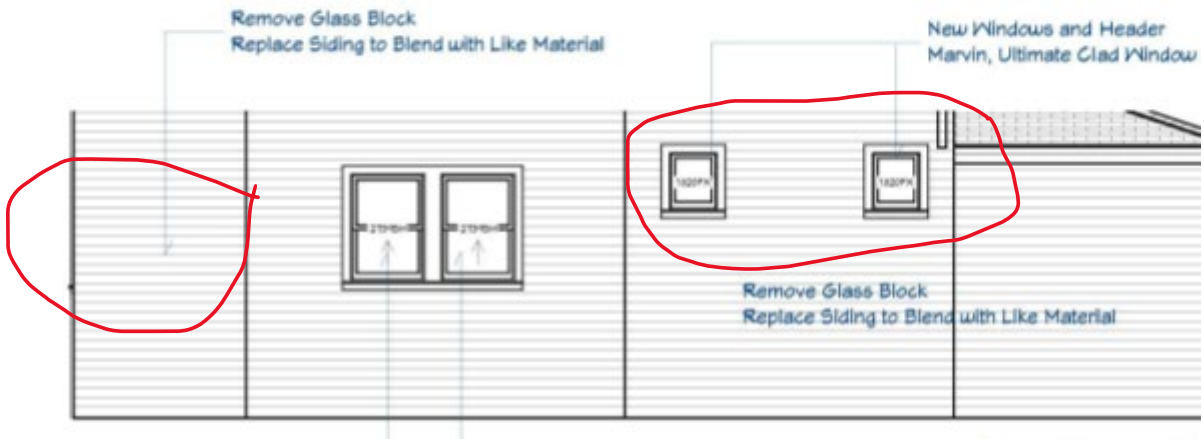
The subject property is located at 609 NE Cowls Street. The property is identified as Tax Lot R4421-BB-18900 ***See Top View Map (Figure 1) below.***

Attachments:
Attachment A: Decision, Conditions, Findings of Fact and Conclusionary Findings for the Approval of HL 3-24
Attachment B: HL 3-24 Application Materials

Exhibit 1. Top View of Property (Property Lines Approximate)

The applicant is continuing a request for approval of the design to remove rear side glass block walls, add new windows on that same side, replace rear and front windows, replace a front door, and replace any siding that cannot reasonably be repaired with cement board. The applicant is requesting Certificate of Approval for these alterations on the subject property.

Exhibit 2 – Glass block windows
Glass block window replacement – rear of house, although it can be seen from the sidewalk from a few angles



Applicant is requesting to remove the glass blocks on the north side (left) and replace them with siding. Applicant is requesting to remove the glass blocks on the south side (right) and replace them with two new, aluminum clad, windows matching the design of a window on the front corner of the home. Pictured below:

Location of window:

Exhibit 3 – rear facing wood windows
Existing wood window replacement – rear of house, although it can be seen from the sidewalk from a few angles

Applicant is requesting to replace the two central wood windows on the main floor with new aluminum clad double hung windows. The condition of the wood windows is not detailed. There is no note of considering repairs to these windows.

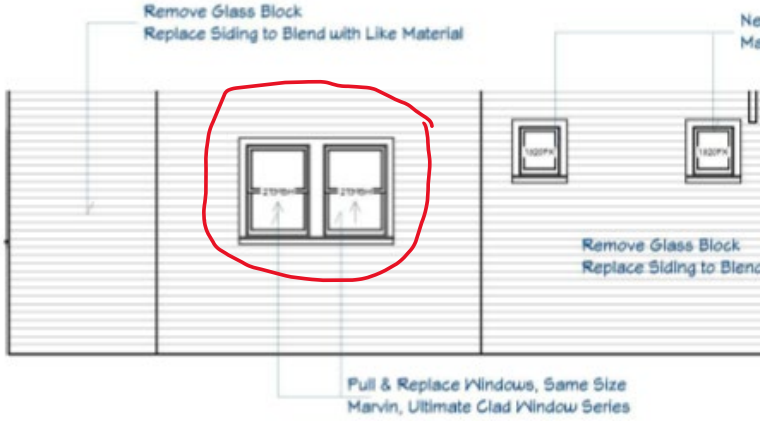
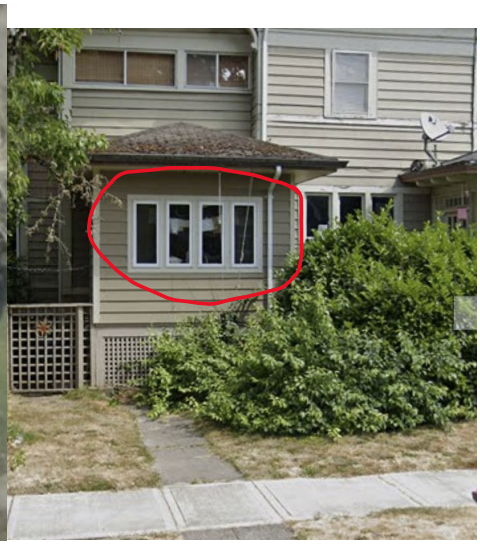
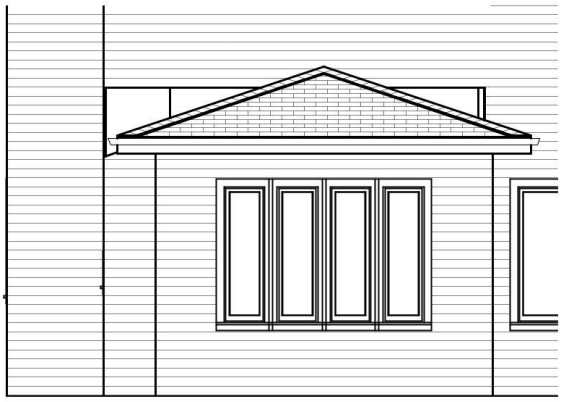


Exhibit 4 – nook window street facing
Nook Window Replacement: applicant is proposing replacing an existing vinyle window with an aluminum clad window.

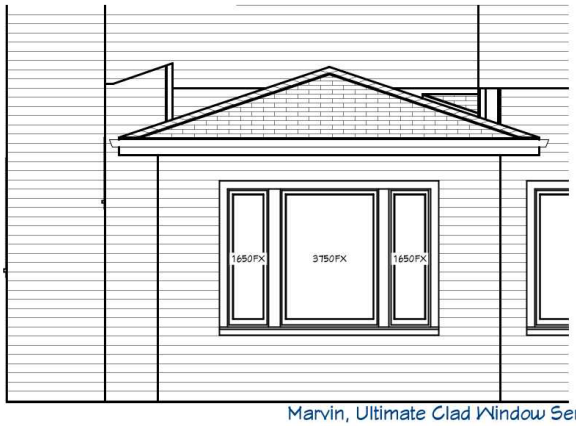


Existing style – vinyl window



As Built-Nook Windows
1/4" = 1'

Proposed Style – aluminum clad



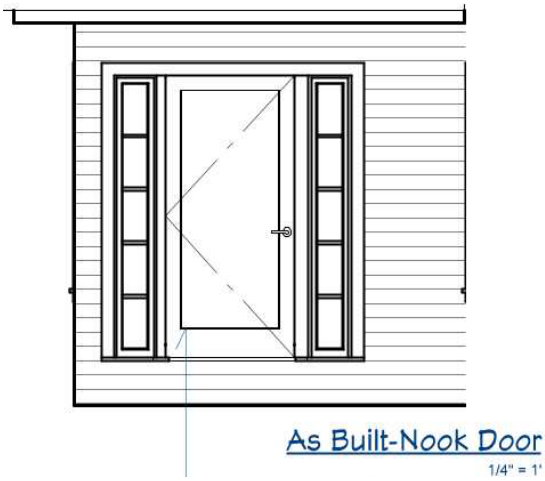
Marvin, Ultimate Clad Window Series

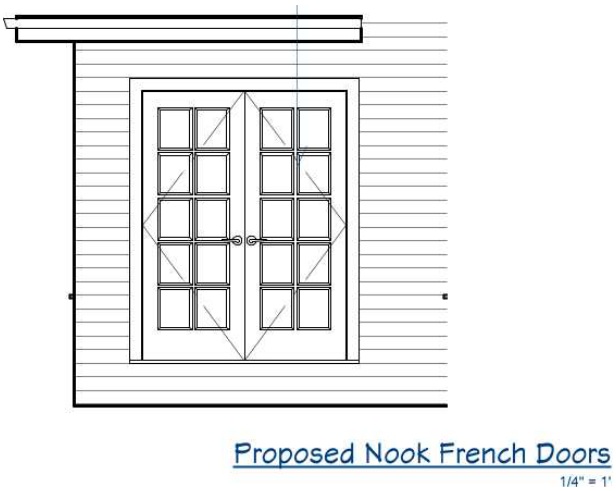
Proposed Windows
1/4" = 1'

Exhibit 5 - nook door street facing
Nook Door Replacement: applicant is proposing replacing an existing vinyl (?) door with wood French doors. Applicant to confirm existing door material.

Existing door style – material unknown

Proposed door style – wood door





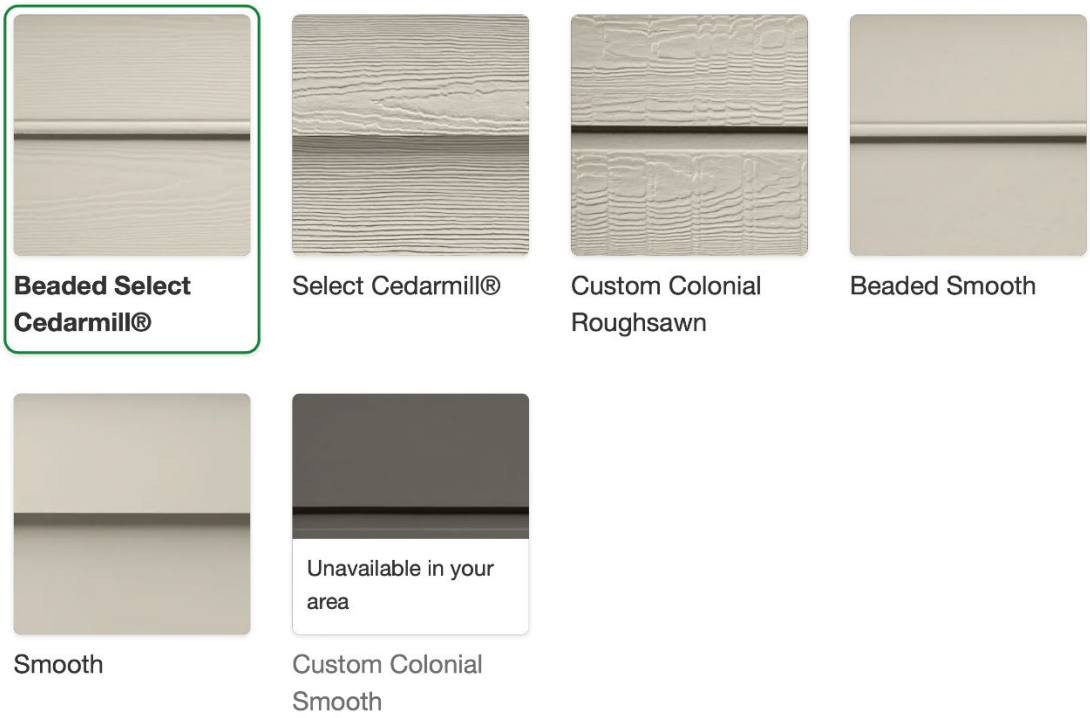
Existing French doors opposite proposed change:

Exhibit 6 – cedar siding under aluminum and vinyl siding
Applicant in requesting to use cementicious siding to replace cedar siding that cannot feasibly be repaired or replaced. Economics is the primary driver in this requested alteration.

1st photo is street facing, 2nd and 3rd photos are rear facing although much of both both can be seen from the sidewalks.

Existing Siding Under Aluminum. Only some original siding has been exposed so far.

Applicant is open to suggestions on what cement board texture would best match the original siding for any areas approved for replacement (some options on next page).



Discussion:

In addition to the staff report from the June 12th, 2024, meeting the following summary is provided.

Standard 6 of the Secretary of the Interior's Standards for Rehabilitation:

6. "Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials. …"

Preservation Brief 16 Summary:

Preservation Brief 16 (PB16) details the use of substitute materials on historic building exteriors. This brief is intended to be used once it has been determined that historic features cannot feasibly be repaired. PB16 opens with the following sentence: "The Secretary of the Interior's Standards for Rehabilitation generally require that deteriorated distinctive architectural features of a historic property be repaired rather than replaced." The brief goes on to prioritize composition, design, color, texture, and other visual properties when considering replacement materials. It also suggests matching materials "when possible".

The second paragraph of the brief states: "With limited exceptions, replacement should only be considered when damage or deterioration is too sever to make repair feasible". It goes on to warn that "there is a point where the amount of replacement can become excessive and the building's historic integrity is diminished to an unacceptable degree, regardless of the material used – that is, a loss of authenticity and the physical features and characteristics closely associated with the property's historic significance. With HL 5-23, 806 SE Hembree St, the committee required that any siding removed as part of the work be replaced with matching profile and materials. Wood windows replaced on the front of the structure were required to be wood and vinyl windows replaced on the rear of the structure were allowed to be vinyl, In HL 3-23, 706 SE 1st St, all window replacements above the basement level were required to be wood windows. Siding on the upper level (street and rear facing), siding on the rear, and a portion of siding on the street facing side of the home were allowed to be replaced with "cementitious

board matching historic alternating exposure". The existing condition and material of the siding were not noted in the application nor staff report.

Preservation brief 16 states that compelling reasons to use a substitute material includes "the unavailability or poor performance of the historic material, or environmental pressure, or code-driven requirements".

Page 4 of PB16 restates "deterioration should generally be address through repair if in repairable condition" and then goes on to say "There are situations when the level of deterioration makes localized repairs infeasible and entire features or units of historic material must be replaced". "Circumstances in which the use of substitute materials may generally be considered appropriate, taking into consideration technical and economic feasibility reasons, include: the unavailability of historic materials; the unavailability of skilled artisans or historic craft techniques; inadequate durability of the original materials; …" Later PB16 details "When features with severe exposure need to be replaced or reproduced, substitute materials that are less susceptible to decay can have a longer life, and when the feature is painted, as exterior wood features generally are, the visual effect of a substitute material can be minimal." Particularly replacement is given extra leeway when considered a secondary feature. "For example, replacing secondary features such as those with limited visibility (e.g., siding material on a rear elevation) may permit replacement materials that are similar in appearance or character without having to be a perfect match (pg. 6)."

In Substitute Materials and Economic Feasibility PB16 states:

> "Economic feasibility is inevitably a concern when choosing a material for any part of a project, whether a historic or substitute material, but it should not be the sole determinant factor at the expense of maintaining the historic character and historic integrity of a building. Other factors may prompt the consideration of a substitute material, such as the cost of maintaining the historic material, because it is comparatively difficult or costly to reach or access, or the frequency of required maintenance the historic material needs. Additionally, where in-kind replacement material is found to be prohibitively expensive, it may be reasonable to consider a substitute that offers an alternative and is a good physical and visual match."

At the close of this section it adds "Maintenance cost should never be the sole reason for replacing a historic material that is not deteriorated."

Criteria for the appropriate use of substitute materials states "Some historic materials, such as wood and ferrous metals, were typically painted, making the color of the substitute unimportant, though the texture of the surface, which telegraphs through a paint layer, is still an important consideration."

The final section "Choosing an Appropriate Substitute Material" begins with "Once all reasonable options for repair and replacement in kind have been considered and sufficient justification for substitute materials has been established, the choice among the variety of substitute materials currently available must be made."

Applicant Case for Change in Material: (provided separately)

Decisions and/or recommendations for approval of the land use application is dependent upon whether or not the application meets state regulations, the McMinnville Comprehensive Plan and the McMinnville Municipal Code. The application can either meet these criteria as proposed, or a condition

of approval can be provided that either outlines what needs to occur to meet the criteria or when something needs to occur to meet the criteria.

The specific review criteria for a Certificate of Approval for Alteration in Section 17.65.060(B) of the MMC require the Historic Landmarks Committee to base each decision on the following criteria:

1. The City's historic policies set forth in the comprehensive plan and the purpose of this ordinance;
2. The following standards and guidelines:
    a. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
    b. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
    c. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
    d. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
    e. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
    f. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.
    g. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
    h. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
    i. The Guidelines for Historic Preservation as published by the United States Secretary of the Interior.
3. The economic use of the historic resource and the reasonableness of the proposed alteration and their relationship to the public interest in the historic resource's preservation or renovation;
4. The value and significance of the historic resource; and
5. The physical condition of the historical resource.

Suggested Conditions of Approval

Staff suggests four conditions of approval. When working with historic buildings it is common to have to adjust the project plan in minor ways to account for unexpected existing conditions. These conditions are meant to allow for those minor adjustments.

1. That all window and doors installed are wood-clad (exterior) to match the existing structure's materials (exhibit 2, exhibit 3, exhibit 4)

2. The replacement French doors (exhibit 5) should have side lights similar to the existing sidelights of the door being replaced and the existing French doors being replicated.

3. The four adjacent vertical windows (exhibit 4) should be replaced with a similar design window pattern with the vertical pattern of separation either by design or with window mullions. The replacement and new windows and doors shall include the wood trim and windowsill design that exists on the remainder of the windows and doors on the existing structure.

4. Siding on the front facing sides of the home: That the applicant evaluates the original siding under the existing siding and repairs any sections that can feasibly be repaired. Any sections that cannot be feasibly repaired will be replaced with cedar wood siding matching the design, texture, and material of the existing siding.

5. Siding on rear facing sides of the home: That the applicant evaluates the original siding under the existing siding and repairs any sections that can feasibly be repaired. Any sections that cannot be feasibly repaired may be replaced with cementitious siding that matches the design, color, texture, and other visual qualities of the original materials.

Committee Options:

1) Close the public meeting and **APPROVE** the application, per the decision document provided which includes the findings of fact.

2) **CONTINUE** the public meeting to a specific date and time.

3) Close the public meeting and **DENY** the application, providing findings of fact for the denial in the motion to deny.

Recommendation:

Staff is recommending approval of the application, subject to the above suggested conditions of approval.

MOTION FOR HL 3-24:

BASED ON THE FINDINGS OF FACT, THE CONCLUSIONARY FINDINGS FOR APPROVAL, AND THE MATERIALS SUBMITTED BY THE APPLICANT, THE HISTORIC LANDMARKS COMMITTEE APPROVES HL 3-24, SUBJECT TO THE CONDITIONS OF APPROVAL PROVIDED IN THE DECISION DOCUMENT.

City of McMinnville
PLANNING

COMMUNITY DEVELOPMENT
231 NE Fifth Street
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www.mcminnvilleoregon.gov

MEMORANDUM

DATE: June 20, 2024
TO: Historic Landmarks Committee Members
FROM: Matthew Deppe, Associate Planner
SUBJECT: Docket HL 3-24, Certificate of Approval for Alteration at 609 NE Cowls Street

Hi Committee Members,

At your Historic Landmarks Committee meeting on Wednesday, June 12, you elected to continue the public meeting for the consideration of HL 3-24, asking the applicant to provide some additional clarifying information for your deliberations.

That information was provided on Monday, June 17, and is attached.

Also attached is the original staff report and draft decision document that was provided for the June 12, 2024 meeting.

Staff is currently reviewing the additional information provided and may follow-up with an additional memorandum on Monday, June 24, 2024.

From: Beth Rhoades
To: Matthew Deppe
Cc: Jennifer Green; Scott Green
Subject: HL 3-24 Additional Information
Date: Monday, June 17, 2024 7:32:55 AM

Hi Matthew,

Heather mentioned sending this to her as well, I do not have her email address. Please let me know what additional information is needed for the meeting on the 27th of June.

HL 3-24
609 NE Cowls St
Request for additional information on Siding and Windows by the committee on June 12th

Siding Issue:

Unfortunately, our siding contractor is out of town this week and next. They are a small business (husband and wife) and cannot immediately provide us with a quote on the difference between fiber cement lap and cedar lap. However, they did mention that the cedar would be more expensive.

With that in mind, here are the reasons (excluding the initial cost savings) we would like to have the option of fiber cement siding:

Maintenance, Durability & Cost of Ownership:
- Insects do not affect fiber cement. We are currently battling carpenter ants throughout the house. We also have squirrels in our attic that gained access by chewing through wood. Fiber cement would help alleviate both issues.
- Unlike wood siding, fiber cement does not rot. Given our wet weather, this would significantly reduce both cost and maintenance.
- Fiber cement needs to be painted every 10-20 years, whereas wood siding needs to be painted every 5-7 years. Painting a house of our size costs about $15,000.
- Fiber cement is fire-resistant, whereas wood siding is not. Our neighbors at 632 NE Cowls had their historic home burn down and had to be replaced. Fire safety is a major concern for our family with young children and pets.
- Fiber cement provides better R-value. The house would need to be sheathed, and fiber cement is much more resistant to wind, rain, and temperature changes. It does not swell and shrink like natural wood.

Despite these advantages, we are still open to some wood sidings. There are "modified" wood sidings that offer many of the benefits of fiber cement, but they are extremely cost-prohibitive. If we can afford to use these wood products in the next year, we will. We are simply asking for the option of either wood siding or fiber cement siding.

Window Issue:

Non-Viewing from Street Windows:
Kitchen Double Hung Windows:
To preserve the existing kitchen windows, the existing windows are in need of replacement due to years of neglect to painting and the overall craftsmanship of the windows is not in good condition. They would need to be re-built to be able to preserve the home and integrity of the window.

The options of replacement with new double hung windows, same size and location:
A. wood window with an aluminum clad exterior.
B. primed pine windows
C. doug fir windows

The cost difference between these three
Wood Window with Aluminum Clad Exterior-Least Expensive Option
Primed Pine Windows 30% Price Increase for the Window Material and Painting
Doug Fir Windows 40% Price Increase for the Window Material and Painting

Additional Transom Windows:
These windows do not exist and are proposed to replace the loss of light with the elimination of the glass block. The option of new would be to match the proposed kitchen windows.
A. wood window with an aluminum clad exterior.
B. primed pine windows
C. doug fir windows

The cost difference between these three
Wood Window with Aluminum Clad Exterior-Least Expensive Option
Primed Pine Windows 30% Price Increase for the Window Material and Painting
Doug Fir Windows 40% Price Increase for the Window Material and Painting

Street Viewing Doors & Windows in Nook:

Nook windows:
The current windows are a clad window configuration of four windows. The configuration is casement, fixed, fixed, casement. The nook was not part of the original house structure and the building materials/building system is modern day framing.

We are proposing to replace these windows with the same material as the kitchen windows. Configuration currently proposed is a casement, larger fixed glass window and casement.

A. wood window with an aluminum clad exterior.
B. primed pine windows
C. doug fir windows

The cost difference between these three
Wood Window with Aluminum Clad Exterior-Least Expensive Option
Primed Pine Windows 30% Price Increase for the Window Material and Painting
Doug Fir Windows 40% Price Increase for the Window Material and Painting

Exterior french doors:
Regarding the exterior door configuration, no additional information was requested by the HLC committee.

Regarding Aluminum Clad Wood window vs All Wood Windows:

The nook windows are on the south side of the house which present problems with the sun and weather exposure.

Wood windows will have the following additional yearly costs associated:
Regular painting, sealing and addressing any signs of dryrot or damage.
The regular maintenance would be $150 to $800 depending on the window and the complexity of the frame.

Aluminum Clad Marvin Window maintenance:
Clean with a soft brush and water

Substitution of Material References:

These are the resources for the substitute materials:

https://www.nps.gov/subjects/taxincentives/evaluating-substitute-materials.htm

In this first link, both the "need for substitute materials" and "Substitute materials and applying the Standards for Rehabilitation" paragraphs should be highlighted.

This is the full preservation brief: https://www.nps.gov/orgs/1739/upload/preservation-brief-16-substitute-materials-2023.pdf
Of which the 5th paragraph should be highlighted.

And then some information describing what the preservation briefs are : https://www.nps.gov/orgs/1739/preservation-briefs.htm#:~:text=Preservation%20Briefs%20provide%20information%20on,common%20problems%20prior%20to%20work.

16 PRESERVATION BRIEFS

The Use of Substitute Materials on Historic Building Exteriors

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The *Secretary of the Interior's Standards for Rehabilitation* generally require that deteriorated distinctive architectural features of a historic property be repaired rather than replaced. Standard 6 of the *Standards for Rehabilitation* further states that when replacement of a distinctive feature is necessary, the new feature must "match the old in composition, design, color, texture, and other visual properties, and, *where possible*, materials" (emphasis added). While the use of matching materials to replace historic ones is always preferred under the *Standards for Rehabilitation*, the Standards also purposely recognize that flexibility may sometimes be needed when it comes to new and replacement materials as part of a historic rehabilitation project. Substitute materials that closely match the visual and physical properties of historic materials can be successfully used on many rehabilitation projects in ways that are consistent with the Standards.

The flexibility inherent in the *Standards for Rehabilitation* must always be balanced with the preservation of the historic character and the historic integrity of a building, of which historic materials are an important aspect. Any replacement work reduces the historic integrity of a building to some degree, which can undermine the historic character of the property over time. With limited exceptions, replacement should only be considered when damage or deterioration is too severe to make repair feasible. When needed replacement is made with a material that matches the historic material, the impact on integrity can be minimal, especially when only a small amount of new material is needed. When a substitute material is used for the replacement, the loss in integrity can sometimes, although not always, be greater than that of a matching material. Also, whether historic or substitute material, there is a point where the amount of replacement can become excessive and the building's historic integrity is diminished to an unacceptable degree, regardless of the material used—that is, a loss of authenticity and the physical features and characteristics closely associated with the property's historic significance.

The term *substitute materials* is used to describe building materials that have the potential to match the appearance, physical properties, and related attributes of historic materials well enough to make them alternatives for use in current preservation practice when historic materials require replacement.

Compelling reasons to use a substitute material instead of the historic material include the unavailability or poor performance of the historic material, or environmental pressures or code-driven requirements that necessitate a change in material. When using a substitute material for replacement it is critical that it match the historic material in all of its visual and physical properties to preserve the historic character of the building and minimize the impact on its integrity.

Substitute materials can be cost-effective, permit the accurate visual duplication of historic materials, and provide improved durability. While the behavior of traditional, historic materials is generally well understood, the behavior of newer materials can be less established and sometimes less predictable. Substitute materials are most successful when the properties of both the original material and the substitute are thoroughly understood by all those involved in the design and construction process. The architect must be adept at the selection of substitute materials and their incorporation into architectural plans and specifications. The contractor or tradesperson in the field must also be experienced with their use.

This Preservation Brief provides general guidance on the use of substitute materials as replacement materials for distinctive features on the exterior of historic buildings. Due to the ever-evolving product market for construction materials, this Brief does not provide specifications for substitute materials. This guidance should be used in conjunction with qualified professionals who are knowledgeable in current construction and historic preservation practices.

This Brief includes a discussion of the appropriate use of substitute materials and provides a path for decision-making in their use. In considering the use of substitute materials, such issues as the deterioration or failure of the historic building component and material must be understood. The existing component's physical and visual properties, profile, surface texture, dimensions, and performance should be identified to establish the basis for evaluating a possible replacement material. The physical and visual properties of the various substitute materials available should also be assessed and compared to the original material for their physical and visual compatibility. Lastly, the suitability of a given substitute replacement material should be determined based on how well the material matches both the physical and visual properties of the existing material as well as any specific performance or application needs. The Brief's descriptions of common substitute materials are not meant to be comprehensive, and, as the performance history of newer materials continues to grow and new materials are developed, available options will change, and our understanding of current material performance will continue to evolve.

Historical Use of Substitute Materials

The tradition of using affordable and common materials in imitation of more expensive and less available materials is a long one. At Mount Vernon, for example, George Washington used wood painted with sand-impregnated paint to imitate rusticated stone. This technique, along with scoring stucco into block patterns, was common in Colonial America to imitate stone.

Nineteenth-century technology made a variety of materials readily available and widely used that were not only able to imitate traditional materials but were also cheaper to fabricate and easier to use. Traditionally, carved stone units were individually worked. Molded or cast materials greatly increased efficiency in creating repetitive elements. Cement-based products such as cast stone could provide convincing imitations of natural stone with carefully chosen aggregates and cements and was typically a commercially manufactured product. It could be tooled like natural stone, though that could reduce much of the cost advantage. These carefully-crafted cementitious products were widely used as trim elements for masonry structures or as the face material for an entire building. At the other end of the spectrum, mail-order catalogs provided a wide variety of forms for molding concrete that were merely evocative of natural stone and did little to match its appearance. Concrete masonry units could be fabricated locally and on site, avoiding expensive quarrying and shipping costs.

Offering similar efficiencies as cast stone for reproducing repetitive and even complex decorative shapes, terra cotta could mimic the surface characteristics of stone with various textures and glazes. It was popular in the late nineteenth and early twentieth centuries for details on stone or brick buildings as well as for the entire skin of large and elaborately detailed buildings.

Cast iron was also used to imitate stone, often with very decorative profiles, for a variety of architectural features ranging from window hoods to columns, piers, balustrades, and even whole façades. Cast iron offered its own set of efficiencies including cost, fabrication time, and weight, but required a painted finish.

While cast stone, terra cotta, and cast iron offered efficiencies over quarried and, particularly, carved stone, they were not cheap or impermanent materials. Less costly, but also less durable, stamped or brake-formed sheet metal, typically galvanized, could also be used instead of masonry for cornices, window hoods, roofing tiles, and even entire building façades.

Substitute Materials and Applying the Standards for Rehabilitation

The *Standards for Rehabilitation* are focused on preserving the important and distinctive character-defining features of a historic property (Standards 2 and 6), and they are to be applied in a reasonable manner, taking into account economic and technical feasibility (36 CFR 67.7 and 36 CFR 68). The Standards have an inherent flexibility that facilitates their application to diverse projects, historic properties, and conditions. They are to be applied on a "cumulative-effect" basis, when the overall effect of all work in the context of the specific conditions of the property and the project is consistent with the property's historic character.

The *Standards for Rehabilitation* require that the replacement of a distinctive feature match the old in physical and visual properties. While the use of matching materials is always preferred, the Standards purposely allow for the use of substitute materials when the use of original materials is not reasonably possible, such as in consideration of economic and technical feasibility or in new construction. They also provide additional flexibility in the treatment of secondary, less distinctive features that are less important in defining the historic character of the property. The *Standards for Rehabilitation* recognize that flexibility is appropriate to facilitate "a compatible use for a property … while preserving those portions or features which convey its historical, cultural, or architectural values" (definition of "Rehabilitation," 36 CFR 67.2(b)).

Examples of Historical Use of Substitute Materials

Figure 2a. Casting concrete blocks to mimic quarried stone was a popular late 19th- to mid 20th-century technique. Concrete masonry units could be completed by local craftsman, saving time and shipping costs. Photo: John Sandor, NPS.

Figure 2b: The 19th century also produced a variety of metal products used to imitate other materials. Across the country, cast iron was used in storefronts to imitate stone. Photo: John Sandor, NPS.

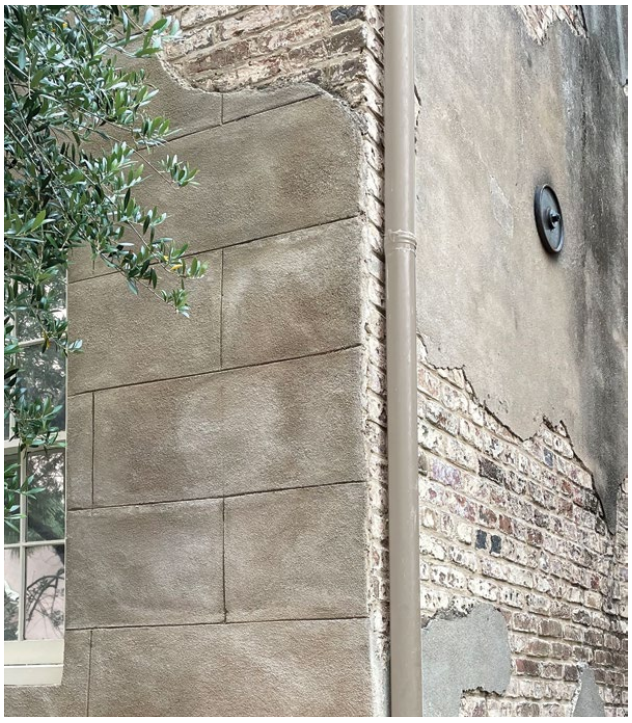

Figure 2c: Stucco has been used to imitate a number of building materials for many centuries. Seen here, stucco was applied to a brick structure and scored to represent a stone façade. Photo: John Sandor, NPS.

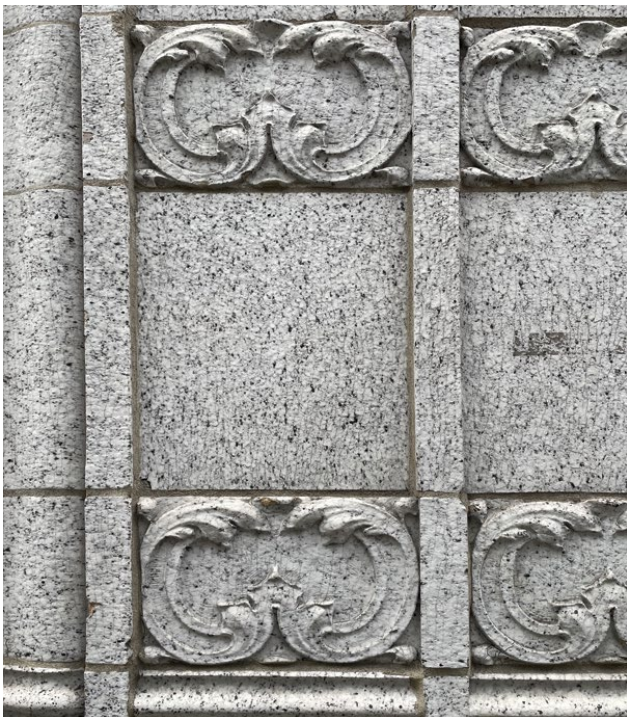

Figure 2d: Terra cotta gained popularity in the late 19th century as a cheap and lightweight alternative to stone. Glazing techniques allowed the blocks to imitate a variety of natural stone materials. Photo: John Sandor, NPS.

These examples of one material used to imitate another, more often in initial construction than for later repair and replacement purposes, are referred to as *imitative materials* in the *Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*, updated in 2017, that accompany the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. These imitative materials, while evoking other materials, usually had distinctive qualities of their own and were not always a very close match in appearance to the historic material they were meant to imitate.

Many of the traditional materials discussed above are still available and used to replace damaged or missing original features, both to replace matching historic materials and sometimes as substitute materials. Because of their extensive use over time and their known physical and chemical properties, cast stone, cast iron, and terra cotta are well understood substitute materials. This continued usage and familiarity means their installation requirements and service life are well established, which in turn makes it easier to determine when and how to use these traditional materials as substitutes for a deteriorated material. However, innovation in replacement materials continues, and new products (many of them consisting of synthetic materials) are continually introduced. These non-traditional products are an increasing part of both the new construction and rehabilitation industries. Some materials, like glass fiber reinforced polymers, glass fiber reinforced concrete, or fiber cement, have been in use long enough for an accurate prediction of their service life and performance. Other newer, non-traditional materials may be too new to have established performance records, thus, understanding their material properties is critical, and their use should be approached with more caution.

When to Consider Using Substitute Materials in Preservation Projects

According to the *Standards for Rehabilitation*, deterioration should generally be addressed through repair if in repairable condition. Repair can entail a variety of treatments that retain the unit of building material and remove and patch or replace only the damaged portion. This approach can be done with traditional methods and materials such as a dutchman, where like-kind material is precisely inserted into wood or stone, or it may employ other materials such as epoxies for wood repair or cementitious compounds for masonry. As long as the repair methods are sound and do not damage or accelerate the deterioration of the historic material, repairs are generally preferable to replacement of an entire element. More complex manufactured products, typical of more recent historic materials (as well as a lot of modern building materials generally), may be more difficult to repair, if they can be repaired at all.

There are situations, however, when the level of deterioration makes localized repairs infeasible and entire features or units of historic material must be replaced. While achieving an effective match of all of the visual qualities of a material can be challenging, even when replacement is in kind, it can be even more challenging when the replacement is a substitute material. A good visual match is not the only consideration when a substitute material is to be used for incremental replacement within a larger assembly of historic material. When an individual siding board or a single block of ashlar is being replaced, it is usually best achieved with the original material. Introduction of a different material into an intact assembly requires that its inherent properties, such as expansion and contraction, moisture resistance, or permeability, be thoroughly considered relative to those of the surrounding historic materials to avoid causing damage.

Figure 3: Incremental repair is best done using in-kind material to minimize differences in the performance characteristics that could negatively affect the overall assembly. Photo: NPS.

Figure 4. While occasionally used to imitate other materials such as wood or slate shingle, many asbestos shingles and siding materials had their own distinct shape and profile. No longer manufactured today, alternative materials must be found to replace these materials when they are distinctive features on a historic structure. Drawing: Association for Preservation Technology, Building Technology Heritage Library.

Figure 5. (Left) Asbestos shingles were often used as a substitute for traditional slate roof shingles. The historic asbestos roof on this rehabilitation project had reached the end of its lifespan and required complete replacement. (Right) Given the limited replacement materials available to match the historic asbestos shingles, utilizing natural slate was determined to be the best visual match for the original shingles and design intent in this instance. Photos: Crosskey Architects.

Circumstances in which the use of substitute materials may generally be considered appropriate, taking into consideration technical and economic feasibility reasons, include: the unavailability of historic materials; the unavailability of skilled artisans or historic craft techniques; inadequate durability of the original materials; the replacement of a secondary feature; construction of a new addition; the reconstruction of a missing feature; code-required performance; and for enhanced resilience and sustainability:

- **Unavailability of historic material.** A common reason for using substitute materials is the difficulty in finding a good match using the historic material (particularly a problem for masonry materials where the color and texture are derived from the material itself). This may be due to the actual unavailability of the material or to protracted delivery dates, particularly if the material cannot be sourced domestically. It is not uncommon for a local quarry that is no longer in operation to have been the source of an original stone. If another quarry cannot supply a satisfactory match, a substitute material such as dry-tamp cast stone or textured precast concrete may be an appropriate alternative, if care is taken to ensure that the detail, color, and texture of the original stone are matched. Even when the color is successfully matched, the appearance of a cementitious product may diverge from that of the historic stone as the substitute material ages.

  Many manufactured materials that were used historically on buildings are no longer made. Terne-plated steel, which was the material most typically used for painted standing-seam or flat-seam roofing, is no longer made. However, because it was always painted, other metals including galvanized steel or copper can generally be substituted if painted. When the historic material needing to be replaced is a manufactured product developed as an imitation of a natural material, which was the case with asbestos shingles meant to imitate slate, the natural material may now be an appropriate substitute material to consider for the manufactured one that is no longer produced.

- **Unavailability of skilled artisans or historic craft techniques**. These two issues can complicate any preservation or rehabilitation project. This is particularly true for intricate ornamental work, such as carved wood, carved stone, wrought iron, or cast iron. While skilled craftsmen may not be as difficult to find as they once were, there can still be limitations geographically, even in finding less specialized skills, and particularly if a project is small. Technical advances have allowed some stone or wood carvers to take advantage of computerized equipment, but complex designs will likely still require hand work. It may also be possible to mimic a carved element using a material that can be cast in a mold, adding significant efficiency where an historic element survives from which a mold can be made. Options for casting include aluminum, cast stone, fiberglass, glass fiber reinforced concretes, and terra cotta, but not all carved elements can be duplicated by a casting, and mold-making and casting still require skilled craftsmen.

- **Inadequate durability of the original material.** Some historic building materials were of inherently poor quality or were not durable. In other cases, one material was naturally incompatible with other materials on the building, causing staining or galvanic corrosion. Examples of poor-quality materials are very soft sandstones, which eroded quickly, and brownstone, which is vulnerable to delamination. In some cases, more durable natural stones may be visually similar enough to stand in for these soft stones but cast stone or another material may be needed to achieve an appropriate match.

The ready availability of manufactured ornamental wood features fed a nineteenth-century taste for decorative architectural details that were often used on the exterior of buildings with little concern for how they would be affected by moisture or maintained. Even old-growth wood from decay-resistant species often could not prevent features with severe exposure from eventually needing to be replaced. Today's available commercial supplies of lumber no longer provide the denser, more decay-resistant wood of old-growth forests, so even careful matching to species, which is not always possible, will not yield a replacement equal in performance to the historic material. Old-growth wood is likely to be very expensive, if it can be found, and may not be available from a sustainable, environmentally responsible source. When features with severe exposure need to be replaced or reproduced, substitute materials that are less susceptible to decay can have a longer life, and when the feature is painted, as exterior wood features generally are, the visual effect of a substitute material can be minimal.

- **Replacement of a secondary feature.** When it is necessary to replace a less distinctive, secondary feature that is less important in defining the historic character of the property, there is more flexibility in how it can be replaced. While it may be less important to find an exact match in materials when replacing such a feature, the retention of the overall historic character should still guide selection of an appropriate replacement material. For example, replacing secondary features such as those with limited visibility (e.g., siding materials on a rear elevation) may permit replacement materials that are similar in appearance or character without having to be a perfect match.

Figure 6. The dramatic difference in the number of growth rings between old-growth wood and wood that was recently harvested from second- or third-growth forests is indicative of the diminished dimensional stability and durability of most lumber currently available. Photo: Zachary Dettmore.

- **Construction of a new addition.** The *Standards* require that new additions to historic buildings and related new construction be differentiated from the old as well as be compatible with the historic character of the property and its site and environment. Using materials that evoke, without matching, the historic material can be an effective means of achieving the needed balance between compatibility and

Figure 7. A new addition replaced non-historic construction on the rear elevation of this building. Fiber cement gives the addition a compatible appearance without replicating the exposure for thickness of the historic siding. Photo: Ward Architecture + Preservation.

differentiation for new additions and new construction. Even if differentiation is achieved through design rather than materials, there generally is no basis for requiring the use of matching historic materials for new additions and new construction as part of a rehabilitation project.

- **Reconstruction of a missing feature.** Many buildings lose significant features over the course of their lives for reasons such as those previously discussed. When a missing feature is to be reconstructed, the importance of matching the original material may be less important to the effect replacing the missing feature may have on the overall historic character and appearance of the building. Though replacement of missing features must be substantiated by documentary, physical, or pictorial evidence, in many cases the authenticity of the material may be secondary to the overall visual qualities. The use of a more cost-effective substitute material for the construction of a missing feature can often be an important factor in the feasibility of undertaking such work.

- **Code-required performance.** Modern building codes are regularly amended to require higher performance levels for new and existing buildings in such areas as life safety, seismic retrofits, and accessibility. Rehabilitation projects often trigger compliance with code requirements that were not in place when a building was constructed. Although building codes may often allow for the retention of historic materials and assemblies, substitute materials can offer an alternative in situations when the historic materials are non-compliant and cannot otherwise be reasonably retained. In these instances, a change in material may be appropriate to meet code requirements, while in other instances selecting the optimal code compliance method for the project may achieve code-compliant solutions that also allow for the preservation of a building's historic materials and finishes.

  For example, fire codes may require increased resistance to flame spread for buildings within dense urban environments where building proximity and separation between buildings is a concern. Some substitute materials are non-combustible, have good ratings for flame spread, and can provide an alternative to help meet

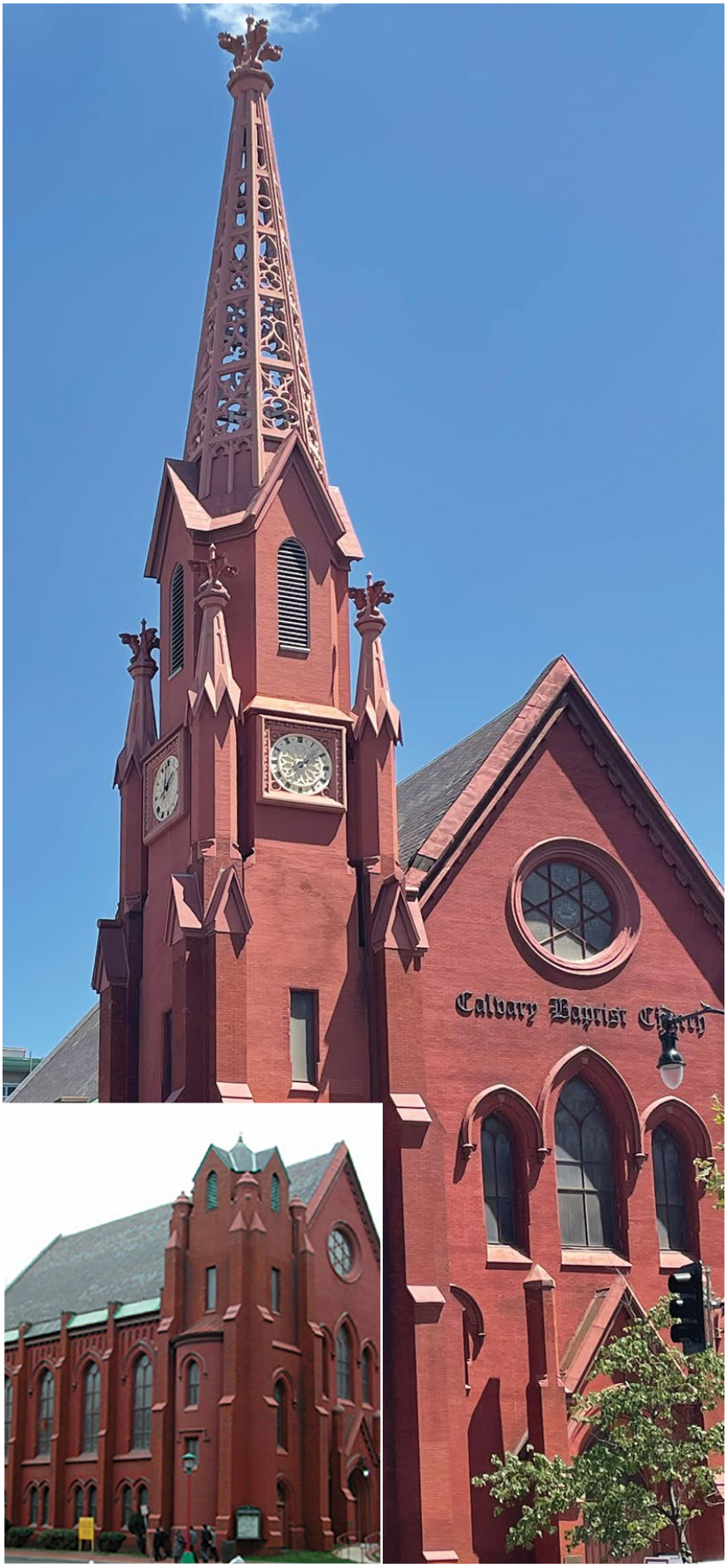

Figure 8. A long-missing cast-iron steeple was reconstructed in aluminum and fiber-reinforced polymer (FRP). Photo: John Sandor, NPS, Inset: Quinn Evans.

fire code requirements. Depending on the building component and the material, however, a substitute material may not resist fire any better than the historic material. In addressing code issues, all feasible alternatives should be considered to minimize the impact on the historic character of the building while still meeting code requirements.

With specific provisions in building code related to issues such as seismic hazards, the choice of materials for features inherently unstable in a seismic event can be a key part of a code-compliant retrofit solution. Elements at risk of falling such as parapets, finials, and overhanging cornices may be made safe by anchoring them to new structural frames. However, for some heavy masonry features, especially where there is deterioration or the feature is difficult to effectively brace, adequately anchoring the existing feature may not prove feasible. In such cases removing and replacing these features with lighter-weight replicas that incorporate a resilient structural framework can help preserve the historic character of the building while improving life safety performance.

- **Enhanced resilience and sustainability.** Wildfires, earthquakes, floods, hurricanes, and other extreme weather events put historic buildings and their occupants at risk and may require adaptive treatments that are more invasive than might be accepted in other circumstances, including related to the use of substitute materials. In these contexts, it is still necessary to try to minimize impacts on a building's historic character as much as possible while still adapting it to be more resilient. Widespread wildfires, for example, have increased demand for fire resistant materials for the exterior building envelope. Flood events may necessitate the replacement of historic materials that have been damaged or inundated with hazardous substances in contaminated floodwaters. When undertaking repairs in such circumstances, substitute materials may offer greater resilience to anticipated future exposure to natural hazard risks.

  Similarly, efforts to improve energy efficiency and performance may include the use of substitute materials as replacement components when modifications to building assemblies are required and the historic materials cannot be preserved. When evaluating substitute materials in the context of sustainability objectives, factors such as the environmental impact of production, the full life cycle of products, and the embodied carbon of the materials already in place should be carefully analyzed. There may be more sustainable choices for a replacement material, including the use of more traditional materials in place of manufactured products that may consist of non-renewable resources or hazardous materials. While some synthetic substitute materials are made from recycled materials or are otherwise sustainably produced, many are not repairable, salvageable, or recyclable themselves, and they may have shorter lifespans to their historic material counterparts. When either greater resilience or sustainability is a factor, all feasible alternatives should be considered in finding a balanced approach that maintains historic character while meeting resilience and sustainability goals.

Substitute Materials and Economic Feasibility

Economic feasibility is inevitably a concern when choosing a material for any part of a project, whether a historic or substitute material, but it should not be the sole determinant factor at the expense of maintaining the historic character and historic integrity of a building. Other factors may prompt the consideration of a substitute material, such as the cost of maintaining the historic material, because it is comparatively difficult or costly to reach or access, or the frequency of required maintenance the historic material needs. Additionally, where in-kind replacement material is found to be prohibitively expensive, it may be reasonable to consider a substitute that offers an alternative and is a good physical and visual match. Not all substitute materials are, however, cost-effective replacements. Long-term durability and maintainability are other factors that should be considered in conjunction with initial cost.

Figure 9. Previously bricked-in openings below the flood line were reopened and new aluminum windows installed with cellular PVC trim detailed to hold back moderate flood waters and survive exposure to water. Photo: John Sandor, NPS.

Maintenance of a material, particularly where accessibility is difficult or expensive, can be an important part of a

cost evaluation. Maintenance costs should not be considered without also considering life-cycle expenses. While some substitute materials may offer reduced initial costs, they may be as or more costly than traditional materials to maintain over time. For example, many substitute materials are not readily repairable, necessitating full replacement when damaged. The cost to replace a material or assembly at the end of its lifespan may also be greater than the accumulated incremental expense to maintain the historic material, particularly if it is a more traditional, repairable material. Maintenance cost should never be the sole reason for replacing a historic material that is not deteriorated.

Criteria for the Appropriate Use of Substitute Materials

Substitute materials must meet three basic criteria to be considered: they must be compatible with the historic materials in appearance; their physical properties must be similar to those of the historic materials, or the materials must be installed in a manner that tolerates differences; and they must meet certain basic performance expectations over an extended period of time.

- **Matching the Appearance of the Historic Material**
  Any material's appearance varies depending on the nature of the material and how it is used. Some historic materials, such as wood and ferrous metals, were typically painted, making the color of the substitute unimportant, though the texture of the surface, which telegraphs through a paint layer, is still an important consideration. Texture can be a large part of distinguishing a material formed by hand from one that is machine-made. Many historic materials, such as most building stones, are used without any coating, making the color, pattern, and reflectivity, as well as surface texture, dependent on the material itself. Matching the color and surface characteristics of a historic natural material with a man-made substitute can often be quite difficult.

  When the color and surface characteristics of an existing material are important, cleaning the material should be the starting point for evaluating a potential matching material. In situations where there are subtle variations in color and texture within the original material, the substitute material should be similarly varied so that it is not conspicuous by its uniformity. If a material is custom fabricated, a sufficient number of samples should be supplied to permit on-site comparison of color, texture, detailing, and other critical visual qualities. For a manufactured product with preset choices of color or texture, it may be necessary to look at samples from more than one manufacturer to find the best match. Similarly, prefabricated products, such as roofing slate, may offer limited, if any, choice of unit size, which can be a critical factor for achieving a good match. A substitute material should not be used to replace distinctive, character-defining materials and features if an adequate match in design and appearance is not possible.

  As all exposed materials are subject to ultraviolet degradation, samples of a new material, particularly when custom formulated, should be prepared during the early planning phases to allow for evaluation of the effects of weathering on color stability. When that is not possible, or if a prefabricated product is used, the fabricator or manufacturer may be able to identify regional locations where equivalent products have been installed long enough ago to get a better sense of how the material weathers and performs.

  While a perfect match is the desired goal for replacing distinctive features, it is not always possible, even when the same matching material is chosen for the replacement. When any compromise

Figure 10. Polymer slates offer a choice of shapes but not sizes, limiting their ability to achieve a good visual match for some historic slate. With the size of the polymer slates (right) being nearly twice that of the historic slates (left), the scale of the entire feature is incompatibly altered. The molded edges of this material, which contribute to its ability to replicate slate, would be lost if each shingle was resized by cutting. Photo: John Sandor, NPS.

Figure 11. The thickness of the wood siding on the front (left) creates a deeper shadow line than is achieved with the fiber cement siding used on the side (right) elevation. While the exposure can be adjusted, fiber cement siding is not available in a matching thickness. Photo: John Sandor, NPS.

must be made in the precision of the match, it is wise to consider the vantage point from which the material will be seen. Sometimes what seems important at close range, such as variations in the texture of a surface, may be secondary to other aspects of the material when viewed from some distance. The closer a feature is to the viewer, the more closely the material and craftsmanship should match the original. An on-site mock-up using a sample of the proposed material can help evaluate whether it is an adequate visual match.

- **Matching the Physical Properties of the Historic Material**
  Carefully chosen substitute materials can often closely match the appearance of historic materials, but their physical properties may differ greatly. These differences are most critical when incrementally replacing components of a larger assembly that retains significant historic material. The chemical composition of the material (e.g., the presence of acids, alkalis, salts, or metals) should be evaluated to ensure that the replacement materials will be compatible with the adjacent historic materials. Materials that will cause galvanic corrosion or other chemical reactions must be isolated from one another.

  The thermal- and moisture-driven expansion and contraction coefficients of each adjacent material must be within narrow limits or be accommodated

Figure 12. Cellulose composite materials, like wood, expand and contract with moisture. Here it was used to reconstruct a missing storefront. Unlike solid wood that is dimensionally stable parallel to the grain, this composite moves equally in all dimensions, resulting in gaps that were not adequately anticipated in the design. Photo: John Sandor, NPS.

by carefully designed joints and fasteners. Joints can play a role both in accommodating movement of materials as well as in managing moisture, either to keep it from entering the enclosure assembly or to let it escape from the building envelope, or both. Because some synthetic materials are less permeable to moisture than more traditional materials, installations must take into account the potential to trap moisture and cause deterioration of historic and new materials. An assembly incorporating new and historic materials should be designed so that if material failures occur, the failures occur within the new material rather than the historic one.

During installation, surface preparation is critical to ensure proper attachment. Deteriorated underlying material must be removed or stabilized. Non-corrosive anchoring devices or fasteners that are designed to carry the new material and to withstand wind, rain, snow, and other destructive elements should be used. Since physical failures often result from poor anchorage or improper installation techniques, a structural engineer should be included in planning any major project. For readily available, off-the-shelf materials, manufacturers' recommendations for attachment and spacing should be followed.

Nearly all substitute materials have some properties that are different from the historic materials they may replace. Even when substitute materials are isolated from historic materials and features, it is important to understand the substitute materials' properties in order to use them successfully.

- **Performance of the Material Over Time**
  When more traditional materials are used to replace damaged historic materials and features, their performance is predictable in most cases. An exception may be modern wood that has durability and other prop-

erties different than those of historic wood from old-growth forests. Many of the materials used as substitutes have been in use long enough to provide some idea of how they perform over time. Other material may only have test results from accelerated weathering. The length of manufacturer warranties may be an indicator of expected durability and lifespan. Warranties only predict a manufacturer's expectation of a product's performance and are no guarantee that the manufacturers will still be in business at the time needed to stand behind them. Just as new manufacturers emerge with new materials, others disappear. Where possible, projects involving substitute materials in similar installations and exposures should be examined before selecting a new, less-tested material. It is unrealistic to expect a substitute material, which can be quite different in composition than the historic material, not to age differently.

Even traditional materials will not perform well if not used or detailed appropriately, and experienced architects, engineers, fabricators, and installers rely on their professional knowledge and experience to ensure proper installation and techniques when working with familiar materials. This is just one of many reasons that using the original materials for needed replacement is usually the best choice. Some of the materials now available as substitutes have properties that differ greatly from the traditional materials they may be used to replace. It is critical to the successful performance of substitute materials that everyone involved in the selection, design, and installation fully understands the material's properties, especially how it is different than the material it is replacing, and how that will affect the surrounding materials and building systems.

Many traditional building materials can be repaired either with traditional methods and materials or with more modern conservation techniques using substances like epoxies. However, many modern substitute materials (particularly synthetic ones) are not as easily repaired, if repairable at all, as their more traditional counterparts. Confirming that a material is repairable may be important for those used, e.g., where impact or significant wear or abrasion is likely.

Finally, it is critical that the substitute materials be documented as part of the historical record of the building so that proper care and maintenance of all of the building materials continue, ensuring the continued life of the historic building.

Choosing an Appropriate Substitute Material

Once all reasonable options for repair and replacement in kind have been considered and sufficient justification for substitute materials has been established, the choice among the variety of substitute materials currently available must be made. Rapidly developing technologies allow a wide variety of materials to choose from that are intended to mimic historic materials. Many of the materials that were historically used as substitutes for more traditional historic materials have themselves become historic, and some of these early substitutes continue to be reasonable options as substitute materials today. No substitute material will exactly match the historic material in all aspects, but many are able to adequately match the appearance and relevant physical attributes to make for a potential substitute. If a substitute material is not

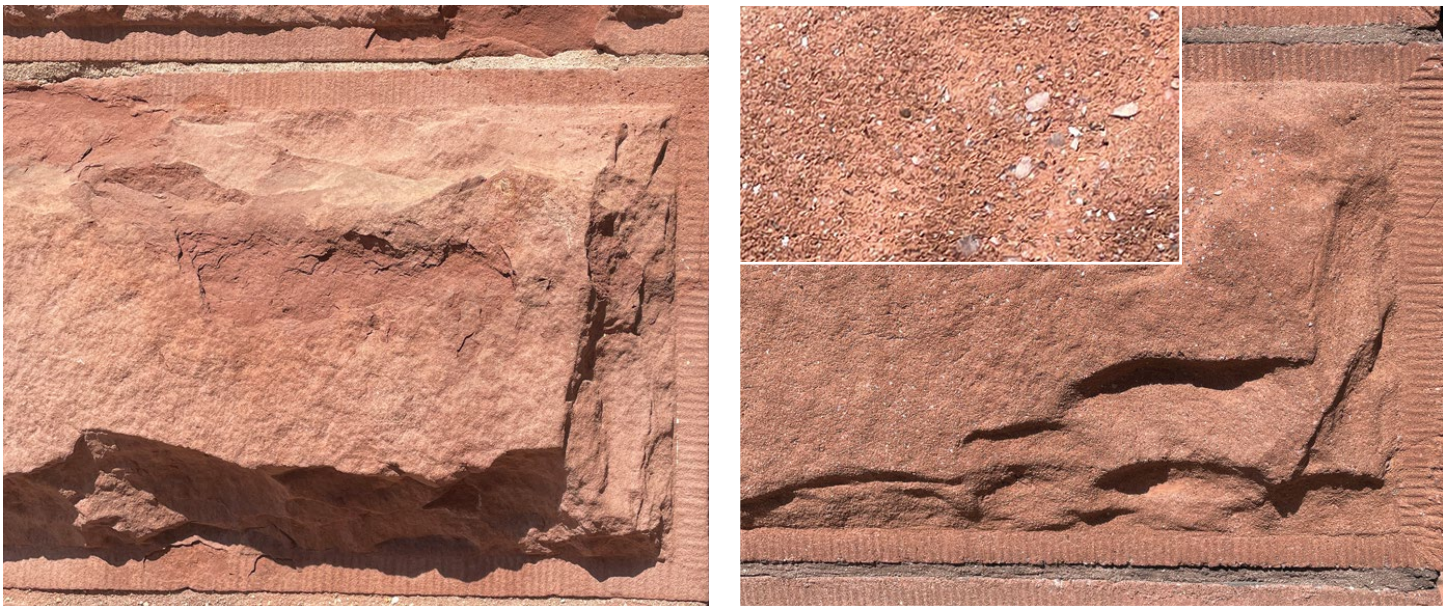

Figure 13. Cast stone was used to effectively replace individual blocks of sandstone. Both the original (left) and the substitute material (right) retain similar physical and visible properties. Having weathered for over 30 years, some erosion of the binder has revealed quartz grains of the aggregate (inset), but it is only noticeable upon close inspection. Photo: John Sandor, NPS.

an adequate physical and visual match given the specific conditions of the building and the project, then it should not be used to replace distinctive, character-defining materials and features.

Listed below are various building components or features and the substitute materials which may, in some circumstances, be considered for use as possible replacement materials in a historic rehabilitation project consistent with the *Standards for Rehabilitation*. This list includes different substitute material options available today for these building features and poses questions that should be asked and considered when choosing between the original material and various types of substitute materials. This is followed by a list of some of the more commonly used, currently available materials that may have some applications as substitute materials and the properties of each that affect their suitability for use as substitutes. This list should not be read as an endorsement of any of these materials, generally, or their appropriateness for use as a substitute material, but it serves as a reminder that the successful use of any building material requires a careful consideration of its properties relative to where and how it will be used.

Considering Substitute Materials

Considering the use of a substitute material should begin with the following questions about the conditions and location where it will be used:

- Will the significance or visibility of the historic feature require a very precise match?
- Is the entire feature being replaced or just a component of it?
- Are pre-existing conditions contributing to the failure of the existing material, and, if so, how will they be addressed/corrected?
- Is the need for replacement due to inherent deficiencies of the original material?
- Will the material need to resist any environmental hazards such as flooding or fire?

Historic Features and Substitute Materials

Historic Building Features

Potential Substitute Materials

	Masonry Stone, terra cotta	**Architectural Metals** Cast & wrought iron, steel, pressed metal	**Siding** Wood, asbestos	**Roofing** Wood shingle, slate, tile	**Decking** Tongue and groove & square edge wood	**Molding / Trim** Wood
Aluminum	●	●	●			●
Cast Stone & Precast Concrete	●			●		
Fiber Reinforced Concretes	●					
Glass Fiber Reinforced Polymers	●	●				
Fiber Cement			●	●		●
Mineral / Polymer Composite			●	●	●	●
Cellulose Fiber / Polymer Composite			●	●	●	●
Non-composite Polymers		●			●	●
Cellular PVC			●		●	●

The above chart lists materials that are sometimes used as substitutes for replacement of historic building features. Even within a given category, all materials may not be equally suitable as a substitute replacement material for the actual historic material or feature. Any substitute material should be selected based on its specific physical and visual characteristics, conditions, and intended application consistent with the Secretary of the Interior's Standards for Rehabilitation.

Historic Building Features: Criteria for selecting an appropriate replacement material

Masonry

FEATURES: corbels, brackets, balusters, cornices, window and door surrounds, friezes, wall surfaces, horizontal surfaces, incidental ornament, columns

HISTORIC MATERIALS: terra cotta, cast stone, stone, concrete

POTENTIAL SUBSTITUTES: cast stone, pre-cast concrete, GFRC, GFRP, non-composite polymers (polyurethane), cast or stamped metal

Questions to ask about the replacement material:

- Can it serve a structural function?
- How is the material affected by moisture?
- Can the material survive flooding and be reused?
- Can it reproduce the surface texture of the original?
- Is its shrinkage in curing low enough to allow it to be molded from existing stones?
- Can matching color be achieved without a coating and with UV stability?
- Can an adequate match of the surface (color and texture) be achieved with a coating?
- Is a coating required?
- If it is not self-supporting, is it lightweight enough to be supported by an underlying framework?
- Can multiple original units be replicated with a single replacement piece?
- Where thermal movement is different from the original material, how will joints accommodate?
- Is the material combustible?

Architectural Metals

FEATURES: pilasters, door and window surrounds, cornices, incidental ornament, columns, spandrels, ceilings, sheathing, roofing

HISTORIC MATERIALS: cast and wrought iron, steel, bronze, lead, aluminum, and stamped steel (usually galvanized or terne-coated)

POTENTIAL SUBSTITUTES: GFRP, aluminum, non-composite polymer (polyurethane), GFRC, metallic/polymer composite

Questions to ask about the replacement material:

- Will the replacement material serve a structural or cosmetic role?
- Will it expand and contract with temperature change enough to require special accommodation in its installation?
- If part of an assembly of mixed materials, how will any expansion and contraction of the dissimilar materials be accommodated?
- Will the replacement material increase deterioration of the historic or surrounding elements, for instance due to galvanic corrosion, moisture entrapment, jacking of original material, off-gassing creating a corrosive environment, or poor original design of the historic material?
- How will the replacement material mimic the surface color/patination of the original material?
- If a coating is needed, what preparation is needed, and what is its durability or service life of the finish?
- What attachment and support systems are necessary?
- If the original element is structural, but the new material is not, how can supplemental structure be introduced to support the new?

Figure 14. Surface texture is an important aspect in matching the appearance of a historic material, especially when a material is viewed at close range. As seen in these two images, many of the substitute materials produced for siding and trim have an embossed wood grain, making them incompatible for replacing historic wood that was typically planed to a smooth surface. Some substitute products are available with a smooth surface as well. Photos: John Sandor, NPS.

Siding

FEATURES: clapboard, tongue-and-groove or shiplap siding, board and batten, shingles

HISTORIC MATERIALS: wood and asbestos

POTENTIAL SUBSTITUTES: cellular PVC, wood fiber/polymer composite, fiber cement, mineral/polymer composite

Questions to ask about the replacement material:

- What are the widths, lengths, profiles, thicknesses, and textures available?
- What, if any, are the finishing requirements, and/or is it available factory-finished?
- How well does it hold paint, and can prefinished surfaces be renewed?
- What tools are needed to cut it, and can it be machined?
- Does it absorb moisture and, if so, to what effect?
- Can the material survive flooding and be reused?
- Will it expand and contract with temperature change enough to require special accommodation in its installation?
- What characteristics can affect its handling (e.g., weight, flexibility, brittleness)?
- Does it have specific fastening requirements?
- Is it susceptible to insect damage?
- What is its impact resistance?
- Does it have a flame spread rating?
- What is the expected lifespan and/or warranty?

Roofing

HISTORIC MATERIALS: wood shingle, slate shingle, asbestos shingle, clay tile, concrete tile, metal

POTENTIAL SUBSTITUTES: fiber cement, mineral/polymer composite, wood fiber/polymer composite, pre-cast concrete, metal

Questions to ask about the replacement material:

- What sizes and shapes are available?
- What are color choices?
- What is the color stability of the new material, and how will it age/weather?
- What is the impact resistance?
- What is its flame spread rating?
- What are the installation requirements of the new material?
- Can the feature being replaced be custom-produced if ready-made ones of the new material are not an accurate match?
- What is the expected lifespan and/or warranty?

Decking

FEATURES: tongue-and-groove, square-edge flooring

HISTORIC MATERIALS: wood

POTENTIAL SUBSTITUTES: cellular PVC, wood fiber/polymer composite, mineral/polymer composite, non-composite polymers (solid PVC)

Questions to ask about the replacement material:

- What are the widths, lengths, and textures available?
- Is it site painted or prefinished?
- How well does it hold paint, and can prefinished surfaces we renewed?
- What tools are needed to cut it, and can it be machined?
- What dimensional span does its strength allow?
- Does it absorb water, and if so, to what effect?
- Can the material survive flooding and be reused?
- Does it require a drainage plane, or can it be installed atop a membrane?
- Will it expand and contract with temperature change enough to require special accommodation in its installation?
- Is it susceptible to insect damage?
- Is it impact resistant?
- Does it have a flame spread rating?
- What is the expected lifespan and/or warranty?

Molding / Trim

FEATURES: run moldings, flat boards, casings, cornice, frieze, railings, balustrade, columns

HISTORIC MATERIALS: wood, metal

POTENTIAL SUBSTITUTES: cellular PVC, wood fiber/polymer composite, mineral/polymer composite, non-composite polymer (polyurethane), GFRP, sheet metal

Questions to ask about the replacement material:

- What are the widths, lengths, and textures available?
- What, if any, are the finishing requirements and/or is it available factory-finished?
- How well does it hold paint, and can prefinished surfaces be renewed?
- What tools are needed to cut it, and can it be machined?
- Does it absorb moisture, and if so, to what effect?
- Can the material survive flooding and be reused?
- Will it expand and contract with temperature change enough to require special accommodation in its installation?
- What characteristics can affect its handling (e.g., weight, flexibility, brittleness)?
- Does it have specific fastening requirements?
- Is it susceptible to insect damage?
- What is its impact resistance?
- Does it have a flame spread rating?
- What is the expected lifespan and/or warranty?

Figure 15. Tongue-and-groove porch flooring is manufactured in several different substitute materials. Each type has different properties, though most are more moisture-resistant than wood. The prefinished product shown can be painted when worn, but repainting is not recommended for some product choices. Photo: Oak Alley Foundation.

Potential Substitute Materials: Matching properties and performance needs

Physical Composition and Properties

After assessing different material options based on the intended application, the appropriateness of a substitute material should also be considered in context of the material's physical composition, associated properties, and necessary visual match.

Aluminum

MATERIAL: Aluminum is a highly corrosion-resistant alloy that can be cast, wrought, or extruded. Molten aluminum is cast into permanent (metal) molds or one-time sand molds forming cast aluminum. Extruded aluminum is formed by passing heated aluminum through a die which produces the desired form. Wrought aluminum is worked using the heated metal and then bending, stamping, and otherwise shaping the metal. If not self-supporting, aluminum elements are generally screwed or bolted to a structural frame. Aluminum can be welded, but more often sections, particularly extruded ones, are mechanically connected.

PROPERTIES:

- Isotropic
- Lightweight
- Thermal movement greater than cast iron or wood
- Corrosion-resistant, but direct contact with other metals may trigger galvanic corrosion
- Lower structural strength that iron or steel
- Ductile - less brittle than cast iron
- Non-combustible
- Retains high definition through molding process and produces crisp profiles through extrusion
- Can be given a durable metallic finish through anodization. Surface etching required for paint adhesion
- Can be machined into a large variety of shapes/ dimensions

Figure 16. Aluminum is a highly corrosion-resistant metal that is commonly used as a substitute material for cast iron. Aluminum can be a more affordable and lightweight alternative to cast iron that retains a similar texture, shape, and maintenance cycle. Photo: NPS.

Figure 17. The balustrade consists of multiple prior campaigns of using cast stone to replace the natural stone. The effective match for the surface texture and color of the original stone allowed individual elements to be incrementally replaced only when they had failed, thus retaining the maximum amount of original material as long as possible. Photo: EverGreene Architectural Arts.

Cast Stone & Precast Concrete

MATERIAL: A cement lime and aggregate mixture that is dry-tamped into a mold is generally referred to as cast stone. Cast stone is one of the original substitute materials. Its longevity has proved that the material ages compatibly with stone. A wet mix of cement and aggregate poured into molds also has a long history of being used to produce concrete masonry units mimicking stone and roofing tiles mimicking clay tile. Both methods have minimal shrinkage during curing, though they employ different curing and finishing techniques. Both can include reinforcing bars and anchorage devices installed during fabrication. The dry-tamp fabrication method is especially effective at producing an outer surface with the appearance of stone.

PROPERTIES:

- Isotropic
- Weight equivalent to stone
- Expansion/contraction similar to stone
- Water absorption may differ from that of any particular stone
- Can be structural
- Non-combustible
- Vapor-permeable
- May achieve a wide range of color and surface textures by varying mix, but use of pigments may reduce UV stability
- Can be coated
- May be tooled to match the appearance of tooled stone
- Repairs similarly to stone

Figure 18. Missing historic terra cotta spandrel panels on all floor levels were recreated utilizing glass fiber reinforced concrete (GFRC) replacements. New spandrels were fabricated as individual components and attached with metal clips between historic terra cotta piers. Photo: Kris Frail, Dewberry.

Fiber Reinforced Concretes (GFRC, CFRC)

MATERIAL: Fiber reinforced concretes are lightweight concrete compounds modified with additives and reinforced with alkaline resistant glass fibers (GFRC), or less frequently carbon fibers (CFRC). They are generally fabricated as thin-shelled panels and applied to a separate structural frame or anchorage system. GFRC is typically sprayed into forms, although it can be poured, and anchoring devices are included in the fabrication. The color is derived from the natural aggregates and, if necessary, a small percentage of added pigments. Because of its low shrinkage in curing, it can be produced using molds taken directly from the building.

PROPERTIES:

- Isotropic
- Lighter weight than solid masonry
- Expansion/contraction similar to stone
- No load bearing capacity, so underlying framework must be used to accommodate any loads
- Material can be fire-rated
- Vapor-permeable
- Can be produced in larger sections efficiently reproducing repetitive elements or features that were originally made up of small individual units
- Large range of colors achievable by varying aggregates, but when pigments are needed UV stability may be reduced
- May be left uncoated or may be painted

Figure 19. A new, lightweight fiber reinforced polymer is attached to a new metal armature to replicate damaged and missing elements of a terra cotta cornice. Photo: Quinn Evans.

Glass Fiber Reinforced Polymers (FRP, Fiberglass)

MATERIAL: Fiberglass is the most well-known of the FRP products generally produced as a thin, rigid, laminate shell formed by pouring a polyester or epoxy resin gelcoat into a mold. When tack-free, layers of chopped glass or glass fabric are added along with additional resins. The surface gel coat can be pigmented or painted. Reinforcing rods and attachment devices can be added when necessary. Because of is low shrinkage in curing, it can be produced using molds taken directly from the building. Rather than being produced as standard components, FRP is custom fabricated for individual applications.

PROPERTIES

- Isotropic
- Lighter weight than masonry, similar to sheet metal
- More thermally driven expansion than masonry or metals
- No load bearing capacity, so underlying framework must be used to accommodate any loads
- High strength to weight ratio
- Flammable
- Not vapor-permeable
- Can be produced in larger sections efficiently reproducing repetitive elements or features that were originally made up of small individual units
- May be difficult to match false joints in multi-unit assemblies to actual joints that need to accommodate movement
- Color can be incorporated into the surface gel-coat, or the surface may be coated

Figure 20. Cement board was used to replace a non-historic infill and mimics the configuration of a typical vehicular door of the period. Photos: Historic Augusta.

Fiber Cement

MATERIAL: Fiber cement products are made from fiber, sand that is ground to a powder, cement, and proprietary additives to reduce moisture absorption. The fiber used in roof products is glass fiber alone, whereas siding and trim board products are primarily wood fiber. The material is formed with a smooth or textured surface, cut to standard sizes of panels, boards, or shingles, and cured in an autoclave. Roofing material has integral color, but board and siding products are produced with a primer, if not fully factory finished. Most siding and trim boards are embossed with a wood grain on one surface and are smooth on the other, the smooth side being the appropriate surface to imitate planed wood.

PROPERTIES:

- Products are minimally orthotropic
- Heavier and more brittle than wood, limiting available lengths
- Very little thermal- and no moisture-driven movement
- Low water absorption, but not recommended for ground or roof contact
- Class A flame spread
- Resists insect damage
- Available in limited thicknesses and widths
- Not machinable, but may be cut with special carbide blades; cutting requires dust collection and personal protective equipment
- Cut edges require sealing
- Available unfinished, primed, or prefinished, and must be painted (with latex paint)
- 15-year limited warranty typical

Figure 21. A mineral polymer composite siding was available in the profile very similar to the historic siding. The replacement siding was used where the original material was almost completely missing beneath a more modern covering. Areas where the original wood was largely intact were replaced with matching wood to sustain more of the material integrity of the building. Photo: Belk Architecture.

Mineral / Polymer Composite

MATERIAL: Calcium carbonate or fly ash are mineral ingredients held in a matrix of various polymers to produce materials formed or molded into a number of building products. Additives found in some of the roofing products include pigments and UV stabilizers. Some use a substantial portion of recycled material. Different combinations yield products with different properties, each formulated for a specific building component. When the material is fly ash with some glass fibers bound in a matrix of polyurethane, it is identified as polyash. Siding, trim, bead board, and deck products are primed or prefinished, whereas roof products have integral color.

PROPERTIES:

Fly ash (siding and trim)

- Isotropic
- Heavier and more brittle than wood, and lacking structural capacity
- Little thermal or moisture-driven movement
- Sufficiently low water absorption to permit ground contact
- Class C flame spread
- Resists insect damage
- Available in limited thicknesses and widths
- Machinable with carbide tools blades; requires dust collection
- Cut edges do not require sealing
- Must be painted
- 30-year limited warranty typical

Calcium carbonate or recycled rubber (roofing)

- Isotropic
- More thermally-driven movement than slate or wood
- Little to no moisture absorption
- As shingles: lighter and more flexible than slate
- As tongue-and-groove decking: heavier and harder than wood
- Not vulnerable to insect damage
- Available in limited dimensions
- As shingles: Class 4 impact resistance, and flame spread ratings ranging from Class A to Class C depending on the specific product
- As shingles: integral color, that may be subject to fading
- As tongue-and-groove decking: prefinished with non-renewable finish, and can be cut with woodworking tools
- 50-year limited warranties on roofing products typical

Cellulose Fiber / Polymer Composite

MATERIAL: Wood strands or fibers are coated with resin for moisture resistance and zinc-borate for insect and fungal-decay resistance, then consolidated under heated pressure. Solid composite core boards are cut from sheets of material, then factory-primed or finished. Resulting siding and trim board products can be referred to as engineered wood, fiber board, or hardboard. Products may be embossed with a wood grain or have a smooth finish, the smooth side being the appropriate surface to imitate planed wood. Siding, trim, and tongue-and-grove decking with a slightly different properties are produced by extruding polyvinyl chloride (PVC) combined with non-wood cellulose. Roofing shingles are molded from fine wood fibers, color additives, and UV stabilizers bound with polypropylene or polyethylene (thermoplastics).

Figure 22. A porch was reconstructed using posts fabricated on site from a smooth-surface cellulose/polymer composite material. Though the face of the posts are painted, the lack of paint on the bottom at the cut ends is not consistent with manufacturers' recommendations. This treatment will allow moisture to be absorbed, shortening the life of the new replacement feature. Photo: John Sandor, NPS.

PROPERTIES:

Predominantly Cellulose (siding, trim and decking)

- Minimal thermal movement
- Resistant to moisture-driven movement
- Lighter and more flexible than solid wood, but lacks structural capacity
- Rice hull cellulose: can span typical floor-framing spacing as decking
- Low water absorption (for wood, no ground or roof contact)
- Class A or Class C flame spread
- Resists insect damage
- Available in limited dimensions
- Machinable with woodworking tools
- Wood cellulose: Cut edges must be sealed and may need additional surface prep for finish; must be painted if unfinished or primed, also available prefinished
- Rice hull cellulose: Accepts stain/paint, but no finish required
- 30–50 year limited warranty, depending on manufacturer

Predominantly Polymer (roofing)

- Minimal thermal movement
- Little to no moisture absorption
- Lighter and more flexible than slate
- Class 4 impact-resistance
- Class A flame spread
- Available in limited shingle size
- 50-year limited warranty typical

Figure 23. 3-D printing using various polymers is occasionally used to replicate missing metal or wood features. This new application is continually being refined, but the application can be successful when a painted, lightweight feature needs to be replicated. Photo: NPS.

Non-composite Polymers

MATERIALS: The main two polymer materials used without significant other components are polyurethane and polyvinyl chloride (PVC). Polyurethane millwork is constructed of urethane foam created by mixing isocyanate and resin. The polyurethane mixture is kept under pressure in a mold as it expands to any desired shape. These molded products have a closed-cell, foamed core with a denser surface skin. Polyurethane products can have exterior applications but are more often used for interior features. Polyvinyl chloride (PVC) in a solid extruded form is another polymer that can have architectural application as tongue-and-groove decking. Various polymers formed using 3-D printing are also being explored as replacements for painted metal or wood ornamental features.

PROPERTIES: Each of the two groupings has distinct physical properties

Urethane Foam (moldings and decorative elements)

- Lightweight and flexible, but lacking structural capacity
- More thermally-driven movement than wood or stone, but less than cellular PVC
- Does not absorb water
- Flammable
- Resists insect damage
- Can be cut with standard woodworking tools
- Adhesive and mechanical fasteners both recommended for installation
- Supplied primed and must be painted (latex paint)
- Lifetime limited warranty typical

Solid PVC (flooring)

- Isotropic
- Heavier and less flexible that wood
- Minimal thermal movement
- Does not absorb water
- Strength to span typical floor-framing spacing
- Impact-resistance greater than wood
- Class A flame spread
- No insect susceptibility
- Good paint adhesion, but also available prefinished
- 20-year warranty typical

Cellular Polyvinyl Chloride (PVC)

MATERIAL: Varying amounts of calcium carbonate and a foaming agent are added to melted PVC before passing through an injection die and then a calibrator to produce the shape and size of the finished product. Cellular PVC is produced as sheets, boards, and moldings. Differences in the specifics of the equipment and the rate of cooling create two varieties of product, with distinct properties. One is known as free-foam, having a fairly consistent structure throughout its section, and the other is identified as Celuka, having a skin that is denser than its core. This primarily affects the ease with which the product can be milled and shaped. The material is white and needs no applied finish. When produced for decking the material has a colored and textured wear layer over the PVC core.

PROPERTIES

- Isotropic
- Lighter and more flexible than wood
- Less strong than wood (in tension and shear), but can span typical floor- framing spacing as decking
- More impact-resistance than wood
- Negligible water absorption; no moisture-driven movement, unlike wood
- Subject to thermal expansion and contraction significantly greater than wood, though the thermal movement is less for the same dimension than the cross-grain moisture-driven movement of wood
- For longer pieces, thermal movement requires manufacturer's specifications to be followed for attachment, and inclusion of expansion joints when installed at low temperature (joints should be glued)
- Class A flame spread
- Resists insect damage
- Machinable with woodworking tools, though cut edges may need additional surface prep for finish
- Good paint adhesion; if painted, high light reflectance (HLV) is recommended to minimize heat driven expansion
- 25–30-year limited warranty, depending on manufacturer

Figure 24. Cellular PVC when painted can be used to replace deteriorated wood features. This beadboard set in a wood frame was not historically designed to shed water effectively and had deteriorated. Cellular PVC was able to match the appearance of the wood details, while its properties were well matched to the shady location, painted finish, and limited size and configuration within the overall assembly; thus, it should provide a long-lasting solution for this application. Photo: Jennifer Balson Alvarez, NPS.

Acknowledgements

John Sandor, Architectural Historian, David Trayte, Historical Architect, and Amy Elizabeth Uebel, Architectural Historian, Technical Preservation Services, National Park Service, revised *Preservation Brief 16: The Use of Substitute Materials on Historic Building Exteriors*, originally written by Sharon C. Park, FAIA, FAPT, and published in 1988. The revised Brief contains expanded and updated information as well as new color photographs describing the general issues and application of substitute materials on historic buildings.

The authors wish to thank the following: Peyton Hall, FAIA, Principal Architect Emeritus, Historic Resources Group, Mary Jablonski, President, Jablonski Building Conservation, Inc., Thomas Jester, FAIA, FAPT, LEED AP, Principal, Quinn Evans, Sharon Park, FAIA, FAPT, Associate Director Emerita, Smithsonian Institution, Debra Slaton, Principal, Wiss, Janney, Elstner Associates, Inc., for their guidance and review of this revision; and to Brian Goeken, Chief of Technical Preservation Services, National Park Service, and Jo Ellen Hensley, Elizabeth Tune, and Jennifer Oeschger, Technical Preservation Services, National Park Service, for their help in the editing of the publication. Illustrations not specifically credited are from National Park Service files. Front cover image: Installation of a new roof feature on a ca.1895 commercial building. The dome was constructed of fiber-reinforced polymer to replicate the missing original feature in Aurora, Illinois, 2023. Photo: Kelsey Cozens/JH Real Estate Partners LLC.

This publication has been prepared pursuant to the National Historic Preservation Act of 1966, as amended, which directs the Secretary of the Interior to develop and make available information concerning historic properties. This publication is available from the Technical Preservation Services website at http://www.nps.gov/tps/ or hard copies may be purchased from the Government Printing Offices at the U.S. Government Bookstore at https://bookstore.gpo.gov/. Comments about this publication should be addressed to Technical Preservation Services, National Park Service, 1849 C Street, NW, Mail Stop 7243, Washington, DC 20240, or by email to NPS_TPS@nps.gov.

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EXHIBIT 4 – STAFF REPORT

DATE: June 12, 2024
TO: Historic Landmark Committee Members
FROM: Matthew Deppe, Associate Planner
SUBJECT: HL 3-24 (Certificate of Approval for Alteration)
609 NE Cowls Street

STRATEGIC PRIORITY & GOAL:

GROWTH & DEVELOPMENT CHARACTER
Guide growth & development strategically, responsively & responsibly to enhance our unique character.

OBJECTIVE/S: Define the unique character through a community process that articulates our core principles

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Report in Brief:

This is a quasi-judicial review of a "*Certificate of Approval for Alteration"* land use application for alterations to the existing historic landmark and building located at 609 NE Cowls Street (Tax Lot R4421-BB-18900. Alterations to existing historic landmarks that are designated on the Historic Resources Inventory need to be reviewed and receive approval for how their design complies with McMinnville's historic preservation standards. Per the McMinnville Municipal Code, the McMinnville Historic Landmarks Committee serves as the decision-making body for the Certificate of Approval review. The applicant, Beth Rhoades, on behalf of property owners Scott & Jennifer Scott, is requesting the Certificate of Approval for Alteration approval. The Certificate of Approval for Alteration request is subject to the review process described in Section 17.65.060 of the McMinnville Municipal Code (MMC). The Historic Landmarks Committee will make a final decision on the application, subject to appeal as described in Section 17.65.080 of the MMC.

Background:

The subject property is located at 609 NE Cowls Street. The property is identified as Tax Lot R4421-BB-18900 ***See Vicinity Map (Figure 1) below.***

Attachments:
Attachment A: Decision, Conditions, Findings of Fact and Conclusionary Findings for the Approval of HL 3-24
Attachment B: HL 3-24 Application Materials

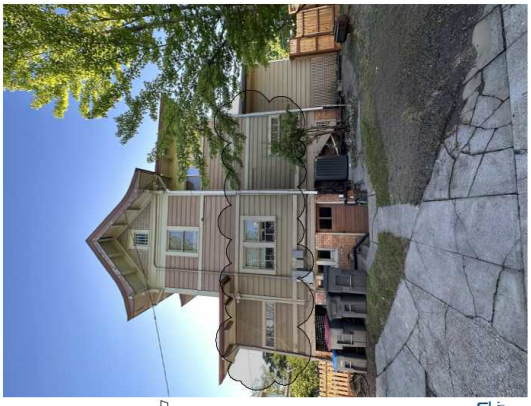
Exhibit 1. Vicinity Map (Property Lines Approximate)

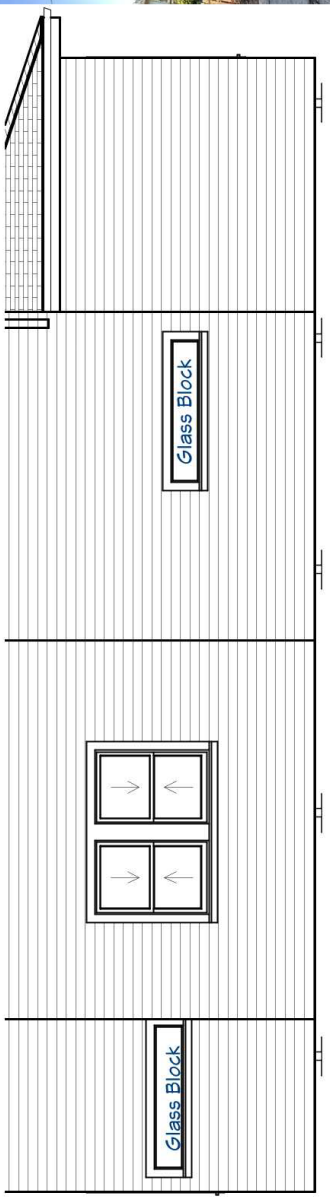
The applicant is requesting approval of the design to replace the gutters, remove rear side glass block walls, add new windows on that same side, replace windows, replace a door, and replace any siding that cannot reasonably be repaired with cement board. The applicant is requesting Certificate of Approval for these alterations on the subject property.

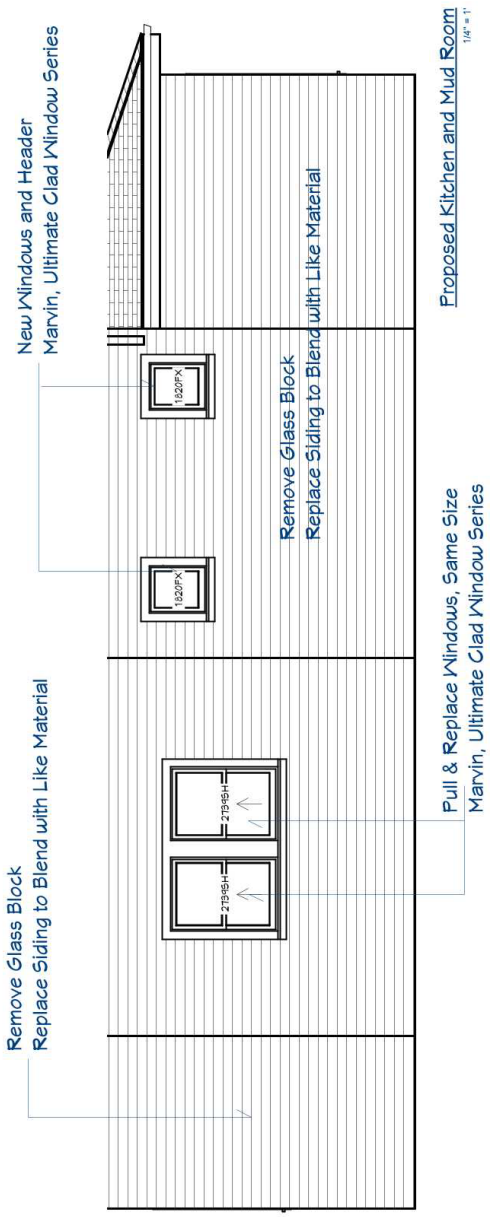
The applicant provided mockups of their proposal provided below.

Exhibit 2.

Glass block window replacement and existing window replacement:

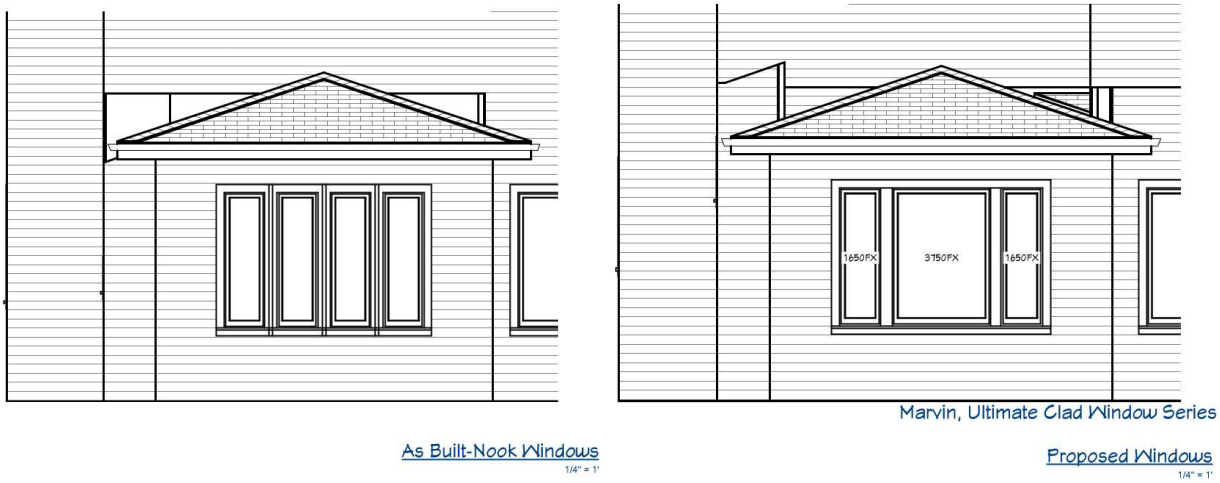




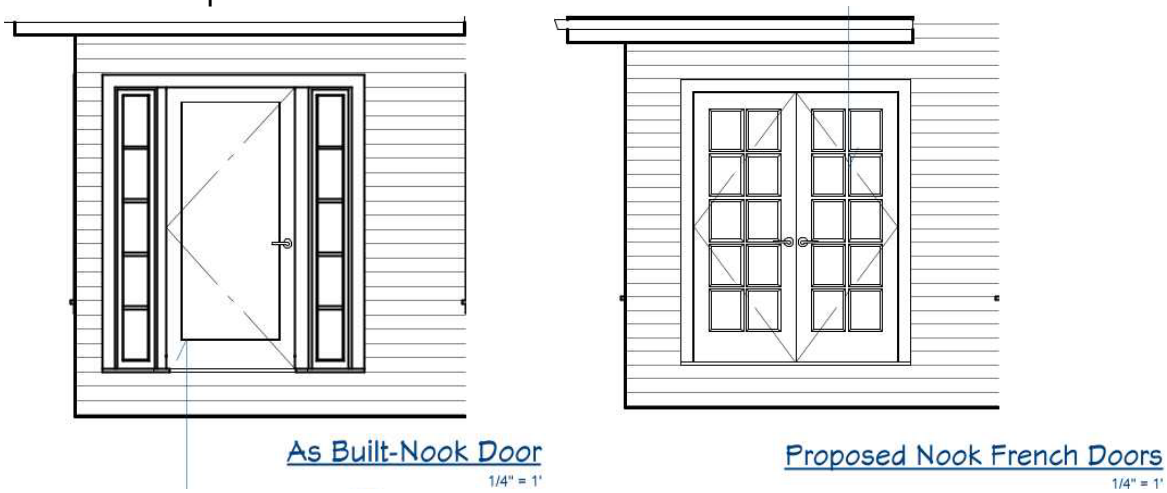


Gutter Replacement:

Nook Window Replacement:



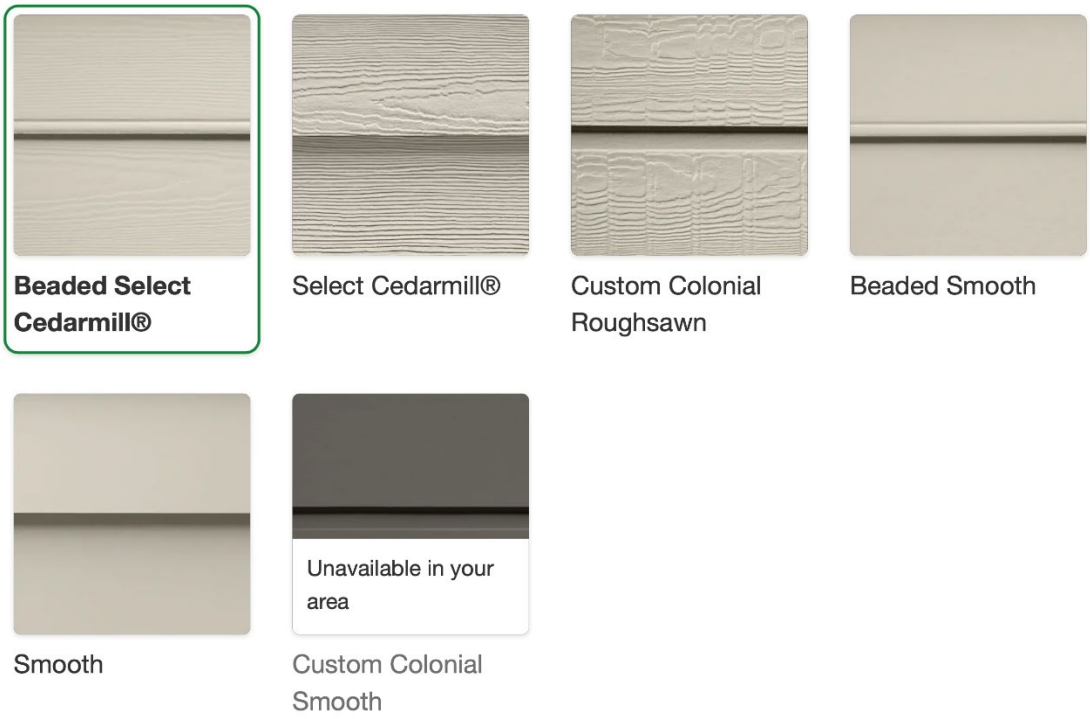
Nook Door Replacement:



Attachments:
Attachment A: Decision, Conditions, Findings of Fact and Conclusionary Findings for the Approval of HL 3-24
Attachment B: HL 3-24 Application Materials

Existing Siding Under Aluminum:

Cement Board Texture Options: the applicant is open to suggestions on what cement board option would best maintain the texture and other visual qualities of the original material



Discussion:

Decisions and/or recommendations for approval of the land use application is dependent upon whether or not the application meets state regulations, the McMinnville Comprehensive Plan and the McMinnville Municipal Code. The application can either meet these criteria as proposed, or a condition of approval can be provided that either outlines what needs to occur to meet the criteria or when something needs to occur to meet the criteria.

The specific review criteria for a Certificate of Approval for Alteration in Section 17.65.060(B) of the MMC require the Historic Landmarks Committee to base each decision on the following criteria:

1. The City's historic policies set forth in the comprehensive plan and the purpose of this ordinance;
2. The following standards and guidelines:
    a. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
    b. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
    c. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
    d. Changes to a property that have acquired historic significance in their own right will be retained and preserved.

e. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
f. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.
g. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
h. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
i. The Guidelines for Historic Preservation as published by the United States Secretary of the Interior.

3. The economic use of the historic resource and the reasonableness of the proposed alteration and their relationship to the public interest in the historic resource's preservation or renovation;
4. The value and significance of the historic resource; and
5. The physical condition of the historical resource.

Suggested Conditions of Approval

Staff suggests four conditions of approval. When working with historic buildings it is common to have to adjust the project plan in minor ways to account for unexpected existing conditions. These conditions are meant to allow for those minor adjustments.

1. That all window and doors installed are wood-clad (exterior) to match the existing structure's materials. The replacement french doors should have side lights similar to the existing sidelights of the door being replaced and the existing french doors being replicated. The four adjacent vertical windows should be replaced with a similar design window pattern with the vertical pattern of separation either by design or with window mullions. The replacement and new windows and doors shall include the wood trim and window sill design that exists on the remainder of the windows and doors on the existing structure.

2. That the applicant evaluate the original siding under the existing siding and repair any sections that can feasibly be repaired. Any sections that cannot be feasibly repaired will be replaced with siding that matches the design, color, texture, and other visual qualities of the original materials.

3. Any applicable agency comments related to the future building permit submittal process be satisfied to ensure that they are consistent with the plans submitted for review.

Committee Options:

1) Close the public meeting and **APPROVE** the application, per the decision document provided which includes the findings of fact.

2) **CONTINUE** the public meeting to a specific date and time.

3) Close the public meeting and **DENY** the application, providing findings of fact for the denial in the motion to deny.

Recommendation:

Staff is recommending approval of the application, subject to the above suggested conditions of approval.

MOTION FOR HL 3-24:

BASED ON THE FINDINGS OF FACT, THE CONCLUSIONARY FINDINGS FOR APPROVAL, AND THE MATERIALS SUBMITTED BY THE APPLICANT, THE HISTORIC LANDMARKS COMMITTEE APPROVES HL 3-24, SUBJECT TO THE CONDITIONS OF APPROVAL PROVIDED IN THE DECISION DOCUMENT.

Attachments:
Attachment A: Decision, Conditions, Findings of Fact and Conclusionary Findings for the Approval of HL 3-24
Attachment B: HL 3-24 Application Materials

City of McMinnville

Planning Department
231 NE Fifth Street
McMinnville, OR 97128
(503) 434-7311
www.mcminnvilleoregon.gov

DECISION, FINDINGS OF FACT AND CONCLUSIONARY FINDINGS OF THE MCMINNVILLE HISTORIC LANDMARKS COMMITTEE FOR THE APPROVAL OF ALTERATIONS TO A HISTORIC LANDMARK LOCATED AT 609 NE Cowls Street

DOCKET: HL 3-24 (Certificate of Approval for Alteration)

REQUEST: Approval of alterations to an existing historic landmark and building that is listed on the McMinnville Historic Resources Inventory as a "Distinctive" historic resource (resource number A355). The proposed alterations include removal of of glass block windows, addition of new wood windows in the same area, replacement of a door, replacement of windows, removal of vinyl and aluminum siding, and replacement of cedar siding with cement board siding when existing holes in the siding make repairs unfeasable.

LOCATION: 609 NE Cowls Street. Tax Lot: R4421-BB-18900

ZONING: O-R (Office Residential)

APPLICANT: Beth Rhoades, on behalf of property owner Scott & Jennifer Scott

STAFF: Matthew Deppe, Associate Planner

DATE DEEMED COMPLETE: May 14, 2024

HEARINGS BODY & ACTION: McMinnville Historic Landmarks Committee

HEARING DATE & LOCATION: June 12, 2024, Police Station Conference Room, 121 SE Adams Street, McMinnville, Oregon.

PROCEDURE: An application for a Certificate of Approval for Alteration is processed in accordance with the procedures in Section 17.65.060 of the McMinnville Municipal Code.

CRITERIA: The applicable criteria for a Certificate of Approval for Alteration are specified in Section 17.65.060(B) of the McMinnville Municipal Code. In addition, the goals, policies, and proposals in Volume II of the Comprehensive Plan are to be applied to all land use decisions as criteria for approval, denial, or modification of the proposed request. Goals and policies are mandated; all land use decisions must conform to the applicable goals and policies of Volume II. "Proposals" specified in Volume II are not mandated, but are to be undertaken in relation to all applicable land use requests.

APPEAL: As specified in Section 17.65.080 of the McMinnville Municipal Code, the Historic Landmarks Committee's decision may be appealed to the Planning Commission

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Attachments:
Attachment 1 – Application and Attachments

within fifteen (15) days of the date written notice of decision is mailed. The City's final decision is subject to a 120 day processing timeline, including resolution of any local appeal.

COMMENTS: This matter was referred to the following public agencies for comment: McMinnville Fire Department, Police Department, Engineering Department, Building Department, Parks Department, City Manager, and City Attorney; McMinnville Water and Light; McMinnville School District No. 40; Yamhill County Public Works; Yamhill County Planning Department; Frontier Communications; Comcast; Northwest Natural Gas; and Oregon Department of Transportation. Their comments are provided in this document.

RECOMMENDATION

Based on the findings and conclusionary findings, the Historic Landmarks Committee finds the applicable criteria are satisfied with conditions and **APPROVES** the Certificate of Approval for New Construction (HL 3-24), **subject to conditions**.

//

RECOMMENDATION: APPROVAL WITH CONDITIONS

//

Historic Landmarks Committee: _____ Date: _____
John Mead, Chair

Planning Department: _____ Date: _____
Heather Richards, Planning Director

Attachments :
Attachment 1 – Application and Attachments

I. APPLICATION SUMMARY:

The applicant has provided information in their application regarding the history of the subject site and the request under consideration. Staff has found the information provided to accurately reflect the current land use requests and the relevant background, and excerpted portions are provided below to give context to the request, in addition to staff's comments.

Subject Property & Request

The subject property is located at 609 NE Cowls Street. The property identified as Tax Lot Tax Lot: R4421-BB-18900 ***See Vicinity Map (Figure 1) below.***

Figure 1. Vicinity Map

The existing building on the subject property is listed on the Historic Resources Inventory as a Distinctive resource (resource number A355).

The applicant provided an overview of their proposal and project in the application narrative, which is as follows:

The proposed alterations and addition of a new garage are identified in the submitted elevations below:

Background

Summary of Criteria & Issues

The application (HL 3-24) is subject to Certificate of Approval for Alteration review criteria in Section 17.65.060(B) of the Zoning Ordinance. The goals and policies in Volume II of the Comprehensive Plan are also independent approval criteria for all land use decisions.

The specific review criteria for Certificate of Approval for Alteration requests, in Section 17.65.060(B) of the McMinnville Zoning Ordinance, require the Historic Landmarks Committee to base each decision on the following criteria:

1. The City's historic policies set forth in the comprehensive plan and the purpose of this ordinance;
2. The following standards and guidelines:
    a. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
    b. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
    c. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
    d. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
    e. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
    f. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.
    g. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
    h. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
    i. The Guidelines for Historic Preservation as published by the United States Secretary of the Interior.
3. The economic use of the historic resource and the reasonableness of the proposed alteration and their relationship to the public interest in the historic resource's preservation or renovation;
4. The value and significance of the historic resource; and
5. The physical condition of the historical resource.

The applicant has provided findings to support the request for a Certificate of Approval for Alteration. These will be discussed in detail in Section VII (Conclusionary Findings) below.

II. CONDITIONS:

1. That all window and doors installed are wood-clad (exterior) to match the existing structure's materials. The replacement french doors should have side lights similar to the existing sidelights of the door being replaced and the existing french doors being replicated. The four adjacent vertical windows should be replaced with a similar design window pattern with the vertical pattern of separation either by design or with window mullions. The replacement and new windows and doors shall include the wood trim and window sill design that exists on the remainder of the windows and doors on the existing structure.

2. That the applicant evaluate the original siding under the existing siding and repair any sections that can feasibly be repaired. Any sections that cannot be feasibly repaired will be replaced with siding that matches the design, color, texture, and other visual qualities of the original materials.

3. Any applicable agency comments related to the future building permit submittal process be satisfied to ensure that they are consistent with the plans submitted for review.

III. ATTACHMENTS:

1. HL 3-24 Application and Attachments (on file with the Planning Department)

IV. COMMENTS:

Agency Comments

This matter was referred to the following public agencies for comment: McMinnville Fire Department, Police Department, Parks and Recreation Department, Engineering and Building Departments, City Manager, and City Attorney, McMinnville School District No. 40, McMinnville Water and Light, Yamhill County Public Works, Yamhill County Planning Department, Recology Western Oregon, Frontier Communications, Comcast, Northwest Natural Gas. The following comments were received:

- McMinnville Engineering Department

  No concerns/comments from engineering

- McMinnville Water & Light

  Contact McMinnville Water & Light if overhead power needs disconnected during any portion of this work.

- McMinnville Building Department

  As long as the use remains single-family residential a building permit is only needed for the installation of two new windows where none previously existed. All other work described as part of the application is exempt from the need for a building permit. The City does not regulate or enforce lead paint or asbestos abatement which is left to other regulatory agencies in Oregon.

  Building permit applications should be made online using Oregon ePermitting. The designer must confirm whether the wall is a bearing wall and if it is, provide header design for each window. An inspection of the framed opening and final installation of the two windows will be necessary.

No other building code related issues noted.

Public Comments

Notice of this request was mailed to property owners located within 300 feet of the subject site. As of the date of the Historic Landmarks Committee public hearing on June 12, 2024, no public testimony had been received by the Planning Department.

V. FINDINGS OF FACT - PROCEDURAL FINDINGS

1. The applicant, Beth Rhoades, on behalf of property owner Scott & Jennifer Scott, submitted the Certificate of Approval application (HL 3-24) on May 14, 2024.

2. Based on that date, the 120 day land use decision time limit expires on September 11, 2024.

3. Notice of the application was referred to the following public agencies for comment in accordance with Section 17.72.120 of the Zoning Ordinance: McMinnville Fire Department, Police Department, Parks and Recreation Department, Engineering and Building Departments, City Manager, and City Attorney, McMinnville School District No. 40, McMinnville Water and Light, Yamhill County Public Works, Yamhill County Planning Department, Recology Western Oregon, Frontier Communications, Comcast, Northwest Natural Gas.

   Comments received from agencies are addressed in the Decision Document.

4. Notice of the application and the June 12, 2024, Historic Landmarks Committee public meeting was mailed to property owners within 300 feet of the subject property in accordance with Section 17.65.070(C) of the Zoning Ordinance on June 5, 2024.

5. No public testimony was submitted to the Planning Department prior to the Historic Landmarks Committee public hearing.

6. On June 12, 2024, the Historic Landmarks Committee held a duly noticed public hearing to consider the request.

VI. FINDINGS OF FACT – GENERAL FINDINGS

1. **Location:** 609 NE Cowls Street. Tax Lot: R4421-BB-18900

2. **Size:** 0.276 Acres (lot), 5,882 sf (structure).

3. **Comprehensive Plan Map Designation:** Residential

4. **Zoning:** O-R (Office Residential)

5. **Overlay Zones/Special Districts:** None.

6. **Current Use:** Single Family Residential

7. **Inventoried Significant Resources:**
   a. **Historic Resources:** Historic Resources Inventory – Resource Number A355.
   b. **Other:** None

8. **Other Features:** The site is developed with a single-family residential structure. The site is largely flat

9. **Utilities:**
   a. **Water:** Water service is available to the subject site.
   b. **Electric:** Power service is available to the subject site.
   c. **Sewer:** Sanitary sewer service is available to the subject site.
   d. **Stormwater:** Storm sewer service is available to the subject site.
   e. **Other Services:** Other utility services are available to the subject site. Northwest Natural Gas and Comcast is available to serve the site.

10. **Transportation:** The site is adjacent to NE Cowls Street and NE 6th Street, which both are identified as a local streets in the McMinnville Transportation System Plan. Section 17.53.101 of the McMinnville Municipal Code identifies the right-of-way width for local streets as 50 feet.

VII. CONCLUSIONARY FINDINGS:

The Conclusionary Findings are the findings regarding consistency with the applicable criteria for the application. The applicable criteria for a Certificate of Approval for Alteration are specified in Section 17.65.060(B) of the Zoning Ordinance.

In addition, the goals, policies, and proposals in Volume II of the Comprehensive Plan are to be applied to all land use decisions as criteria for approval, denial, or modification of the proposed request. Goals and policies are mandated; all land use decisions must conform to the applicable goals and policies of Volume II. "Proposals" specified in Volume II are not mandated, but are to be undertaken in relation to all applicable land use requests.

Comprehensive Plan Volume II:

The following Goals, Policies, and Proposals from Volume II of the Comprehensive Plan provide criteria applicable to this request:

The implementation of most goals, policies, and proposals as they apply to this application are accomplished through the provisions, procedures, and standards in the city codes and master plans, which are sufficient to adequately address applicable goals, polices, and proposals as they apply to this application.

The following additional findings are made relating to specific Goals and Policies:

GOAL III 2: TO PRESERVE AND PROTECT SITES, STRUCTURES, AREAS, AND OBJECTS OF HISTORICAL, CULTURAL, ARCHITECTURAL, OR ARCHAEOLOGICAL SIGNIFICANCE TO THE CITY OF McMINNVILLE.

APPLICANT'S RESPONSE: The proposed project will meet the policies of the Comprehensive plan by preserving and protecting this site of historical significance. The removal of the aluminum and vinyl and repair of underlying cedar or replacement with texture matching cement board will improve property value.

FINDING: SATISFIED. The City concurs with the applicant's findings, and adds that the protection of the structure is being achieved through compliance with the applicable Certificate of Approval for Alteration criteria, as described in more detail below.

GOAL X 1: TO PROVIDE OPPORTUNITIES FOR CITIZEN INVOLVEMENT IN THE LAND USE DECISION MAKING PROCESS ESTABLISHED BY THE CITY OF McMINNVILLE.

GOAL X 2: TO MAKE EVERY EFFORT TO ENGAGE AND INCLUDE A BROAD CROSS SECTION OF THE COMMUNITY BY MAINTAINING AN ACTIVE AND OPEN CITIZEN INVOLVEMENT PROGRAM THAT IS ACCESSIBLE TO ALL MEMBERS OF THE COMMUNITY AND ENGAGES THE COMMUNITY DURING DEVELOPMENT AND IMPLEMENTATION OF LAND USE POLICIES AND CODES.

Policy 188.00 The City of McMinnville shall continue to provide opportunities for citizen involvement in all phases of the planning process. The opportunities will allow for review and comment by community residents and will be supplemented by the availability of information on planning requests and the provision of feedback mechanisms to evaluate decisions and keep citizens informed.

APPLICANT'S RESPONSE: None.

FINDING: SATISFIED. The process for a Certificate of Approval for Alteration provides an opportunity for citizen involvement throughout the process through the public notice and the public meeting process. Throughout the process, there are opportunities for the public to review and obtain copies of the application materials and the completed staff report prior to the advertised public meeting(s). All members of the public have access to provide testimony and ask questions during the public review and hearing process.

McMinnville Zoning Ordinance

The following Sections of the McMinnville Zoning Ordinance (Ord. No. 3380) provide criteria applicable to the request:

Chapter 17.03. General Provisions

17.03.020 Purpose. The purpose of this ordinance is to encourage appropriate and orderly physical development in the City through standards designed to protect residential, commercial, industrial, and civic areas from the intrusions of incompatible uses; to provide opportunities for establishments to concentrate for efficient operation in mutually beneficial relationship to each other and to shared services; to provide adequate open space, desired levels of population densities, workable relationships between land uses and the transportation system, and adequate community facilities; to provide assurance of opportunities for effective utilization of the land resource; and to promote in other ways public health, safety, convenience, and general welfare.

APPLICANT'S RESPONSE: None.

FINDING: SATISFIED. The purpose of the Zoning Ordinance is met by the proposal as described in the Conclusionary Findings contained in this Decision Document.

17.65.060 Exterior Alteration or Remodeling. The property owner shall submit an application for a Certificate of Approval for any exterior alteration to a historic landmark, or any resource that is listed on the National Register for Historic Places. Applications shall be submitted to the Planning Department for initial review for completeness as stated in Section 17.72.040 of the McMinnville Zoning Ordinance. The Planning Director shall determine whether the proposed activities constitute an alteration as defined in Section 17.65.020 (A) of this chapter. The Historic Landmarks Committee shall meet within thirty (30) days of the date the application was deemed complete by the Planning Department to review the request. A failure to review within thirty (30) days shall be considered as an approval of the application. Within five (5) working days after a decision has been rendered, the Planning Department shall provide written notice of the decision to all parties who participated.

APPLICANT'S RESPONSE: None.

FINDING: SATISFIED. The applicant, who is representing the property owner, filed an application and request for approval of proposed alterations to the building that is designated as a Distinctive resource on the Historic Resources Inventory. The application was reviewed by the Historic Landmarks Committee within 30 days of the application being deemed complete.

17.65.060 Exterior Alteration or Remodeling. […]

B. The Historic Landmarks Committee shall base its decision on the following criteria:

17.65.060(B)(1). *The City's historic policies set forth in the comprehensive plan and the purpose of this ordinance;*

APPLICANT'S RESPONSE: None.

FINDING: SATISFIED. The findings for the applicable Comprehensive Plan policies are provided above.

17.65.060(B)(2)(a). *A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.*

APPLICANT'S RESPONSE: None.

FINDING: SATISFIED. The home will continue to be used as a residence. Upgrading the aluminum siding to a siding more accurate in color, texture, and other visual qualities.

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

APPLICANT'S RESPONSE: We have had to take off more siding around the house and the holes are everywhere. We took off siding for the re-framing on the back of the house and there were holes. Under the porch on the front of the house, we took off a few pieces and there are the holes.

We talked to our siding company, and they said it is possible to replace the cedar boards with the holes. The question is if there are so many that we must decide if the new cedar would blend in or not. Our preference is to refurb the cedar siding, but it might be too expensive. We cannot afford to put new cedar on the entire home. In that case, we would do the cement lap boards. We will only do that if the cedar is in too bad of shape for refurbishing.

Pictures identifying location of aluminum (A) and vinyl (V) siding.

Pictures of original cedar siding with insulation holes under aluminum and vinyl siding.

FINDING: SATISFIED WITH CONDITION OF APPROVAL #2. The applicant's intention is to repair the original siding under the existing siding. Early investigation of the original cedar siding is that there may be more insulation holes drilled than expected and, in some cases, more than are feasible to repair. Residing the entire home with new cedar is financially unfeasible for the applicant and they are requesting permission to replace overly drilled sections of the existing cedar with cement board matching the reveals of the existing cedar. Total replacement area will be unknown until all the existing aluminum siding is removed. The applicant have provided multiple texture options, for the committee's review, to receive guidance on which texture would best meet the Secretary of Interior's Standards for Rehabilitation best. Seeking to match the old siding in design, color, texture and other visual qualities.

SATISFIED WITH CONDITION OF APPROVAL #2. That the applicant evaluate the original siding under the existing siding and repair any sections that can feasibly be repaired. Any sections that cannot be feasible repaired will be replaced with siding that matches the design, color, texture, and other visual qualities of the original materials.

17.65.060(B)(2)(c). *Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.*

FINDING: SATISFIED WITH CONDITION OF APPROVAL #2. The applicant's intention is to repair the original siding under the existing siding. Early investigation of the original cedar siding is that there may be more insulation holes drilled than expected and, in some cases, more than are feasible to repair. Residing the entire home with new cedar is financially unfeasible for the applicant and they are requesting permission to replace overly drilled sections of the existing cedar with cement board matching the reveals of the existing cedar. Total replacement area will be unknown until all the existing aluminum siding is removed. The applicant have provided multiple texture options, for the committee's review, to receive guidance on which texture would best meet the Secretary of Interior's Standards for Rehabilitation best. Seeking to match the old siding in design, color, texture and other visual qualities.

SATISFIED WITH CONDITION OF APPROVAL #2. That the applicant evaluate the original siding under the existing siding and repair any sections that can feasibly be repaired. Any sections that cannot be feasibly repaired will be replaced with siding that matches the design, color, texture, and other visual qualities of the original materials.

17.65.060(B)(2)(d). *Changes to a property that have acquired historic significance in their own right will be retained and preserved.*

FINDING: NOT APPLICABLE.

17.65.060(B)(2)(e). *Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.*

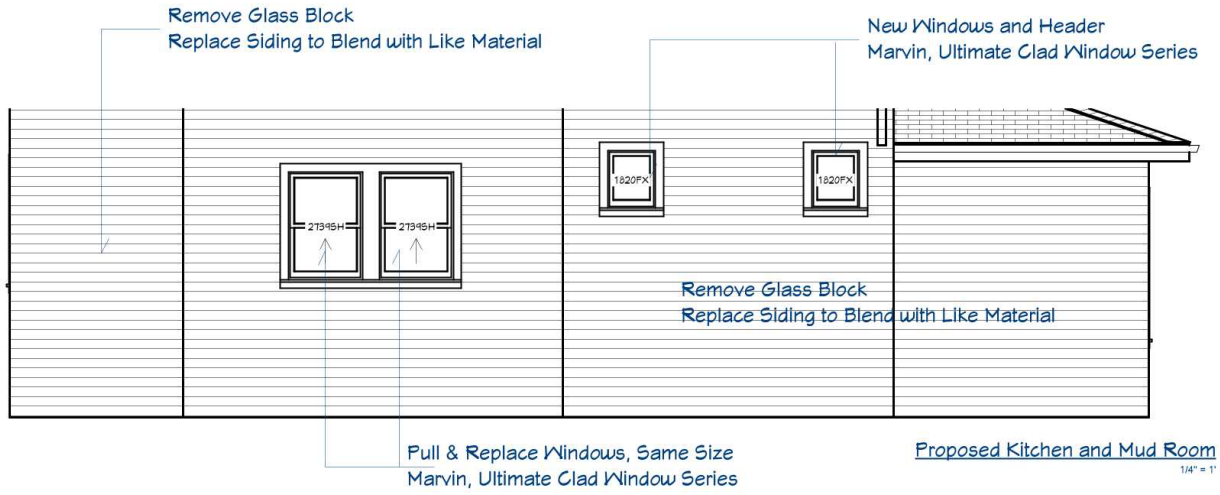
FINDING: SATISFIED WITH CONDITION OF APPROVAL #2. The applicant's intention is to repair the original siding under the existing siding. Early investigation of the original cedar siding is that there may be more insulation holes drilled than expected and, in some cases, more than are feasible to repair. Residing the entire home with new cedar is financially unfeasible for the applicant and they are requesting permission to replace overly drilled sections of the existing cedar with cement board matching the reveals of the existing cedar. Total replacement area will be unknown until all the existing aluminum siding is removed. The applicant have provided multiple texture options, for the committee's review, to receive guidance on which texture would best meet the Secretary of Interior's Standards for Rehabilitation best. Seeking to match the old siding in design, color, texture and other visual qualities.

SATISFIED WITH CONDITION OF APPROVAL #2. That the applicant evaluate the original siding under the existing siding and repair any sections that can feasibly be repaired. Any sections that cannot be feasibly repaired will be replaced with siding that matches the design, color, texture, and other visual qualities of the original materials.

17.65.060(B)(2)(f). *The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.*

Applicant's Response:
The applicant is proposing replacing all the existing gutters with rustic copper finish gutters.

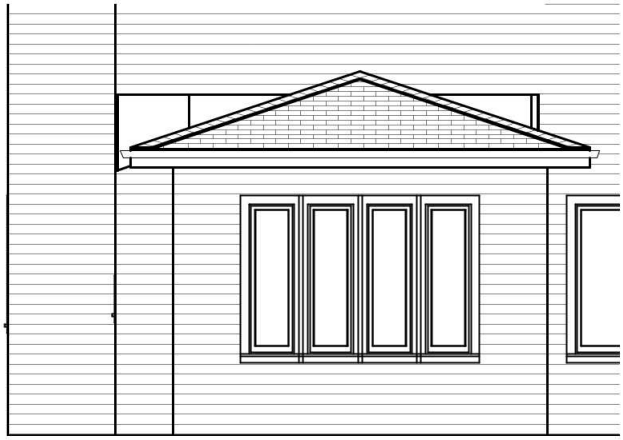
The applicant is proposing a removal of non-historic glass block windows on the rear of the home and replacing them with new aluminum clad windows.



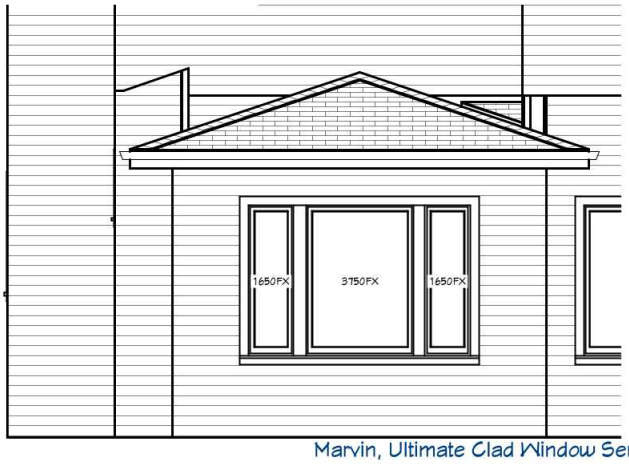
(Above are original square windows in the home matching the style of two of the proposed rear window additions replacing the glass block windows proposed for removal.)

The applicant is proposing replacing the existing front nook windows with a bay window design.

Window Changes



As Built-Nook Windows
1/4" = 1'



Marvin, Ultimate Clad Window Series

Proposed Windows
1/4" = 1'

The applicant is proposing replacing the door in the nook with french doors.

FINDING: SATISFIED WITH CONDITION OF APPROVAL #1. The applicant plans to replace glass block windows with square aluminum clad windows that are of similar size to other square windows on the house. The applicant would also like to replace four vertical adjacent windows with an aluminum bay window and a door with side lights with aluminum clad french door.

The Secretary of Interior Standards for Rehabilitation encourages replacing windows and doors with similar design and materials. The existing windows and doors are wood framed.

CONDITION OF APPROVAL #1: That all window and doors installed are wood-clad (exterior) to match the existing structure's materials. The replacement french doors should have side lights similar to the existing sidelights of the door being replaced and the existing french doors being replicated. The four adjacent vertical windows should be replaced with a similar design window pattern with the vertical pattern of separation either by design or with window mullions. The replacement and new windows and doors shall include the wood trim and window sill design that exists on the remainder of the windows and doors on the existing structure.

17.65.060(B)(2)(g). *Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.*

FINDING: NOT APPLICABLE. No chemical treatments are proposed.

17.65.060(B)(2)(h). *Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.*

FINDING: SATISFIED. The City understands that any archeological resources discovered during the construction process will be preserved.

17.65.060(B)(2)(i). *The Guidelines for Historic Preservation as published by the United States Secretary of the Interior.*

APPLICANT'S RESPONSE:

FINDING: SATISFIED WITH CONDITIONS. The Secretary of the Interior's Standards for the Treatment of Historic Properties describes the rehabilitation of a historic building as follows:

> "In Rehabilitation, historic building materials and character-defining features are protected and maintained as they are in the treatment Preservation. However, greater latitude is given in the Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings to replace extensively deteriorated, damaged, or missing features using either the same material or compatible substitute materials. Of the four treatments, only Rehabilitation allows alterations and the construction of a new addition, if necessary for a continuing or new use for the historic building."

Some of the applicable rehabilitation guidelines for historic buildings, and findings for the guidelines, are provided below:

Finding: As described in more detail above, the applicant is proposing to repair exterior siding. Other areas where doors or windows are being removed will be finished with matching exterior siding and materials. In cases where repair is not possible the applicant is seeking to replace the siding with cement board matching the design, texture, and other visual qualities of the original cedar.

> Recommended Guideline: Identifying, retaining, and preserving windows and their functional and decorative features that are important to the overall character of the building. The window material and how the window operates (e.g., double hung, casement, awning, or hopper) are significant, as are its components (including sash, muntins, ogee lugs, glazing, pane configuration, sills, mullions, casings, or brick molds) and related features, such as shutters.
>
> Recommended Guideline: Designing and installing a new window or its components, such as frames, sash, and glazing, when the historic feature is completely missing. It may be an accurate restoration based on documentary and physical evidence, but only when the historic feature to be replaced coexisted with the features currently on the building. Or, it may be a new design that is compatible with the size, scale, material, and color of the historic building.

Finding: As described in more detail above, existing incompatible block glass windows are proposed to be removed and replaced with wood windows. A condition of approval is included

to require that all replacement and new windows be wood material to match the existing material of the historic structure.

Finding: As described in more detail above, the proposed design does propose French doors to replace one of the existing nook doors. A condition of approval is included to require that the new front door be consistent in style with the other existing front door, which is the eastern door on the street-facing façade of the structure. Both existing front doors used to contain a grid system within a large glazed portion of the door. The condition of approval will require that the new door match the old in material and design.

Recommended Guideline: Designing new onsite features (such as parking areas, access ramps, or lighting), when required by a new use, so that they are as unobtrusive as possible, retain the historic relationship between the building or buildings and the landscape, and are compatible with the historic character of the property.

Recommended Guideline: Designing new exterior additions to historic buildings or adjacent new construction that are compatible with the historic character of the site and preserves the historic relationship between the building or buildings and the landscape.

Recommended Guideline: Locating new construction far enough away from the historic building, when possible, where it will be minimally visible and will not negatively affect the building's character, the site, or setting.

Recommended Guideline: Designing new construction on a historic site or in a historic setting that it is compatible but differentiated from the historic building or buildings.

17.65.060(B)(3). *The economic use of the historic resource and the reasonableness of the proposed alteration and their relationship to the public interest in the historic resource's preservation or renovation;*

APPLICANT'S RESPONSE:

FINDING:

17.65.060(B)(4). *The value and significance of the historic resource; and*

APPLICANT'S RESPONSE:

FINDING:

17.65.060(B)(5). *The physical condition of the historical resource.*

APPLICANT'S RESPONSE: None.

FINDING:

City Of McMinnville
Planning Department
231 NE Fifth Street ○ McMinnville, OR 97128
(503) 434-7311 Office ○ (503) 474-4955 Fax
www.mcminnvilleoregon.gov

Office Use Only:
File No. HL 3-24
Date Received 5/14/2024
Fee $1,809.00
Receipt No. 209849
Received by AW

569-24-000104-PLNG

Certificate of Approval (Alteration)

Applicant Information

Applicant is: ☐ Property Owner ☐ Contract Buyer ☐ Option Holder ☐ Agent ☒ Other **Contractor**

Applicant Name **C&R Design Remodel, CCB 1932** Phone **503-363-1343**

Contact Name **Beth Rhoades** Phone **503-932-4947**
(If different than above)

Address **1160 Vista Ave SE**

City, State, Zip **Salem, OR 97302**

Contact Email **BethR@RemodelSalem.com**

Property Owner Information

Property Owner Name **Scott & Jennifer Scott** Phone **503-472-6161**
(If different than above)

Contact Name _____ Phone _____

Address **609 NE Cowls St**

City, State, Zip **McMinnville, OR 97128**

Contact Email **jennifergreendo@gmail.com**

Site Location and Description

(If metes and bounds description, indicate on separate sheet)

Property Address **609 NE Cowls St**

Assessor Map No. R4 **421BB-18900** - Total Site Area **.2755**

Subdivision **WILLIS' ADDITION** Block **Block 4** Lot **Lots 7 & 8 -**

Comprehensive Plan Designation **Residential** Zoning Designation O-R (Office Residential)

1. What is the classification of the historic building?_____

2. Architect Name_____ Phone_____
   (Engineer or Other Designer)

   Contact Name_____ Phone_____

   Address_____

   City, State, Zip_____

   Contact Email_____

3. Contractor Name **C&R Design Remodel, CCB 1932** Phone **503-363-1343**

   Contact Name **Beth Rhoades** Phone **503-932-4947**

   Address **1160 Vista Ave SE**

   City, State, Zip **Salem, OR 97302**

   Contact Email **BethR@RemodelSalem.com**

4. The existing use of the property. **Single Family Residential**

5. The intended use of the property. **Single Family Residential**

6. Attach a written narrative that describes:

   A. The proposed project in detail (specific portions of the structure being altered, new features being constructed, etc.);

   B. How the proposed project meets the applicable Comprehensive Plan policies;

   C. How the proposed project meets the applicable design standards and guidelines, which are as follows:

      a. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
      b. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
      c. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
      d. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
      e. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
      f. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.

g. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
h. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
i. The proposed project must be consistent with the Guidelines for Historic Preservation as published by the United States Secretary of the Interior;

D. The reasonableness of the proposed project and a description of the economic use of the historic resource, and how those factors relate to the proposed project;

E. The current value and significance of the historic resource, and how those factors relate to the proposed project; and

F. The physical condition of the historic resource, and how the condition relates to the proposed project.

In addition to this completed application, the applicant must provide the following:

☒ *A site plan (drawn to scale, with a north arrow, legible, and of a reproducible size), showing the information listed in the information sheet.*

☒ *Architectural drawings, including elevations of the proposed alteration. The elevations shall include descriptions of the proposed finish material.*

☒ *Photographs and/or drawings of the existing structure.*

I certify the statements contained herein, along with the evidence submitted, are in all respects true and are correct to the best of my knowledge and belief.

Applicant's Signature	**5/8/2024** Date
DocuSigned by: BDAB84A09901482...	5/13/2024 Date
Property Owner's Signature	

Scope of Project:

Siding Work:

Remove aluminum siding on house
Restore existing cedar siding
Paint Exterior

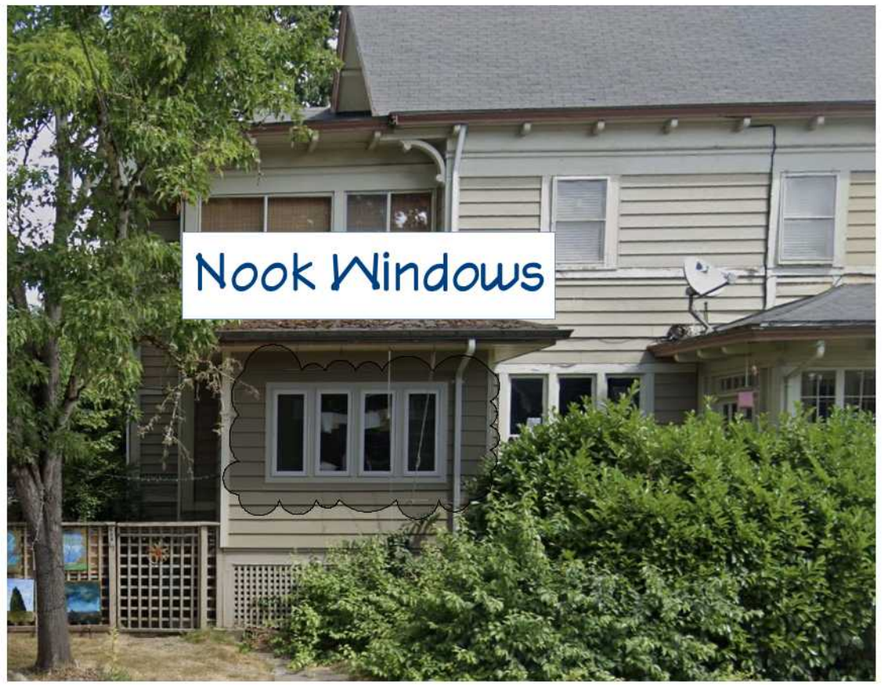
Gutters:

Remove existing gutters
Install new gutters
Finish to be rustic copper

Window Work & Door Work:

Replace Nook Windows and Door
Remove glass block on side of house (not street facing)
Replace with two new windows at existing kitchen (not street facing)
Add two new windows at kitchen (not street facing)

No change to trim work or all other windows

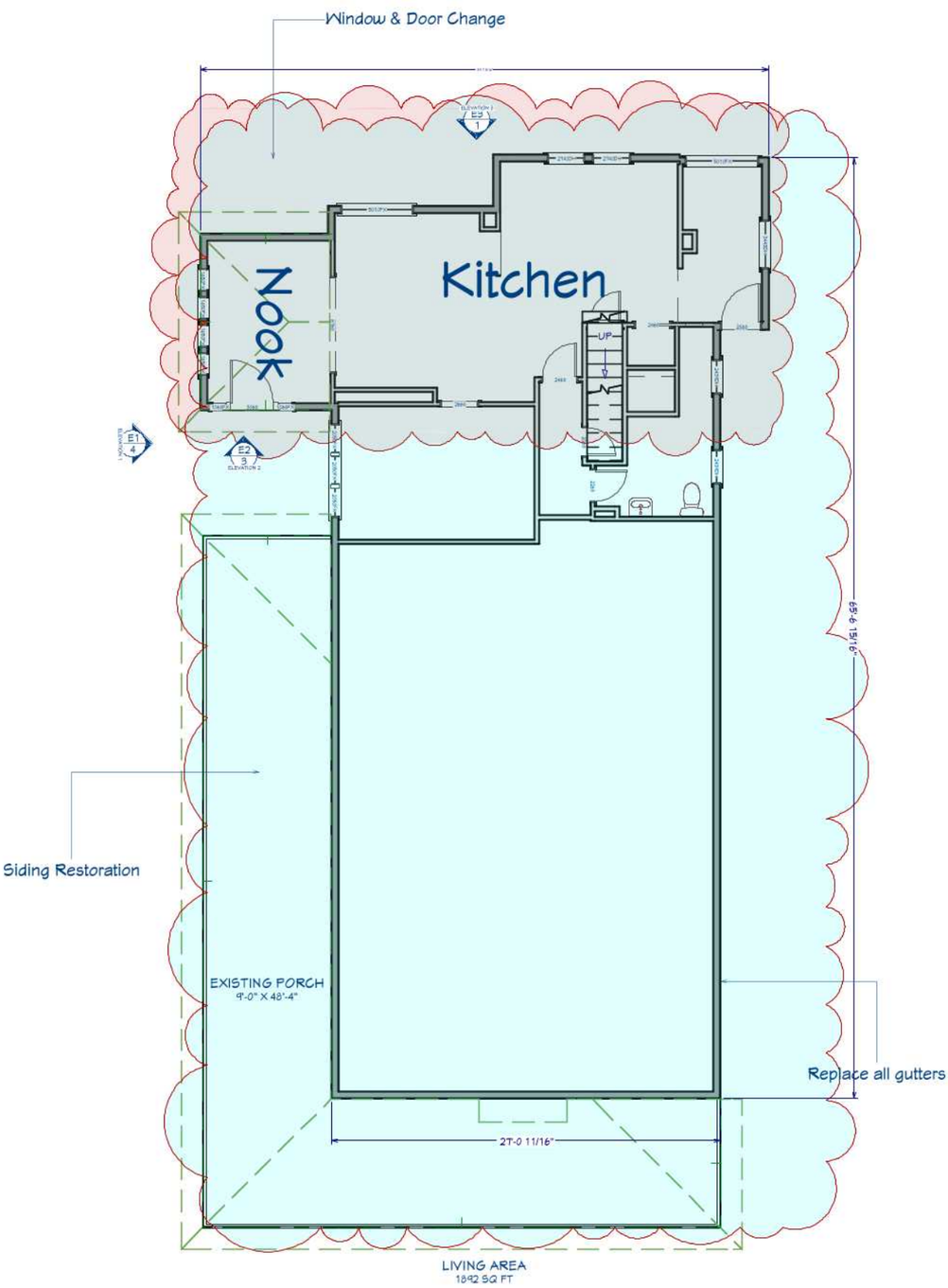


SHEET NUMBER 1 REVISION #:

Scott & Jennifer Green
609 NE Cowls St, McMinnville, OR
DRAWN BY: BETH RHOADES DATE: 5/7/2024

Exterior Window & Door Replacement
Exterior Siding Removal & Restoration

DRAWINGS PROVIDED BY:
C&R Design Remodel
1160 Vista Ave SE
503.363.1343
CCB #1932



120'

100'

6th

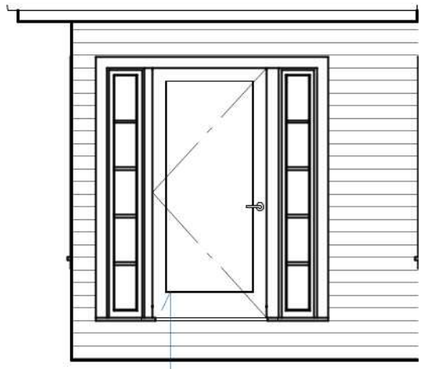
NE Cowls

Site Plan
1/10" = 1'

N

DRAWINGS PROVIDED BY: C&R Design Remodel 1160 Vista Ave SE 503.363.1343 CCB #1932	Exterior Window & Door Replacement Exterior Siding Removal & Restoration	Scott & Jennifer Green 609 NE Cowls St, McMinnville, OR DRAWN BY: BETH RHOADES DATE: 5/7/2024	SHEET NUMBER 2 REVISION #:

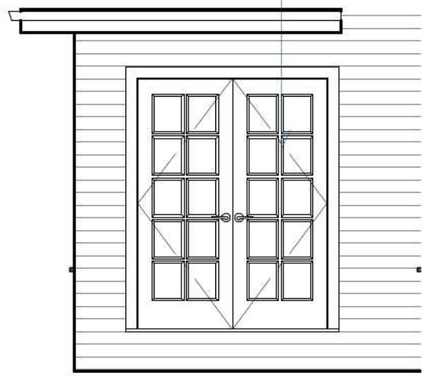
Door Change from Nook



As Built-Nook Door

1/4" = 1'

Wood Doors



Proposed Nook French Doors

1/4" = 1'

FRENCH SERIES

4510 (IG)

Painted Wood French Door

Clear Glass

SHEET NUMBER 3 REVISION #:

Scott & Jennifer Green
609 NE Cowls St, McMinnville, OR

DRAWN BY: BETH RHOADES DATE: 5/7/2024

Exterior Window & Door Replacement
Exterior Siding Removal & Restoration

DRAWINGS PROVIDED BY:
C&R Design Remodel
1160 Vista Ave SE
503.363.1343
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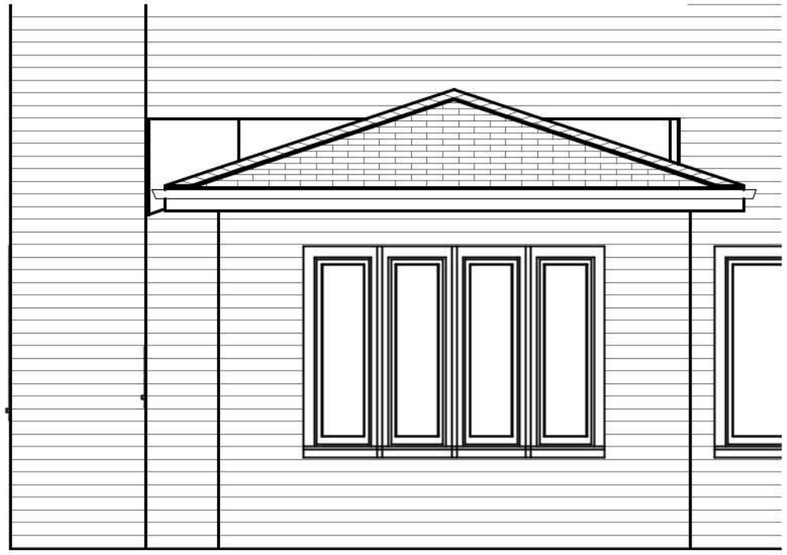
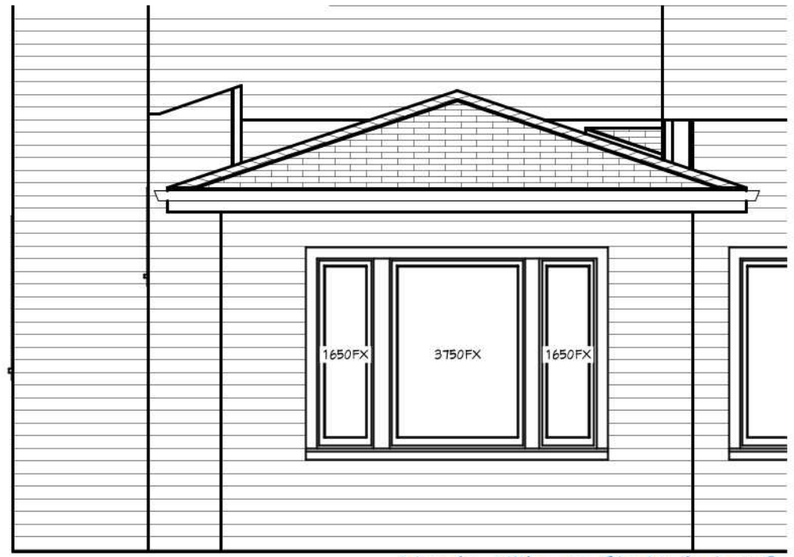
Window Changes



As Built-Nook Windows

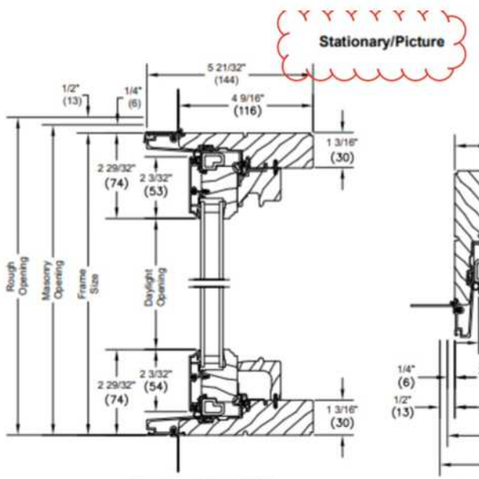
1/4" = 1'



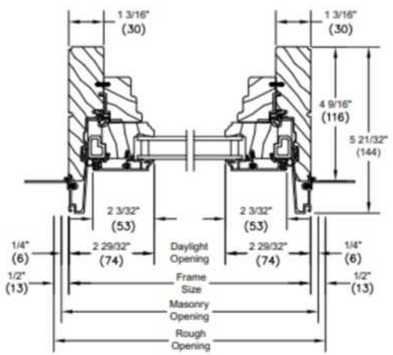
Marvin, Ultimate Clad Window Series

Proposed Windows

1/4" = 1'



Head Jamb and Sill



Jambs

SHEET NUMBER 4 REVISION #:

Scott & Jennifer Green
609 NE Cowls St, McMinnville, OR
DRAWN BY: BETH RHOADES DATE: 5/7/2024

Exterior Window & Door Replacement
Exterior Siding Removal & Restoration

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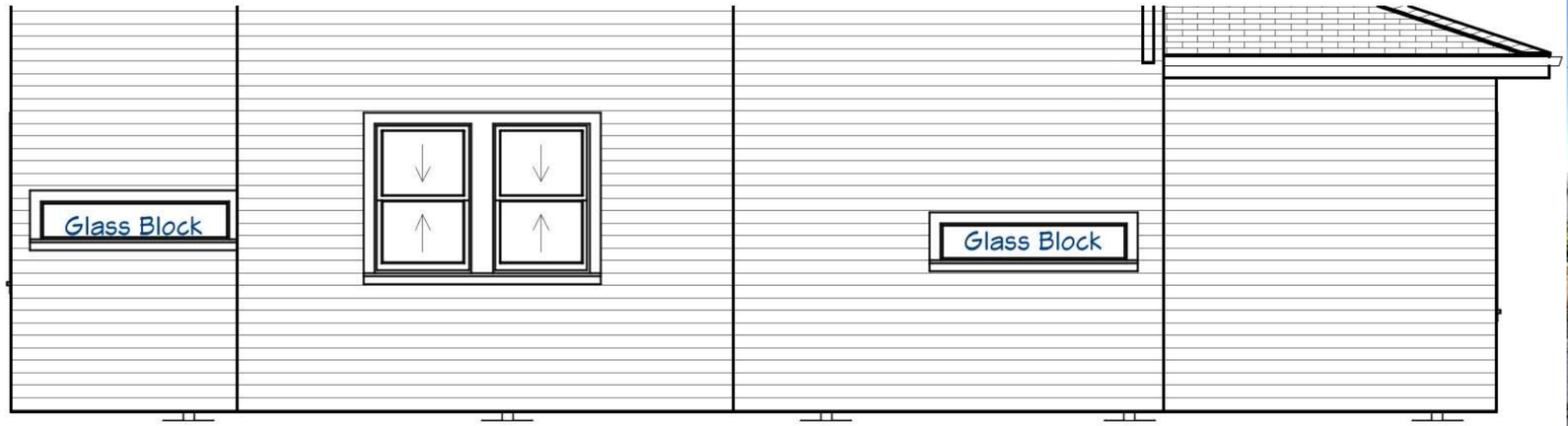
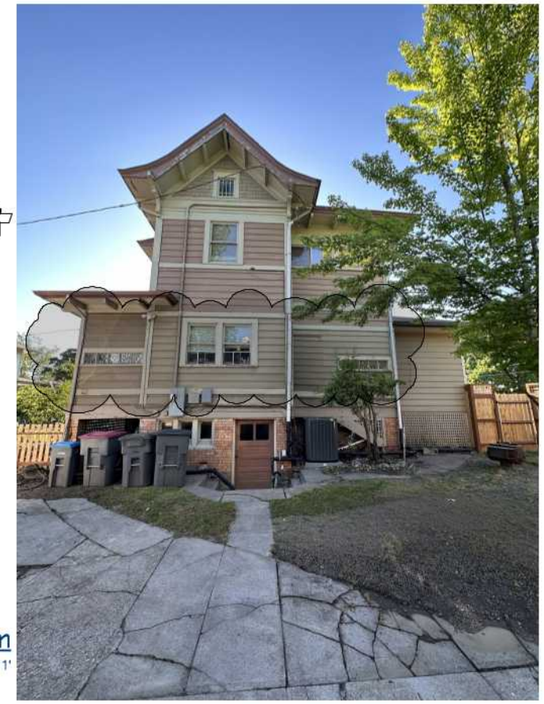
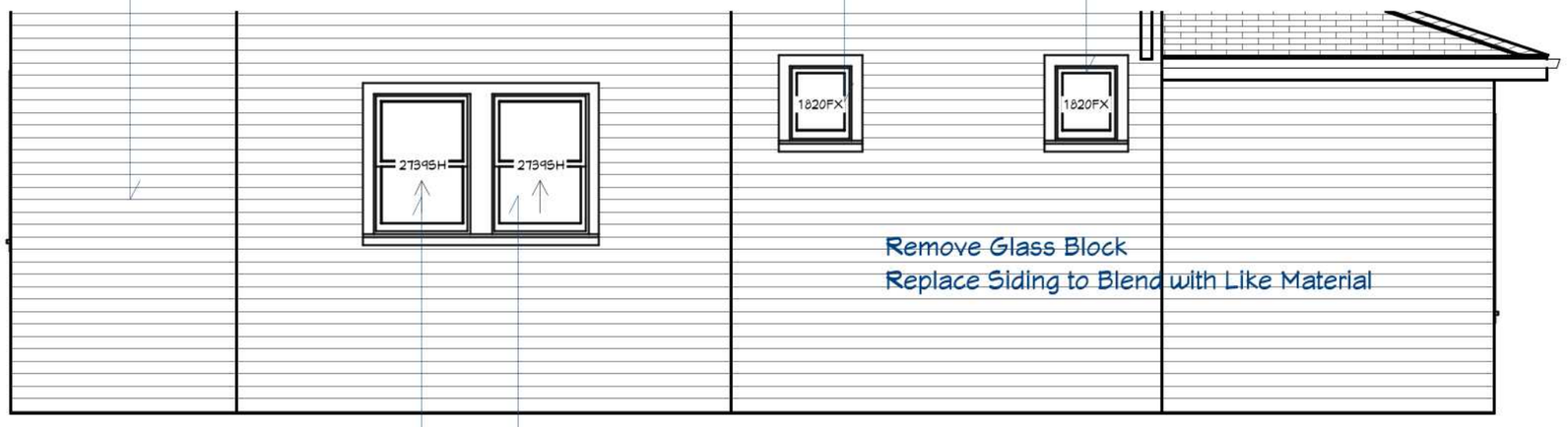


As Built Kitchen and Mud Room

1/4" = 1'





Proposed Kitchen and Mud Room

1/4" = 1'

SHEET NUMBER 5 REVISION #:

Scott & Jennifer Green
609 NE Cowls St, McMinnville, OR

DRAWN BY: BETH RHOADES DATE: 5/7/2024

Exterior Window & Door Replacement
Exterior Siding Removal & Restoration

DRAWINGS PROVIDED BY:
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1160 Vista Ave SE
503.363.1343
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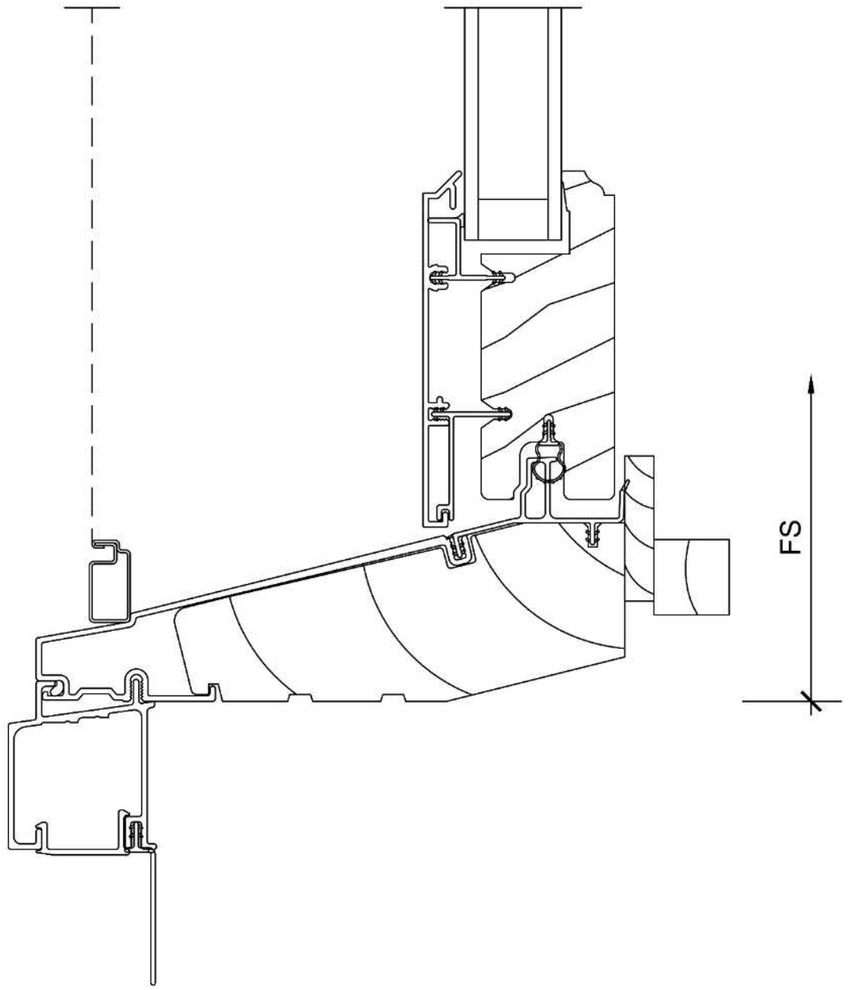
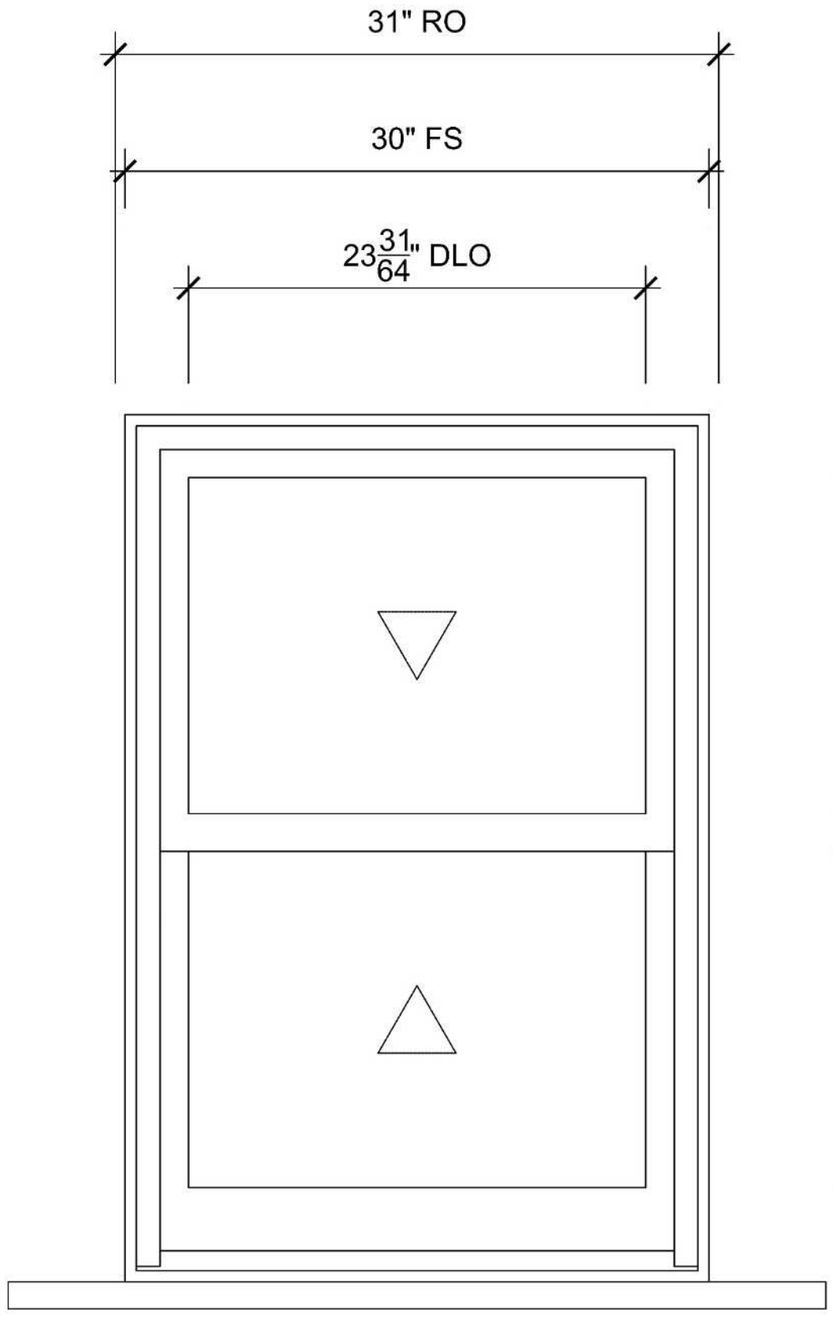
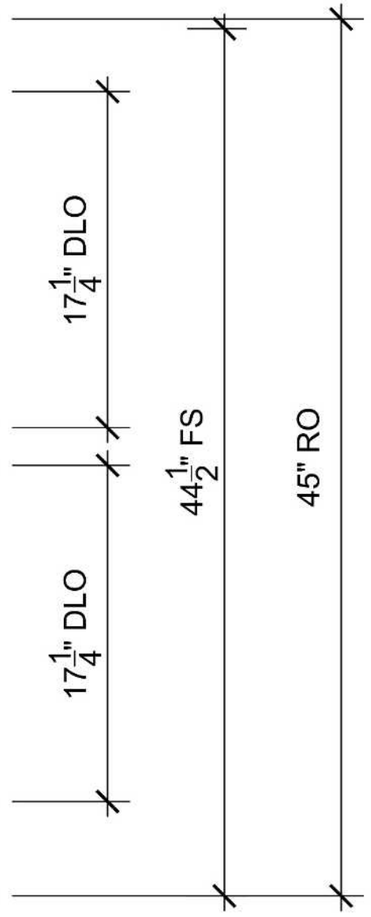


3/1 Sill Double Hung





DOUBLE HUNG

SHEET NUMBER 6 REVISION #:

Scott & Jennifer Green
609 NE Cowls St, McMinnville, OR
DRAWN BY: BETH RHOADES DATE: 5/7/2024

Exterior Window & Door Replacement
Exterior Siding Removal & Restoration

DRAWINGS PROVIDED BY:
C&R Design Remodel
1160 Vista Ave SE
503.363.1343
CCB #1932

Paint Colors for Exterior

Exterior Window Clad Colors from Marvin

Gutter Details

SHEET NUMBER 7 REVISION #:

Scott & Jennifer Green
609 NE Cowls St, McMinnville, OR
DRAWN BY: BETH RHOADES | DATE: 5/7/2024

Exterior Window & Door Replacement
Exterior Siding Removal & Restoration

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